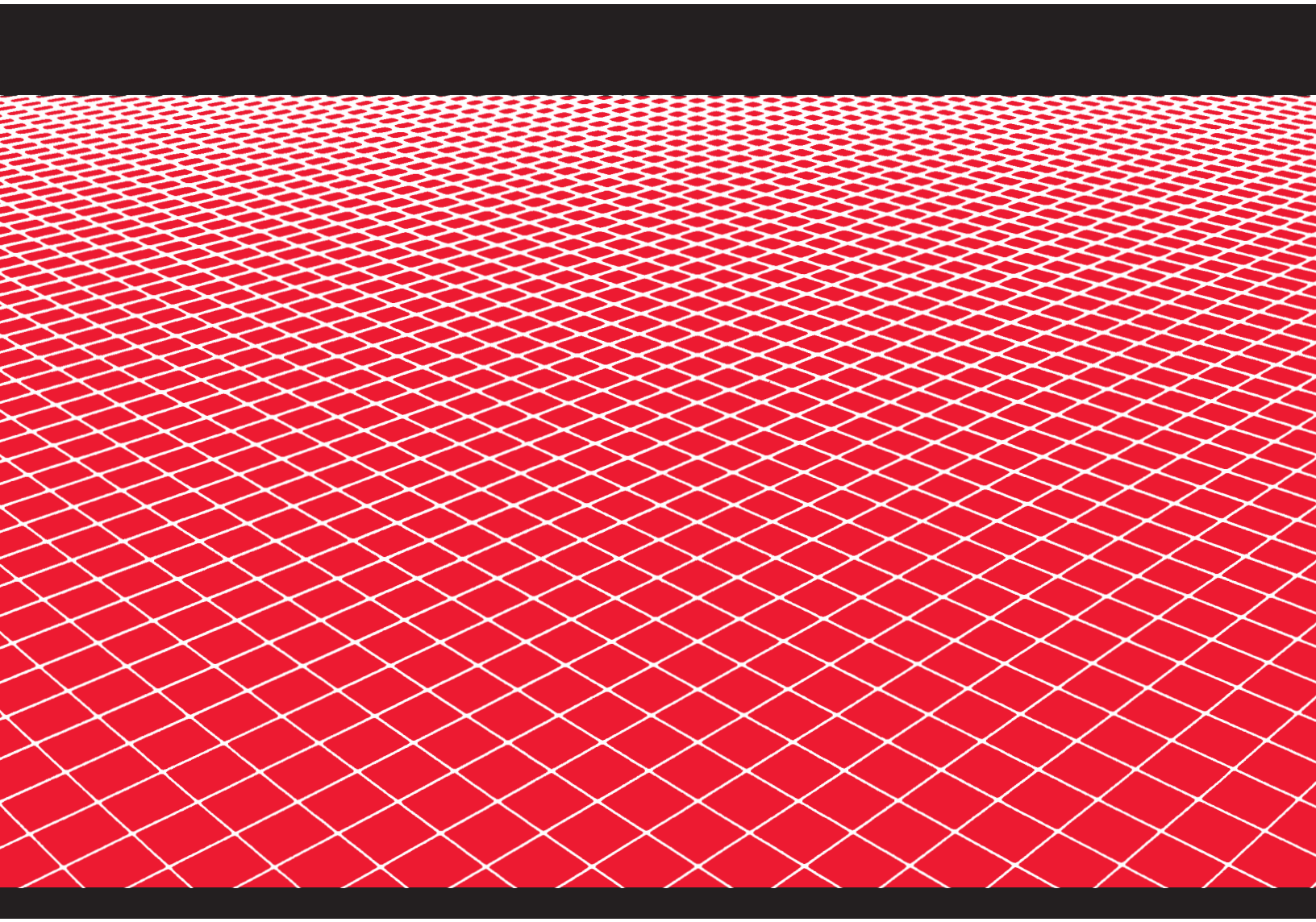
HONDA

SHOP MANUAL

CRF1000/A/D



CRF1000/A/DG

A Few Words About Safety

Service Information

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

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

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

For Your Customer's Safety

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

⚠WARNING

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

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

For Your Safety

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

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

⚠WARNING

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

Follow the procedures and precautions in this manual carefully.

Important Safety Precautions

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

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

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

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

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

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

How To Use This Manual

This manual describes the service procedures for the CRF1000/A/D-G.

Sections 1,2 and 3 apply to the whole motorcycle. Section 2 illustrates procedures for removal/installation of components that may be required to perform service described in the following sections.
Section 4 through 24 describe parts of the motorcycle, grouped according to location.

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

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

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

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

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

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

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

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

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

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

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

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SYMBOLS

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

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

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MEMO

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SERVICE RULES

1. Use Honda Genuine or Honda-recommended parts and lubricants or their equivalents. Parts that don't meet Honda's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the motorcycle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as show in the Cable and Harness Routing (page 1-26).
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
DCT	Dual Clutch Transmission
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
EOP sensor	Engine Oil Pressure sensor
EOT sensor	Engine Oil Temperature sensor
EVAP	Evaporative Emission
HSTC	Honda Selectable Torque Control
IACV	Idle Air Control Valve
IAT sensor	Intake Air Temperature sensor
MAP sensor	Manifold Absolute Pressure sensor
MCS	Motorcycle Communication System
MIL	Malfunction Indicator Lamp
PAIR	Pulse Secondary Air Injection
PCM	Powertrain Control Module
PGM-FI	Programmed Fuel Injection
SCS	Service Check Signal
TP sensor	Throttle Position sensor
TR sensor	Transmission Range Sensor
VS sensor	Vehicle Speed sensor

DESTINATION CODE

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

DESTINATION CODE	REGION
ED, IIED, IIIED	European direct sales
RU, IIRU, IIIRU	Russia
U, IIU, IIIU	Australia, New Zealand

MODEL IDENTIFICATION

CRF1000/A:

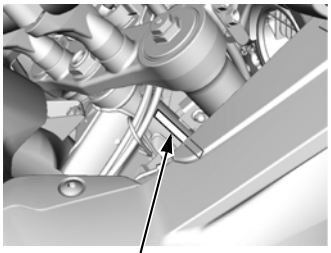


CRF1000D:

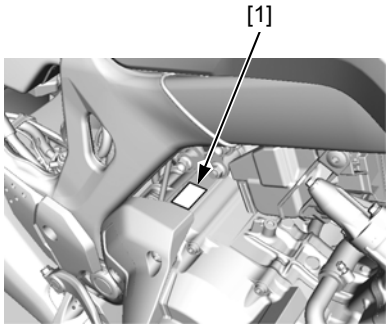


SERIAL NUMBERS/LABELS

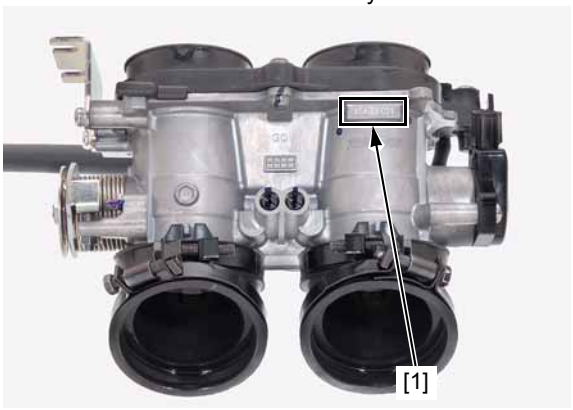
The motorcycle Identification Number (V.I.N) [1] is stamped on the right side of the steering head.



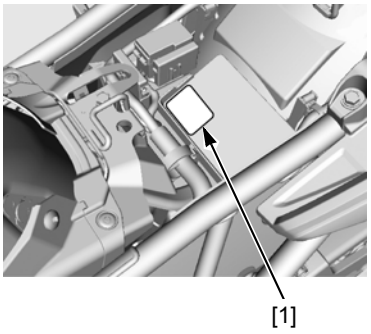
The engine serial number [1] is stamped on the lower back side of the crankcase.



The throttle body identification number [1] is stamped on the upper front left side of the throttle body as shown.



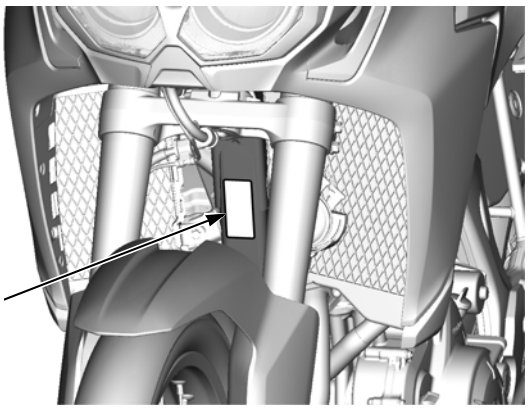
The color label [1] is attached on the up side of the ETC tray. When ordering color-coded parts, always specify the designated color code.



The registered number plate (ED, RU models) [1] is attached on the right side of the rear frame.



The compliance label (U model only) [1] is attached on the front side of the down tube.



TYPES

TYPE CODE	DESTINATION CODE	Manual Transmission	Dual Clutch Transmission	Anti-lock Brake System	HSTC
CRF1000	ED, IIED, IIIED	○	–	–	–
	U	○	–	–	–
CRF1000A	ED, IIED, IIIED	○	–	○	○
	RU, IIRU, IIIRU	○	–	○	○
	U, IIU, IIIU	○	–	○	○
CRF1000D	ED, IIED, IIIED	–	○	○	○
	RU, IIRU, IIIRU	–	○	○	○
	U, IIU, IIIU	–	○	○	○

SPECIFICATIONS

GENERAL SPECIFICATIONS

ITEM				SPECIFICATIONS
DIMENSIONS	Overall length			2,335 mm (91.9 in)
	Overall width		CRF1000	875 mm (34.4 in)
			CRF1000A/D	930 mm (36.6 in)
	Overall height			1,475 mm (58.1 in)
	Wheelbase			1,575 mm (62.0 in)
	Seat height			870 mm (34.3 in)
	Footpeg height			351 mm (13.8 in)
	Ground clearance			250 mm (9.8 in)
	Curb weight		CRF1000	228 kg (503 lbs)
			CRF1000A	232 kg (511 lbs)
			CRF1000D	242 kg (534 lbs)
	Maximum weight capacity			195 kg (430 lbs)
FRAME	Frame type			Semi double cradle
	Front suspension			Telescopic fork
	Front axle travel			204 mm (8.0 in)
	Rear suspension			Swingarm
	Rear axle travel			220 mm (8.7 in)
	Front tire size			90/90-21M/C 54H
	Rear tire size			150/70R18M/C 70H
	Front tire brand			D610F (DUNLOP)
	Rear tire brand			D610 (DUNLOP)
	Front brake			Hydraulic double disc
	Rear brake			Hydraulic single disc
	Caster angle			27° 30’
	Trail length			113 mm (4.4 in)
	Fuel tank capacity			18.8 liters (4.97 US gal, 4.14 Imp gal)
ENGINE	Cylinder arrangement			2 cylinders in-line, slant angle 22.5°
	Bore and stroke			92.0 x 75.1 mm (3.62 x 2.96 in)
	Displacement			998 cm^3 (60.9 cu-in)
	Compression ratio			10.0 : 1
	Valve train			Chain driven, OHC with valve lifter and rocker arm
	Intake valve	opens	at 1 mm (0.04 in) lift	5° BTDC
		closes	at 1 mm (0.04 in) lift	40° ABDC
	Exhaust valve	opens	at 1 mm (0.04 in) lift	40° BBDC
		closes	at 1 mm (0.04 in) lift	5° ATDC
	Lubrication system			Forced pressure and dry sump
	Oil pump type			Trochoid
	Cooling system			Liquid cooled
	Air filtration			Viscous paper element
	Engine dry weight		CRF1000/A	68.2 kg (150.4 lbs)
			CRF1000D	76.4 kg (168.4 lbs)
	Firing order			1 - 2
FUEL DELIVERY SYSTEM	Type			PGM-FI
	Throttle bore			44 mm (1.73 in)
DRIVE TRAIN (CRF1000/A)	Clutch system			Multi-plate, wet
	Clutch operation system			Cable operating
	Transmission			Constant mesh, 6-speeds
	Primary reduction			1.733 (78/45)
	Final reduction			2.625 (42/16)
	Gear ratio		1st	2.866 (43/15)
			2nd	1.888 (34/18)
			3rd	1.480 (37/25)
			4th	1.230 (32/26)
			5th	1.100 (33/30)
			6th	0.968 (31/32)
	Gearshift pattern			Left foot operated return system, 1 - N - 2 - 3 - 4 - 5 - 6

ITEM			SPECIFICATIONS
DRIVE TRAIN (CRF1000D)	Clutch system		2 Multi-plate wet clutches
	Clutch operation system		Automatic
	Transmission		Constant mesh, 6-speeds
	Primary reduction		1.883 (81/43)
	Final reduction		2.625 (42/16)
	Gear ratio	1st	2.562 (41/16)
		2nd	1.761 (37/21)
		3rd	1.375 (33/24)
		4th	1.133 (34/30)
		5th	0.972 (36/37)
		6th	0.882 (30/34)
	Gearshift pattern		Automatic and electric shift (left hand operated) return system, N - 1 - 2 - 3 - 4 - 5 - 6
ELECTRICAL	Ignition system		Full transistorized ignition
	Starting system		Electric starter motor
	Charging system		Triple phase output alternator
	Regulator/rectifier		FET shorted/triple phase full wave rectification
	Lighting system		Battery

PGM-FI SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
IAT sensor resistance (at 40°C/104°F)	1.0 – 1.3 kΩ
Fuel injector resistance (at 20°C/68°F)	11 – 13 Ω
O_2 sensor heater resistance (at 20°C/68°F)	6.7 – 10.5 Ω
IACV resistance (at 25°C/77°F)	99 – 121 Ω

IGNITION SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
Spark plug	SILMAR8A9S (NGK)
Spark plug gap	0.8 – 0.9 mm (0.03 – 0.04 in)
Ignition coil primary peak voltage	100 V minimum
CKP sensor peak voltage	0.7 V minimum
Ignition timing ("F"mark)	10° BTDC at idle

FUEL SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
Throttle body identification number	GQA5A
Engine idle speed	1,200 ± 100 min^{-1} (rpm)
Throttle grip freeplay	2 – 6 mm (0.08 – 0.24 in)
Fuel pressure at idle	324 – 367 kPa (3.3 – 3.7 kgf/cm^2, 47 – 53 psi)
Fuel pump flow (at 12 V)	319 cm^3 (4.2 US oz, 4.4 Imp oz) minimum/10 seconds
PAIR control solenoid valve resistance (at 20°C/68°F)	24 – 28 Ω

COOLING SYSTEM SPECIFICATIONS

ITEM			SPECIFICATIONS
Coolant capacity	Radiator and engine	CRF1000/A	1.63 liters (1.72 US qt, 1.43 Imp qt)
		CRF1000D	1.65 liters (1.74 US qt, 1.45 Imp qt)
	Reserve tank		0.33 liter (0.35 US qt, 0.29 Imp qt)
Radiator cap relief pressure			108 – 137 kPa (1.1 – 1.4 kgf/cm^2, 16 – 20 psi)
Thermostat	Begin to open		80 – 84°C (176 – 183°F)
	Fully open		95°C (203°F)
	Valve lift		8 mm (0.3 in) minimum
Recommended antifreeze			High quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors
Standard coolant concentration			1:1 mixture with distilled water

LUBRICATION SYSTEM SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Engine oil capacity	CRF1000/A	After draining	3.9 liter (4.1 US qt, 3.4 Imp qt)	–
		After draining/engine oil filter change	4.1 liter (4.3 US qt, 3.6 Imp qt)	–
		After disassembly	4.9 liter (5.2 US qt, 4.3 Imp qt)	–
	CRF1000D	After draining	4.0 liter (4.2 US qt, 3.5 Imp qt)	–
		After draining/engine oil filter/clutch oil filter change	4.2 liter (4.4 US qt, 3.7 Imp qt)	–
		After disassembly	5.2 liter (5.5 US qt, 4.6 Imp qt)	–
Recommended engine oil			Honda "4-stroke motorcycle oil" or an equivalent motor oil. API classification: SG or higher JASO T903 standard: MA Viscosity: SAE 10W-30	–
Oil pressure (at oil filter cartridge)			499 – 637 kPa (5.1 – 6.5 kgf/cm^2, 72 – 92 psi) at 5,000 min^{-1} (rpm)/ (80°C/176°F)	–
Oil pump rotor	Tip clearance		0.15 (0.006)	0.20 (0.008)

CYLINDER HEAD/VALVE/CAMSHAFT SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression at 500 rpm			1,245 kPa (12.7 kgf/cm^3, 181 psi)	–
Valve clearance		IN	0.16 ± 0.03 (0.006 ± 0.001)	–
		EX	0.23 ± 0.02 (0.009 ± 0.001) (between roller and cam lobe)	–
Valve, valve guide	Valve stem O.D.	IN	5.475 – 5.490 (0.2352 – 0.2358)	5.465 (0.215)
		EX	5.465 – 5.480 (0.2152 – 0.2157)	5.465 (0.214)
	Valve guide I.D.	IN/EX	5.500 – 5.512 (0.2165 – 0.2170)	5.542 (0.219)
	Valve guide projection above cylinder head	IN	17.7 – 18.0 (0.70 – 0.71)	–
		EX	17.8 – 18.1 (0.70 – 0.71)	–
	Valve seat width	IN	1.1 – 1.3 (0.04 – 0.05)	1.5 (0.06)
		EX	1.3 – 1.5 (0.05 – 0.06)	1.9 (0.07)
Valve spring	Free length		43.20 (1.701)	42.2 (1.97)
Valve lifter	Valve lifter O.D.	IN	28.978 – 28.993 (1.1409 – 1.1415)	28.97 (1.141)
	Valve lifter bore I.D.	IN	29.010 – 29.026 (1.1421 – 1.1428)	29.04 (1.143)
Rocker arm	Arm I.D.	EX	12.000 – 12.018 (0.4724 – 0.4731)	12.05 (0.474)
	Shaft O.D.	EX	11.977 – 11.990 (0.4715 – 0.4720)	–
Camshaft	Cam lobe height	IN	41.240 – 41.480 (1.6236 – 1.6331)	41.21 (1.622)
		EX	41.531 – 41.771 (1.6351 – 1.6445)	41.50 (1.634)
	Oil clearance		0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)
Cylinder head warpage			–	0.10 (0.004)

ALTERNATOR/STARTER CLUTCH SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Starter driven gear boss	O.D.	57.749 – 57.768 (2.2736 – 2.2743)	–
	I.D.	44.000 – 44.016 (1.7323 – 1.7329)	–

CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS (CRF1000/A)

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Clutch lever freeplay		10 – 20 (0.4 – 0.8)	–
Clutch	Spring free length	52.48 (2.066)	51.48 (2.02)
	Disc thickness	3.22 – 3.38 (0.127 – 0.133)	3.0 (0.12)
	Plate warpage	–	0.20 (0.008)
	Primary driven gear I.D.	41.958 – 41.983 (1.6519 – 1.6529)	–
Clutch outer guide	O.D.	34.975 – 34.991 (1.3770 – 1.3776)	–
	I.D.	28.000 – 28.021 (1.1024 – 1.1032)	–
Mainshaft O.D. at clutch outer guide		27.967 – 27.980 (1.1011 – 1.1016)	–

DUAL CLUTCH TRANSMISSION SPECIFICATIONS (CRF1000D)

ITEM		STANDARD	SERVICE LIMIT
Shift clutch	Clutch clearance	0.9 – 1.1 (0.035 – 0.043)	–
	Disc thickness	1.88 – 2.00 (0.074 – 0.079)	worn out lining
	Plate thickness	1.95 – 2.05 (0.077 – 0.081)	discoloration
EOT sensor resistance (20°C/68°F)		2.5 – 2.8 kΩ	–

CRANKCASE/TRANSMISSION/BALANCER SPECIFICATIONS (CRF1000/A)

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Transmission	Gear I.D.	M5, M6	31.000 – 31.025 (1.2205 – 1.2215)	–
		C1	25.000 – 25.021 (1.3780 – 1.3789)	–
		C2, C3, C4	33.000 – 33.025 (1.2992 – 1.3002)	–
	Gear bushing O.D.	M5	30.955 – 30.980 (1.2187 – 1.2197)	–
		M6	30.950 – 30.975 (1.2185 – 1.2195)	–
		C1	24.959 – 24.980 (0.9826 – 0.9835)	–
		C2	32.955 – 32.980 (1.2974 – 1.2984)	–
		C3, C4	32.950 – 32.975 (1.2972 – 1.2682)	–
	Gear bushing I.D.	M5	27.985 – 28.006 (1.1018 – 1.1026)	–
		C1	21.985 – 22.006 (0.8655 – 0.8664)	–
		C2	29.985 – 30.006 (1.1805 – 1.1813)	–
	Mainshaft O.D.	at M5	27.967 – 27.980 (1.1011 – 1.1016)	–
	Countershaft O.D.	at C1	21.987 – 22.000 (0.8656 – 0.8661)	–
		at C2	29.967 – 29.980 (1.1798 – 1.1803)	–
Shift fork, fork shaft	Fork I.D.		12.000 – 12.018 (0.4724 – 0.4731)	–
	Claw thickness		5.93 – 6.00 (0.233 – 0.236)	5.83 (0.230)
	Shift fork shaft O.D.		11.957 – 11.968 (0.4707 – 0.4712)	–

CRANKCASE/TRANSMISSION/BALANCER SPECIFICATIONS (CRF1000D)

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Transmission	Gear I.D.	M5	35.000 – 35.025 (1.3780 – 1.3789)	–
		M6	43.000 – 43.025 (1.6929 – 1.6939)	–
		C1	35.000 – 35.025 (1.3780 – 1.3789)	–
		C2	25.000 – 25.021 (0.9843 – 0.9851)	–
		C3, C4	33.000 – 33.025 (1.2992 – 1.3002)	–
	Gear bushing O.D.	M5	34.950 – 34.975 (1.3760 – 1.3770)	–
		M6	42.950 – 42.975 (1.6909 – 1.6919)	–
		C1	34.950 – 34.975 (1.3760 – 1.3770)	–
		C2	24.959 – 24.980 (0.9826 – 0.9835)	–
		C3, C4	32.950 – 32.975 (1.2972 – 1.2982)	–
	Gear bushing I.D.	M5	32.000 – 32.025 (1.2598 – 1.2608)	–
		M6	40.007 – 40.028 (1.5751 – 1.5759)	–
		C1	30.000 – 30.021 (1.1811 – 1.2067)	–
		C2	21.985 – 22.006 (0.8655 – 0.8664)	–
	Inner mainshaft O.D.	M5	31.957 – 31.970 (1.2581 – 1.2587)	–
	Outer mainshaft O.D.	M6	39.975 – 39.991 (1.5738 – 1.5744)	–
	Countershaft O.D.	C1	29.967 – 29.980 (1.1798 – 1.1803)	–
		C2	21.987 – 22.000 (0.8656 – 0.8661)	–
Shift fork	I.D.		12.000 – 12.018 (0.4724– 0.4731)	–
	Claw thickness		5.93 – 6.00 (0.233 – 0.236)	5.83 (0.230)
	Shaft O.D.		11.957 – 11.968 (0.4707 – 0.4712)	–

CRANKSHAFT/PISTON/CYLINDER SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod side clearance		0.10 – 0.20 (0.004 – 0.008)	0.35 (0.014)
	Runout		–	0.05 (0.002)
	Main journal bearing oil clearance		0.019 – 0.038 (0.0007 – 0.0015)	0.05 (0.002)
	Crankpin bearing oil clearance		0.027 – 0.045 (0.0011 – 0.0018)	0.065 (0.0026)
Cylinder	I.D.		92.000 – 92.015 (3.6220 – 3.6226)	92.10 (3.626)
Piston, pis-ton pin, piston ring	Piston O.D. at 12 mm (0.5 in) from bottom		91.981 – 91.996 (3.6213 – 3.6218)	91.89 (3.618)
	Piston pin hole I.D.		22.002 – 22.008 (0.8662 – 0.8665)	22.02 (0.867)
	Piston pin O.D.		21.994 – 22.000 (0.8659 – 0.8661)	21.98 (0.865)
	Piston ring end gap	Top	0.15 – 0.30 (0.006 – 0.012)	0.40 (0.016)
		Second	0.45 – 0.60 (0.018 – 0.024)	0.70 (0.028)
		Oil (side rail)	0.20 – 0.70 (0.008 – 0.028)	0.90 (0.035)
	Piston ring-to-ring groove clearance	Top	0.030 – 0.060 (0.0012 – 0.0024)	–
		Second	0.030 – 0.060 (0.0012 – 0.0024)	–
Connecting rod small end I.D.			22.030 – 22.044 (0.8673 – 0.8679)	22.054 (0.8683)

FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
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		–	1.0 (0.04)
	Axial		–	1.0 (0.04)
Wheel hub-to-rim distance			28.5 – 30.5 (1.12 – 1.20)	–
Wheel balance weight			–	60 g (2.1 oz) max.
Fork	Spring free length		433.7 (17.07)	425.0 (16.73)
	Recommended fork fluid		Honda Ultra Cushion Oil 10W (SS-47)	–
	Fluid level		95.0 (3.74)	–
	Fluid capacity		721 ± 2.5 cm^3 (24.4 ± 0.1 US oz, 25.4 ± 0.1 Imp oz)	–
	Pre-load adjuster standard position	CRF1000/A	5 turns from the full soft position	–
		CRF1000D	8.5 turns from the full soft position	–
	Rebound adjuster standard position		2 1/4 turns from maximum position	–
	Compression adjuster standard position		8 clicks from maximum position	–
Steering head bearing pre-load			9.8 – 14.7 N (1.0 – 1.5 kgf, 2.2 – 3.3 lbf)	–

REAR WHEEL/SUSPENSION SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure	Driver only	250 kPa (2.50 kgf/cm^2, 36 psi)	–
	Driver and passenger	280 kPa (2.80 kgf/cm^2, 41 psi)	–
Axle runout		–	0.2 (0.01)
Wheel rim runout	Radial	–	1.0 (0.04)
	Axial	–	1.0 (0.04)
Wheel hub-to-rim distance		5.2 – 7.2 (0.205 – 0.283)	–
Wheel balance weight		–	60 g (2.1 oz) max.
Drive chain	Slack	35 – 45 (1.4 – 1.8)	–
	Size/link	DID525HV3-124LE	–
Shock absorber	Pre-load adjuster standard position	7 clicks from maximum position (first click is "0" position)	–
	Rebound adjuster standard setting	11 clicks from maximum position	–
	Compression adjuster standard position	14 clicks from maximum position	–

HYDRAULIC BRAKE SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Front	Specified brake fluid		DOT 4 brake fluid	–
	Brake disc thickness		4.5 ± 0.1 (0.18 ± 0.004)	3.5 (0.14)
	Brake disc warpage		–	0.20 (0.008)
	Master cylinder I.D.		14.000 – 14.043 (0.5512 – 0.5529)	–
	Master piston O.D.		13.957 – 13.984 (0.5495 – 0.5506)	–
	Caliper cylinder I.D.	Upper	30.230 – 30.280 (1.1902 – 1.1921)	–
		Lower	27.000 – 27.050 (1.0630 – 1.0650)	–
	Caliper piston O.D.	Upper	30.148 – 30.198 (1.1869 – 1.1889)	–
		Lower	26.918 – 26.968 (1.0598 – 1.0617)	–
Rear	Specified brake fluid		DOT 4 brake fluid	–
	Master cylinder push rod length		83.0 – 85.0 (3.28 – 3.35)	–
	Brake disc thickness		6.0 ± 0.2 (0.24 ± 0.008)	5.0 (0.20)
	Brake disc warpage		–	0.30 (0.012)
	Master cylinder I.D.		12.700 – 12.743 (0.5000 – 0.5017)	–
	Master piston O.D.		12.657 – 12.684 (0.4983 – 0.4994)	–
	Caliper cylinder I.D.		38.18 – 38.23 (1.503 – 1.505)	–
	Caliper piston O.D.		38.098 – 38.148 (1.4999 – 1.5019)	–

BATTERY/CHARGING SYSTEM SPECIFICATIONS

ITEM			SPECIFICATIONS
Battery	Type		YTZ14S
	Capacity		12 V – 11.2 Ah (10 HR)/11.8 Ah (20 HR)
	Current leakage		0.66 mA max.
	Voltage (20°C/68°F)	Fully charged	13.0 – 13.2 V
		Needs charging	Below 12.3 V
	Charging current	Normal	1.1 A/5 – 10 h
		Quick	5.5 A/h
Alternator	Capacity		0.49 kW/5,000 min^{-1} (rpm)
	Charging coil resistance (20°C/68°F)		0.1 – 1.0 Ω

LIGHTS/METERS/SWITCHES SPECIFICATIONS

ITEM			SPECIFICATIONS
Bulbs	Headlight	Hi	LED
		Lo	LED
	Brake/taillight		LED
	Position light		LED
	Front turn signal/position light (CRF1000)		12 V – 21/5 W x 2
	Front turn signal light (CRF1000A/D)		LED
	Rear turn signal light	CRF1000	12 V – 21 W x 2
		CRF1000A/D	LED
	License light		12 V – 5 W
	Instrument light		LED
	Turn signal indicator		LED
	High beam indicator		LED
	Neutral indicator		LED
	Low oil pressure indicator		LED
	Fuel reserve indicator		LED
	MIL		LED
	High coolant temperature indicator		LED
	HISS indicator		LED
	ABS indicator (CRF1000A/D)		LED
	Rear ABS indicator (CRF1000A/D)		LED
	Parking brake indicator (CRF1000D)		LED
	Torque control indicator (CRF1000A/D)		LED
	Torque control off indicator (CRF1000A/D)		LED
Fuse	Main fuse		30 A
	FI fuse		15 A
	ABS MAIN fuse (CRF1000A/D)		30 A
	DCT M fuse (CRF1000D)		30 A
	Sub fuse	CRF1000	20 A x 1, 10 A x 1, 7.5 A x 5
		CRF1000A	20 A x 1, 10 A x 1, 7.5 A x 6
		CRF1000D	20 A x 1, 10 A x 1, 7.5 A x 7
ECT sensor resistance		40°C (104°F)	1.0 – 1.3 kΩ
		100°C (212°F)	0.14 – 0.18 kΩ
Open air temperature sensor resistance 25°C (77°F)			4.9 – 5.1 kΩ
Fuel level sensor resistance		Full	6.4 – 10.4 Ω
		Empty	204.8 – 210.8 Ω

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 (Include SH flange bolt) and nut	10 (1.0, 7)	6 mm screw	9.0 (0.9, 6.6)
		6 mm flange bolt (Include NSHF) and nut	12 (1.2, 9)
8 mm bolt and nut	22 (2.2, 16)		
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

FRAME BODY PANELS/EXHAUST SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Windscreen mounting screw	4	5	0.42 (0.04, 0.3)	
Skid plate mounting bolt	3	8	26 (2.7, 19)	
Left rear cover mounting bolt	2	6	12 (1.2, 9)	
Brake hose oil bolt (CRF1000A/D)	2	10	34 (3.5, 25)	
Brake pipe joint nut (CRF1000A/D)	2	10	14 (1.4, 10)	Apply brake fluid to the threads.
Exhaust pipe cover C pan screw	3	6	9.0 (0.9, 6.6)	
Exhaust outer cover screw	1	6	9.0 (0.9, 6.6)	
Exhaust pipe joint nut	4	8	20 (2.0, 15)	
Exhaust pipe cover A pan screw	1	6	9.0 (0.9, 6.6)	
Exhaust pipe cover B band screw	1	–	3.5 (0.4, 2.6)	
Muffler band bolt	2	8	17 (1.7, 13)	
Muffler cover pan screw	2	6	9.0 (0.9, 6.6)	
Tail cap cover bolt	2	6	9.0 (0.9, 6.6)	
Exhaust pipe stud bolt	4	8	–	See page 2-18
Sidestand pivot bolt	1	10	10 (1.0, 7)	See page 2-19
Sidestand pivot nut	1	10	29 (3.0, 21)	See page 2-19 U-nut

MAINTENANCE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Throttle cable adjuster lock nut (throttle grip side)	1	7	3.8 (0.4, 2.8)	
Throttle cable A lock nut (throttle body side)	1	8	8.5 (0.9, 6.3)	
Air cleaner element mounting screw	4	5	1.1 (0.1, 0.8)	Tapping screw
Air cleaner cover screw	8	5	1.1 (0.1, 0.8)	Tapping screw
Spark plug	4	10	22 (2.2, 16)	
Valve adjusting screw lock nut	4	5	10 (1.0, 7)	Apply engine oil to the threads and seating surface.
Timing hole cap	1	14	6.0 (0.6, 4.4)	Apply grease to the threads.
Crankshaft hole cap	1	30	8.0 (0.8, 5.9)	Apply grease to the threads.
Engine oil drain bolt	2	12	30 (3.1, 22)	
Oil filter boss (crankcase side)	1	20	–	Apply locking agent to the threads. See page 3-12
Engine oil filter cartridge	1	20	26 (2.7, 19)	Apply engine oil to the threads.
Clutch oil filter cover bolt (CRF1000D)	2	6	12 (1.2, 9)	
Rear axle nut	1	18	100 (10.2, 74)	U-nut
Drive chain adjuster lock nut	2	8	27 (2.8, 20)	UBS-nut
Drive sprocket bolt	1	10	54 (5.5, 40)	
Driven sprocket nut	5	12	100 (10.2, 74)	U-nut
Parking brake adjuster lock nut (CRF1000D)	1	8	17.2 (1.8, 13)	
Front spoke	36	BC 3.5	3.7 (0.4, 2.7)	
Rear spoke	32	BC 3.5	3.7 (0.4, 2.7)	

PGM-FI SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
ECT sensor	1	10	12 (1.2, 9)	
IAT sensor mounting screw	2	5	1.1 (0.1, 0.8)	
O_2 sensor	1	12	24.5 (2.5, 18)	
PAIR reed valve cover bolt	2	6	12 (1.2, 9)	

ELECTRIC STARTER

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Starter motor setting bolt	2	5	4.9 (0.5, 3.6)	
Starter cable terminal nut/washer	1	6	10 (1.0, 7)	
Negative brush mounting screw/ washer	1	5	3.7 (0.4, 2.7)	

FUEL SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Fuel filler cap bolt	3	4	1.8 (0.2, 1.3)	
Fuel pump/reserve sensor terminal screw	2	4	1.0 (0.1, 0.7)	
Fuel pump mounting nut	5	6	12 (1.2, 9)	See page 7-10
Fuel pump mounting cap nut	1	6	12 (1.2, 9)	See page 7-10
Connecting hose band screw	2	4	1.5 (0.2, 1.1)	See page 7-12
IACV holder screw	3	5	3.4 (0.3, 2.5)	
Throttle cable A/B lock nut (throttle body side)	2	8	8.5 (0.9, 6.3)	
Insulator band screw (throttle body side)	2	–	–	See page 7-15
IACV setting plate screw	2	4	2.1 (0.2, 1.5)	
Fuel injector assembly mounting bolt	4	5	5.1 (0.5, 3.8)	
PAIR reed valve cover bolt	2	6	12 (1.2, 9)	

COOLING SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Coolant drain bolt	1	6	13 (1.3, 10)	
Thermostat cover bolt	2	6	12 (1.2, 9)	
Fan motor shroud bolt	6	6	8.5 (0.9, 6.3)	
Cooling fan mounting nut	2	3	1.0 (0.1, 0.7)	Apply locking agent to the threads.
Fan motor mounting screw	6	4	2.7 (0.3, 2.0)	
Water pump cover bolt	4	6	13 (1.3, 10)	Apply locking agent to the threads. (*1) See page 1-20

LUBRICATION SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Engine oil filter cartridge	1	20	26 (2.7, 19)	Apply engine oil to the threads.
Sealing bolt (22 mm)	1	22	30 (3.1, 22)	Apply locking agent to the threads. (*2) See page 1-21
Sealing bolt (24 mm) (CRF1000D)	1	24	30 (3.1, 22)	Apply locking agent to the threads. (*2) See page 1-21
Oil pump flange bolt	6	6	12 (1.2, 9)	
Oil pump mounting bolt	3	6	16 (1.6, 12)	

CYLINDER HEAD/VALVE/CAMSHAFT

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cylinder head cover bolt	3	6	10 (1.0, 7)	
Rocker arm shaft bolt	2	6	12 (1.2, 9)	Apply engine oil to the threads and seating surface.
Rocker arm shaft stopper bolt	1	14	18 (1.8, 13)	
Camshaft holder bolt	6	6	12 (1.2, 9)	Apply engine oil to the threads and seating surface.
Cam sprocket bolt	2	7	20 (2.0, 15)	Apply locking agent to the threads. (*2) See page 1-21
Cylinder head bolt	6	12	83 (8.5, 61)	Apply molybdenum oil solution to the threads and seating surface. Apply engine oil solution to the washer.
Insulator band screw (engine side)	2	–	–	See page 10-19

ALTERNATOR/STARTER CLUTCH

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Alternator cover bolt	12	6	12 (1.2, 9)	
Stator mounting bolt	5	6	12 (1.2, 9)	Apply locking agent to the threads. (*1) See page 1-20
CKP sensor mounting bolt	2	6	12 (1.2, 9)	Apply locking agent to the threads. (*1) See page 1-20
Flywheel mounting bolt	1	12	137 (14.0, 101)	Apply engine oil to the threads and seating surface.
Starter clutch torx bolt	6	8	29 (3.0, 21)	Apply locking agent to the threads. (*2) See page 1-21

CLUTCH/GEARSHIFT LINKAGE (CRF1000/A)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Right crankcase cover bolt	15	6	12 (1.2, 9)	
Engine right side rear cover bolt	2	6	10 (1.0, 7)	
Clutch center nut	1	25	128 (13.1, 94)	Apply engine oil to the threads and seating surface.
Clutch set plate bolt	3	6	12 (1.2, 9)	
Primary drive gear mounting bolt	1	10	103 (10.5, 76)	Apply engine oil to the threads and seating surface.
Cam chain tensioner pivot bolt	1	8	23 (2.3, 17)	Apply locking agent to the threads. (*1) See page 1-20
Shift drum stopper arm pivot bolt	1	6	12 (1.2, 9)	Apply locking agent to the threads. (*1) See page 1-20
Shift drum center bolt	1	8	23 (2.3, 17)	Apply locking agent to the threads. (*1) See page 1-21
Gearshift spindle set plate bolt	1	6	12 (1.2, 9)	Apply locking agent to the threads. (*1) See page 1-20
Gearshift spindle cover bolt	2	6	12 (1.2, 9)	

DUAL CLUTCH TRANSMISSION (CRF1000D)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Feed pipe guide plate bolt	2	5	5 (0.5, 3.7)	
Feed pipe cover bolt	3	6	12 (1.2, 9)	
Right crankcase cover bolt	15	6	12 (1.2, 9)	
Water pipe mounting bolt	2	6	12 (1.2, 9)	
Clutch EOP sensor wire stay bolt	1	6	12 (1.2, 9)	
Clutch EOP sensor cover socket bolt	2	6	10 (1.0, 7)	
Shift spindle angle sensor mounting bolt	1	6	12 (1.2, 9)	
Engine right side rear cover bolt	2	6	10 (1.0, 7)	
Linear solenoid valve body cover bolt	4	6	12 (1.2, 9)	
Linear solenoid valve stopper plate bolt	1	6	12 (1.2, 9)	Apply locking agent to the threads. (*1) See page 1-20
Linear solenoid valve body mounting bolt	4	6	12 (1.2, 9)	
Primary drive gear mounting nut (left-hand thread)	1	22	118 (12.0, 87)	Apply engine oil to the threads and seating surface.
Reduction gear cover torx bolt	3	6	14 (1.4, 10)	
Shift control motor mounting torx bolt	3	6	14 (1.4, 10)	
Shift control motor cover bolt	2	6	12 (1.2, 9)	
Shift drum center bolt	1	8	31 (3.2, 23)	Apply locking agent to the threads. (*2) See page 1-21
Drum shifter guide plate/drum shifter assembly mounting bolt	2	6	12 (1.2, 9)	Apply locking agent to the threads. (*1) See page 1-20
TR sensor mounting bolt	1	6	12 (1.2, 9)	
No.1/No.2 clutch EOP sensor	2	10	20 (2.0, 15)	
Clutch line EOP sensor	1	10	20 (2.0, 15)	
EOT sensor	1	10	15 (1.5, 11)	Apply engine oil to the threads and seating surface.
Neutral switch	1	10	12 (1.2, 9)	
Neutral switch terminal nut	1	4	1.7 (0.2, 1.3)	

CRANKCASE/TRANSMISSION/BALANCER

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Front balancer right bearing set plate bolt	3	6	12 (1.2, 9)	Apply locking agent to the threads. (*1) See page 1-20
Front balancer gear bolt	1	10	103 (10.5, 76)	Apply engine oil to the threads and seating surface.
Oil pump driven gear set plate bolt	1	6	12 (1.2, 9)	Apply locking agent to the threads. (*1) See page 1-20
Rear balancer shaft holder bolt	3	8	29 (3.0, 21)	
Mainshaft bearing set plate bolt	3	6	12 (1.2, 9)	Apply locking agent to the threads. (*1) See page 1-20
Shift drum bearing setting bolt	2	6	12 (1.2, 9)	Apply locking agent to the threads. (*1) See page 1-20
Main journal bolt	6	10	43 (4.4, 32)	Apply molybdenum oil solution to the threads and seating surface.
Crankcase 6 x 40 mm bolt	1	6	12 (1.2, 9)	Blue paint
Crankcase 8 mm bolt	9	8	24 (2.4, 18)	
Crankcase 10 mm bolt	1	10	39 (4.0, 29)	
Cam chain tensioner bolt	1	8	23 (2.3, 17)	Apply locking agent to the threads. (*1) See page 1-20

CRANKSHAFT/PISTON/CYLINDER

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Crankpin bearing cap bolt (new)	4	9	22 (2.2, 16) + 120°	Apply engine oil to the threads and seating surface. Replace with a new one.
Main journal bolt	6	10	43 (4.4, 32)	Apply molybdenum oil solution to the threads and seating surface.
Crankpin bearing cap bolt (retightening)	4	9	22 (2.2, 16) + 90°	Apply engine oil to the threads and seating surface.

ENGINE REMOVAL/INSTALLATION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Right lower frame bolt	4	10	44 (4.5, 32)	
Swingarm pivot nut	1	16	80 (8.2, 59)	Apply engine oil to the threads and seating surface. U-nut
Rear lower nut (10 mm)	1	10	44 (4.5, 32)	
Front lower nut (10 mm)	1	10	44 (4.5, 32)	
Front middle nut (8 mm)	2	8	32 (3.3, 24)	
Front middle nut (10 mm)	1	10	44 (4.5, 32)	
Front upper bolt	3	8	32 (3.3, 24)	
Rear upper bolt (8 x 25 mm)	2	8	32 (3.3, 24)	
Rear upper nut (8 mm)	1	8	32 (3.3, 24)	
Drive sprocket bolt	1	10	54 (5.5, 40)	
EOT sensor (CRF1000D)	1	10	15 (1.5, 11)	
Clutch EOP sensor wire stay bolt (CRF1000D)	1	6	12 (1.2, 9)	
Clutch EOP sensor cover socket bolt (CRF1000D)	2	6	10 (1.0, 7)	

FRONT WHEEL/SUSPENSION/STEERING

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Handlebar weight bolt	2	18	55 (5.6, 41)	ALOC bolt: replace with new ones.
Lower handlebar holder mounting nut	2	10	39 (4.0, 29)	U-nut
Upper handlebar holder socket bolt	4	8	32 (3.3, 24)	
Left handlebar switch housing screw/washer	2	5	2.5 (0.3, 1.8)	
Right handlebar switch housing screw/washer	2	5	2.5 (0.3, 1.8)	
Front brake master cylinder holder bolt	2	6	9.8 (1.0, 7.2)	
Pulser ring bolt (CRF1000A/D)	3	5	7 (0.7, 5.2)	ALOC bolt: replace with new ones.
Front brake disc bolt	12	6	20 (2.0, 15)	ALOC bolt: replace with new ones.
Front axle holder pinch bolt	4	8	22 (2.2, 16)	
Front axle nut	1	16	60 (6.1, 44)	
Fork bolt	2	–	35 (3.6, 26)	
Fork damper lock nut	2	10	20 (2.0, 15)	
Fork socket bolt	2	–	34 (3.5, 25)	
Fork bottom bridge pinch bolt	4	8	25 (2.5, 18)	
Fork top bridge pinch bolt	4	8	22 (2.2, 16)	
Front brake hose clamp mounting bolt	1	6	10 (1.0, 7)	
Steering stem adjusting nut	1	26	15 (1.5, 11)	See page 17-26
Steering stem nut	1	24	100 (10.2, 74)	See page 17-26

REAR WHEEL/SUSPENSION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Rear brake disc bolt	6	8	42 (4.3, 31)	ALOC bolt: replace with new ones.
Driven sprocket nut	5	12	100 (10.2, 74)	Apply engine oil to the threads and seating surface. U-nut
Pulser ring bolt (CRF1000A/D)	4	5	7 (0.7, 5.2)	ALOC bolt: replace with new ones.
Rear axle nut	1	18	100 (10.2, 74)	U-nut
Rear shock absorber upper mounting nut	2	10	54 (5.5, 40)	U-nut
Rear shock absorber lower mounting nut	2	10	44 (4.5, 32)	U-nut
Lower cushion arm nut	1	10	55 (5.6, 41)	U-nut
Upper cushion arm nut	1	12	74 (7.5, 55)	U-nut
Cushion connecting rod mounting nut	1	10	45 (4.6, 33)	Apply engine oil to the threads and seating surface. U-nut
Drive chain slider screw	3	5	4.2 (0.4, 3.1)	ALOC screw: replace with new ones.
Drive chain guard bolt	2	6	10 (1.0, 7)	ALOC bolt: replace with new ones.
Swingarm pivot nut	1	16	80 (8.2, 59)	Apply engine oil to the threads and seating surface. U-nut
Parking cable guide bolt (CRF1000D)	1	6	10 (1.0, 7)	
Rear brake hose clamp mounting bolt	1	6	10 (1.0, 7)	
Rear brake hose guide mounting screw	3	5	1.2 (0.1, 0.9)	ALOC screw: replace with new ones.

HYDRAULIC BRAKE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake caliper bleed valve	3	8	5.4 (0.6, 4.0)	
Front brake master cylinder reservoir cap screw	2	4	1.5 (0.2, 1.1)	
Rear brake master cylinder reservoir cap screw	2	4	1.5 (0.2, 1.1)	
Rear brake master cylinder reserve tank mounting bolt	1	6	10 (1.0, 7)	
Front brake caliper mounting bolt	4	10	45 (4.6, 33)	ALOC bolt: replace with a new one.
Rear brake caliper mounting bolt	1	8	22 (2.2, 16)	ALOC bolt: replace with a new one.
Rear brake pad pin	1	10	17 (1.7, 13)	
Parking brake caliper mounting bolt (CRF1000D)	2	8	31 (3.2, 23)	ALOC bolt: replace with a new one.
Parking brake caliper cover socket bolt (CRF1000D)	2	6	9 (0.9, 6.6)	
Parking brake pad pin (CRF1000D)	2	8	17.2 (1.8, 13)	ALOC bolt: replace with a new one.
Front brake master cylinder holder bolt	2	6	9.8 (1.0, 7.2)	
Brake hose oil bolt	5	10	34 (3.5, 25)	
Front brake light switch mounting screw	1	4	1.2 (0.1, 0.9)	
Front brake lever pivot bolt	1	6	1.0 (0.1, 0.7)	
Front brake lever pivot nut	1	6	5.9 (0.6, 4.4)	
Step bracket mounting bolt	4	10	35 (3.6, 26)	
Rear brake master cylinder mounting bolt	2	6	14 (1.4, 10)	
Rear brake master cylinder hose joint screw	1	4	1.5 (0.2, 1.1)	Apply locking agent to the threads. (*1) See page 1-20
Rear brake master cylinder push rod lock nut	1	8	17.2 (1.8, 13)	
Parking brake lever pivot bolt (CRF1000D)	1	6	1.0 (0.1, 0.7)	
Parking brake lever pivot nut (CRF1000D)	1	6	5.9 (0.6, 4.4)	
Parking brake lock lever pivot bolt (CRF1000D)	1	6	6.9 (0.7, 5.1)	
Parking brake stopper stay flange bolt (CRF1000D)	1	6	11.9 (1.2, 9)	
Parking brake stopper stay HEX bolt (CRF1000D)	1	4	2.3 (0.2, 1.7)	
Parking brake switch mounting screw (CRF1000D)	1	4	1.2 (0.1, 0.9)	Apply locking agent to the threads.
Parking brake adjuster lock nut (CRF1000D)	1	8	17.2 (1.8, 13)	
Parking brake caliper pin bolt (CRF1000D)	1	8	22 (2.2, 16)	

ANTI-LOCK BRAKE SYSTEM (ABS) (CRF1000A/D)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Front brake hose clamp mounting bolt	1	6	10 (1.0, 7)	
Rear brake hose clamp mounting bolt	1	6	10 (1.0, 7)	
Rear brake hose guide mounting screw	3	5	1.2 (0.1, 0.9)	ALOC screw: replace with new ones.
Brake hose oil bolt	2	10	34 (3.5, 25)	
Brake pipe joint nut	2	10	14 (1.4, 10)	Apply brake fluid to the threads.
Front wheel speed sensor mounting bolt	1	6	10 (1.0, 7)	ALOC bolt: replace with a new one.
Rear wheel speed sensor mounting bolt	1	6	10 (1.0, 7)	ALOC bolt: replace with a new one.

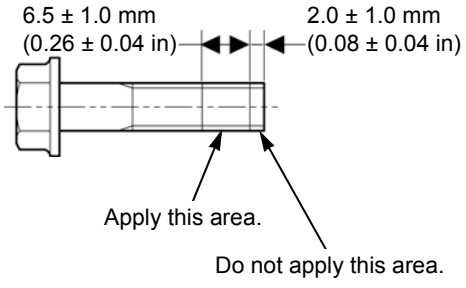
LIGHTS/METERS/SWITCHES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Turn signal light mounting nut (CRF1000)	4	6	8.8 (0.9, 6.5)	
License light cover screw	2	5	3.8 (0.4, 2.8)	
Combination meter mounting screw/ washer	4	5	1.0 (0.1, 0.7)	Tapping screw
EOP switch (CRF1000/A)	1	PT 1/8	12 (1.2, 9)	Apply sealant to the threads. See page 22-20
EOP switch terminal bolt/washer (CRF1000/A)	1	4	2 (0.2, 1.5)	
EOP sensor (CRF1000D)	1	10	22 (2.2, 16)	
Ignition switch mounting bolt	2	8	26 (2.7, 19)	Replace with a new one.
Gear position switch mounting bolt (CRF1000/A)	1	6	10 (1.0, 7)	
Sidestand switch mounting bolt	1	6	10 (1.0, 7)	Replace with a new one.

OTHERS

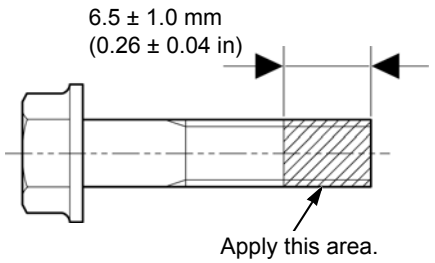
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Clutch lever pivot bolt (CRF1000/A)	1	6	1.0 (0.1, 0.7)	
Clutch lever pivot nut (CRF1000/A)	1	6	5.9 (0.6, 4.4)	U-nut
Pillion step bracket mounting bolt	4	8	34 (3.5, 25)	
Throttle cable A/B nut (switch housing side)	2	10	1.5 (0.2, 1.1)	

*1: Apply locking agent to the threads as shown.



The bolt shown is typical.

*2: Apply locking agent to the threads as shown.



The bolt shown is typical.

LUBRICATION & SEAL POINTS

ENGINE

MATERIAL	LOCATION	REMARKS
Sealant (TB1207B manufactured by ThreeBond or an equivalent)	Crankcase mating surface	See page 14-27
	Alternator cover mating surface	See page 11-6
	CKP sensor wire grommet	See page 11-7
	Right crankcase cover mating surface	CRF1000/A: See page 12-6 CRF1000D: See page 13-55
	Linear solenoid valve wire grommet	See page 13-61
Sealant (TB5211C manufactured by ThreeBond, KE45T manufactured by Shin-Etsu Silicone or an equivalent)	Cylinder head cover packing	See page 10-5
Molybdenum oil solution (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease)	Rocker arm sliding area and thrust surface	
	Rocker arm shaft outer surface	
	Camshaft journals cam lobes, and thrust surface	
	Valve stem sliding area and stem end	
	Starter reduction gears shaft outer surfaces	
	Clutch outer guide entire surface (CRF1000/A)	
	Primary driven gear teeth and clutch outer sliding surface (CRF1000/A)	
	Judder spring and judder spring seat entire surface (CRF1000/A)	
	Primary drive gear sliding surface	
	Primary driven gear teeth, friction springs, and boss sliding area (dual clutch assembly, CRF1000D)	
	Front balancer driven gear sliding area and thrust surface	
	Rear balancer driven gear, sub driven gear, friction spring, and washer sliding surface	
	Rear balancer thrust spring sliding surface	
	Rear balancer driven gear sliding area and thrust surface	
	Oil pump driven gear shaft outer surface	
	Each transmission bushing inner/outer surface	
	Each transmission needle bearing inner/outer surface	
	Each transmission spline bushing outer surface	
	M3, M4, C5, C6 gear (shift fork grooves and spline area)	
	Shift fork shaft outer surface	
	Main journal bearing sliding surface	
	Crankshaft thrust surface	
	Crankpin bearing sliding surface	
	Connecting rod small end inner surface	
	Piston pin outer surface	
Engine oil	Valve adjusting screw threads	
	Oil strainer seal ring entire surface	
	Starter one-way clutch sliding surface	
	Clutch discs entire surface	
	Dual clutch assembly O-ring entire surface (CRF1000D)	
	Piston pin hole inner surface	
	Piston sliding surface	
	Piston ring groove	
	Piston ring entire surface	
	Each bearing rolling area and contact surface	
	Each gear teeth and rotating surface	
	Each O-ring entire surface	
	Other rotating area and sliding surface	
Lithium based multi-purpose grease NLGI #2 or equivalent	Each oil seal lips	
Locking agent	Cam chain guide plate bolt threads	Coating width; See page 1-20
UNIREX N3 manufactured by ExxonMobil or equivalent	Shift reduction gear teeth and journal (CRF1000D)	2 – 4 g (0.07 – 0.14 oz)

FRAME

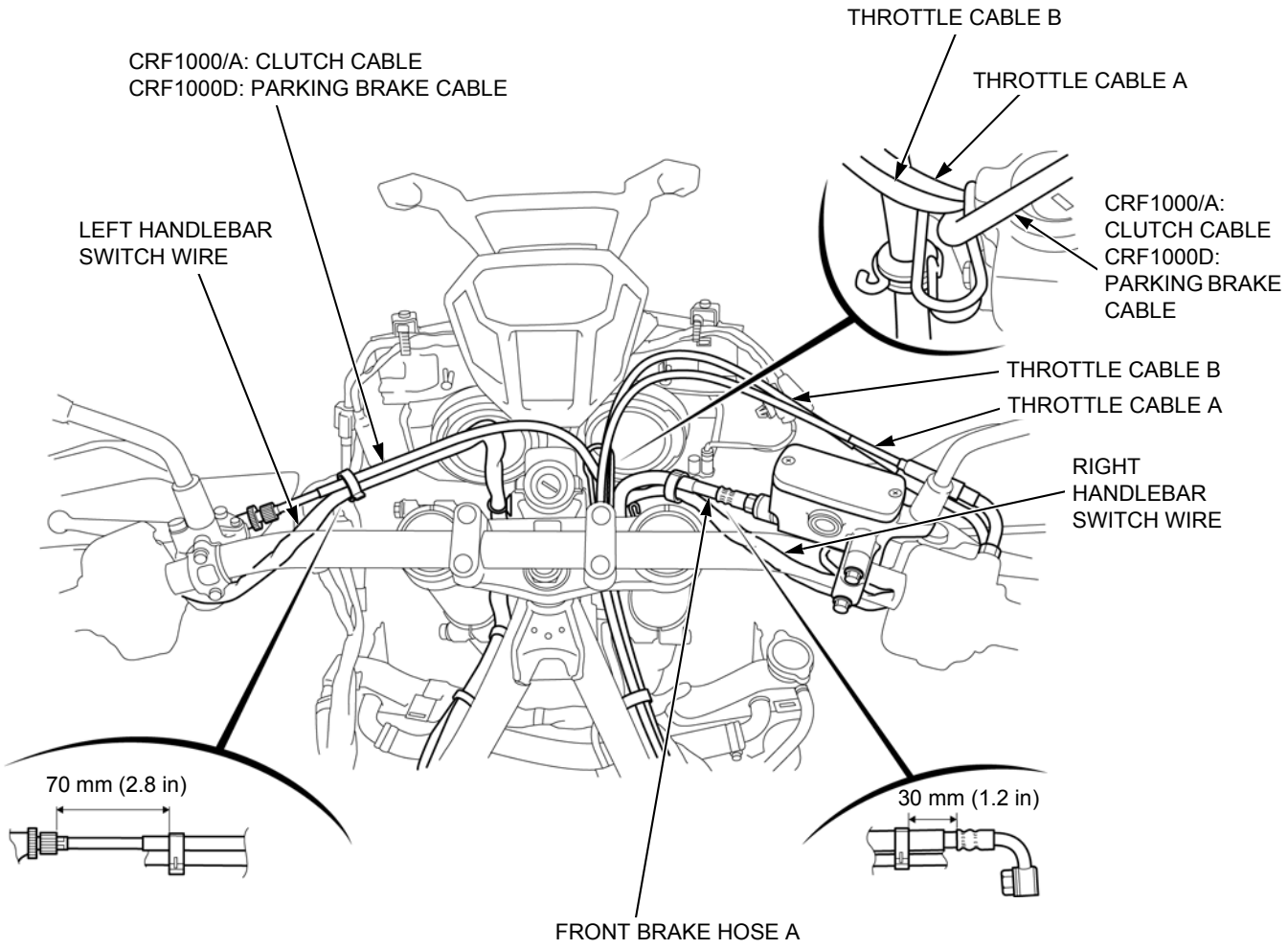
MATERIAL	LOCATION	REMARKS
Urea based multi-purpose extreme pressure grease NLGI #2 (EXCELITE EP2 manufactured by KYODO YUSHI CO., LTD. or equivalent)	Steering head bearing rolling contact surface	3 – 5 g (0.1 – 0.2 oz)
	Steering head dust seal lips	
Lithium based multi-purpose grease NLGI #2 or equivalent	Seat catch hook sliding area	
	Gearshift pedal pivot sliding area (grease groove) (CRF1000/A)	
	Throttle cable end and throttle grip pipe flange groove	
	Wheel dust seal lips	
	Rear wheel hub O-ring (driven flange side)	
	Rear brake middle arm pivot sliding surface	
	Parking brake stopper stay teeth and lock lever pivot sliding surface (CRF1000D)	
	Parking brake lever pivot sliding surface (CRF1000D)	
	Clutch lever pivot sliding area (CRF1000/A)	
Molybdenum disulfide grease (containing more than 3% molybdenum disulfide, NLGI #2 or equivalent)	Sidestand collar outer surface	
	Sidestand pivot sliding surface	
	Swingarm pivot dust seal lips	
	Swingarm pivot needle bearings	
	Cushion arm dust seal lips	
	Cushion arm needle bearings	
	Cushion connecting rod needle bearings	
Cable lubricant	Seat lock cable outer inside	
Honda Bond A or an equivalent	Handlebar grip rubber inside	
ThreeBond 1521 or an equivalent	Swingarm cap mating surface	
	Rear brake pad retainer mating surface	
Silicone grease	Front brake lever pivot bolts sliding surface	0.10 g (0.004 oz) minimum
	Front brake lever-to-master piston contacting area	0.10 g (0.004 oz) minimum
	Rear brake master cylinder push rod sliding surface	0.10 g (0.004 oz) minimum
	Rear brake master cylinder push rod boot fitting area	0.10 g (0.004 oz) minimum
	Rear brake pad pin stopper ring	
	Brake caliper dust seals	
	Rear brake caliper sleeve sliding surface	0.4 g (0.01 oz) minimum
	Rear brake caliper pin bolt sliding surface	0.4 g (0.01 oz) minimum
	Parking brake push rod rolling surface (CRF1000D)	0.4 g (0.01 oz) minimum
	Parking brake piston sliding surface (CRF1000D)	0.4 g (0.01 oz) minimum
	Parking brake shaft threads (CRF1000D)	0.4 g (0.01 oz) minimum
	Parking brake shaft boot lips (CRF1000D)	0.4 g (0.01 oz) minimum
	Parking brake pin bolt sliding surface (CRF1000D)	0.4 g (0.01 oz) minimum
	Parking brake caliper bracket pin sliding surface (CRF1000D)	0.4 g (0.01 oz) minimum
DOT 4 brake fluid	Brake master piston and cups	
	Brake caliper piston	
	Brake caliper piston seals	
	Rear master cylinder reservoir hose joint O-ring	
Fork fluid	Fork cap O-ring	
	Fork dust seal and oil seal lips	
Dive chain lubricant designed specifically for O-ring chains or SAE #80-90 gear oil	Drive chain whole surface	

SPECIAL TOOL LIST

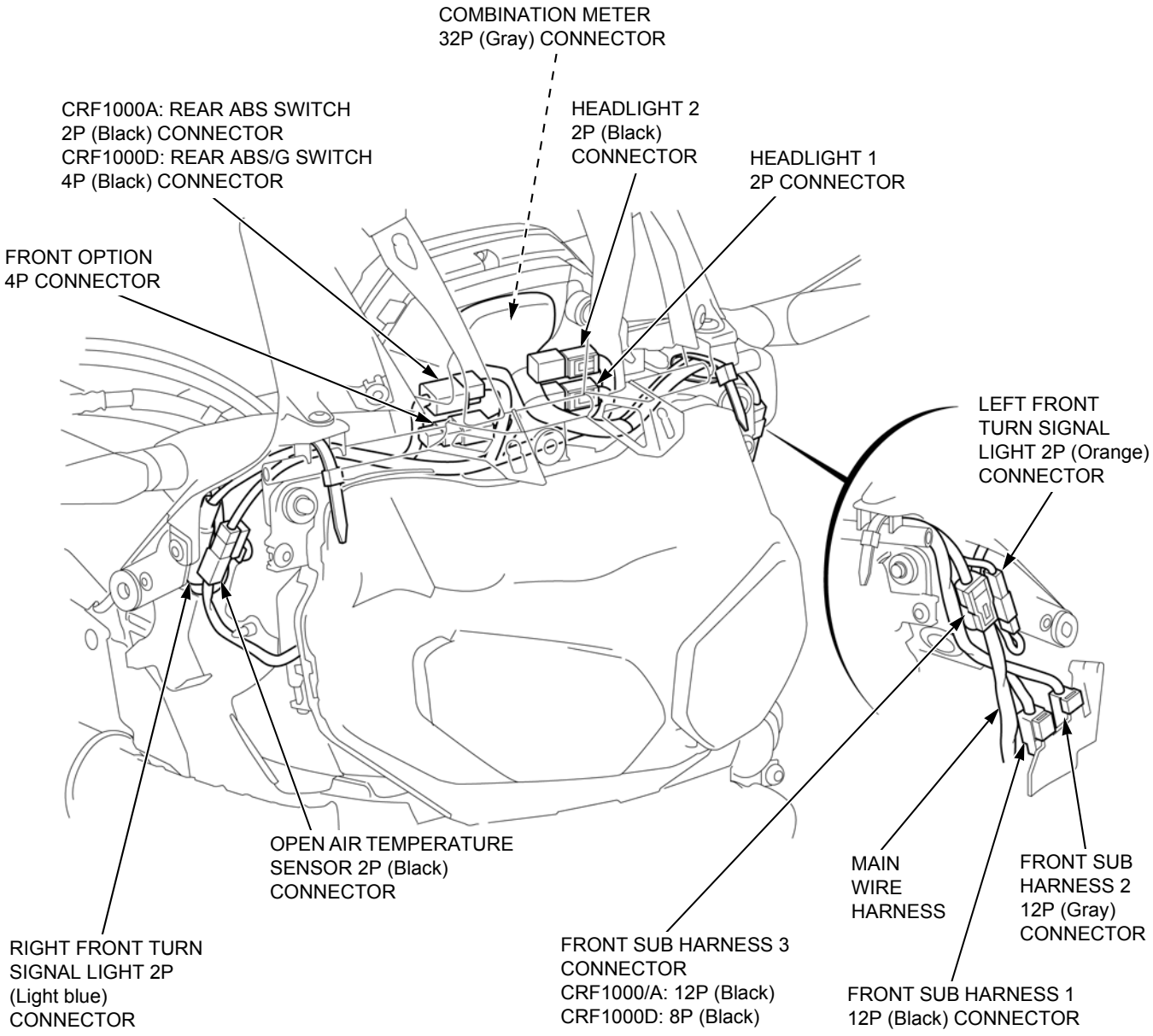
TITLE	TOOL No	TOOL NAME
MAINTENANCE	07708-0030400	Valve adjusting wrench
	07HAA-PJ70101	Oil filter wrench
	07HMH-MR10103	Drive chain tool set
PGM-FI SYSTEM	070PZ-ZY30100	SCS connector
	07ZAJ-RDJA110	Test probe
	FRXM17 (Snap on)	Sensor socket wrench
IGNITION SYSTEM	07HGJ-0020100	Peak voltage adaptor
	07ZAJ-RDJA110	Test probe
FUEL SYSTEM	07406-0040004	Fuel pressure gauge
	070MJ-K260100	Pressure gauge attachment set
	07ZAJ-S5A0130	Hose attachment, 6 mm/9 mm
	07ZAJ-S7C0100	Hose attachment, 8 mm/9 mm
	07ZAJ-S7C0200	Attachment joint, 8 mm/9 mm
	07ZAJ-S5A0150	Attachment joint, 6 mm/9 mm
LUBRICATION SYSTEM	070MJ-0010101	Oil pressure gauge attachment
	07HAA-PJ70101	Oil filter wrench
	07506-3000001	Oil pressure gauge set
	07406-0030000	Oil pressure gauge attachment
CYLINDER HEAD/VALVE/CAMSHAFT	070MG-0010100	Tensioner holder B
	07757-0010000	Valve spring compressor
	07742-0010100	Valve guide driver 5.5 mm
	07743-0020000	Valve guide driver
	07984-2000001	Valve guide reamer, 5.5 mm
	07781-0010101	Cutter holder, 5.5 mm
	07780-0010500	Seat cutter, 40 mm (45° IN)
	07780-0010400	Seat cutter, 35 mm (45° EX)
	07780-0013000	Flat cutter, 42 mm (32° IN/EX)
	07780-0014700	Interior cutter, 34 mm (60° IN/EX)
ALTERNATOR/STARTER CLUTCH	07725-0040001	Flywheel holder
	07733-0020001	Rotor puller
CLUTCH/GEARSHIFT LINKAGE (CRF1000/A)	07724-0050002	Clutch center holder P.D. 48 - 135
	07916-9690000	Lock nut wrench 30 x 40 mm
	07749-0010000	Driver
	07746-0010100	Attachment, 32 x 35 mm
	07746-0040400	Pilot, 17 mm
	07QAD-P0A0100	Attachment, 42 mm
	07746-0010300	Attachment, 42 x 47 mm
	07746-0040800	Pilot, 35 mm
	07724-0010100	Gear holder, 2.5
DUAL CLUTCH Transmission (DCT) (CRF1000D)	07ZAJ-RDJA110	Test probe
	07HGJ-0020100	Peak voltage adaptor
	07741-0010201	Remover weight
	07JAC-PH80200	Bearing remover shaft
	07JAC-PH80100	Adjustable bearing puller, 20 – 40 mm
	07936-3710600	Bearing remover set, 20 mm
	07936-3710100	Remover handle
	07749-0010000	Driver
	07746-0010400	Attachment, 52 x 55 mm
	07746-0040900	Pilot, 40 mm
	07746-0040500	Pilot, 20 mm
	07LAE-PX40000	Clutch compressor set
	07724-0010100	Gear holder, 2.5

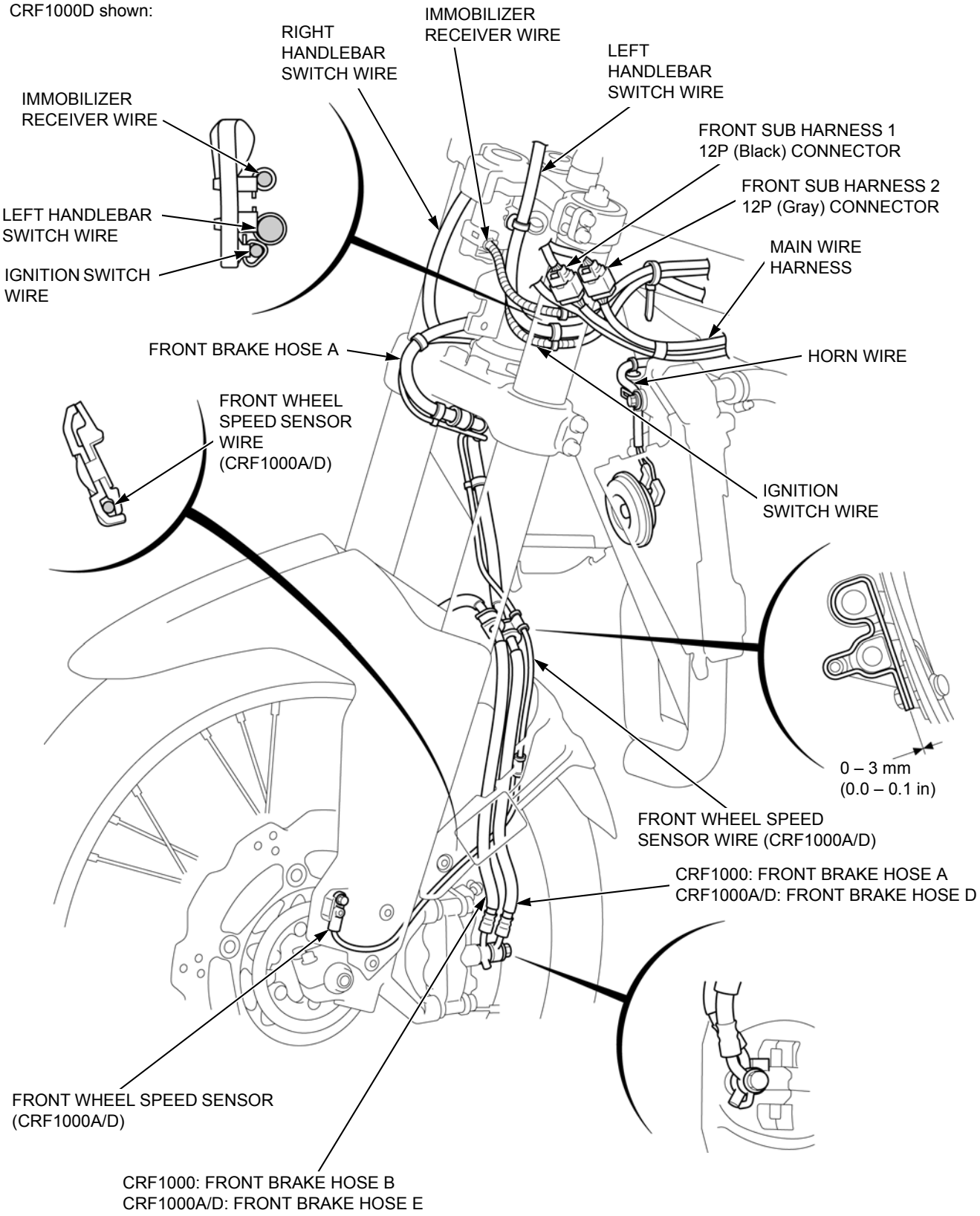
TITLE	TOOL No	TOOL NAME
CRANKCASE/TRANSMISSION/BALANCER	07724-0010100	Gear holder, 2.5
	07LAE-PX40000	Clutch compressor set
	07936-ZV10100	Bearing remover shaft set, 25 mm
	07741-0010201	Remover weight
	07949-3710001	Driver, 15 x 280L
	07746-0010400	Attachment, 52 x 55 mm
	07746-0040600	Pilot, 25 mm
	07746-0040200	Pilot, 12 mm
	07PPD-YE10100	Seal driver, 14 x 22 mm
FRONT WHEEL/SUSPENSION/STEERING	07746-0050600	Bearing remover head, 20 mm
	07746-0050100	Bearing remover shaft
	07749-0010000	Driver
	07746-0010300	Attachment, 42 x 47 mm
	07746-0040500	Pilot, 20 mm
	070MF-MBZC110	Spring collar holder
	070MF-MBZC130	Stopper plate
	07KMD-KZ30100	Fork seal driver, 45.2 mm
	070MF-MBZC120	Damper rod holder
	07916-KA50100	Steering stem socket
	07953-MJ10100	Remover attachment
	07953-MJ10200	Remover handle
	07946-3710500	Bearing remover
	07946-MB00000	Inner driver, 30 x 36 x 300 L
	07746-0010400	Attachment, 52 x 55 mm
REAR WHEEL/SUSPENSION	07749-0010000	Driver
	07746-0010800	Attachment, 22 x 24 mm
	07746-0040400	Pilot, 17 mm
	07746-0050600	Bearing remover head, 20 mm
	07GGD-0010100	Bearing remover shaft
	07746-0010300	Attachment, 42 x 47 mm
	07746-0040500	Pilot, 20 mm
	07946-1870100	Attachment, 28 x 30 mm
	07746-0010400	Attachment, 52 x 55 mm
	07746-0041000	Pilot, 22 mm
	07741-0010201	Remover weight
	07936-3710100	Remover handle
	07936-3710300	Bearing remover set, 17 mm
	07936-3710600	Bearing remover set, 20 mm
	07949-3710001	Driver handle 15 x 280L
	07746-0010100	Attachment, 32 x 35 mm
	07746-0040600	Pilot, 25 mm
HYDRAULIC BRAKE	07914-SA50001	Snap ring pliers
ANTI-LOCK BRAKE SYSTEM (ABS) (CRF1000A/D)	07ZAJ-RDJA110	Test probe
BATTERY/CHARGING SYSTEM	BM-210	Battery tester
LIGHT/METERS/SWITCHES	07ZAJ-RDJA110	Test probe
	07HGJ-0020100	Peak voltage adaptor
IMMOBILIZER SYSTEM (HISS)	07XMZ-MBW0101	Inspection adaptor
	070MZ-MEC0101	Test harness adaptor
	07ZAJ-RDJA110	Test probe

CABLE & HARNESS ROUTING

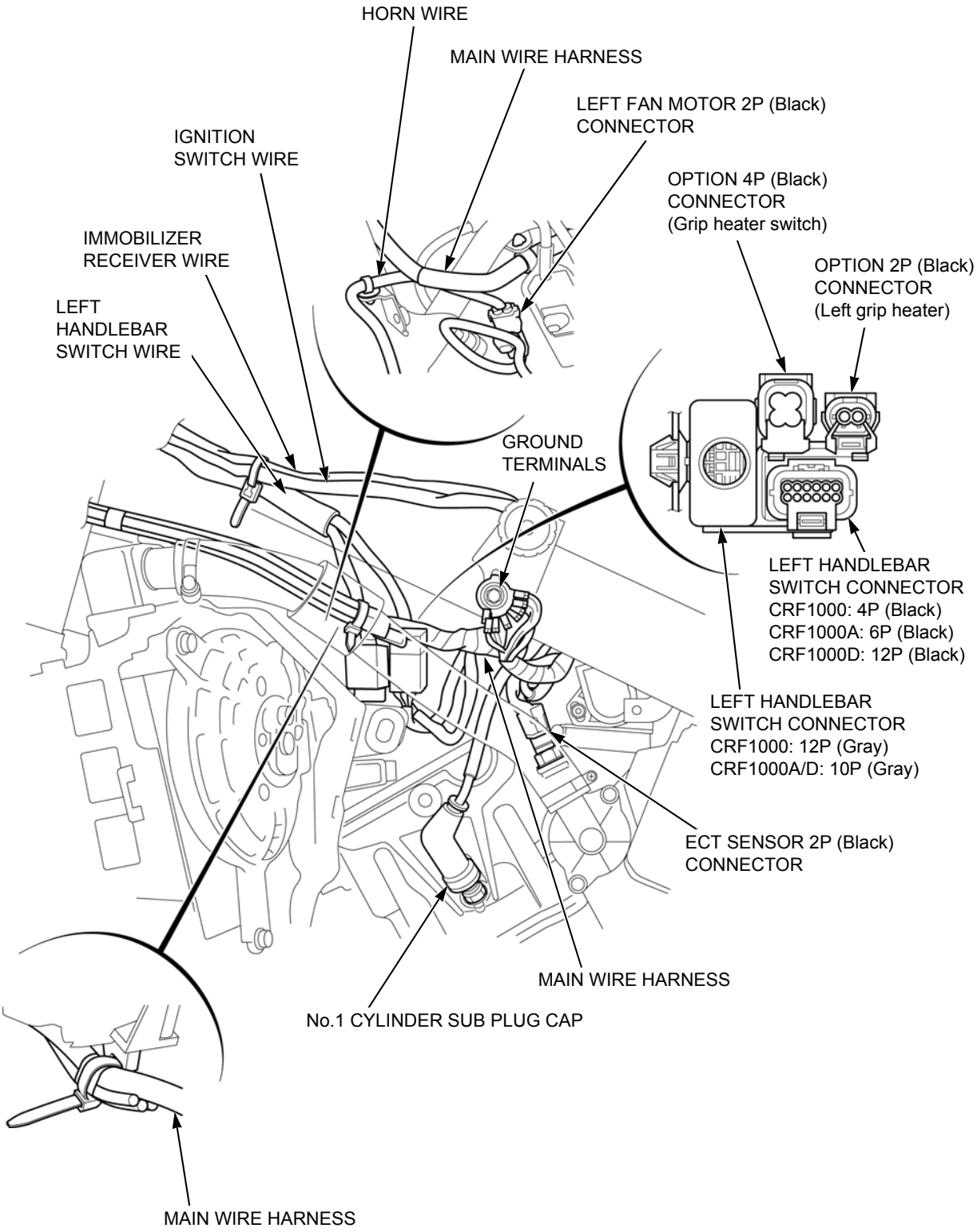


CRF1000D shown:

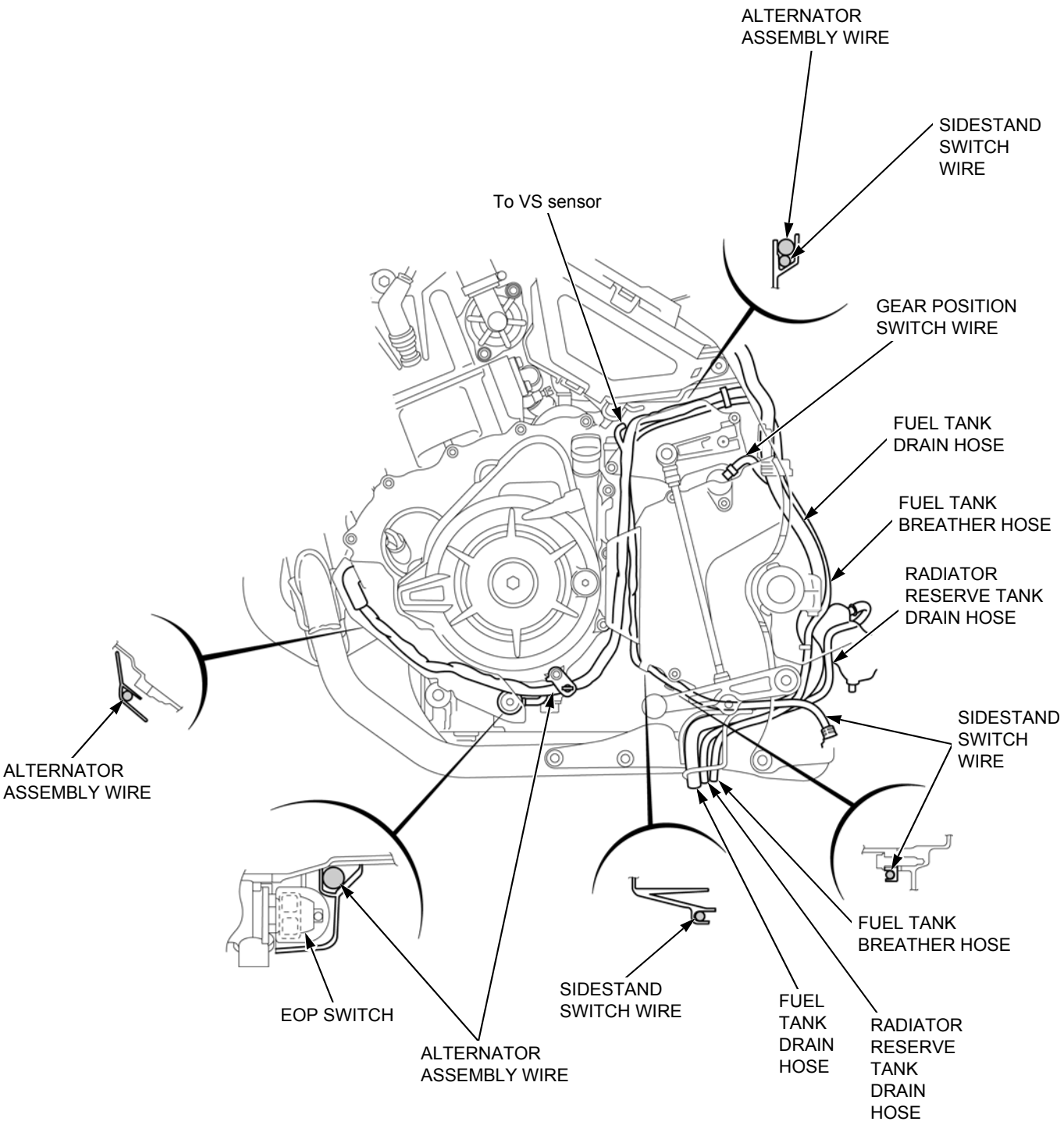



CRF1000D shown:
RIGHT HANDLEBAR SWITCH WIRE
IMMOBILIZER RECEIVER WIRE
LEFT HANDLEBAR SWITCH WIRE
IMMOBILIZER RECEIVER WIRE
LEFT HANDLEBAR SWITCH WIRE
IGNITION SWITCH WIRE
FRONT SUB HARNESS 1 12P (Black) CONNECTOR
FRONT SUB HARNESS 2 12P (Gray) CONNECTOR
MAIN WIRE HARNESS
FRONT BRAKE HOSE A
HORN WIRE
FRONT WHEEL SPEED SENSOR WIRE (CRF1000A/D)
IGNITION SWITCH WIRE
0 – 3 mm (0.0 – 0.1 in)
FRONT WHEEL SPEED SENSOR WIRE (CRF1000A/D)
CRF1000: FRONT BRAKE HOSE A
CRF1000A/D: FRONT BRAKE HOSE D
FRONT WHEEL SPEED SENSOR (CRF1000A/D)
CRF1000: FRONT BRAKE HOSE B
CRF1000A/D: FRONT BRAKE HOSE E

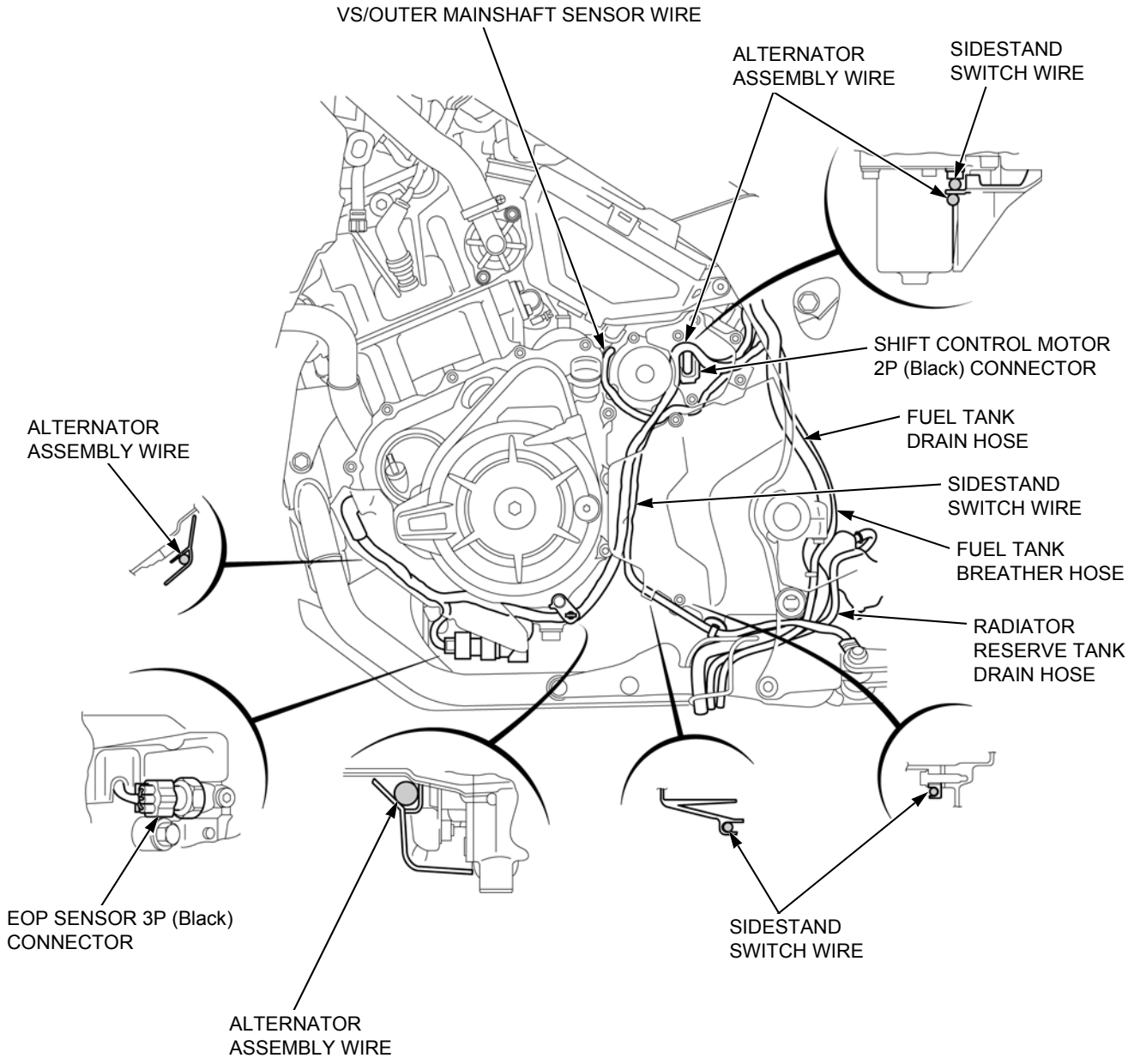
CRF1000D shown:



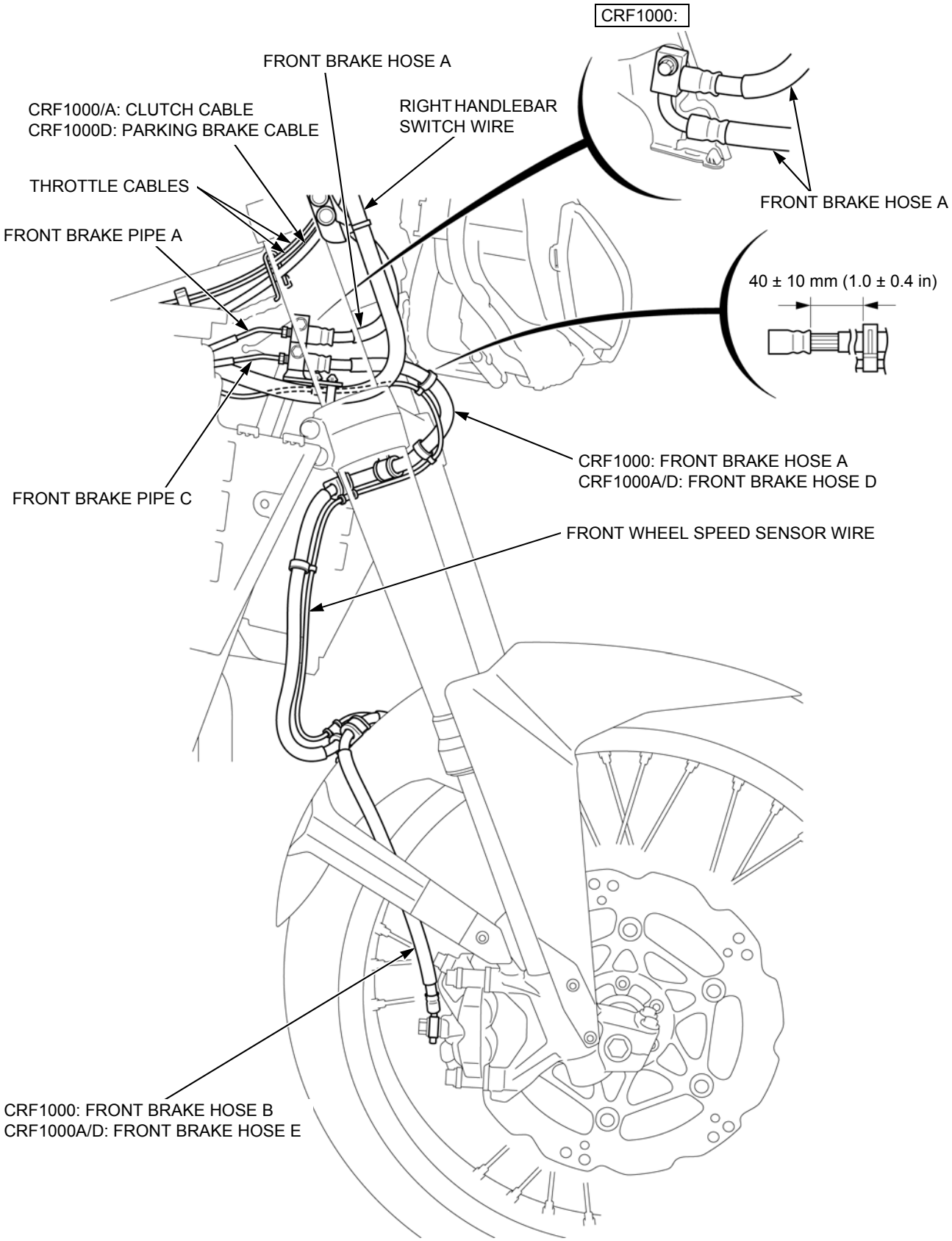
CRF1000/A (CRF1000 shown)



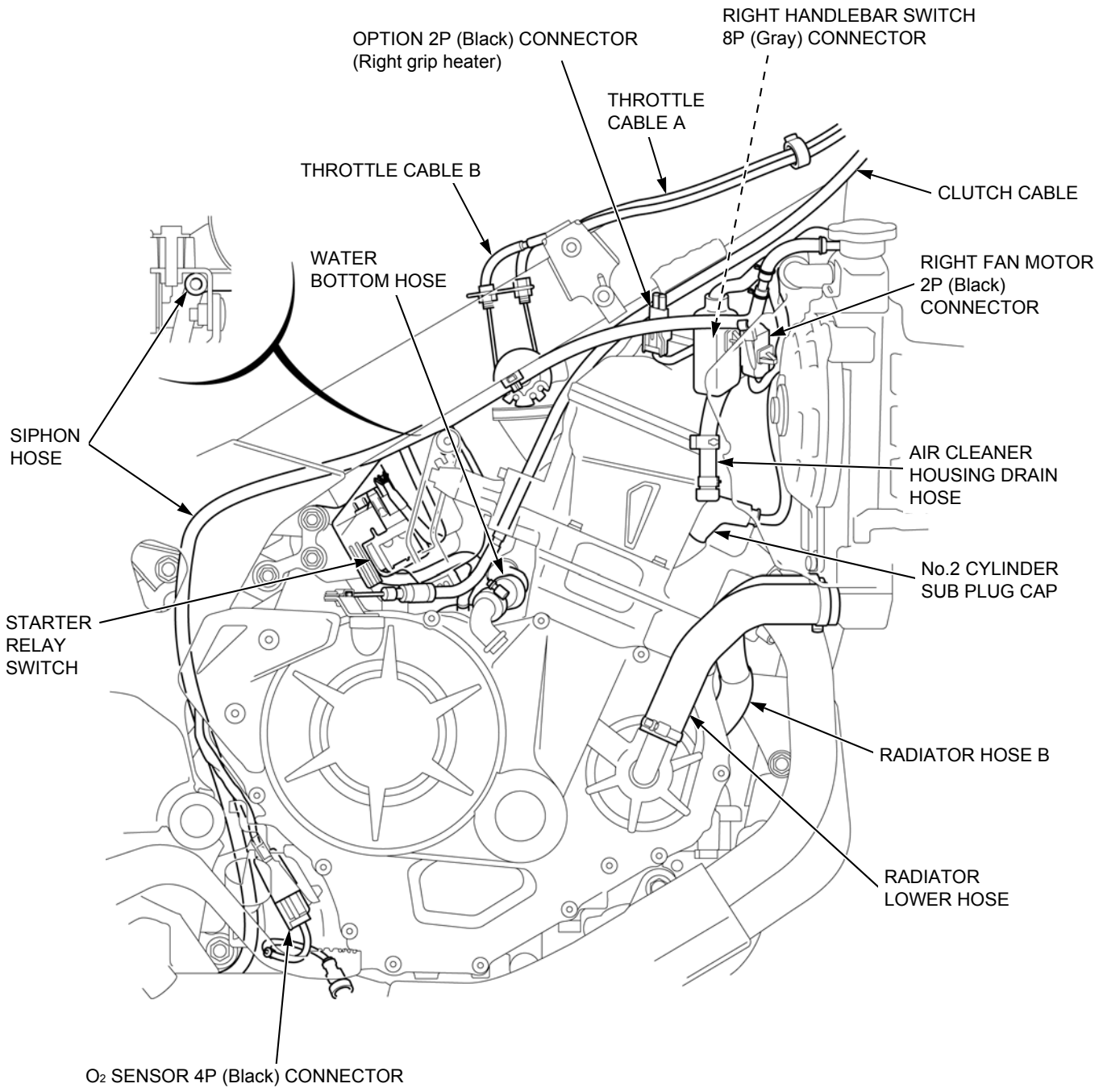
CRF1000D:


VS/OUTER MAINSHAFT SENSOR WIRE
ALTERNATOR ASSEMBLY WIRE
SIDESTAND SWITCH WIRE
SHIFT CONTROL MOTOR 2P (Black) CONNECTOR
FUEL TANK DRAIN HOSE
ALTERNATOR ASSEMBLY WIRE
SIDESTAND SWITCH WIRE
FUEL TANK BREATHER HOSE
RADIATOR RESERVE TANK DRAIN HOSE
EOP SENSOR 3P (Black) CONNECTOR
ALTERNATOR ASSEMBLY WIRE
SIDESTAND SWITCH WIRE

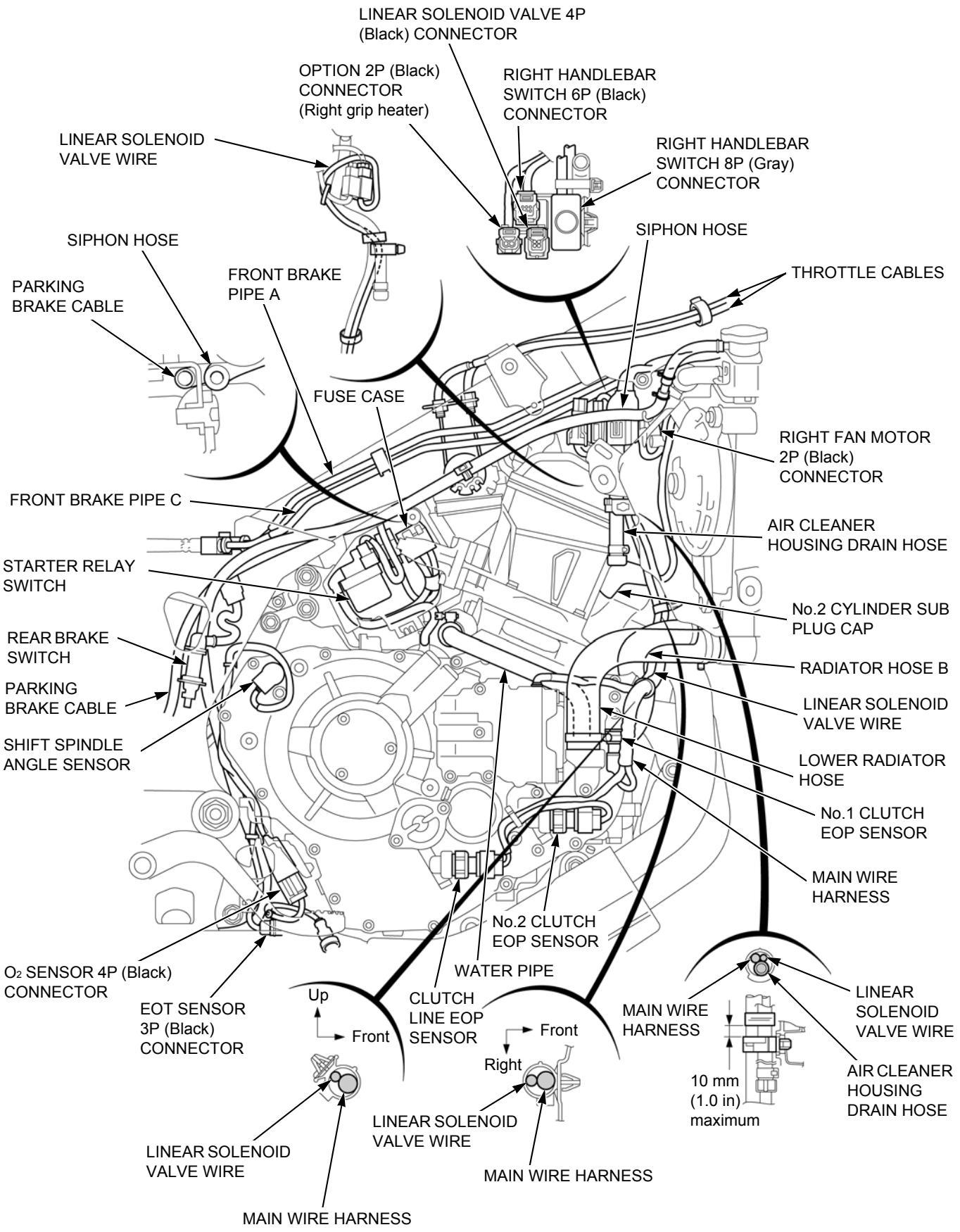
CRF1000D shown:



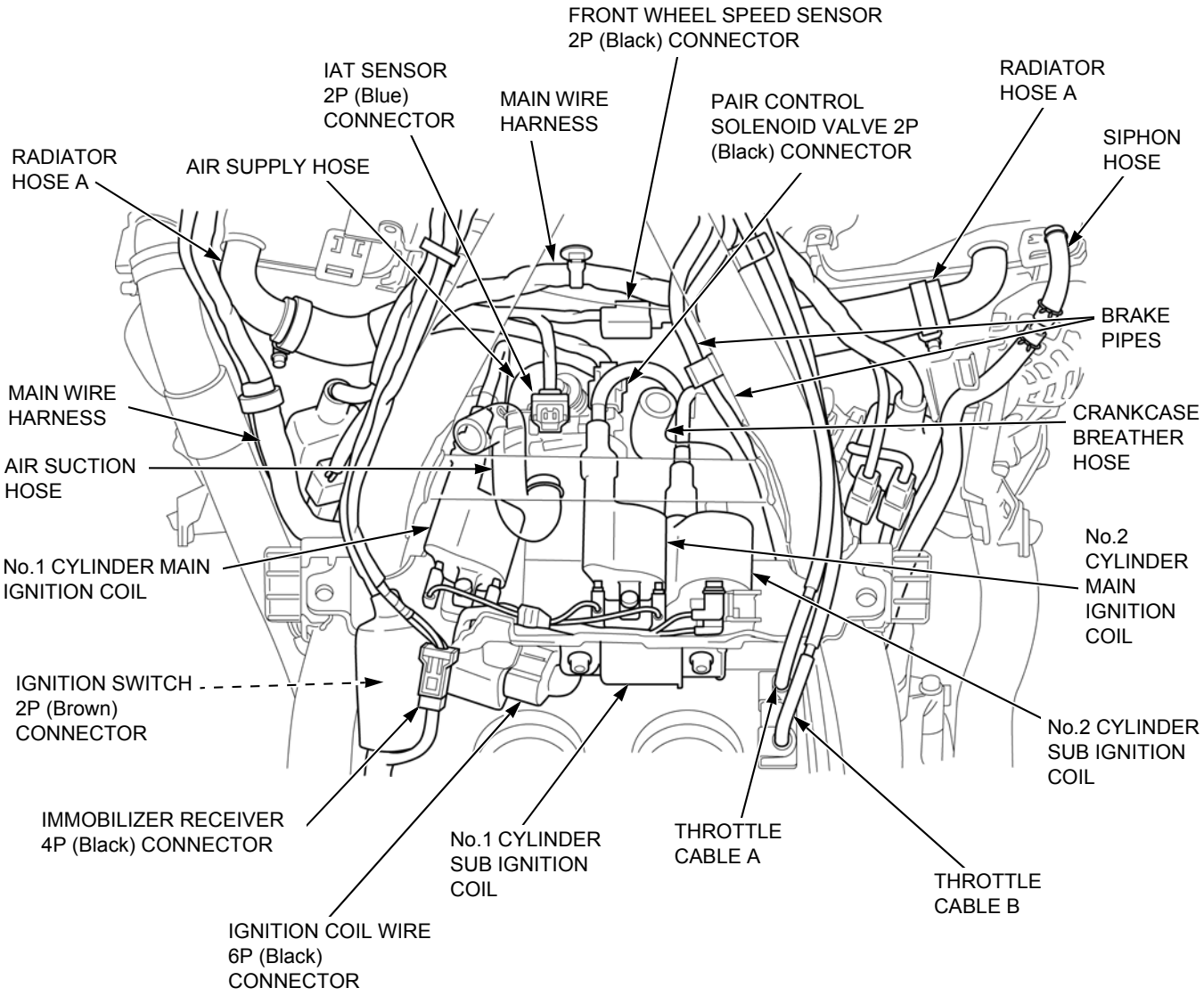
CRF1000/A (CRF1000 shown)



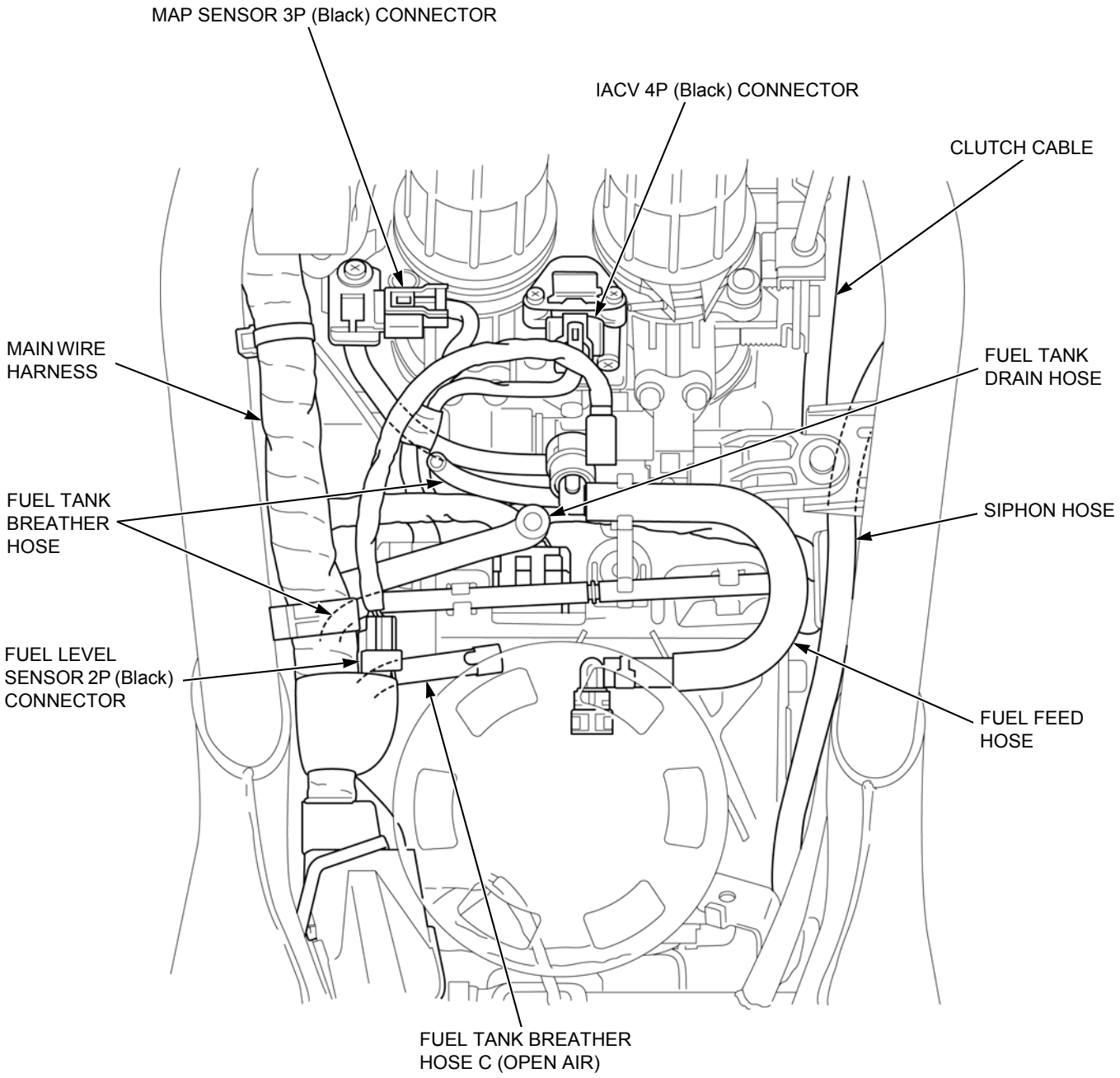
CRF1000D:


LINEAR SOLENOID VALVE 4P (Black) CONNECTOR
OPTION 2P (Black) CONNECTOR (Right grip heater)
RIGHT HANDLEBAR SWITCH 6P (Black) CONNECTOR
LINEAR SOLENOID VALVE WIRE
RIGHT HANDLEBAR SWITCH 8P (Gray) CONNECTOR
SIPHON HOSE
SIPHON HOSE
FRONT BRAKE PIPE A
THROTTLE CABLES
PARKING BRAKE CABLE
FUSE CASE
RIGHT FAN MOTOR 2P (Black) CONNECTOR
FRONT BRAKE PIPE C
AIR CLEANER HOUSING DRAIN HOSE
STARTER RELAY SWITCH
No.2 CYLINDER SUB PLUG CAP
REAR BRAKE SWITCH
RADIATOR HOSE B
PARKING BRAKE CABLE
LINEAR SOLENOID VALVE WIRE
SHIFT SPINDLE ANGLE SENSOR
LOWER RADIATOR HOSE
No.1 CLUTCH EOP SENSOR
MAIN WIRE HARNESS
No.2 CLUTCH EOP SENSOR
WATER PIPE
O2 SENSOR 4P (Black) CONNECTOR
EOT SENSOR 3P (Black) CONNECTOR
Up
Front
CLUTCH LINE EOP SENSOR
Front
Right
MAIN WIRE HARNESS
LINEAR SOLENOID VALVE WIRE
10 mm (1.0 in) maximum
AIR CLEANER HOUSING DRAIN HOSE
LINEAR SOLENOID VALVE WIRE
LINEAR SOLENOID VALVE WIRE
MAIN WIRE HARNESS
MAIN WIRE HARNESS

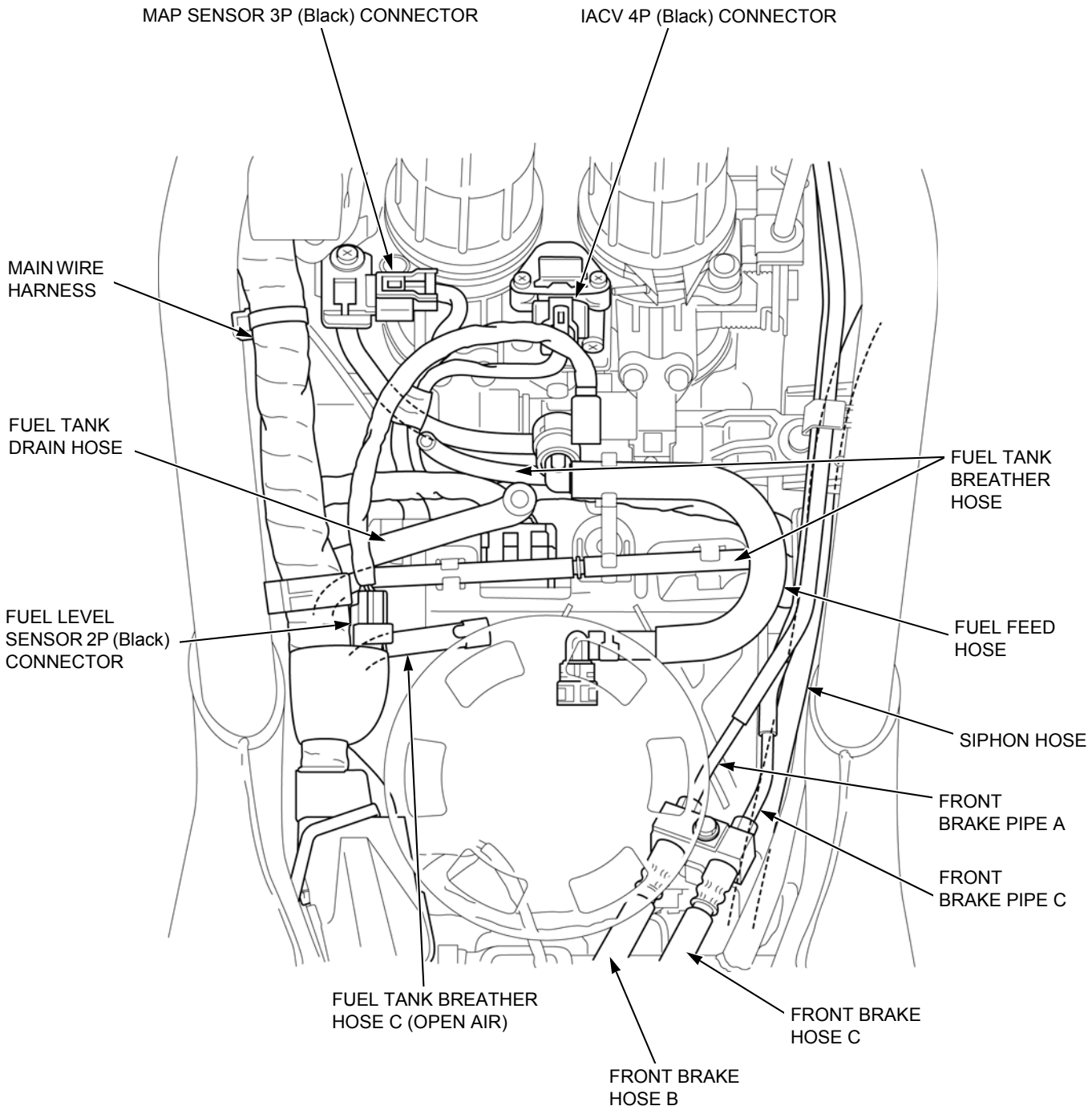
CRF1000D shown:



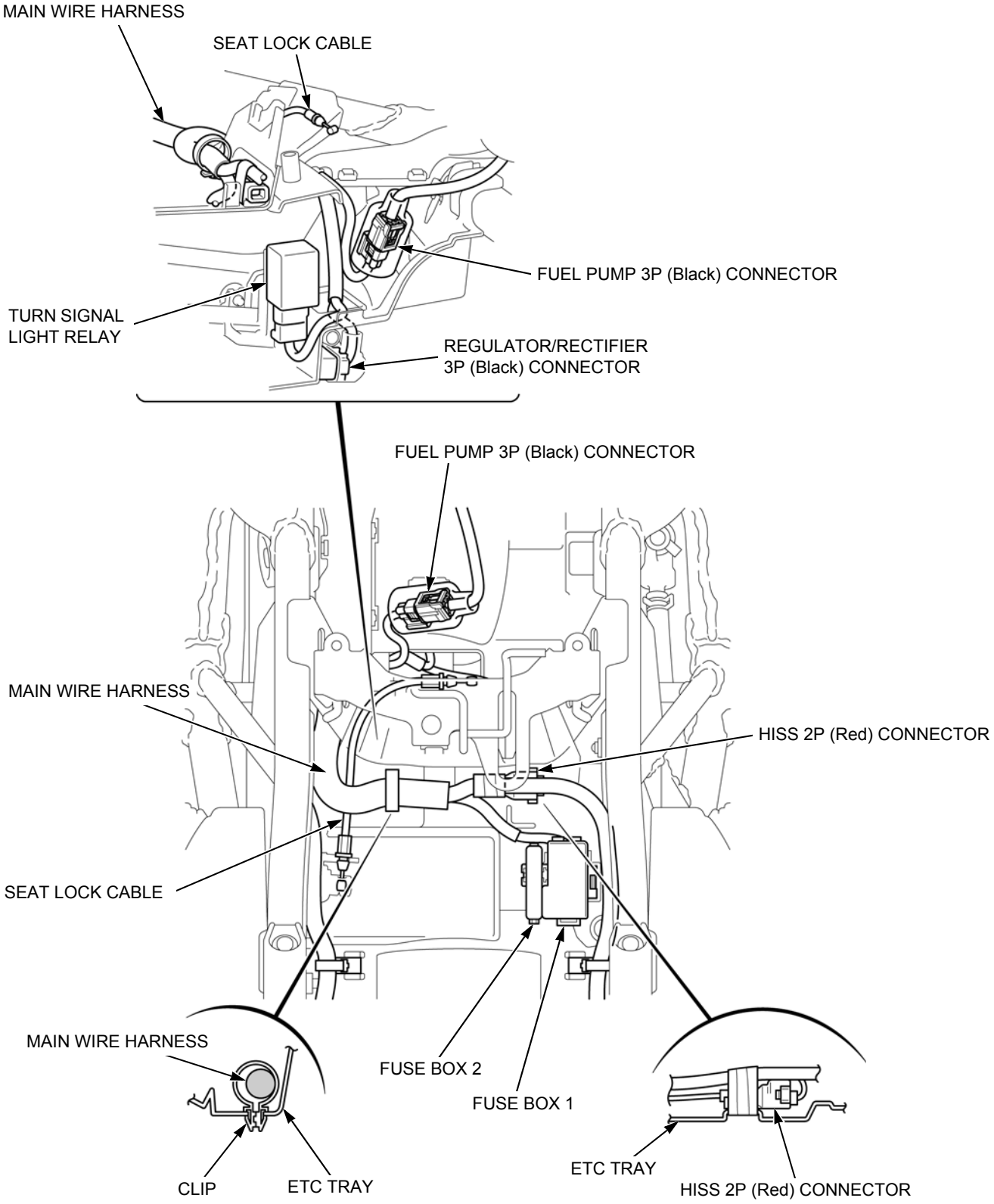
CRF1000:


MAP SENSOR 3P (Black) CONNECTOR
IACV 4P (Black) CONNECTOR
CLUTCH CABLE
MAIN WIRE HARNESS
FUEL TANK DRAIN HOSE
FUEL TANK BREATHER HOSE
SIPHON HOSE
FUEL LEVEL SENSOR 2P (Black) CONNECTOR
FUEL FEED HOSE
FUEL TANK BREATHER HOSE C (OPEN AIR)

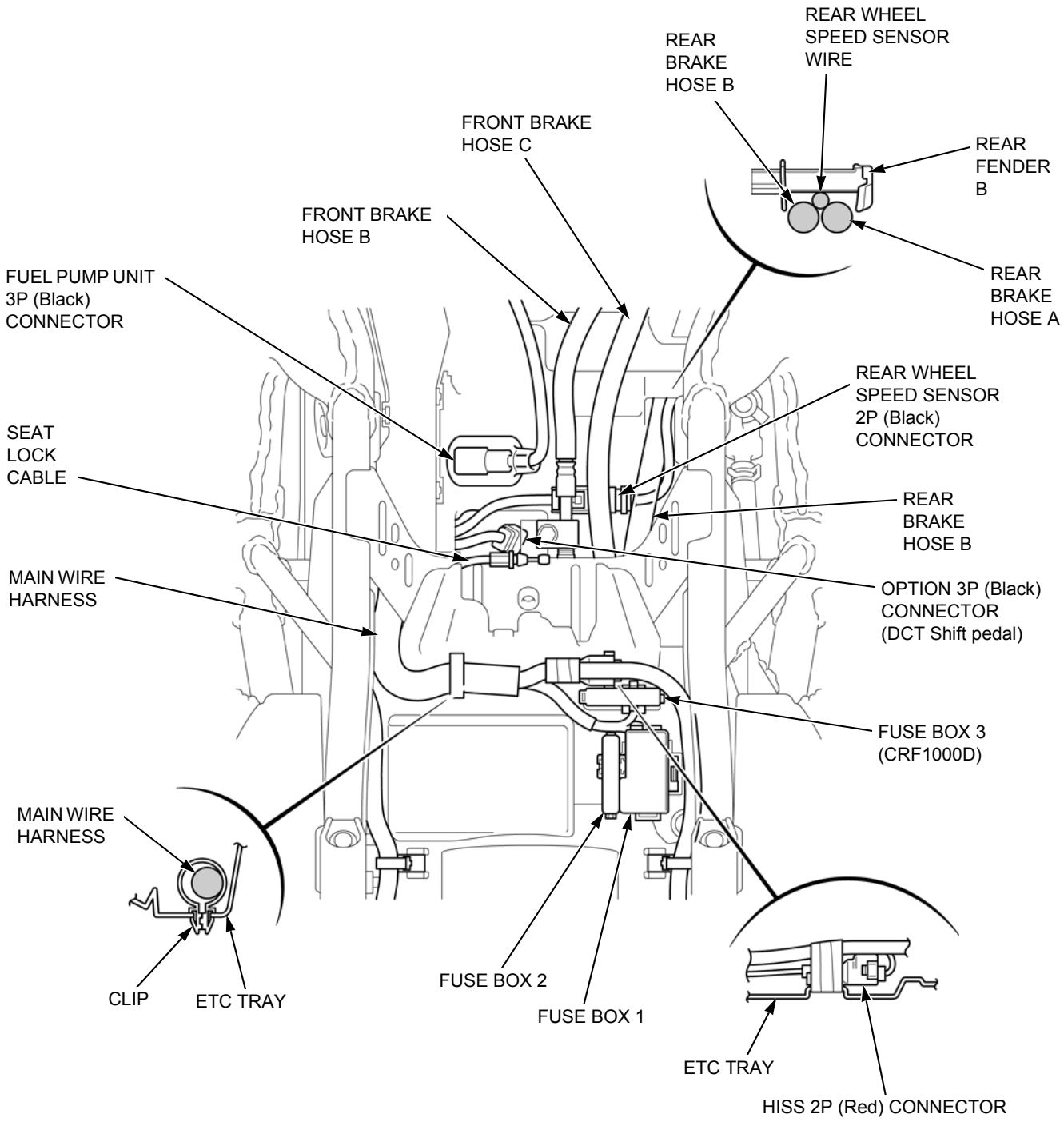
CRF1000A/D:


MAP SENSOR 3P (Black) CONNECTOR
IACV 4P (Black) CONNECTOR
MAIN WIRE HARNESS
FUEL TANK DRAIN HOSE
FUEL TANK BREATHER HOSE
FUEL LEVEL SENSOR 2P (Black) CONNECTOR
FUEL FEED HOSE
SIPHON HOSE
FRONT BRAKE PIPE A
FRONT BRAKE PIPE C
FUEL TANK BREATHER HOSE C (OPEN AIR)
FRONT BRAKE HOSE C
FRONT BRAKE HOSE B

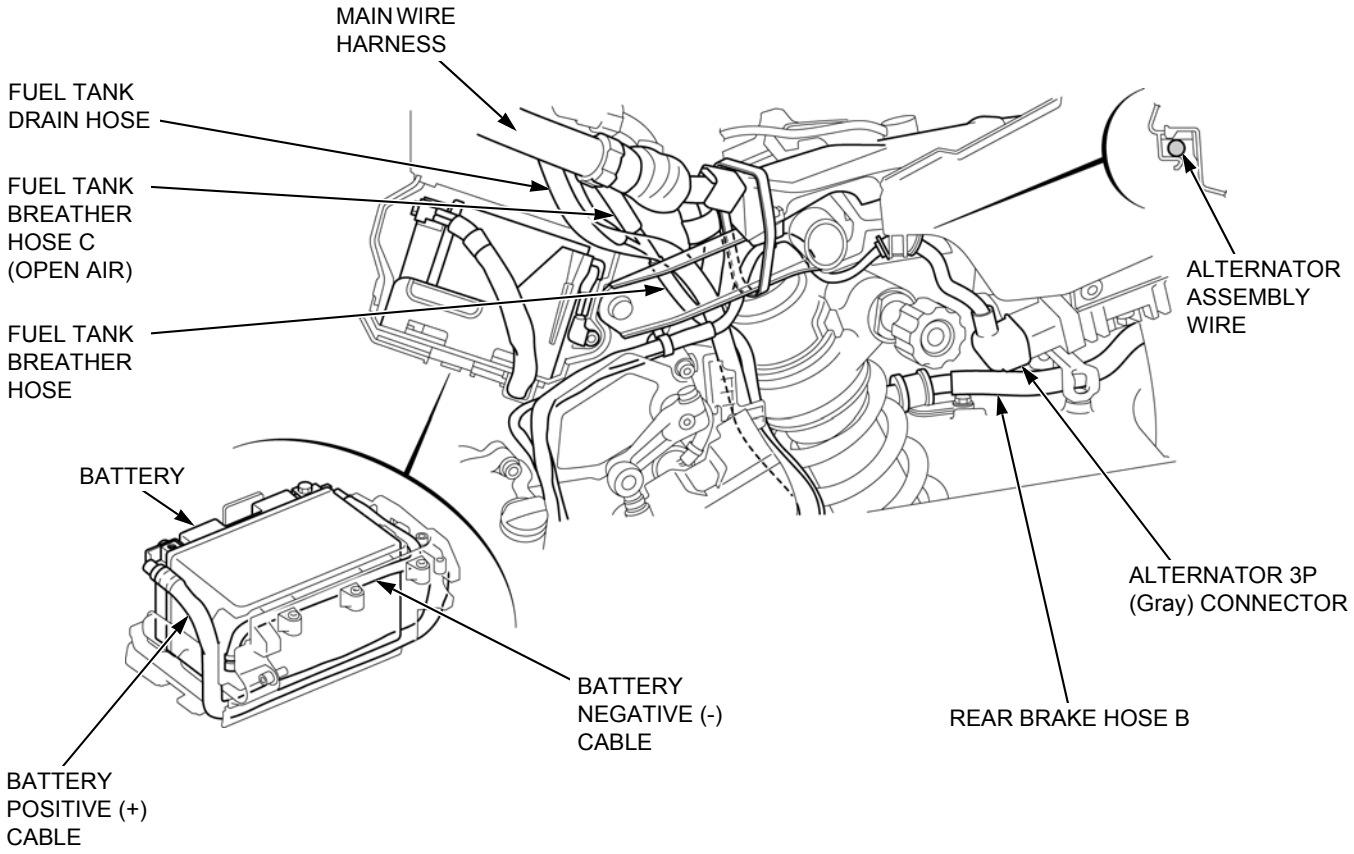
CRF1000:


MAIN WIRE HARNESS
SEAT LOCK CABLE
FUEL PUMP 3P (Black) CONNECTOR
TURN SIGNAL LIGHT RELAY
REGULATOR/RECTIFIER 3P (Black) CONNECTOR
FUEL PUMP 3P (Black) CONNECTOR
MAIN WIRE HARNESS
HISS 2P (Red) CONNECTOR
SEAT LOCK CABLE
MAIN WIRE HARNESS
FUSE BOX 2
FUSE BOX 1
CLIP
ETC TRAY
ETC TRAY
HISS 2P (Red) CONNECTOR

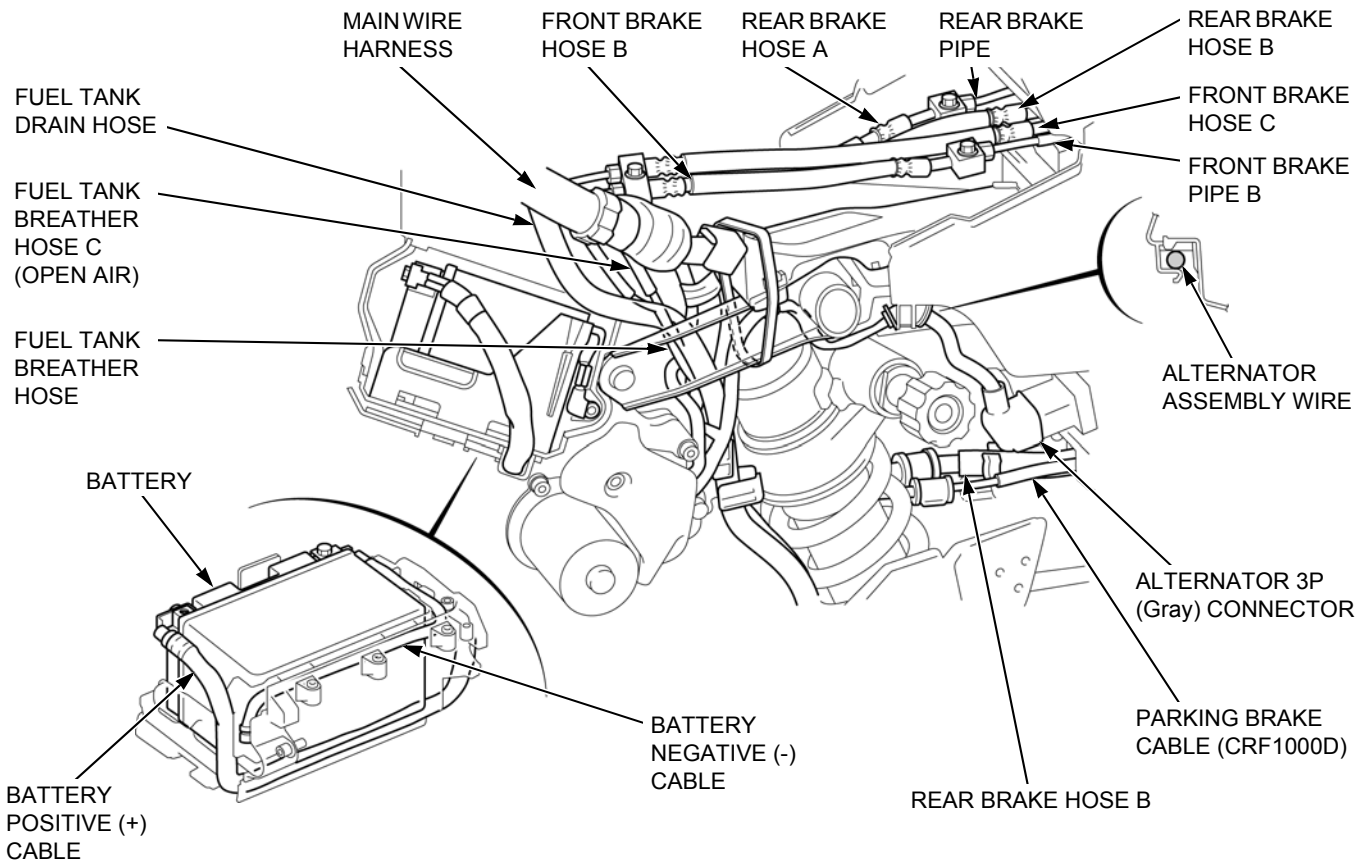
CRF1000A/D:


REAR WHEEL SPEED SENSOR WIRE
REAR BRAKE HOSE B
FRONT BRAKE HOSE C
REAR FENDER B
FRONT BRAKE HOSE B
REAR BRAKE HOSE A
FUEL PUMP UNIT 3P (Black) CONNECTOR
REAR WHEEL SPEED SENSOR 2P (Black) CONNECTOR
SEAT LOCK CABLE
REAR BRAKE HOSE B
MAIN WIRE HARNESS
OPTION 3P (Black) CONNECTOR (DCT Shift pedal)
FUSE BOX 3 (CRF1000D)
MAIN WIRE HARNESS
CLIP
ETC TRAY
FUSE BOX 2
FUSE BOX 1
ETC TRAY
HISS 2P (Red) CONNECTOR

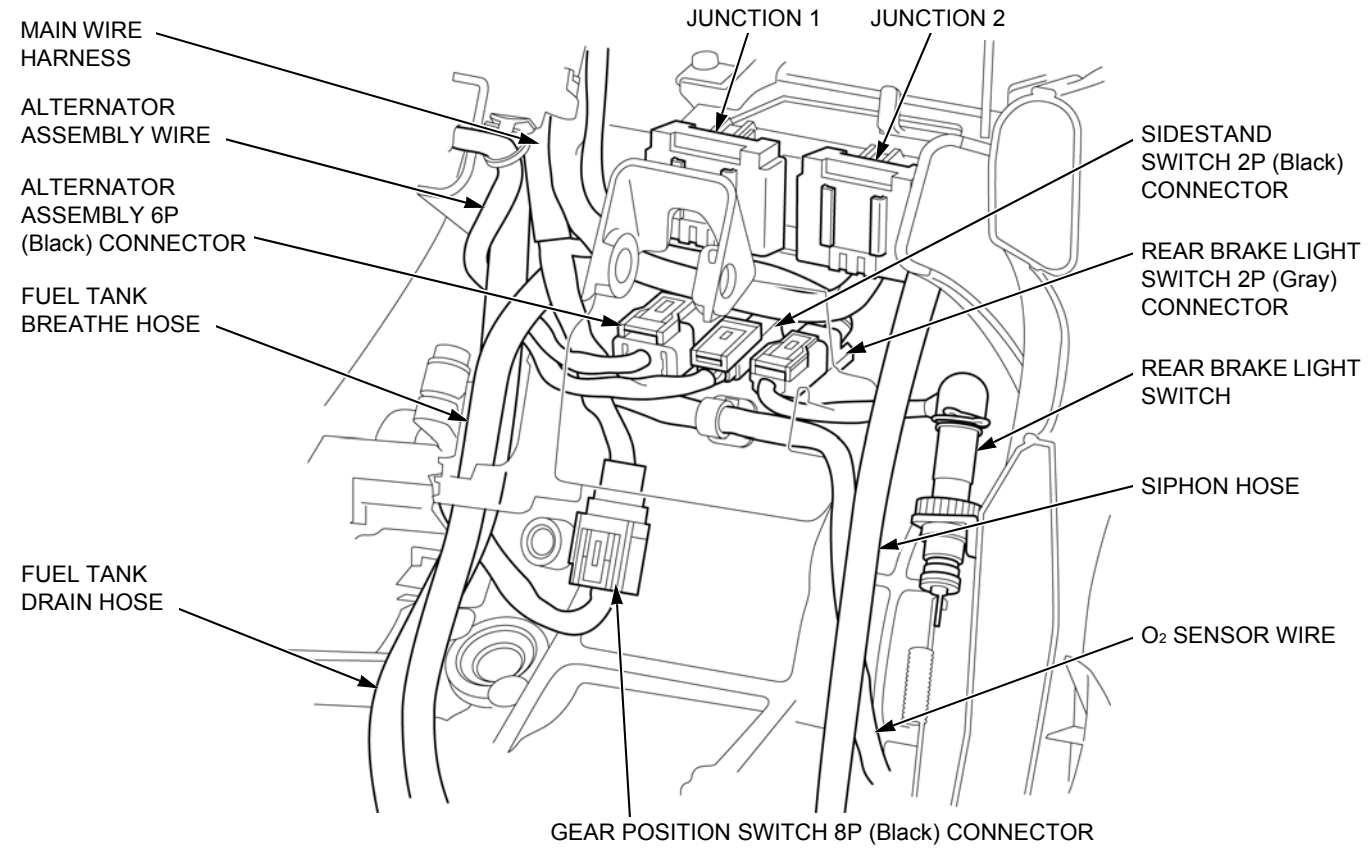
CRF1000:



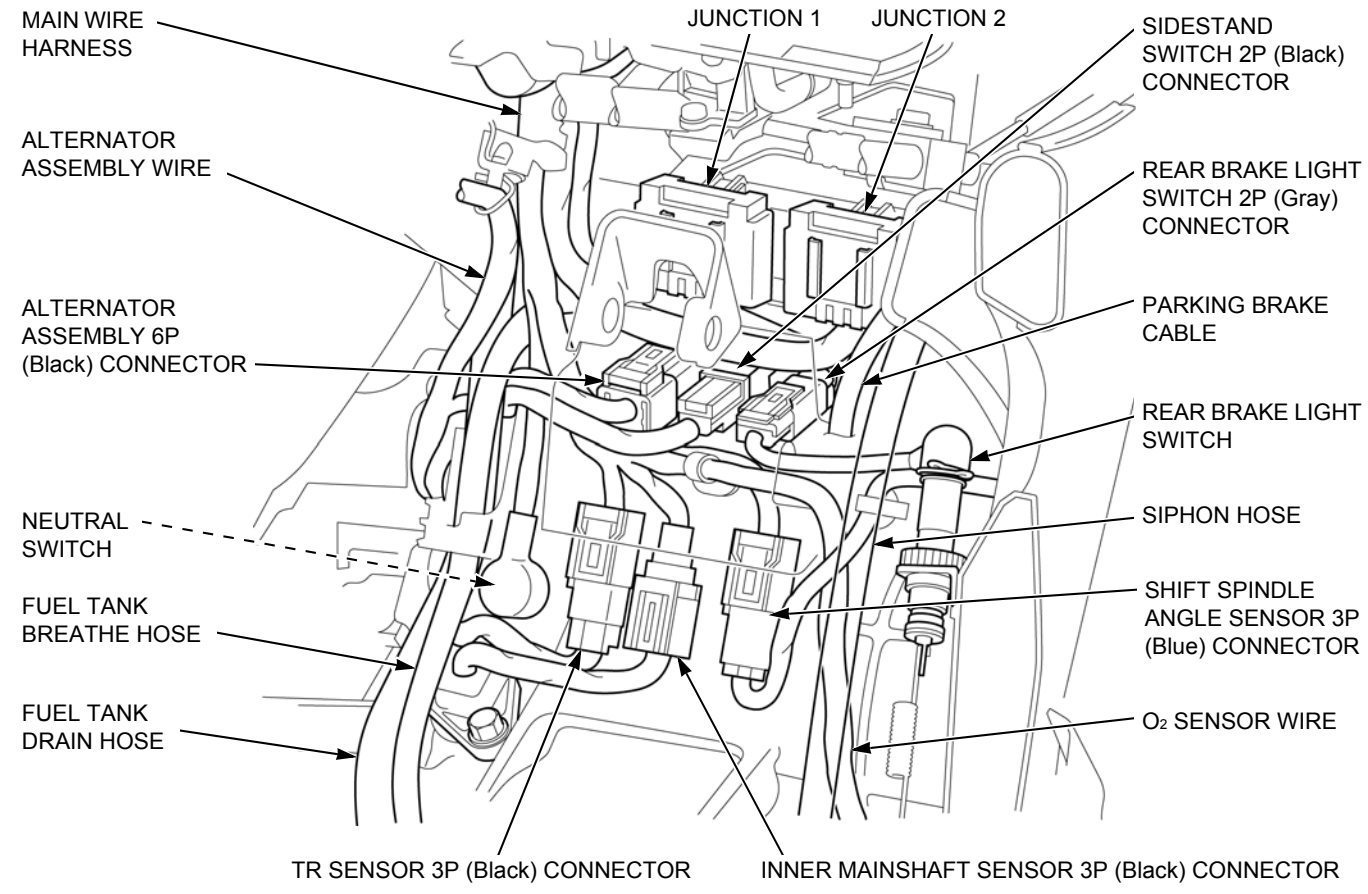
CRF1000A/D:



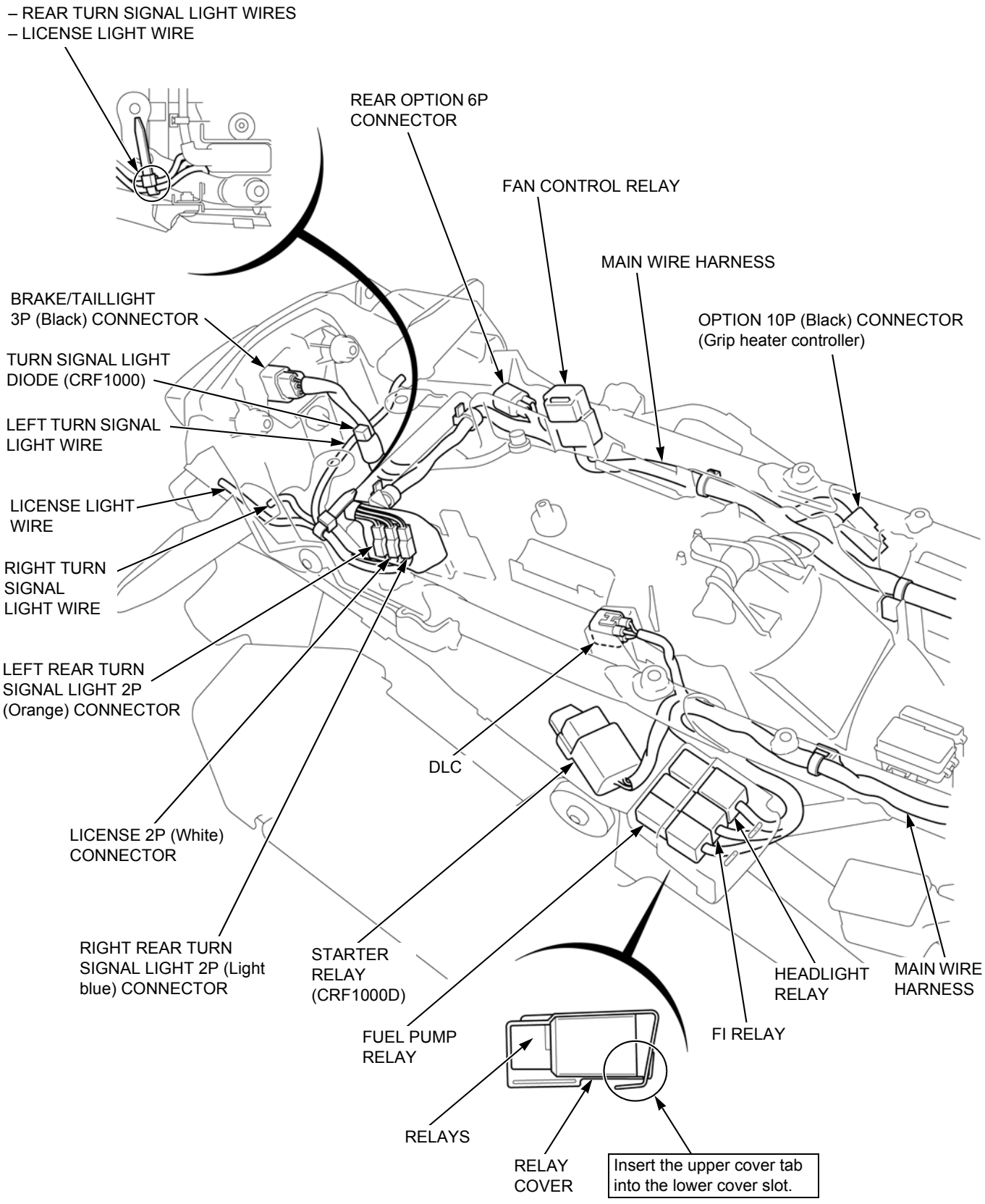
CRF1000/A:



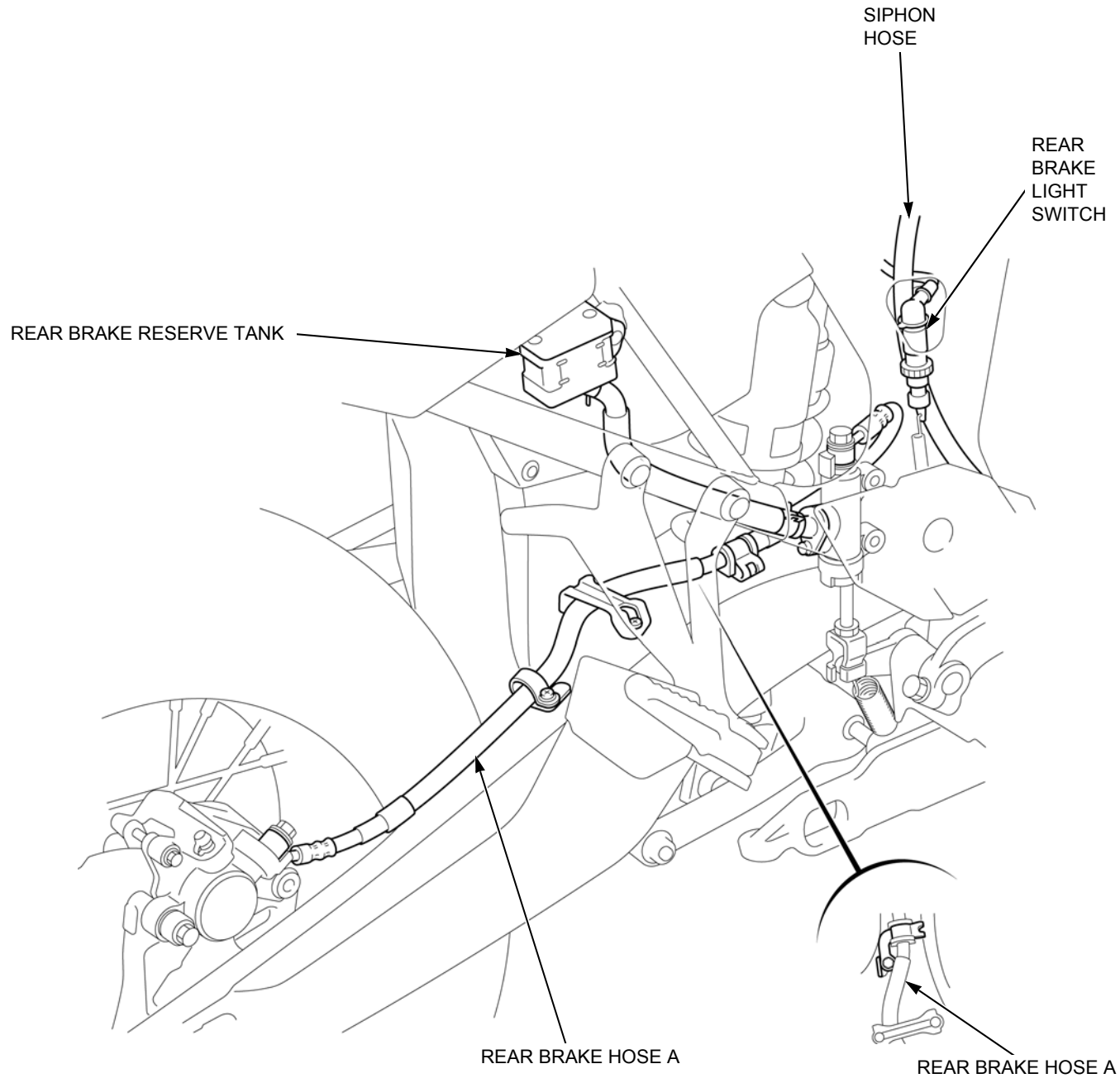
CRF1000D:



CRF1000D shown:

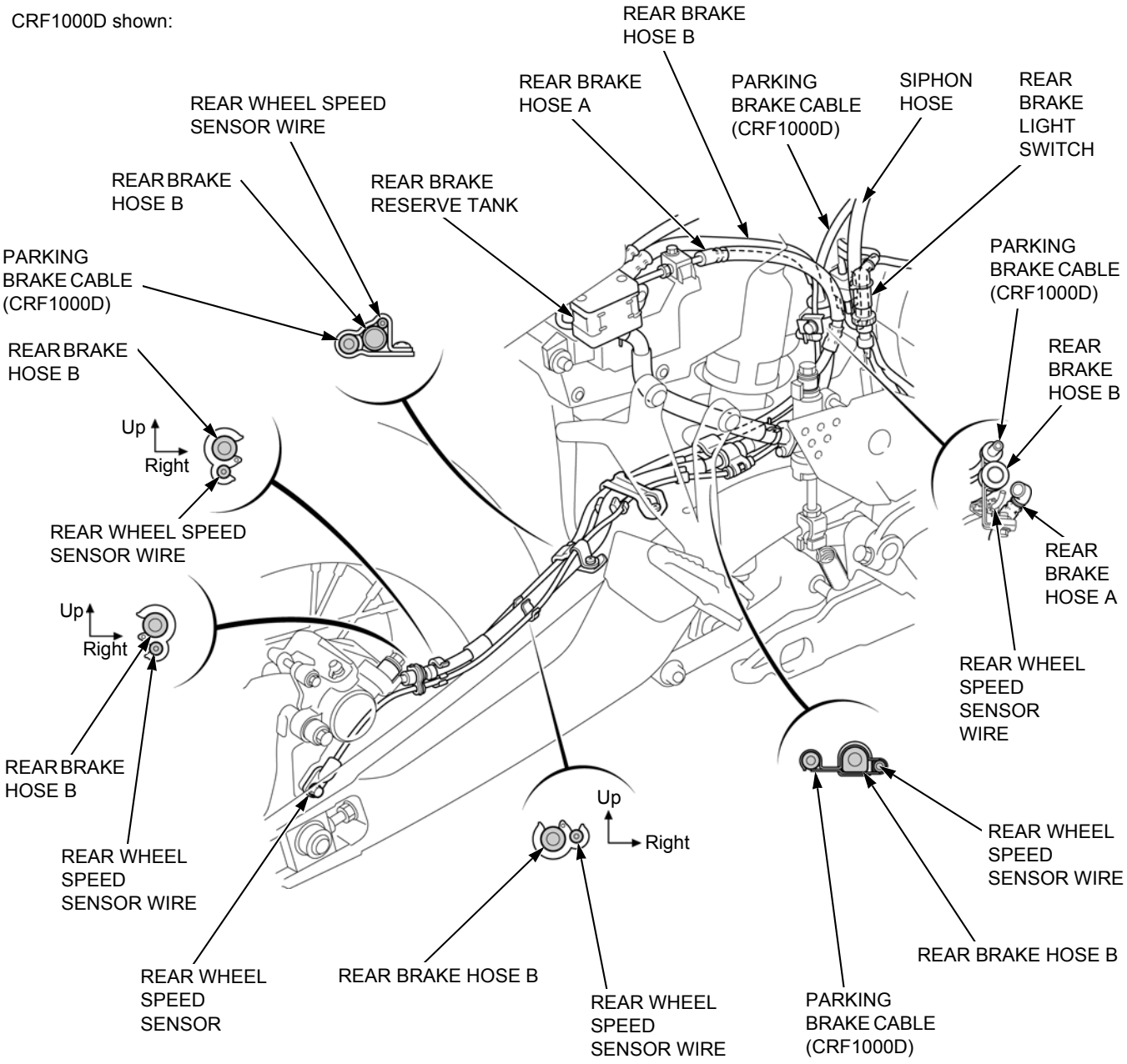


CRF1000:

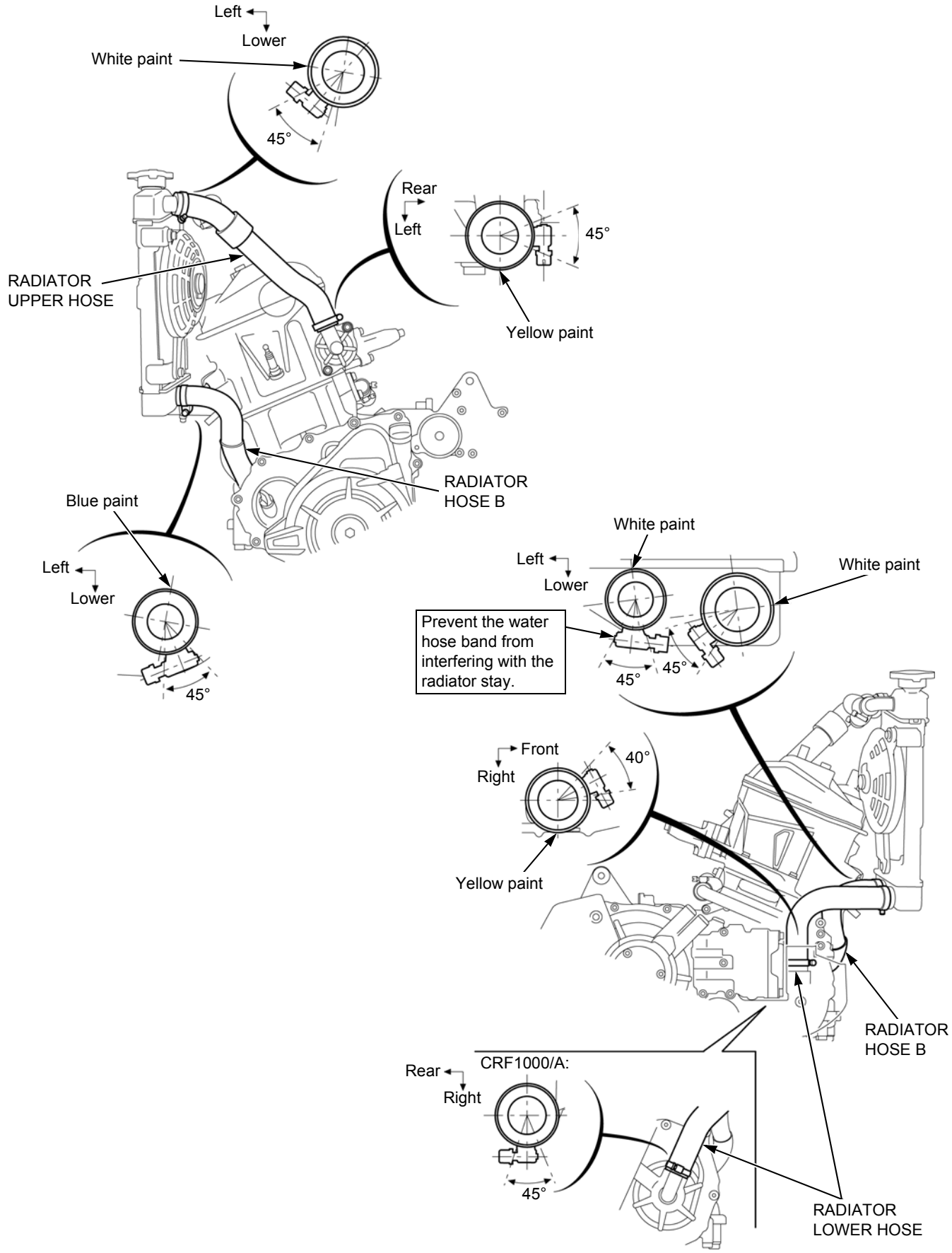

SIPHON HOSE
REAR BRAKE LIGHT SWITCH
REAR BRAKE RESERVE TANK
REAR BRAKE HOSE A
REAR BRAKE HOSE A

CRF1000A/D:

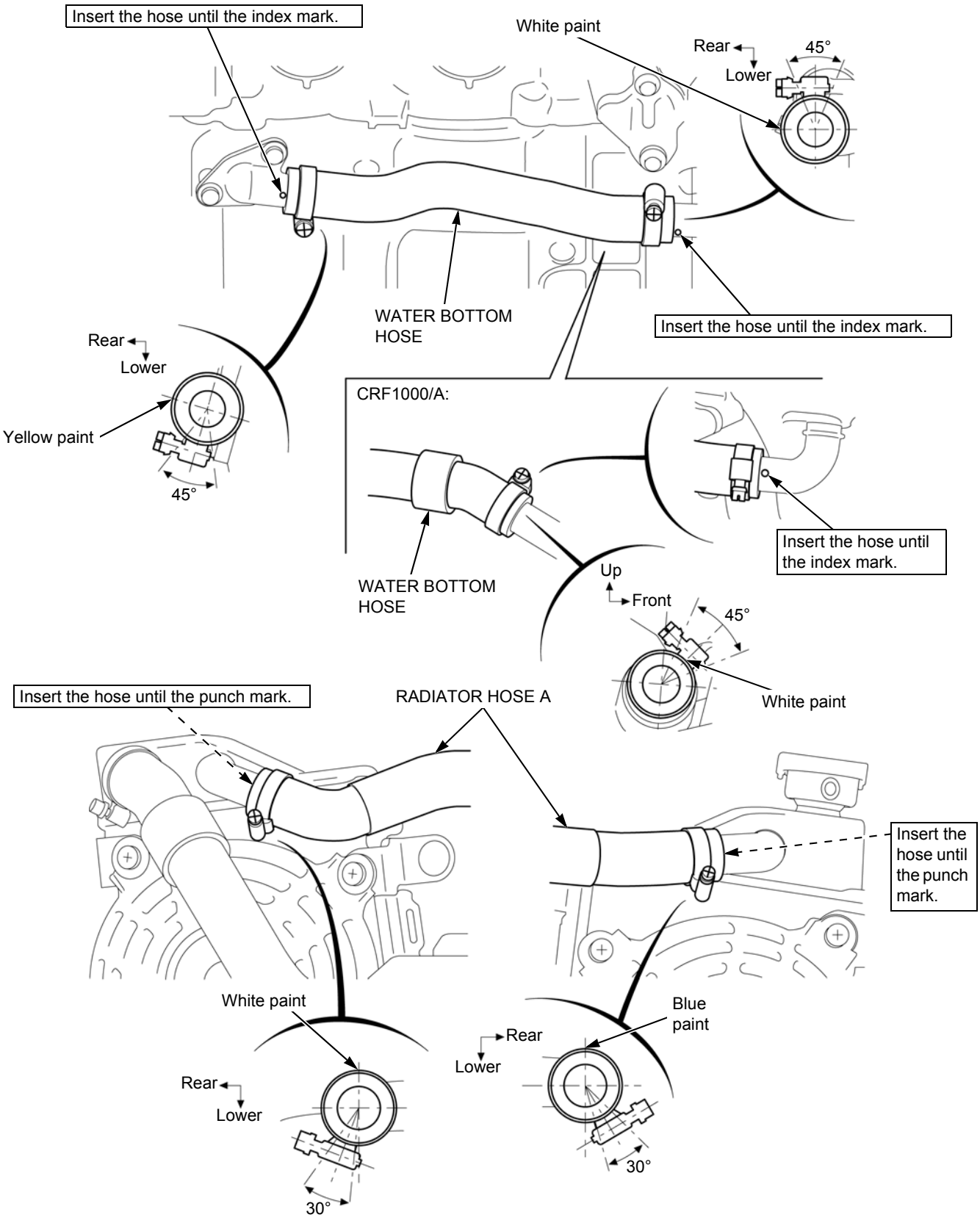
CRF1000D shown:



CRF1000D shown:



CRF1000D shown:



EMISSION CONTROL SYSTEMS

SOURCE OF EMISSIONS

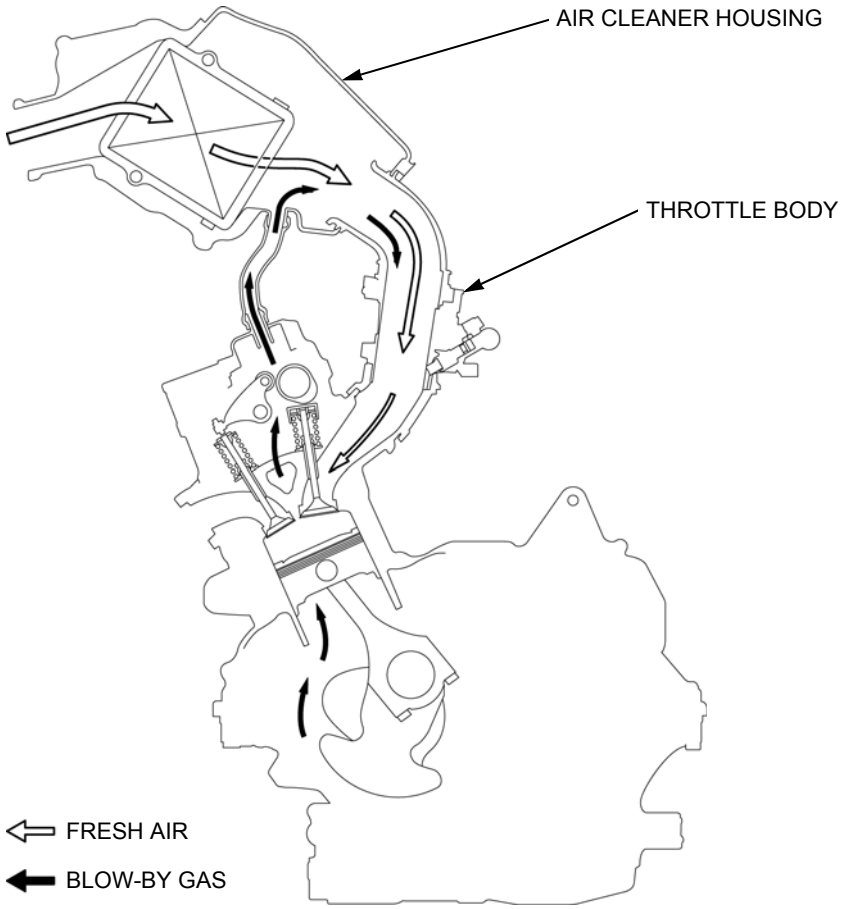
The combustion process produces carbon monoxide (CO), oxides of nitrogen (NOx) and hydrocarbons (HC). The control of hydrocarbons and oxides of nitrogen is very important because, under certain conditions, they react to form photochemical smog when subject to sunlight. Carbon monoxide does not react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

Honda Motor Co., Ltd. utilizes various system to reduce carbon monoxide, hydrocarbons, and oxides of nitrogen.

CRANKCASE EMISSION CONTROL SYSTEM

The engine is equipped with a closed crankcase system to prevent discharging crankcase emissions into the atmosphere.

Blow-by gas is returned to the combustion chamber through the air cleaner and throttle body.



EXHAUST EMISSION CONTROL SYSTEM

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

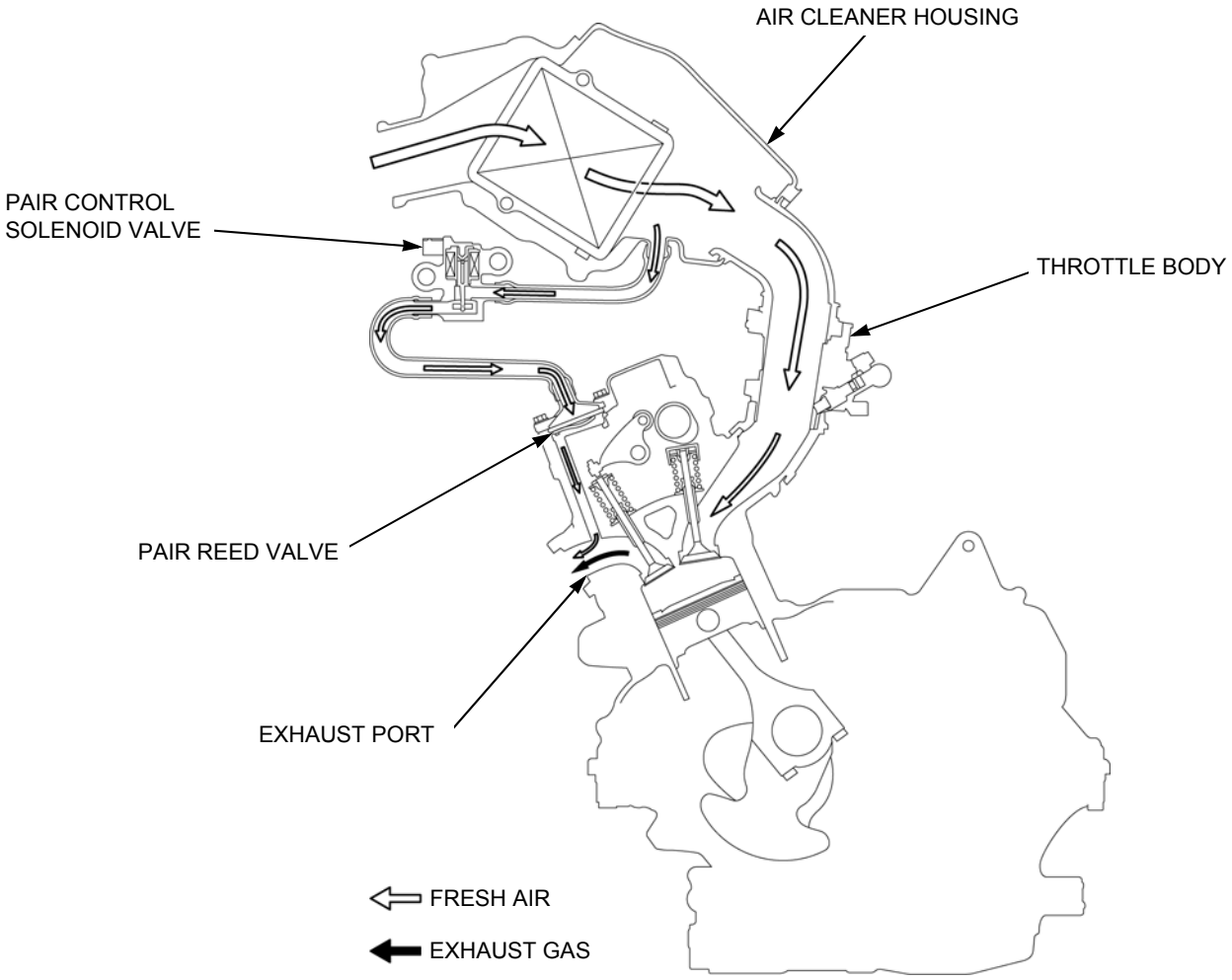
SECONDARY AIR SUPPLY SYSTEM

The 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 (Pulse Secondary Air Injection) control solenoid 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 solenoid valve is operated by the solenoid valve. The solenoid valve is controlled by the ECM/PCM, 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 also equipped with three-way catalytic converter, and two heated oxygen sensors.

The three-way catalytic converter is in the exhaust system. Through chemical reactions, they convert HC, CO, and NOx in the engine's exhaust to carbon dioxide (CO_2), dinitrogen (N_2), and water vapor.

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

NOISE EMISSION CONTROL SYSTEM

TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED: Local low may prohibits 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 new motorcycle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; (2) the use of the motorcycle 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 or puncturing of the muffler, baffles, header pipes or any other component which conducts exhaust gases.
2. Removal or puncturing of any part of the intake system.
3. Lack of proper maintenance.
4. Replacing any moving parts of the motorcycle, or parts of the exhaust or intake system, with parts other then those specified by the manufacturer.

NOISE EMISSION CONTROL SYSTEM (U model)

TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED: Local low may prohibits 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 new motorcycle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; (2) the use of the motorcycle after such device or element of design has been removed or rendered inoperative by any person.

TECHNICAL FEATURES

ABS WITH MODE-SELECTION MECHANISM (REAR ABS OFF MODE) (CRF1000A/D)

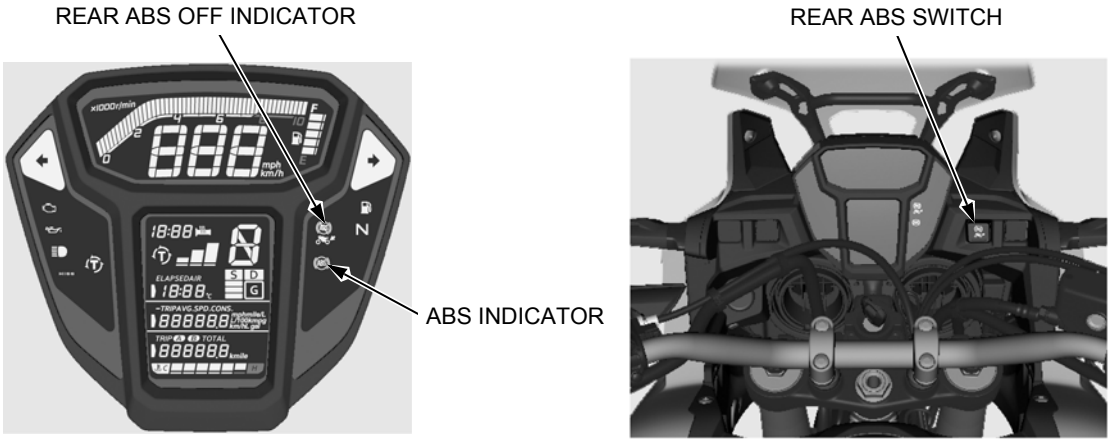
SYSTEM OVERVIEW

The CRF1000A/D (ABS type) is equipped with an ABS with selectable modes. In the ABS with mode-selection mechanism, the front ABS functions as a regular ABS, but the rear ABS can be cancelled; this mechanism gives greater freedom of off-road riding while ensuring the safety.

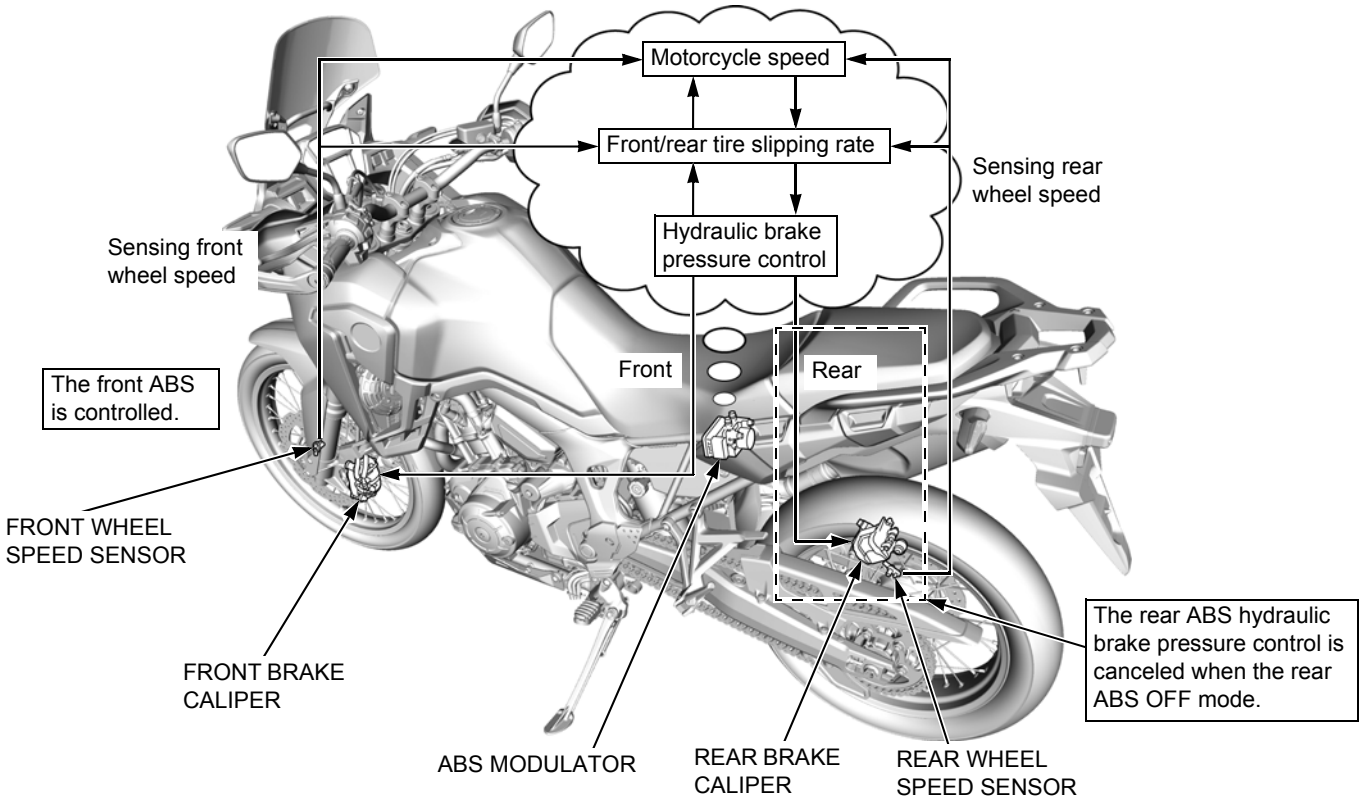
To switch between the modes, press and hold the rear ABS switch for more than two seconds when the motorcycle is stopped, then the rear ABS OFF indicator blinks. Releasing the rear ABS switch while the indicator blinks turns the indicator to stay on and cancels the rear ABS.

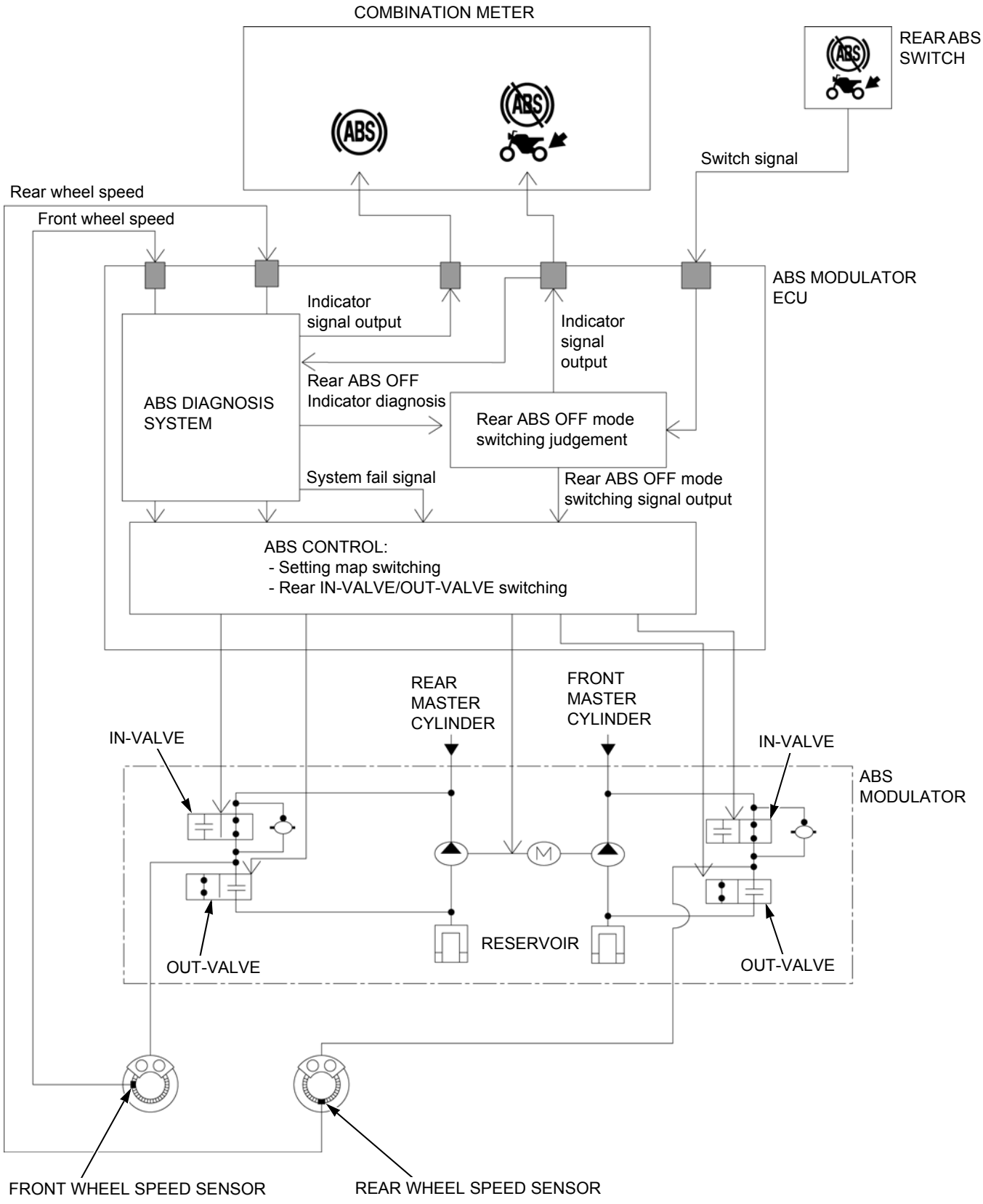
When in the rear ABS OFF mode, only when the rear ABS OFF indicator fails, the fail safe function is activated to actuate both front and rear ABSs.
Neither the front nor rear ABS is actuated by other types of failure; for those failures, the ABS indicator starts blinking to warn of the failure.
To cancel the rear ABS OFF mode, press the rear ABS switch for more than two seconds.

INDICATORS AND SWITCHES LOCATION



SYSTEM DIAGRAMS




COMBINATION METER
REAR ABS SWITCH
Switch signal
Rear wheel speed
Front wheel speed
ABS MODULATOR ECU
Indicator signal output
Indicator signal output
ABS DIAGNOSIS SYSTEM
Rear ABS OFF Indicator diagnosis
Rear ABS OFF mode switching judgement
System fail signal
Rear ABS OFF mode switching signal output
ABS CONTROL:
- Setting map switching
- Rear IN-VALVE/OUT-VALVE switching
REAR MASTER CYLINDER
FRONT MASTER CYLINDER
IN-VALVE
IN-VALVE
ABS MODULATOR
RESERVOIR
OUT-VALVE
OUT-VALVE
FRONT WHEEL SPEED SENSOR
REAR WHEEL SPEED SENSOR

G RIDE (CRF1000D)

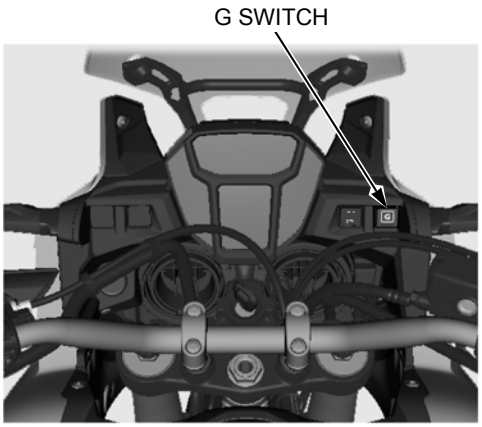
SYSTEM OVERVIEW

The CRF1000D (DCT type) is equipped with the G ride designed for off-road riding.
To switch to the G ride, press the G switch with the throttle fully closed when the motorcycle is stopped. The G indicator displays to confirm that the mode is successfully switched to the G ride.

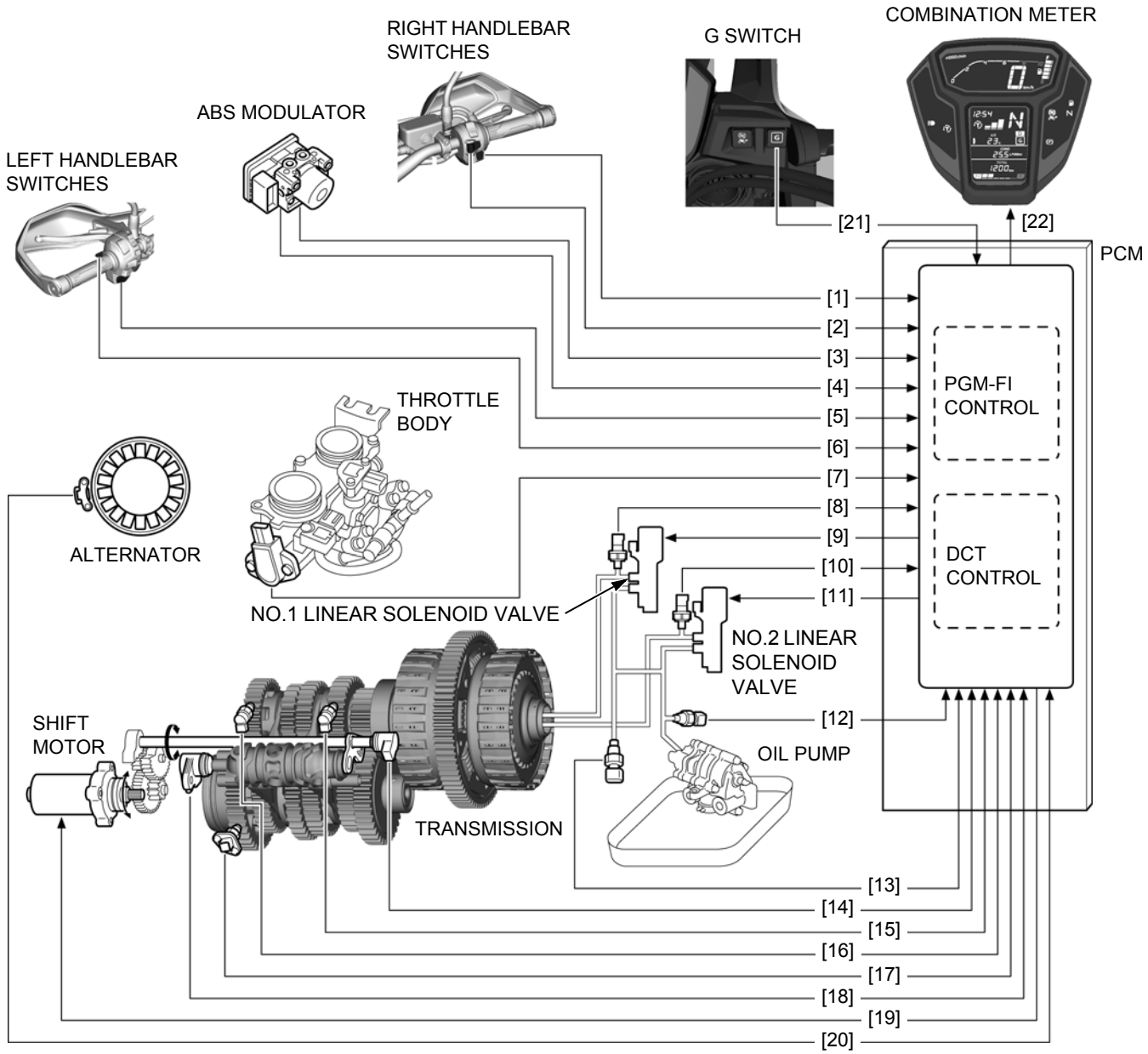
The G ride directly transfers the engine power to the road surface by minimizing clutch slipping occurring during throttle operation. When used with the rear ABS OFF mode, it can offer truly enjoyable machine control, satisfying the broad range of users.

INDICATORS AND SWITCHES LOCATION





DUAL CLUTCH TRANSMISSION CONTROL CIRCUIT (G RIDE)



[1]	A/M SWITCH SIGNAL
[2]	N-D SWITCH SIGNAL
[3]	FRONT WHEEL SPEED SIGNAL
[4]	REAR WHEEL SPEED SIGNAL
[5]	SHIFT DOWN SIGNAL
[6]	SHIFT UP SIGNAL
[7]	THROTTLE POSITION SIGNAL
[8]	No.1 CLUTCH OIL PRESSURE SIGNAL
[9]	No.1 LINEAR SOLENOID OUTPUT
[10]	No.2 CLUTCH OIL PRESSURE SIGNAL
[11]	No.2 LINEAR SOLENOID OUTPUT
[12]	OIL TEMPERATURE SIGNAL
[13]	CLUTCH LINE OIL PRESSURE SIGNAL
[14]	SHIFT SPINDLE ANGLE SIGNAL
[15]	OUTER MAINSHAFT REVOLUTION SIGNAL
[16]	VS SIGNAL
[17]	INNER MAINSHAFT REVOLUTION SIGNAL
[18]	TR SIGNAL
[19]	SHIFT CONTROL MOTOR OUTPUT
[20]	CRANK PULSE SENSOR SIGNAL
[21]	G SWITCH SIGNAL
[22]	TXD OUTPUT

S MODE (CRF1000D)

SYSTEM OVERVIEW

The CRF1000D (DCT type) is equipped with the S mode designed for sport riding.
To switch to the S mode, press the N-D switch when the motorcycle is stopped for safety. The S indicator displays to confirm that the mode is successfully switched to the S mode.
After set to the S mode, the mode can be selected from three levels by pressing and holding the D-S side of the N-D switch with the throttle fully closed.

INDICATORS AND SWITCHES LOCATION

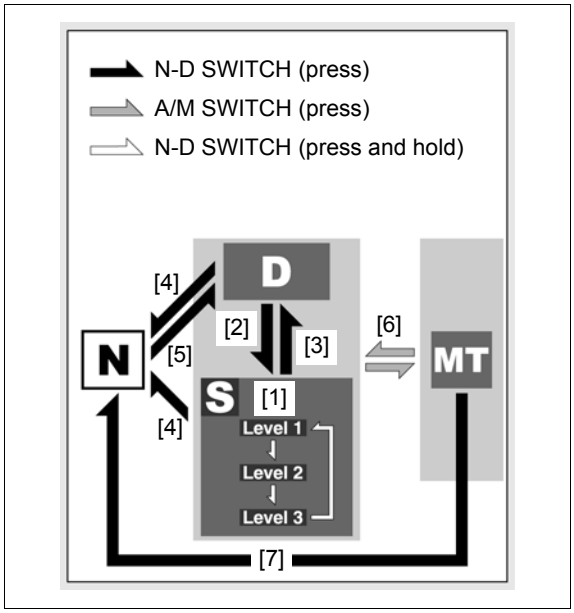




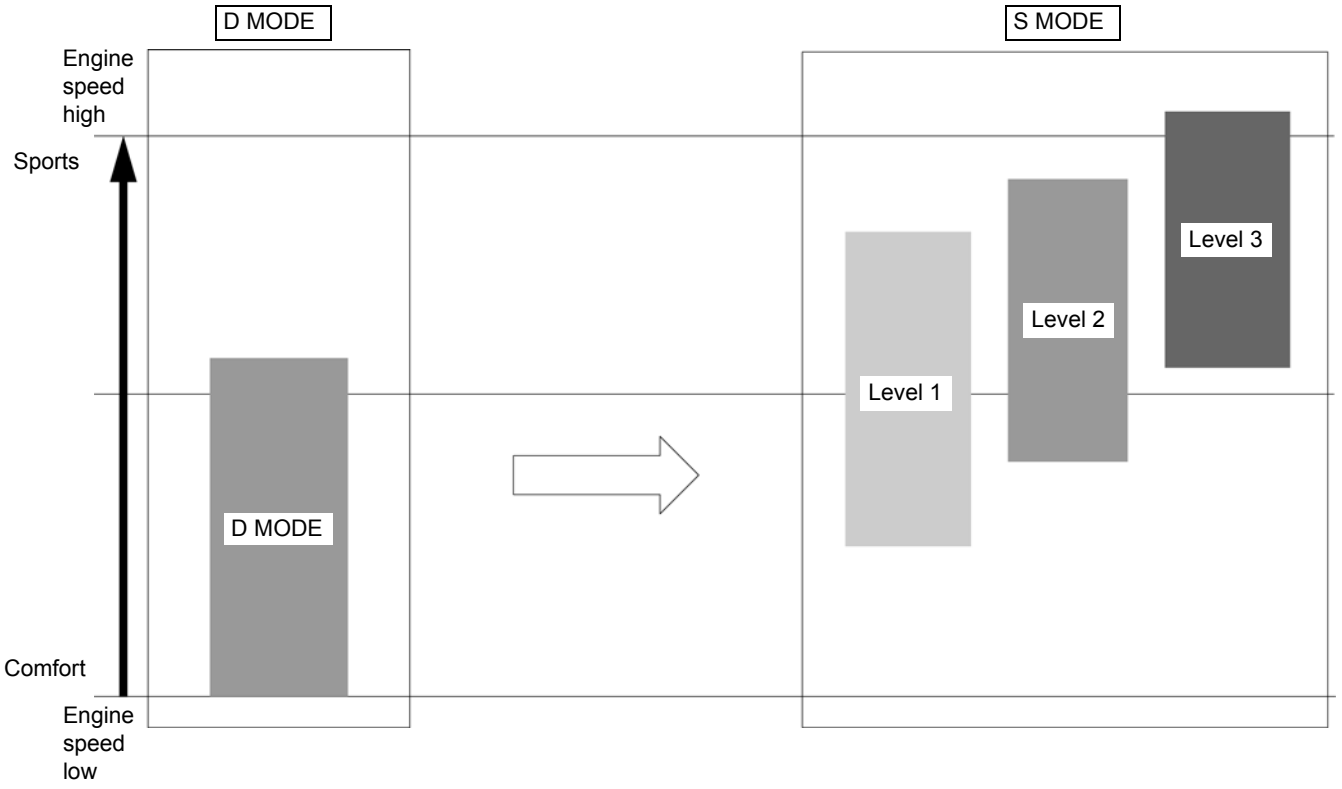
INDICATOR PATTERNS BY OPERATING SWITCHES

[1]: Press and hold the D-S side of the N-D switch with the throttle fully closed.
[2]: Press the D-S side of the N-D switch when the motorcycle is stopped. (*1)
[3]: Press the D-S side of the N-D switch when the motorcycle is stopped.
[4]: Press the N side of the N-D switch when the motorcycle is stopped.
[5]: Press the D-S side of the N-D switch when the motorcycle is stopped.
[6]: Press the A/M switch when the motorcycle is stopped.
[7]: Press the N side of the N-D switch when the motorcycle is stopped.

(*1): The selected level is maintained even when the ignition switch is turned off, or transmission is switched to out of S mode.



D AND S MODE SHIFT TIMING



MEMO

2. FRAME/BODY PANELS/EXHAUST SYSTEM

SERVICE INFORMATION ····· 2-2
TROUBLESHOOTING ····· 2-2
BODY PANEL LOCATIONS ····· 2-3
MAIN SEAT ····· 2-4
WINDSCREEN ····· 2-5
KNUCKLE GUARD (CRF1000A/D) ····· 2-5
MIDDLE COWL ····· 2-6
FRONT SPOILER ····· 2-7
FRONT COVER ····· 2-7
INNER PANEL COVER ····· 2-8
INNER COVER ····· 2-8
FRONT FENDER ····· 2-9
TANK FRONT COVER ····· 2-9
TANK SIDE COVER ····· 2-9
TANK REAR COVER ····· 2-10
SKID PLATE (CRF1000A/D) ····· 2-10
LEFT REAR COVER ····· 2-10
PILLION SEAT ····· 2-11
ETC TRAY ····· 2-11
SIDE COVER ····· 2-11
REAR CARRIER ····· 2-12
REAR FENDER A ····· 2-12
REAR FENDER B ····· 2-13
MUFFLER/EXHAUST PIPE ····· 2-16
SIDESTAND ····· 2-19

SERVICE INFORMATION

GENERAL

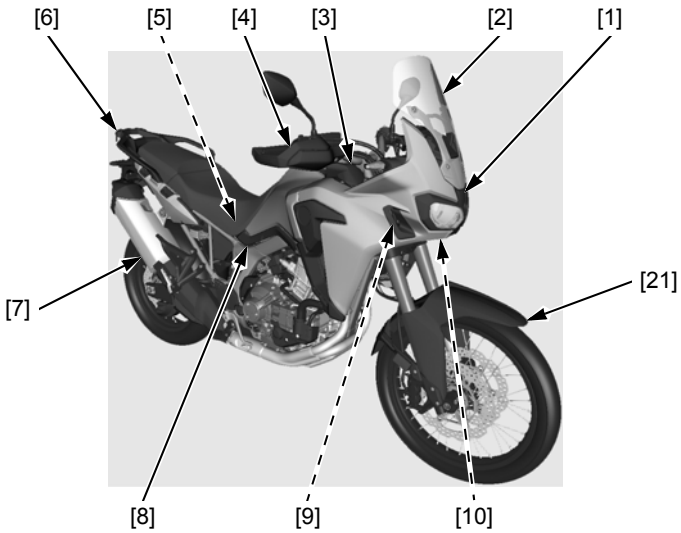
- This section covers removal and installation of the body panels, exhaust system and sidestand.
- Always replace the exhaust pipe gaskets after removing the exhaust pipes from the engine.
- When installing the exhaust system, loosely install all of the exhaust pipe fasteners. Always tighten the exhaust clamps first, then tighten the mounting fasteners. If you tighten the mounting fasteners first, the exhaust pipe may not seat properly.
- Always inspect the exhaust system for leaks after installation.

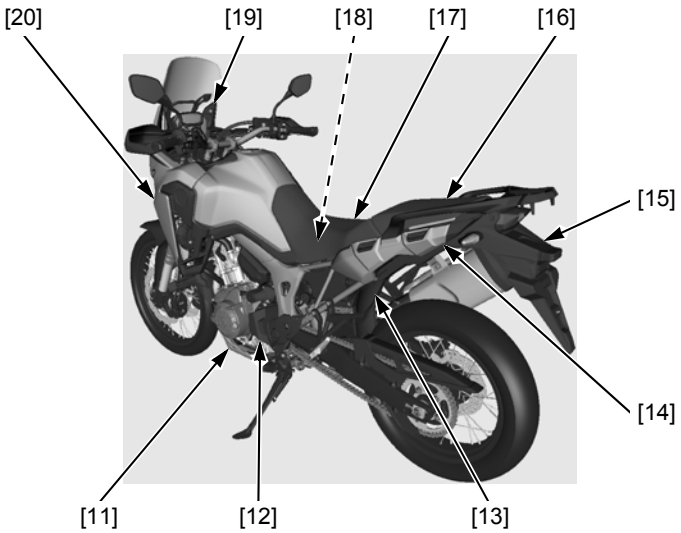
TROUBLESHOOTING

Excessive exhaust noise
- Broken exhaust system
- Exhaust gas leak

Poor performance
- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

BODY PANEL LOCATIONS

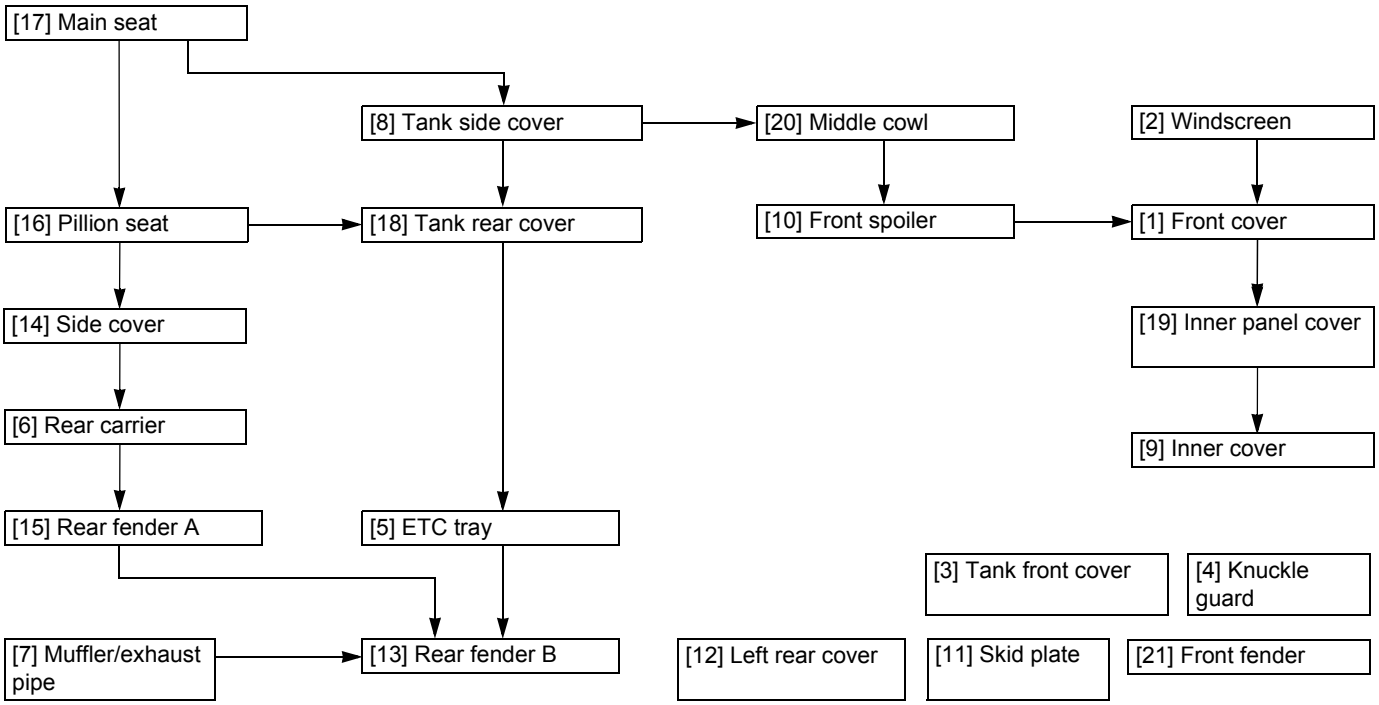




[1] Front cover (page 2-7)
[2] Windscreen (page 2-5)
[3] Tank front cover (page 2-9)
[4] Knuckle guard (CRF1000A/D) (page 2-5)
[5] ETC tray (page 2-11)
[6] Rear carrier (page 2-12)
[7] Muffler/exhaust pipe (page 2-16)
[8] Tank side cover (page 2-9)
[9] Inner cover (page 2-8)
[10] Front spoiler (page 2-7)
[11] Skid plate (CRF1000A/D) (page 2-10)
[12] Left rear cover (page 2-10)
[13] Rear fender B (page 2-13)
[14] Side cover (page 2-11)
[15] Rear fender A (page 2-12)
[16] Pillion seat (page 2-11)
[17] Main seat (page 2-4)
[18] Tank rear cover (page 2-10)
[19] Inner panel cover (page 2-8)
[20] Middle cowl (page 2-6)
[21] Front fender (page 2-9)

BODY PANEL REMOVAL CHART

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



MAIN SEAT

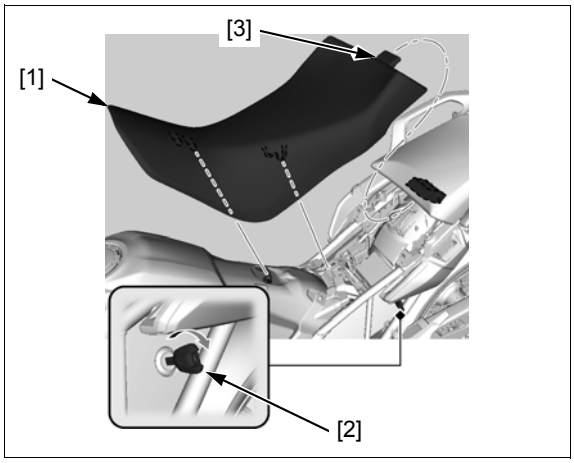
MAIN SEAT REMOVAL/INSTALLATION

Unlock the main seat [1] using the ignition key [2].

Remove the seat while pulling it forward and upward.

Install the seat while aligning its hook [3] with the retainer on the rear carrier.

Push the seat downward, and lock it.



SEAT CATCH STAY REMOVAL/ INSTALLATION

Remove the tank rear cover (page 2-10).

Remove the bolts [1] and pull up the seat catch stay [2].

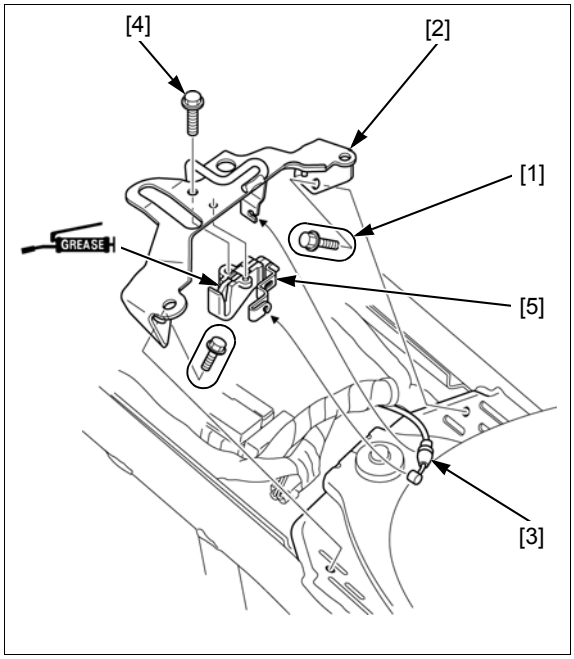
Disconnect the seat lock cable [3] from the stay.

Remove the bolt [4] and seat catch hook [5].

Installation is in the reverse order of removal.

NOTE:

- Apply grease to the seat catch hook sliding area.
- Align the seat catch hook boss with the stay hole.



SEAT LOCK CYLINDER REMOVAL/ INSTALLATION

Remove the ETC tray (page 2-11).

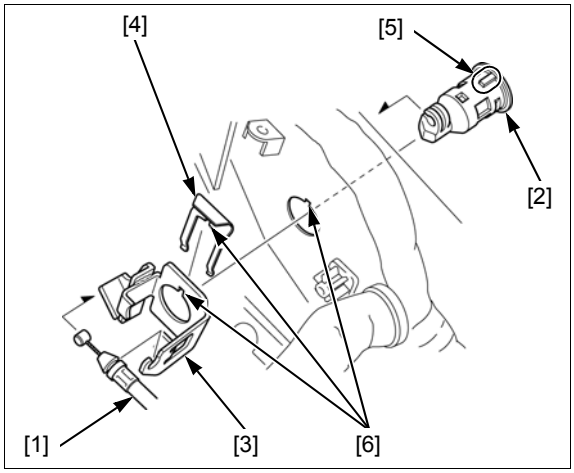
Disconnect the seat lock cable [1] from the seat lock cylinder [2] and stay [3].

Remove the lock spring [4], cylinder, and stay.

Installation is in the reverse order of removal.

NOTE:

- Align the lug [5] of the cylinder with the grooves [6] of the rear fender B, lock spring, and stay.



WINDSCREEN

REMOVAL/INSTALLATION

Remove the socket bolts [1], plastic washers [2], rubber washers [3], and windscreen [4].

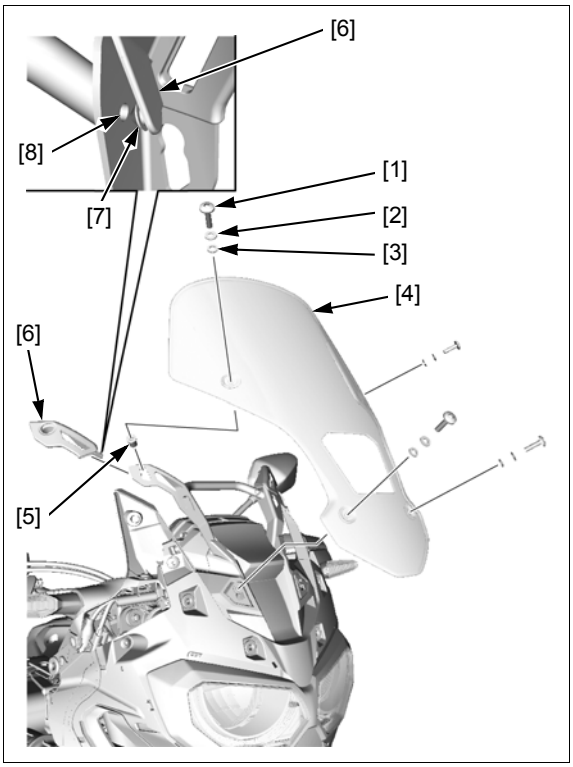
Remove the well nuts [5] and cowl stay covers [6] if necessary.

Installation is in the reverse order of removal.

NOTE:

- When installing the cowl stay cover, set the stay cover boss [7] into the front cowl stay hole [8].

TORQUE: 0.42 N·m (0.04 kgf·m, 0.3 lbf·ft)



KNUCKLE GUARD (CRF1000A/D)

REMOVAL/INSTALLATION

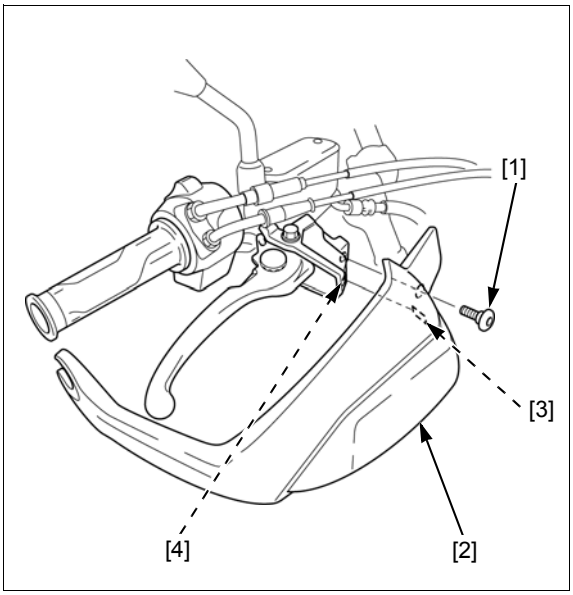
Remove the handlebar weight bolt (page 17-6).

Remove the socket bolt [1] and knuckle guard [2].

Installation is in the reverse order of removal.

NOTE:

- Install the knuckle guard by aligning its boss [3] with the hole [4] of the stay.



MIDDLE COWL

REMOVAL/INSTALLATION

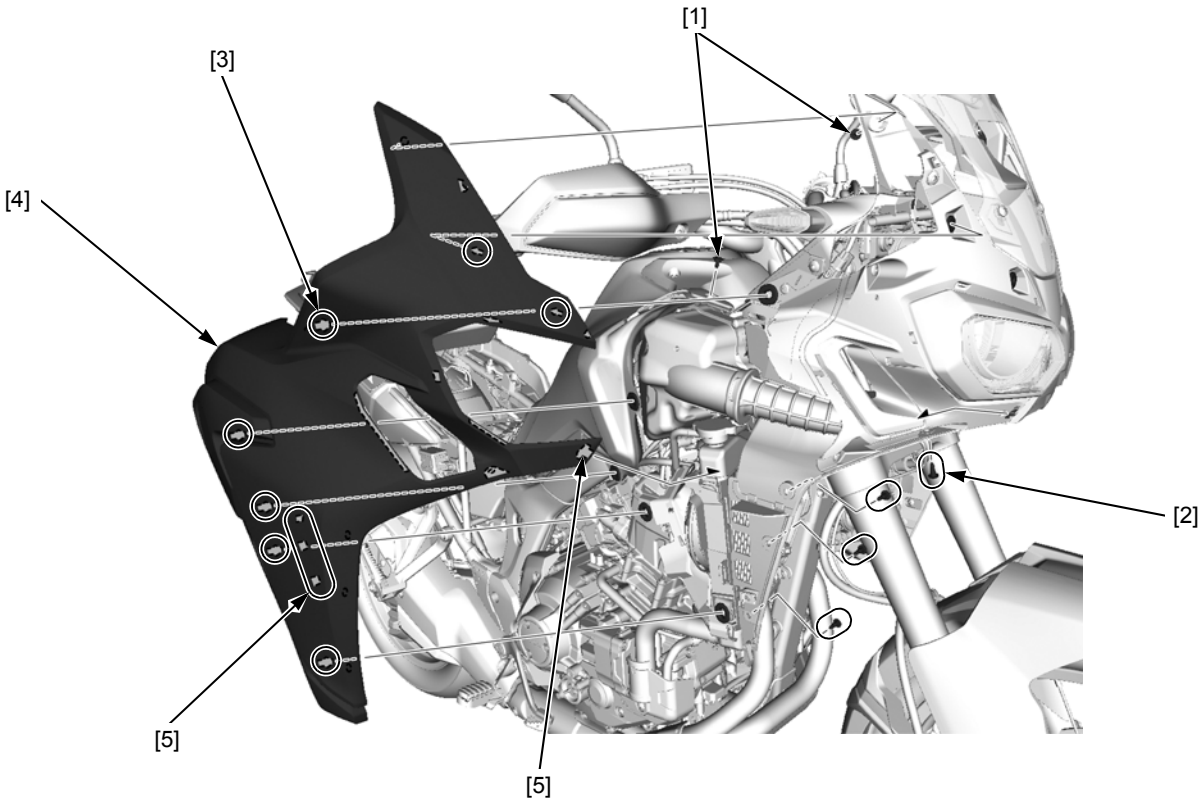
Remove the tank side cover (page 2-9).

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

Release the bosses [3].

Remove the middle cowl [4] by releasing the tabs [5].

Installation is in the reverse order of removal.

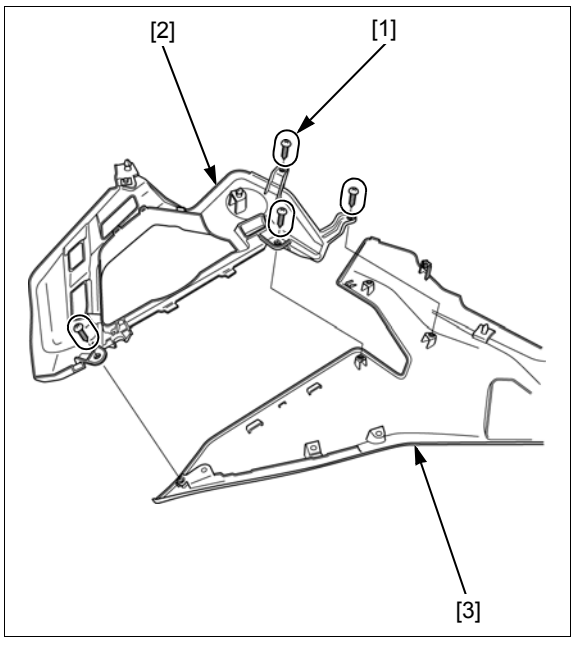


DISASSEMBLY/ASSEMBLY

Remove the middle cowl (page 2-6).

Remove the screws [1] and front side cover [2] from the middle cowl [3].

Installation is in the reverse order of removal.



FRONT SPOILER

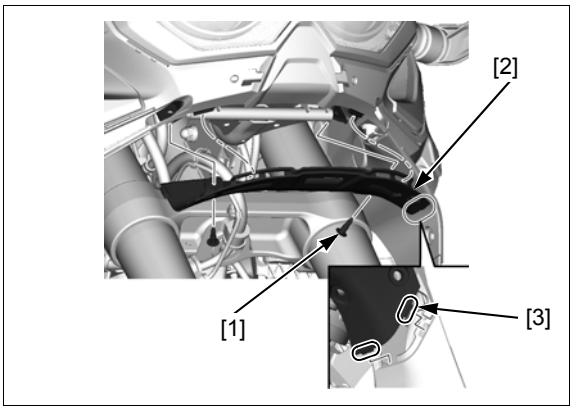
REMOVAL/INSTALLATION

Remove the middle cowl (page 2-6).

Remove the trim clips [1].

Remove the front spoiler [2] by releasing the tabs [3] from the front cover and inner cover.

Installation is in the reverse order of removal.



FRONT COVER

REMOVAL/INSTALLATION

Remove the front spoiler (page 2-7).
Remove the windscreen (page 2-5).

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

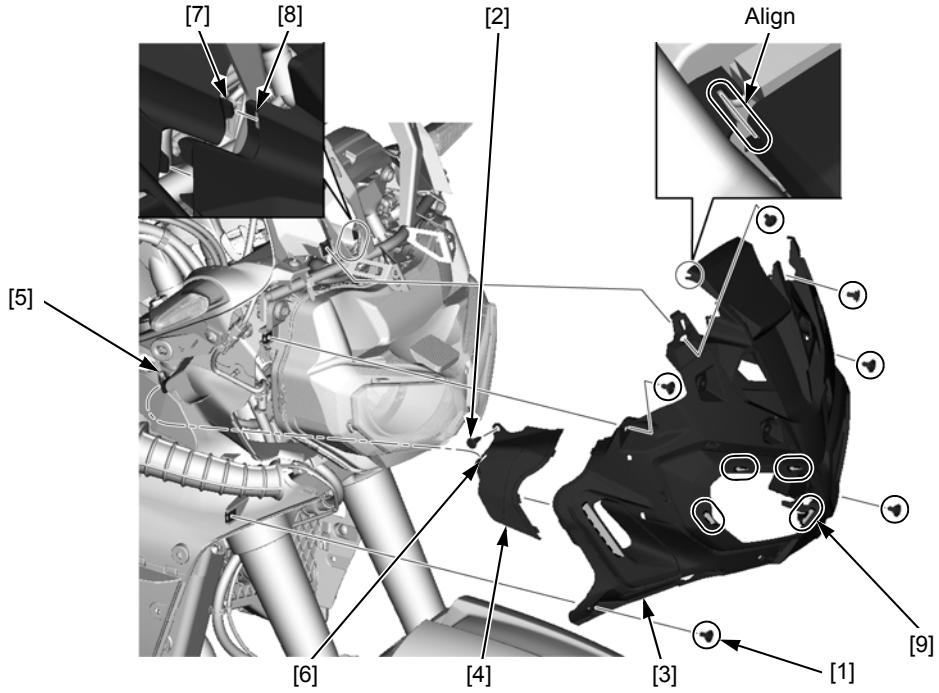
Remove the front cover [3] while pulling it forward.

Remove the left and right front inner covers [4] from the front cover.

Installation is in the reverse order of removal.

NOTE:

- Right side only: Install the tab [5] of the inner panel cover into the groove [6] of the right front inner cover.
- Install the lug [7] of the inner panel cover into the slit [8] of the front cover.
- Align the grooves of the inner panel cover and front cover.
- Align the groove [9] of the front cover with the lug of the headlight.



INNER PANEL COVER

REMOVAL/INSTALLATION

Remove the front cover (page 2-7).

Disconnect the following:

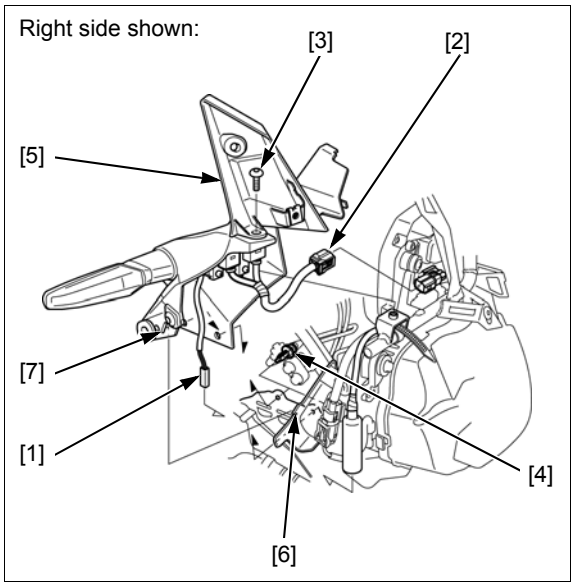
Left side:
– Front turn signal light 2P (Orange) connector

Right side:
– Front turn signal light 2P (Light blue) connector [1]
– CRF1000A: rear ABS switch 2P (Black) connector [2]
– CRF1000D: rear ABS/G switch 4P (Black) connector [2]

Remove the socket bolt [3] and trim clips [4] and then remove the right inner panel cover [5].

Installation is in the reverse order of removal.

NOTE:
• Install the tab [6] of the inner cover into the groove [7] of the inner panel cover.



INNER COVER

REMOVAL/INSTALLATION

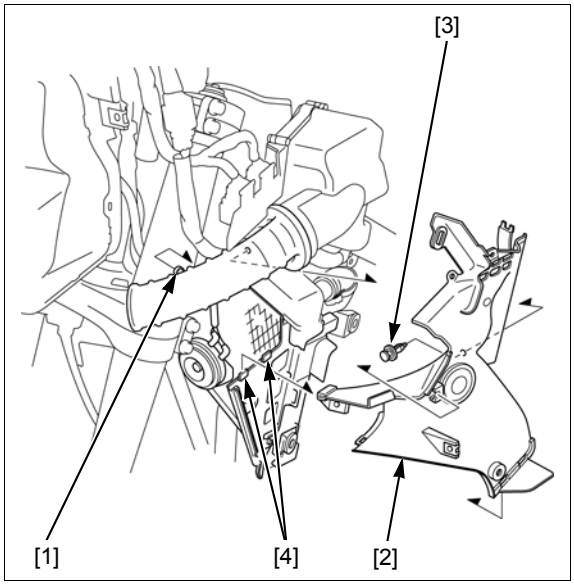
Remove the inner panel cover (page 2-7).

Release the tab [1] of the air cleaner duct from the inner cover [2].

Remove the trim clip [3].

Remove the inner cover by releasing the tabs [4] of the radiator shroud.

Installation is in the reverse order of removal.



FRONT FENDER

REMOVAL/INSTALLATION

Remove the socket bolts [1] and collars [2].
Remove the fender cover [3].

CRF1000A/D: Release the front speed sensor wire [4] from the fender clamp [5].

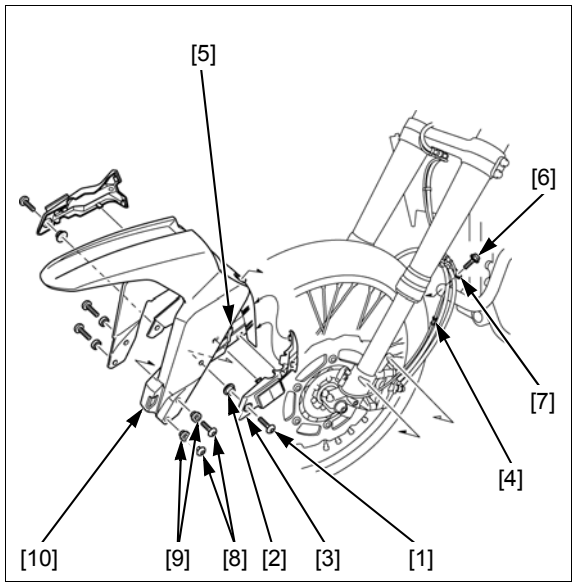
Remove the bolt [6] and brake hose clamp [7].

Remove the socket bolts [8] and collars [9].
Remove the front fender [10].

Installation is in the reverse order of removal.

NOTE:

- Route the wire and hoses properly (page 1-26).



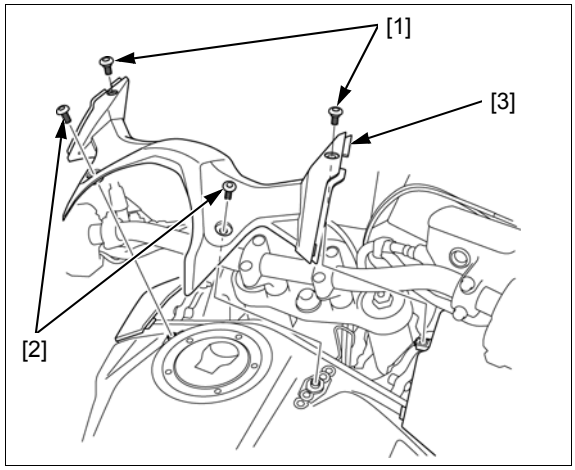
TANK FRONT COVER

REMOVAL/INSTALLATION

Remove the socket bolts A [1] and B [2].

Remove the tank front cover [3].

Installation is in the reverse order of removal.



TANK SIDE COVER

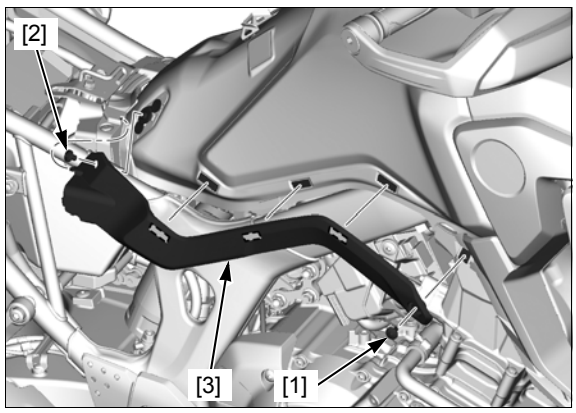
REMOVAL/INSTALLATION

Remove the main seat (page 2-4).

Remove the socket bolts A [1] and B [2].

Remove the tank side cover [3].

Installation is in the reverse order of removal.



TANK REAR COVER

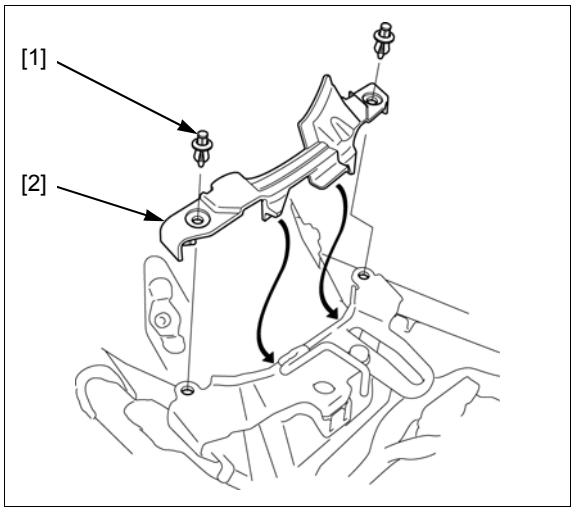
REMOVAL/INSTALLATION

Remove the main seat (page 2-4).

Remove the trim clips [1].

Remove the tank rear cover [2].

Installation is in the reverse order of removal.



SKID PLATE (CRF1000A/D)

REMOVAL/INSTALLATION

Remove the bolts [1], washers [2], and collar [3].

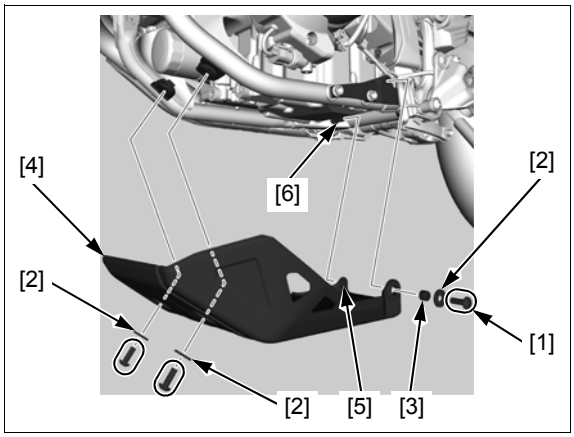
Remove the skid plate [4].

Installation is in the reverse order of removal.

NOTE:

- Align the right rear grommet [5] of the skid plate with the boss [6] of frame.

TORQUE: 26 N·m (2.7 kgf·m, 19 lbf·ft)



LEFT REAR COVER

REMOVAL/INSTALLATION

CRF1000/A: Remove the gearshift arm (page 12-21).

Release the sidestand wire clip [1] from the left rear cover [2].
Release the sidestand wire from the left rear cover wire guide.

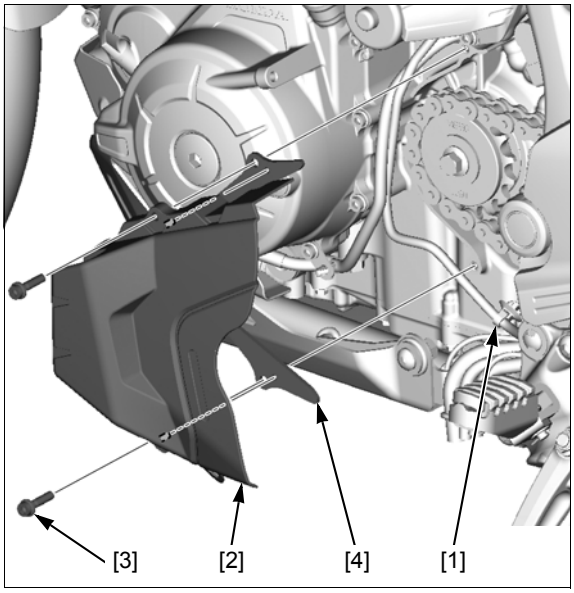
Remove the bolts [3], left rear cover and drive chain guide plate [4].

Installation is in the reverse order of removal.

NOTE:

- Align the hole of plate with the boss of the cover.
- Route the wires properly (page 1-26).

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



PILLION SEAT

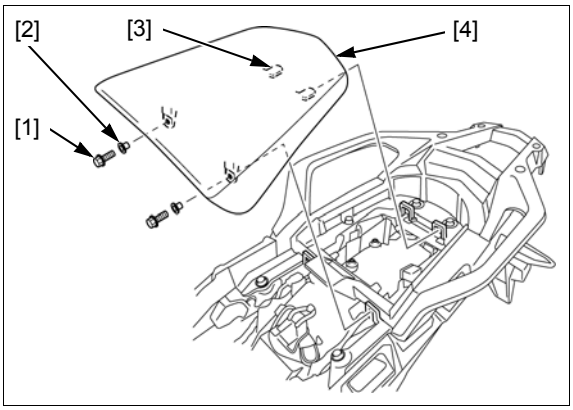
REMOVAL/INSTALLATION

Remove the main seat (page 2-4).

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

Release the tab [3] and remove the pillion seat [4] by pulling forward.

Installation is in the reverse order of removal.



ETC TRAY

REMOVAL/INSTALLATION

Remove the seat catch stay (page 2-4).

Release the following:

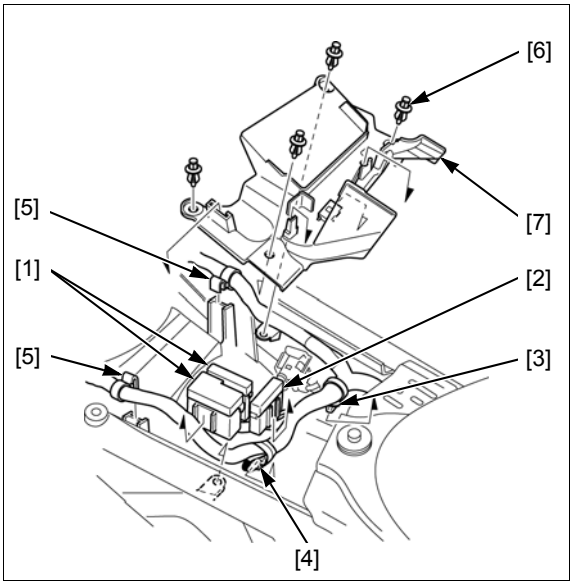
– Fuse box 1/2 [1]
– Fuse box 3 [2] (CRF1000D)
– Main wire harness clip [3]
– HISS 2P (Red) connector [4]
– Main wire harness clamps [5]

Remove the trim clips [6] and ETC tray [7]

Installation is in the reverse order of removal.

NOTE:

• Route the wire harnesses properly (page 1-26).



SIDE COVER

REMOVAL/INSTALLATION

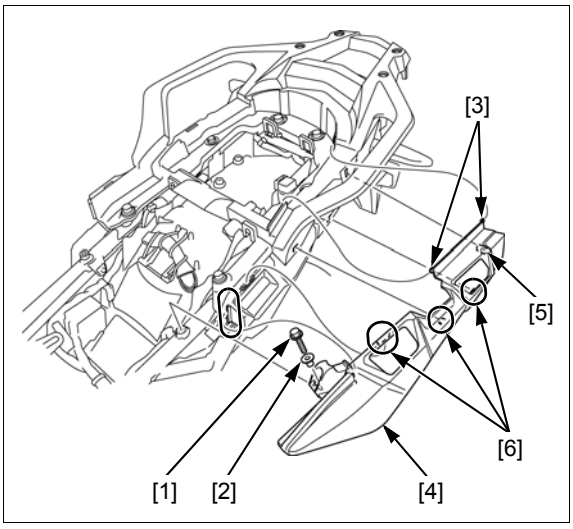
Remove the pillion seat (page 2-11).

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

Release the tabs [3] of side cover [4] from the rear carrier.

Remove the side cover by releasing the snap fit [5] and tabs [6].

Installation is in the reverse order of removal.



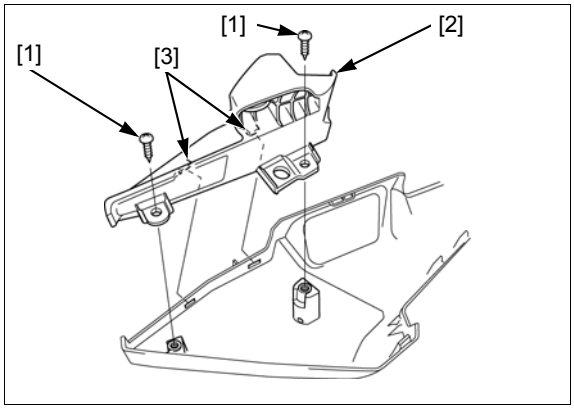
DISASSEMBLY/ASSEMBLY

Remove the side cover (page 2-11).

Remove the screws [1].

Remove the side inner cover [2] by releasing the tab [3].

Installation is in the reverse order of removal.



REAR CARRIER

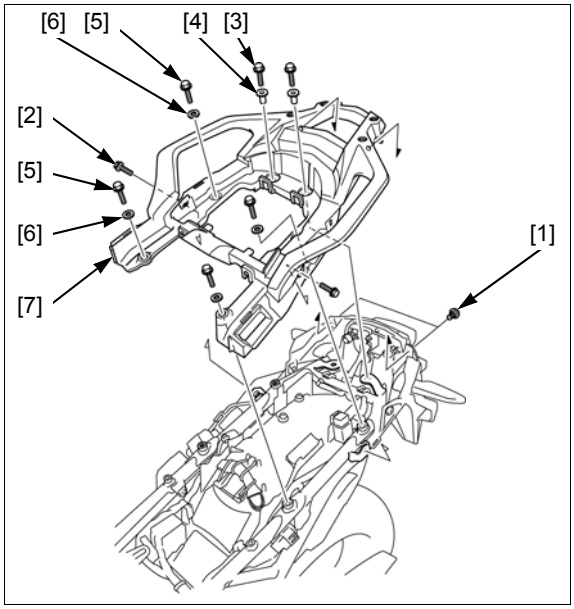
REMOVAL/INSTALLATION

Remove the side covers (page 2-11).

Remove the socket bolts [1].
Remove the flange bolts A [2].
Remove the flange bolts B [3] and collars [4].
Remove the flange bolts C [5] and washers [6].

Remove the rear carrier [7].

Installation is in the reverse order of removal.



REAR FENDER A

REMOVAL/INSTALLATION

Remove the rear carrier (page 2-12).

Disconnect the following connectors.

– Right rear turn signal light 2P (Light blue) connector [1]
– Left rear turn signal light 2P (Orange) connector [2]
– License light 3P (White) connector [3]

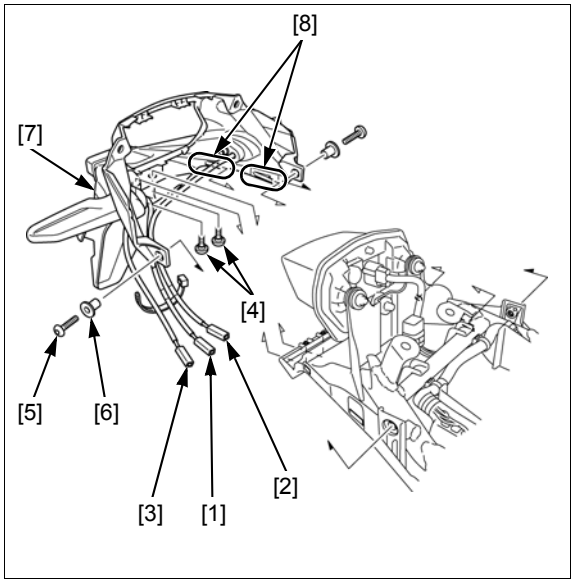
Remove the socket bolts A [4], socket bolts B [5], and collars [6].

Remove the rear fender A [7] while pulling rearward by releasing its tabs [8] from the rear fender B.

Installation is in the reverse order of removal.

NOTE:

• Route the wires properly (page 1-26).



REAR FENDER B

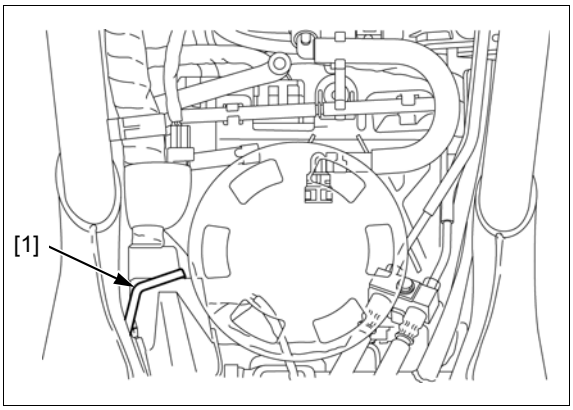
REMOVAL/INSTALLATION

CRF1000A/D: Drain the brake fluid from the hydraulic system (page 19-6).

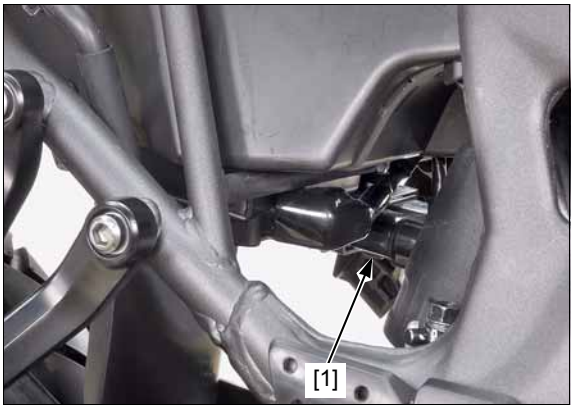
Remove the following:

– Regulator/rectifier (page 21-8)
– Fuel tank (page 7-6)

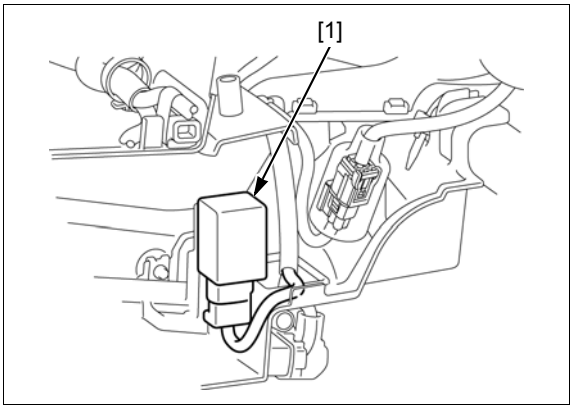
Remove the wire band [1].



Disconnect the turn signal light relay 18P (Black) connector [1].



CRF1000: Release the turn signal light relay [1].



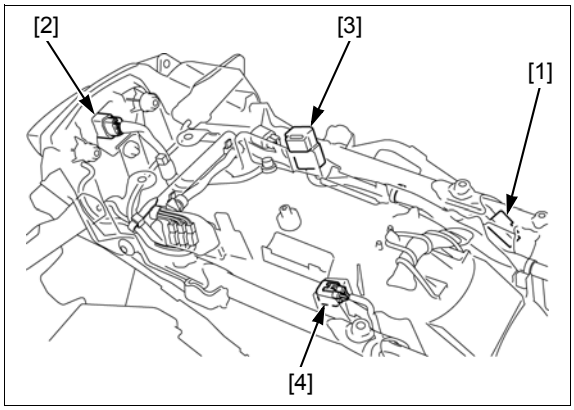
Disconnect the following:

– Grip heater control (Option) 10P (Black) connector [1]
– Brake/taillight 3P (Black) connector [2]

Release the following:

– Fan control relay [3]
– Dummy connector/DLC [4]

Remove the rear fender A (page 2-12)



CRF1000A/D: Release the rear speed sensor wire clip [1].



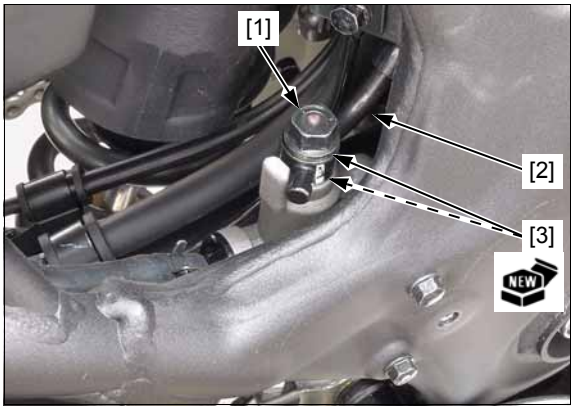
CRF1000A/D: Remove the oil bolt [1], rear brake hose A [2], and sealing washers [3].

NOTICE

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

NOTE:

• Always replace the sealing washers with new one.



CRF1000A/D: Disconnect the rear brake hose B [1] from the ABS modulator by removing the oil bolt [2] and sealing washers [3].

Disconnect the following:

– ABS modulator 18P (Black) connector [4]
– Rear speed sensor 2P (Black) connector [5]

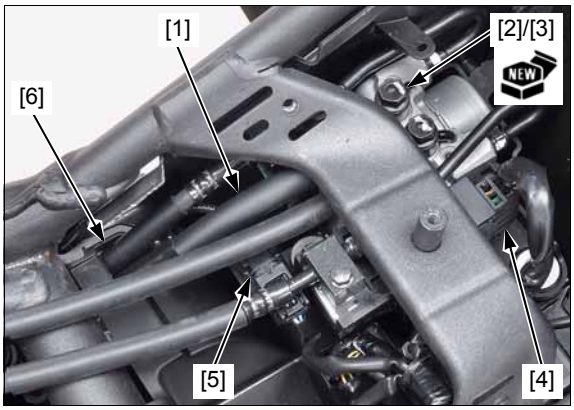
Release the rear brake hose B and speed sensor wire through the hole [6] of rear fender B.

NOTICE

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

NOTE:

• Always replace the sealing washers with new one.



Remove the screw [1].
Remove the mud guard [2] downward by releasing its tab [3] from the slit [4] of the rear fender B.

CRF1000A/D: Loosen the brake pipe joint nuts [5] and disconnect the brake pipes [6].
Remove the joint bolt [7].

NOTICE

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

Remove the socket bolts [8].
Remove the rear fender B [9] by pulling it rearward.

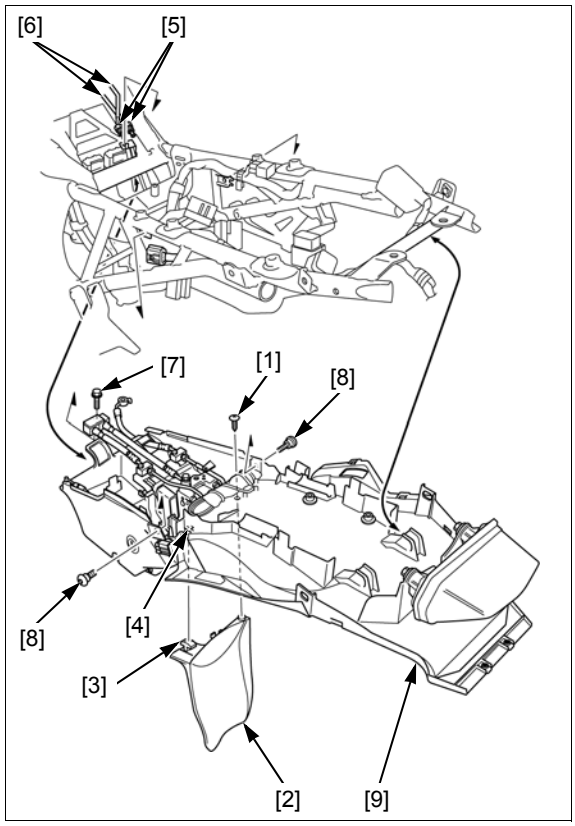
Remove the following from the rear fender B.

– ABS modulator (page 20-24) (CRF1000A/D)
– Brake/taillight (page 22-11)
– Turn signal light relay (page 22-8) (CRF1000A/D)

Installation is in the reverse order of removal.

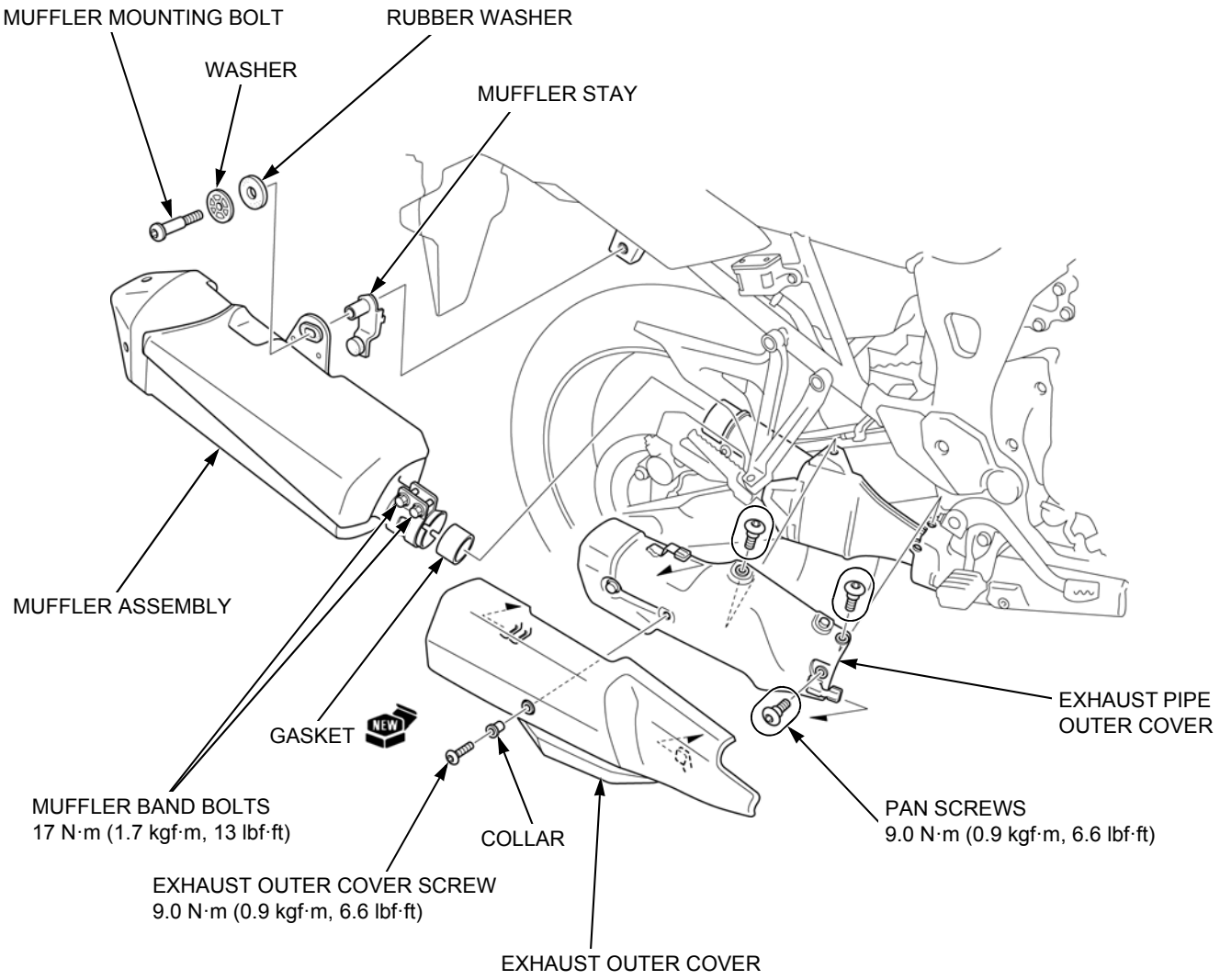
NOTE:
- Apply brake fluid to the joint nut threads.
- Place the fender hooks onto the rear frame.
- Route the wires, pipes and hoses properly (page 1-26).

TORQUE:
Brake hose oil bolt:
34 N·m (3.5 kgf·m, 25 lbf·ft)
Brake pipe joint nut:
14 N·m (1.4 kgf·m, 10 lbf·ft)



MUFFLER/EXHAUST PIPE

MUFFLER REMOVAL/INSTALLATION

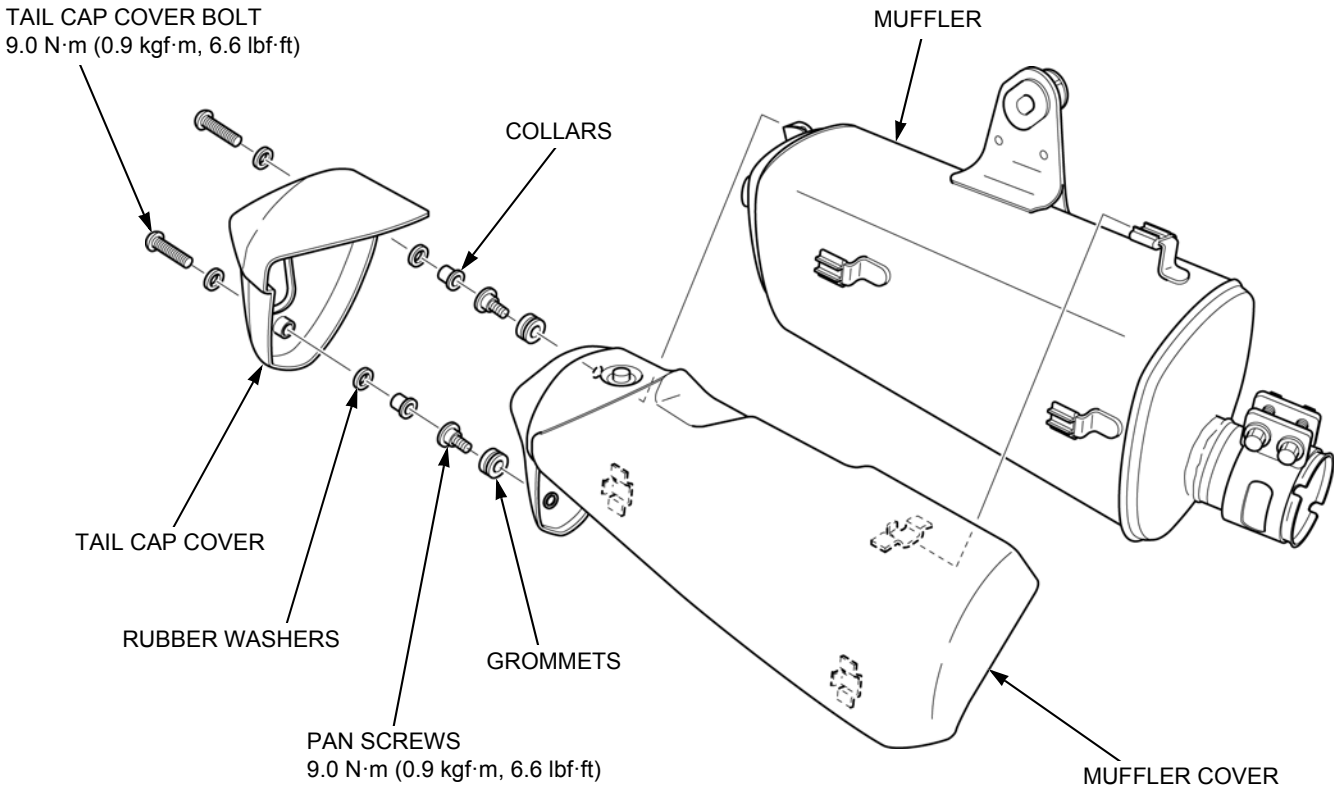


NOTE:

- Always replace the gasket with a new one.
- When installing the muffler, loosely install the mounting bolt, and washer and tighten the muffler band bolts first to the specified torque, and then tighten the mounting bolt securely.
- Align the slots of the outer cover with the bosses of the exhaust pipe cover C.

MUFFLER DISASSEMBLY/ASSEMBLY

Remove the muffler (page 2-16).



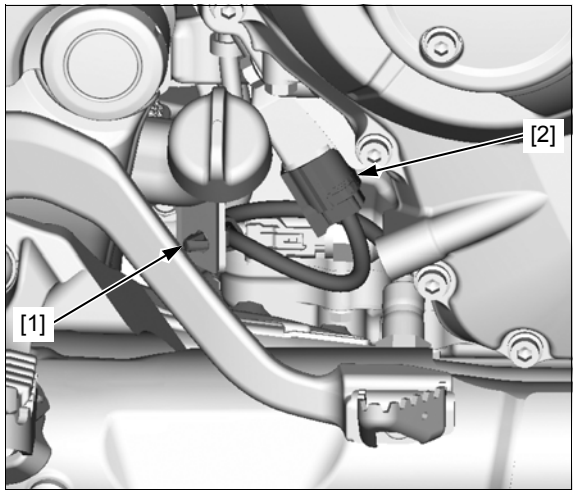
NOTE:

- Align the slots of the muffler cover with the bosses of the muffler.

EXHAUST PIPE REMOVAL/INSTALLATION

Remove the muffler (page 2-16).

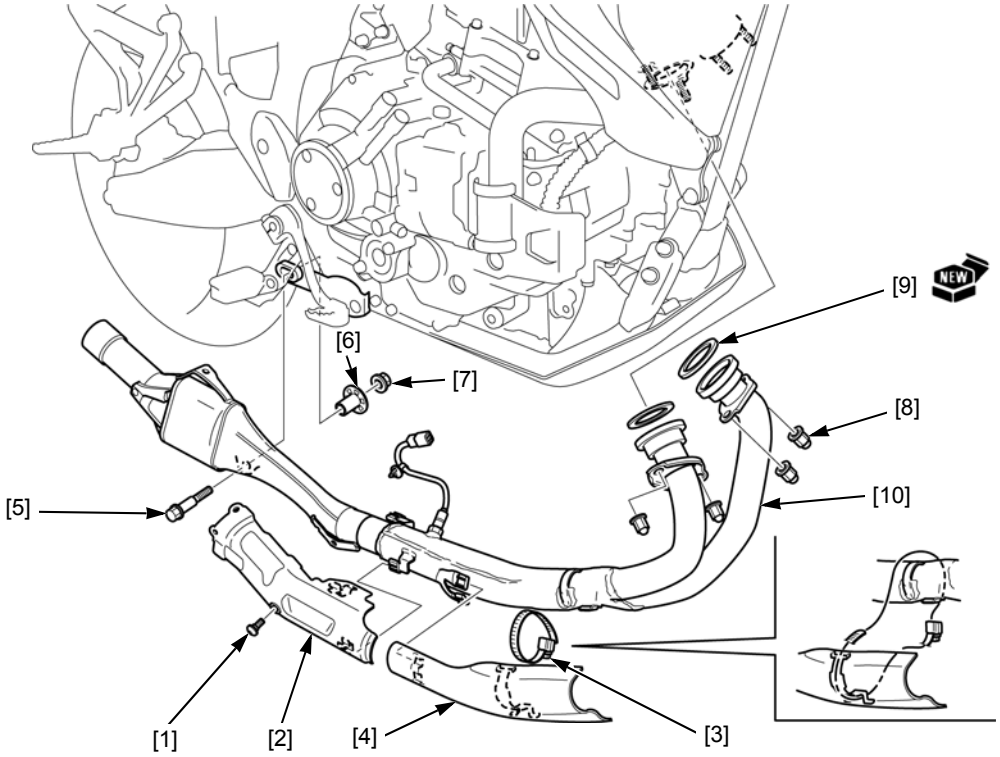
Release the O_2 sensor wire clip [1] and disconnect the 4P (Black) connector [2].



Remove the pan screw [1] and exhaust pipe cover A [2].
Loosen the band screw and remove the band [3] and exhaust pipe cover B [4].

Remove the mounting bolt [5], collar [6], and mounting nut [7].
Remove the exhaust pipe joint nuts [8], gaskets [9], and exhaust pipe [10].

Installation is in the reverse order of removal.



NOTE:
- Always replace the gasket with new ones.
- When installing the exhaust pipe, loosely install all of the exhaust pipe fasteners.
- Always tighten the joint nuts first, then tighten the mounting bolt.
- Align the slots of the exhaust pipe cover A/B with the bosses of the exhaust pipe.
- For O_2 sensor removal/installation (page 4-42)

TORQUE:
Exhaust pipe joint nut:
20 N·m (2.0 kgf·m, 15 lbf·ft)
Exhaust pipe cover A pan screw:
9.0 N·m (0.9 kgf·m, 6.6 lbf·ft)
Exhaust pipe cover B band screw:
3.5 N·m (0.4 kgf·m, 2.6 lbf·ft)

STUD BOLT REPLACEMENT

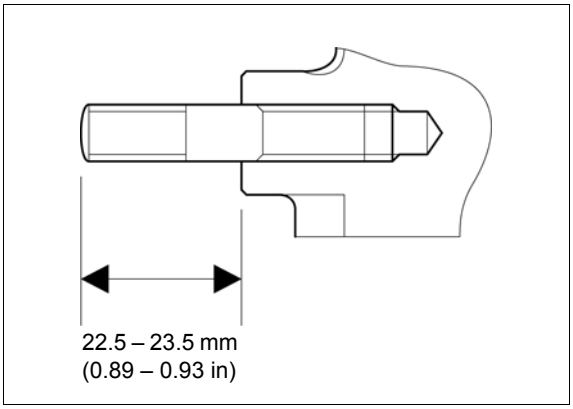
Remove the exhaust pipe (page 2-17).

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.

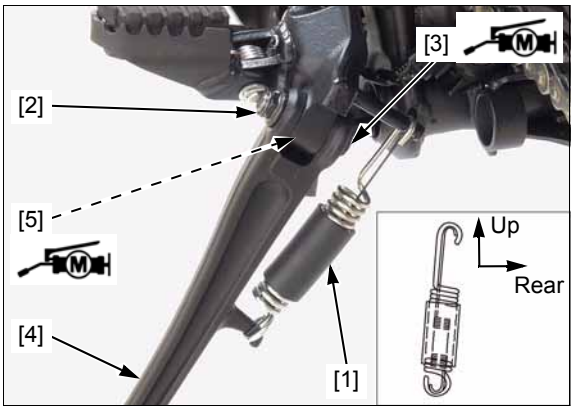
After installing the stud bolts, check that the length from the bolt head to the cylinder head surface is within specification.

Install the exhaust pipe (page 2-17).



SIDESTAND

REMOVAL/INSTALLATION



Remove the sidestand switch (page 22-27) (not necessary to disconnect the connector).

Support the motorcycle securely using a hoist or equivalent.

Remove the sidestand return springs [1].

Remove the sidestand pivot nut [2] and bolt [3], then remove the sidestand [4] and collar [5].

Apply molybdenum disulfide grease to the sidestand pivot bolt sliding surface and collar outer surface.

Install the sidestand and collar.

Install and tighten the pivot bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

After tightening the pivot bolt, return the pivot bolt 45°.

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

TORQUE: 29 N·m (3.0 kgf·m, 21 lbf·ft)

Install the sidestand and return springs in the direction as shown.

Install the sidestand switch (page 22-27).

MEMO

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SERVICE INFORMATION

GENERAL

- Place the motorcycle on level surface before starting any work.

MAINTENANCE SCHEDULE

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

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

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

	ITEMS	NOTE	FREQUENCY (NOTE 1)						ANNUAL CHECK	REGULAR REPLACE	REFER TO PAGE
			x 1,000 km	1	12	24	36	48			
			x 1,000 mi	0.6	8	16	24	32			
*	FUEL LINE				I	I	I	I	I		3-3
*	THROTTLE OPERATION				I	I	I	I	I		3-3
*	AIR CLEANER	NOTE 2				R		R			3-4
	CRANKCASE BREATHER	NOTE 3			C	C	C	C			3-5
*	SPARK PLUG					I		R			3-5
*	VALVE CLEARANCE					I		I			3-8
	ENGINE OIL			R	R	R	R	R	R		3-11
	ENGINE OIL FILTER			R		R		R	R		3-12
	CLUTCH OIL FILTER	NOTE 6		R		R		R			3-13
*	ENGINE IDLE SPEED				I	I	I	I	I		3-14
	RADIATOR COOLANT	NOTE 5			I	I	I	I	I	3 YEARS	3-14
*	COOLING SYSTEM				I	I	I	I	I		3-15
*	SECONDARY AIR SUPPLY SYSTEM					I		I			3-15
	DRIVE CHAIN	NOTE 4	EVERY 1,000 km (600 mi) I, L								3-16
	DRIVE CHAIN SLIDER	NOTE 4			I	I	I	I			3-19
	BRAKE FLUID	NOTE 5			I	I	I	I	I	2 YEARS	3-19
	BRAKE PADS WEAR				I	I	I	I	I		3-20
	BRAKE SYSTEM				I	I	I	I	I		3-20
	BRAKE LIGHT SWITCH				I	I	I	I	I		3-21
*	BRAKE LOCK OPERATION	NOTE 6			I	I	I	I			3-21
	HEADLIGHT AIM				I	I	I	I	I		3-22
	CLUTCH SYSTEM	NOTE 7			I	I	I	I	I		3-22
	SIDESTAND				I	I	I	I	I		3-23
*	SUSPENSION				I	I	I	I	I		3-23
*	NUTS, BOLTS, FASTENERS	NOTE 4			I	I	I	I	I		3-25
**	WHEELS/TIRES	NOTE 4	EVERY 6,000 km (4,000 mi) I						I		3-26
**	STEERING HEAD BEARINGS				I	I	I	I	I		3-26

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

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

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

NOTES:

1. At higher odometer readings, repeat at the frequency interval established here.
2. Service more frequently when riding in unusually wet or dusty areas.
3. Service more frequently when riding in rain or at full throttle.
4. Service more frequently when riding OFF-ROAD.
5. Replacement requires mechanical skill.
6. CRF1000D only.
7. CRF1000/A only.

FUEL LINE

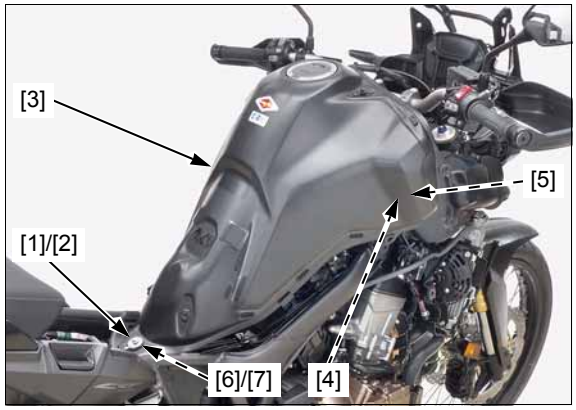
Remove the middle cowl (page 2-6).
Remove the ETC tray (page 2-11).

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

Lift the fuel tank [3] by releasing its grooves [4] from the mounting rubbers [5].

Put the grooves onto the mounting rubbers and install the fuel tank grommet [6] into the frame boss [7].
Temporarily install the bolt and washer.

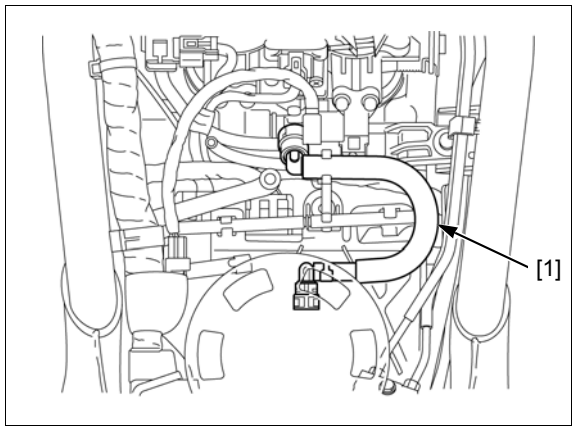
Support the fuel tank using a suitable support.



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

Also check the fuel line fittings for leakage.

Install the removed parts in the reverse order of removal.



THROTTLE OPERATION

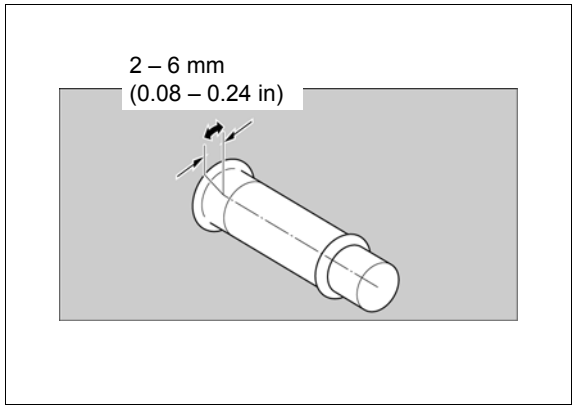
Check the throttle cables for any deterioration or damage.
Check the throttle grip for smooth operation.
Check that the throttle opens and automatically closes in all steering positions.

If the throttle grip does not return properly, lubricate the throttle grip housing.
If the throttle grip still does not return properly, replace the throttle cables.

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 the 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 (0.08 – 0.24 in)



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

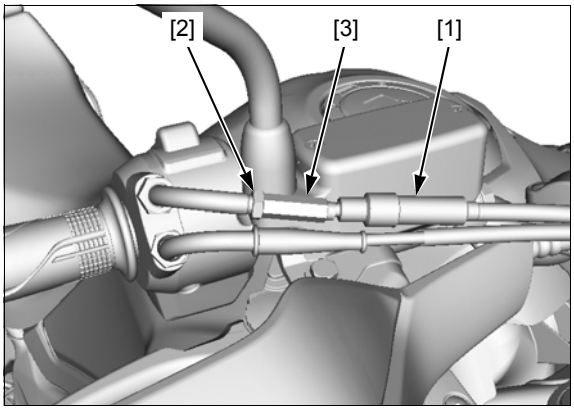
Minor adjustments is made with the upper adjuster.

Release the dust cover [1].
Adjust the freeplay by loosening the lock nut [2] and turning the adjuster [3].
Tighten the lock nut while holding the adjuster to the specified torque.

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

Reposition the dust cover properly on the adjuster.

Recheck the throttle operation.



Major adjustments is made with the lower adjuster on the throttle body.

Lift and support the fuel tank using a suitable support (page 3-3).

Adjust the freeplay by loosening the lock nut [1] and turning the adjuster [2].
After adjustment, tighten the lock nut to the specified torque.

TORQUE: 8.5 N·m (0.9 kgf·m, 6.3 lbf·ft)

Recheck the throttle operation.

Install the fuel tank (page 3-3).



AIR CLEANER

NOTE:

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

Remove the front cover (page 2-7).

Release the tab [1] of the air duct from the inner cover.

Remove the screws [2].

Remove the air cleaner lid [3] while pulling forward from the air cleaner housing.

Remove the air cleaner element mounting screws [4] and air cleaner element [5].

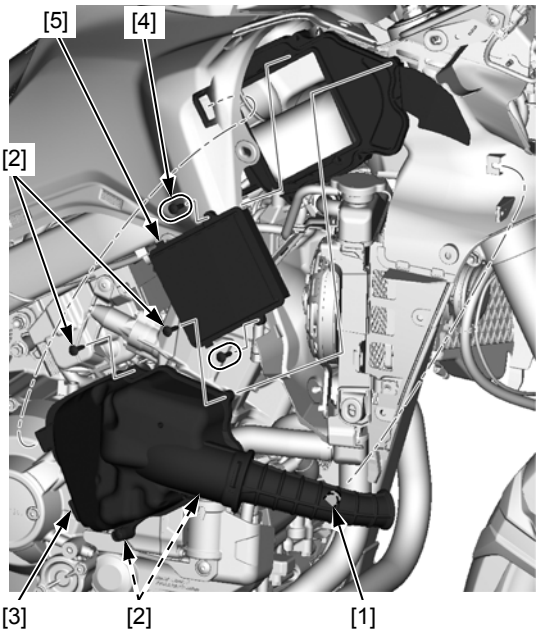
Replace the air cleaner element in accordance with the MAINTENANCE SCHEDULE (page 3-2).

Also replace the air cleaner element any time if it is excessively dirty or damaged.

Install the removed parts in the reverse order of removal.

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

Right side shown:



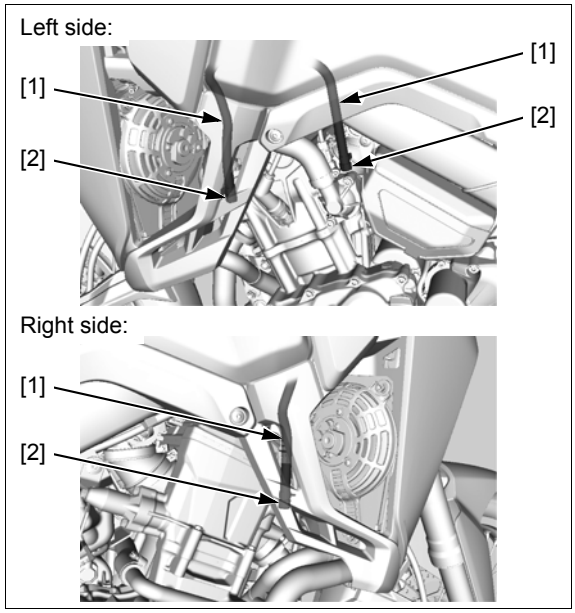
CRANKCASE BREATHER

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

Check the air cleaner housing drain hoses [1].

If necessary, remove the drain plugs [2] from the drain hoses and drain the deposits into a suitable container.

Reinstall the plugs securely.



SPARK PLUG

PULL THE RADIATOR TO OUTSIDE

Remove the inner cover (page 2-8).
Remove the horn (page 22-28).

Remove the bolts [1], washers [2], and wire clamp [3].



Release the connector clip [1] from the radiator shroud.

Release the air cleaner housing drain hose [2] from the clamp [3].



Remove the bolts [1] and washers [2].



Release the siphon hose [1].

Release the connector clip [2] from the radiator shroud.

Release the linear solenoid [3] and main wire harness [4] from the clamp [5].

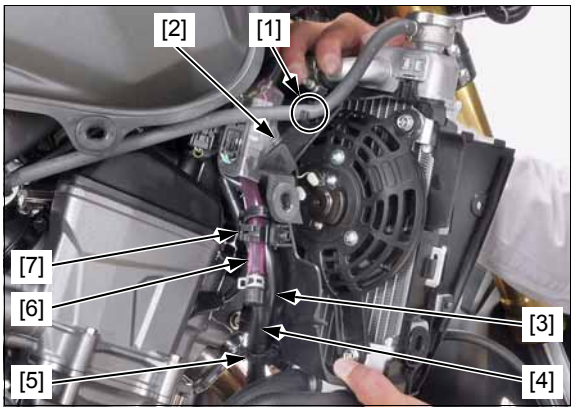
Release the air cleaner housing drain hose [6] from the clamp [7].

Pull the left/right radiator to outside.

Installation is in the reverse order of removal.

NOTE:

- Route the hose and wire properly (page 1-26).



REMOVAL/INSTALLATION

NOTE:

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

Remove the spark plug cap [1].

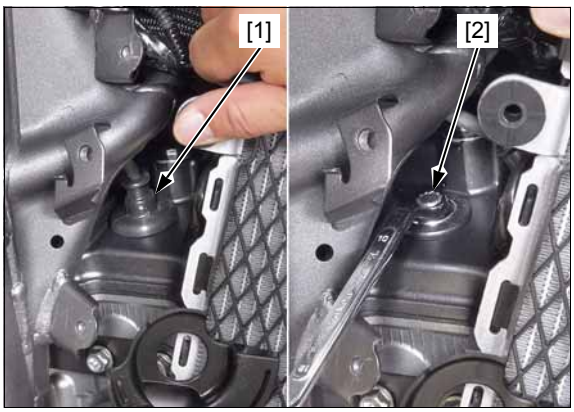
Remove the No.1 cylinder sub plug [2] using the equipped spark plug wrench.



Pull the left radiator to outside (page 3-5).

Remove the spark plug cap [1].

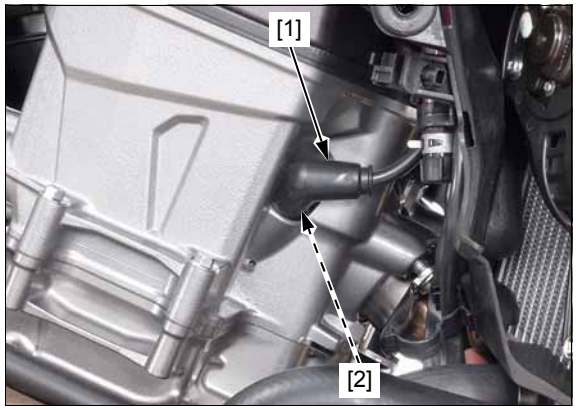
Remove the No.1 cylinder main plug using the equipped spark plug wrench [2].



Pull the right radiator to outside (page 3-5).

Remove the spark plug cap [1].

Remove the No.2 cylinder sub plug [2] using the equipped spark plug wrench.



Remove the spark plug cap [1].

Remove the No.2 cylinder main plug using the equipped spark plug wrench [2].

Inspect or replace the spark plug as described in the MAINTENANCE SCHEDULE (page 3-2).



Replace new spark plugs as set.

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

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Connect the spark plug caps securely.

Install the removed parts in the reverse order of removal.

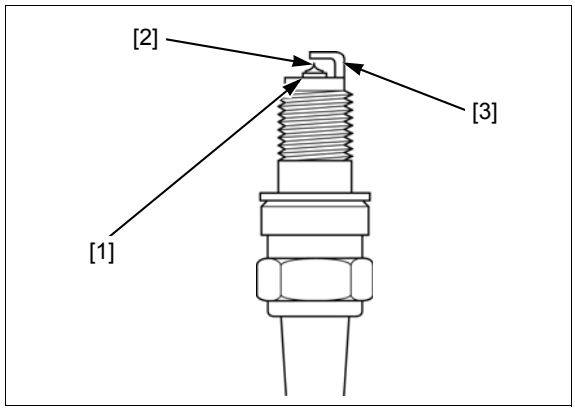
NOTE:

- Route the hose and wire properly (page 1-26).

INSPECTION

Check the following and replace the spark plug if necessary.

- Insulator [1] for damage
- Center electrode [2] and side electrode [3] for wear
- Coloration or burning condition



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

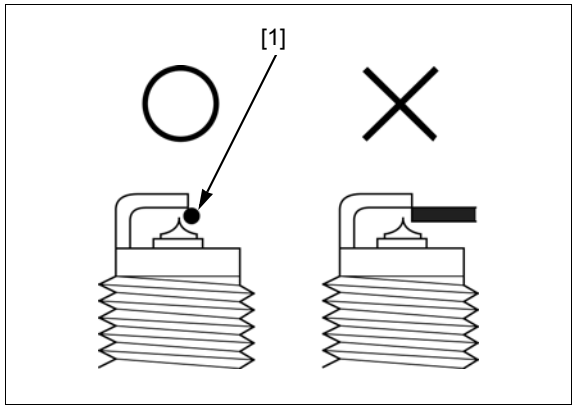
If the electrodes are contaminated with accumulated objects or dirt, replace the spark plug.

SPECIFIED SPARK PLUG: SILMAR8A9S (NGK)

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

Check the 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 can not be inserted between the gap.



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

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

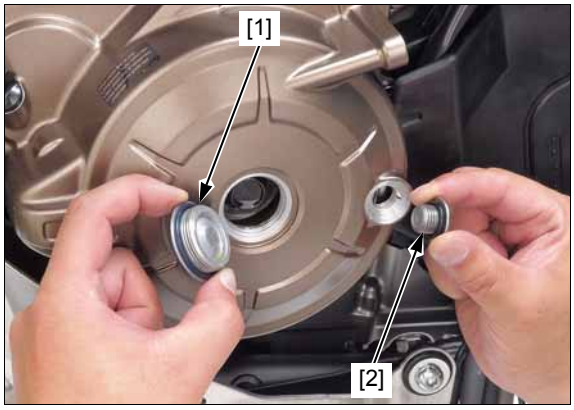
VALVE CLEARANCE

NOTE:

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

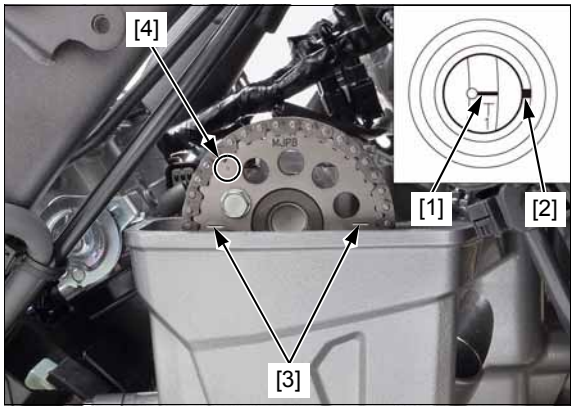
Remove the cylinder head cover (page 10-4).

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



Rotate the crankshaft counterclockwise and align the "T1" mark [1] on the flywheel with the index mark [2] on the alternator cover.

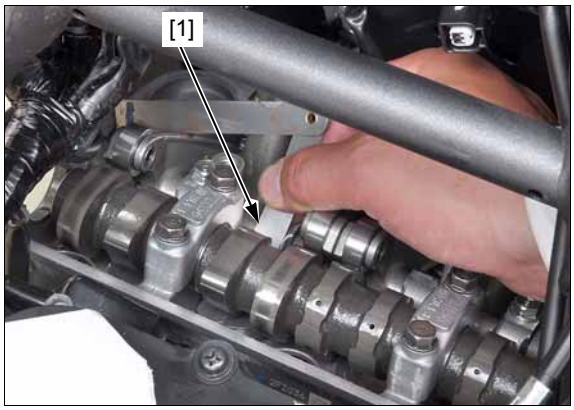
Make sure that the index lines [3] on the cam sprocket align with the upper surface of the cylinder head and the punch mark [4] on the sprocket is visible.



Check the No.1 cylinder intake valve clearances by inserting a feeler gauge [1] between the valve lifter and cam lobe.

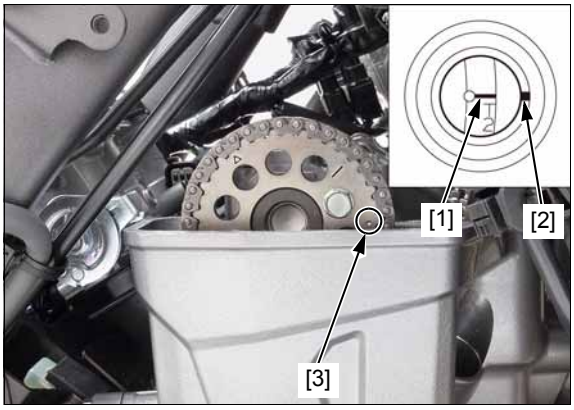
No.1 cylinder intake valve clearance:
0.16 ± 0.03 mm (0.006 ± 0.001 in)

Adjust the valve clearance by changing the valve lifter shim (page 3-10).



Rotate the crankshaft counterclockwise 270° and align the "T2" mark [1] with the index mark [2].

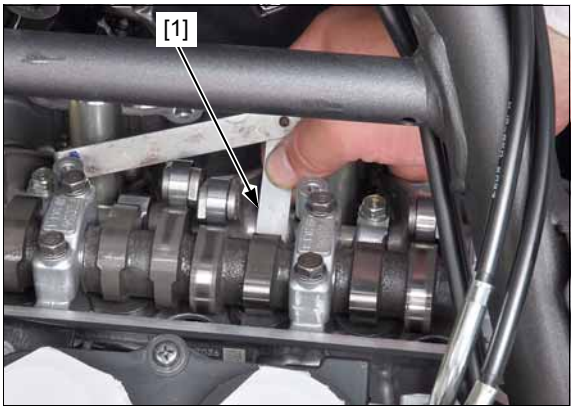
Make sure that the punch mark [3] on the cam sprocket align with the upper surface of the cylinder head as shown.



Check the No.2 cylinder intake valve clearances by inserting a feeler gauge [1] between the valve lifter and cam lobe.

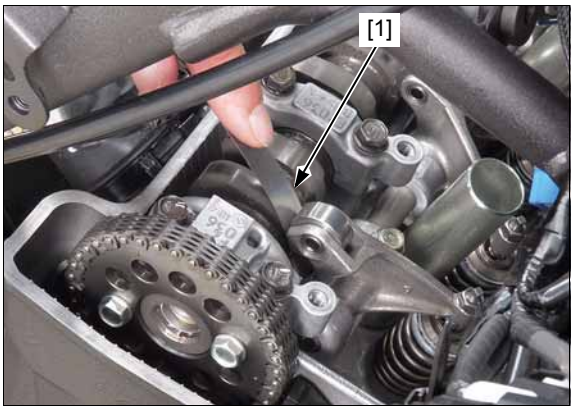
No.2 cylinder intake valve clearance:
0.16 ± 0.03 mm (0.006 ± 0.001 in)

Adjust the valve clearance by changing the valve lifter shim (page 3-10).



Check the No.2 cylinder exhaust valve clearances by inserting a feeler gauge [1] between the rocker arm roller and cam lobe.

No.2 cylinder exhaust valve clearance:
0.23 ± 0.02 mm (0.009 ± 0.001 in)



Adjust the No.2 cylinder exhaust valve clearance by loosening the lock nut [1] and turning the adjusting screw [2] until there is a slight drag on the feeler gauge [3].

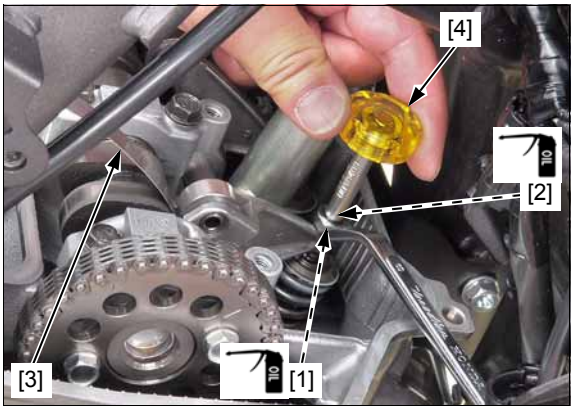
TOOL:
Valve adjusting wrench [4] 07708-0030400

Apply engine oil to the adjusting screw and lock nut threads and seating surface.

Hold the adjusting screw and tighten the lock nut.

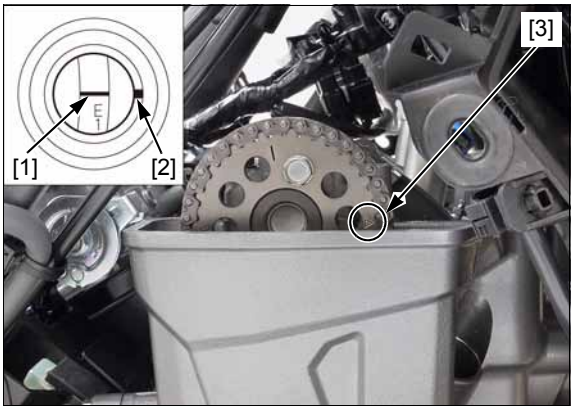
TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

After tightening the lock nut, recheck the valve clearance.



Rotate the crankshaft counterclockwise 252.5° and align the "E1" mark [1] with the index mark [2].

Make sure that the "△" mark [3] on the cam sprocket align with the upper surface of the cylinder head as shown.



Check the No.1 cylinder exhaust valve clearances by inserting a feeler gauge [1] between the locker arm roller and cam lobe.

No.1 cylinder exhaust valve clearance:
0.23 ± 0.02 mm (0.009 ± 0.001 in)



Adjust the No.1 cylinder exhaust valve clearance by loosening the lock nut [1] and turning the adjusting screw [2] until there is a slight drag on the feeler gauge [3].

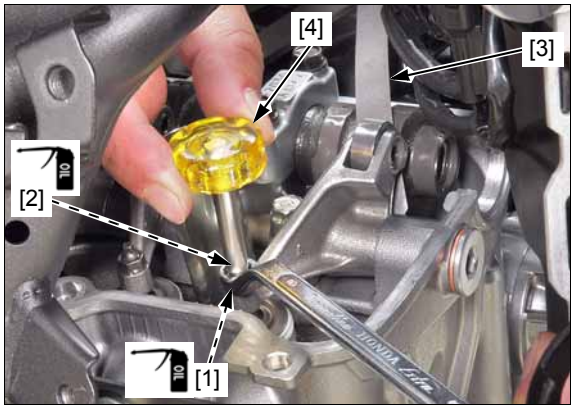
TOOL:
Valve adjusting wrench [4] 07708-0030400

Apply engine oil to the adjusting screw and lock nut threads and seating surface.

Hold the adjusting screw and tighten the lock nut.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

After tightening the lock nut, recheck the valve clearance.



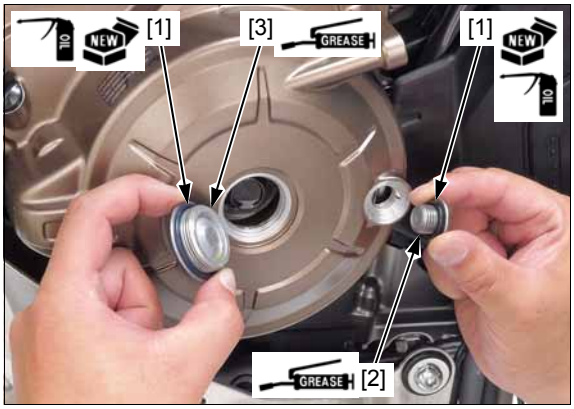
Coat new O-rings [1] with engine oil and install them into the timing hole cap [2] and crankshaft hole cap [3].

Apply grease to the threads of the timing hole and crankshaft hole caps.

Install the timing hole and crankshaft hole caps, and tighten them.

TORQUE:
Timing hole cap: 6 N·m (0.6 kgf·m, 4.4 lbf·ft)
Crankshaft hole cap: 8 N·m (0.8 kgf·m, 5.9 lbf·ft)

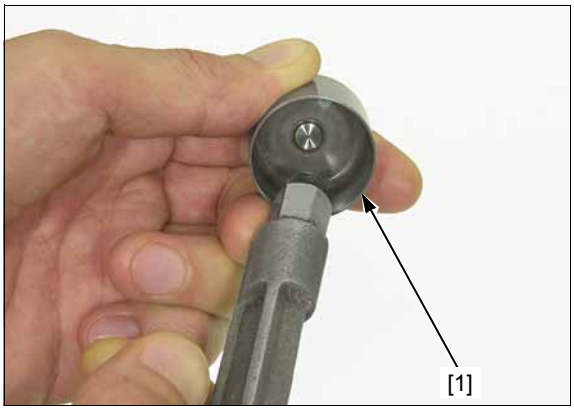
Install the cylinder head cover (page 10-5).



INTAKE VALVE CLEARANCE ADJUSTMENT

Remove the valve lifter [1] and shim (page 10-9).

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



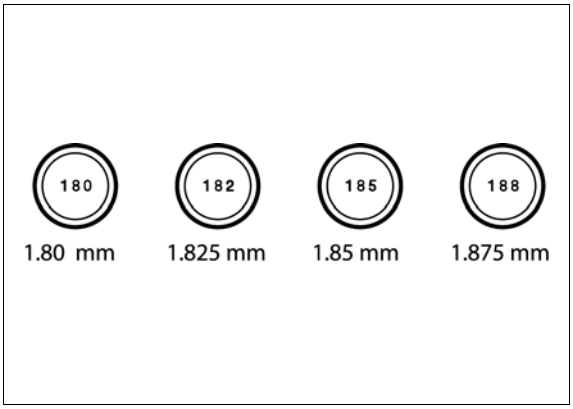
Measure the shim [1] thickness and record it.



NOTE:

- Fifty-one different shim thicknesses are available in increments of 0.025 mm (from 1.200 mm to 2.450 mm).

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 with the micrometer.
- Reface the valve seat if carbon deposits result in a calculated dimension of over 2.450 mm.

Install newly selected shims on the valve retainers.

Install the valve lifter and camshaft (page 10-11).

Rotating the crankshaft counterclockwise several times and recheck the valve clearances.

ENGINE OIL

OIL LEVEL INSPECTION

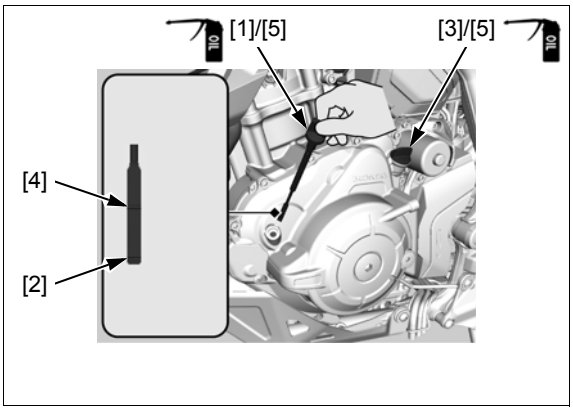
Place the motorcycle on its sidestand.
Start the engine and let it idle for 3 – 5 minutes.
Stop the engine and wait 2 – 3 minutes.

Remove the dipstick [1] and wipe it clean.

Place the motorcycle on a level surface, and support it in an upright position.

Insert the dipstick until it seats, but do not screw it in.
Check that the oil level is between the upper and lower level lines on the dipstick.

If the level is below the lower level line [2], remove the oil filler cap [3] and fill the crankcase with the recommended oil up to the upper level line [4] (page 3-12).



RECOMMENDED ENGINE OIL:

Honda "4-stroke motorcycle oil" or an equivalent motor oil.
API service classification: SG or higher
JASO T903 standard: MA
Viscosity: SAE 10W-30

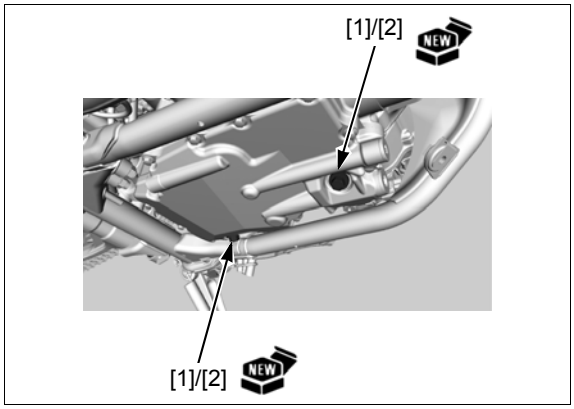
Check that the O-rings [5] of the oil filler cap and dipstick are in good condition, replace them if necessary.

Apply engine oil to the O-rings.
Install the oil filler cap and dipstick.

ENGINE OIL CHANGE

CRF1000A/D: Remove the skid plate (page 2-10).

Warm up the engine.
Stop the engine and remove the oil filler cap and dipstick.
Place an oil pan under the engine to catch the engine oil, then remove the engine oil drain bolts [1] and sealing washers [2].
Drain the engine oil completely.



NOTE:

Be sure to drain the engine oil from both drain holes.

Clean the drain bolts and install new sealing washers onto the drain bolts.
Install and tighten the drain bolts to the specified torque.

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)

Fill the engine with the recommended engine oil (page 3-11).

ENGINE OIL CAPACITY:
CRF1000/A:
3.9 liter (4.1 US qt, 3.4 Imp qt) at draining
4.1 liter (4.3 US qt, 3.6 Imp qt) at oil filter change
4.9 liter (5.2 US qt, 4.3 Imp qt) at disassembly
CRF1000D:
4.0 liter (4.2 US qt, 3.5 Imp qt) at draining
4.2 liter (4.4 US qt, 3.7 Imp qt) at oil filter change
5.2 liter (5.5 US qt, 4.6 Imp qt) at disassembly

Check the engine oil level (page 3-11).
Make sure that there are no oil leaks.

CRF1000A/D: Install the skid plate (page 2-10).

ENGINE OIL FILTER

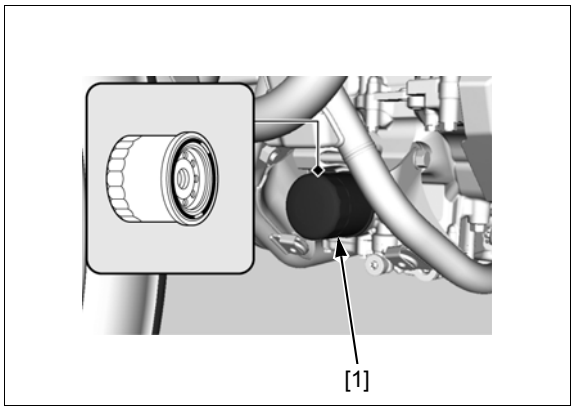
NOTE:

- Replace the clutch oil filter when the engine oil filter is replaced.

Drain the engine oil (page 3-12).

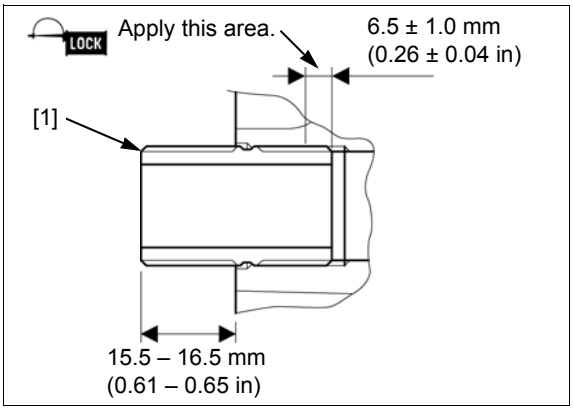
Remove and discard the oil filter cartridge [1] using the special tool.

TOOL:
Oil filter wrench **07HAA-PJ70101**



Check the oil filter boss [1] protrusion from the crankcase is within the specified length as shown.

SPECIFIED LENGTH: 15.5 – 16.5 mm (0.61 – 0.65 in)



NOTE:

- If the oil filter boss is removed, apply locking agent to the oil filter boss threads as shown and install it.

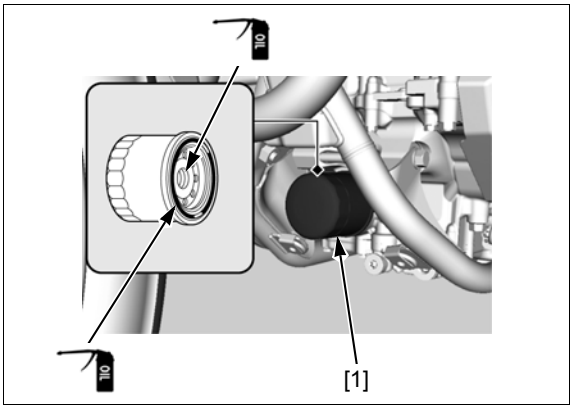
Clean the oil filter attaching surface of the crankcase.

Apply engine oil to new oil filter cartridge threads and O-ring.

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

TOOL:
Oil filter wrench 07HAA-PJ70101

TORQUE: 26 N·m (2.7 kgf·m, 19 lbf·ft)



Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-12).

CLUTCH OIL FILTER (CRF1000D)

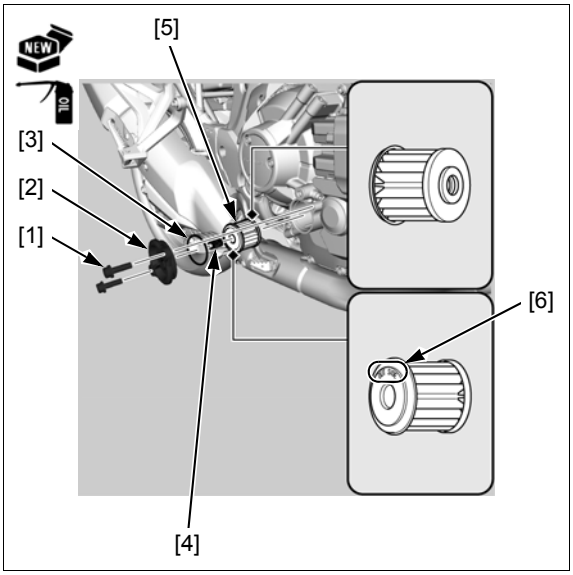
NOTE:

- Replace the engine oil filter when the clutch oil filter is replaced.

Drain the engine oil (page 3-12).

Remove the following:

– Bolts [1]
– Clutch oil filter cover [2]
– O-ring [3]
– Spring [4]
– Clutch oil filter [5]



Install a new clutch oil filter with the "OUT SIDE" mark [6] facing outside.

NOTE:

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

Apply engine oil to a new O-ring and install it to the oil filter cover.
Install the spring and oil filter cover.
Tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Fill the crankcase with the recommended engine oil check that there are no oil leaks (page 3-12).

ENGINE IDLE SPEED

IDLE SPEED INSPECTION

- Inspect the idle speed after all other engine maintenance items have been performed and are within specifications.
- Before inspecting the idle speed, check that the following items:
  – No DTC and MIL blinking
  – Spark plug condition (page 3-7)
  – Air cleaner element condition (page 3-4)
  – Throttle operation and throttle grip freeplay (page 3-3)
- The engine must be warm for accurate idle speed inspection.
- This system eliminates the need for manual idle speed adjustment compared to previous designs.

Start the engine and warm it up until the coolant temperature rises to 80°C (176°F).
Stop the engine and connect a tachometer according to the tachometer manufacturer's operating instructions.
Start the engine and let it idle. Check the idle speed.

ENGINE IDLE SPEED: 1,200 ± 100 min^{-1} (rpm)

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

– Intake air leak or engine top-end problem (page 10-2)
– IACV operation (page 7-16)

RADIATOR COOLANT

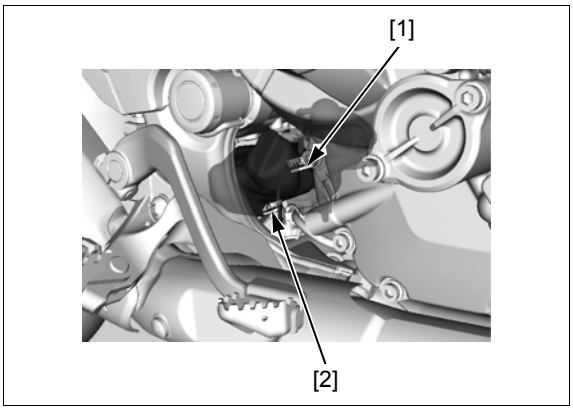
Check the coolant level of the reserve tank with the engine running at normal operating temperature.

The level should be between the "UPPER" [1] and "LOWER" [2] level lines.

If necessary, add the recommended coolant.

RECOMMENDED ANTIFREEZE:
High quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors

RECOMMENDED MIXTURE:
1:1 mixture with distilled water

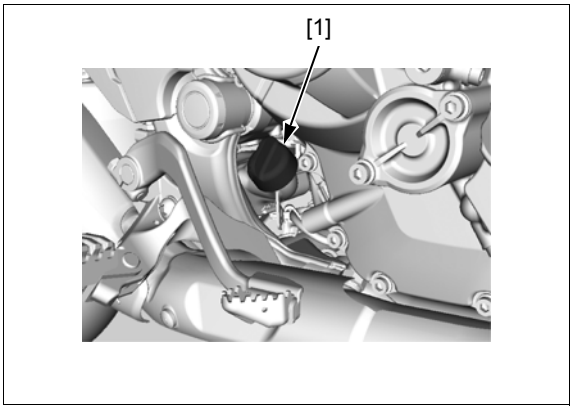


Remove the reserve tank cap [1] and add the coolant to the "UPPER" level line.

Reinstall the cap.

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 8-4).



COOLING SYSTEM

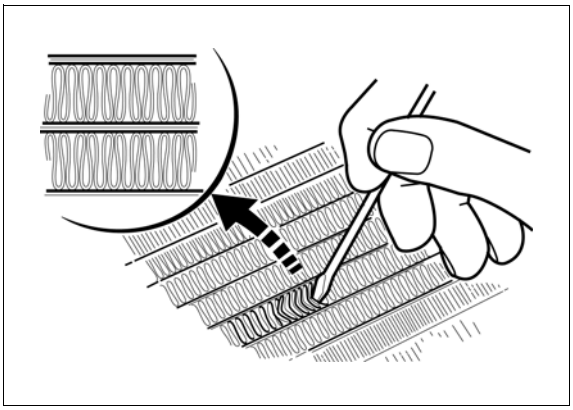
Check the radiator air passages for clogging or damage.

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 8-8).



SECONDARY AIR SUPPLY SYSTEM

- This model is equipped built-in secondary air supply system. The pulse secondary air supply system is located on the cylinder head cover [1].
- The secondary air supply system introduces filtered air into the 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.

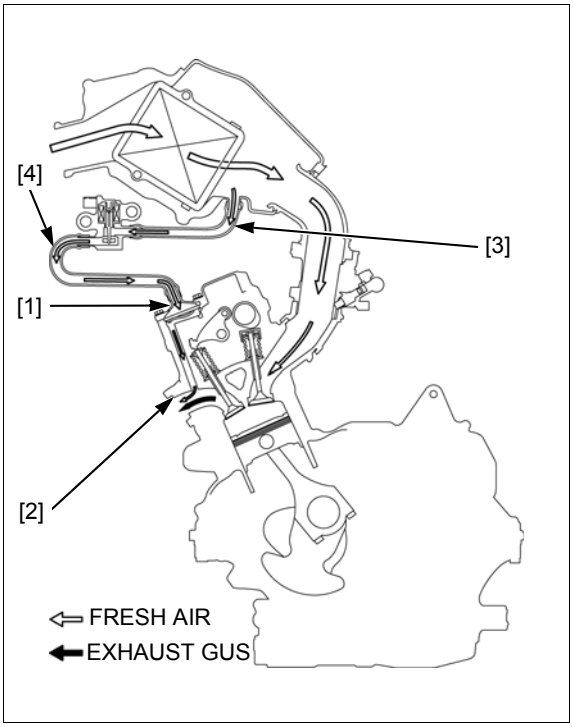
Remove the air cleaner housing (page 7-11).

Check the PAIR hoses for deterioration, damage or loose connections.
Also, check that the hoses are not kinked, pinched or cracked.

– Air suction hose [3] (between the air cleaner housing and PAIR control solenoid valve)
– Air supply hose [4] (between the PAIR control solenoid valve and cylinder head cover)

If the air suction/supply hose show any signs of heat damage, inspect the PAIR reed valves (page 7-21).

For secondary air supply system inspection (page 7-18).



DRIVE CHAIN

⚠WARNING

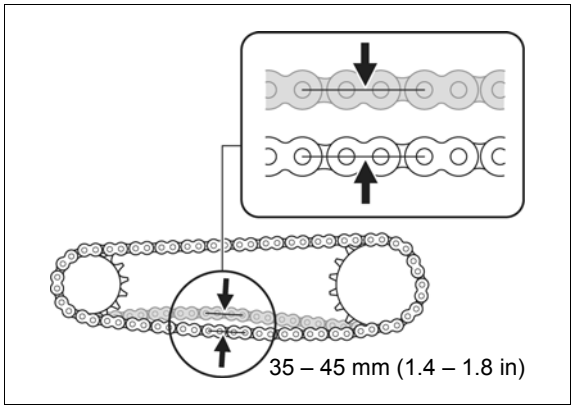
Amputation hazard. Never inspect or adjust the drive chain while the engine is running.

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: 35 – 45 mm (1.4 – 1.8 in)



NOTICE

- *Excessive chain slack, 60 mm (2.4 in) or more, may damage the frame.*

ADJUSTMENT

Loosen the rear axle nut [1].
Loosen the lock nuts [2] and turn the adjusting bolts [3] an equal number of turn until the correct drive chain slack is obtained.

Make sure that the rear end of the adjusting plates [4] are aligned with the same number of the index lines [5] from the rear end of the swingarm.

Tighten the axle nut to the specified torque.

TORQUE: 100 N·m (10.2 kgf·m, 74 lbf·ft)

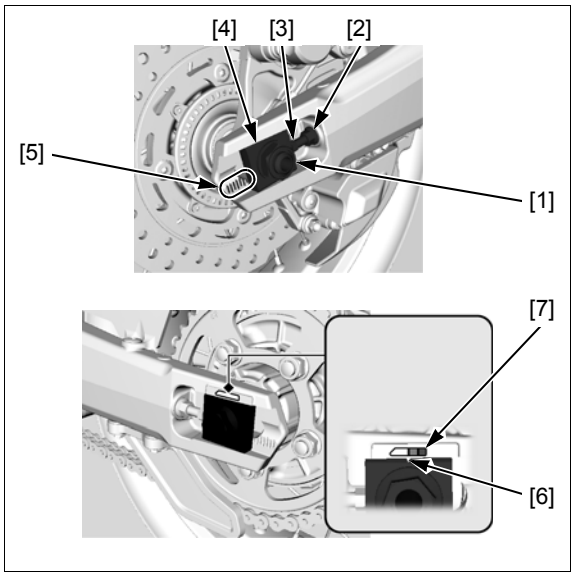
Hold the adjusting bolts and tighten the lock nuts to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)

Recheck the drive chain slack and free wheel rotation.

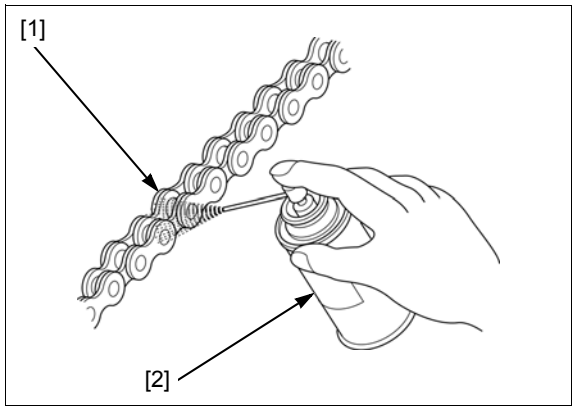
Check the drive chain wear indicator label attached on the left swingarm.

If the indicator groove [6] of the drive chain adjusting plate reaches red zone [7] of the indicator label, replace the drive chain with a new one (page 3-18).



CLEANING AND LUBRICATION

Clean the drive chain [1] with a chain cleaner designed specifically for O-ring chains. 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 drive chain lubricant [2].

RECOMMENDED LUBRICANT:

Dive chain lubricant designed specifically for O-ring chains or SAE #80-90 gear oil

NOTICE

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

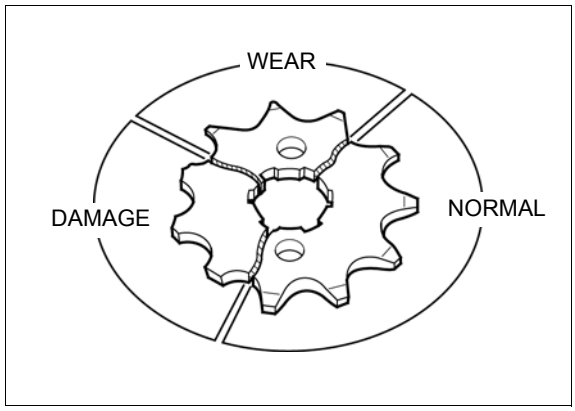
Wipe off the excess oil or drive chain lubricant.

SPROCKET INSPECTION

Remove the left rear cover (page 2-10).

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

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



Check the drive sprocket bolt [1] and driven sprocket nuts [2] on the drive and driven sprockets.
If any are loose, torque them.



TORQUE:

Drive sprocket bolt:
54 N·m (5.5 kgf·m, 40 lbf·ft)
Driven sprocket nut:
100 N·m (10.2 kgf·m, 74 lbf·ft)

Install the left rear cover (page 2-10).

REPLACEMENT

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

Fully slacken the drive chain (page 3-16).

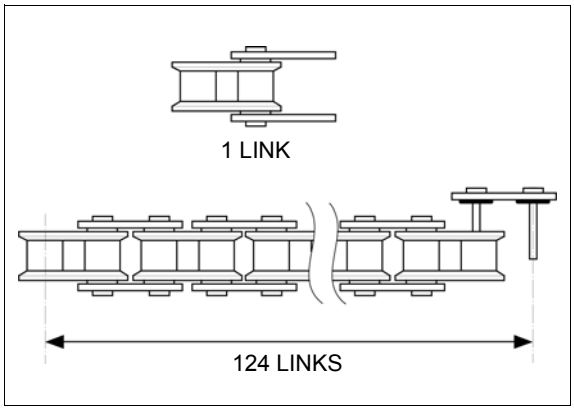
Remove the drive chain using the special tool.

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

TOOL:
Drive chain tool set 07HMH-MR10103

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

STANDARD LINKS: 124 LINKS



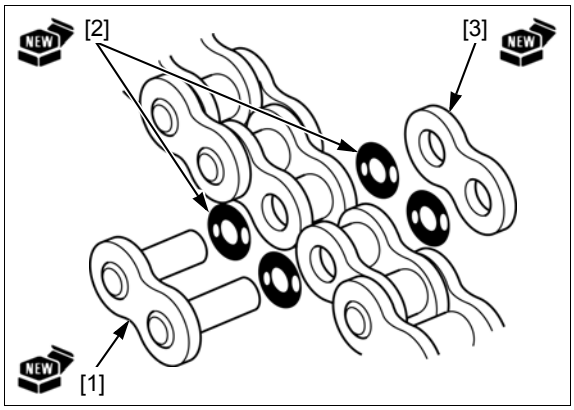
REPLACEMENT CHAIN
DID: DID525HV3-130ZB

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

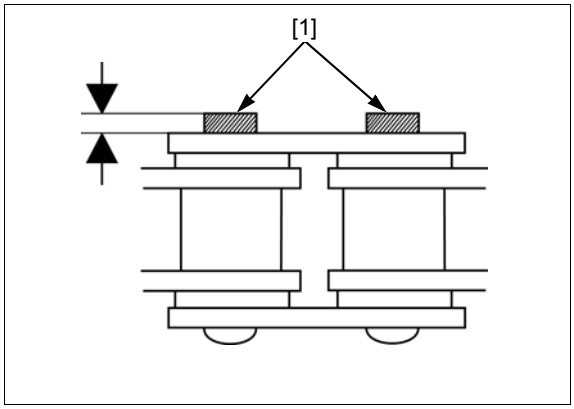
TOOL:
Drive chain tool set 07HMH-MR10103



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

STANDARD LENGTH: 1.3 – 1.5 mm (0.05 – 0.06 in)

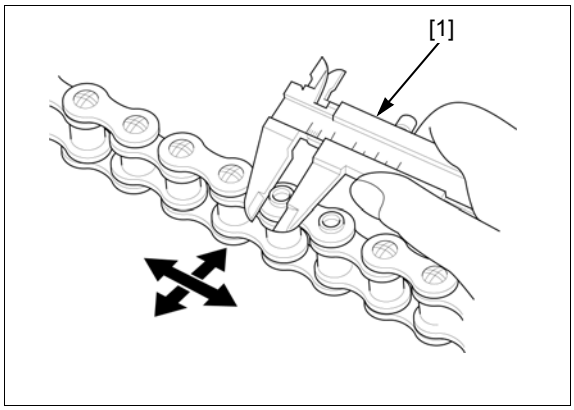
Stake the master link pins.



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

DIAMETER OF THE STAKED AREA:
5.50 – 5.80 mm (0.217 – 0.228 in)

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

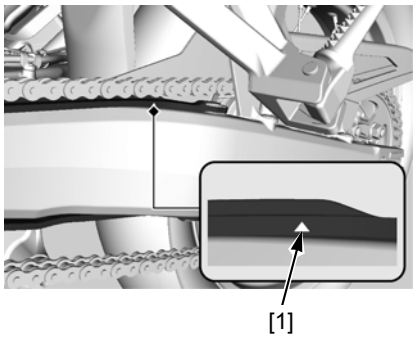


DRIVE CHAIN SLIDER

Check the drive chain slider for wear or damage.

The drive chain slider must be replaced if it is worn to the wear limit indicator [1].

Refer to the swingarm DISASSEMBLY/ASSEMBLY for drive chain slider replacing (page 18-14).



BRAKE FLUID

NOTICE

- *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.*
- *Avoid spilling fluid on painted, plastic or rubber parts. Place a shop towel over these parts whenever the system is serviced.*

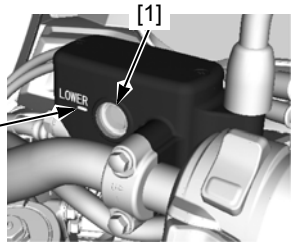
When the fluid level is low, check the brake pads for wear (page 3-20).

A low fluid level may be due to wear of the brake pads. If the brake pads are worn, the caliper piston is pushed out, and this accounts for a low reservoir level. If the brake pads are not worn and the fluid level is low, check entire system for leaks (page 3-20).

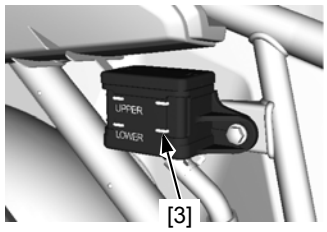
FRONT BRAKE:
Turn the handlebar so that the reservoir is level and check the front brake fluid reservoir level through the sight glass [1].
If the level is near the lower level line [2], check the brake pad wear (page 3-20).

REAR BRAKE:
Place the motorcycle on a level surface, and support it in an upright position.
Check the rear brake fluid reservoir level.
If the level is near the lower level line [3], check the brake pad wear (page 3-20).

Front:



Rear:

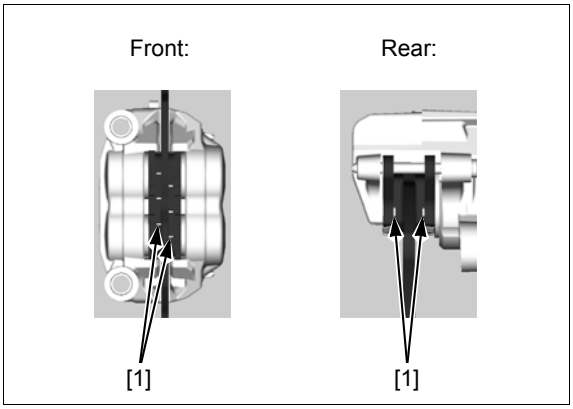


BRAKE PADS WEAR

INSPECTION

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

Refer to front brake pad replacement (page 19-8).
Refer to rear brake pad replacement (page 19-9).

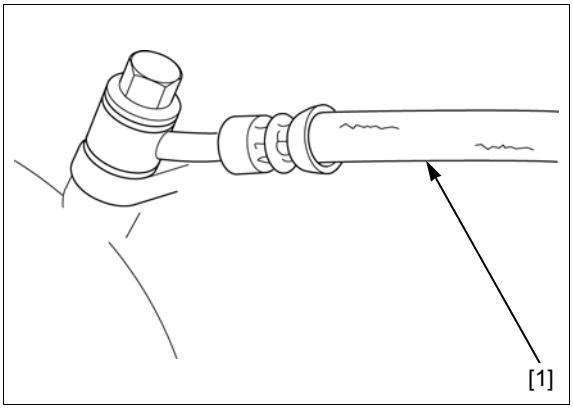


BRAKE SYSTEM

HYDRAULIC SYSTEM INSPECTION

Firmly apply the brake lever or pedal, and check that no air has entered the system.
If the lever or pedal feels soft or spongy when operated, bleed the air from the system (page 19-7).

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

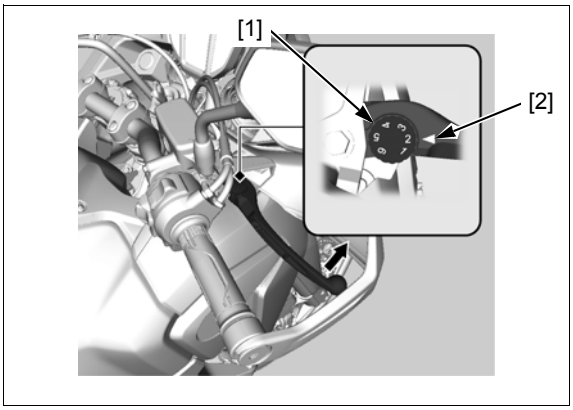


BRAKE LEVER ADJUSTMENT

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

NOTE:

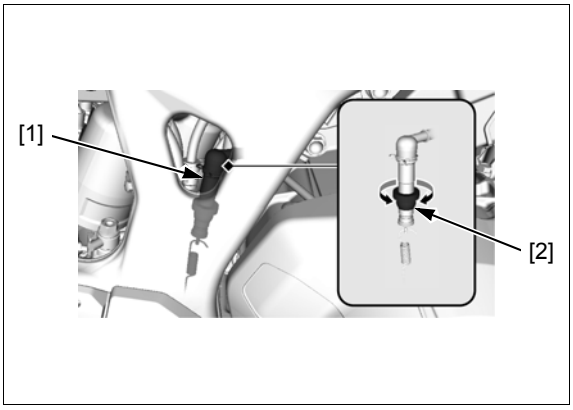
- Align the "△" mark [2] on the brake lever with the index number on the adjuster.



BRAKE LIGHT SWITCH

The front brake light switch does not require adjustment.

Adjust the brake light switch [1] so that the brake light comes on just prior to the brake actually being engaged.
If the light fails to come on, adjust the switch so that the light comes on at the proper time.
Hold the switch body and turn the adjuster [2]. Do not turn the switch body.

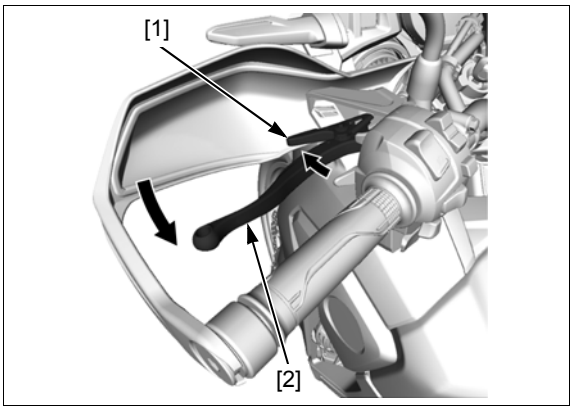


BRAKE LOCK OPERATION (CRF1000D)

INSPECTION

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

Unlock the parking brake lock lever [1] by pushing it forward, then apply the parking brake lever [2]. Check that the parking brake locked operation is properly.



ADJUSTMENT

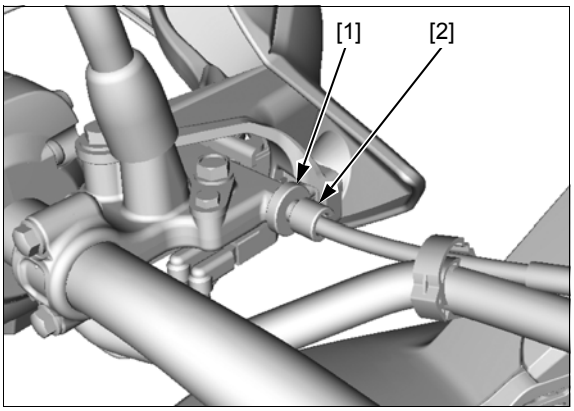
Minor adjustment is made with the upper adjuster at the parking brake lever.
Support the motorcycle using a safety stand or hoist and raise the rear wheel off the ground.
Set the parking brake lever in one notch.

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

Loosen the lock nut [1] and turn the adjuster [2] until there is a slight drag while turning the rear wheel slowly.

Tighten the lock nut while holding the adjuster.

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



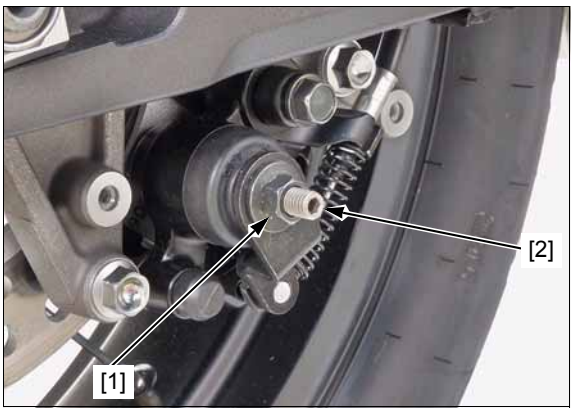
Remove the parking brake caliper cover (page 19-10).
Set the parking brake lever in one notch.

Loosen the lock nut [1].
Turn the rear wheel slowly by hand and turn the push rod [2] until there is a slight drag.
Hold the adjusting bolt and tighten the nut to the specified torque.

TORQUE: 17.2 N·m (1.8 kgf·m, 13 lbf·ft)

Recheck the parking brake operation.

Install the parking brake caliper cover (page 19-12).

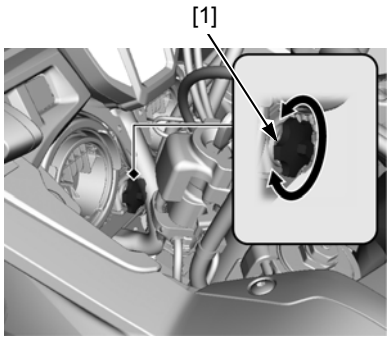


HEADLIGHT AIM

Place the motorcycle on a level surface.

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

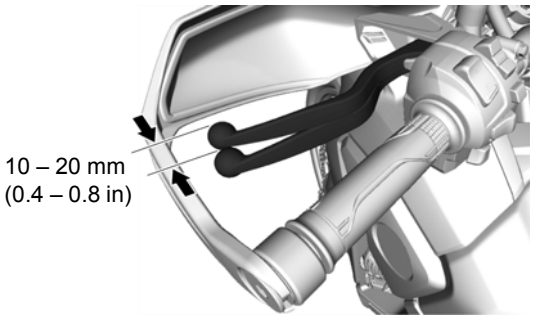
Adjust the headlight beams vertically by turning the vertical beam adjuster [1].



CLUTCH SYSTEM (CRF1000/A)

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

FREEPLAY:10 – 20 mm (0.4 – 0.8 in)



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

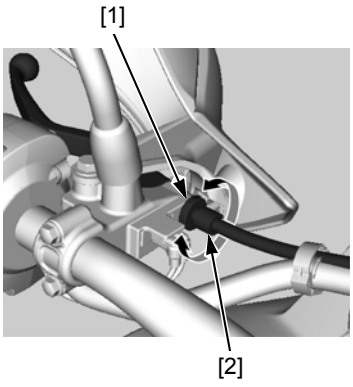
Minor adjustment is made with the upper adjuster at the clutch lever.

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.

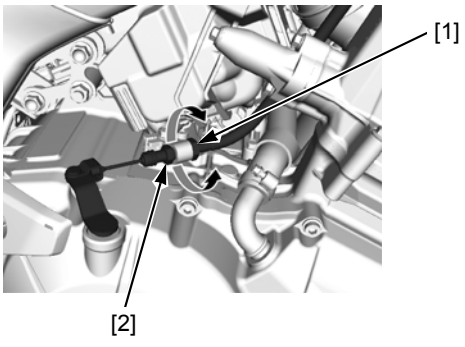
Recheck the clutch lever freeplay.



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

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, inspect the clutch (page 12-8).



SIDESTAND

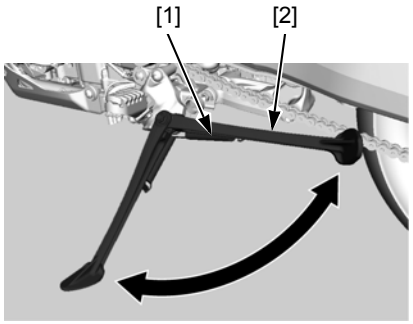
Check the sidestand spring [1] for damage or loss of tension.

Check the sidestand [2] for 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, 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 22-27).



SUSPENSION

FRONT SUSPENSION INSPECTION

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

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

Replace the damaged components which cannot be repaired.

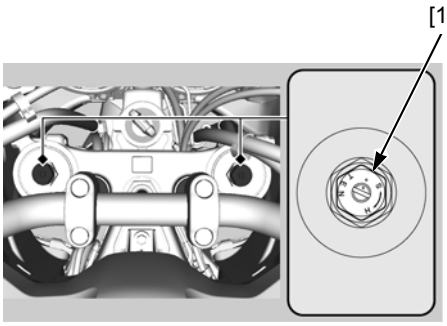
Tighten all nuts and bolts.
Refer to the fork service (page 17-14).

FRONT SUSPENSION ADJUSTMENT

SPRING PRE-LOAD ADJUSTER

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

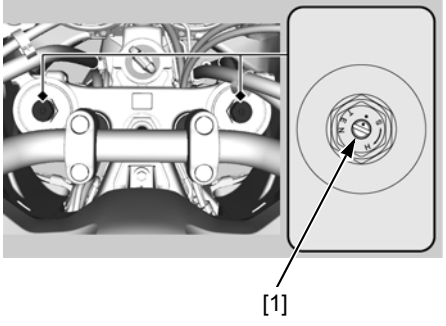
TURN CLOCKWISE:
Increases the spring pre-load
TURN COUNTERCLOCKWISE:
Decreases the spring pre-load
PRE-LOAD ADJUSTER ADJUSTABLE RANGE:
15 turns
PRE-LOAD ADJUSTER STANDARD POSITION (from the full soft position):
CRF1000/A: 5 turns
CRF1000D: 8.5 turns



REBOUND DAMPING ADJUSTER

Turn the rebound adjuster [1] clockwise until it stops (maximum position), then turn the adjuster counterclockwise.

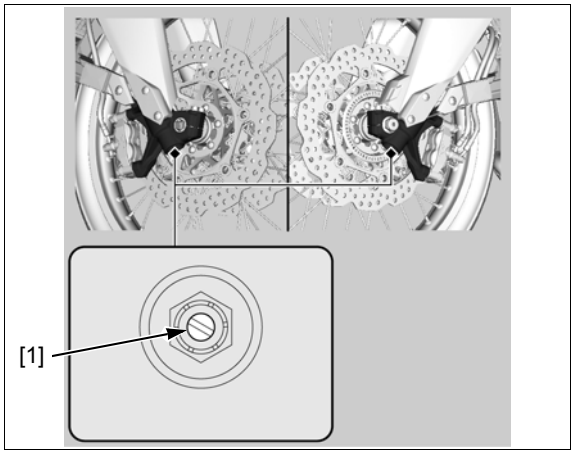
REBOUND ADJUSTER ADJUSTABLE RANGE:
3 – 4 turns
REBOUND ADJUSTER STANDARD POSITION (from maximum position):
2 1/4 turns



COMPRESSION DAMPING ADJUSTER

Turn the compression adjuster [1] clockwise until it stops (maximum position), then turn the adjuster counterclockwise.

COMPRESSION ADJUSTER ADJUSTABLE RANGE:
12 clicks or more
COMPRESSION ADJUSTER STANDARD POSITION (from maximum position):
8 clicks



REAR SUSPENSION INSPECTION

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

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

Replace damaged components which can not be repaired.

Tighten all nuts and bolts.

Refer to shock absorber service (page 18-8).

Support the motorcycle securely and raise the rear wheel off the ground.
Check for worn swingarm bearings by grabbing the rear wheel and attempting to move the wheel side to side.
Replace the bearings if looseness is felt.

Refer to swingarm service (page 18-12)

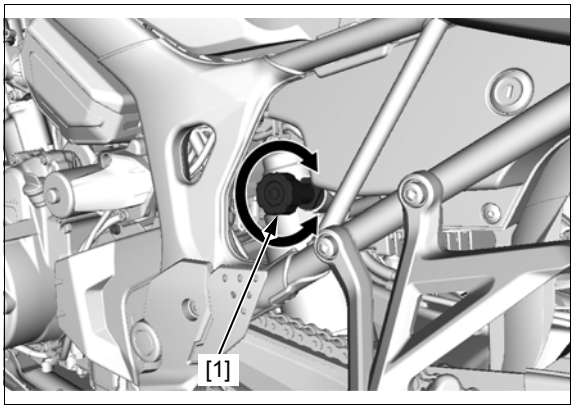
REAR SUSPENSION ADJUSTMENT

SPRING PRE-LOAD ADJUSTER

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

TURN CLOCKWISE:
Increases the spring pre-load
TURN COUNTERCLOCKWISE:
Decreases the spring pre-load

PRE-LOAD ADJUSTER STANDARD POSITION (from minimum position):
7 clicks (first click is "0" position)



REBOUND DAMPING ADJUSTER

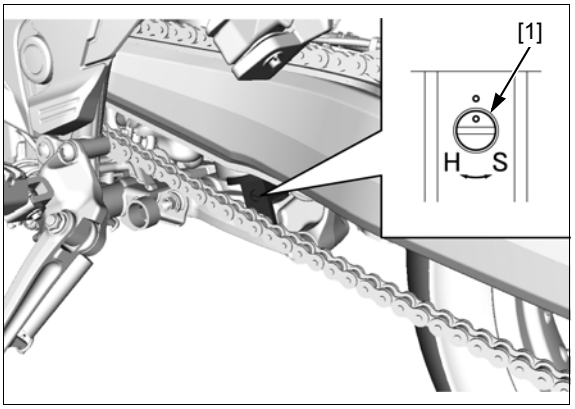
NOTICE

- *Always start on fully hard when adjusting the damping.*
- *Do not turn the adjuster screws more than the given positions or the adjusters may be damaged.*

The rebound damping can be adjusted by turning the adjuster [1].

Turn the rebound adjuster clockwise until it stops (maximum position), then turn the adjuster counterclockwise.

REBOUND ADJUSTER STANDARD POSITION (from maximum position):
11 clicks



COMPRESSION DAMPING ADJUSTER

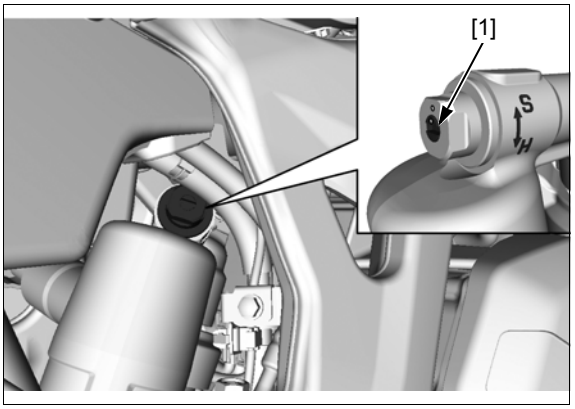
NOTICE

- *Always start on fully hard when adjusting the damping.*
- *Do not turn the adjuster screws more than the given positions or the adjusters may be damaged.*

The rebound damping can be adjusted by turning the adjuster [1].

Turn the compression adjuster clockwise until it stops (maximum position), then turn the adjuster counterclockwise.

REBOUND ADJUSTER STANDARD POSITION (from maximum position):
14 clicks



NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to their correct torque values (page 1-12).
Check that all safety clips, hose clamps and cable stays are in place and properly secured.

WHEELS/TIRES

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

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

For front wheel service (page 17-10).

Support the motorcycle securely and 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 bearing are worn.

For rear wheel service (page 18-4).

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

– Front tire (page 1-10)
– Rear tire (page 1-10)

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

Check the front and rear wheel for trueness.

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

– Front tire (page 1-10)
– Rear tire (page 1-10)

Inspect the wheel rims and spokes for damage.

Remove the rear wheel (page 18-4).
Tighten any loose spokes to the specified torque.

TORQUE:
FRONT: 3.7 N·m (0.4 kgf·m, 2.7 lbf·ft)
REAR: 3.7 N·m (0.4 kgf·m, 2.7 lbf·ft)

STEERING HEAD BEARINGS

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

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

If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering head bearings (page 17-22).

SERVICE INFORMATION ····· 4-2

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SYSTEM DIAGRAM ····· 4-3

PGM-FI TROUBLESHOOTING INFORMATION ····· 4-5

PGM-FI SYMPTOM TROUBLESHOOTING ····· 4-8

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ECT SENSOR ····· 4-41

IAT SENSOR ····· 4-41

VS SENSOR ····· 4-42

O_2 SENSOR ····· 4-42

BANK ANGLE SENSOR ····· 4-42

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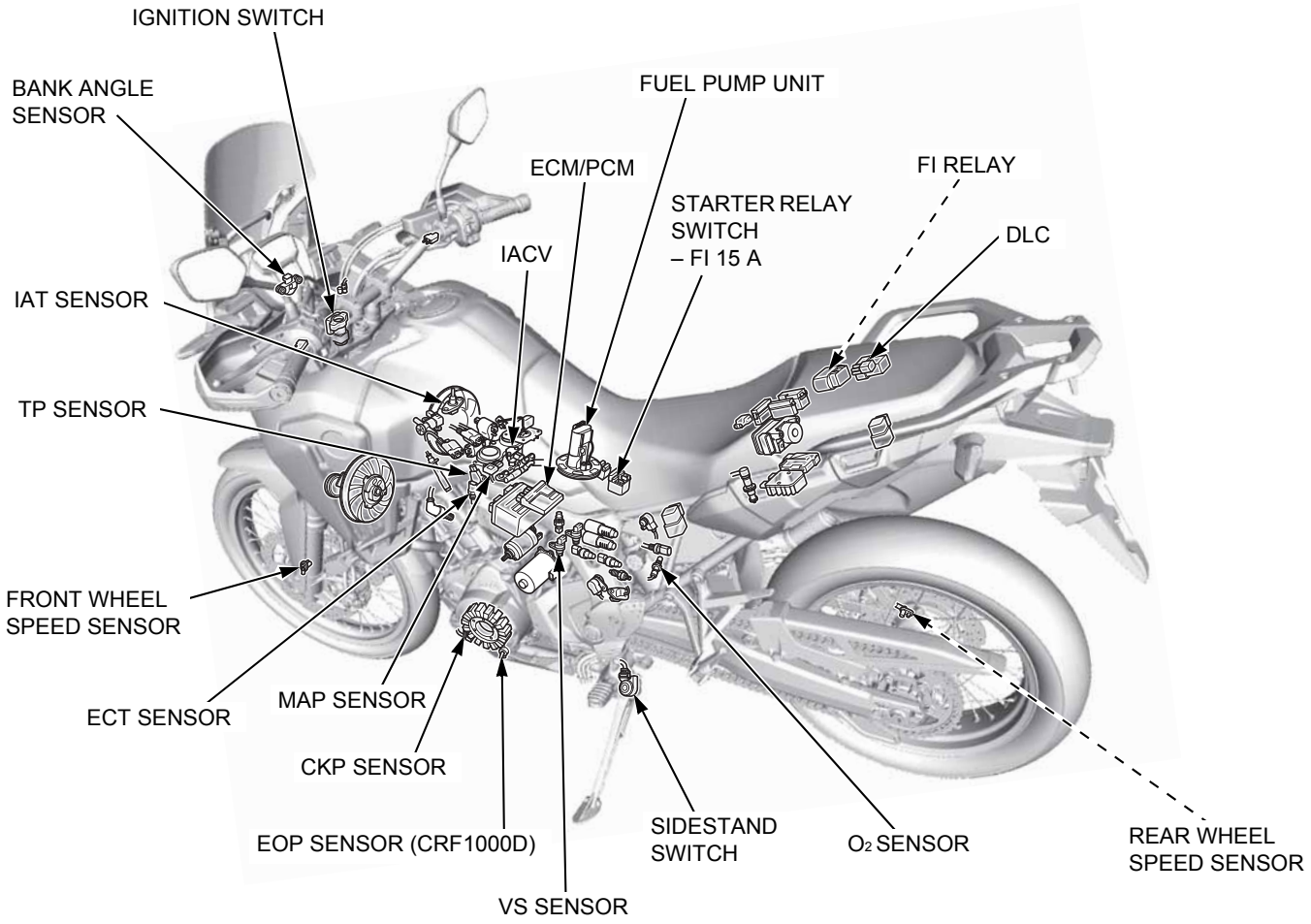
SERVICE INFORMATION

GENERAL

- This section covers electrical system service of the PGM-FI system. For other service and fuel supply system, see Fuel System section (page 7-2)
- A faulty PGM-FI system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- The PGM-FI system is equipped with the Self-Diagnostic System (page 4-5). If the MIL blinks, follow the Self-Diagnostic Procedures to remedy the problem.
- When checking the PGM-FI, always follow the steps in the troubleshooting flow chart.
- If the ECM/PCM is replaced, perform the following procedure.
  – Key Registration Procedure (page 23-3)
  – Clutch Initialize Learning Procedure (CRF1000D) (page 13-82)
- The PGM-FI system is provided with fail-safe function to secure a minimum running capability even when there is any trouble in the system. When any abnormality is detected by the self-diagnosis function, running capability is secured by making use of the numerical values of a situation preset in the simulated program map.
  It must be remembered, however, that when any abnormality is detected in an injector, the fail-safe function stops the engine to protect it from damage.
- For PGM-FI system location (page 4-2).
- Use a digital tester for PGM-FI system inspection.
- The following color codes are used throughout this section.

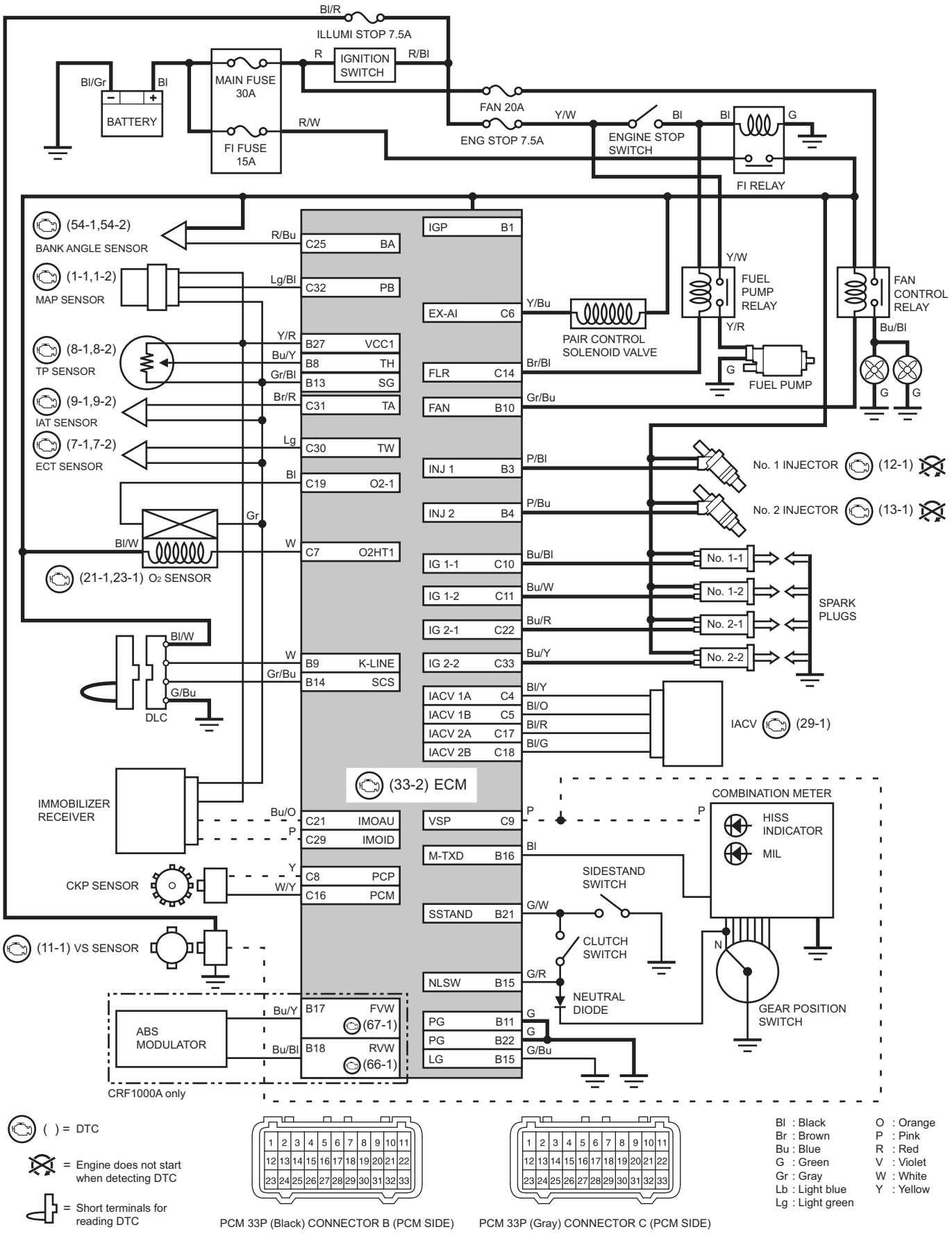
Bl = Black	Bu = Blue	Gr = Gray	O = Orange	R = Red	W = White
Br = Brown	G = Green	Lg = Light green	P = Pink	V = Violet	Y = Yellow

SYSTEM LOCATION



SYSTEM DIAGRAM

CRF1000/A



( ) = DTC

= Engine does not start when detecting DTC

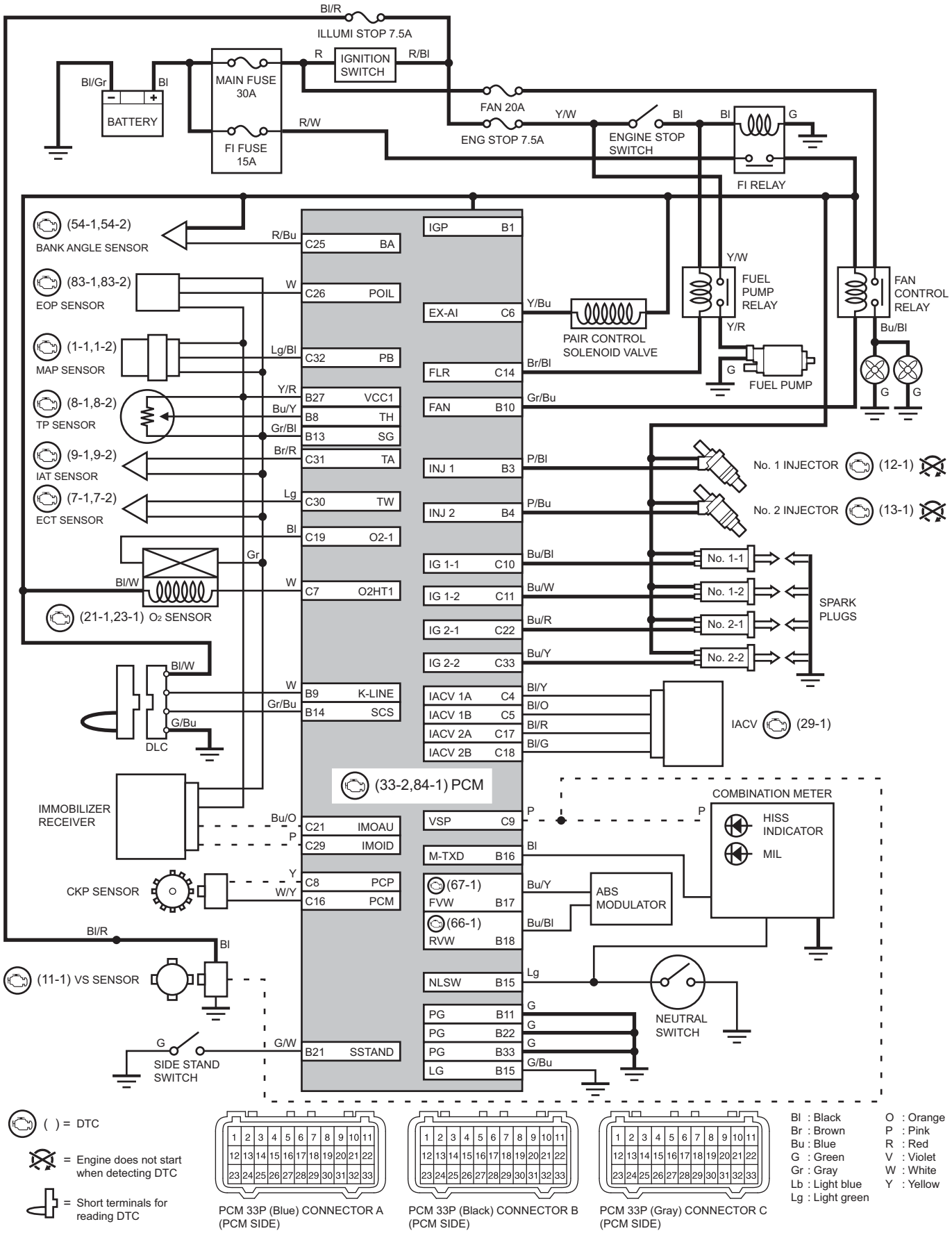
= Short terminals for reading DTC

PCM 33P (Black) CONNECTOR B (PCM SIDE)

PCM 33P (Gray) CONNECTOR C (PCM SIDE)

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

CRF1000D


Bl/R
ILLUMI STOP 7.5A
R
IGNITION SWITCH
R/Bl
Bl/Gr
Bl
BATTERY
MAIN FUSE 30A
FI FUSE 15A
R/W
FAN 20A
ENG STOP 7.5A
Y/W
ENGINE STOP SWITCH
Bl
Bl
G
FI RELAY
(54-1,54-2)
BANK ANGLE SENSOR
R/Bu
C25 BA
IGP B1
(83-1,83-2)
EOP SENSOR
W
C26 POIL
EX-AI C6
Y/Bu
PAIR CONTROL SOLENOID VALVE
Y/W
FUEL PUMP RELAY
Y/R
FAN CONTROL RELAY
Bu/Bl
(1-1,1-2)
MAP SENSOR
Lg/Bl
C32 PB
FLR C14
Br/Bl
FUEL PUMP
G
(8-1,8-2)
TP SENSOR
Y/R
Bu/Y
Gr/Bl
B27 VCC1
B8 TH
B13 SG
FAN B10
Gr/Bu
G
G
(9-1,9-2)
IAT SENSOR
Br/R
C31 TA
INJ 1 B3
P/Bl
No. 1 INJECTOR
(12-1)
(7-1,7-2)
ECT SENSOR
Lg
C30 TW
INJ 2 B4
P/Bu
No. 2 INJECTOR
(13-1)
Bl
C19 O2-1
Gr
IG 1-1 C10
Bu/Bl
No. 1-1
Bl/W
W
C7 O2HT1
IG 1-2 C11
Bu/W
No. 1-2
SPARK PLUGS
(21-1,23-1) O2 SENSOR
IG 2-1 C22
Bu/R
No. 2-1
IG 2-2 C33
Bu/Y
No. 2-2
Bl/W
W
Gr/Bu
B9 K-LINE
B14 SCS
IACV 1A C4
IACV 1B C5
IACV 2A C17
IACV 2B C18
Bl/Y
Bl/O
Bl/R
Bl/G
IACV
(29-1)
G/Bu
DLC
(33-2,84-1) PCM
COMBINATION METER
IMMOBILIZER RECEIVER
Bu/O
P
C21 IMOAU
C29 IMOID
VSP C9
P
P
HISS INDICATOR
MIL
M-TXD B16
Bl
Y
W/Y
C8 PCP
C16 PCM
CKP SENSOR
(67-1)
FVW B17
(66-1)
RVW B18
Bu/Y
Bu/Bl
ABS MODULATOR
Bl/R
Bl
(11-1) VS SENSOR
NLSW B15
Lg
NEUTRAL SWITCH
PG B11
PG B22
PG B33
LG B15
G
G
G
G/Bu
G
G/W
B21 SSTAND
SIDE STAND SWITCH
( ) = DTC
= Engine does not start when detecting DTC
= Short terminals for reading DTC
PCM 33P (Blue) CONNECTOR A (PCM SIDE)
PCM 33P (Black) CONNECTOR B (PCM SIDE)
PCM 33P (Gray) CONNECTOR C (PCM SIDE)
Bl : Black
Br : Brown
Bu : Blue
G : Green
Gr : Gray
Lb : Light blue
Lg : Light green
O : Orange
P : Pink
R : Red
V : Violet
W : White
Y : Yellow

PGM-FI TROUBLESHOOTING INFORMATION

GENERAL TROUBLESHOOTING

Intermittent Failure

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

Opens and Shorts

"Opens" and "Shorts" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something will not work at all. With ECM/PCM 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 4-6).

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 4-8).

SYSTEM DESCRIPTION

SELF-DIAGNOSIS SYSTEM

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

FAIL-SAFE FUNCTION

The PGM-FI system is provided with a fail-safe function to secure a minimum running capability even when there is trouble in the system. When any abnormality is detected by the self-diagnosis function, running capability is maintained by pre-programed value in the simulated program map. When any abnormality is detected in the fuel injector, 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/PCM with the MCS.
  The digits in front of the hyphen are the main code, they indicate the component of function failure.
  The digits behind the hyphen are the sub code, they detail the specific symptom of the component or function failure.
  For example, in the case of the TP sensor:
  – DTC 08 – 1 = (TP sensor voltage) – (lower than the specified value)
  – DTC 08 – 2 = (TP sensor voltage) – (higher than the specified value)
- The MAP, ECT, TP and IAT sensor diagnosis will be made according to the voltage output of the affected sensor.
  If a failure occurs, the ECM/PCM determines the Function Failure, compares the sensor voltage output to the standard value, and then outputs the corresponding DTC to the MCS.

MIL Blink Pattern

- If the MCS is not available, DTC can be read from the ECM/PCM memory by the MIL [1] blink pattern.
- The number of MIL blinks is the equivalent 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/PCM detects the problem at present, when the ignition switch ON and engine stop switch "⟳" or idling with the sidestand down. The MIL will stay ON when the engine speed is over 2,100 min^{-1} (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/PCM stores more than one DTC, the MIL will indicate them by blinking in the order from the lowest number to highest number.



MIL Check

When the ignition switch is turned ON and engine stop switch "⟳" the MIL will stay on for a few seconds, then go off. If the MIL does not come on, troubleshoot the MIL circuit (page 4-39).

CURRENT DTC/FREEZE DTC

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

- In case the ECM/PCM 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/PCM 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 4-6).

MCS INFORMATION

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

How to connect the MCS

Turn the ignition switch OFF.

Remove the dummy connector from the DLC (page 4-6).

Connect the MCS to the DLC.

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

NOTE:

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

DTC READOUT

Start the engine and check the MIL.

NOTE:

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

If the MIL stays on or blinks, connect the MCS to the DLC (page 4-6).
Read the DTC, freeze data and follow the troubleshooting index (page 4-9).

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

Reading DTC with the MIL

Turn the ignition switch OFF.

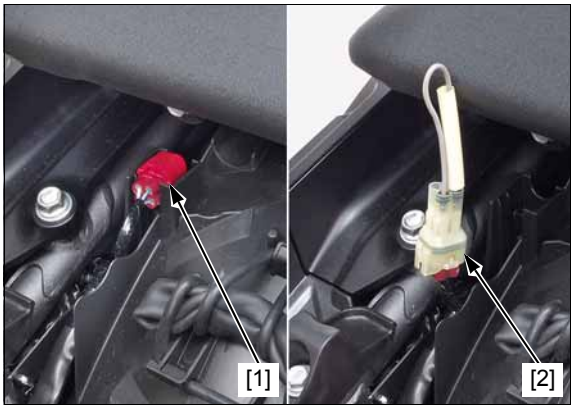
Remove the main seat (page 2-4).

Remove the dummy connector [1] from the DLC.

Short the DLC terminals using a special tool.

CONNECTION: Brown – Green

TOOL:
SCS connector [2] 070PZ-ZY30100



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

NOTE:

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

ERASING STORED DTC

NOTE:

- The stored DTC can not be erased by simply disconnecting the battery negative (–) cable.

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

How to clear the DTC with SCS connector

1. Connect the SCS connector to the DLC (page 4-6).
2. Turn the ignition switch ON and engine stop switch "".
3. Disconnect the SCS connector [1] from the DLC [2].

   Connect the SCS connector to the DLC again while the MIL stays ON about 5 seconds (reset receiving pattern).
4. The stored DTC is erased if the MIL goes off and starts blinking (successful pattern).

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

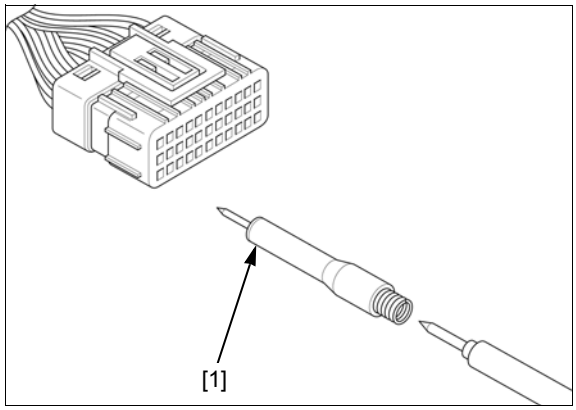


CIRCUIT INSPECTION

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

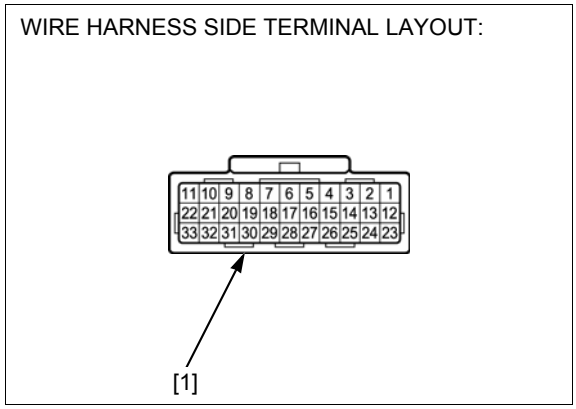
Test probe	**07ZAJ-RDJA110**



The ECM/PCM connector [1] terminals (wire harness side) are numbered as shown in the illustration.

– PCM 33P connector A color: Blue (CRF1000D only)
– ECM/PCM 33P connector B color: Black
– ECM/PCM 33P connector C color: Gray

WIRE HARNESS SIDE TERMINAL LAYOUT:



PGM-FI SYMPTOM TROUBLESHOOTING

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

Symptom	Diagnosis procedure	Also check for
Engine cranks but won't start (No DTC and MIL blinking)	1. Check the spark plug condition (page 3-5). 2. Inspect the ignition system (page 5-6). 3. Check the cylinder compression (page 10-4). 4. Check the fuel pump (page 7-7). 5. Check the IACV (page 7-16).	• Contaminated/deteriorated fuel • No fuel to fuel injector – Clogged fuel filter – Pinched or clogged fuel tank breather hose – Pinched or clogged fuel feed hose • Faulty fuel injector • Intake air leak
Engine cranks but won't start (No fuel pump operation sound when turning the ignition ON)	1. ECM/PCM power/ground circuits malfunction (page 4-40). 2. Check the fuel pump (page 7-7).	• Faulty bank angle sensor or related circuit • Faulty FI relay or related circuit • Faulty engine stop switch or related circuit
Engine stalls, hard to start, rough idling	1. Check the idle speed (page 3-14). 2. Check the IACV (page 7-16). 3. Inspect the fuel supply system (page 7-4). 4. Inspect the battery charging system (page 21-7). 5. Inspect the ignition system (page 5-6).	• Contaminated/deteriorated fuel • Intake air leak • Pinched or clogged fuel tank breather hose • Faulty ignition system
Afterburn when engine braking is used	1. Inspect the secondary air supply system (page 3-15). 2. Inspect the ignition system (page 5-6).	
Backfiring or misfiring during acceleration	Inspect the ignition system (page 5-6).	
Poor performance (driveability) and poor fuel economy	1. Inspect the fuel supply system (page 7-4). 2. Inspect the air cleaner element (page 3-4). 3. Inspect the ignition system (page 5-6).	• Faulty pressure regulator (fuel pump) • Faulty fuel injector
Idle speed is below specifications or fast idle too low (No DTC and MIL blinking)	1. Inspect the fuel supply system (page 7-4). 2. Check the idle speed (page 3-14). 3. Check the IACV (page 7-16). 4. Inspect the ignition system (page 5-6).	
Idle speed is above specifications or fast idle too high (No DTC and MIL blinking)	1. Check the idle speed (page 3-14). 2. Check the throttle operation and freeplay (page 3-3). 3. Check the IACV (page 7-16).	• Faulty ignition system • Intake air leak • Engine top-end problem • Air cleaner condition
MIL never comes on at all	Inspect the combination meter (page 22-12).	
MIL stays on but no DTCs set	Inspect the MIL circuit (page 4-39). • DLC circuit malfunction • TXD line circuit malfunction	

DTC INDEX

NOTE:

- If the MCS is not used, perform all of the inspection on the corresponding main code (digits in front of hyphen) of the DTC.

DTC	Function Failure	Symptom/Fail-safe function	Refer to
1-1	MAP sensor circuit low voltage (less than 0.029 V) • MAP sensor or its circuit malfunction	• Engine operates normally	4-11
1-2	MAP sensor circuit high voltage (more than 3.809 V) • Loose or poor contact of the MAP sensor connector • MAP sensor or its circuit malfunction	• Engine operates normally	4-12
7-1	ECT sensor circuit low voltage (less than 0.049 V) • ECT sensor or its circuit malfunction	• Hard start at a low temperature	4-14
7-2	ECT sensor circuit high voltage (more than 4.946 V) • Loose or poor contact of the ECT sensor connector • ECT sensor or its circuit malfunction	• Hard start at a low temperature	4-15
8-1	TP sensor circuit low voltage (less than 0.122 V) • Loose or poor contact of the TP sensor connector • TP sensor or its circuit malfunction	• Poor engine acceleration	4-16
8-2	TP sensor circuit high voltage (more than 4.966 V) • TP sensor or its circuit malfunction	• Poor engine acceleration	4-18
9-1	IAT sensor circuit low voltage (less than 0.049 V) • IAT sensor or its circuit malfunction	• Engine operates normally	4-19
9-2	IAT sensor circuit high voltage (more than 4.946 V) • Loose or poor contact of the sensor unit connector • IAT sensor or its circuit malfunction	• Engine operates normally	4-20
11-1	VS sensor malfunction • Loose or poor contact of the VS sensor connector • VS sensor or its circuit malfunction	• Engine operates normally	4-21
12-1	No. 1 (left) fuel injector malfunction • Loose or poor contact of the fuel injector connector • Fuel injector or its circuit malfunction	• Engine does not start • Fuel injector, fuel pump and ignition coil shut down	4-23
13-1	No. 2 (right) fuel injector malfunction • Loose or poor contact of the fuel injector connector • Fuel injector or its circuit malfunction	• Engine does not start • Fuel injector, fuel pump and ignition coil shut down	4-23
21-1	O_2 sensor malfunction • Loose or poor contact of the O_2 sensor connector • O_2 sensor or its circuit malfunction	• Engine operates normally	4-25
23-1	O_2 sensor heater malfunction • Loose or poor contact of the O_2 sensor connector • O_2 sensor heater or its circuit malfunction	• Engine operates normally	4-27
29-1	IACV malfunction • Loose or poor contact of the IACV connector • IACV or its circuit malfunction	• Engine stalls, hard to start, rough idling	4-29
33-2*1	ECM/PCM EEPROM malfunction	• Engine operates normally • Does not hold the self-diagnosis data	4-30
54-1	Bank angle sensor circuit low voltage (less than 0.020 V) • Bank angle sensor or its circuit malfunction	• Engine operates normally • Engine stop function does not operate	4-31
54-2	Bank angle sensor circuit high voltage (more than 4.976 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	4-32
66-1*2	Rear wheel speed sensor malfunction • Loose or poor contact of the rear wheel speed sensor connector • Faulty rear wheel speed sensor or its circuit malfunction	• Engine operates normally	4-33
67-1*2	Front wheel speed sensor malfunction • Loose or poor contact of the front wheel speed sensor connector • Faulty front wheel speed sensor or its circuit malfunction	• Engine operates normally	4-35

DTC	Function Failure	Symptom/Fail-safe function	Refer to
83-1*3	EOP sensor low voltage (less than 0.059 V) • EOP sensor or its circuit malfunction	• Engine operates normally	4-36
83-2*3	EOP sensor high voltage (more than 4.883 V) • Loose or poor contact of the EOP sensor connector • EOP sensor or its circuit malfunction	• Engine operates normally	4-37
84-1*3	CPU in the ECM/PCM malfunction • EOP sensor or its circuit malfunction	• Engine operates normally	4-38

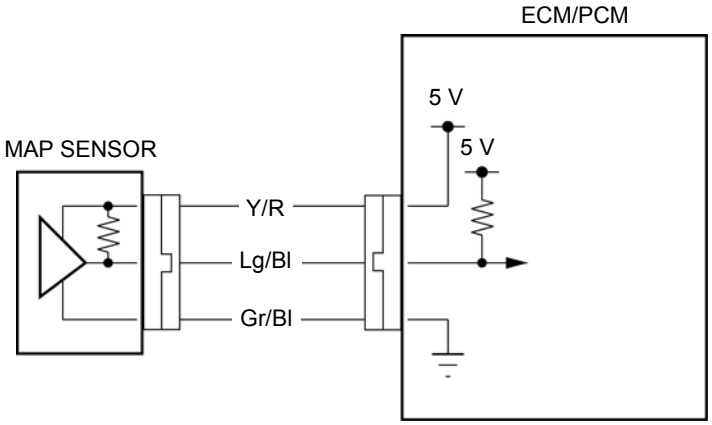
- *1 : The MIL does not blink (DTC can be readout/erased only by MCS)
- *2: CRF1000A/D
- *3: CRF1000D

DTC TROUBLESHOOTING

NOTE:

- If the ECM/PCM is replaced, perform the Key Registration Procedure (page 23-3).
- CRF1000D: If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 13-82).

DTC 1 (MAP SENSOR)



Probable cause

- Open circuit in the Yellow/red or Gray/black wire between the MAP sensor and ECM/PCM
- Open or short circuit in the Light green/black wire between the MAP sensor and ECM/PCM
- Faulty MAP sensor
- Faulty ECM/PCM

DTC 1-1 (MAP SENSOR LOW VOLTAGE)

1. **MAP sensor system inspection**

   Check the MAP sensor with the MCS.

   Is about 0 V indicated?

   YES – GO TO STEP 2.

   NO – Intermittent failure

2. **MAP Sensor Input Voltage Inspection**

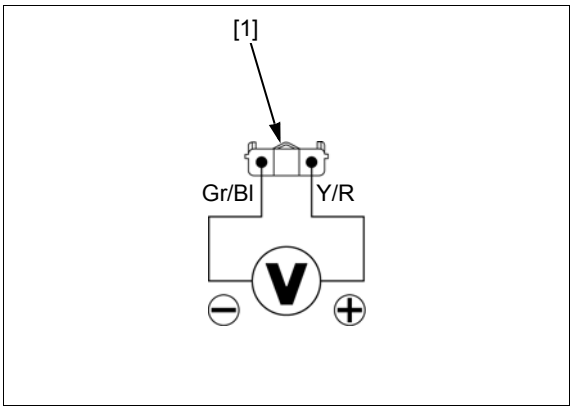
   Turn the ignition switch OFF.
   Disconnect the MAP sensor 3P (Black) connector (page 4-41).
   Turn the ignition switch ON.
   Measure the voltage at the wire harness side 3P (Black) connector [1].

   Connection: Yellow/red (+) – Gray/black (–)

   Is the voltage within 4.75 – 5.25 V?

   YES – GO TO STEP 4.

   NO – GO TO STEP 3.



3. MAP Sensor Input Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 33P (Black) connector [2].

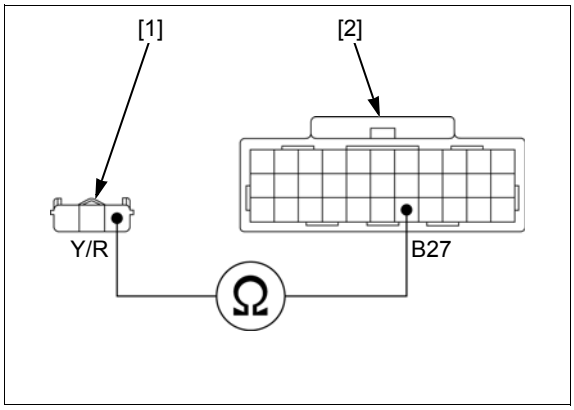
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Yellow/red – B27

Is there continuity?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Yellow/red wire



4. MAP Sensor Signal Line Short Circuit Inspection

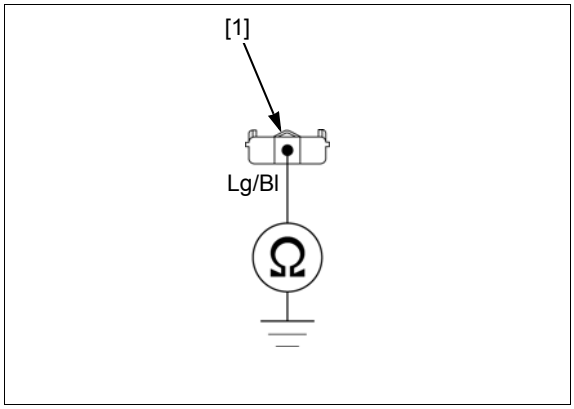
Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Gray) connector (page 4-39).
Check for continuity between 3P (Black) connector [1] and ground.

Connection: Light green/black – Ground

Is there continuity?

YES – Short circuit in the Light green/black wire

NO – GO TO STEP 5.



5. MAP Sensor Inspection

Replace the MAP sensor with a known good one (page 4-41).
Connect the 33P (Gray) connector.
Erase the DTC (page 4-6).
Check the MAP sensor with the MCS.

Is DTC 1-1 indicated?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Faulty original MAP sensor

DTC 1-2 (MAP SENSOR HIGH VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the MAP sensor 3P (Black), ECM/PCM 33P (Black) and 33P (Gray) connectors, and recheck the DTC.

1. MAP sensor system inspection

Check the MAP sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. MAP Sensor Input Voltage Inspection

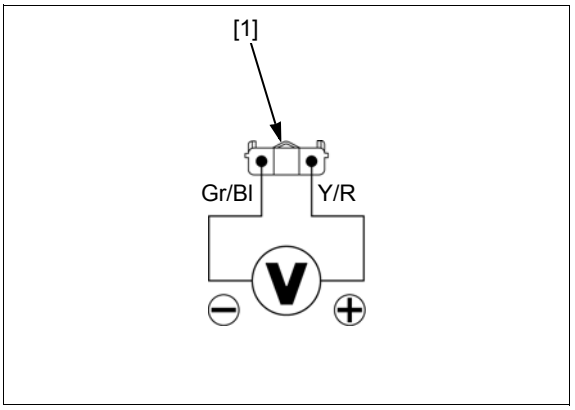
Turn the ignition switch OFF.
Disconnect the MAP sensor 3P (Black) connector (page 4-41).
Turn the ignition switch ON.
Measure the voltage at the wire harness side 3P (Black) connector [1].

Connection: Yellow/red (+) – Gray/black (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 3.

NO – Open circuit in the Gray/black wire



3. MAP Sensor System Inspection with Jumper Wire

Turn the ignition switch OFF.
Connect the wire harness side 3P (Black) connector [1] terminals with a jumper wire [2].

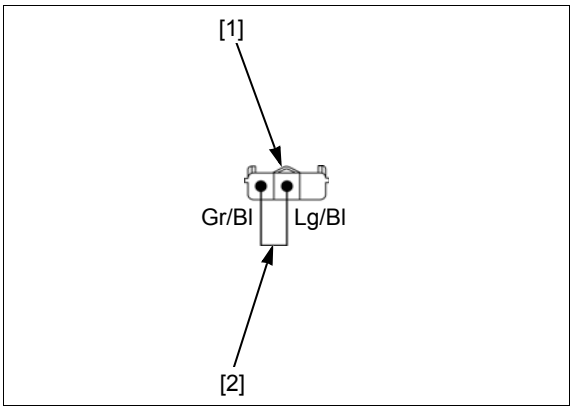
Connection: Light green/black – Gray/black

Check the MAP sensor with the MCS.

Is about 0 V indicated?

YES – Faulty MAP sensor

NO – GO TO STEP 4.



4. MAP Sensor Signal Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 33P (Gray) connector [2].

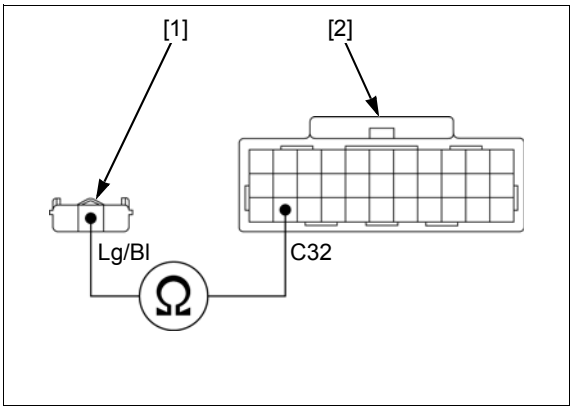
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Light green/black – C32

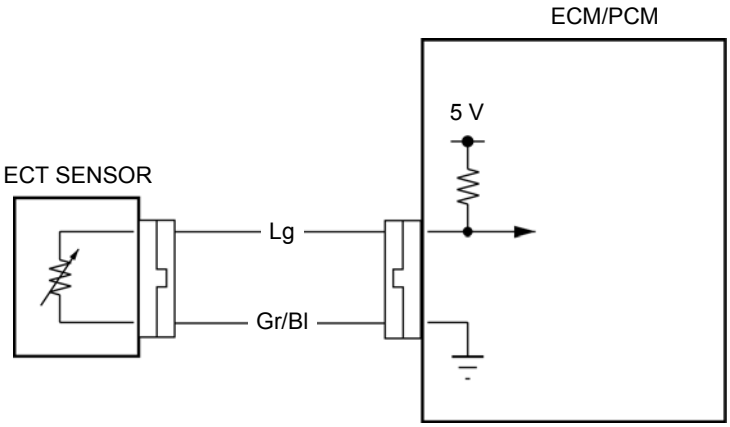
Is there continuity?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Light green/black wire



DTC 7 (ECT SENSOR)



Probable cause
- Open or short circuit in the Light green wire between the ECT sensor and ECM/PCM
- Open circuit in the Gray/black wire between the ECT sensor and ECM/PCM
- Faulty ECT sensor
- Faulty ECM/PCM

DTC 7-1 (ECT SENSOR LOW VOLTAGE)

1. ECT Sensor System Inspection

Check the ECT sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. ECT Sensor System Inspection with Connector Disconnected

Turn the ignition switch OFF.
Disconnect the ECT sensor 2P (Black) connector (page 4-41).
Check the ECT sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty ECT sensor

3. ECT Sensor Output Line Short Circuit Inspection

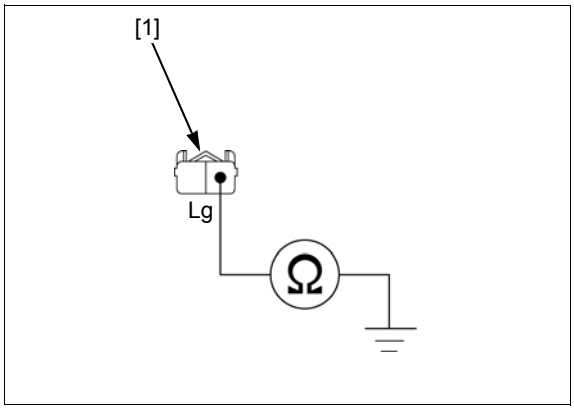
Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 2P (Black) connector [1] and ground.

Connection: Light green – Ground

Is there continuity?

YES – Short circuit in the Light green wire

NO – Replace the ECM/PCM with a known good one (page 4-39) and recheck.



DTC 7-2 (ECT SENSOR HIGH VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the ECT sensor 2P (Black), ECM/PCM 33P (Black) and 33P (Gray) connectors, and recheck the DTC.

1. ECT Sensor System Inspection

Check the ECT sensor with the MCS.

Is about 5 V indicated?

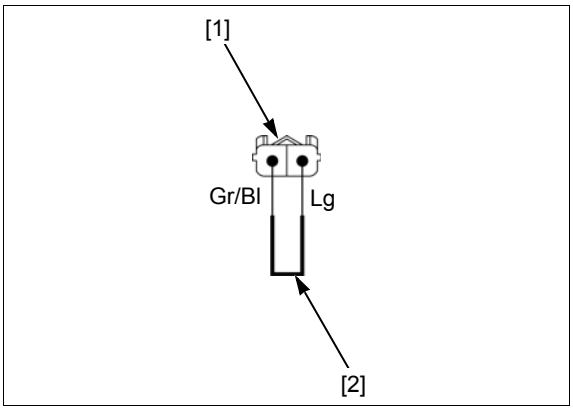
YES – GO TO STEP 2.

NO – Intermittent failure

2. ECT Sensor System Inspection with Jumper Wire

Turn the ignition switch OFF.
Disconnect the ECT sensor 2P (Black) connector (page 4-41).
Connect the wire harness side 2P (Black) connector [1] terminals with a jumper wire [2].

Connection: Light green – Gray/black



Check the ECT sensor with the MCS.

Is about 0 V indicated?

YES – Faulty ECT sensor

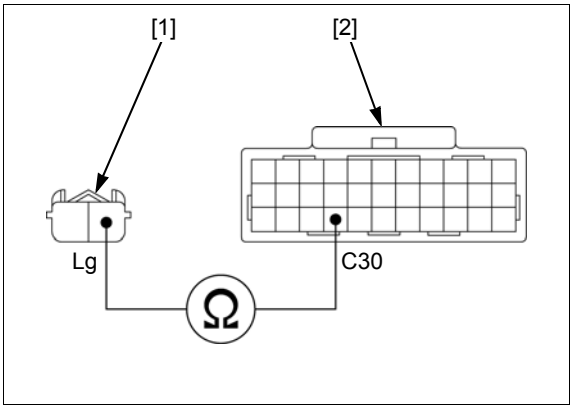
NO – GO TO STEP 3.

3. ECT Sensor Output Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 2P (Black) connector [1] and 33P (Gray) connector [2].

TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Light green – C30



Is there continuity?

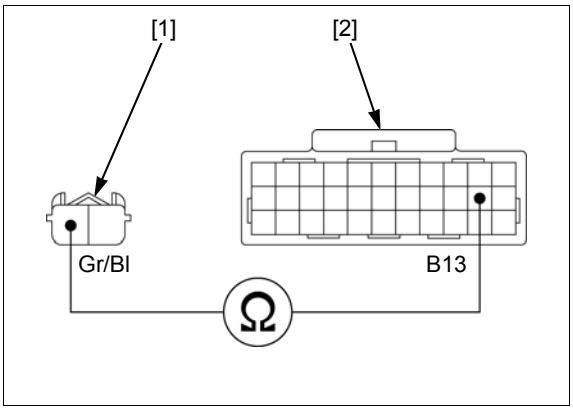
YES – GO TO STEP 4.

NO – Open circuit in the Light green wire

4. ECT Sensor Ground Line Open Circuit Inspection

Disconnect the ECM/PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 2P (Black) connector [1] and 33P (Black) connector [2].

Connection: Gray/black – B13

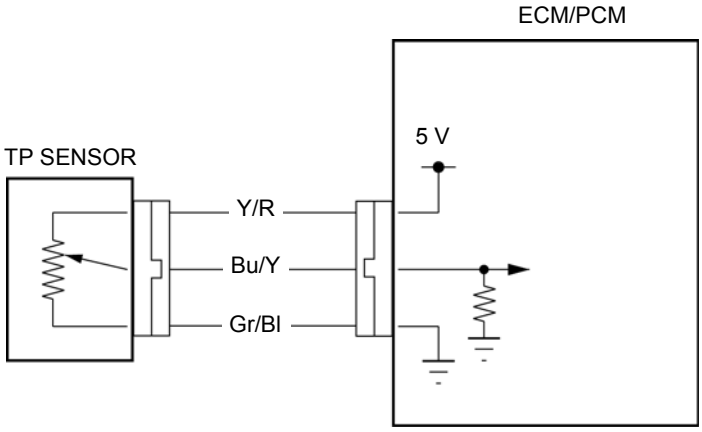


Is there continuity?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Gray/black wire

DTC 8 (TP SENSOR)



Probable cause

- Open circuit in the Yellow/red or Gray/black wire between the TP sensor and ECM/PCM
- Open or short circuit in the Blue/yellow wire between the TP sensor and ECM/PCM
- Faulty sensor TP sensor
- Faulty ECM/PCM

DTC 8-1 (TP SENSOR LOW VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the TP sensor 3P (Black) and ECM/PCM 33P (Black) connectors, and recheck the DTC.

1. TP Sensor System Inspection

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

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – GO TO STEP 2.

2. TP Sensor System Inspection with throttle operated

Check that the TP sensor voltage increases continuously when the throttle is moved from fully closed position to fully open position, using the data list menu of the MCS.

Does the voltage increase continuously?

YES – Intermittent failure

NO – Faulty TP sensor (replace the throttle body as assembly)

3. TP Sensor Input Voltage Inspection

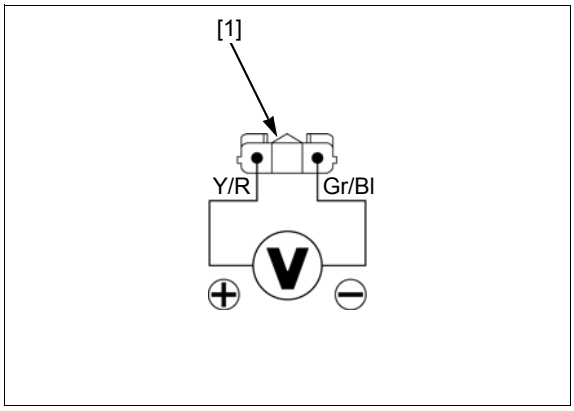
Turn the ignition switch OFF.
Disconnect the TP sensor 3P (Black) connector (page 7-12).
Turn the ignition switch ON.
Measure the voltage at the wire harness side 3P (Black) connector [1].

Connection: Yellow/red (+) – Gray/black (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 5.

NO – GO TO STEP 4.



4. TP Sensor Input Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 33P (Black) connector [2].

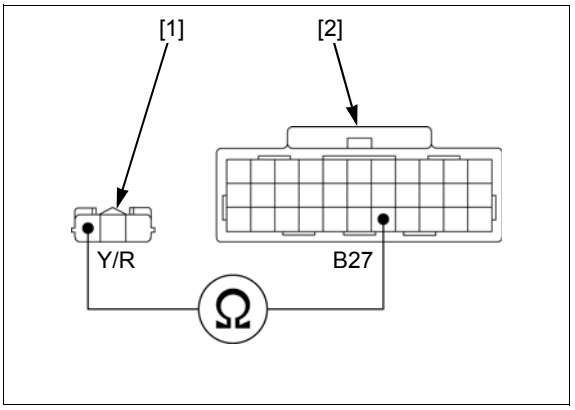
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Yellow/red – B27

Is there continuity?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Yellow/red wire



5. TP Sensor Signal Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side TP sensor 3P (Black) connector [1] and ECM/PCM 33P (Black) connector [2].

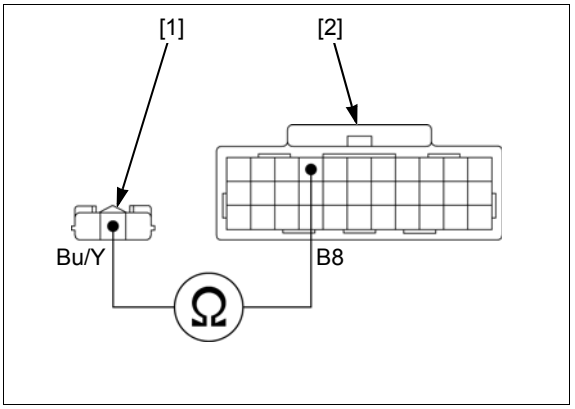
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Blue/yellow – B8

Is there continuity?

YES – GO TO STEP 6.

NO – Open circuit in the Blue/yellow wire



6. TP Sensor Signal Line Short Circuit Inspection

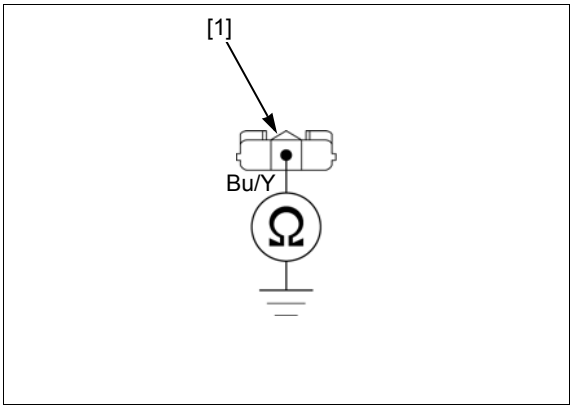
Check for continuity between the wire harness side TP sensor 3P (Black) connector [1] and ground.

Connection: Blue/yellow – Ground

Is there continuity?

YES – Short circuit in the Blue/yellow wire

NO – GO TO STEP 7.



7. TP Sensor Inspection

Replace the throttle body with a known good one (page 7-12).
Connect the 33P (Black) connector.
Erase the DTC (page 4-6).
Check the TP sensor with the MCS.

Is DTC 8-1 indicated?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Faulty original TP sensor (replace the throttle body as assembly)

DTC 8-2 (TP SENSOR HIGH VOLTAGE)

1. TP Sensor System Inspection

Check the TP sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – GO TO STEP 3.

2. TP Sensor System Inspection with throttle operated

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

Is the voltage increase continuously?

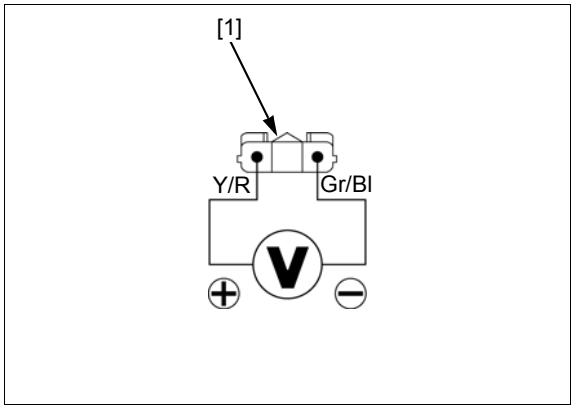
YES – Intermittent failure

NO – Faulty TP sensor (replace the throttle body as assembly)

3. TP Sensor Input Voltage Inspection

Turn the ignition switch OFF.
Disconnect the TP sensor 3P (Black) connector (page 7-12).
Turn the ignition switch ON.
Measure the voltage at the wire harness side 3P (Black) connector [1].

Connection: Yellow/red (+) – Gray/black (–)



Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – Open circuit in the Gray/black wire

4. TP Sensor Inspection

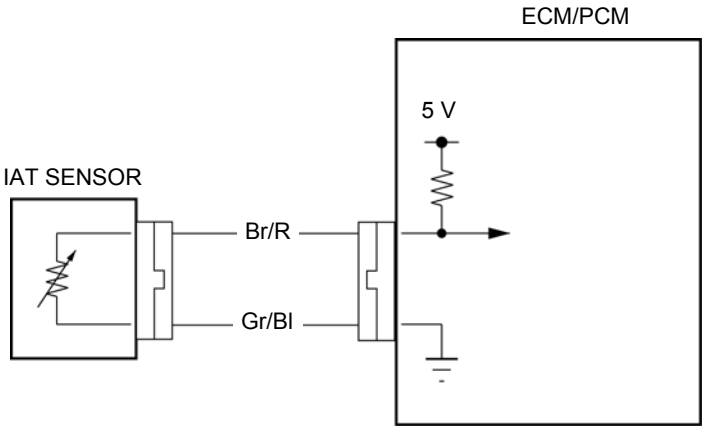
Replace the throttle body with a known good one (page 7-12).
Connect the ECM/PCM 33P (Black) connector.
Erase the DTC (page 4-6).
Check the TP sensor with the MCS.

Is DTC 8-2 indicated?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Faulty original TP sensor (replace the throttle body as assembly)

DTC 9 (IAT SENSOR)



Probable cause
- Open or short circuit in the Brown/red wire between the IAT sensor and ECM/PCM
- Open circuit in the Gray/black wire between the IAT sensor and ECM/PCM
- Faulty IAT sensor
- Faulty ECM/PCM

DTC 9-1 (IAT SENSOR LOW VOLTAGE)

1. IAT Sensor System Inspection

Check the IAT sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. IAT Sensor System Inspection with Connector Disconnected

Turn the ignition switch OFF.
Disconnect the IAT sensor 2P (Blue) connector (page 4-41).
Check the IAT sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty sensor unit (IAT sensor)

3. IAT Sensor Output Line Short Circuit Inspection

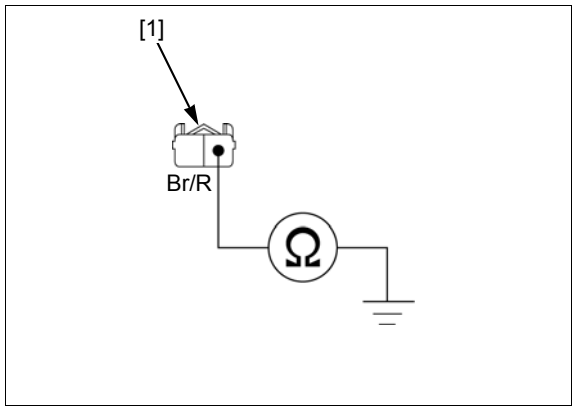
Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 2P (Blue) connector [1] and ground.

Connection: Brown/red – Ground

Is there continuity?

YES – Short circuit in the Brown/red wire

NO – Replace the ECM/PCM with a known good one (page 4-39) and recheck.



DTC 9-2 (IAT SENSOR HIGH VOLTAGE)

NOTE:

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

1. IAT Sensor System Inspection

Check the IAT sensor with the MCS.

Is about 5 V indicated?

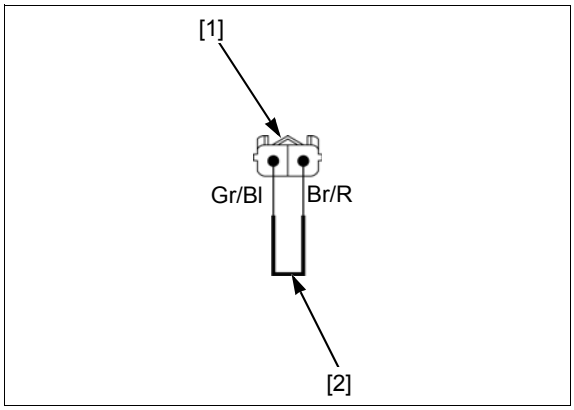
YES – GO TO STEP 2.

NO – Intermittent failure

2. IAT Sensor System Inspection with Jumper Wire

Turn the ignition switch OFF.
Disconnect the IAT sensor 2P (Blue) connector (page 4-41).
Connect the wire harness side 2P (Blue) connector [1] terminals with a jumper wire [2].

Connection: Brown/red – Gray/black



Check the IAT sensor with the MCS.

Is about 0 V indicated?

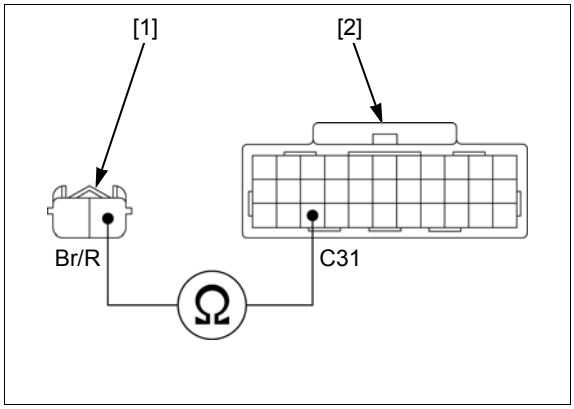
YES – Faulty IAT sensor

NO – GO TO STEP 3.

3. IAT Sensor Output Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 2P (Blue) connector [1] and 33P (Gray) connector [2].

TOOL:
Test probe **07ZAJ-RDJA110**



Connection: Brown/red – C31

Is there continuity?

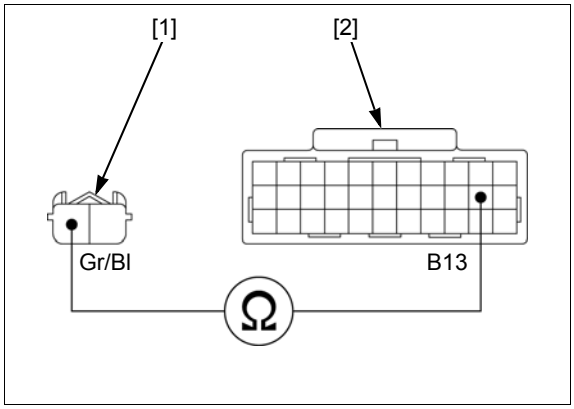
YES – GO TO STEP 4.

NO – Open circuit in the Brown/red wire

4. IAT Sensor Ground Line Open Circuit Inspection

Disconnect the ECM/PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 2P (Blue) connector [1] and 33P (Black) connector [2].

TOOL:
Test probe **07ZAJ-RDJA110**



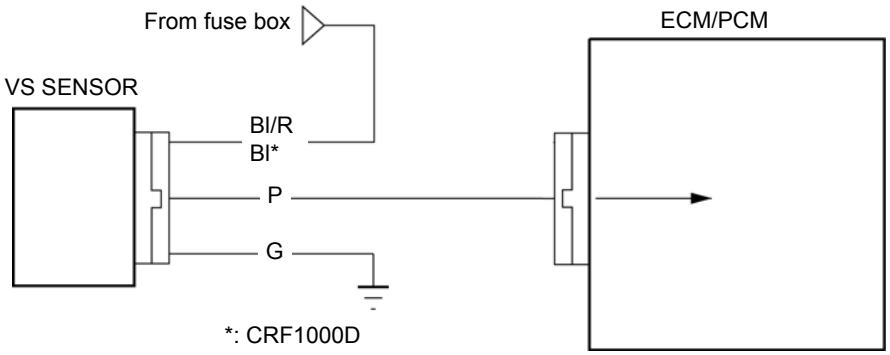
Connection: Gray/black – B13

Is there continuity?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Gray/black wire

DTC 11 (VS SENSOR)



Probable cause

- Open circuit in the Black/red (CRF1000/A) or Black (CRF1000D) wire between the fuse box and VS sensor
- Open circuit in the Green wire between the VS sensor and ground
- Open or short circuit in the Pink wire between the VS sensor and ECM/PCM
- Faulty VS sensor
- Faulty ECM/PCM

DTC 11-1 (VS SENSOR)

NOTE:

- Before starting the inspection, check for loose or poor contact on the VS sensor 3P (Black), engine sub-wire harness 6P (Black) (CRF1000/A only) and ECM/PCM 33P (Gray) connectors, and recheck the DTC.

1. Recheck DTC

Erase the DTC (page 4-6).
Test-ride the motorcycle above 3,400 min^{-1} (rpm).
Stop the engine.
Check the DTC with the MCS.

Is DTC 11-1 indicated?

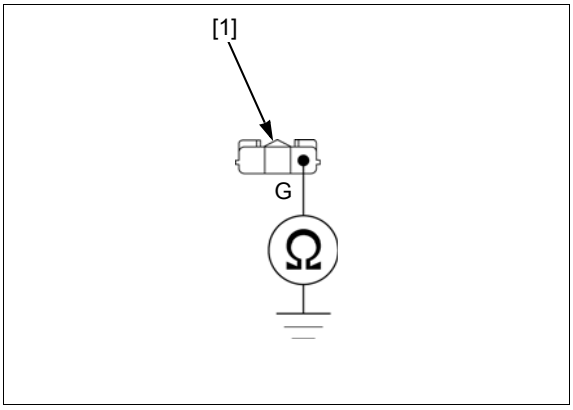
YES – GO TO STEP 2.

NO – Intermittent failure

2. VS Sensor Ground Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the VS sensor 3P (Black) connector (page 4-42).
Check for continuity between the wire harness side 3P (Black) connector [1] and ground.

Connection: Green – Ground



Is there continuity?

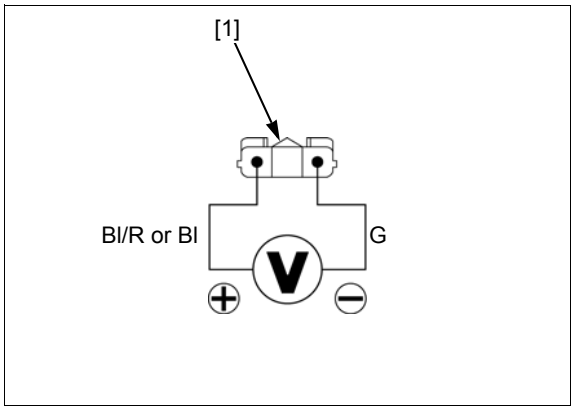
YES – GO TO STEP 3.

NO – Open circuit in the Green wire

3. VS Sensor Input Line Open Circuit Inspection

Temporarily install the removed electrical parts in the reverse order of removal.
Turn the ignition switch ON.
Measure the voltage between the wire harness side 3P (Black) connector [1] and ground.

Connection:
CRF1000/A: Black/red (+) – Green (–)
CRF1000D: Black (+) – Green (–)



Is there battery voltage?

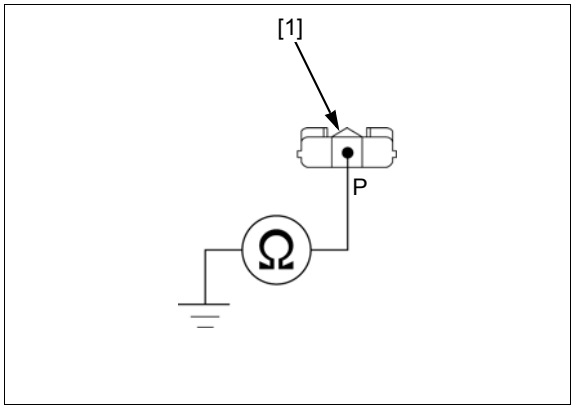
YES – GO TO STEP 4.

NO – • Open circuit in the Black/red wire (CRF1000/A)
• Open circuit in the Black or Black/red wire (CRF1000D)

4. VS Sensor Signal Line Short Circuit Inspection

Turn the ignition switch OFF.
Check for continuity between the wire harness side 3P (Black) connector [1] and ground.

Connection: Pink – Ground



Is there continuity?

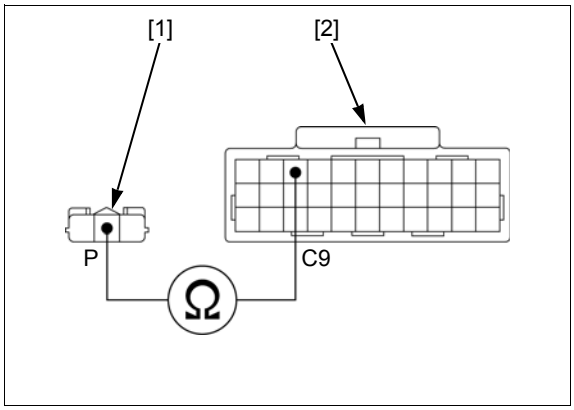
YES – Short circuit in the Pink wire

NO – GO TO STEP 5.

5. VS Sensor Signal Line Open Circuit Inspection

Disconnect the ECM/PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 33P (Gray) connector [2].

TOOL:
Test probe **07ZAJ-RDJA110**



Connection: Pink – C9

Is there continuity?

YES – GO TO STEP 6.

NO – Open circuit in the Pink wire

6. VS Sensor Inspection

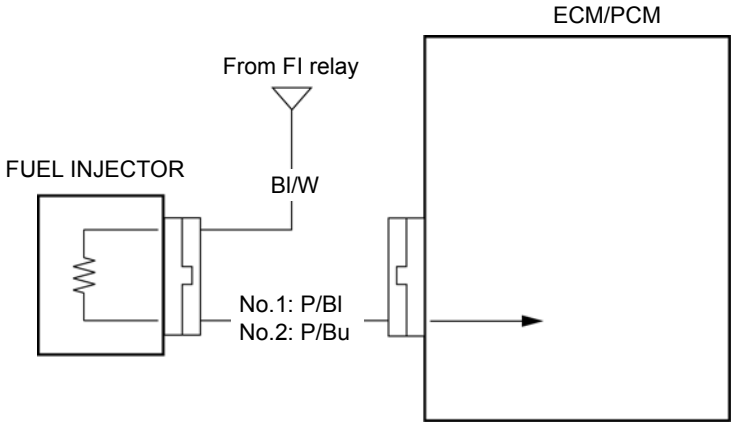
Replace the VS sensor with a known good one (page 4-42).
Connect the 33P (Gray) connector.
Erase the DTC (page 4-6).
Test-ride the motorcycle above 3,400 min^{-1} (rpm).
Stop the engine.
Check the DTC with the MCS.

Is DTC 11-1 indicated?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Faulty original VS sensor

DTC 12/DTC 13 (FUEL INJECTOR)



Probable cause

- Open circuit in the Black/white wire between the FI relay and fuel injector
- Open or short circuit in the Pink/black (No.1) or Pink/blue (No.2) wire between the fuel injector and ECM/PCM
- Faulty fuel injector
- Faulty ECM/PCM

DTC 12-1 (No. 1 FUEL INJECTOR)/
DTC 13-1 (No. 2 FUEL INJECTOR)

NOTE:

- Before starting the inspection, check for loose or poor contact on the fuel injector 2P (No.1: Black/No.2: Blue) and ECM/PCM 33P (Black) connectors, and recheck the DTC.

1. Recheck DTC

Erase the DTC (page 4-6).
Check the DTC with the MCS.

Is the DTC 12-1 or 13-1 indicated?

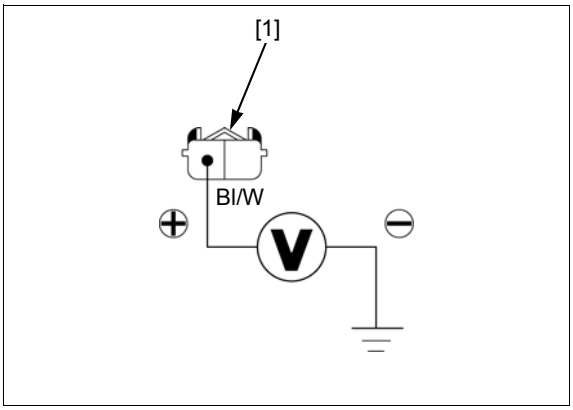
YES – GO TO STEP 2.

NO – Intermittent failure

2. Fuel Injector Input Voltage Inspection

Turn the ignition switch OFF.
Disconnect the fuel injector 2P (No.1: Black/No.2: Blue) connector (page 7-17).
Turn the ignition switch ON.
Measure the voltage between the wire harness side injector 2P connector [1] and ground.

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



Is there battery voltage?

YES – GO TO STEP 3.

NO – Open circuit in the Black/white wire

3. Fuel Injector Resistance Inspection

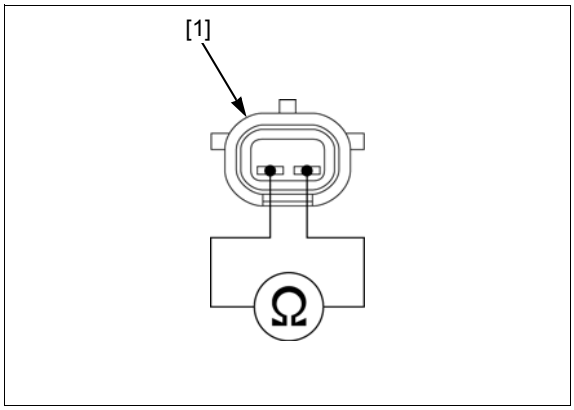
Turn the ignition switch OFF.
Measure the resistance at the injector side 2P connector [1].

Standard: 11 – 13 Ω (20°C/68°F)

Is the resistance within standard value?

YES – GO TO STEP 4.

NO – Faulty fuel injector



4. Fuel Injector Signal Line Open Circuit Inspection

Disconnect the ECM/PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 2P connector [1] and 33P (Black) connector [2].

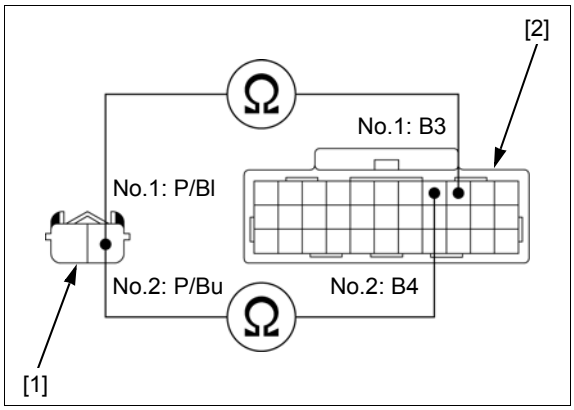
TOOL:
Test probe **07ZAJ-RDJA110**

Connection:
No.1: Pink/black – B3
No.2: Pink/blue – B4

Is there continuity?

YES – GO TO STEP 5.

NO – • Open circuit in the Pink/black wire
• Open circuit in the Pink/blue wire



5. Fuel Injector Signal Line Short Circuit Inspection

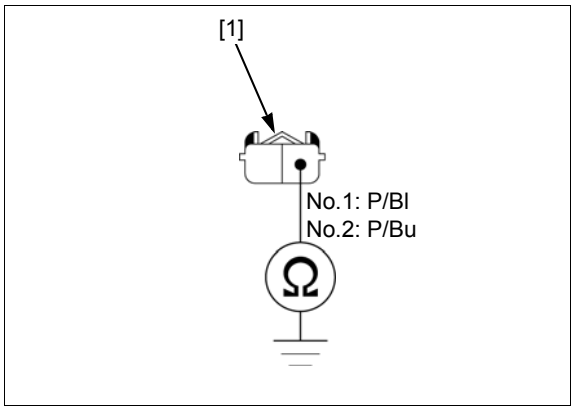
Check for continuity between the wire harness side 2P connector [1] and ground.

Connection:
No.1: Pink/black – Ground
No.2: Pink/blue – Ground

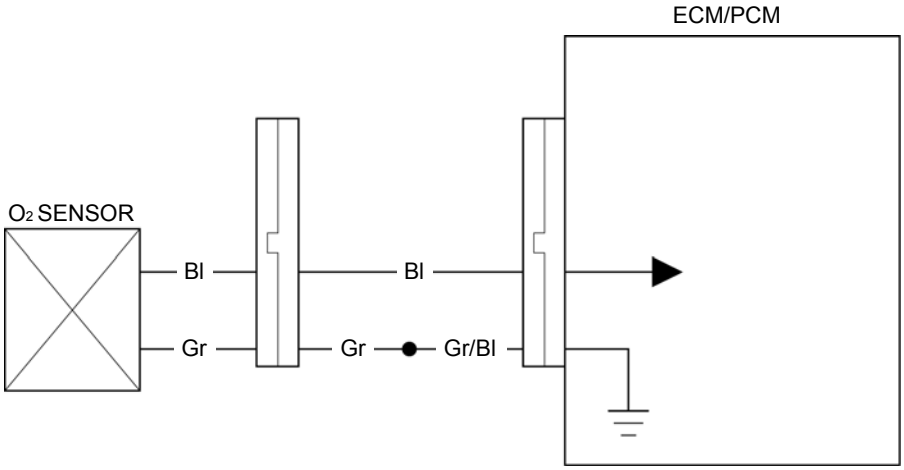
Is there continuity?

YES – • Short circuit in the Pink/black wire
• Short circuit in the Pink/blue wire

NO – Replace the ECM/PCM with a known good one (page 4-39) and recheck.



DTC 21 (O_2 SENSOR)



Probable cause
- Open or short circuit in the Black wire between the ECM/PCM and O_2 sensor
- Open circuit in the Gray or Gray/black wire between the O_2 sensor and ECM/PCM
- Faulty O_2 sensor
- Faulty ECM/PCM

DTC 21-1 (O_2 Sensor)

NOTE:
- Before starting the inspection, check for loose or poor contact on the O_2 sensor 4P (Black), ECM/PCM 33P (Black) and 33P (Gray) connectors, and recheck the DTC.

1. Recheck DTC

Erase the DTC (page 4-6).
Start the engine and warm it up until the coolant temperature is 80°C (176°F).
Stop the engine.
Check the DTC with the MCS.

Is the DTC 21-1 indicated?

YES – GO TO STEP 2.

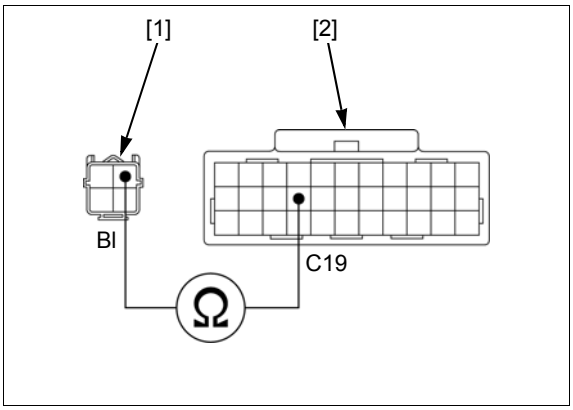
NO – Intermittent failure

2. O_2 Sensor Output Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the O_2 sensor 4P (Black) connector (page 2-17).
Disconnect the ECM/PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 4P (Black) connector [1] and 33P (Gray) connector [2].

TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Black – C19



Is there continuity?

YES – GO TO STEP 3.

NO – Open circuit in the Black wire

3. O_2 Sensor Output Line Short Circuit Inspection

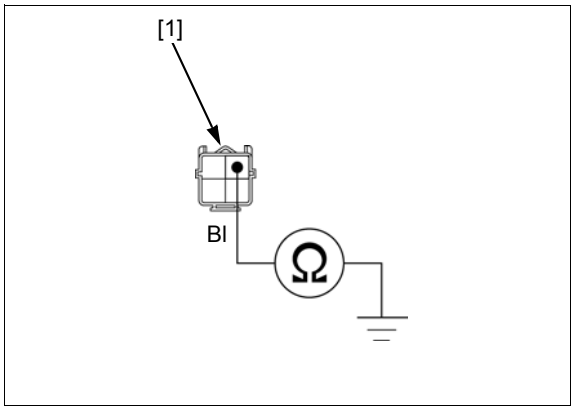
Check for continuity between the wire harness side 4P (Black) connector [1] and ground.

Connection: Black – Ground

Is there continuity?

YES – Short circuit in the Black wire

NO – GO TO STEP 4.



4. O_2 Sensor Ground Line Open Circuit Inspection

Disconnect the ECM/PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 4P (Black) connector [1] and 33P (Black) connector [2].

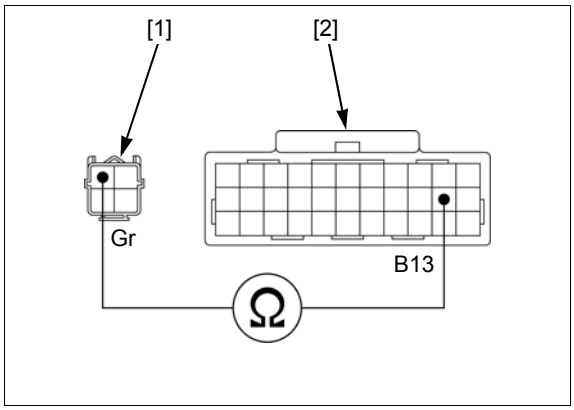
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Gray – B13

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in the Gray or Gray/black wire



5. O_2 Sensor Inspection

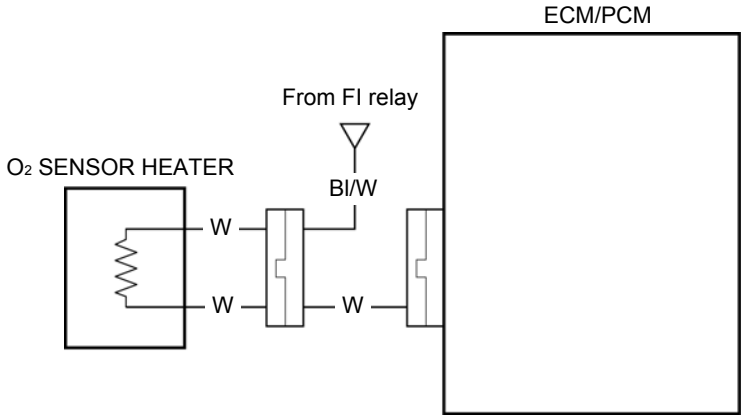
Replace the O_2 sensor with a known good one (page 4-42).
Connect the ECM/PCM 33P (Black and Gray) connectors.
Erase the DTC (page 4-6).
Start the engine and warm it up until the coolant temperature is 80°C (176°F).
Stop the engine.
Check the O_2 sensor with the MCS.

Is the DTC 21-1 indicated?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Faulty original O_2 sensor

DTC 23 (O_2 SENSOR HEATER)



Probable cause
- Open circuit in the Black/white wire between the FI relay and O_2 sensor
- Open or short circuit in the White wire between the O_2 sensor and ECM/PCM
- Faulty O_2 sensor
- Faulty ECM/PCM

DTC 23-1 (O_2 SENSOR HEATER)

NOTE:
- Before starting the inspection, check for loose or poor contact on the O_2 sensor 4P (Black) and ECM/PCM 33P (Gray) connectors, and recheck the DTC.

1. Recheck DTC

Erase the DTC (page 4-6).
Start the engine and check the DTC with the MCS.

Is DTC 23-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. O_2 Sensor Heater Resistance Inspection

Turn the ignition switch OFF.
Disconnect the O_2 sensor 4P (Black) connector (page 2-17).
Measure the resistance at the sensor side 4P (Black) connector [1].

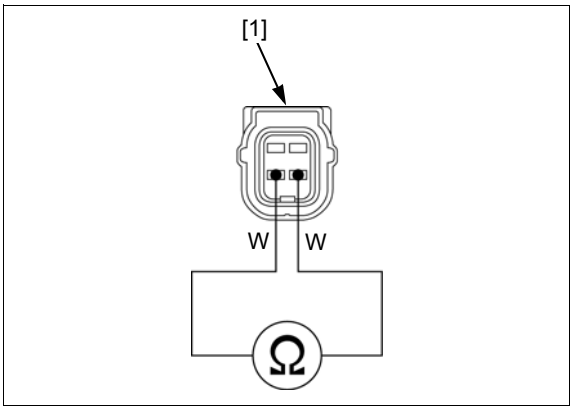
Connection: White – White

Standard: 6.7 – 10.5 Ω (20°C/68°F)

Is the resistance within standard value?

YES – GO TO STEP 3.

NO – Faulty O_2 sensor



3. O_2 Sensor Heater Input Voltage Inspection

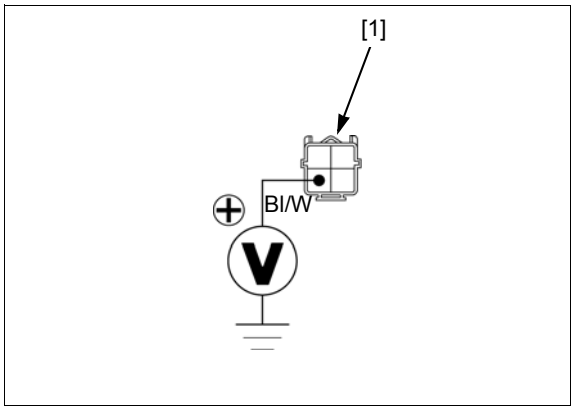
Turn the ignition switch ON.
Measure the voltage between the wire harness side 4P (Black) connector [1] and ground.

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

Is there battery voltage?

YES – GO TO STEP 4.

NO – Open circuit in the Black/white wire



4. O_2 Sensor Heater Line Open Circuit Inspection

Disconnect the ECM/PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side O_2 sensor 4P (Black) connector [1] and ECM/PCM 33P (Black) connector [2].

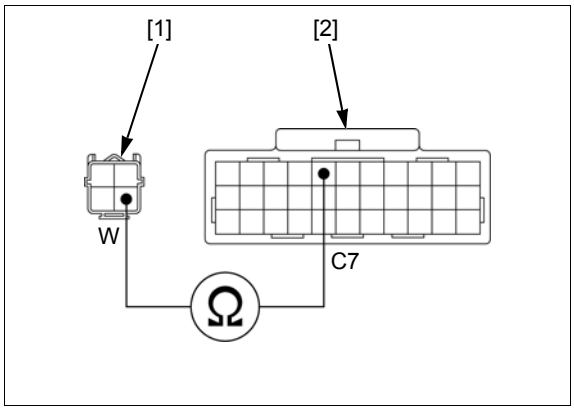
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: White – C7

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in the White wire



5. O_2 Sensor Heater Line Short Circuit Inspection

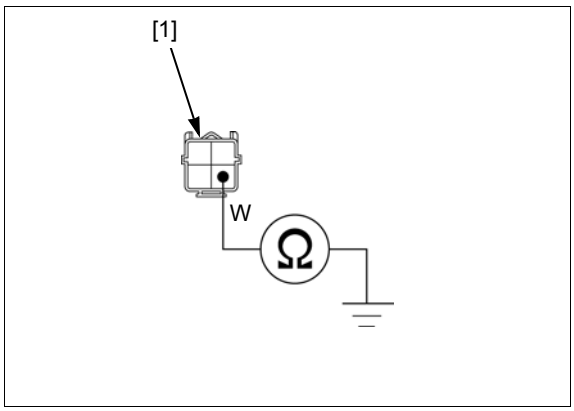
Check for continuity between the wire harness side 4P (Black) connector [1] and ground.

Connection: White – Ground

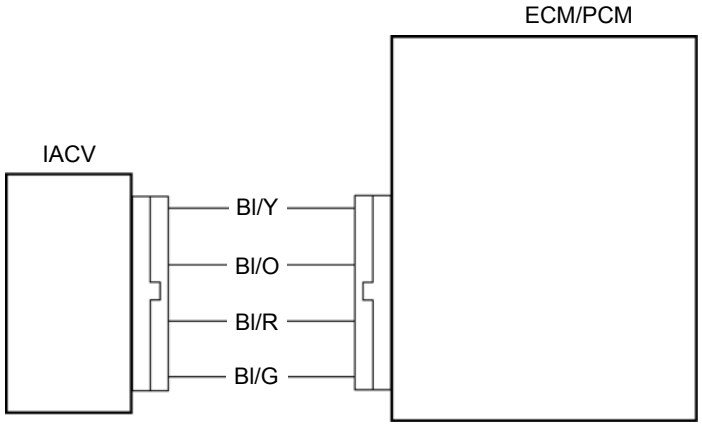
Is there continuity?

YES – Short circuit in the White wire

NO – Replace the ECM/PCM with a known good one (page 4-39) and recheck.



DTC 29 (IACV)



Probable cause
- Open or short circuit in Black/yellow, Black/orange, Black/red, or Black/green wire between the IACV and ECM/PCM
- Faulty IACV
- Faulty ECM/PCM

DTC 29-1 (IACV)

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

1. Recheck DTC

Erase the DTC (page 4-6).
Check the DTC with the MCS.

Is the DTC 29-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. IACV Resistance Inspection

Turn the ignition switch OFF.
Disconnect the IACV 4P (Black) connector (page 7-16).
Measure the resistance at the IACV side 4P connector [1].

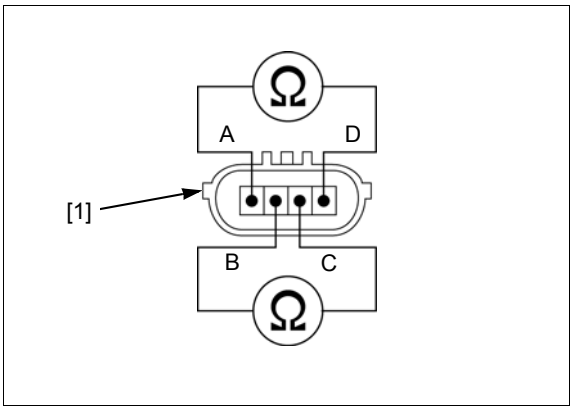
Connection: A – D
B – C

Standard: 99 – 121 Ω (25°C/77°F)

Is the resistance within standard value?

YES – GO TO STEP 3.

NO – Faulty IACV

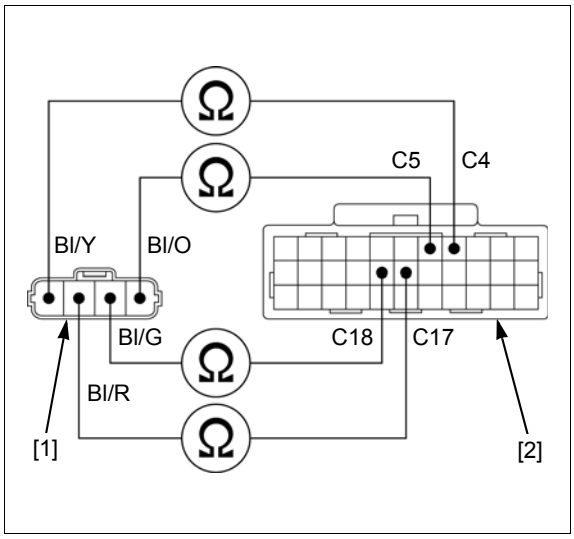


3. IACV Line Open Circuit Inspection

Disconnect the ECM/PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 4P (Black) connector [1] and 33P (Gray) connector [2]

TOOL:
Test probe (2 required) 07ZAJ-RDJA110

Connection: Black/yellow – C4
Black/orange – C5
Black/red – C17
Black/green – C18



Is there continuity?

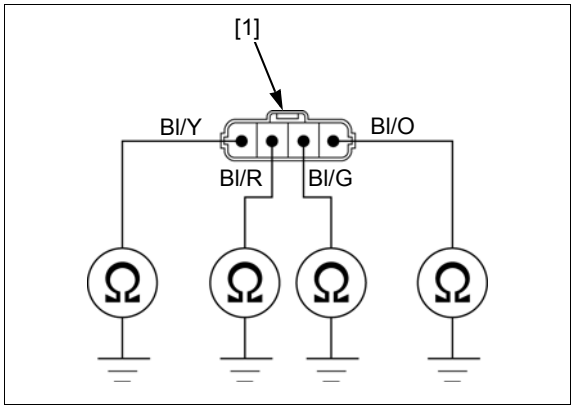
YES – GO TO STEP 4.

NO – • Open circuit in the Black/yellow or Black/orange wire
• Open circuit in the Black/red or Black/green wire

4. IACV Line Short Circuit Inspection

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

Connection: Black/yellow – Ground
Black/orange – Ground
Black/red – Ground
Black/green – Ground



Is there continuity?

YES – • Short circuit in the Black/yellow or Black/orange wire
• Short circuit in the Black/red or Black/green wire

NO – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

DTC 33-2 (ECM/PCM EEPROM)

1. Recheck DTC

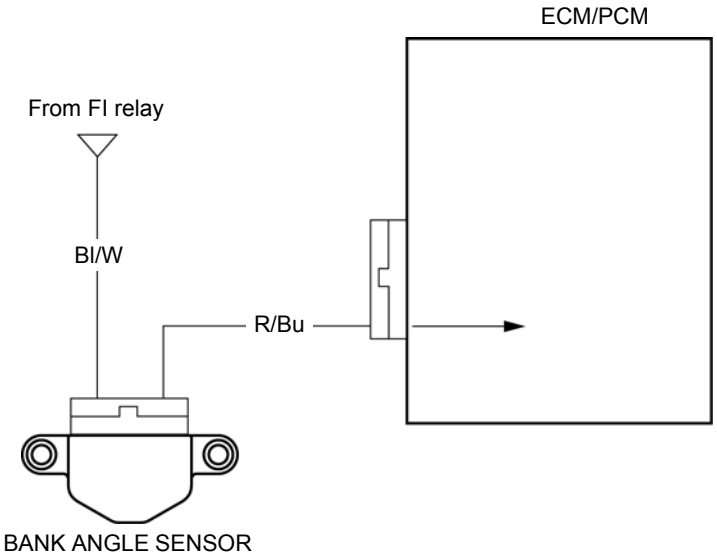
Erase the DTC (page 4-6).
Check the DTC with the MCS.

Is the DTC 33-2 indicated?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Intermittent failure

DTC 54 (BANK ANGLE SENSOR)



Probable cause
- Open circuit in the Black/white wire between the FI relay and bank angle sensor
- Open or short circuit in the Red/blue wire between the bank angle sensor and ECM/PCM
- Faulty bank angle sensor
- Faulty ECM/PCM

DTC 54-1 (BANK ANGLE SENSOR LOW VOLTAGE)

NOTE:
- Before starting the inspection, check for loose or poor contact on the bank angle sensor 2P (Black) and ECM/PCM 33P (Gray) connectors, and recheck the DTC.

1. Bank Angle Sensor System Inspection

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

Is about 0 V indicated?

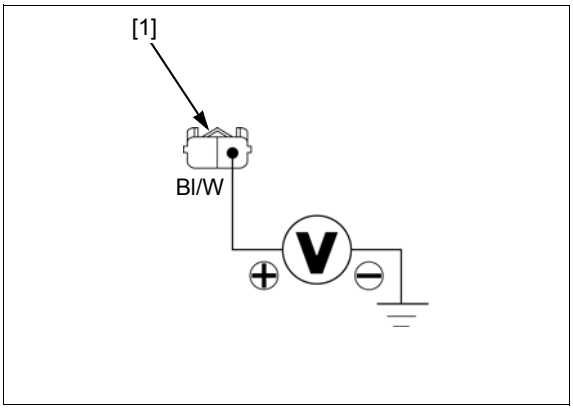
YES – GO TO STEP 2.

NO – Intermittent failure

2. Bank Angle Sensor Input Voltage Inspection

Turn the ignition switch OFF.
Disconnect the bank angle sensor 2P (Black) connector (page 22-4).
Turn the ignition switch ON.
Measure the voltage between the wire harness side 2P (Black) connector [1] and ground.

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



Is there battery voltage?

YES – GO TO STEP 3.

NO – Open circuit in the Black/white wire

3. Bank Angle Sensor Signal Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 2P (Black) connector [1] and 33P (Black) connector [2].

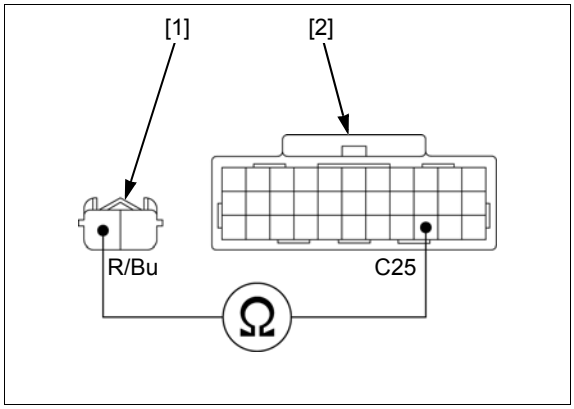
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Red/blue – C25

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Red/blue wire



4. Bank Angle Sensor Signal Line Short Circuit Inspection

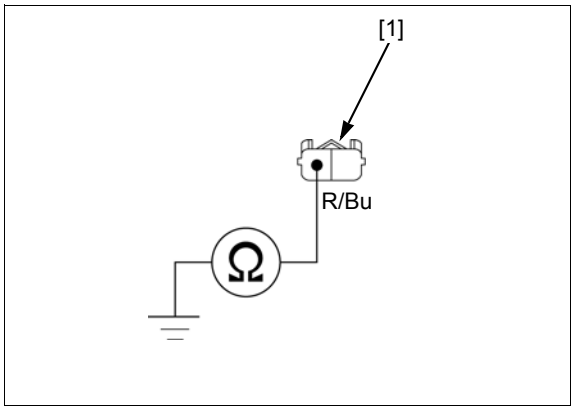
Check for continuity between the wire harness side 2P (Black) connector [1] and ground.

Connection: Red/blue – Ground

Is there continuity?

YES – Short circuit in the Red/blue wire

NO – GO TO STEP 5.



5. Bank Angle Sensor Inspection

Replace the bank angle sensor with a known good one (page 4-42).
Connect the ECM/PCM 33P (Gray) connector.
Erase the DTC (page 4-6).
Check the DTC with the MCS.

Is DTC 54-1 indicated?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Faulty original bank angle sensor

DTC 54-2 (BANK ANGLE SENSOR HIGH VOLTAGE)

1. Bank Angle Sensor System Inspection

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

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. Bank Angle Sensor Inspection

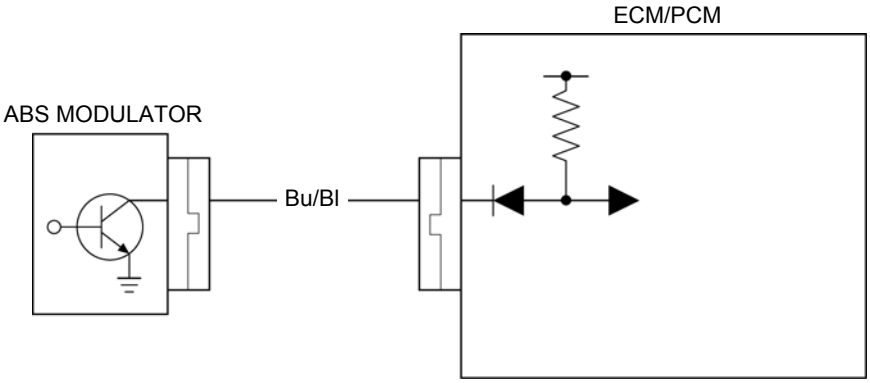
Replace the bank angle sensor with a known good one (page 4-42).
Erase the DTC (page 4-6).
Check the bank angle sensor with the MCS.

Is about 5 V indicated?

YES – Replace the ECM/PCM with a known good one (page 4-39) and recheck.

NO – Faulty original bank angle sensor

DTC 66 (REAR WHEEL SPEED SENSOR SIGNAL) (CRF1000A/D)



Probable cause
- Open or short circuit in the Blue/black wire between the ABS modulator and ECM/PCM
- Faulty ABS modulator
- Faulty ECM/PCM

DTC 66-1 (REAR WHEEL SPEED SENSOR SIGNAL)

1. DTC Recheck

Erase the DTC (page 4-6).
Test-ride the motorcycle above 20 km/h (12 mph) for more than 20 seconds.
Stop the engine.
Check the DTC with the MCS.

Is DTC 66-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. ABS DTC Check

Check the ABS DTC (page 20-6).

Does the ABS modulator have any DTC?

YES – Follow the ABS DTC index (page 20-8).

NO – GO TO STEP 3.

3. Rear Wheel Speed Sensor Signal Output Line Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the following:
– ABS modulator 18P (Black) connector (page 20-7)
– ECM/PCM 33P (Black) connector (page 4-39)

Check for continuity between the wire harness side 18P (Black) connector [1] and 33P (Black) connector [2].

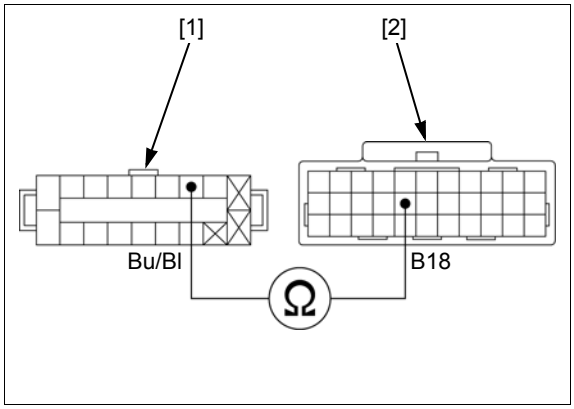
TOOL:
Test probe 07ZAJ-RDJA110

Connection: Blue/black – B18

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Blue/black wire



4. Rear Wheel Speed Sensor Signal Output Line Short Circuit Inspection

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

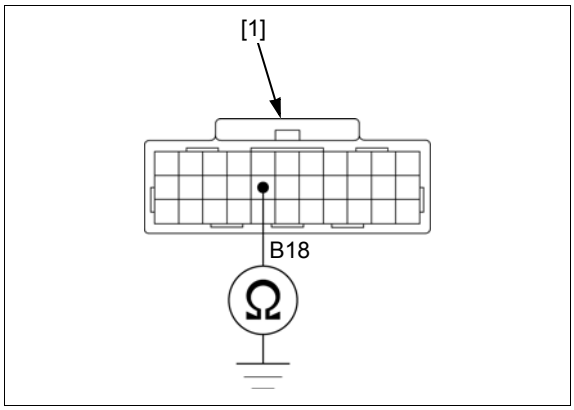
TOOL:
Test probe 07ZAJ-RDJA110

Connection: B18 – Ground

Is there continuity?

YES – Short circuit in the Blue/black wire

NO – GO TO STEP 5.



5. ECM/PCM Inspection

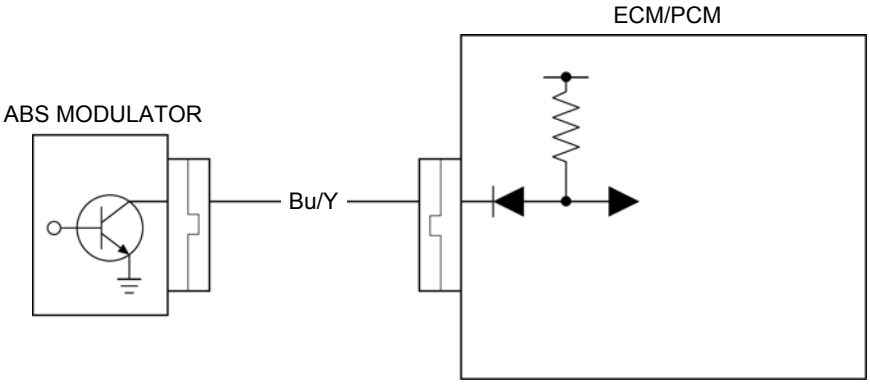
Replace the ECM/PCM with a known good one (page 4-39).
Connect the ABS modulator 18P (Black) connector.
Erase the DTC (page 4-6).
Test-ride the motorcycle above 20 km/h (12 mph) for more than 20 seconds.
Stop the engine.
Check the DTC with the MCS.

Is DTC 66-1 indicated?

YES – Replace the ABS modulator with a known good one (page 20-24) and recheck.

NO – Faulty original ECM/PCM

DTC 67 (FRONT WHEEL SPEED SENSOR SIGNAL) (CRF1000A/D)



Probable cause
- Open or short circuit in the Blue/yellow wire between the ABS modulator and ECM/PCM
- Faulty ABS modulator
- Faulty ECM/PCM

DTC 67-1 (FRONT WHEEL SPEED SENSOR SIGNAL)

1. DTC Recheck

Erase the DTC (page 4-6).
Test-ride the motorcycle above 20 km/h (12 mph) for more than 20 seconds.
Stop the engine.
Check the DTC with the MCS.

Is DTC 67-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. ABS DTC Check

Check the ABS DTC (page 20-6).

Does the ABS modulator have any DTC?

YES – Follow the ABS DTC index (page 20-8).

NO – GO TO STEP 3.

3. Front Wheel Speed Sensor Signal Output Line Open Circuit Inspection

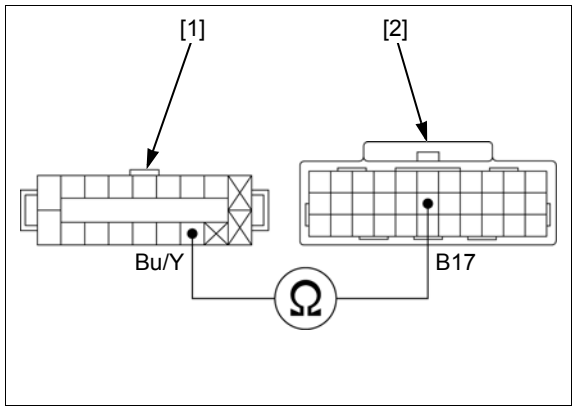
Turn the ignition switch OFF.

Disconnect the following:
– ABS modulator 18P (Black) connector (page 20-7)
– ECM/PCM 33P (Black) connector (page 4-39)

Check for continuity between the wire harness side 18P (Black) connector [1] and 33P (Black) connector [2].

TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Blue/yellow – B17



Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Blue/yellow wire

4. Front Wheel Speed Sensor Signal Output Line Short Circuit Inspection

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

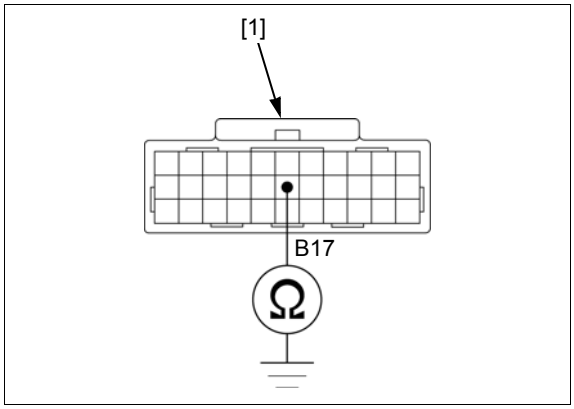
TOOL:
Test probe 07ZAJ-RDJA110

Connection: B17 – Ground

Is there continuity?

YES – Short circuit in the Blue/yellow wire

NO – GO TO STEP 5.



5. ECM/PCM Inspection

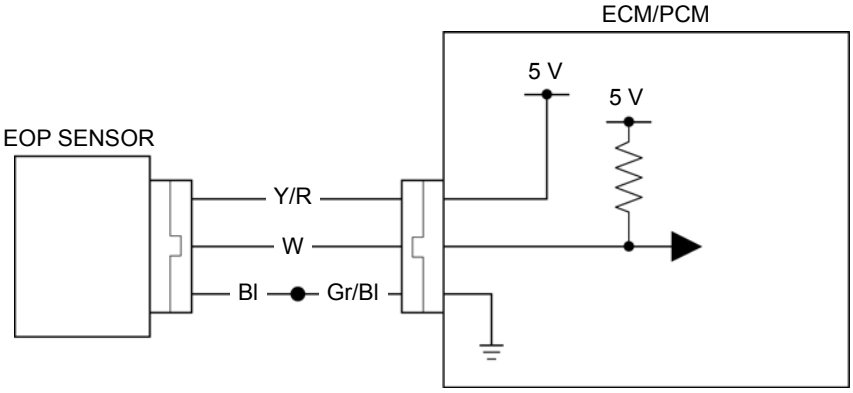
Replace the ECM/PCM with a known good one (page 4-39).
Connect the ABS modulator 18P (Black) connector.
Erase the DTC (page 4-6).
Test-ride the motorcycle above 20 km/h (12 mph) for more than 20 seconds.
Stop the engine.
Check the DTC with the MCS.

Is DTC 67-1 indicated?

YES – Replace the ABS modulator with a known good one (page 20-24) and recheck.

NO – Faulty original ECM/PCM

DTC 83 (EOP SENSOR) (CRF1000D)



Probable cause
- Open circuit in the Yellow/red or Gray/black wire between the EOP sensor and PCM
- Open or short circuit in the White wire between the EOP sensor and PCM
- Faulty EOP sensor
- Faulty PCM

DTC 83-1 (EOP SENSOR LOW VOLTAGE)

1. EOP Sensor System Inspection

Connect the MCS and start the engine.
Check the EOP sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. EOP Sensor Inspection

Stop the engine.
Disconnect the EOP sensor 3P (Black) connector (page 22-20).
Turn the ignition switch ON.
Check the EOP sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty EOP sensor

3. EOP Sensor Input Line Open Circuit Inspection

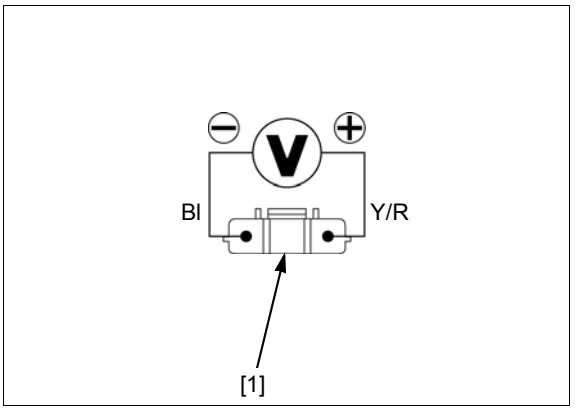
Measure the voltage at the wire harness side 3P (Black) connector [1].

Connection: Yellow/red (+) – Black (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – Open circuit in the Yellow/red wire



4. EOP Sensor Output Line Short Circuit Inspection

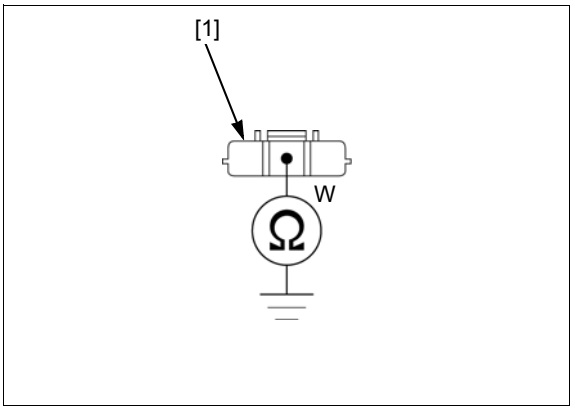
Turn the ignition switch OFF.
Disconnect the PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and ground.

Connection: White – Ground

Is there continuity?

YES – Short circuit in the White wire

NO – Replace the PCM with a known good one (page 4-39) and recheck.



DTC 83-2 (EOP SENSOR HIGH VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the EOP sensor 3P (Black), alternator assembly 6P (Black), PCM 33P (Black) and 33P (Gray) connectors, and recheck the DTC.

1. EOP Sensor System Inspection

Check the EOP sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. EOP Sensor Inspection

Turn the ignition switch OFF.
Disconnect the EOP sensor 3P (Black) connector (page 22-20).
Connect the wire harness side 3P (Black) connector [1] with a jumper wire [2].

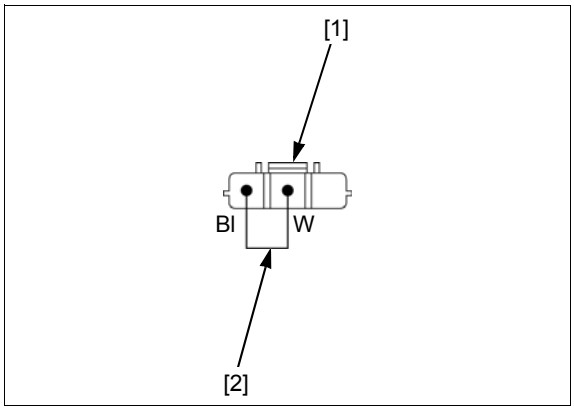
Connection: White – Black

Turn the ignition switch ON.
Check the EOP sensor with the MCS.

Is about 0 V indicated?

YES – Faulty EOP sensor

NO – GO TO STEP 3.



3. EOP Sensor Ground Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side sensor 3P (Black) connector [1] and 33P (Black) connector [2].

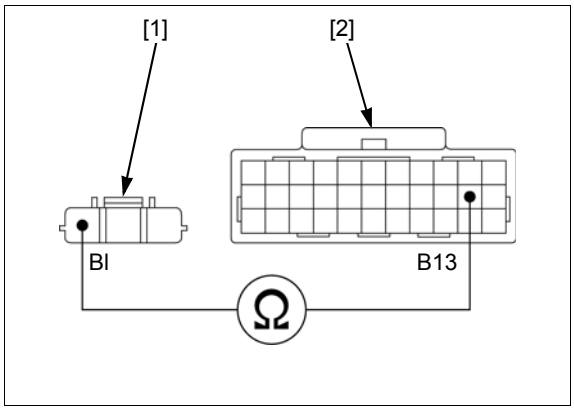
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Black – B13

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Black or Gray/black wire



4. EOP Sensor Output Line Open Circuit Inspection

Disconnect the PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 33P (Gray) connector [2].

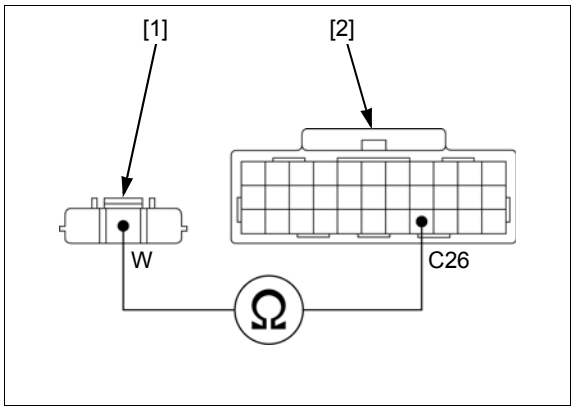
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: White – C26

Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the White wire



DTC 84-1 (CPU IN THE PCM) (CRF1000D)

1. DTC Recheck

Erase the DTC (page 4-6).
Check the DTC with the MCS.

Is DTC 84-1 indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Intermittent failure

MIL CIRCUIT TROUBLESHOOTING

When The Engine Starts But The MIL Does Not Come On

Check that the MIL comes on a few seconds and goes OFF when the ignition switch is turned ON with the engine stop switch "".

If the MIL and digital display do not function at all, refer to combination meter power/ground line inspection (page 22-12).

When The Engine Starts But The MIL Does Not Go Off Within A Few Seconds

If the engine stop switch is in "", the MIL will stay on even when the system is normal.

If the MIL stays on, check the combination meter indication when the TXD line is abnormal (page 22-14).

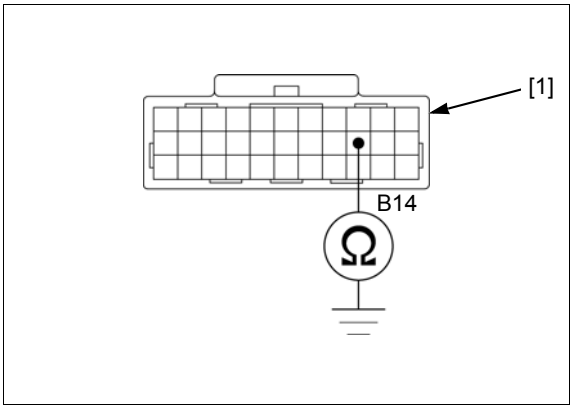
If the indication is not according to above condition, check as follows.

Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side ECM/PCM 33P (Black) connector [1] and ground.

TOOL:
Test probe **07ZAJ-RDJA110**

CONNECTION: B14 – Ground

If there is continuity, check for short circuit in the Gray/ blue wire between the DLC and ECM/PCM.
If there is no continuity, replace the ECM/PCM with a known good one (page 4-39), and recheck.



ECM (CRF1000/A)/PCM (CRF1000D)

REMOVAL/ INSTALLATION

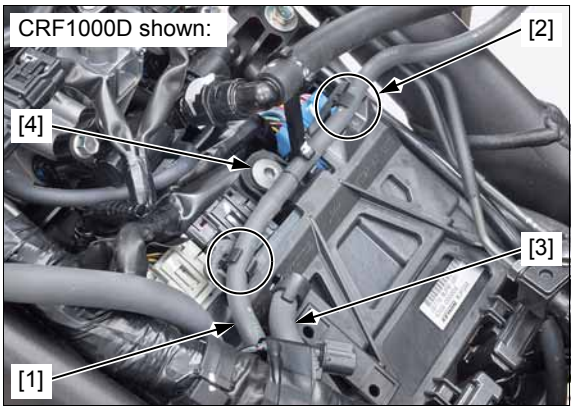
Remove the fuel tank (page 7-6)

Turn the ignition switch OFF.

Release the fuel tank breather hose [1] from the ECM/ PCM stay clamps [2].

Release the fuel tank breather hose C (open air) [3].

Remove the socket bolt [4].



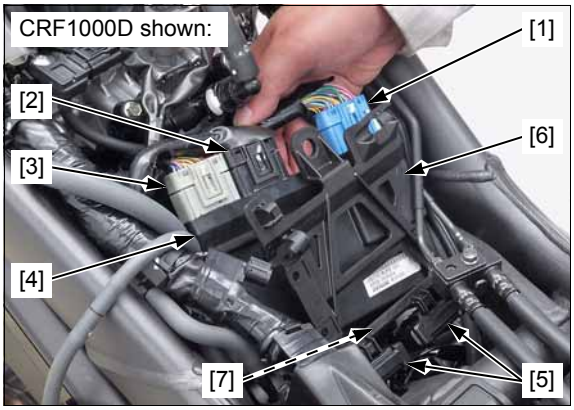
Disconnect the following:

– PCM 33P (Blue) connector [1] (CRF1000D)
– ECM/PCM 33P (Black) connector [2]
– ECM/PCM 33P (Gray) connector [3]

Remove the ECM/PCM [4].

Release the junction terminals [5] from the ECM/PCM stay [6] and remove the stay by releasing its tab [7] from the battery box.

Installation is in the reverse order of removal.



POWER/GROUND LINE INSPECTION

Disconnect the ECM/PCM 33P (Black) connector (page 4-39).

POWER INPUT LINE

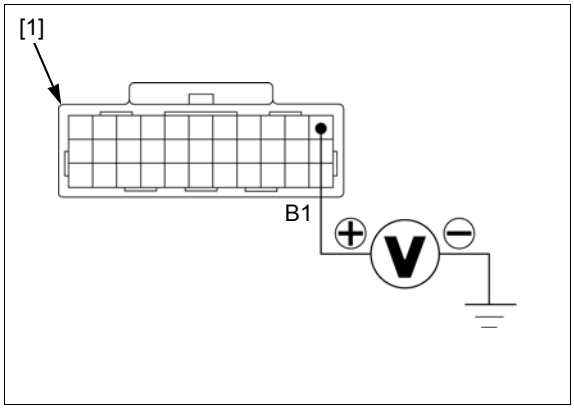
Measure the voltage between the wire harness side ECM/PCM 33P (Black) connector [1] and ground.

TOOL:
Test probe **07ZAJ-RDJA110**

CONNECTION: B1 (+) – Ground (–)

There should be battery voltage with the ignition switch turned ON and engine stop switch "".

If there is no voltage, check the following:
– Open circuit in the Black/white wire between the ECM/PCM and main relay
– FI relay (page 4-43) and related circuit



GROUND LINE

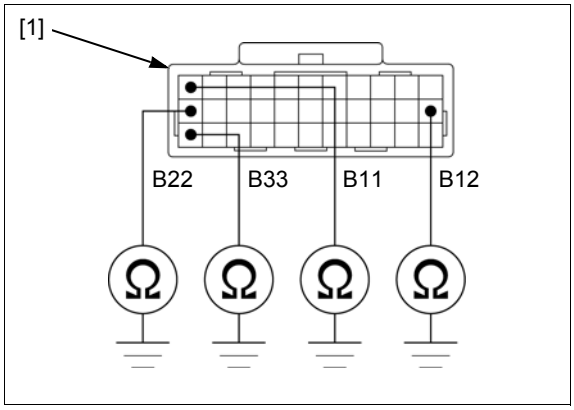
Check for continuity between the wire harness side ECM/PCM 33P (Black) connector [1] and ground.

TOOL:
Test probe **07ZAJ-RDJA110**

CONNECTION: B11 – Ground
B12 – Ground
B22 – Ground
B33 – Ground (CRF1000D)

There should be continuity at all times.

If there is no continuity, check for open circuit in the Green/blue or Green wire.



MAP SENSOR

REMOVAL/INSTALLATION

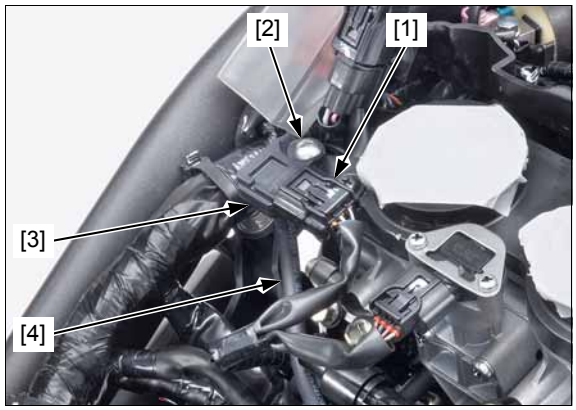
Remove the air cleaner housing (page 7-11).

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

Remove the screw [2] and MAP sensor [3] from the throttle body setting plate.

Disconnect the MAP sensor hose [4].

Installation is in the reverse order of removal.



ECT SENSOR

REMOVAL/INSTALLATION

Drain the coolant (page 8-4).

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

Remove the ECT sensor [2] and O-ring [3].

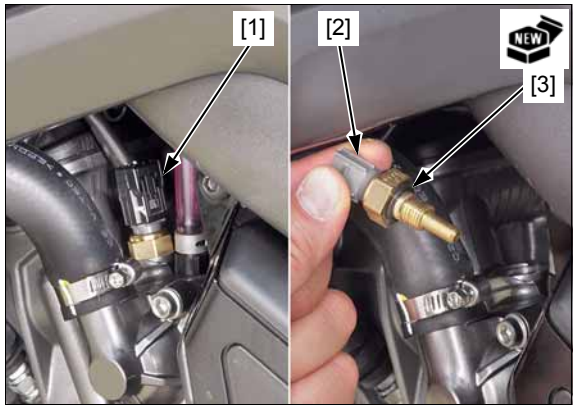
Installation is in the reverse order of removal.

NOTE:

- Replace the O-ring with a new one (do not apply oil).

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Fill the and bleed the cooling system (page 8-4).



IAT SENSOR

REMOVAL/INSTALLATION

Remove the air cleaner housing (page 7-11).

Remove the screws [1].

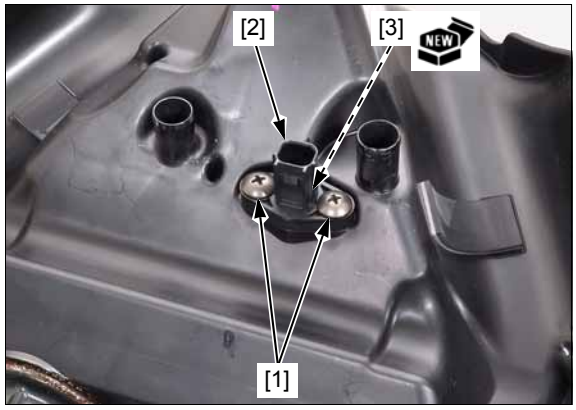
Remove the IAT sensor [2] and O-ring [3].

Installation is in the reverse order of removal.

NOTE:

- Replace the O-ring with a new one.

TORQUE: 1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)



VS SENSOR

REMOVAL/INSTALLATION

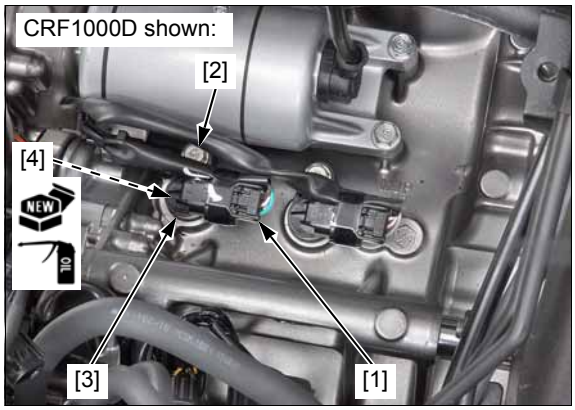
Remove the battery box (page 21-6).

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

Remove the following:

– Bolt [2]
– VS sensor [3]
– O-ring [4]

Installation is in the reverse order of removal.



NOTE:

- The VS sensor and outer mainshaft sensor are the same parts.
- Replace the O-ring with a new one and coat it with engine oil.
- Install the O-ring into the groove in the VS sensor.

O_2 SENSOR

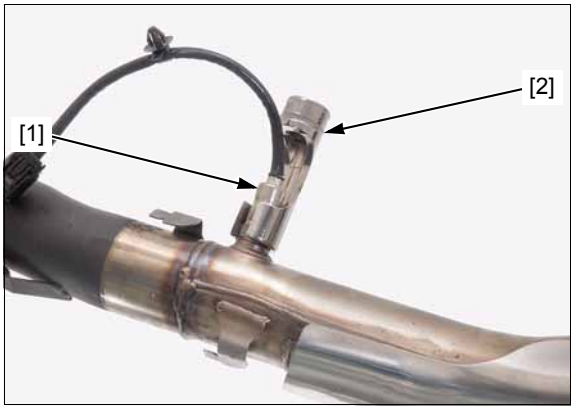
REMOVAL/INSTALLATION

Remove the exhaust pipe (page 2-17).

Remove the O_2 sensor [1] using the special tool.

TOOL:

Sensor socket wrench [2]	**FRXM17 (Snap on) or equivalent**



NOTICE

- *Handle the O_2 sensor with care.*
- *Do not get grease, oil, or other materials in the O_2 sensor air hole.*
- *Be careful not to damage the sensor wire.*
- *Do not use an impact wrench while removing or installing the O_2 sensor.*
- *Do not service the O_2 sensor while it is hot.*

Installation is in the reverse order of removal.

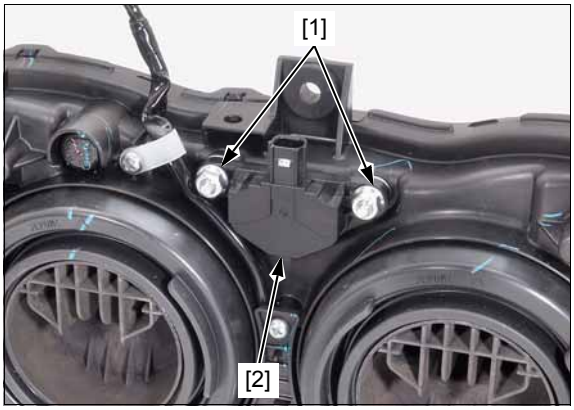
TORQUE: 24.5 N·m (2.5 kgf·m, 18 lbf·ft)

BANK ANGLE SENSOR

REMOVAL/INSTALLATION

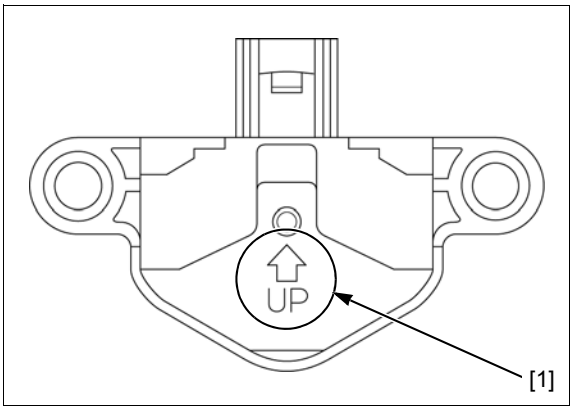
Remove the headlight (page 22-4).

Remove the nuts [1] and bank angle sensor [2].



Installation is in the reverse order of removal.

- Install the bank angle sensor with its "UP" mark [1] facing up.



SYSTEM INSPECTION

Connect the MCS (page 4-6).
Remove the bank angle sensor (page 4-42).

Connect the bank angle sensor 2P (Black) connector.

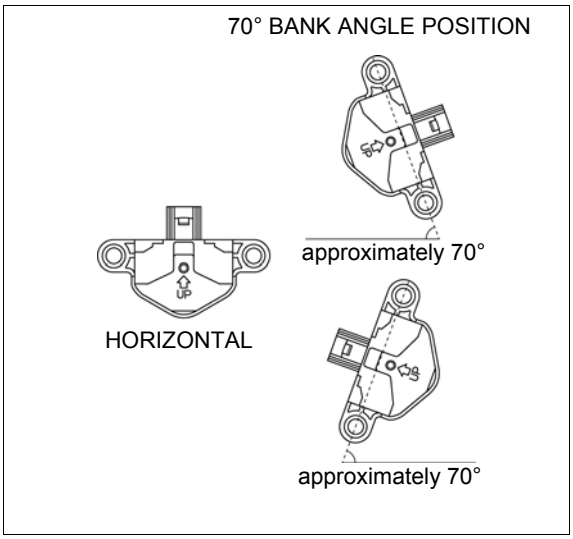
Place the bank angle sensor horizontally as shown.

Turn the ignition switch ON and engine stop switch "".
Read the voltage with the MCS.

STANDARD: 1.2 – 4.6 V

Incline the bank angle sensor approximately 70° to the left or right with keeping the ignition switch ON.
Read the voltage with MCS.

STANDARD: 0.1 – 0.5 V



FI RELAY

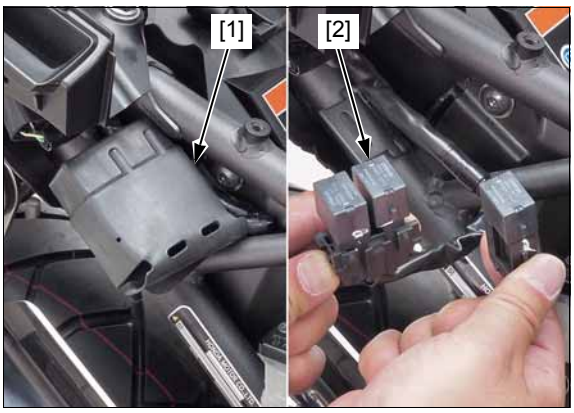
REMOVAL/INSTALLATION

Remove the right side cover (page 2-11).

Release the relay connectors from the frame and remove the relay cover [1].

Remove the FI relay [2].

Installation is in the reverse order of removal.



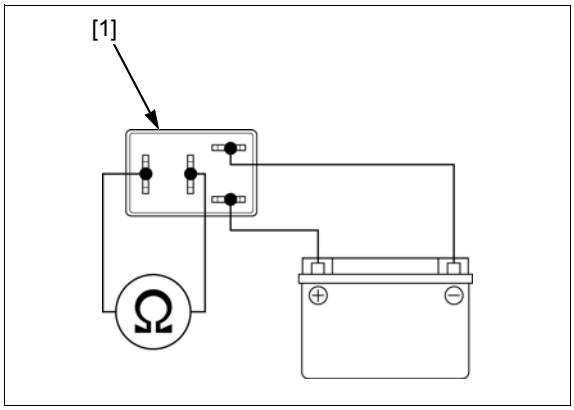
RELAY INSPECTION

Remove the FI relay (page 4-43).

Connect an ohmmeter to the FI relay [1] terminals.
Connect a 12 V battery to the starter relay connector terminals as shown.

There should be continuity only when 12 V battery is connected.
If there is no continuity when the 12 V battery is connected, replace the starter relay.

Install the removed parts in the reverse order of removal.



5. IGNITION SYSTEM

SERVICE INFORMATION ····· 5-2
TROUBLESHOOTING ····· 5-3
SYSTEM LOCATION ····· 5-4
SYSTEM DIAGRAM ····· 5-5
IGNITION SYSTEM INSPECTION ····· 5-6
IGNITION COIL ····· 5-9
IGNITION TIMING ····· 5-10

SERVICE INFORMATION

GENERAL

NOTICE

- *The ECM/PCM 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 5-3).
- 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 that 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 ECM/PCM service (page 4-39).
- Refer to CKP sensor removal/installation (page 11-7).
- Refer to following components informations:
  - Bank angle sensor (page 4-42)
  - FI relay (page 4-43)
  - Neutral switch (CRF1000D) (page 13-82)
  - Ignition switch (page 22-23)
  - Engine stop switch (page 22-24)
  - Clutch switch (CRF1000/A) (page 22-25)
  - Gear position switch (CRF1000/A) (page 22-25)
  - Sidestand switch (page 22-27)
- The following color codes are used throughout this section.

Bl = Black	Bu = Blue	Gr = Gray	G = Green	Lg = Light green	R = Red
W = White	Y = Yellow				

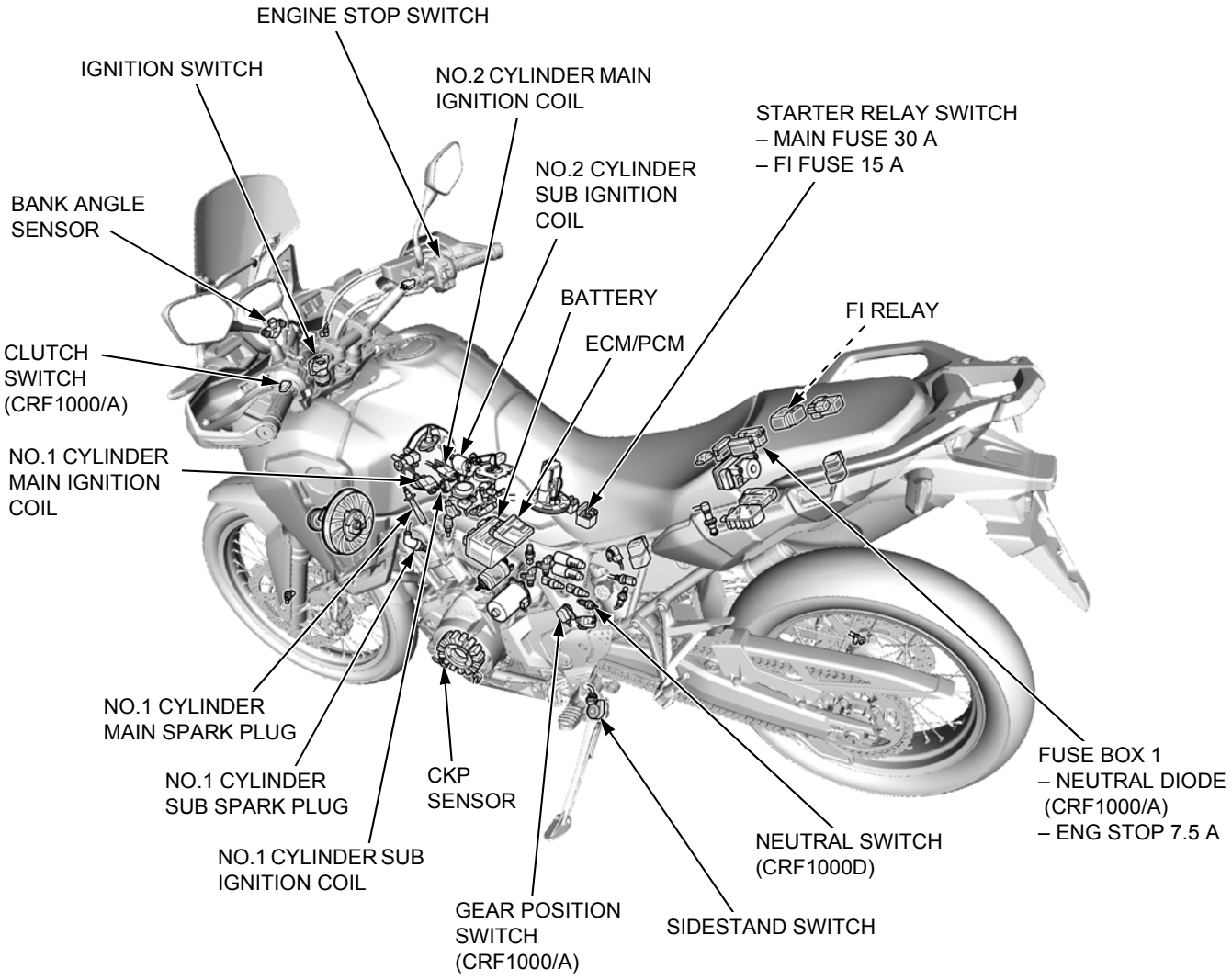
TROUBLESHOOTING

- Inspect the following before diagnosing the system.
  – Faulty spark plug
  – Loose spark plug cap and spark plug connection
  – Loose ignition coil connectors
  – Water got into the spark plug cap (Leaking the ignition coil secondary voltage)
- If there is no spark at one cylinder, temporarily exchange the direct ignition coil with the other good one and perform the spark test. If there is spark, the original direct ignition coil is faulty.
- "Initial voltage" of the ignition primary coil is battery voltage with the ignition switch turned ON and engine stop switch turned "" (The engine is not cranked by the starter motor).

No spark at spark plug

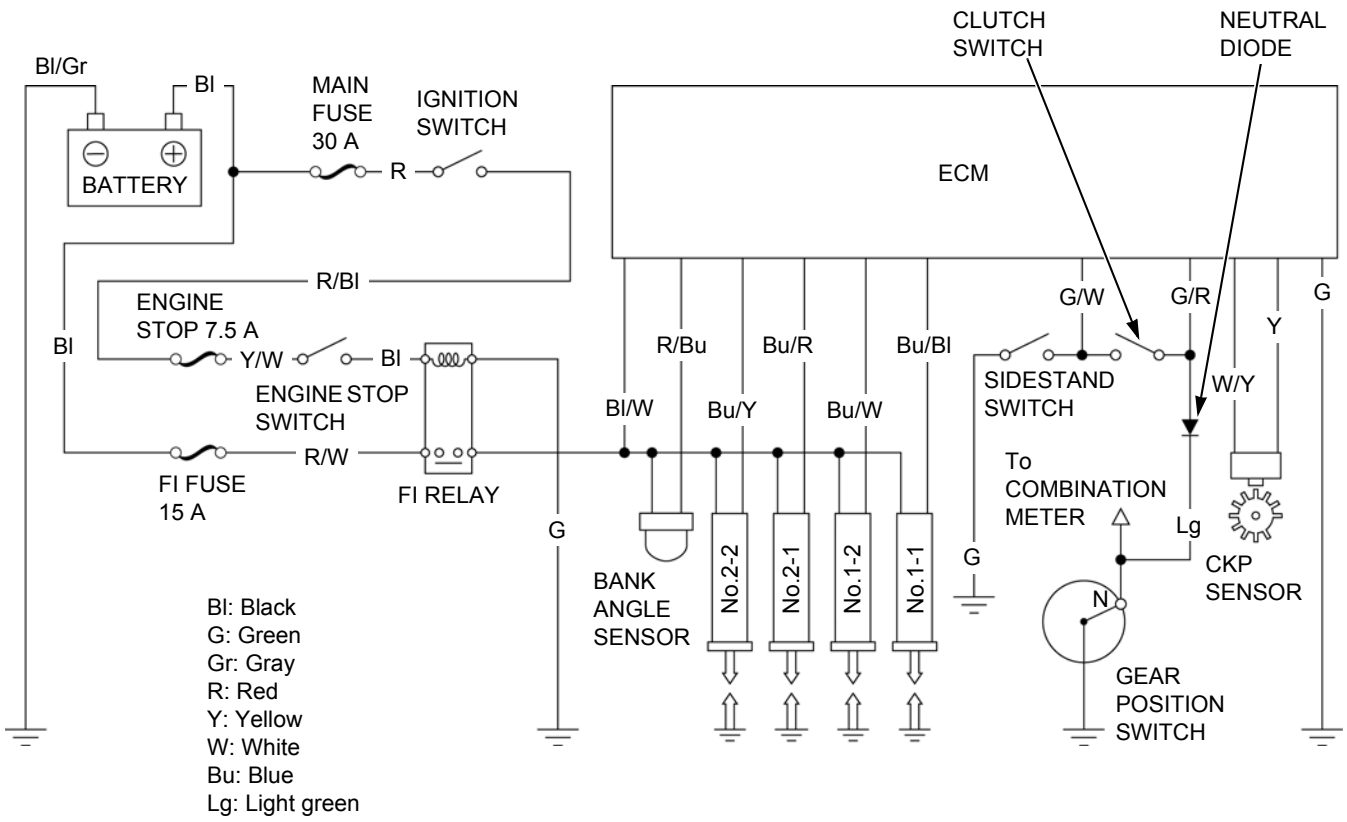
Unusual condition		Probable cause (Check in numerical order)
Ignition coil primary voltage	No initial voltage with the ignition switch ON and engine stop switch "" (Other electrical components are normal).	1. Faulty ignition switch 2. Faulty engine stop switch 3. Faulty FI relay or its related circuits 4. An open circuit in Black/white wire between the FI relay and ignition coil 5. Loose or poor connection of the primary terminal, or an open circuit in the primary coil 6. Faulty ECM/PCM (in case when the initial voltage is normal with the ECM/PCM connector disconnected).
	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/white (+) wire and body ground (–) at the ECM/PCM connector or loosen ECM/PCM connection 4. An open circuit or loose connection in Green wire at the ECM/PCM 5. An open circuit or loose connection in Blue/black, Blue/white, Blue/red, or Blue/yellow wires between the ignition coil and ECM/PCM 6. Faulty following components: – CRF1000/A: sidestand switch, clutch switch, or gear position switch – CRF1000D: sidestand switch or neutral switch 7. Loose or poor connection or an open circuit in No. 6 related wires – Sidestand switch line: Green/white and Green wires – Clutch switch line (CRF1000/A): Green/red and Green/white wires – Gear position switch line (CRF1000/A): Light green wire – Neutral switch line (CRF1000D): Light green wire 8. Faulty CKP sensor (Measure peak voltage) 9. Faulty ECM/PCM (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/PCM (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/PCM (in case when above No. 1 through 3 are normal).
	Initial and peak voltages are normal, but no spark jumps at plug.	1. Faulty spark plug or leaking ignition coil secondary current ampere 2. Faulty ignition coil
CKP sensor	Peak voltage is lower than the 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

SYSTEM LOCATION

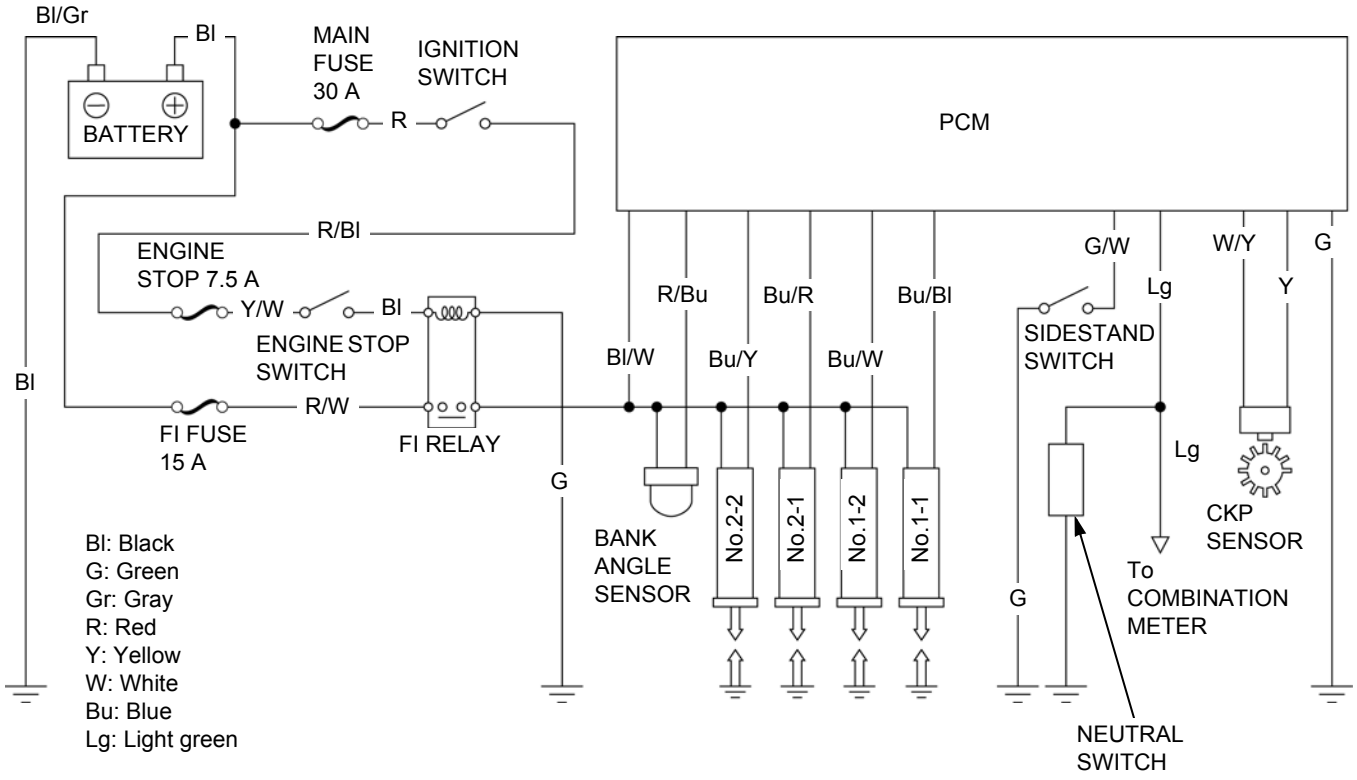


SYSTEM DIAGRAM

CRF1000/A



CRF1000D



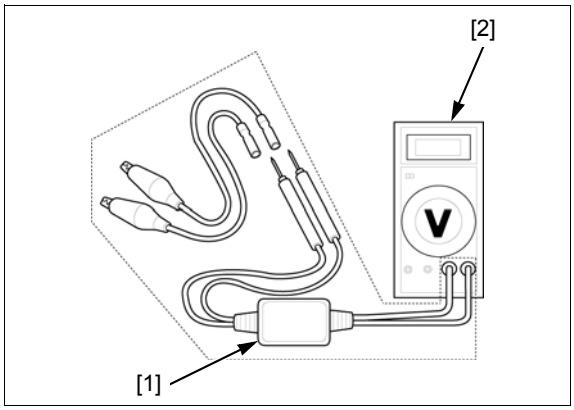
IGNITION SYSTEM INSPECTION

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 MΩ/DCV minimum.
- The display value differs depending upon the internal impedance of the multimeter.
- If using the imrie diagnostic tester (MODEL 625), follow the manufacturer's instructions.

Connect the peak voltage adaptor to the digital multimeter, or use the peak voltage tester.

TOOLS:
Imrie diagnostic tester (model 625) or
Peak voltage adaptor [1] 07HGJ-0020100
with commercially available digital multimeter [2]
(impedance 10 MΩ/DCV minimum)



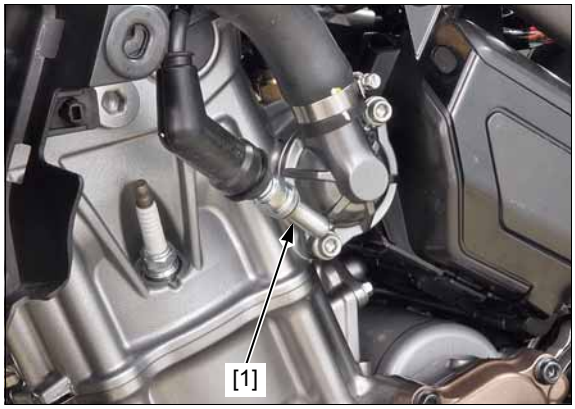
IGNITION COIL PRIMARY PEAK VOLTAGE

NOTE:

- Check all system connections before performing this inspection. Loose connectors can cause incorrect readings.
- 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.

Disconnect the spark plug caps (page 3-6).

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.

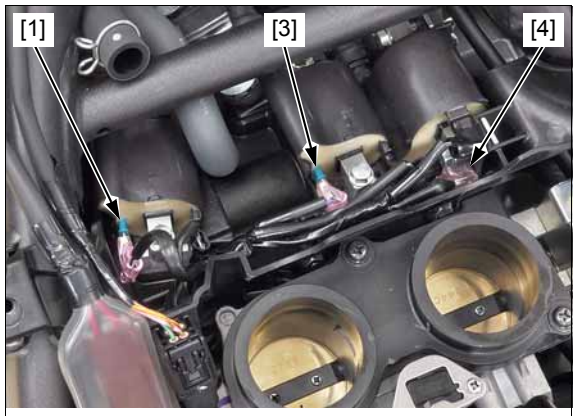


Remove the air cleaner housing (page 7-11).

Do not disconnect the ignition coil primary wire.

With the ignition coil primary wire connected, connect the peak voltage adaptor or Imrie tester to the ignition coil primary terminal and ground.

– No.1 cylinder main ignition coil primary terminal [1]
– No.1 cylinder sub ignition coil primary terminal [2]
– No.2 cylinder main ignition coil primary terminal [3]
– No.2 cylinder sub ignition coil primary terminal [4]





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

CONNECTION:
No.1 main: Blue/black (+) – Ground (–)
No.1 sub: Blue/white (+) – Ground (–)
No.2 main: Blue/red (+) – Ground (–)
No.2 sub: Blue/yellow (+) – Ground (–)

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

Check the initial voltage at this time.
The battery voltage should be measured.
If the initial voltage cannot be measured, follow the checks described in the troubleshooting table (page 5-3).

Shift the transmission into neutral.

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

Crank the engine with the starter motor and measure the 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 5-3).

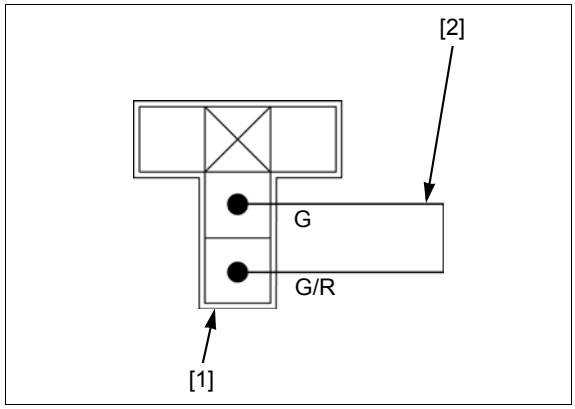
Install the air cleaner housing (page 7-11).

CKP SENSOR PEAK VOLTAGE

NOTE:
Check the cylinder compression and check that the spark plugs are installed correctly in the cylinder head.

CRF1000D:

Turn the ignition switch OFF.
Remove the starter relay (page 7-11).
Connect the wire harness side relay 4P (Black) connector [1] terminals with a jumper wire [2].

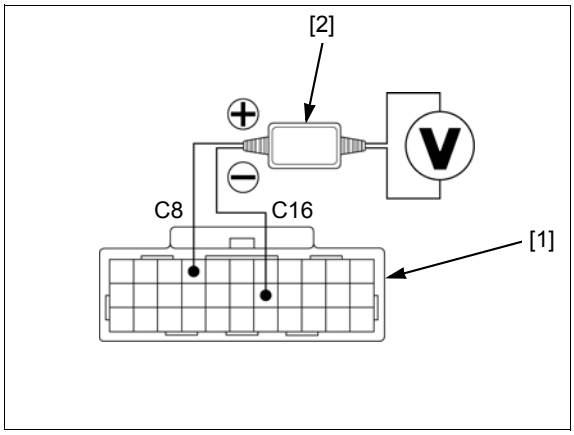


CONNECTION: Green/red – Green

Turn the ignition switch OFF.

Disconnect the ECM/PCM 33P (Gray) connectors (page 4-39).

Connect the peak voltage tester or adaptor probes to the wire harness side 33P (Gray) [1] connectors.



TOOLS:
Imrie diagnostic tester (model 625) or
Peak voltage adaptor [2] 07HGJ-0020100
with commercially available digital multimeter
(impedance 10 MΩ/DCV minimum)
Test probe 07ZAJ-RDJA110

CONNECTION: C8 (+) – C16 (–)

CRF1000/A: Shift the transmission into neutral.

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

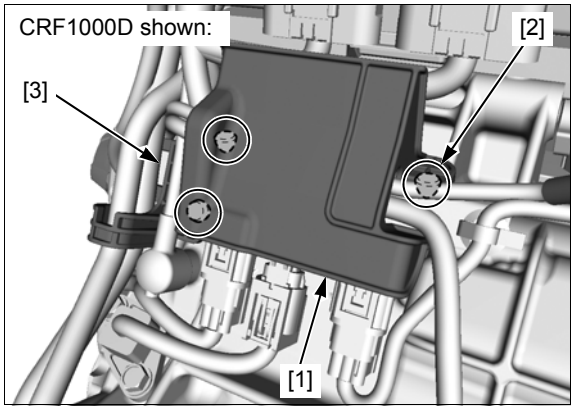
Crank the engine with the starter motor and measure the CKP sensor peak voltage.

PEAK VOLTAGE: 0.7 V minimum

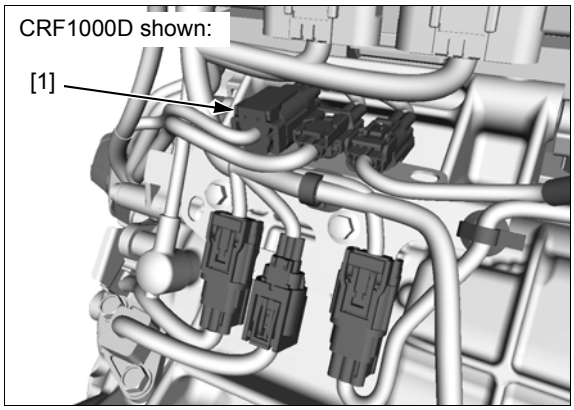
If the peak voltage measured at the ECM/PCM 33P connectors are abnormal, measure the peak voltage at the CKP sensor connector.

Remove the ECM/PCM (page 4-39).

Remove the connector cover [1] by releasing its bosses [2] and slit [3] from the connector clip stay.



Disconnect the Alternator assembly 6P (Black) connector [1].



Connect the ECM/PCM 33P connectors.

CONNECTION: Yellow (+) – White/yellow (–)

In the same manner as at the ECM/PCM 33P connectors, measure the peak voltage and compare it to the voltage measured at the ECM/PCM 33P connectors.

– If the peak voltage measured at the ECM/PCM 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 5-3).

For CKP sensor replacement (page 11-7).

Install the removed parts in the reverse order of removal.

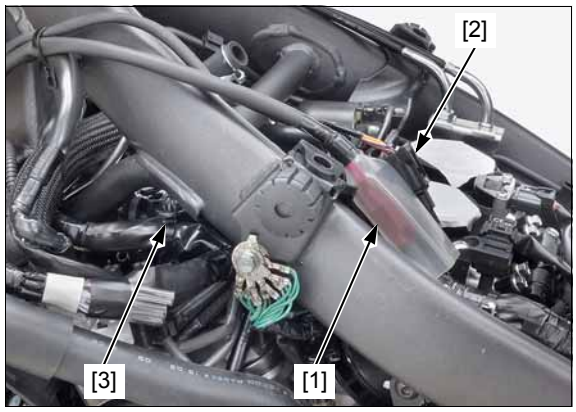
IGNITION COIL

IGNITION COIL TRAY REMOVAL/ INSTALLATION

Disconnect the spark plug cap (page 3-6).
Remove the air cleaner housing (page 7-11).

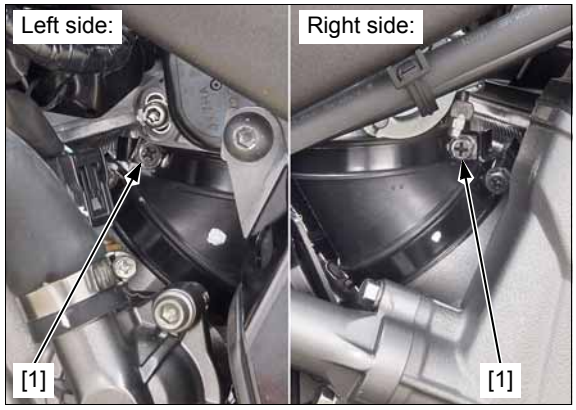
Release the ignition switch 2P (Brown) [1] and immobilizer receiver 4P (Black) [2] connectors from the ignition coil tray.

Release the main wire harness clip [3].

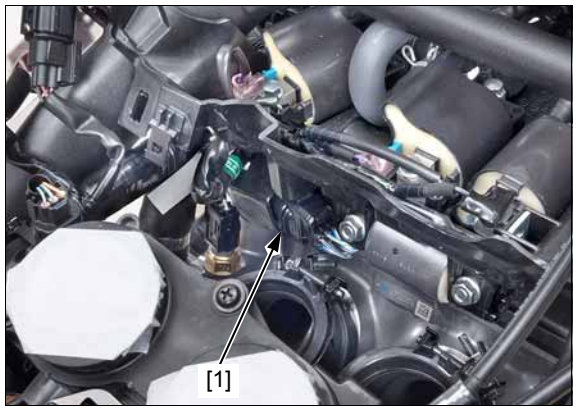


Loosen the band screws (throttle body side) [1].

Disconnect the throttle body from the insulators and pull it rearward.



Disconnect the ignition coil wire sub harness 6P (Black) connector [1].

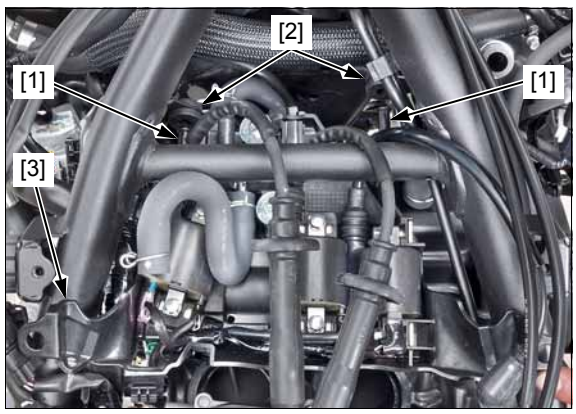


Releasing the bosses [1] from the grommets [2] by pulling the ignition coil tray assembly [3] rearward, and remove the tray assembly.

Installation is in the reverse order of removal.

NOTE:

- Route the wires properly (page 1-26).
- Refer to the throttle body installation (page 7-15).



IGNITION COIL TRAY DISASSEMBLY/ DISASSEMBLY

Remove the ignition coil tray assembly (page 5-9)

Remove the PAIR control solenoid valve (page 7-19)

Disconnect the ignition coil connectors.

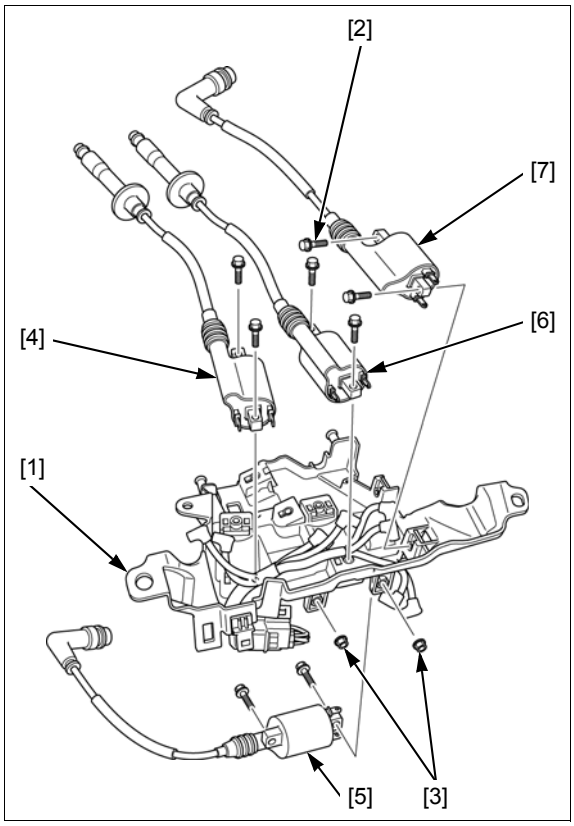
Remove the following from the ignition tray [1]:

– Bolts [2]
– Nuts [3]
– No.1 cylinder main ignition coil [4]
– No.1 cylinder sub ignition coil [5]
– No.2 cylinder main ignition coil [6]
– No.2 cylinder sub ignition coil [7]

Installation is in the reverse order of removal.

NOTE:

• Route the wire harness properly (page 1-26).



IGNITION TIMING

Warm up the engine.

Stop the engine and remove the timing hole cap.

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

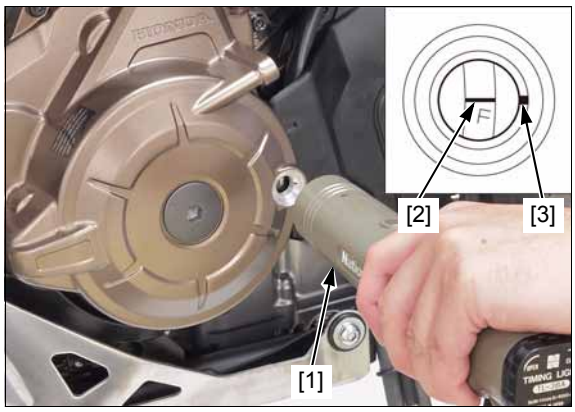
NOTE:

• Read the instructions for timing light operation.

Start the engine and let it idle.

IDLE SPEED: 1,200 ± 100 min^{-1} (rpm)

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



Apply engine oil to a new O-ring [1] and install it to the timing hole cap [2].

Apply grease to the timing hole cap threads.

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

TORQUE: 6 N·m (0.6 kgf·m, 4.4 lbf·ft)



6. ELECTRIC STARTER

SERVICE INFORMATION ····· 6-2
TROUBLESHOOTING ····· 6-2
SYSTEM LOCATION ····· 6-3
SYSTEM DIAGRAM ····· 6-4
STARTER MOTOR ····· 6-5
STARTER RELAY SWITCH ····· 6-7
NEUTRAL DIODE (CRF1000/A) ····· 6-9
STARTER RELAY (CRF1000D) ····· 6-9

SERVICE INFORMATION

GENERAL

NOTICE

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

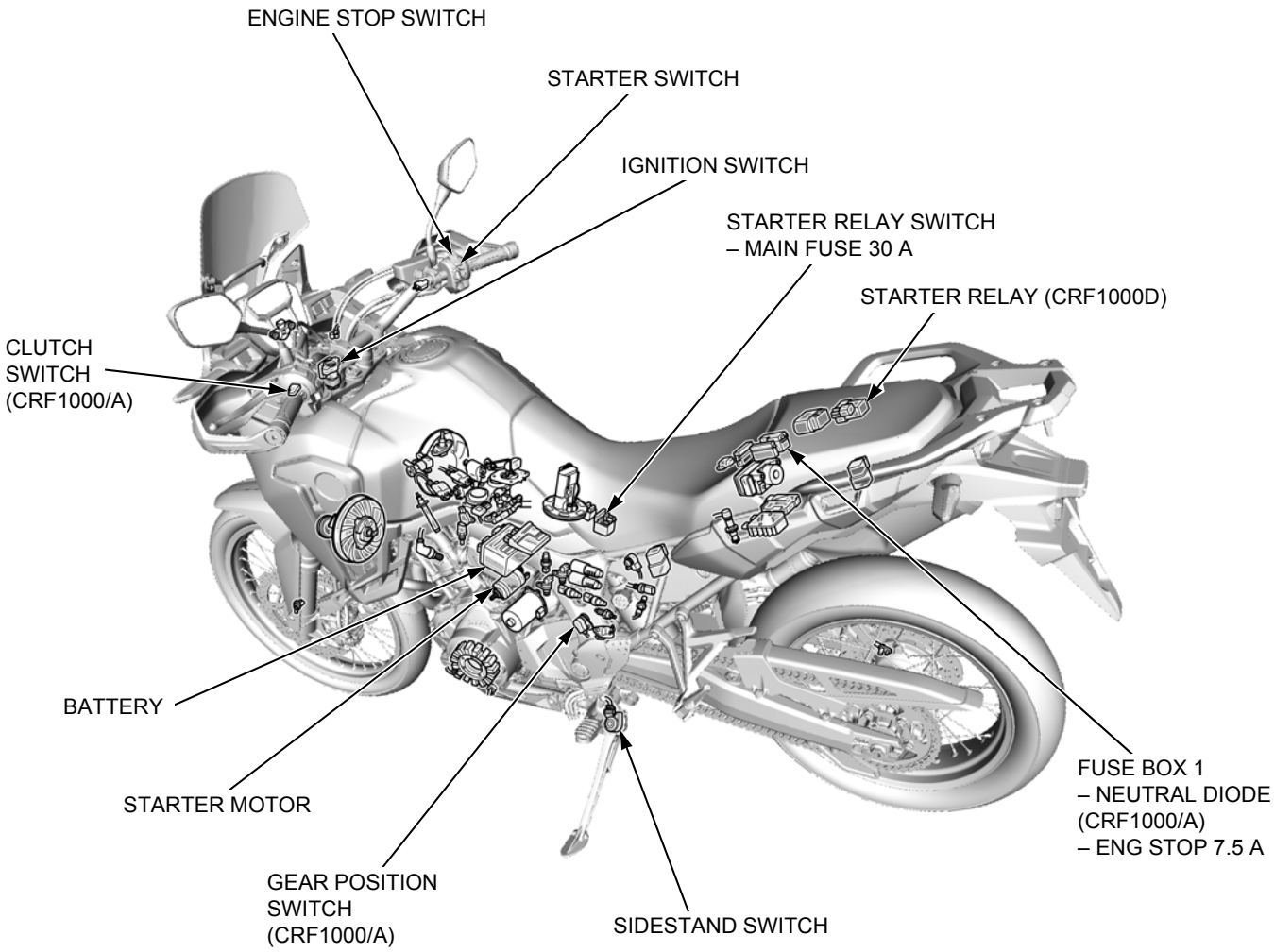
- The starter motor can be serviced with the engine installed in the frame.
- Always turn the ignition switch OFF before servicing the starter motor. The motor could suddenly start, causing serious injury.
- A weak battery may be unable to turn the starter motor quickly enough, or supply adequate ignition current.
- When servicing the starter system, always follow the steps in the troubleshooting table (page 6-2).
- Refer to the following components information:
  - Ignition switch (page 22-23)
  - Starter switch (page 22-24)
  - Engine stop switch (page 22-24)
  - Clutch switch (CRF1000/A) (page 22-25)
  - Gear position switch (CRF1000/A) (page 22-25)
  - Sidestand switch (page 22-27)
  - The following color codes are used throughout this section.

Bl = Black	Br = Brown	Gr = Gray	G = Green	Lg = Light green	R = Red
W = White	Y = Yellow				

TROUBLESHOOTING

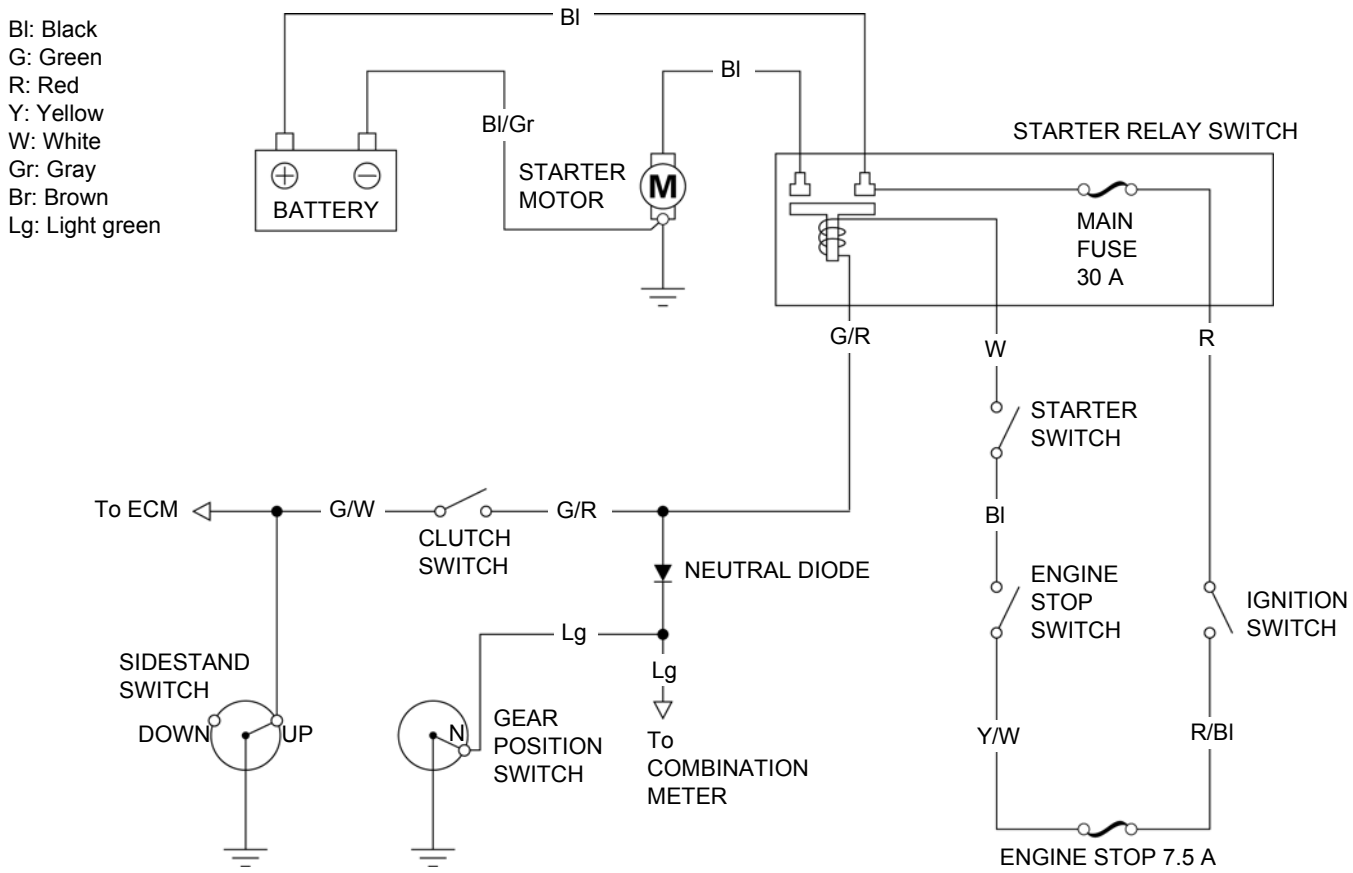
Unusual condition		Probable cause (Check in numerical order)
Starter motor	Starter motor does not turn	1. Loose or poor contact on related connectors and terminals 2. Blown fuse 3. Weak battery 4. Faulty starter relay switch 5. Faulty starter motor 6. Loose connection, open or short circuit in starter motor cable 7. Faulty starter switch 8. Open circuit in starter relay switch ground circuit 9. Faulty starter relay (CRF1000D) 10. Open or short circuit in starter relay switch power circuit 11. Loose contact or open circuit in related wires
	CRF1000/A: Starter motor turns only when the transmission is in neutral (Starter motor does not turn when the transmission is in any gear with the sidestand retracted and clutch lever pulled in)	1. Loose or poor contact on related connectors and terminals 2. Faulty clutch switch 3. Faulty sidestand switch 4. Loose contact or open circuit in related wires
	CRF1000/A: Starter motor turns only when the transmission is in any gear with the sidestand retracted and clutch lever pulled in (Starter motor does not turn when the transmission is in neutral with the sidestand lowered and clutch lever released)	1. Loose or poor contact on related connectors and terminals 2. Faulty diode 3. Faulty gear position switch 4. Loose contact or open circuit in related wires
	Starter motor turns slowly	1. Low battery voltage 2. Poorly connected battery terminal cable 3. Poorly connected starter motor cable 4. Faulty starter motor 5. Poorly connected battery ground cable
	Starter motor turns, but engine does not turn	1. Starter motor is running backwards – Case assembled improperly – Terminals connected improperly 2. Faulty starter clutch 3. Damaged or faulty starter idle gear and/or reduction gear
	Starter relay switch "Clicks", but engine does not turn over	1. Crankshaft does not turn due to engine problems

SYSTEM LOCATION

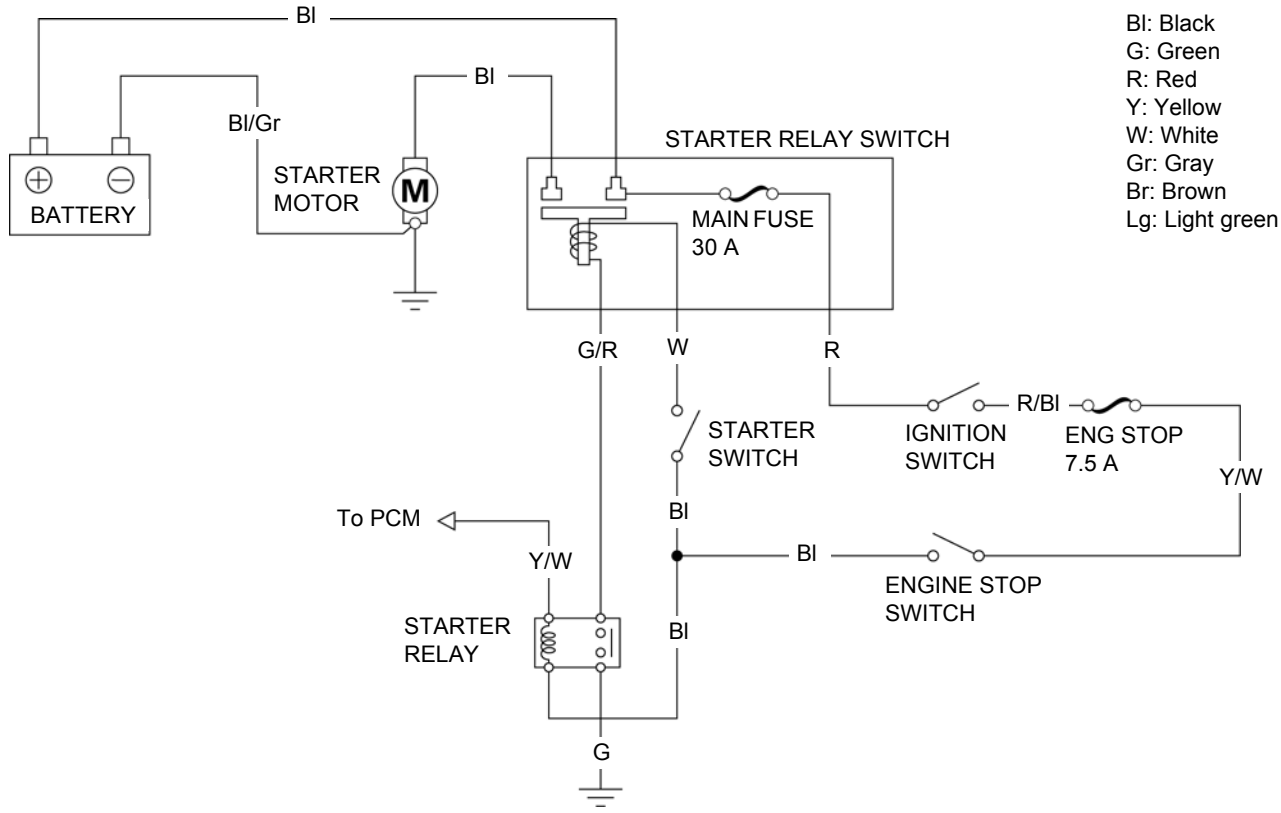


SYSTEM DIAGRAM

CRF1000/A



CRF1000D



STARTER MOTOR

REMOVAL/INSTALLATION

Remove the battery box (page 21-6).

Remove the bolts [1] and starter motor [2].



Remove the O-ring [1].

Installation is in the reverse order of removal.

NOTE:

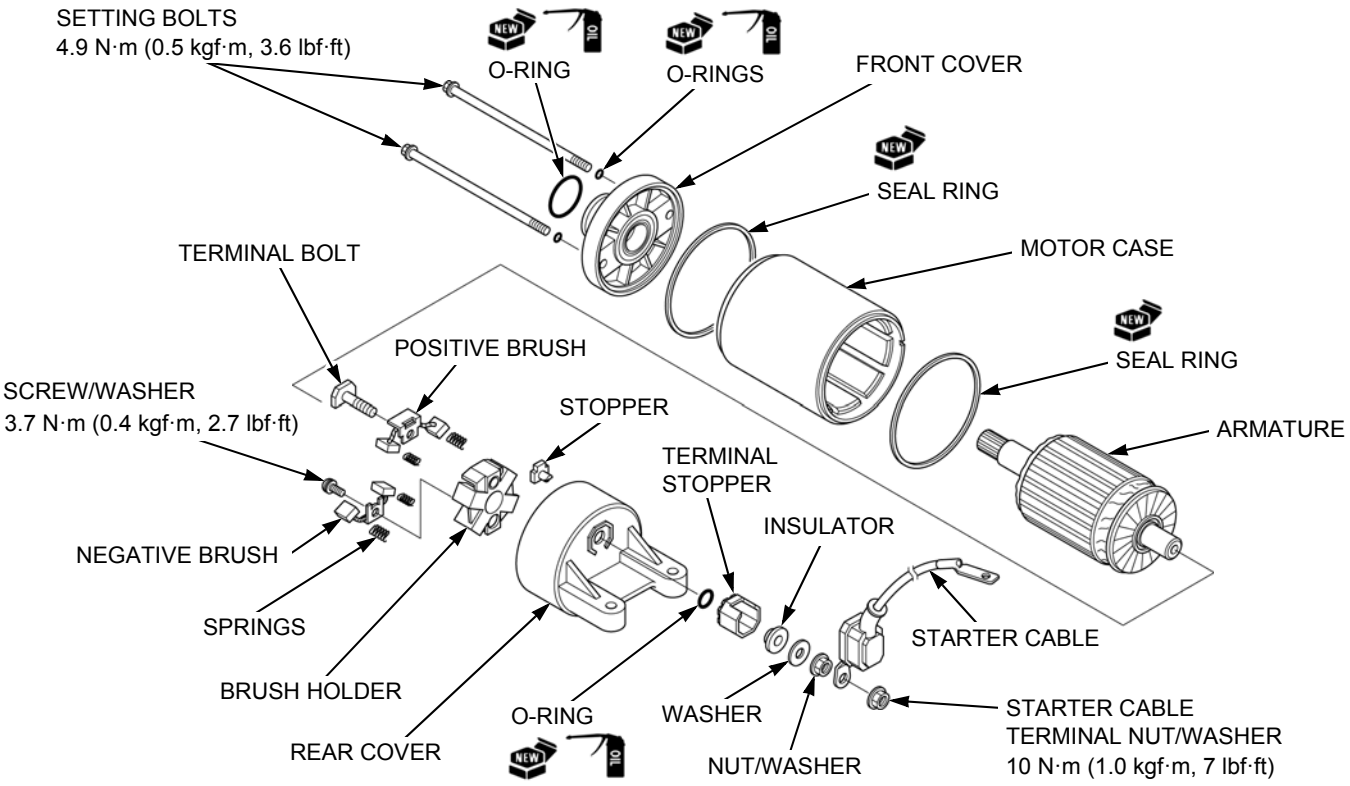
- Replace the O-ring with a new one.
- Apply engine oil to the new O-ring.



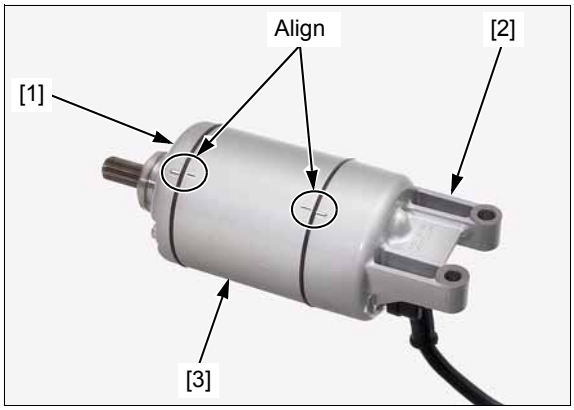
DISASSEMBLY/ASSEMBLY

NOTICE

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



When installing the front cover [1] and rear cover [2] onto the motor case [3], align the lines as shown.



INSPECTION

FRONT COVER

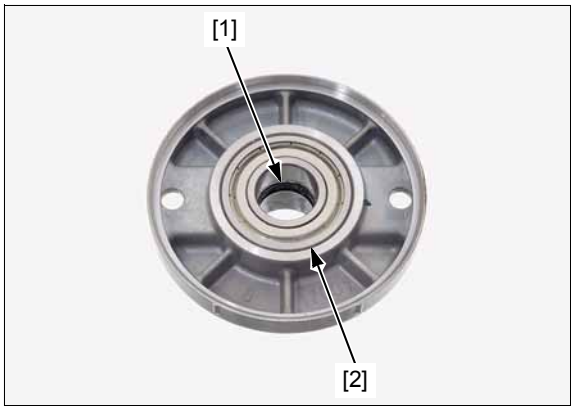
Check the oil seal [1] in the front cover for deterioration, wear, or damage.

Turn the inner race of bearing [2] in the front cover with your finger.

The bearings should turn smoothly and quietly.

Also check that the outer race fits tightly in the front cover.

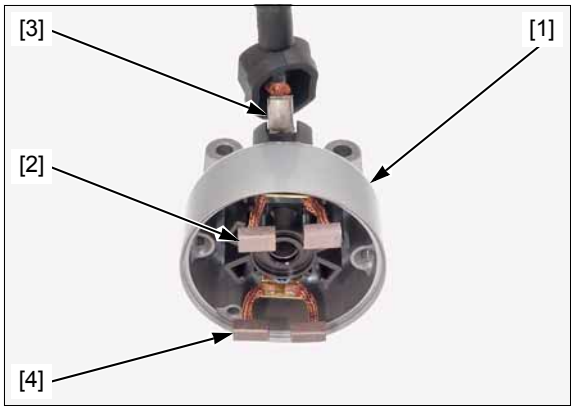
Replace the starter motor as an assembly if necessary.



REAR COVER

Check for continuity or no continuity for each part of rear cover [1] as below:

– Between the positive brush [2] and cable terminal [3]: should be continuity.
– Between the cable terminal and the rear cover: should be no continuity.
– Between the positive brush and rear cover: should be no continuity.
– Between positive brush and negative brush [4]: should be no continuity.



ARMATURE

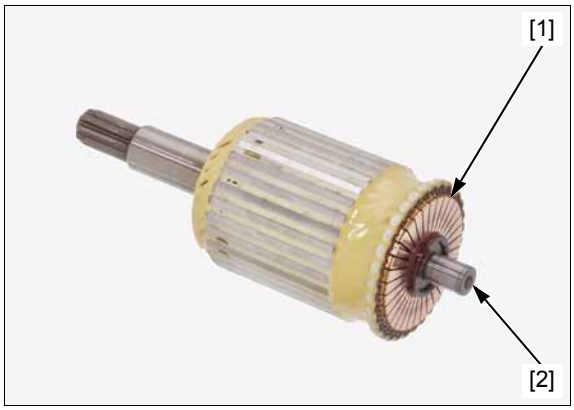
Clean the metallic debris off the commutator bars [1].

Check the commutator bars for discoloration.

Check for continuity on the armature as below:

– Between pair of commutator bars: there should be continuity.
– Between each commutator bar and the armature shaft [2]: should be no continuity.

Replace the starter motor as an assembly if necessary.

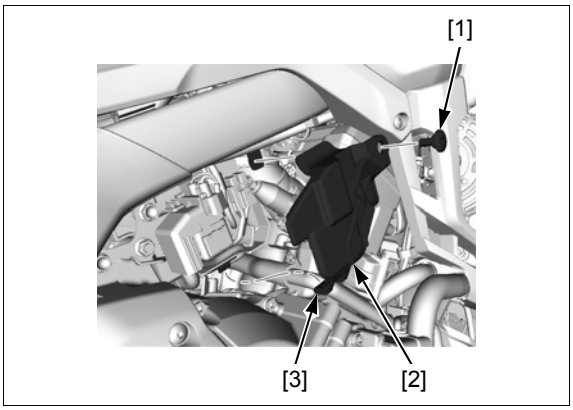


STARTER RELAY SWITCH

REMOVAL/INSTALLATION

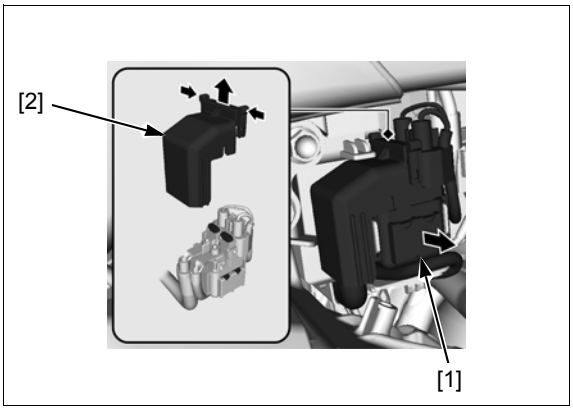
Remove the socket bolt [1].

Remove the battery box cover [2] by releasing the tab [3].



Release the starter relay switch [1] from the battery box.

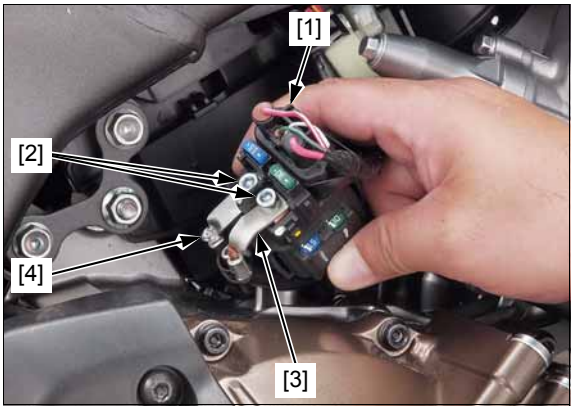
Remove the starter relay switch cover [2].



Disconnect the starter relay switch 4P (Black) connector [1].

Remove the bolts [2] and disconnect the starter motor cable [3] and battery positive (+) cable [4] from the starter relay switch.

Installation is in the reverse order of removal.



INSPECTION

Remove the battery box cover (page 6-7).

Shift the transmission into neutral.

Turn the ignition switch ON and engine stop switch "". 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 as follows:



STARTER RELAY INPUT VOLTAGE

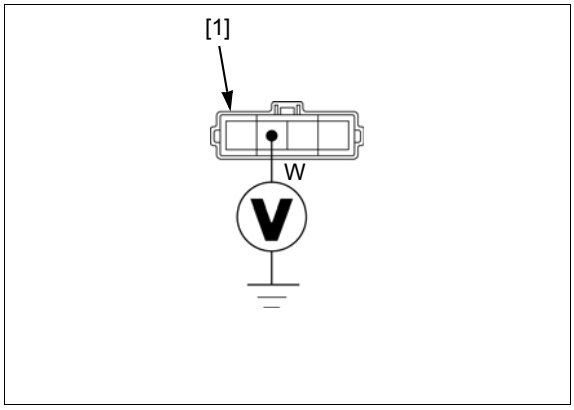
Remove the starter relay switch 4P (Black) connector (page 6-7).

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

Measure the voltage between the wire harness side 4P (Black) connector [1] and ground (–).

CONNECTION: White (+) – Ground (–)

There should be battery voltage when the starter switch is pushed.



GROUND LINE

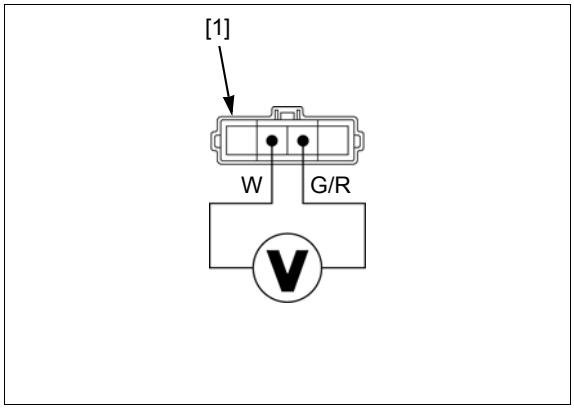
Remove the starter relay switch 4P (Black) connector (page 6-7).

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

Measure the voltage at the wire harness side 4P (Black) connector [1].

CONNECTION: White (+) – Green/red (–)

There should be battery voltage when the starter switch is pushed.

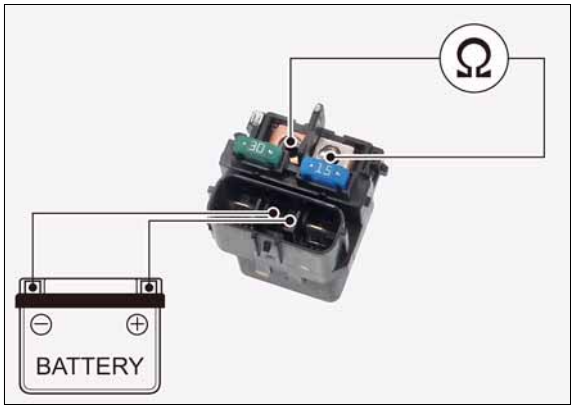


OPERATION CHECK

Remove the starter relay switch (page 6-7).

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 no continuity when the battery is disconnected.



NEUTRAL DIODE (CRF1000/A)

REMOVAL/INSTALLATION

Remove the main seat (page 2-4).

Open the fuse box cover and remove the neutral diode [1].

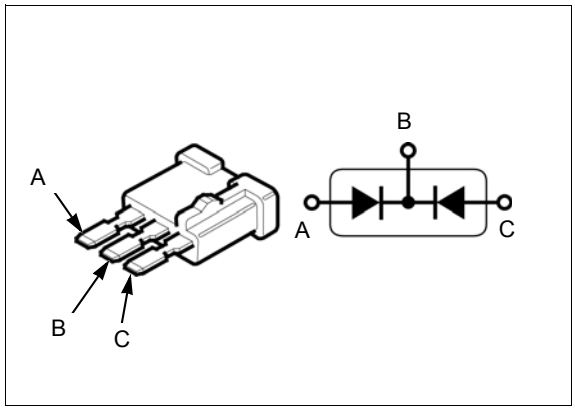
Installation is in the reverse order of removal.



INSPECTION

Check for continuity between the diode terminals.
When there is continuity, a small resistance value will register.

If there is continuity in direction shown by the arrow, the diode is normal.



STARTER RELAY (CRF1000D)

REMOVAL/INSTALLATION

Remove the right side cover (page 2-11).

Release the starter relay [1]/cover [2] from the frame and remove the cover.

Remove the starter relay from the relay connector.



RELAY INSPECTION

Remove the starter relay (page 6-9).

Refer to FI relay inspection (page 4-44).

MEMO

7. FUEL SYSTEM

SERVICE INFORMATION ····· 7-2
TROUBLESHOOTING ····· 7-2
COMPONENT LOCATION ····· 7-3
FUEL LINE INSPECTION ····· 7-4
FUEL TANK ····· 7-6
FUEL PUMP UNIT ····· 7-7
FUEL PUMP RELAY ····· 7-10
AIR CLEANER HOUSING ····· 7-11
THROTTLE BODY ····· 7-12
IACV ····· 7-16
FUEL INJECTOR ····· 7-17
SECONDARY AIR SUPPLY SYSTEM ····· 7-18

SERVICE INFORMATION

GENERAL

- Before disconnecting the fuel feed hose, relieve fuel pressure from the system (page 7-4).
- Bending or twisting the control cables will impair smooth operation and could cause the cables to stick or bind, resulting in loss of motorcycle 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 or fuel rail has been removed.
- Do not damage the throttle body. It may cause incorrect throttle valve operation.
- Prevent dirt and debris from entering the throttle bore and air passages after the throttle body has been removed. Clean them using a compressed air if necessary.
- Do not loosen or tighten the white painted nuts and screws 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.
- For fuel level sensor inspection (page 22-21).

TROUBLESHOOTING

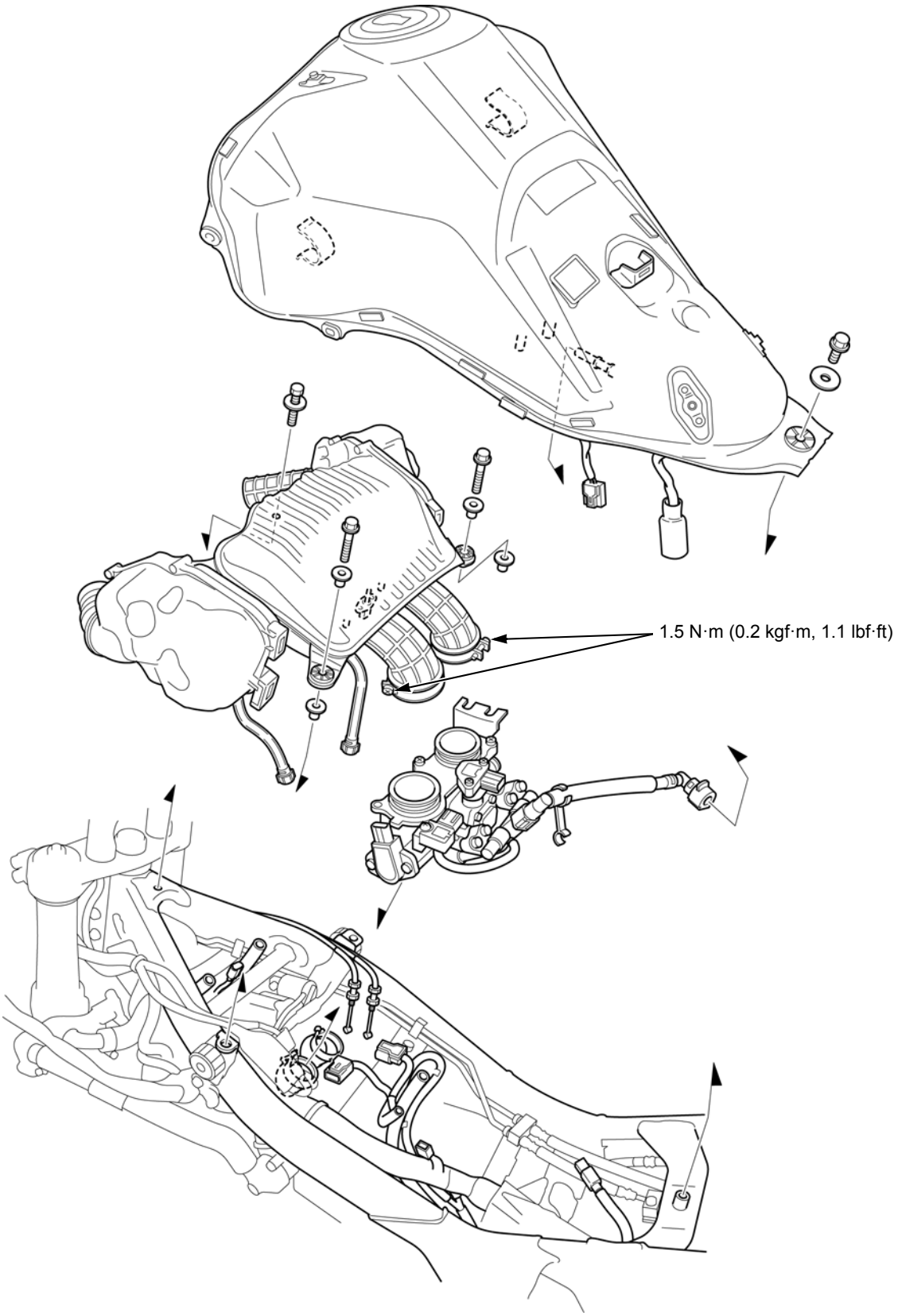
Engine won't start
- Deteriorated fuel
- Bent or kinked fuel hose/fuel tank breather hose
- Clogged fuel filter
- Faulty fuel pump or its drive circuit
- Intake air leak
- Faulty fuel injector
- Faulty IACV
- Faulty ignition system
- Faulty ECM/PCM (page 4-39)
- Faulty bank angle sensor or its related circuit (page 4-42)
- Faulty fuel pump relay or its related circuit
- Faulty engine stop switch or its related circuit (page 22-24)
- Blown FI fuse (15 A)

Engine stall, hard to start, rough idling
- Deteriorated fuel
- Bent or kinked fuel hose/fuel tank breather hose
- Faulty IACV
- Intake air leak
- Faulty ignition system
- Faulty MAP sensor (page 4-41)
- Faulty charging system

Backfiring or misfiring during acceleration
- Faulty ignition system (page 5-3)

Engine lacks power
- Bent or kinked fuel hose/fuel tank breather hose
- Clogged fuel filter
- Faulty fuel pump or its drive circuit
- Faulty fuel injector
- Faulty ignition system (page 5-3)
- Clogged air cleaner element (page 3-4)

COMPONENT LOCATION



FUEL LINE INSPECTION

FUEL PRESSURE RELIEVING

NOTE:

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

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



QUICK CONNECT FITTING REMOVAL/ INSTALLATION

NOTE:

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

Relieve the fuel pressure (page 7-4).

Disconnect the battery negative (-) cable (page 21-5).

Push the retainer tab [1] forward.

Press down the retainer and disconnect the connector [2] from the fuel pump joint/fuel rail.

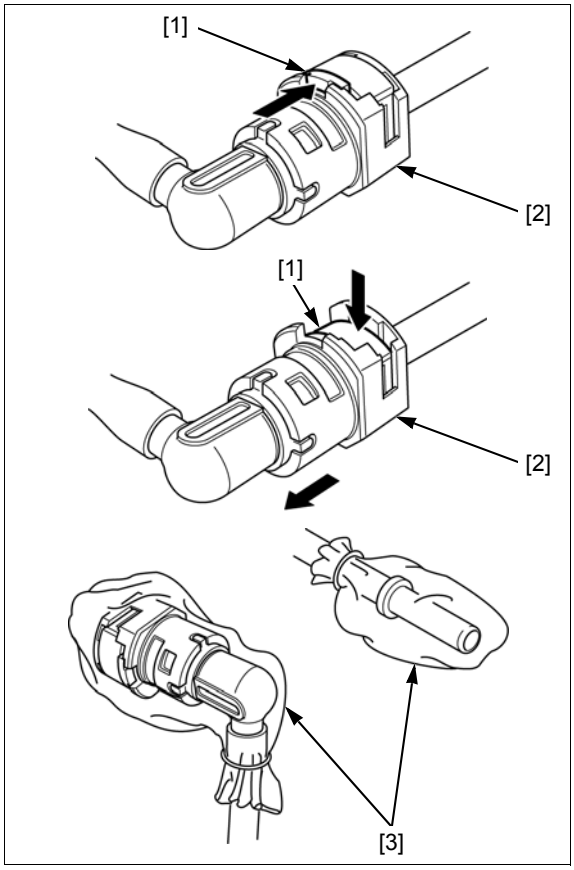
NOTE:

- Check the retainer condition and replace it if necessary.
- To prevent damage and keep foreign matter out, cover the disconnected connector and pipe end with the plastic bags [3].

Press the connector onto the fuel pump joint/fuel rail until the retainer locks with a “CLICK”. If it is hard to connect, put a small amount of engine oil on the pipe end.

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

Increase the fuel pressure (page 7-5).



FUEL PRESSURE NORMALIZATION

1. Connect the fuel pump unit 3P (Black) connector [1].

   Connect the battery negative (–) cable (page 21-5).

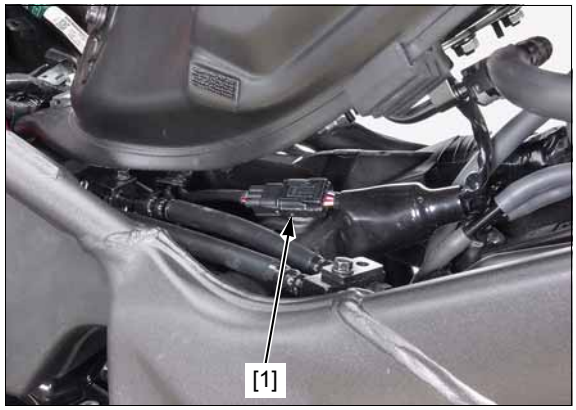
2. Turn the ignition switch ON and engine stop switch "○".

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

NOTE:

- Do not start the engine.

3. Turn the ignition switch OFF.
4. Repeat 2 or 3 times, and check that there is no leakage in the fuel supply system.
5. Install the fuel tank (page 7-6).



FUEL PRESSURE TEST

Relieve the fuel pressure (page 7-4).
Disconnect the quick connect fitting (fuel pump side) (page 7-4).

Attach the special tools between the fuel pump joint and fuel feed hose.

TOOLS:

Fuel pressure gauge [1]	**07406-0040004**
Pressure gauge attachment set [2]	**070MJ-K260100**
Hose attachment, 6 mm/9 mm [3]	**07ZAJ-S5A0130**
Hose attachment, 8 mm/9 mm [4]	**07ZAJ-S7C0100**
Attachment joint, 8 mm/9 mm [5]	**07ZAJ-S7C0200**
Attachment joint, 6 mm/9 mm [6]	**07ZAJ-S5A0150**

Temporarily connect the battery negative (–) cable and fuel pump unit 3P (Black) connector.
Start the engine and let it idle.
Read the fuel pressure.

Standard:

324 – 367 kPa (3.3 – 3.7 kgf/cm^2, 47 – 53 psi)

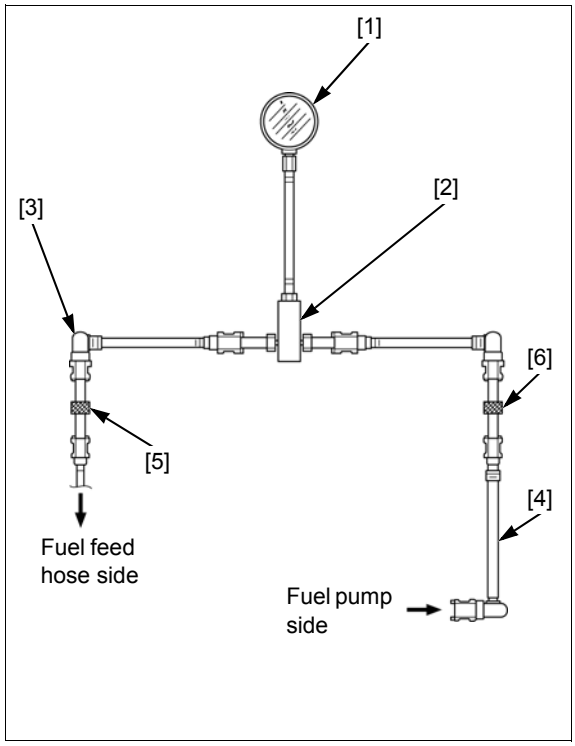
If the fuel pressure is higher than specified, replace the fuel pump unit.
If the fuel pressure is lower than specified, inspect the following:

– Fuel line leaking
– Pinched or clogged fuel hose or fuel tank breather hose
– Fuel pump unit (page 7-7)

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

Remove the special tools.

Connect the quick connect fitting (page 7-4).



FUEL FLOW INSPECTION

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

Clean up any spilled fuel.

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



Temporarily connect the battery negative (–) cable and fuel pump unit 3P (Black) connector.
Turn the ignition switch ON and engine stop switch "".
Measure the amount of fuel flow.

NOTE:

- The fuel pump operates for 2 seconds. Repeat 5 times to meet the total measuring time.
- Return fuel to the fuel tank when the measurement is completed.

Amount of fuel flow:
319 cm^3 (4.2 US oz, 4.4 Imp oz) minimum/10 seconds at 12 V

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

– Pinched or clogged fuel hose or fuel tank breather hose
– Fuel pump unit (page 7-7)

Connect the quick connect fitting (page 7-4).

FUEL TANK

REMOVAL/INSTALLATION

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

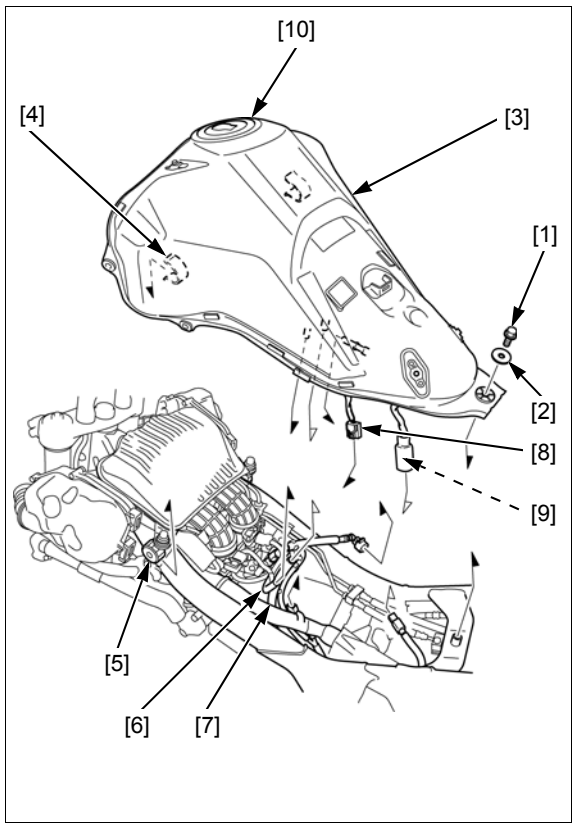
Remove the fuel tank mounting bolt [1] and washer [2], then remove the fuel tank [3] by releasing its grooves [4] from the mounting rubbers [5].

Disconnect the following:

– Fuel tank breather hose [6]
– Fuel tank drain hose [7]
– Fuel level sensor 2P (Black) connector [8]
– Fuel pump unit 3P (Black) connector [9]

Remove the fuel filler cap [10] by removing the cap bolts, if necessary.

Installation is in the reverse order of removal.



Installation is in the reverse order of removal.

NOTE:

- A pressure release can be heard when opening the fuel cap, but this is not blockage of the passage. If checking for clog in the passage of the fuel tank side is necessary, apply air pressure to the breather hose end with the fuel filler cap opened.
- If the fuel filler cap was removed, replace the breather seal [1] with a new one.
- Route the hoses, wires and harness properly.
- Be careful not to damage the harness and hose.
- After installing the fuel tank, make sure the drain, air vent, overflow hose and fuel hoses are not kinked or bound.



TORQUE:
Fuel filler cap bolt:
1.8 N·m (0.2 kgf·m, 1.3 lbf·ft)

FUEL PUMP UNIT

INSPECTION

Turn the ignition switch ON and engine stop switch "○" and confirm that the fuel pump operates for a few seconds.
If the fuel pump does not operate, inspect as follows:

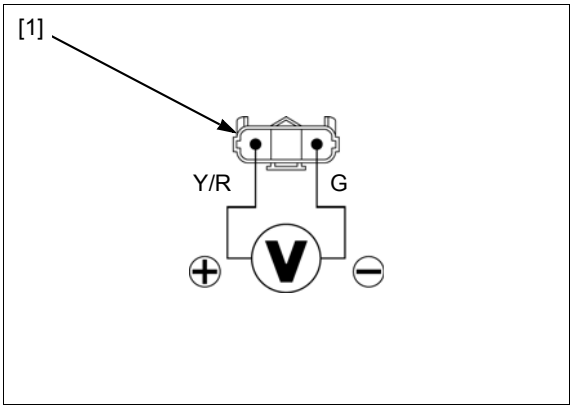
Turn the ignition switch OFF.

Disconnect the fuel pump unit 3P (Black) connector (page 7-4).

Turn the ignition switch ON.

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

CONNECTION: Yellow/red (+) – Green (–)



There should be battery voltage for a few seconds.

If there is battery voltage for a few seconds, replace the fuel pump unit.

If there is no battery voltage, inspect the following:

– Sub fuse ENG STOP 7.5 A
– Fuel pump relay (page 7-10)
– Fuel pump relay related circuit
– Open circuit in the Yellow/red or Green wire
– ECM/PCM power/ground line (page 4-40)

REMOVAL

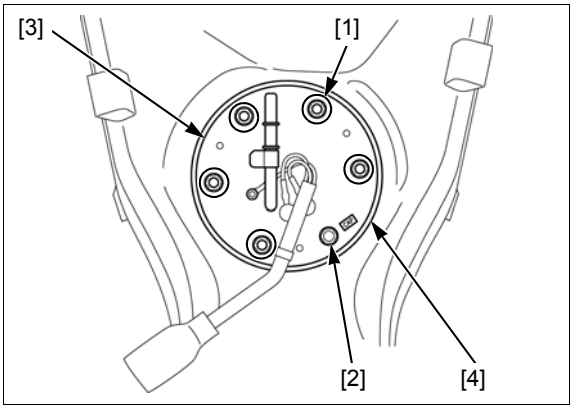
Remove the fuel tank (page 7-6).

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

Clean around the fuel pump unit.

Loosen the fuel pump unit mounting nuts [1] and cap nut [2] in a crisscross pattern in 2 or 3 steps and remove them.

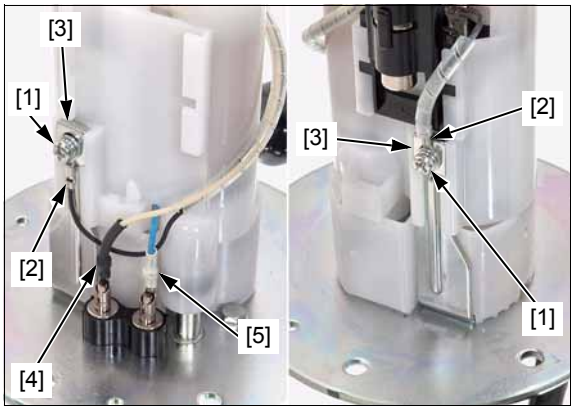
Remove the fuel pump unit [3] and packing [4].



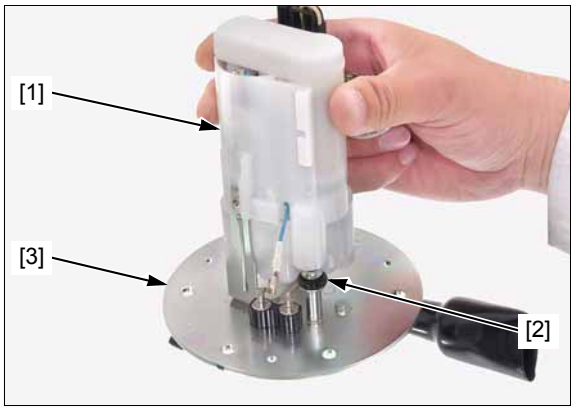
DISASSEMBLY/INSPECTION

Remove the screws [1], Black wire terminals [2], and stoppers [3].

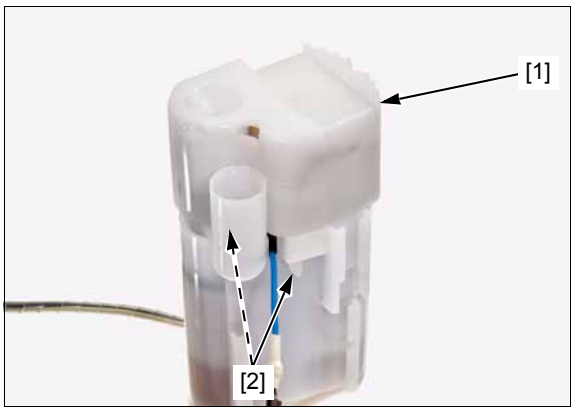
Disconnect the White wire connector [4] and Blue wire connector [5].



Remove the fuel pump filter assembly [1] and O-ring [2] from the fuel pump stay [3].



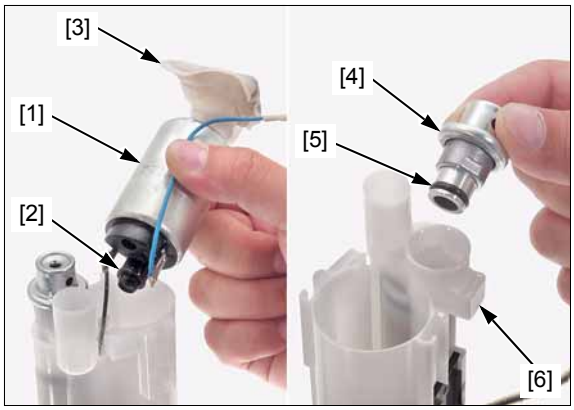
Remove the chamber [1] by releasing the tabs [2].



Remove the fuel pump [1] and O-ring [2].

Visually inspect the suction filter [3] for dirt, debris, or any clogging.
Replace fuel pump unit as an assembly if necessary.

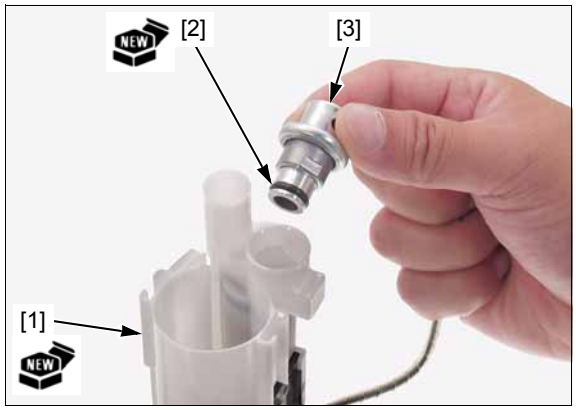
Remove the pressure regulator [4] and O-ring [5] from the fuel filter assembly [6].



ASSEMBLY

Replace the fuel filter assembly [1] with a new one.

Install a new O-ring [2] to the pressure regulator [3].
Install the pressure regulator.

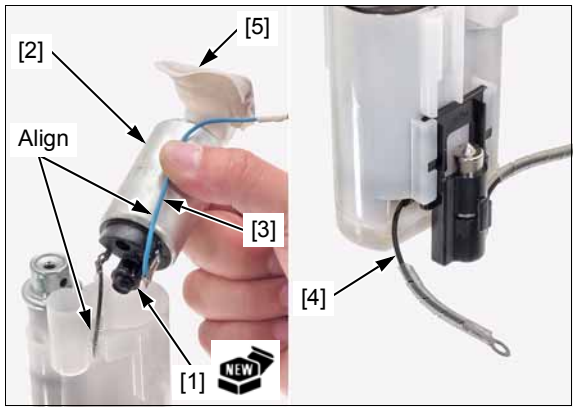


Install a new O-ring [1] to the fuel pump [2].
Install the fuel pump.

NOTE:

- Align the Blue wire [3] with the fuel filter groove.
- Lead the Black wire [4] through the hole of the fuel filter assembly as shown.

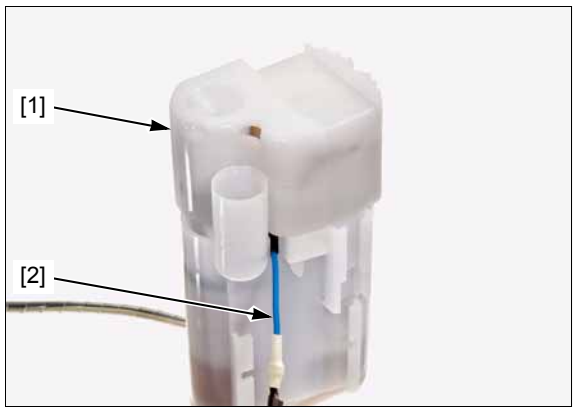
Insert the fuel pump filter [5] edge between the fuel pump and pressure regulator.



Install the chamber [1].

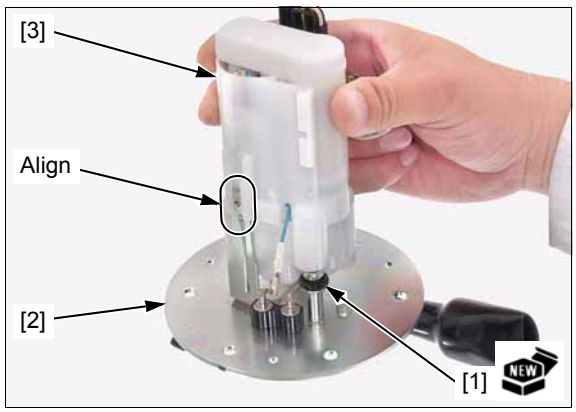
NOTE:

- Set the Blue wire [2] as shown.



Install a new O-ring [1] to the fuel pump stay [2].

Install the fuel pump unit assembly [3] by aligning the groove with the fuel pump stay tab.

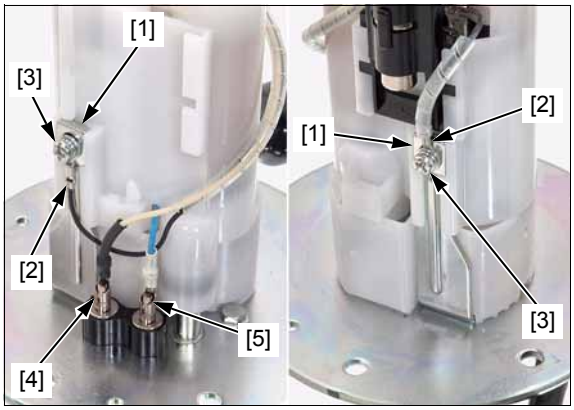


Install the stoppers [1], Black wire terminals [2], and screws [3].

Tighten the screws to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Connect the White wire connector [4] and Blue wire connector [5].

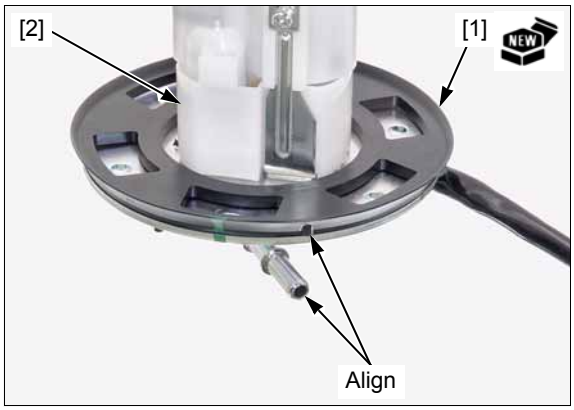


INSTALLATION

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

NOTE:

- Always replace the packing with a new one.
- Be careful not to pinch any dirt or debris between the fuel pump unit and packing.
- Align the packing tab with the fuel pipe.

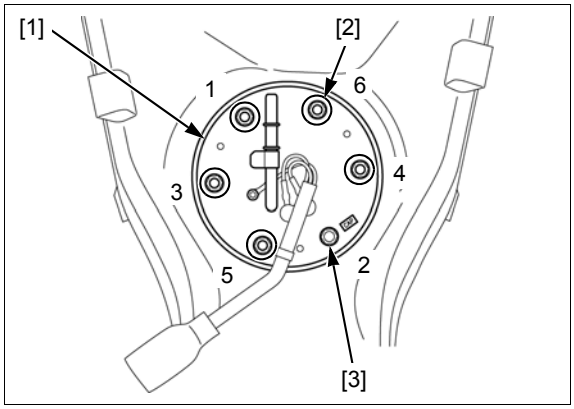


Install the fuel pump unit [1] into the fuel tank.

Install and tighten the fuel pump unit mounting nuts [2] and cap nut [3] to the specified torque in the sequence as shown.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the fuel tank (page 7-6).



FUEL PUMP RELAY

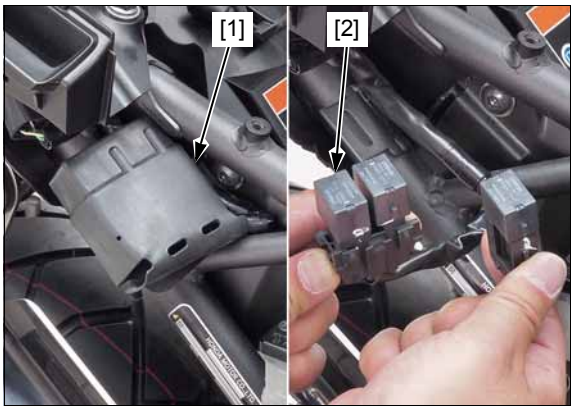
REMOVAL/INSTALLATION

Remove the right side cover (page 2-11).

Release the relay connectors from the frame and remove the relay cover [1].

Remove the fuel pump relay [2].

Installation is in the reverse order of removal.



RELAY INSPECTION

Remove the fuel pump relay (page 7-10).

Refer to FI relay inspection (page 4-44).

AIR CLEANER HOUSING

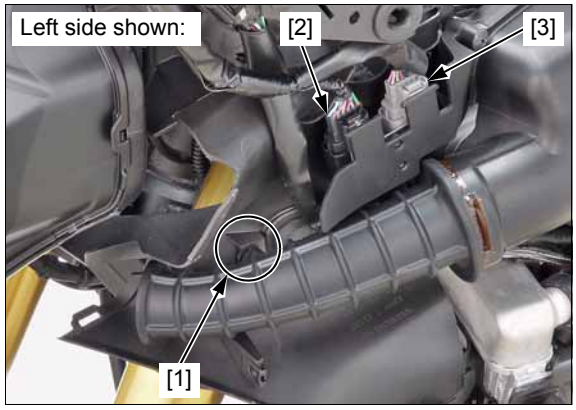
REMOVAL/INSTALLATION

Remove the following:

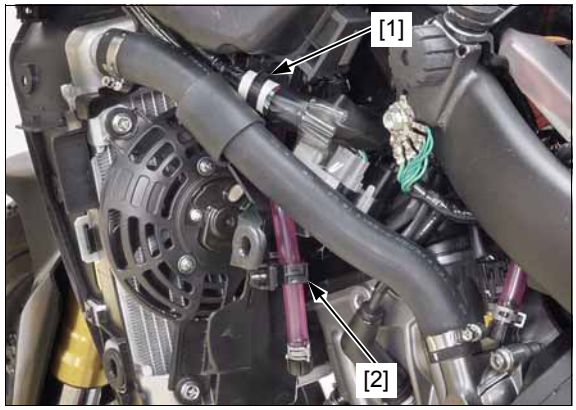
– Front cover (page 2-7)
– Fuel tank (page 7-6)

Release the left/right tabs [1] of the air cleaner duct from the inner cover.

Left side only: Release the front No.1 sub harness 12P (Black) [2] and No.2 sub harness 12P (Gray) [3] connectors from the connector stays.



Release the wire band [1] and clamp [2].



CRF1000D: Release the wire band [1] and clamp [2].

Release the clamp [3].



Loosen the connecting hose band screws [1]

Remove the following:

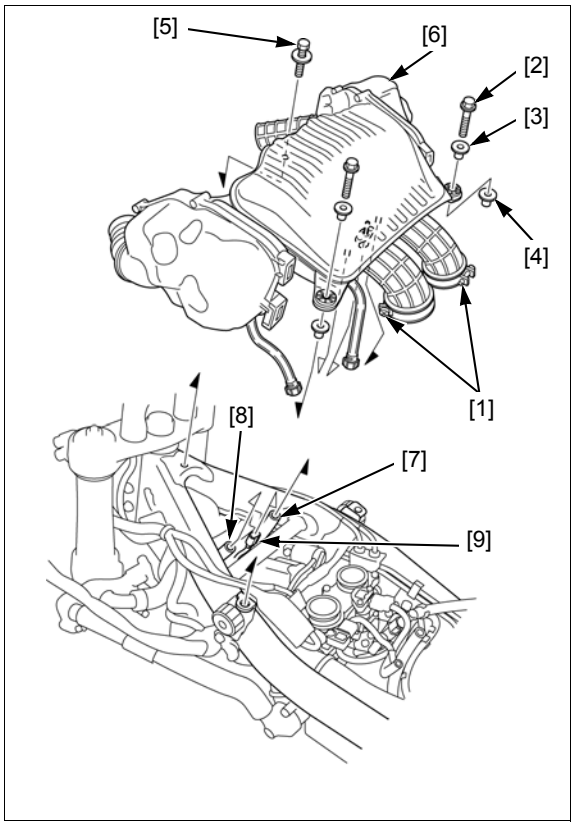
– Bolts [2], collars A [3], and collars B [4]
– Bolt/washer [5]

Disconnect the connecting hose and pull the air cleaner housing [6] upward.

Disconnect the following:

– Crankcase breather hose [7]
– Air suction hose [8]
– IAT sensor 2P (Blue) connector [9]

Remove the air cleaner housing.



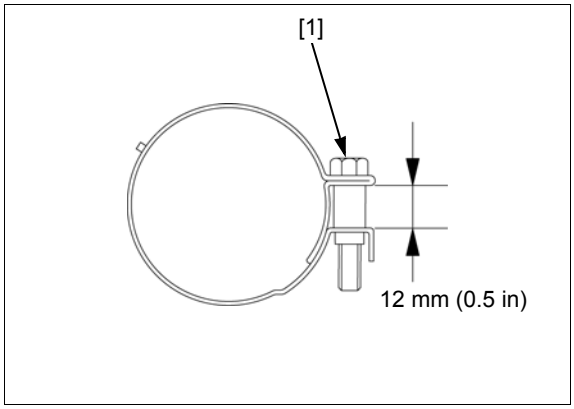
Installation is in the reverse order of removal.

NOTE:

• Tighten the connecting hose band screws [1] to the specified range.

TORQUE:

Connecting hose band screw:
1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)

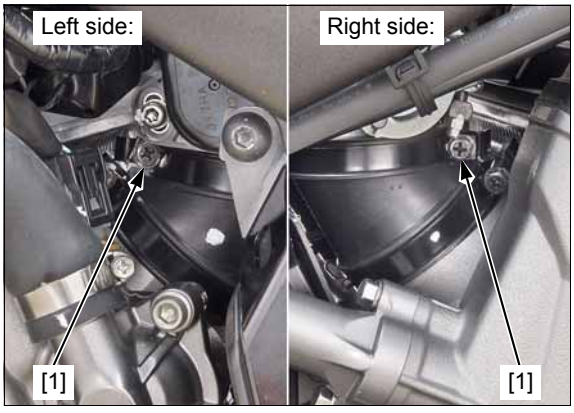


THROTTLE BODY

REMOVAL

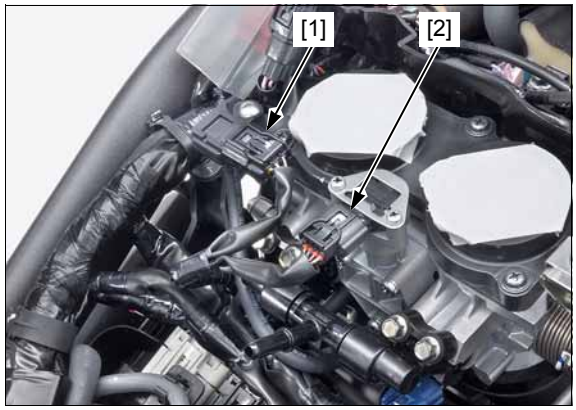
Remove the air cleaner housing (page 7-11).
Disconnect the fuel feed hose from the fuel rail (page 7-4).

Loosen the band screws (throttle body side) [1].



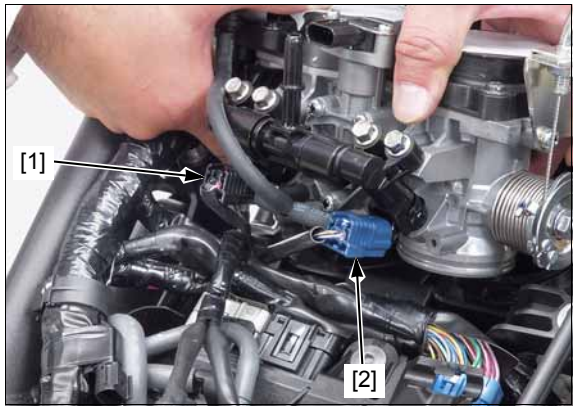
Disconnect the MAP sensor 3P (Black) connector [1].

Disconnect the IACV 4P (Black) connector [2].



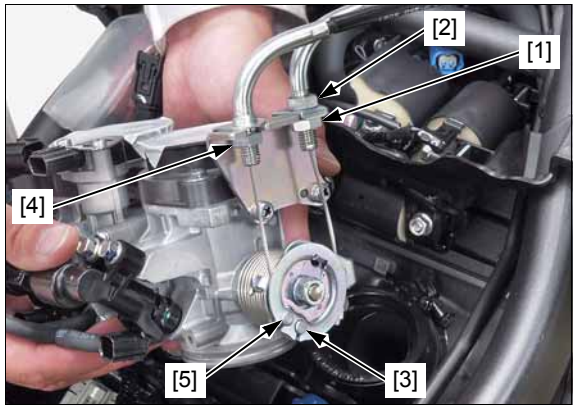
Disconnect the throttle body by pulling it upward.

Disconnect the injector 2P (Black) [1] and 2P (Blue) [2] connectors.



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



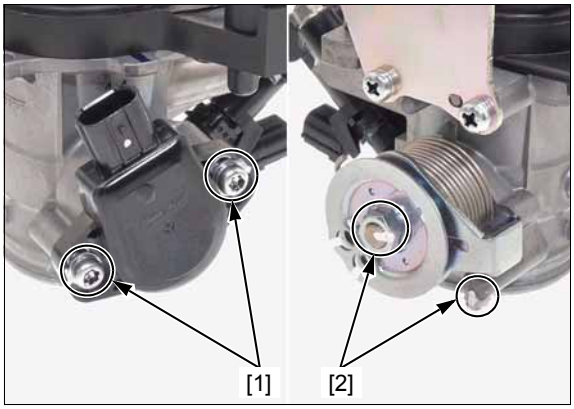
Disconnect the TP sensor 3P (Black) connector [1] and remove the throttle body [2].



DISASSEMBLY/ASSEMBLY

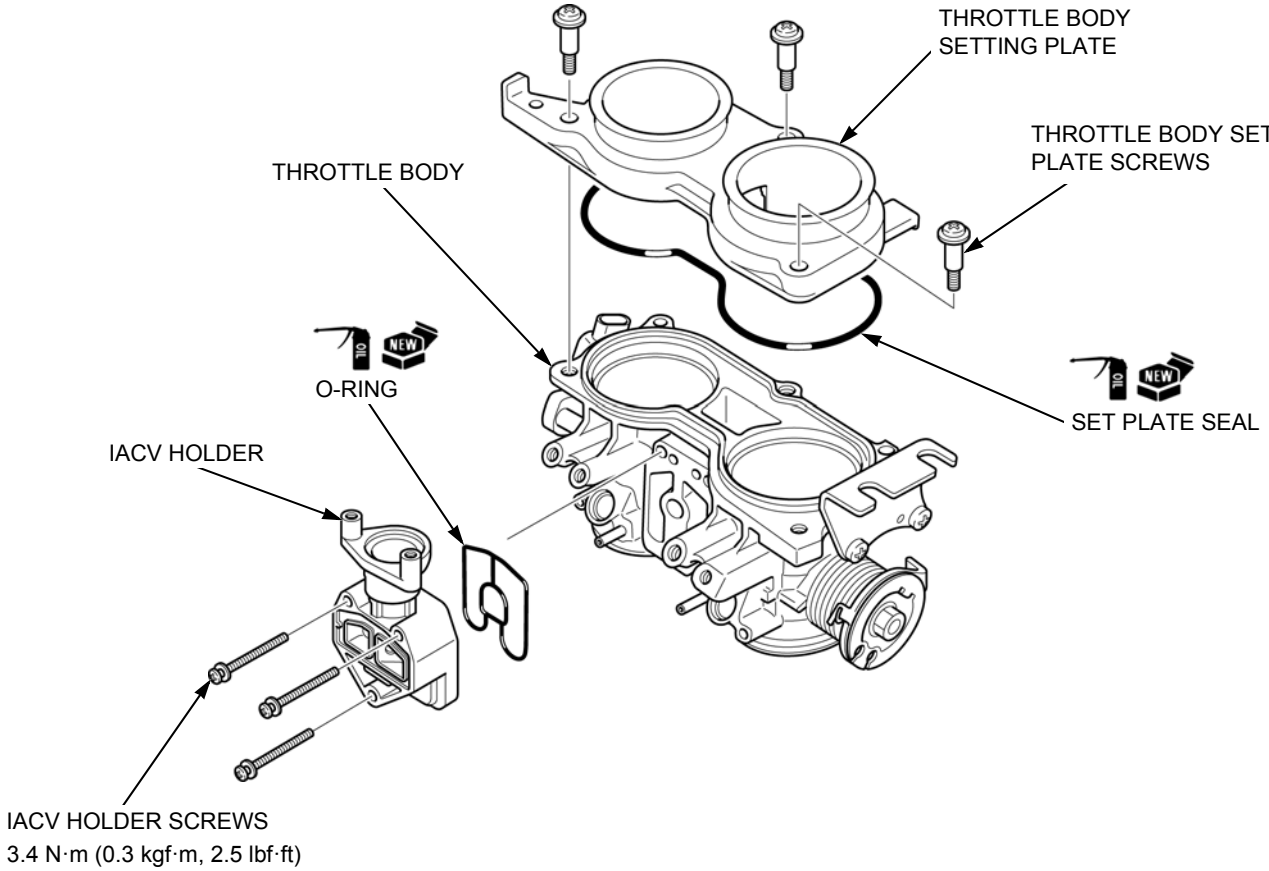
NOTICE

- *Do not remove the sensor unit unless it is replaced.*
- *Do not loosen or tighten the white painted nuts and screws [1] and nuts [2] 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:

- MAP sensor removal/installation (page 4-41)
- IACV removal/installation (page 7-16)
- Fuel injector removal/installation (page 7-17)
- If the O-ring is not installed properly, the idle air will leak and engine idle speed will be unstable.



INSTALLATION

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

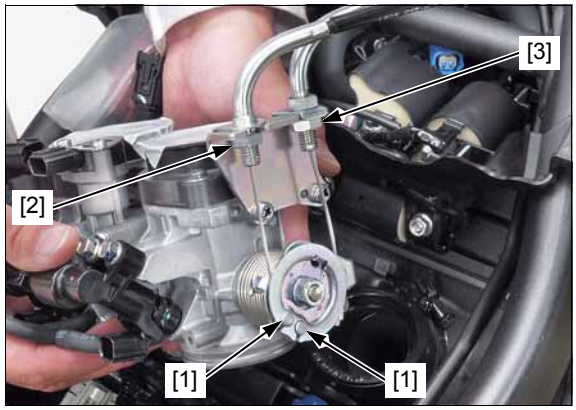


Connect the throttle cables [1] to the throttle drum and throttle cable stay.

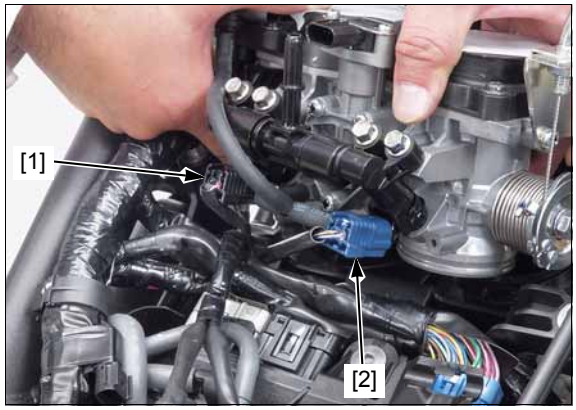
Tighten the throttle cable B lock nut [2] to the specified torque.

TORQUE: 8.5 N·m (0.9 kgf·m, 6.3 lbf·ft)

Temporarily tighten the throttle cable A adjuster lock nut [3].



Connect the injector 2P (Black) [1] and 2P (Blue) [2] connectors.



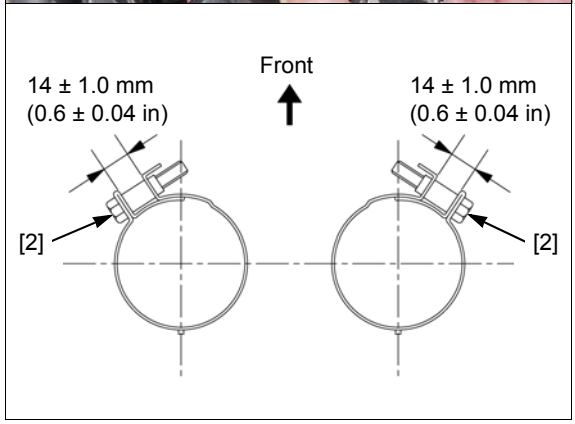
Install the throttle body [1].

NOTE:

- Make sure that the band screws (throttle body side) [2] is in position as shown.
- Align the insulator grooves with the throttle body lugs.

Tighten the insulator band screws (throttle body side) to the specified range as shown.





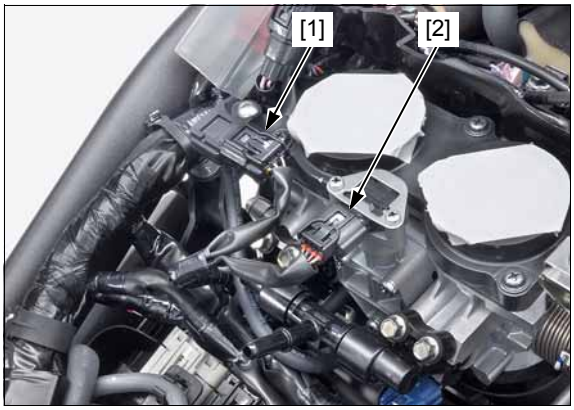
Connect the MAP sensor 3P (Black) connector [1].

Connect the IACV 4P (Black) connector [2].

Adjust the throttle grip freeplay (page 3-3).

Connect the fuel feed hose to the fuel rail (page 7-4).

Install the air cleaner housing (page 7-11).



IACV

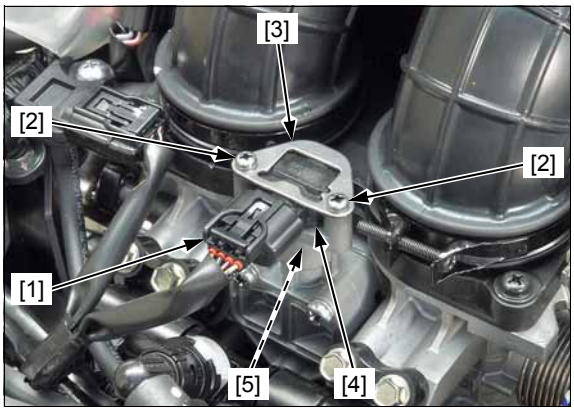
REMOVAL

Remove the fuel tank (page 7-6).

Clean the throttle body to prevent dirt and debris from entering the IACV passage.

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

Remove the screws [2], setting plate [3], IACV [4], and O-ring [5].



INSPECTION

NOTE:

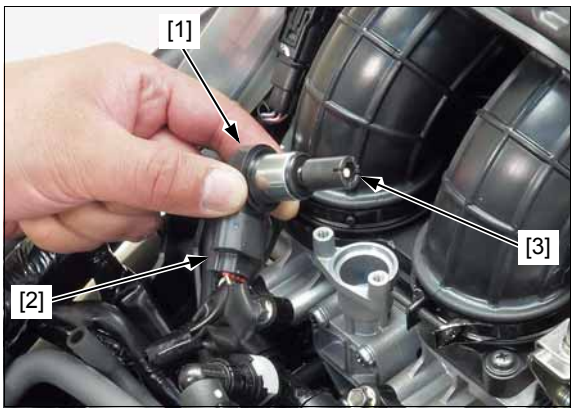
- The IACV is installed on the throttle body and is operated by the stepping motor. When the ignition switch is turned ON, the IACV operates for a few seconds.

Remove the fuel tank (page 7-6).

Turn the ignition switch ON and check the IACV.
If the step motor operating sound is heard, the IACV is normal.

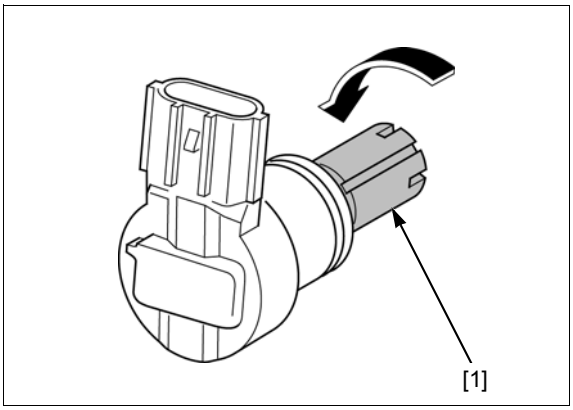
If the IACV does not sound with no MIL blinking, inspect as follows:

1. Remove the IACV (page 7-16).
   Check the IACV [1] for wear or damage.
2. Connect the IACV 4P (Black) connector [2].
3. Turn ignition switch ON, the slide valve [3] should move back and forth.
4. After inspection, install the IACV (page 7-17).



INSTALLATION

Turn the slide valve [1] clockwise until it is lightly seated on the IACV.



Install a new O-ring [1] onto the IACV [2].

Install the IACV into the throttle body by aligning the valve slit with the guide pin in the throttle body.

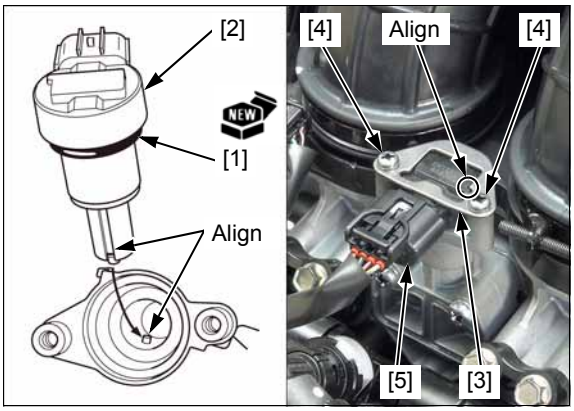
Install the setting plate [3] by aligning its cut-out with the tab of IACV.

Install and tighten the screws [4] to the specified torque.

TORQUE: 2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)

Connect the IACV 4P (Black) connector [5].

Install the fuel tank (page 7-6).



FUEL INJECTOR

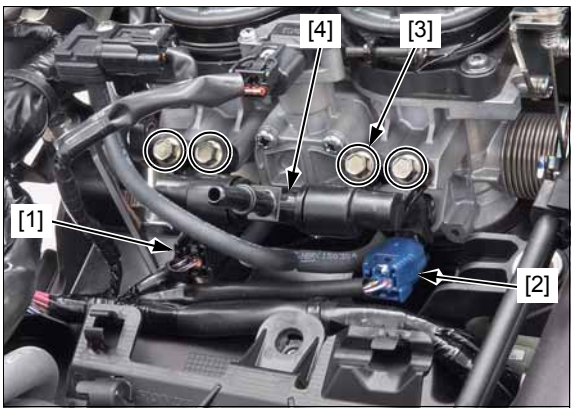
REMOVAL/DISASSEMBLY

Remove the ECM/PCM (page 4-39).

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

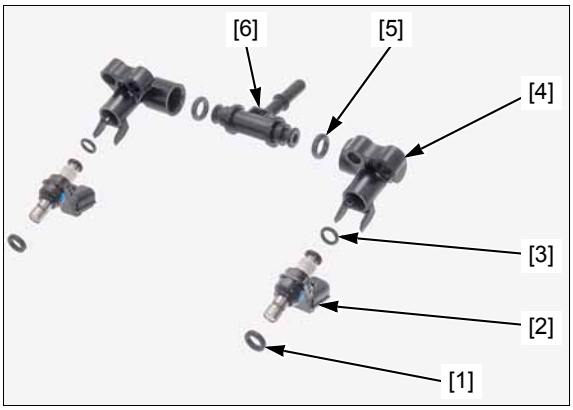
Disconnect the fuel injector 2P (Black) [1] and 2P (Blue) [2] connectors.

Remove the bolts [3] and fuel injector assembly [4].



Disassemble the following:

– Seal rings [1]
– Fuel injectors [2]
– O-rings [3]
– Fuel injector joints [4]
– O-rings [5]
– Fuel rail [6]



ASSEMBLY/INSTALLATION

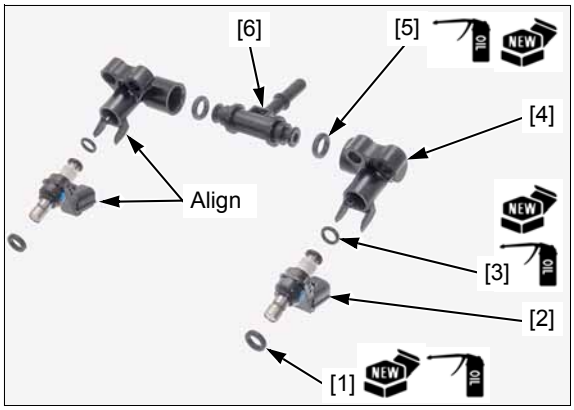
Apply engine oil to new O-rings and seal rings.

Assemble the following:

– Seal rings [1]
– Fuel injectors [2]
– O-rings [3]
– Fuel injector joints [4]
– O-rings [5]
– Fuel rail [6]

NOTE:

• Align the injector connectors with the fuel joint tabs to position them upright.



Install the fuel injector assembly [1].

NOTE:

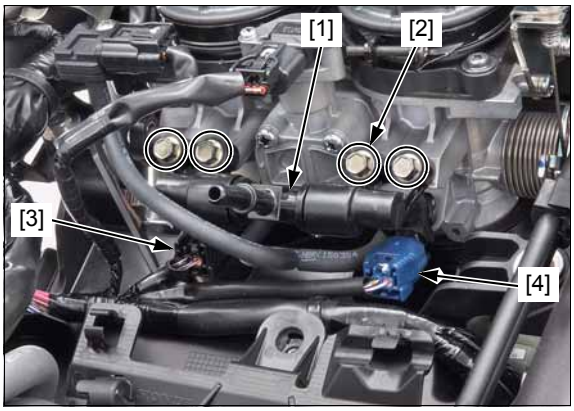
• When installing the fuel injector, be careful not to damage the seal ring.

Install and tighten the bolts [2] to the specified torque.

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

Connect the fuel injector 2P (Black) [3] and 2P (Blue) [4] connectors.

Install the ECM/PCM (page 4-39).



SECONDARY AIR SUPPLY SYSTEM

SYSTEM INSPECTION

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

Stop the engine.

Remove the air cleaner housing (page 7-11).

Check that the secondary air intake port [1] of the element holder is clean and free of carbon deposits.

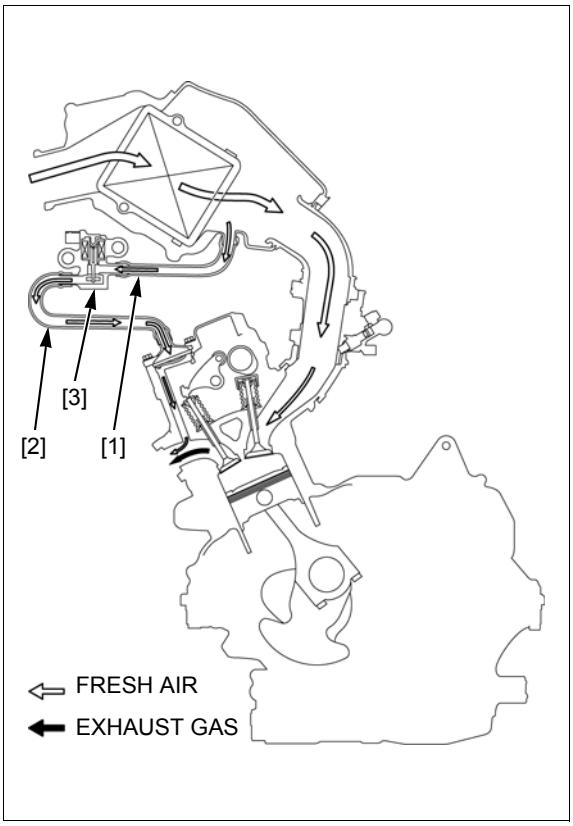
Check the PAIR reed valve if the port is carbon fouled (page 7-21).



Temporarily install the fuel tank (page 7-6).
Temporarily connect the IAT sensor 2P (Black) connector (page 7-12).
Lift the fuel tank (page 3-3)

Start the engine and open the throttle slightly to be certain that air is sucked in through the disconnected air suction hose [1].

If the air is not drawn in, check the air suction hose and air supply hose [2] for clogs and PAIR control solenoid valve [3].
For PAIR control solenoid valve removal/installation (page 7-19).



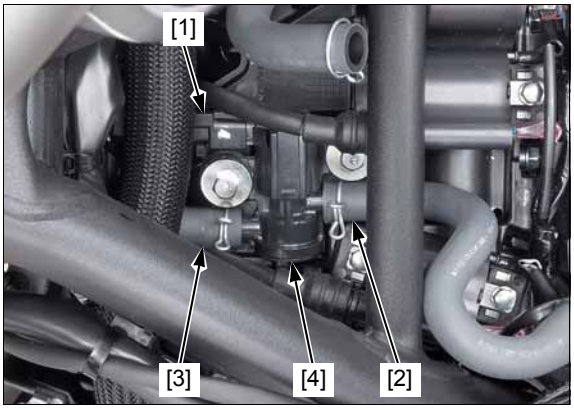
PAIR CONTROL SOLENOID VALVE REMOVAL/INSTALLATION

Remove the air cleaner housing (page 7-11).

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

Disconnect the suction hose [2] and air supply hose [3] and remove the PAIR control solenoid valve [4].

Installation is in the reverse order of removal.



PAIR CONTROL SOLENOID VALVE INSPECTION

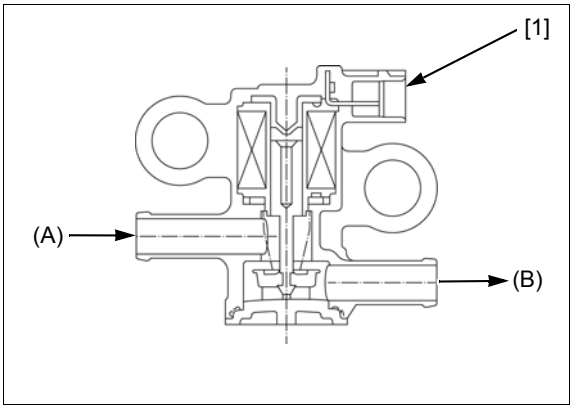
Remove the PAIR control solenoid valve (page 7-19).

Check the air flow through the solenoid valve.

Air should flow from input hose fitting (A) to output hose fitting (B).

Connect a 12 V battery to the 2P connector [1] of the PAIR control solenoid valve.

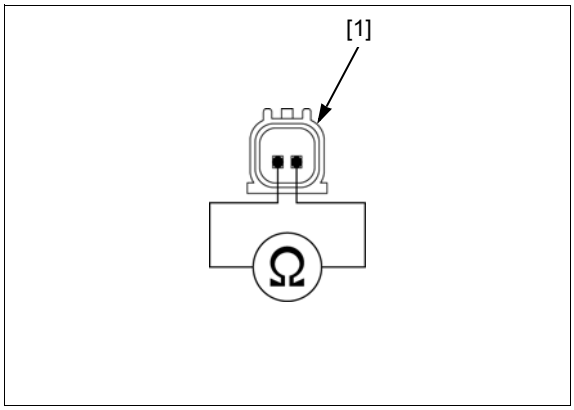
Air should not flow when the battery is connected.



Measure the resistance at the 2P connector [1] of the PAIR control solenoid valve.

STANDARD: 24 – 28 Ω (20°C/68°F)

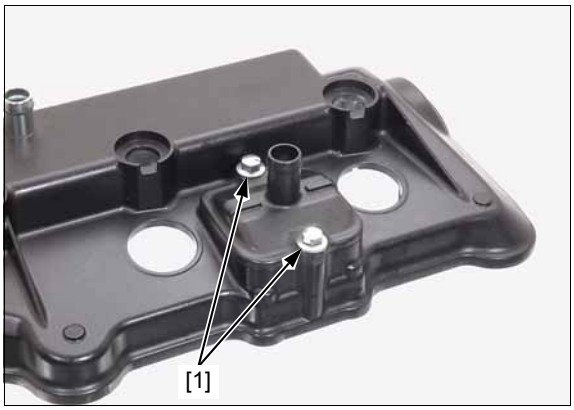
If the resistance is out of the specification, replace the PAIR control solenoid valve.



PAIR REED VALVE REMOVAL/ INSTALLATION

Remove the cylinder head cover (page 10-4).

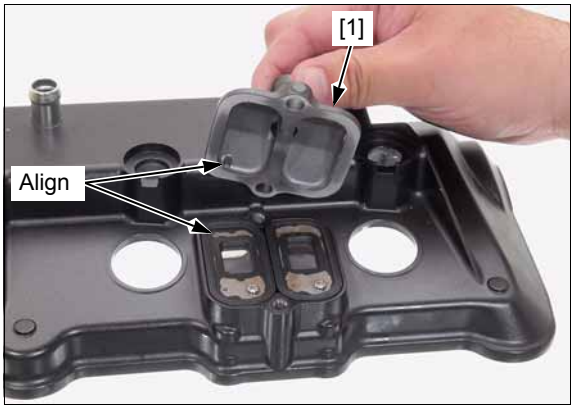
Remove the bolts [1].



Remove the PAIR reed valve cover [1]

NOTE:

- When installing the cover, align the boss of the cover with the hole of the reed valve.



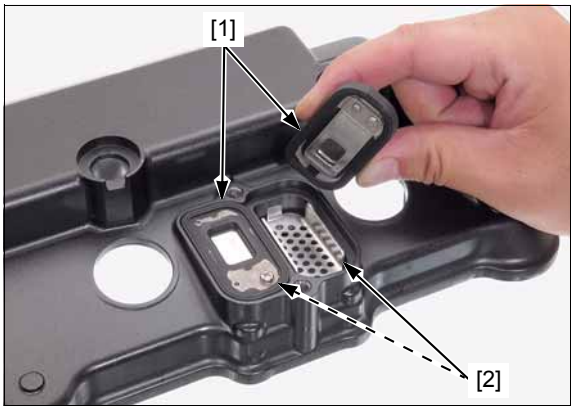
Remove the PAIR reed valves [1] and port plates [2].

Installation is in the reverse order of removal.

NOTE:

- Install the reed valves and port plates as shown.

TORQUE:
PAIR reed valve cover bolt:
12 N·m (1.2 kgf·m, 9 lbf·ft)

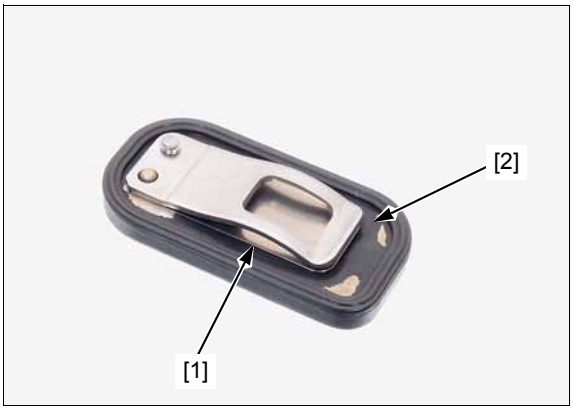


PAIR REED VALVE INSPECTION

Remove the PAIR reed valves (page 7-20).

Check the reed valve [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.



MEMO

8. COOLING SYSTEM

SERVICE INFORMATION ····· 8-2

TROUBLESHOOTING ····· 8-2

SYSTEM FLOW PATTERN ····· 8-3

SYSTEM TESTING ····· 8-4

COOLANT REPLACEMENT ····· 8-4

THERMOSTAT ····· 8-5

RADIATOR ····· 8-6

RADIATOR RESERVE TANK ····· 8-10

WATER PUMP ····· 8-10

FAN CONTROL RELAY ····· 8-11

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 corrosion inhibitors may cause premature wear of water pump seals or blockage of radiator passages. Using tap water may cause engine damage.

- Add coolant 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.
- Refer to the ECT sensor inspection (page 22-18).

TROUBLESHOOTING

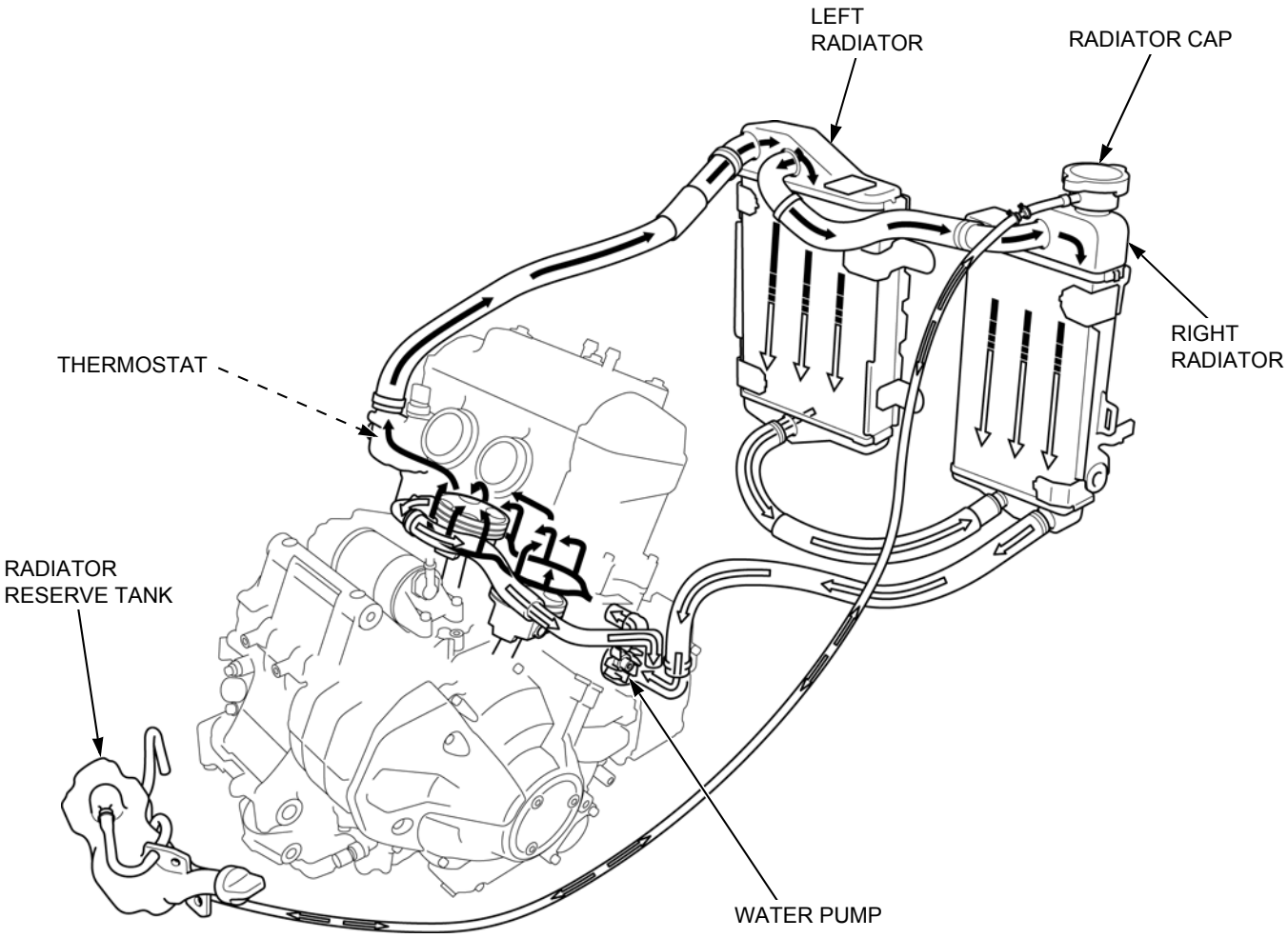
Engine temperature too high
- Faulty temperature gauge or ECT sensor
- Thermostat stuck closed
- Faulty radiator cap
- Insufficient coolant
- Passage blocked in radiator, hoses or water jacket
- Air in system
- Faulty cooling fan motor
- Faulty fan control relay
- Faulty water pump

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-rings
- Faulty radiator cap
- Damaged or deteriorated cylinder head gasket
- Loose hose connection or clamp
- Damaged or deteriorated hose
- Damaged radiator

SYSTEM FLOW PATTERN

CRF1000D shown:



SYSTEM TESTING

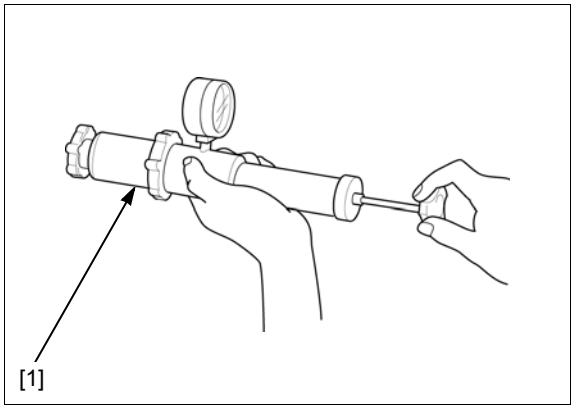
RADIATOR CAP/SYSTEM PRESSURE INSPECTION

Remove the right middle cowl (page 2-6).

Remove the radiator cap [1].



Wet the sealing surfaces of the cap, then install the cap onto the tester [1].



Pressure test the radiator cap.
Replace the radiator cap if it does not hold pressure, or if relief pressure is too high or too low.
It must hold specified pressure for at least 6 seconds.

RADIATOR CAP RELIEF PRESSURE:
108 – 137 kPa (1.1 – 1.4 kgf/cm^2, 16 – 20 psi)

Install the tester to the radiator.

Apply pressure to the radiator, engine, and hoses and check for leaks.

NOTICE

Excessive pressure can damage the cooling system components. Do not exceed 137 kPa (1.4 kgf/cm^2, 20 psi).

Repair or replace components if the system will not hold specified pressure for at least 6 seconds.

COOLANT REPLACEMENT

REPLACEMENT/AIR BLEEDING

NOTE:

- When filling the system or reserve tank with coolant or checking the coolant level, place the motorcycle in an upright position on a flat, level surface.

Remove the radiator cap (page 8-4).

CRF1000D: Remove the EOP sensor cover (page 13-53)

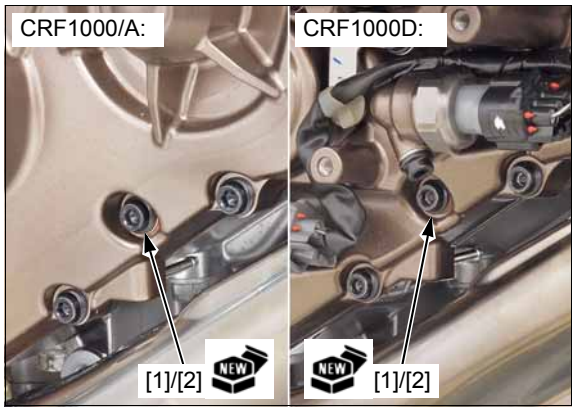
Remove the drain bolt [1], sealing washer [2], and drain the coolant.
Reinstall the drain bolt with a new sealing washer.
Tighten the drain bolt to the specified torque.

TORQUE: 13 N·m (1.3 kgf·m, 10 lbf·ft)

Remove the radiator reserve tank (page 8-10).

Empty the coolant and rinse the inside of the reserve tank with water.

Install the radiator reserve tank (page 8-10).



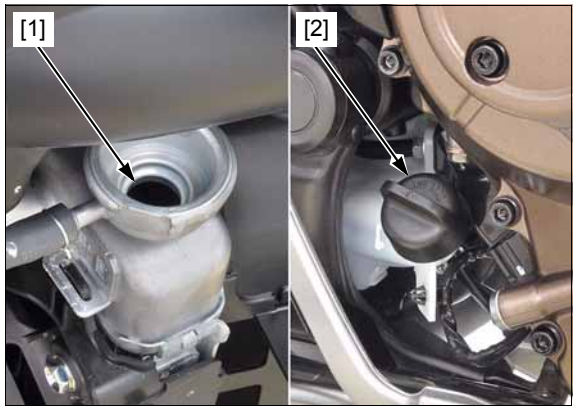
Fill the system with the recommended coolant through the filler opening up to filler neck [1].

Remove the radiator reserve tank cap [2] and fill the reserve tank to the upper level line.

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 or 4 times to bleed air from the system.
3. Stop the engine and add coolant up to the filler neck if necessary.
4. Install the radiator cap.
5. Check the level of coolant in the reserve tank and fill to the upper level line if it is low (page 3-14).



NOTE:

- When air bleeding is insufficient, level of coolant in the reserve tank will decrease. If so, fill to the upper level line with coolant.

After installation, check that there are no coolant leaks.

Install the removed parts in the reverse order of removal.

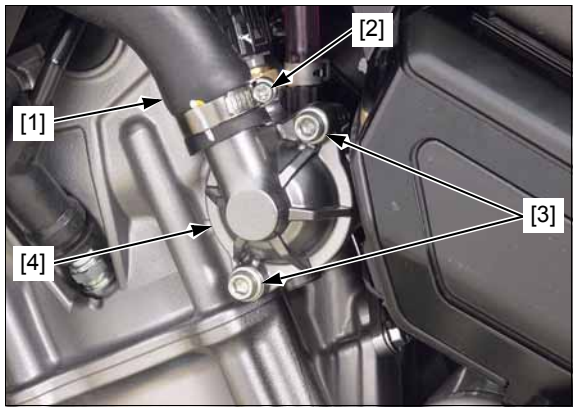
THERMOSTAT

REMOVAL/INSTALLATION

Drain the coolant (page 8-4).

Disconnect the upper radiator hose [1] by loosening the hose band screw [2].

Remove the bolts [3] and thermostat cover [4].



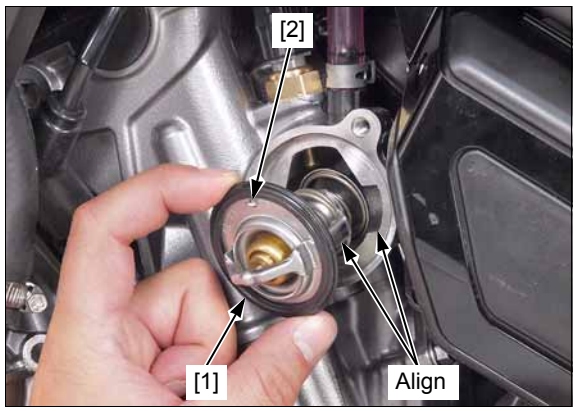
Remove the thermostat [1] from the upper crankcase.

Installation is in the reverse order of removal.

NOTE:

- Install the thermostat air bleed hole [2] facing up.
- Align the thermostat ribs with the slits of the upper crankcase.
- Tighten the hose band screw to the specified range (page 8-8).

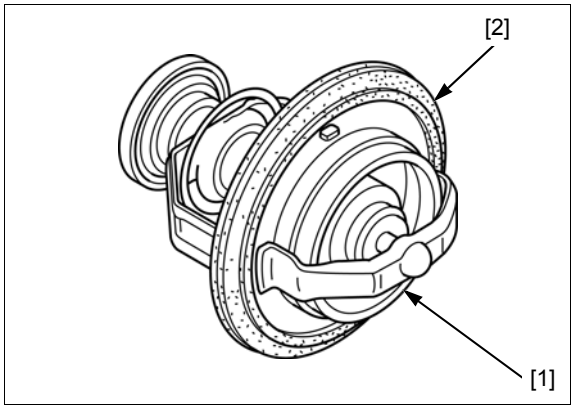
TORQUE:
Thermostat cover bolt:
12 N·m (1.2 kgf·m, 9 lbf·ft)



INSPECTION

Visually inspect the thermostat [1] for damage.

Check the thermostat rubber [2] for damage and replace if necessary.



Visually inspect the thermostat [1] for damage.
Replace the thermostat if the valve stays open at room temperature.

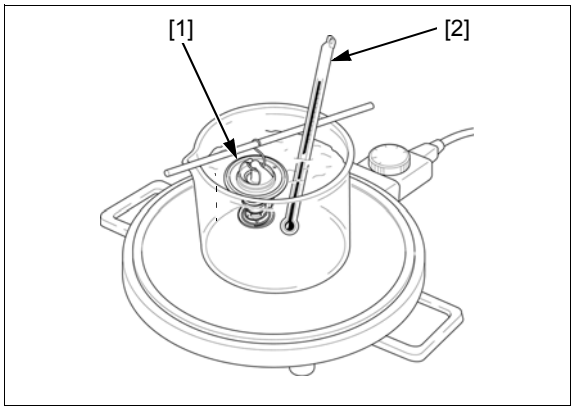
Do not let the thermostat or thermometer [2] touch the pan, or you will get a false reading.

Heat a container of water with an electric heating element for 5 minutes.
Suspend the thermostat in heated water to check its operation.

THERMOSTAT BEGIN TO OPEN:
80 – 84°C (176 – 183°F)

VALVE LIFT:
8 mm (0.3 in) minimum at 95°C (203°F)

Replace the thermostat if the valve opens at a temperature other than those specified.



RADIATOR

REMOVAL/INSTALLATION

LEFT RADIATOR

Drain the coolant (page 8-4).

Remove the left Inner cover (page 2-8).
Remove the horn (page 22-28).

Remove the bolts [1], washers [2], and wire clamp [3].

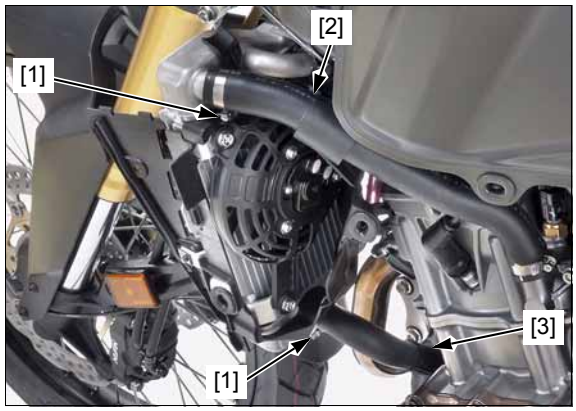


Release the connector clip [1] from the radiator shroud.

Release the air cleaner housing drain hose [2] from the clamp [3].



Loosen the hose band screws [1] and disconnect the upper radiator hose [2] and radiator hose B [3] from the left radiator.



Disconnect left fan motor 2P (Black) connector [1] and remove the left radiator assembly [2].



RIGHT RADIATOR

Drain the coolant (page 8-4).

Remove the right Inner cover (page 2-8).

Remove the bolts [1] and washers [2].

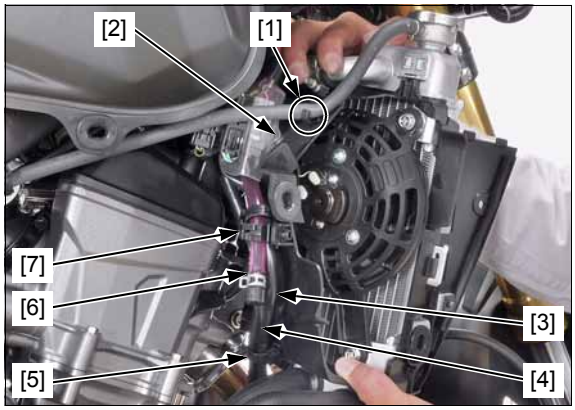


Release the siphon hose [1].

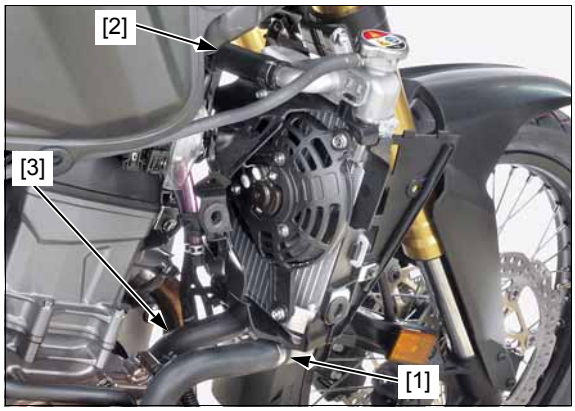
Release the connector clip [2] from the radiator shroud.

Release the linear solenoid wire [3] and main wire harness [4] from the clamp [5].

Release the air cleaner housing drain hose [6] from the clamp [7].



Loosen the hose band screws and disconnect the lower radiator hose [1], radiator hose A [2], and B [3] from the right radiator.



Disconnect right fan motor 2P (Black) connector [1] and remove the right radiator assembly [2].

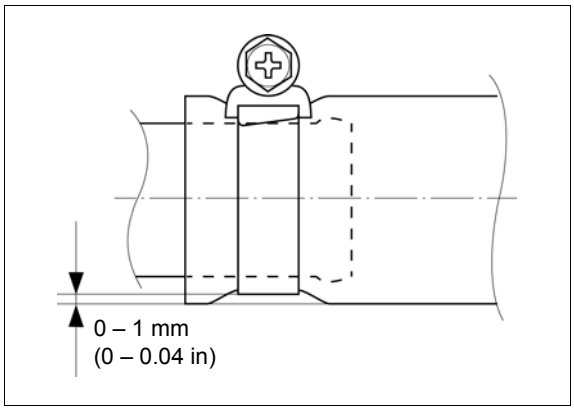


Installation is in the reverse order of removal.

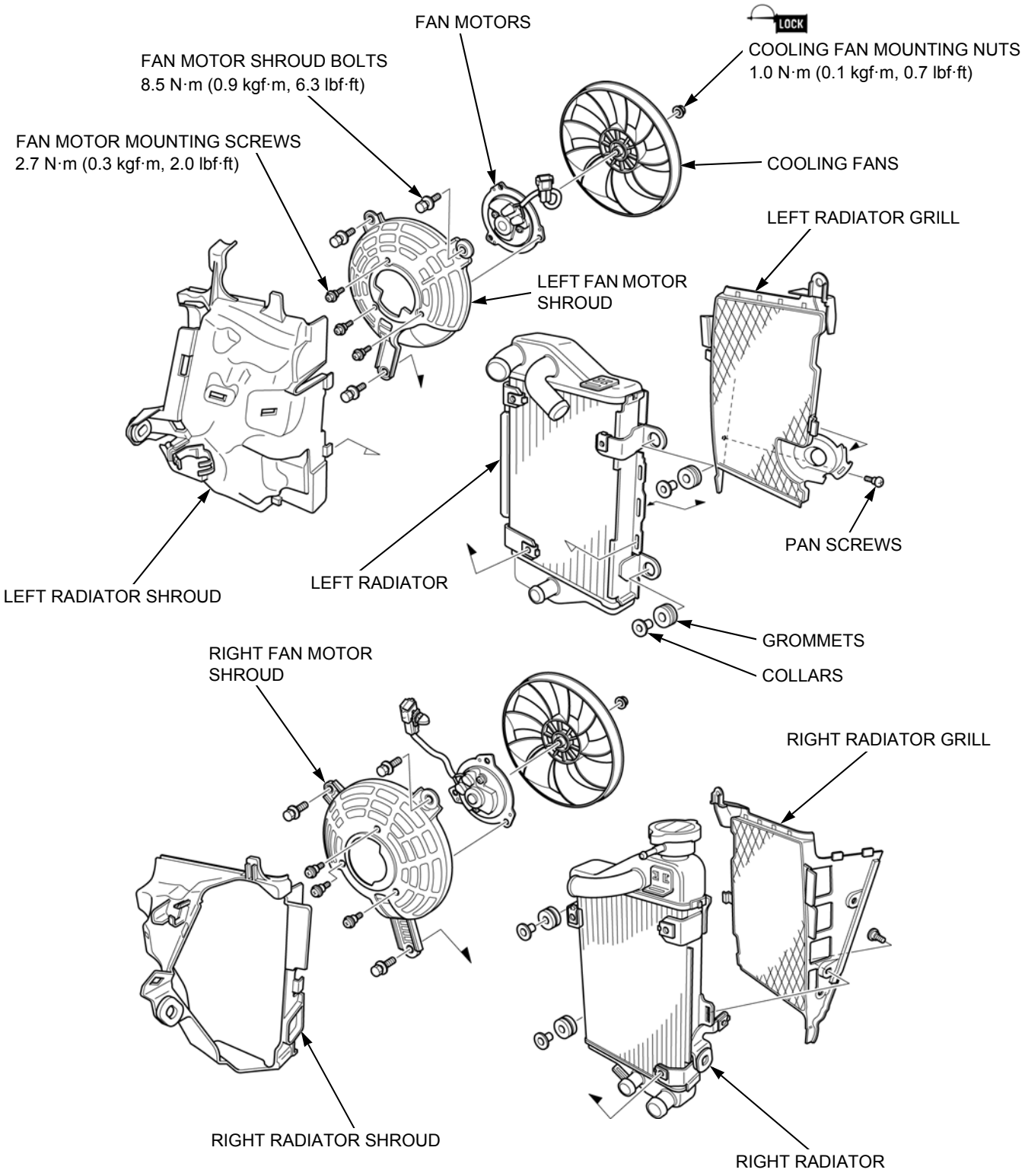
NOTE:

- Tighten the water hose band screws to the specified range as shown.
- Route the hoses and wires properly (page 1-26).

Fill the recommended coolant mixture to the filler neck and bleed the air (page 8-4).



DISASSEMBLY/ASSEMBLY



NOTE:

- Align the cooling fan and fan motor shaft flat surfaces.
- Apply locking agent to the cooling fan mounting nut threads.

RADIATOR RESERVE TANK

REMOVAL/INSTALLATION

Remove the shock absorber (page 18-8).

Remove the rear wheel (page 18-4).

Remove the radiator reserve tank mounting bolt [1].

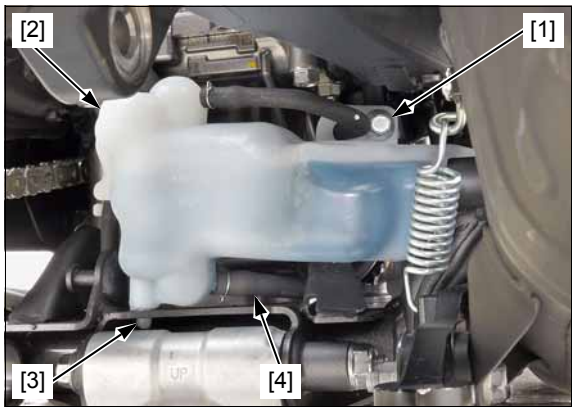
Remove the radiator reserve tank [2] by releasing the boss [3] from the frame.

Disconnect the siphon hose [4] and drain the coolant.

Installation is in the reverse order of removal.

Fill the system with the recommended coolant to the upper level line (page 8-4).

Install the shock absorber (page 18-8).



WATER PUMP

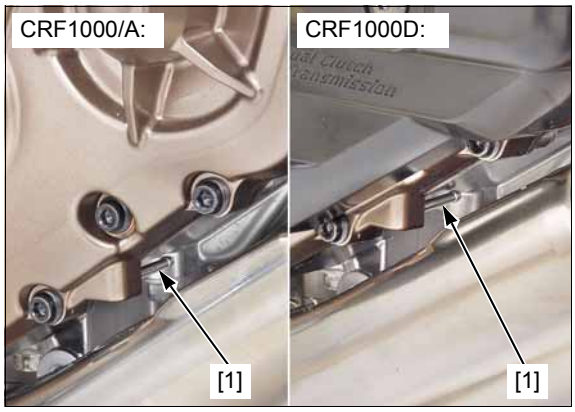
MECHANICAL SEAL INSPECTION

Check the bleed pipe [1] of the water pump for signs of coolant leakage.

NOTE:

- A small amount of coolant weeping from the bleed pipe is normal.
- Make sure that there is no continuous coolant leakage from the bleed pipe while operating the engine.

Replace the water pump as an assembly if necessary.



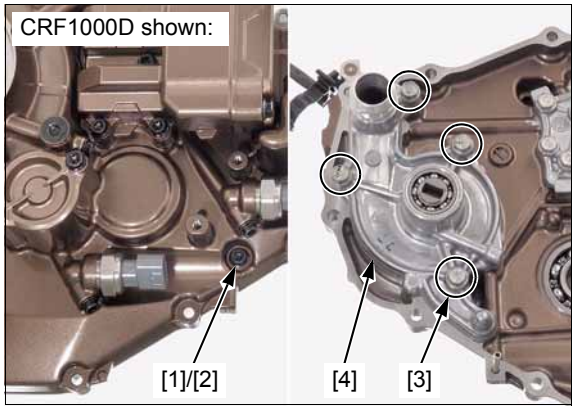
REMOVAL/INSTALLATION

Remove the right crankcase cover.

– CRF1000/A (page 12-4)
– CRF1000D (page 13-52)

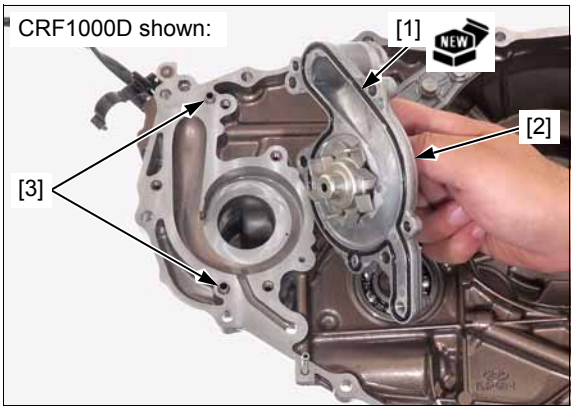
Remove the drain bolt [1] and sealing washer [2].

Remove the water pump cover bolts [3] and water pump body [4].



Install a new O-ring [1] into the groove in the water pump body [2].

Install the dowel pins [3] and water pump body.



Apply locking agent to the water pump cover bolts threads (page 1-20).

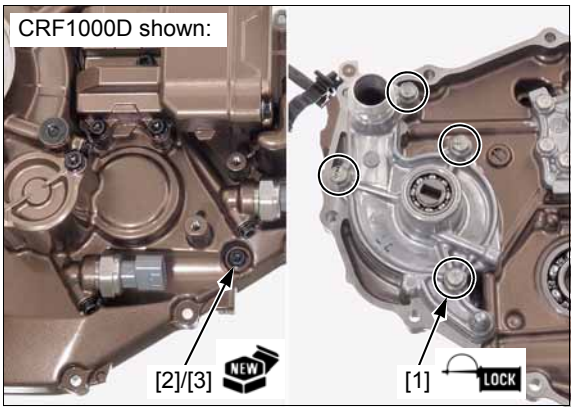
Install and tighten the bolts [1] to the specified torque.

TORQUE: 13 N·m (1.3 kgf·m, 10 lbf·ft)

Install the drain bolt [2] and a new sealing washer [3] and tighten the bolt securely.

TORQUE: 13 N·m (1.3 kgf·m, 10 lbf·ft)

Install the right crankcase cover (page 2-11).



FAN CONTROL RELAY

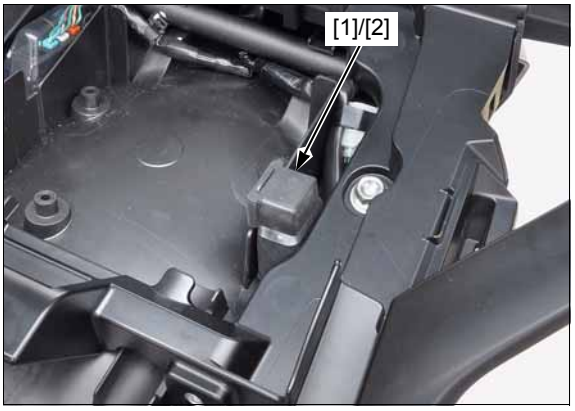
REMOVAL/INSTALLATION

Remove the pillion seat (page 2-11).

Release the fan control relay [1] and cover [2].

Remove the relay cover and disconnect the relay from the relay connector.

Installation is in the reverse order of removal.



RELAY INSPECTION

Remove the fan control relay (page 8-11).

Refer to FI relay inspection (page 4-44).

MEMO

9. LUBRICATION SYSTEM

SERVICE INFORMATION ····· 9-2

TROUBLESHOOTING ····· 9-2

LUBRICATION SYSTEM DIAGRAM ····· 9-3

OIL PRESSURE INSPECTION ····· 9-5

OIL PUMP (CRF1000/A) ····· 9-5

OIL PUMP (CRF1000D) ····· 9-7

OIL STRAINER ····· 9-8

SERVICE INFORMATION

GENERAL

⚠ CAUTION

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

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

TROUBLESHOOTING

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

Low oil pressure
- Oil level low
- Clogged oil strainer
- Faulty oil pump
- Internal oil leak
- Incorrect oil being used
- Oil pressure relief valve stuck open

No oil pressure
- Oil level too low
- Oil pressure relief valve stuck open
- Damaged oil pump
- Internal oil leak

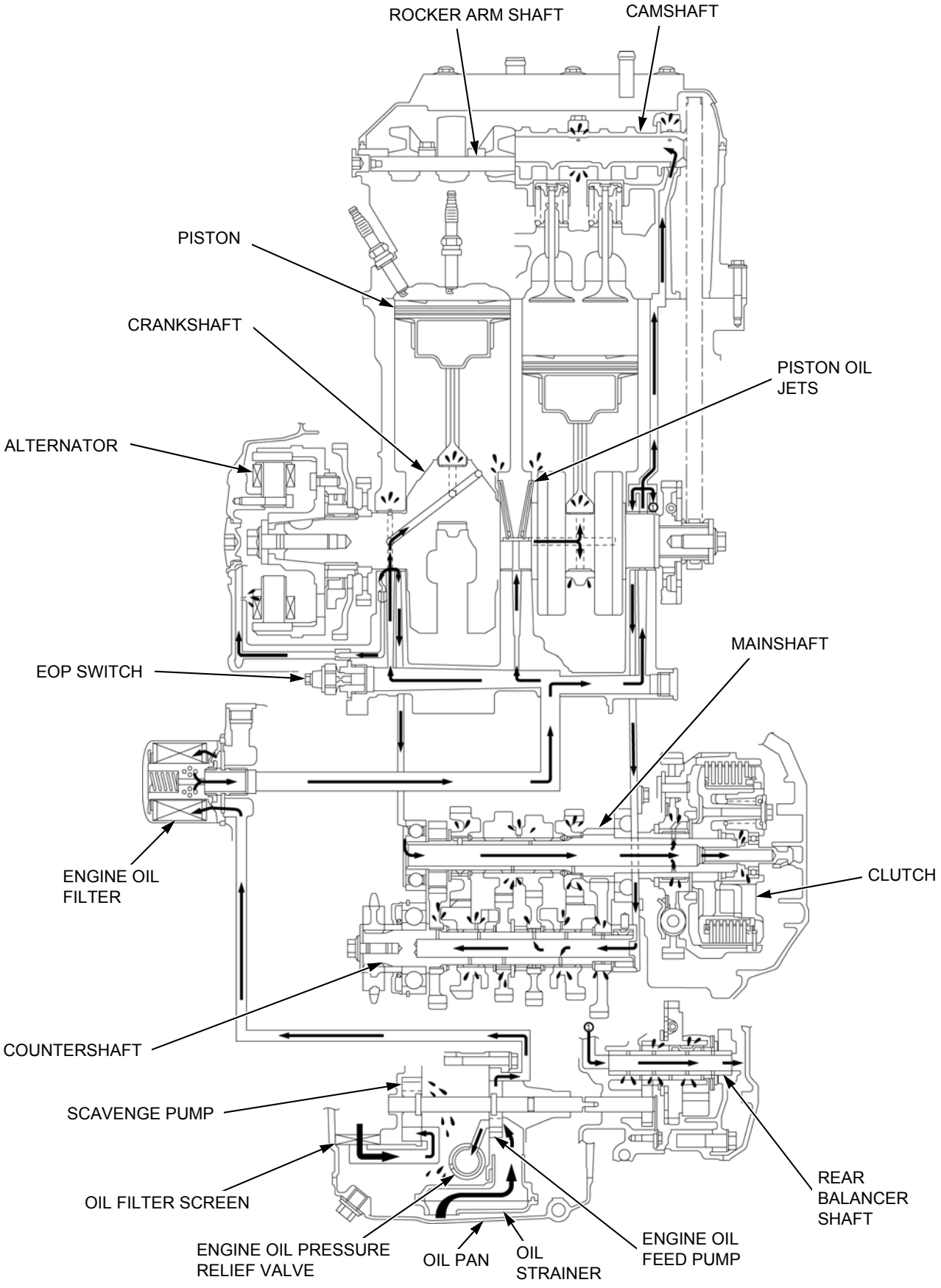
High oil pressure
- Oil pressure relief valve stuck closed
- Clogged oil filter, oil gallery, or metering orifice
- Incorrect oil being used

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

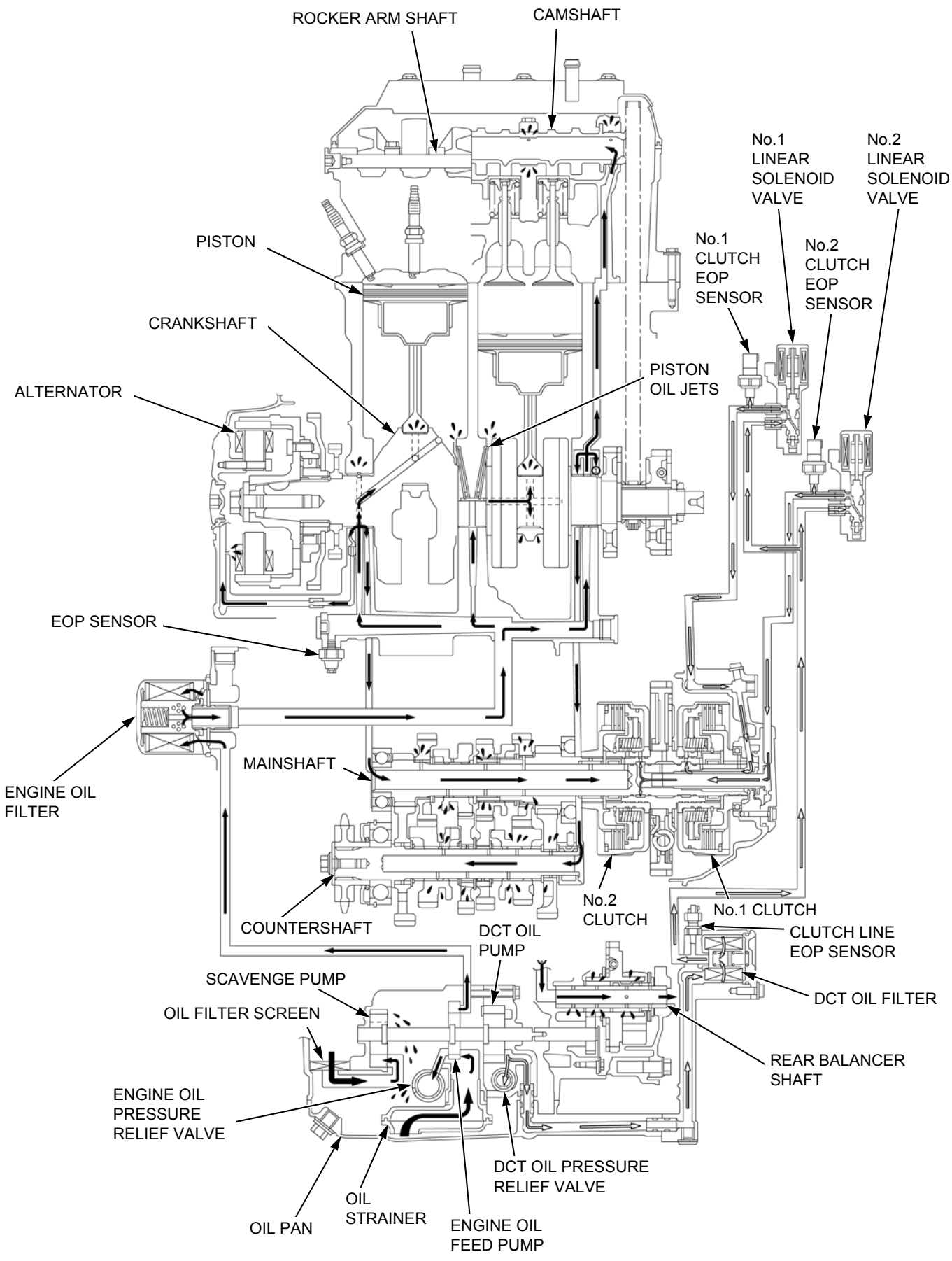
Oil emulsification
- Blown cylinder head gasket
- Leaky coolant passage
- Entry of water

LUBRICATION SYSTEM DIAGRAM

CRF1000/A



CRF1000D


ROCKER ARM SHAFT
CAMSHAFT
No.1 LINEAR SOLENOID VALVE
No.2 LINEAR SOLENOID VALVE
PISTON
No.1 CLUTCH EOP SENSOR
No.2 CLUTCH EOP SENSOR
CRANKSHAFT
ALTERNATOR
PISTON OIL JETS
EOP SENSOR
ENGINE OIL FILTER
MAINSHAFT
No.2 CLUTCH
No.1 CLUTCH
CLUTCH LINE EOP SENSOR
COUNTERSHAFT
DCT OIL PUMP
SCAVENGE PUMP
DCT OIL FILTER
OIL FILTER SCREEN
REAR BALANCER SHAFT
ENGINE OIL PRESSURE RELIEF VALVE
DCT OIL PRESSURE RELIEF VALVE
OIL PAN
OIL STRAINER
ENGINE OIL FEED PUMP

OIL PRESSURE INSPECTION

Remove the engine oil filter cartridge (page 3-12).

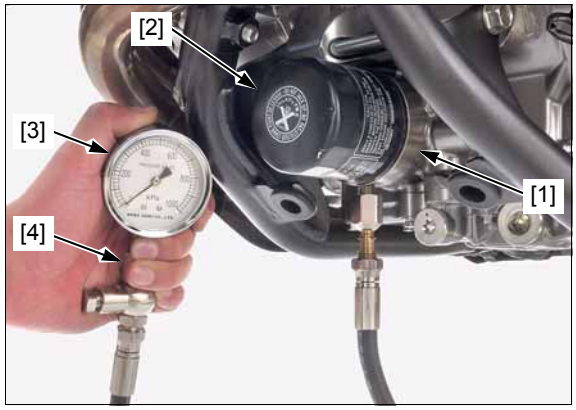
Apply engine oil to the O-ring and install the oil pressure attachment [1] onto the oil filter boss.

TOOL:
Oil pressure gauge attachment 070MJ-0010101

Apply engine oil to the O-ring and install the engine oil filter cartridge [2] onto the oil pressure attachment.

TOOL:
Oil filter wrench 07HAA-PJ70101

TORQUE: 26 N·m (2.7 kgf·m, 19 lbf·ft)



Connect the oil pressure gauge [3] and attachment [4] to the oil pressure gauge attachment.

TOOLS:

Oil pressure gauge set	**07506-3000001 or equivalent commercially available**
Oil pressure gauge attachment	**07406-0030000 or equivalent commercially available**

Fill the engine with the recommended engine oil (page 3-12).

Warm the engine to normal operating temperature (approximately 80°C/176°F) and increase the engine speed to 5,000 min^{-1} (rpm) and read the oil pressure.

STANDARD:
499 – 637 kPa (5.1 – 6.5 kgf/cm^2, 72 – 92 psi) at 5,000 min^{-1} (rpm)/(80°C/176°F)

Stop the engine and remove the tools.

Install the engine oil filter cartridge (page 3-12).

OIL PUMP (CRF1000/A)

REMOVAL/INSTALLATION

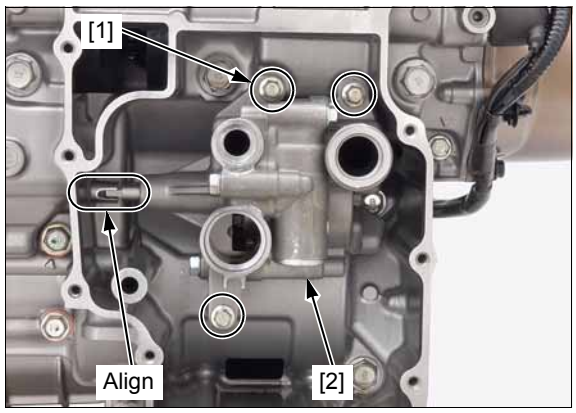
Remove the oil strainer (page 9-8).

Remove the bolts [1] and oil pump [2].

Installation is in the reverse order of removal.

NOTE:

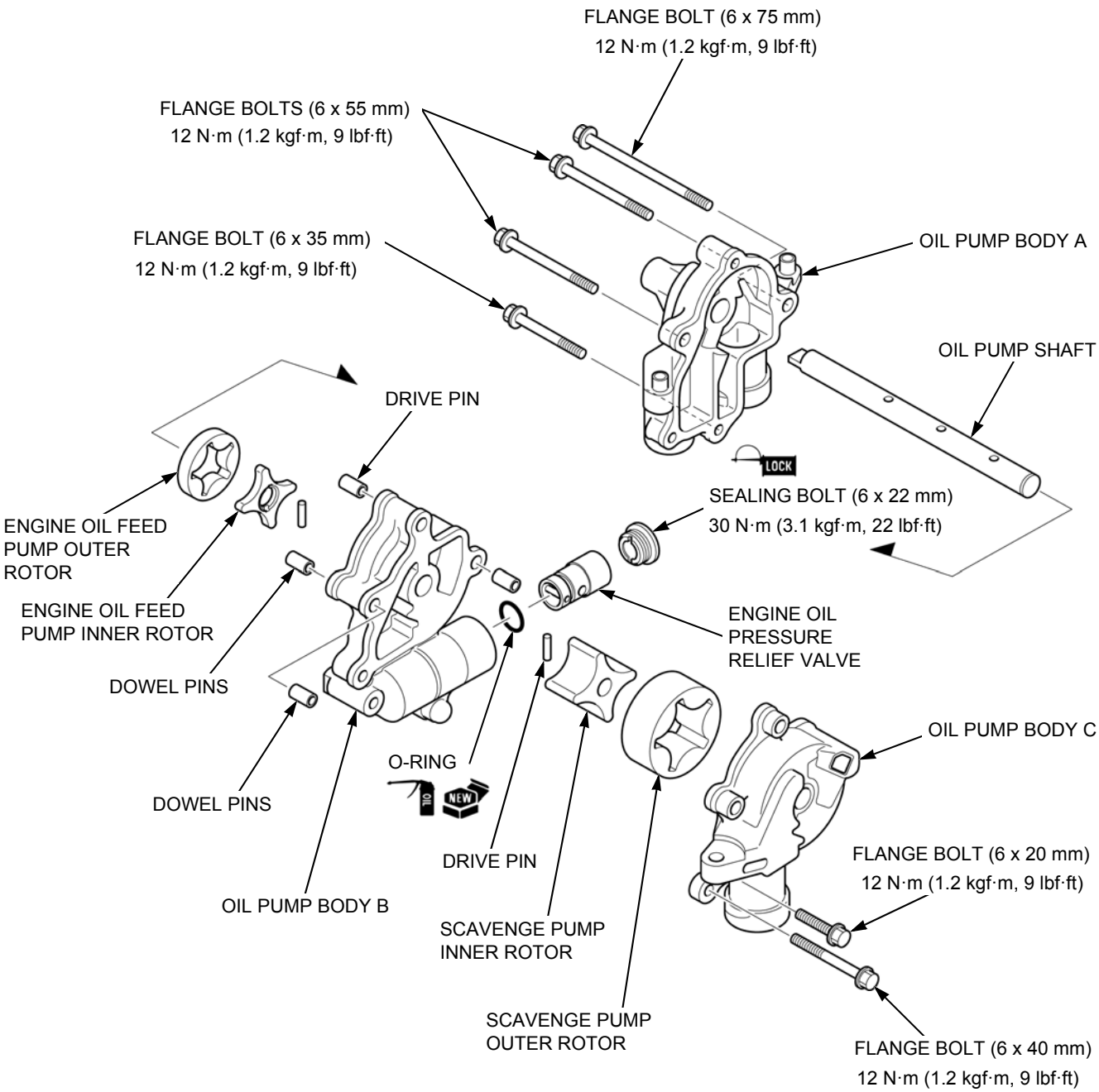
- Align the oil pump driven shaft end with the oil pump drive shaft groove.



DISASSEMBLY/ASSEMBLY

NOTE:

- Dip all parts in clean engine oil.



OIL PUMP INSPECTION

Refer to CRF1000D oil pump inspection (page 9-8).

PRESSURE RELIEF VALVE INSPECTION

Remove the pressure relief valve (page 9-6).

Refer to pressure relief valve (CRF1000D) inspection (page 9-8).

OIL PUMP (CRF1000D)

REMOVAL/INSTALLATION

Remove the oil strainer (page 9-8).

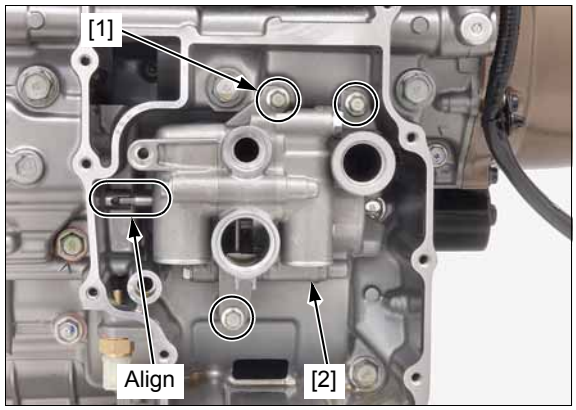
Remove the oil pump mounting bolts [1] and oil pump [2].

Installation is in the reverse order of removal.

NOTE:

- Align the oil pump driven shaft end with the oil pump drive shaft groove.

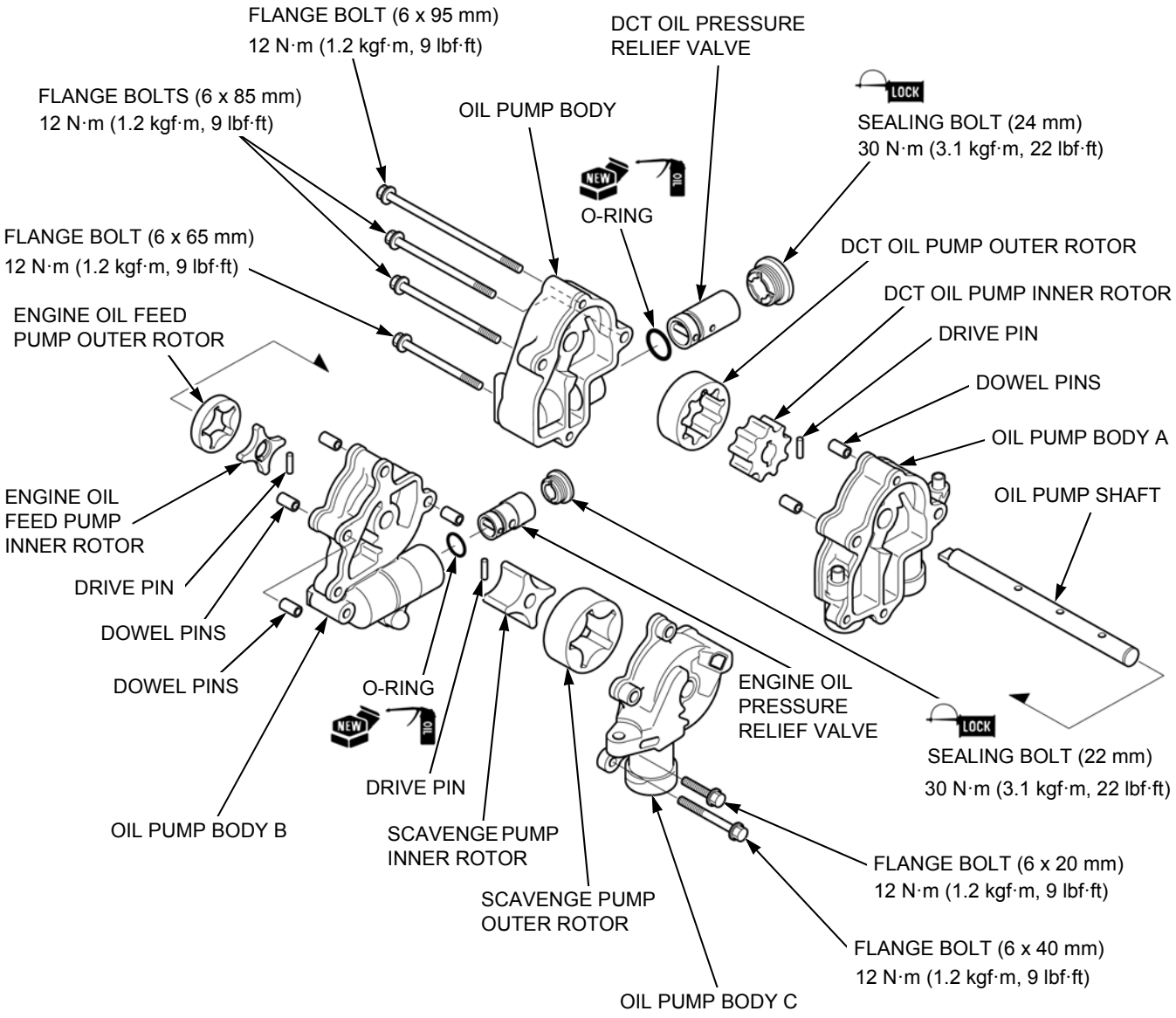
TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)



DISASSEMBLY/ASSEMBLY

NOTE:

- Dip all parts in clean engine oil.



OIL PUMP INSPECTION

NOTE:

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

Inspection the following parts for damage, abnormal wear, deformation, or burning:

– Oil pump shaft
– Drive pin
– Inner rotor
– Outer rotor
– Oil pump body

Measure the oil pump clearances according to LUBRICATION SYSTEM SPECIFICATIONS (page 1-7).

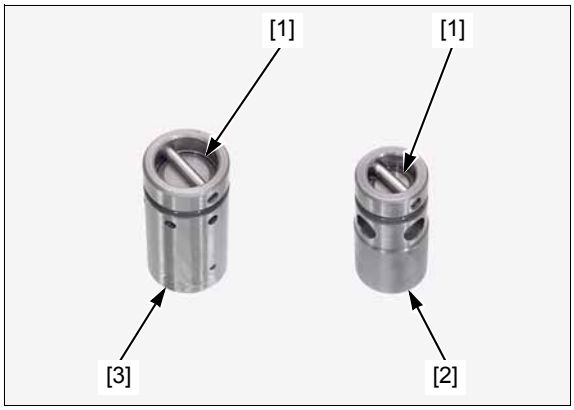
If any of the measurement is out of the service limit, replace the oil pump as an assembly.

PRESSURE RELIEF VALVE INSPECTION

Remove the pressure relief valve (page 9-7).

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

– Engine oil pressure relief valve [2]
– DCT oil pressure relief valve (CRF1000D only) [3]

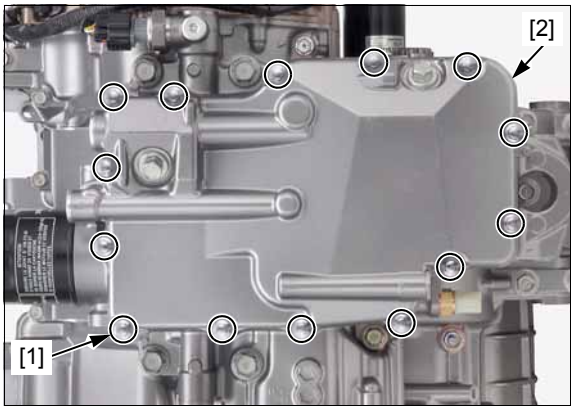


OIL STRAINER

REMOVAL/INSTALLATION

Drain the engine oil (page 3-12).

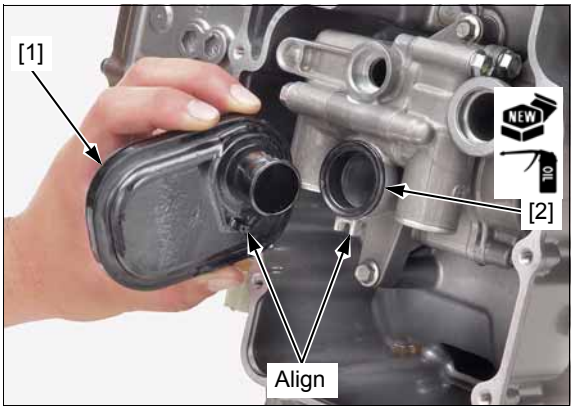
Loosen the bolts [1] in a crisscross pattern in 2 or 3 steps, and remove the bolts and oil pan [2].



Remove the oil strainer [1] and seal ring [2].

Clean the oil strainer and check for damage, replace it if necessary.

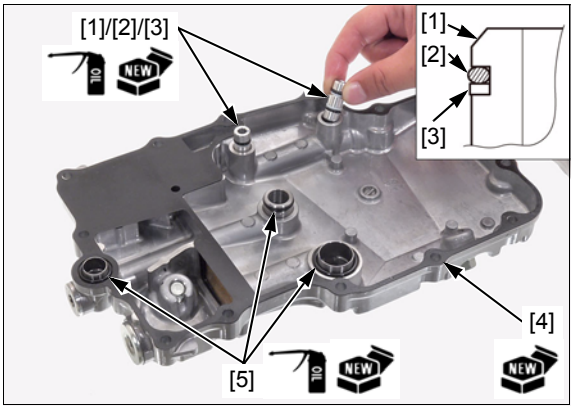
NOTE:
- Align the oil strainer boss with the oil pump groove.
- Always replace the seal ring with a new one.
- Apply engine oil to a new seal ring.



Remove the following:

– Oil joints [1], O-rings [2], and back up rings [3]
– Gasket [4]
– O-rings [5]

NOTE:
- Always replace the O-rings, back up rings, and gasket with new ones.
- Apply engine oil to new O-rings.
- Install new O-rings and back up rings to the oil joints as shown.

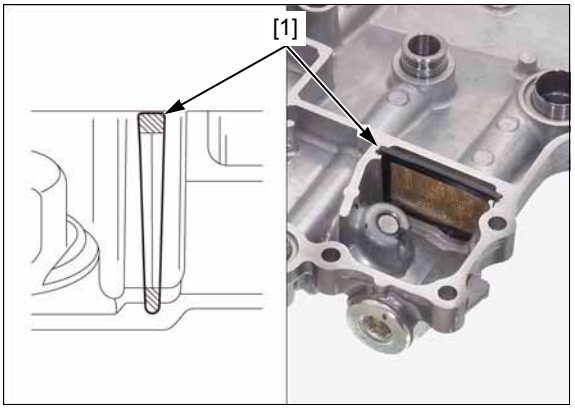


Remove the oil filter screen [1].

Clean the oil filter screen and check for damage, replace it if necessary.

NOTE:
- Install the oil filter screen into the oil pan as shown.

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-12).



MEMO

10. CYLINDER HEAD/VALVE/CAMSHAFT

SERVICE INFORMATION ····· 10-2
TROUBLESHOOTING ····· 10-2
COMPONENT LOCATION ····· 10-3
CYLINDER COMPRESSION ····· 10-4
CYLINDER HEAD COVER ····· 10-4
ROCKER ARM ····· 10-6
CAM CHAIN TENSIONER LIFTER ····· 10-8
CAMSHAFT ····· 10-9
CYLINDER HEAD ····· 10-13
INSULATOR ····· 10-19

SERVICE INFORMATION

GENERAL

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

TROUBLESHOOTING

- Engine top-end problems usually affect engine performance. These can be diagnosed by a compression test, or by tracing noises to the top-end with a sounding rod or stethoscope.
- If the performance is poor at low speeds, check for a white smoke in the crankcase breather hose. If the hose is smoky, check for seized piston ring (page 15-13).

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

- Valves:
  - Incorrect valve clearance
  - Burned or bent valve
  - Incorrect valve timing
  - Broken valve spring
  - Uneven valve seating
  - Valve stuck open
- Cylinder head:
  - Leaking or damaged cylinder head gasket
  - Loose spark plug
  - Warped or cracked cylinder head
- Cylinder/piston problem (page 15-2)

Compression too high, overheating or knocking

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

Excessive smoke

- Worn valve stem or valve guide
- Damaged stem seal
- Cylinder/piston problem (page 15-2)

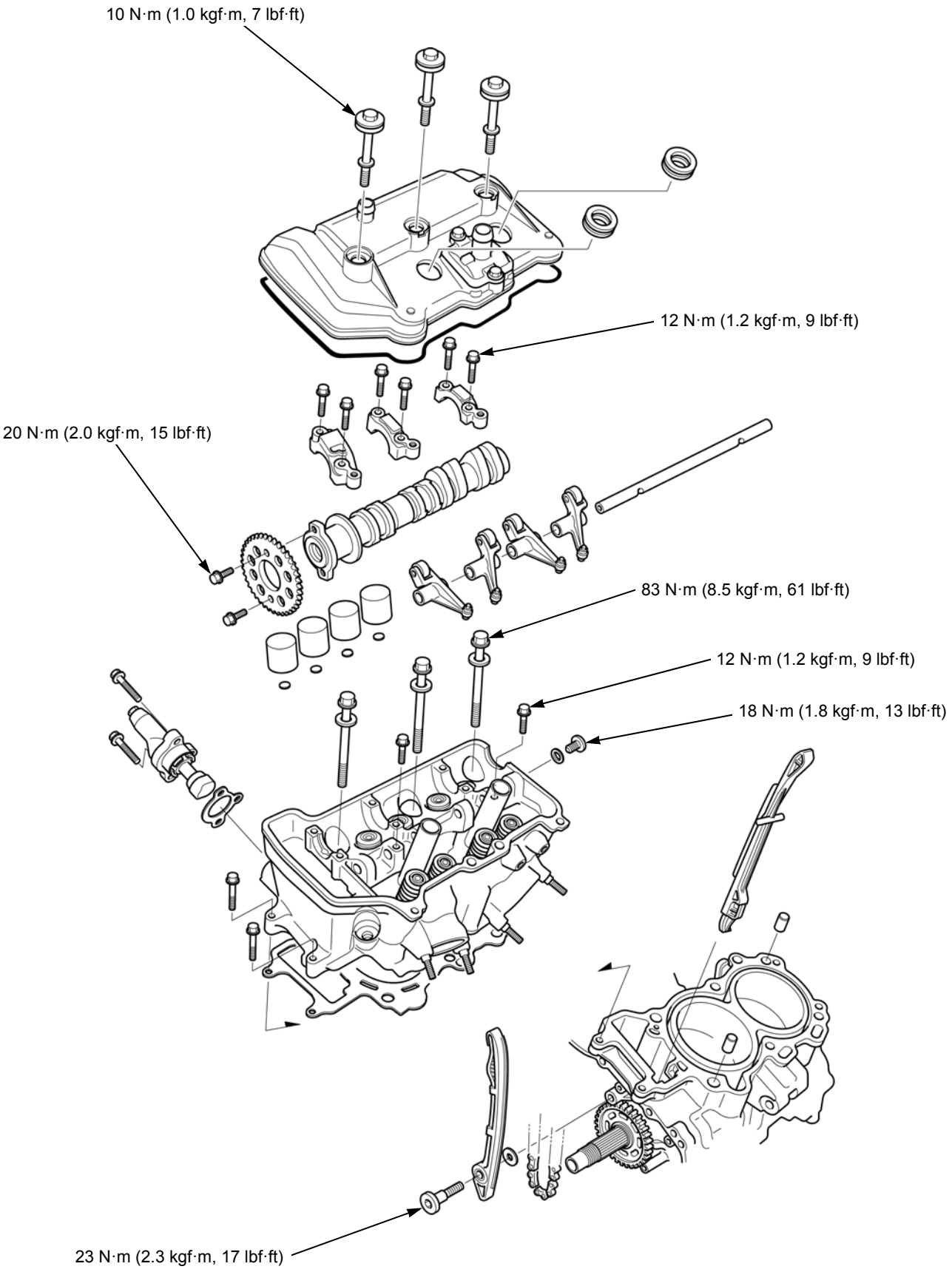
Excessive noise

- Incorrect valve clearance
- Sticking valve or broken valve spring
- Excessively worn valve seat
- Worn or damaged camshaft
- Worn rocker arm and/or shaft
- Worn rocker arm follower or valve stem end
- Loose or worn cam chain
- Worn or damaged cam chain tensioner
- Worn cam sprocket teeth
- Cylinder/piston problem (page 15-2)

Rough idle

- Low cylinder compression

COMPONENT LOCATION

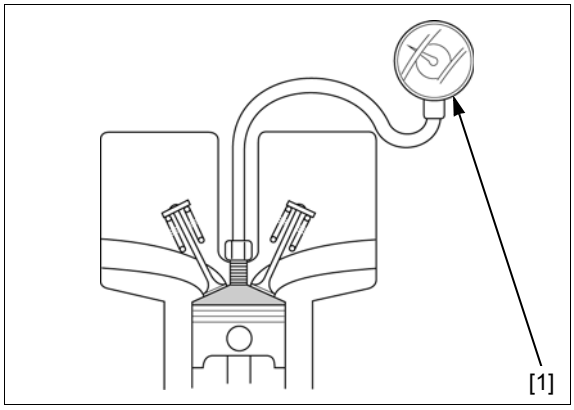


CYLINDER COMPRESSION

Warm up the engine to normal operating temperature. Stop the engine, disconnect the spark plug caps and remove the spark plugs (page 3-5).

Disconnect the fuel pump unit 3P (Black) connector (page 7-4).

Install the compression gauge [1] into the spark plugs hole.



Turn the ignition switch ON.

CRF1000/A: Shift the transmission into the neutral position.

Open the throttle all the way and crank the engine with the starter motor until the gauge reading stops rising. The maximum reading is usually reached within 4 – 7 seconds.

COMPRESSION PRESSURE:
1,245 kPa (12.7 kgf/cm^2, 181 psi) at 500 rpm

Low compression can be caused by:
– Blown cylinder head gasket
– Improper valve adjustment
– Valve leakage
– Worn piston ring or cylinder

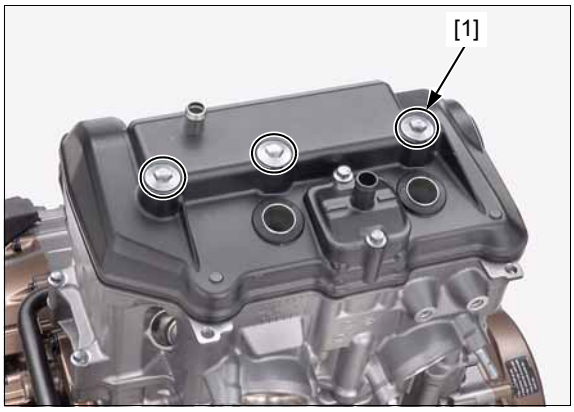
High compression can be caused by:
– Carbon deposits in combustion chamber or on piston head

CYLINDER HEAD COVER

REMOVAL

Remove the ignition coil tray (page 5-9).

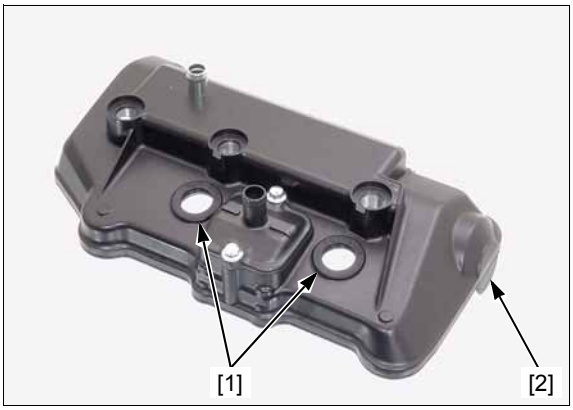
Remove the bolts [1].



Remove the cylinder head cover [1] to the right side as shown.



Remove the plug pipe seals [1] and cylinder head cover packing [2].

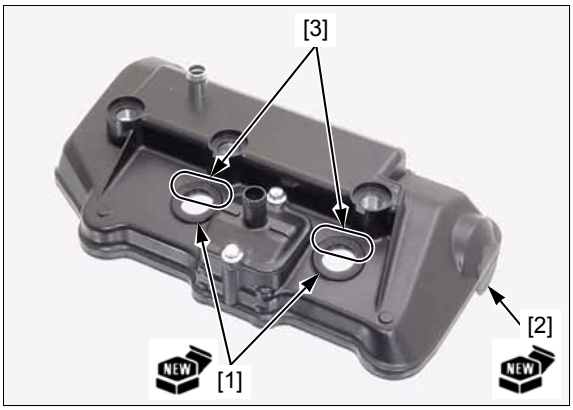


INSTALLATION

Install new plug pipe seals [1].
Install a new cylinder head cover packing [2].

NOTE:

- Install the plug pipe seals with their "OUT SIDE" marks [3] facing up.

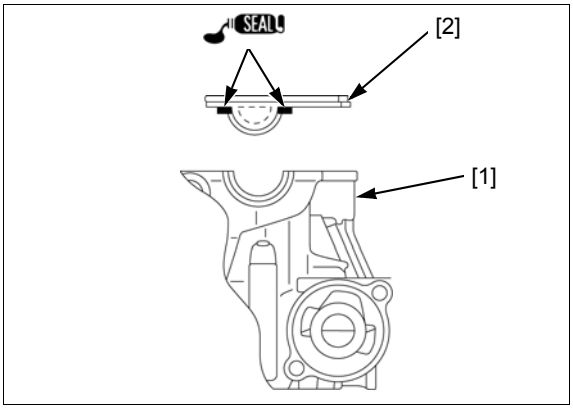


Clean the cylinder head [1] mating surface thoroughly.

Apply liquid sealant (TB5211C manufactured by ThreeBond, KE45T manufactured by Shin-Etsu Silicone or an equivalent) to the cylinder head cover packing [2] as shown.

NOTE:

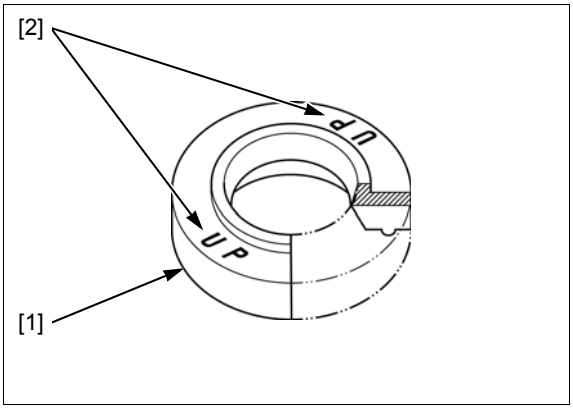
- Do not apply more liquid sealant than necessary.



Check that the mounting rubbers [1] are in good condition, and replace them if necessary.

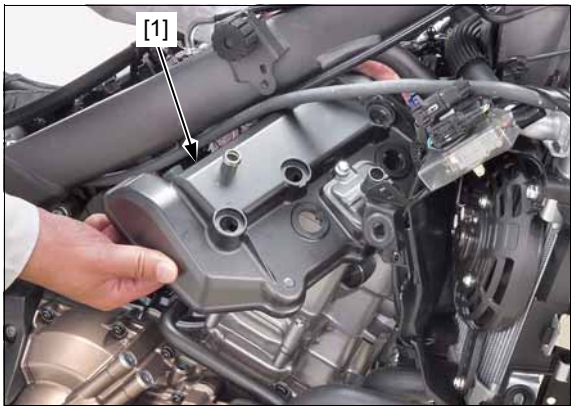
NOTE:

- Install the mounting rubbers with their "UP" marks [2] facing up.



Insert the cylinder head cover [1] from the right side as shown.

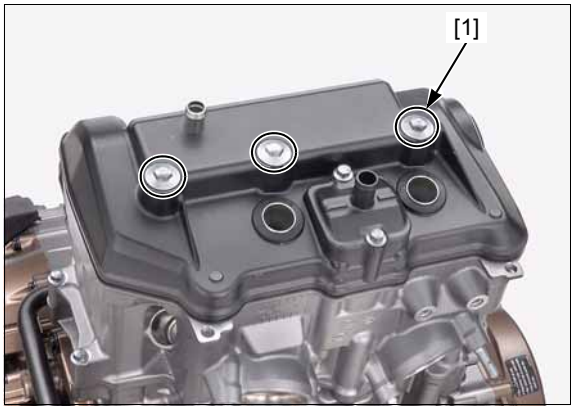
Install the cover on the cylinder head securely.



Install the bolts [1] and tighten them to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the ignition coil tray (page 5-9).



ROCKER ARM

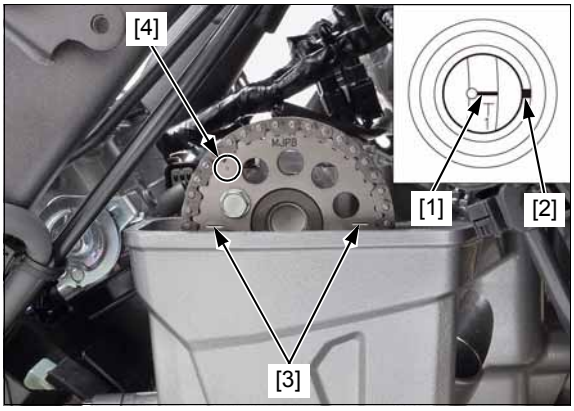
REMOVAL

Remove the cylinder head cover (page 10-4).

Remove the crankshaft hole cap and the timing hole cap (page 3-8).

Turn the crankshaft counterclockwise and align the "T1" mark [1] on the flywheel with the index mark [2] of the alternator cover.

Make sure that the index lines [3] on the cam sprocket align with the upper surface of the cylinder head and the punch mark [4] on the sprocket is visible.



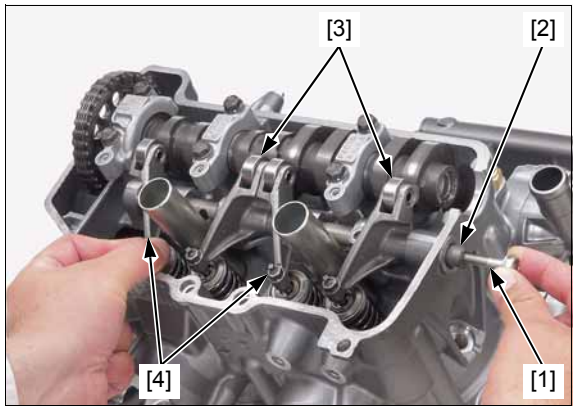
Remove the rocker arm shaft stopper bolt [1], sealing washer [2], and rocker arm shaft bolts [3].



Temporarily install a 6 mm bolt [1].

Remove the rocker arm shaft [2] by pulling it.
Remove the rocker arms A [3] and B [4].

Remove the 6 mm bolt.



INSPECTION

Inspect the following parts for damage, abnormal wear, deformation, burning.

– Rocker arm
– Rocker arm shaft

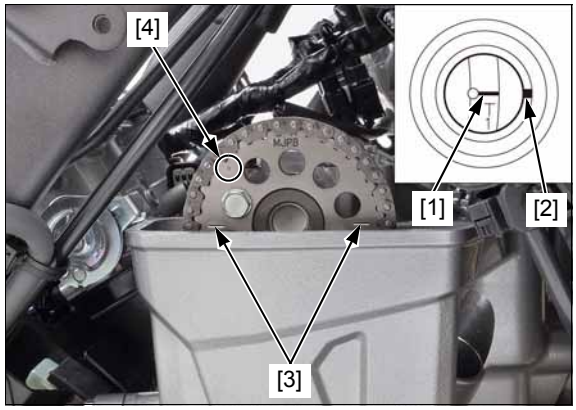
Measure each part according to CYLINDER HEAD/ VALVE/CAMSHAFT SPECIFICATIONS (page 1-7).

Replace any part if it is out of the service limit.

INSTALLATION

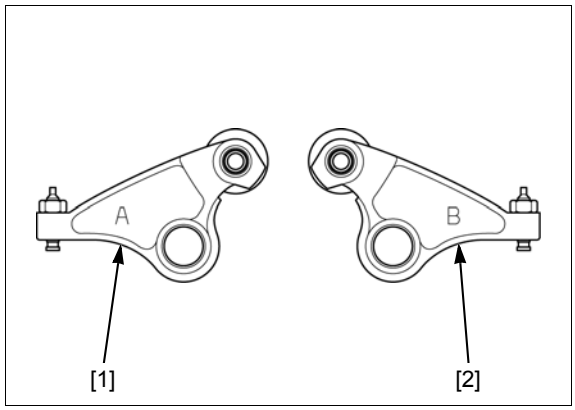
Turn the crankshaft counterclockwise and align the "T1" mark [1] on the flywheel with the index mark [2] of the alternator cover.

Make sure that the index lines [3] on the cam sprocket align with the upper surface of the cylinder head and the punch mark [4] on the sprocket is visible.



The rocker arms have the following identification marks:

– "A" mark: rocker arm A [1]
– "B" mark: rocker arm B [2]



Apply molybdenum oil solution to the rocker arm sliding area and thrust surface.
Apply molybdenum oil solution to the rocker arm shaft outer surface.

Temporarily install a 6 mm bolt [1].

Install the rocker arms A [2] and B [3].

Install the rocker arm shaft [4].

NOTE:

- Install the rocker arm shaft by aligning its grooves with the bolt holes of the cylinder head.

Apply engine oil to the rocker arm shaft bolt threads and seating surface.
Install and tighten the shaft bolts [5] to the specified torque.

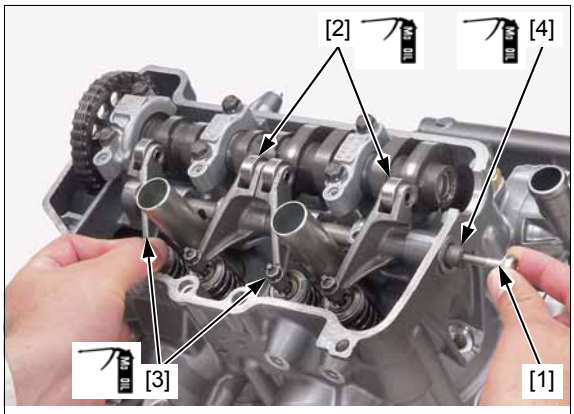
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Remove the 6 mm bolt.

Install the stopper bolt [6] and a new sealing washer [7] and tighten the bolt to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Install the cylinder head cover (page 10-5).





CAM CHAIN TENSIONER LIFTER

REMOVAL/INSTALLATION

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

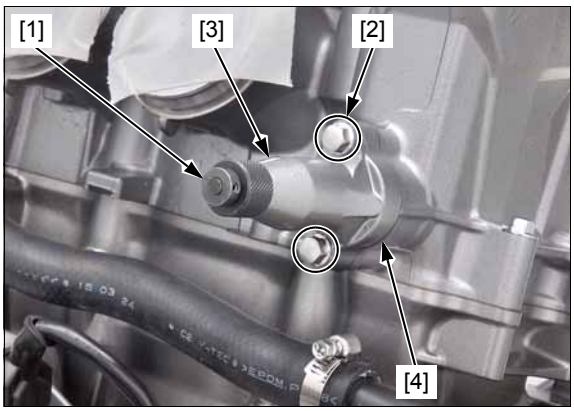


Turn the cam chain tensioner lifter shaft fully in (clockwise) and secure it using the special tool.

TOOL:
Tensioner holder B [1] 070MG-0010100

Remove the cam chain tensioner lifter mounting bolts [2].

Remove the cam chain tensioner lifter [3] and gasket [4].

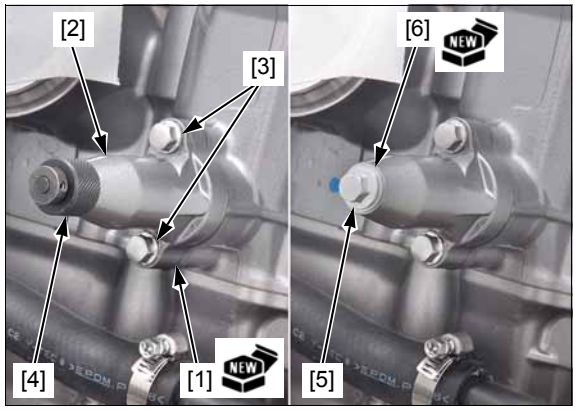


Install a new gasket [1] on the cam chain tensioner lifter [2] and install them to the cylinder.

Install and tighten the mounting bolts [3].

Remove the tensioner holder B [4].

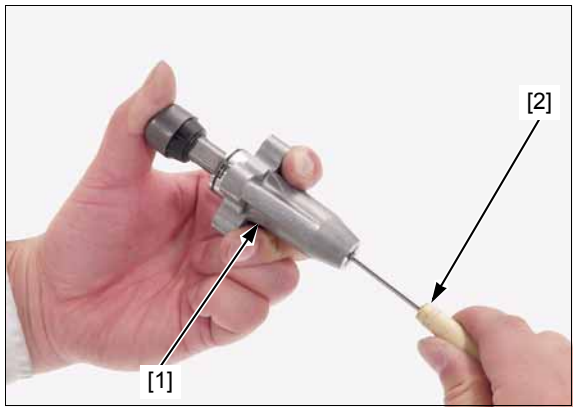
Install and tighten the plug [5] with a new sealing washer [6].



INSPECTION

Check the cam chain tensioner lifter [1] operation:

– The cam chain tensioner lifter shaft should not go into the lifter body when it is pushed.
– When it is turned clockwise with the tensioner holder or a screwdriver [2], the shaft should be pulled into the lifter body. The shaft should spring out of the lifter body as soon as the tensioner holder is released.



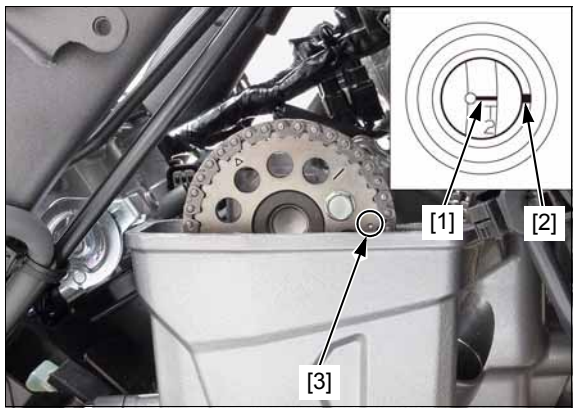
CAMSHAFT

REMOVAL

Remove the rocker arms (page 10-6).

Turn the crankshaft counterclockwise and align the "T2" mark [1] on the flywheel with the index mark [2] of the alternator cover.

Make sure that the punch mark [3] on the cam sprocket align with the upper surface of the cylinder head as shown.



Release the cam chain tension (page 10-8).

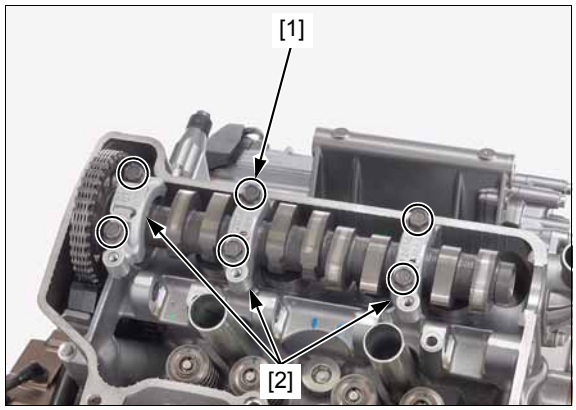
Be careful not to let the camshaft holder bolts fall into the crankcase.

Loosen the camshaft holder bolts [1] gradually in a crisscross pattern in 2 or 3 steps, and remove them.

Remove the camshaft holders [2] with the dowel pins.

NOTE:

• Do not forcibly remove the dowel pins from the camshaft holders.

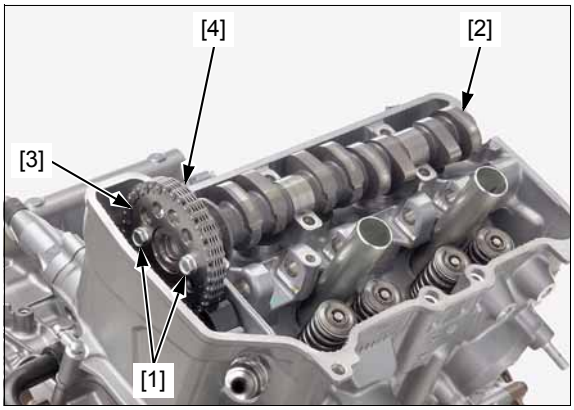


Remove the cam sprocket bolts [1] and disassemble the camshaft [2] and cam sprocket [3].

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

Release the cam chain [4] from the cam sprocket.

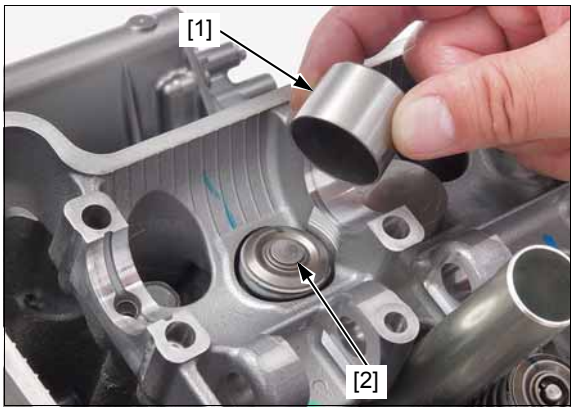
Remove the camshaft.



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

NOTE:

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



INSPECTION

Inspect the following parts for damage, abnormal wear, deformation, burning, or clogs in oil passages.

– Cam sprocket
– Camshaft
– Camshaft holder/dowel pin
– Valve lifter

Measure each part according to CYLINDER HEAD/VALVE/CAMSHAFT SPECIFICATIONS (page 1-7).

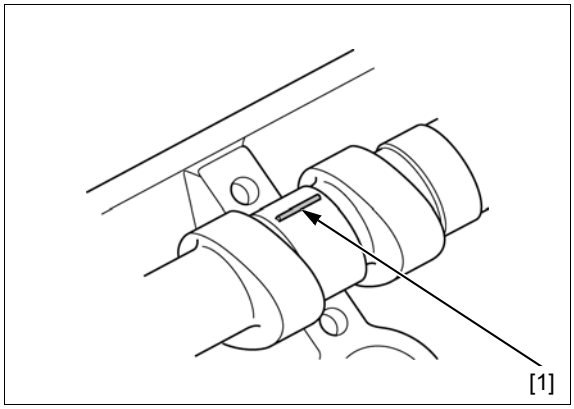
Replace any part if it is out of the service limit.

CAMSHAFT OIL CLEARANCE

Do not rotate the camshaft during inspection.

Wipe any oil from the journals of the cylinder head, camshaft and camshaft holder.
Install the camshaft onto the cylinder head (page 10-11).

Lay a strip of plastigauge [1] lengthwise on each camshaft journal and be sure to avoid the oil passages.

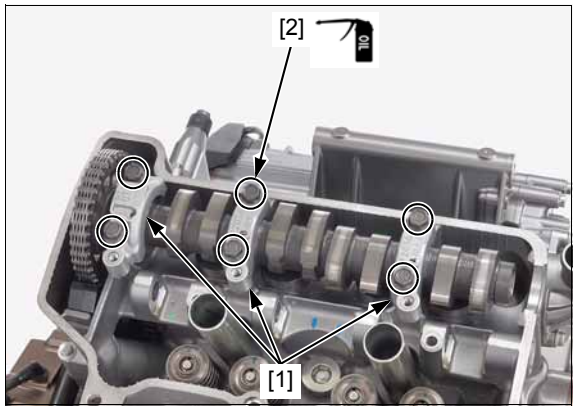


Install camshaft holders/dowel pins [1] in the correct locations, being careful not to drop the plastigauge.

Apply engine oil to the threads and seating surfaces of the camshaft holder bolts [2] and install them.

Tighten the bolts to the specified torque.

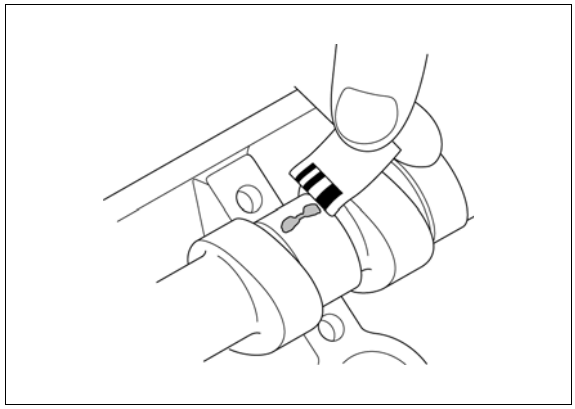
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Remove the camshaft holders and measure the compressed plastigauge at its widest point on the camshaft to determine the oil clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

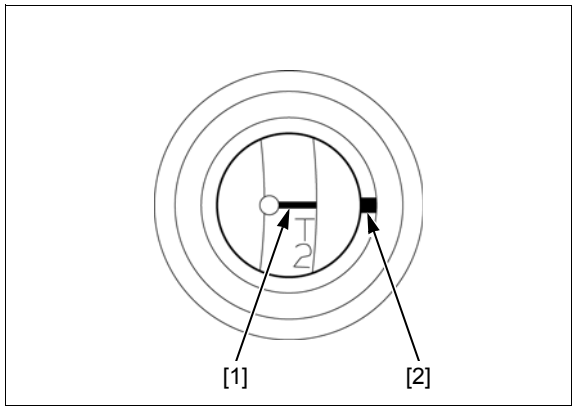
If the oil clearance exceeds the service limit, replace the camshaft and recheck the oil clearance.
Replace the cylinder head and camshaft holder as a set if the oil clearance still exceeds the service limit.



INSTALLATION

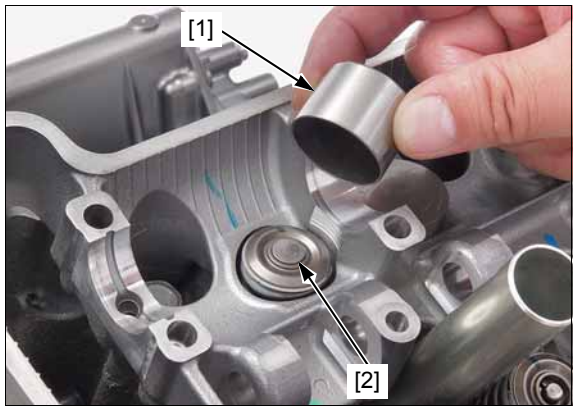
Carefully rotate the crankshaft while holding the cam chain to avoid jamming the cam chain against the timing sprocket of the crankshaft.

Turn the crankshaft counterclockwise and align the "T2" mark [1] on the flywheel with the index mark [2] of the alternator cover.



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

NOTE:
- Do not allow the shims to fall into the crankcase.
- Install all valve lifters and shims in their original locations.



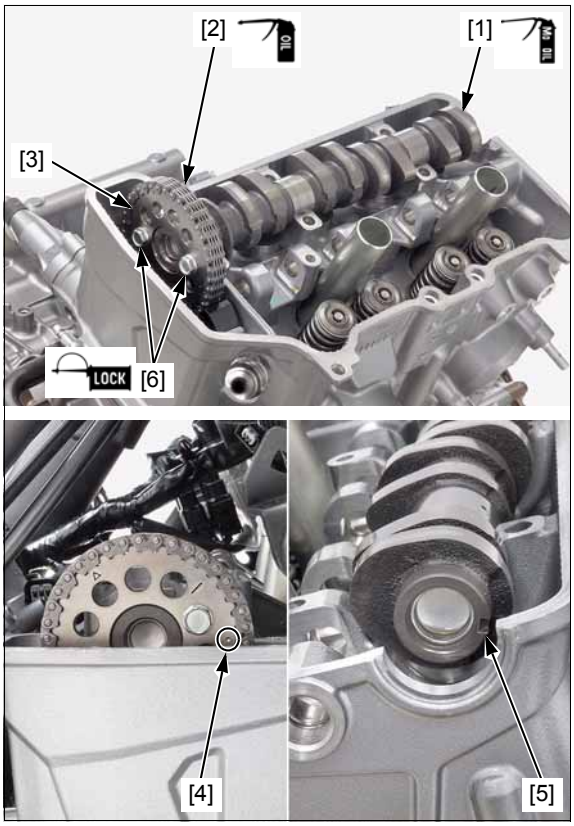
Apply molybdenum oil solution to the camshaft journal cam lobes, and thrust surfaces.
Put the camshaft [1] onto the cylinder head.

Apply engine oil to the cam chain whole surface.
Install the cam chain [2] over the cam sprocket [3]
Assemble the camshaft and cam sprocket.

Make sure that the punch mark [4] on the cam sprocket align with the upper surface of the cylinder head as shown.
Make sure that the camshaft end [5] is in position as shown.

Apply locking agent to the cam sprocket bolts threads (page 1-21).
Install and tighten the cam sprocket bolts [6] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

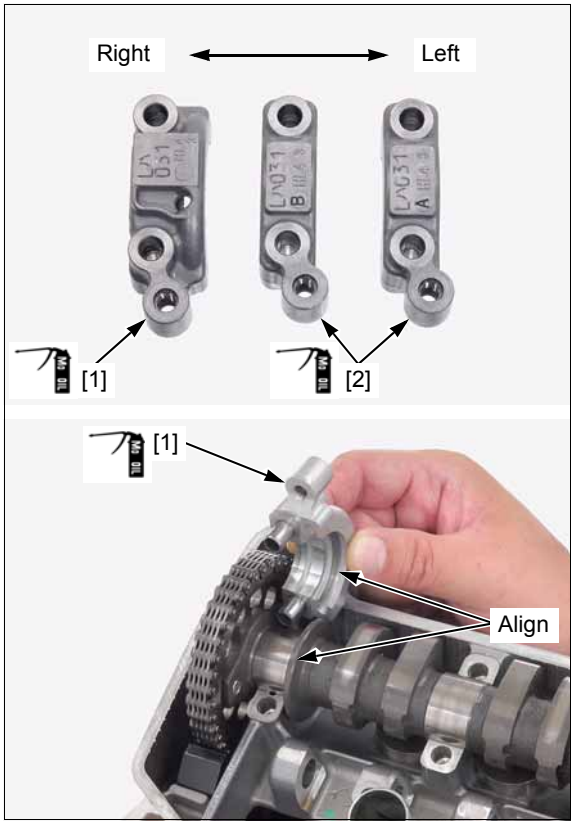


Apply molybdenum oil solution to the camshaft holders inside and install them in their original locations.

– Camshaft holder A/dowel pins [1]
– Camshaft holders B/dowel pins [2]

NOTE:

• Align the groove of the camshaft holder A with the tab of the camshaft.



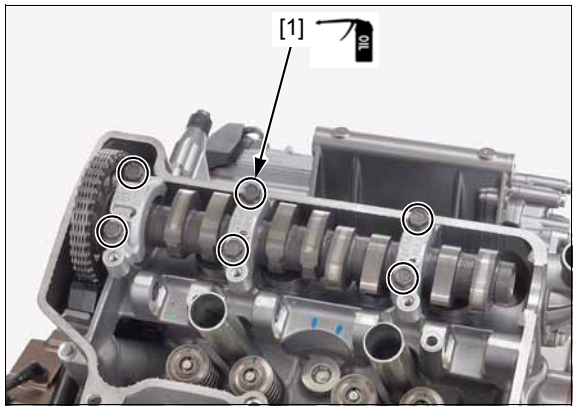
Apply engine oil to the camshaft holder bolt [1] threads and seating surfaces and install them.

Tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Apply the cam chain tension (page 10-8).

Install the removed parts in the reverse order of removal.



CYLINDER HEAD

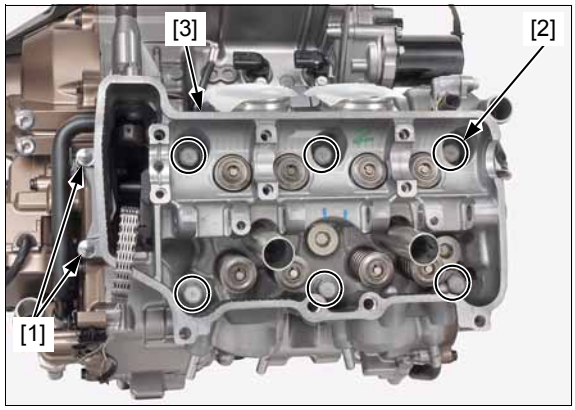
REMOVAL

Remove the engine (page 16-5).
Remove the camshaft (page 10-9).

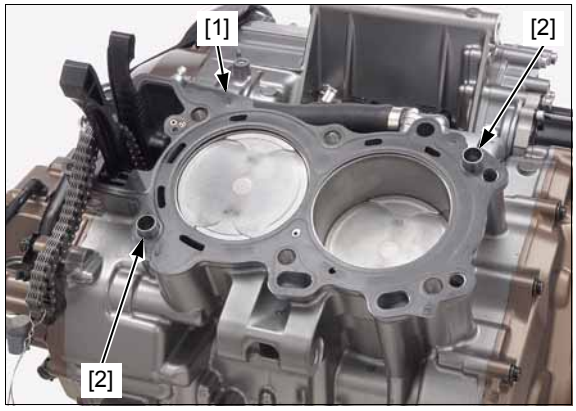
Remove the 6 mm bolts [1].
Loosen the cylinder head bolts [2] in a crisscross pattern in 2 or 3 steps, and remove them.

Remove the cylinder head [3].

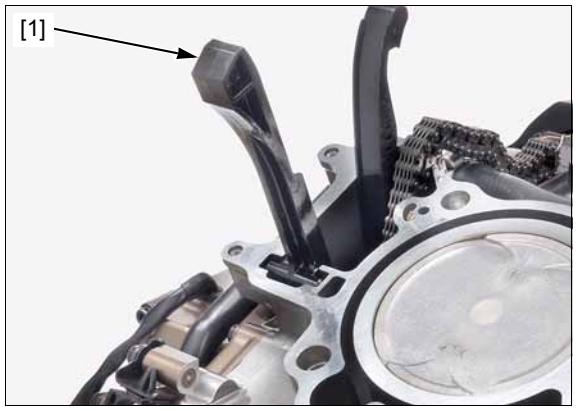
Do not tap the cylinder head too hard and do not damage the mating surface with a screwdriver.



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



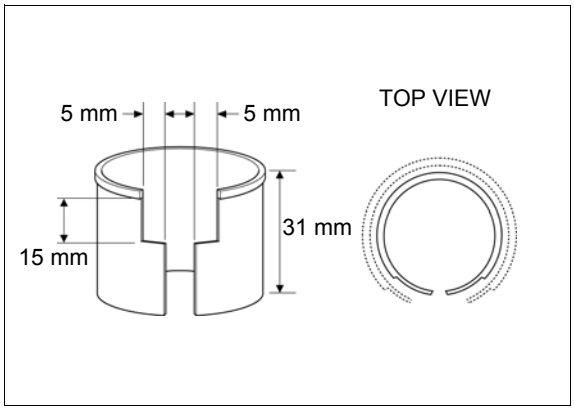
Remove the cam chain guide [1].



DISASSEMBLY

Install the tappet hole protector into the valve lifter bore.

A tool can easily be made from a plastic 35 mm film container or equivalent as shown.



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

Remove the valve cotters [1] using the special tool as shown.

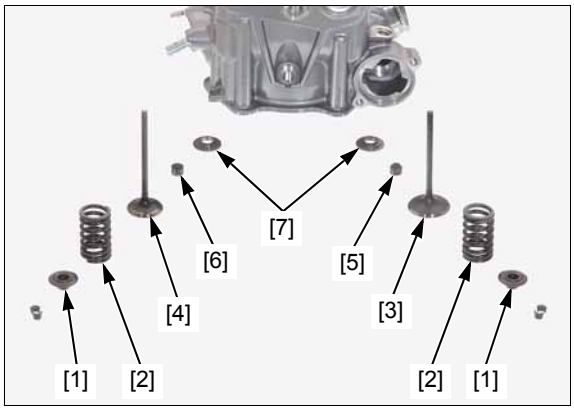
TOOLS:
Valve spring compressor [2] 07757-0010000



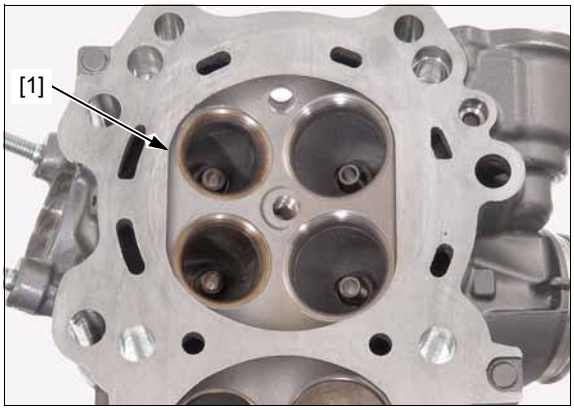
Mark all the parts so they can be placed back in their original locations.

Remove the following:

- Spring retainers [1]
- Valve springs [2]
- Intake valves [3]
- Exhaust valves [4]
- Stem seals (Intake side) [5]
- Stem seals (Exhaust side) [6]
- Spring seats [7]



Remove carbon deposits from the combustion chamber [1].



INSPECTION

Inspect the following parts for damage, abnormal wear, deformation, burning or clogs in oil passages.

– Cylinder head
– Valve springs
– Valves
– Valve guides

Measure each part according to CYLINDER HEAD/ VALVE SPECIFICATIONS (page 1-7).

Replace any part if it is out of service limit.

NOTE:

- Ream the valve guide using the valve guide reamer to remove any carbon build up before measuring the guide (page 10-15).
- Refer to valve seat inspection (page 10-16).

VALVE GUIDE REPLACEMENT

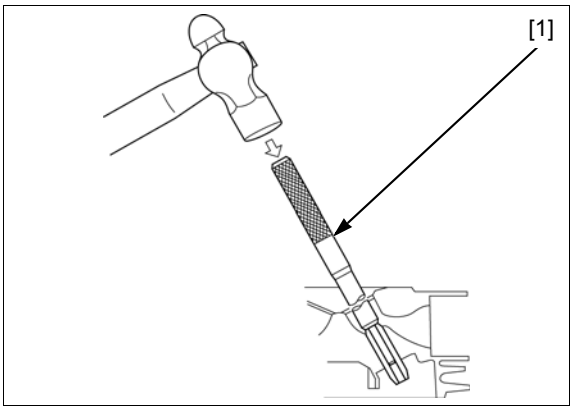
Chill the replacement valve guides in the freezer section of a refrigerator for about an hour.

Do not use a torch to heat the cylinder head; it may cause warping.

Heat the cylinder head to 100 – 150°C (212 – 302°F) with a hot plate or oven.
To avoid burns, wear heavy gloves when handling the heated cylinder head.

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

TOOL:
Valve guide driver 5.5 mm [1] 07742-0010100



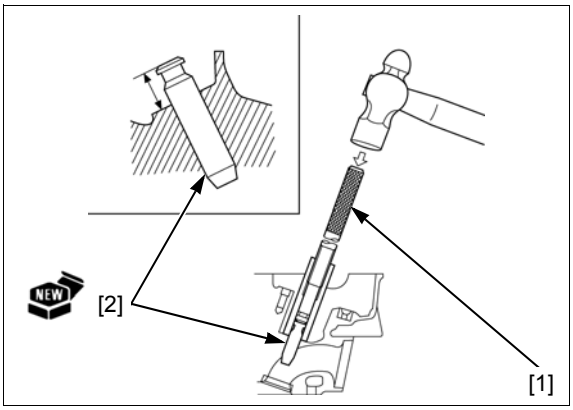
NOTE:

- Mark the guides with a permanent marker at the specified height. Drive the guides to the marked line and check with a pair of calipers.

Adjust the valve guide driver [1] to the specified depth.

SPECIFIED DEPTH:
IN: 17.7 – 18.0 mm (0.70 – 0.71 in)
EX: 17.8 – 18.1 mm (0.70 – 0.71 in)

TOOL:
Valve guide driver 07743-0020000



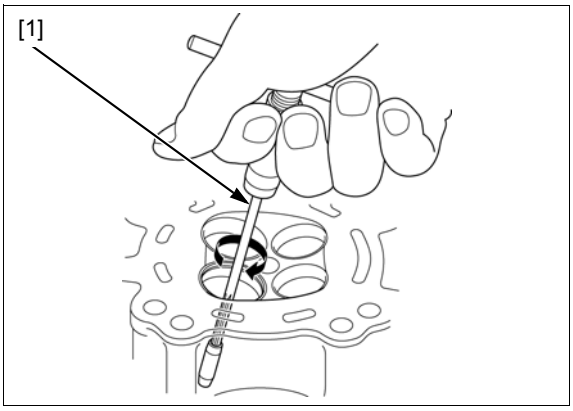
While the cylinder head is still heated, drive new valve guides [2] from the camshaft side until the exposed height is specified value.

Let the cylinder head cool to room temperature.

Use cutting oil on the reamer during this operation.

Ream new valve guides after installation.
Insert the reamer [1] from the combustion chamber side of the cylinder head and always rotate the reamer clockwise.

TOOL:
Valve guide reamer, 5.5 mm 07984-2000001



- Take care not to tilt or lean the reamer in the guide while reaming.

Clean the cylinder head thoroughly to remove any metal particles.

Reface the valve seat (page 10-16).

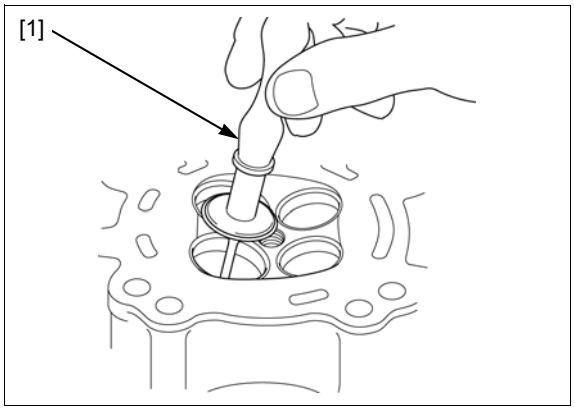
VALVE SEAT INSPECTION/REFACING

Disassemble the cylinder head (page 10-14).

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

Apply a light coating of Prussian Blue to the valve seats.

Tap the valves and seats using a rubber hose or other hand-lapping tool [1].



Measure the valve seat width according to CYLINDER HEAD/VALVE/CAMSHAFT SPECIFICATIONS (page 1-7).

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

Inspect the valve seat face for:

- Uneven seat width:
  – replace the valve and reface the valve seat.
- Damaged face:
  – replace the valve and reface the valve seat.
- Contact area (too high or too low)
  – reface the valve seat.

REFACING

Reface the valve seat using the following tools.

TOOLS:

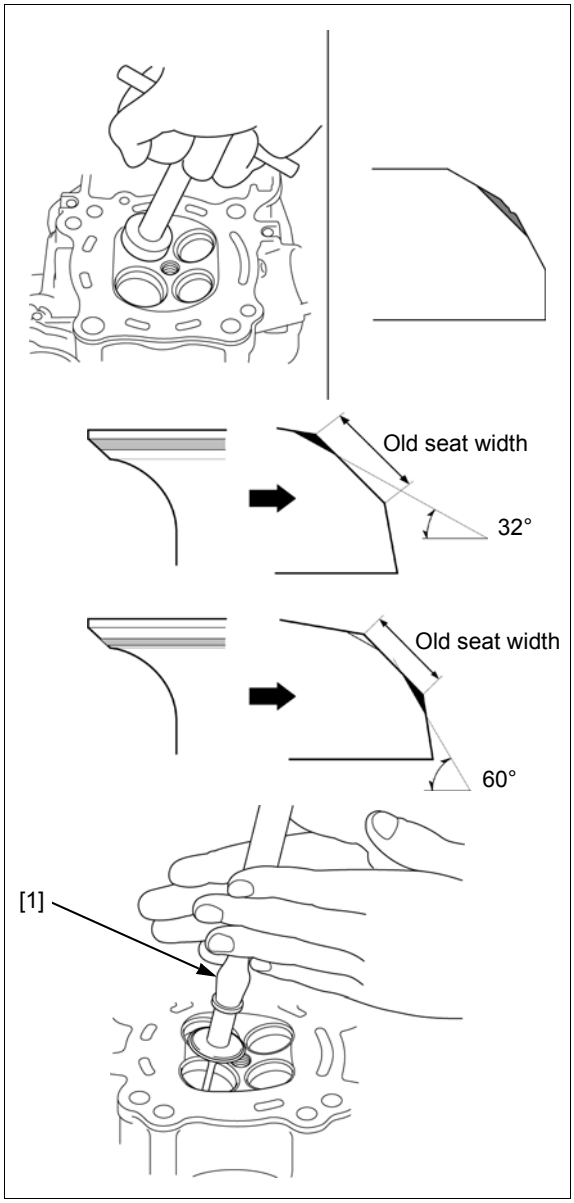
Cutter holder, 5.5 mm	**07781-0010101**
Seat cutter, 40 mm (45° IN)	**07780-0010500**
Seat cutter, 35 mm (45° EX)	**07780-0010400**
Flat cutter, 42 mm (32° IN/EX)	**07780-0013000**
Interior cutter, 34 mm (60° IN/EX)	**07780-0014700**

STANDARD:

IN: 1.1 – 1.3 mm (0.04 – 0.05 in)
EX: 1.3 – 1.5 mm (0.05 – 0.06 in)

SERVICE LIMITS:

IN: 1.5 mm (0.06 in)
EX: 1.9 mm (0.07 in)



NOTE:

- Follow the refacer manufacturer's operating instructions.
- Be careful not to grind the seat more than necessary.

1. Use a 45° seat cutter, remove any roughness or irregularities from the seat.
2. Use a 32° flat cutter, remove the top 1/4 of the existing valve seat material.
3. Use a 60° interior cutter, remove the bottom 1/4 of the existing valve seat material.
4. Using a 45° seat cutter, cut the seat to the proper width.
   Make sure that all pitting and irregularities are removed.
5. After cutting the seat, apply lapping compound to the valve face, and lap the valve using light pressure.

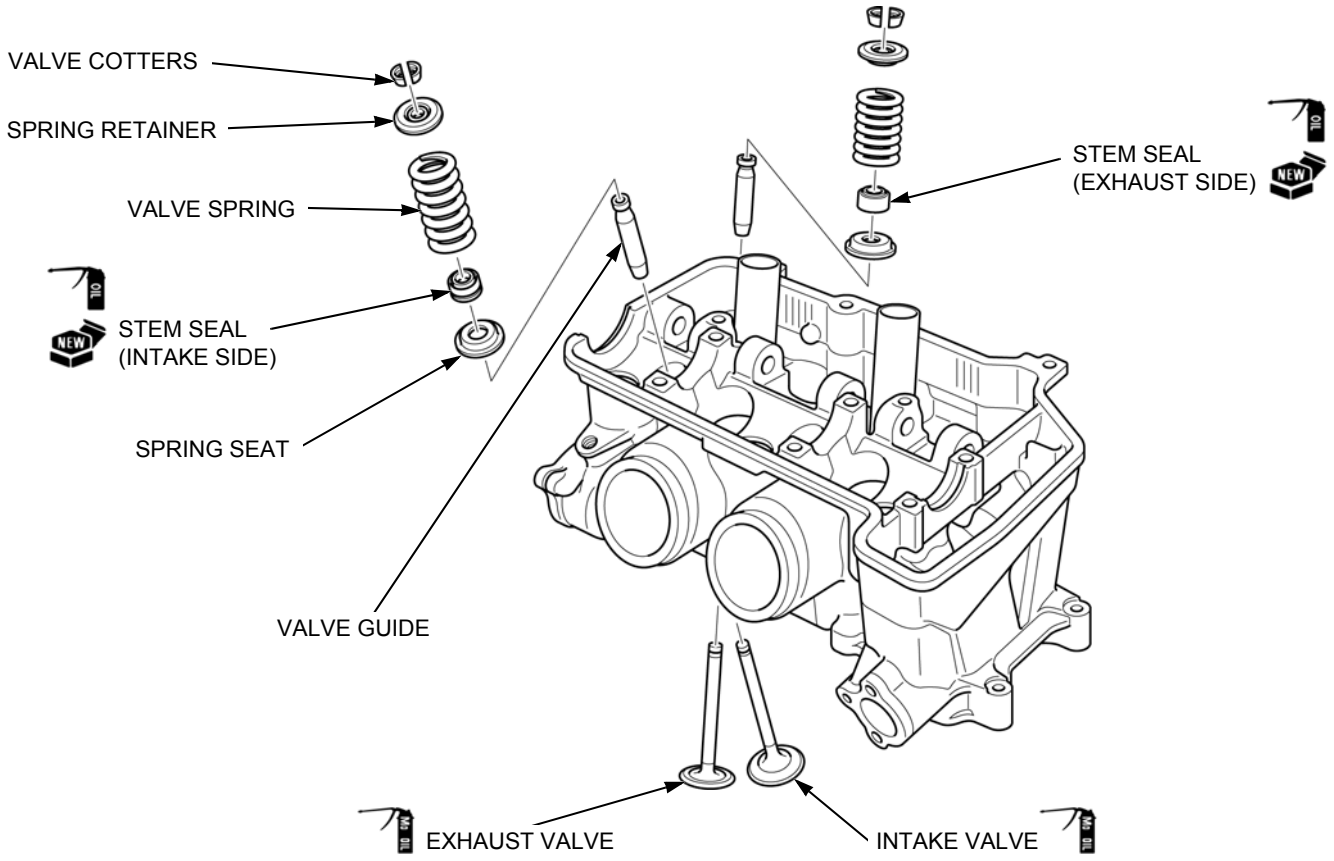
NOTE:

- Excessive lapping pressure may deform or damage the seat.
- Change the angle of lapping tool [1] frequently to prevent uneven seat wear.
- Do not allow lapping compound to enter the guides.

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

Assemble the cylinder head (page 10-17).

ASSEMBLY



Blow through the oil passage in the cylinder head with compressed air.

Install the spring seats [1].

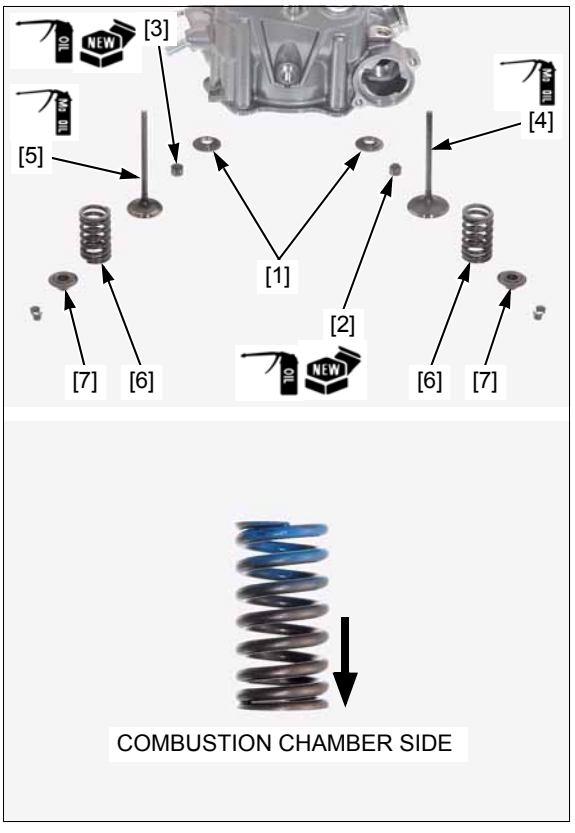
Apply engine oil to the inside of new stem seals (intake side) [2]/(exhaust side) [3] and install them.

Apply molybdenum oil solution to the valve stem sliding area and stem end.

Insert the intake valves [4] and exhaust valves [5] into the valve guide while turning it slowly to avoid damage to the stem seal.

Install the valve springs [6] with the tightly wound coils facing the combustion chamber.

Install the valve spring retainers [7].



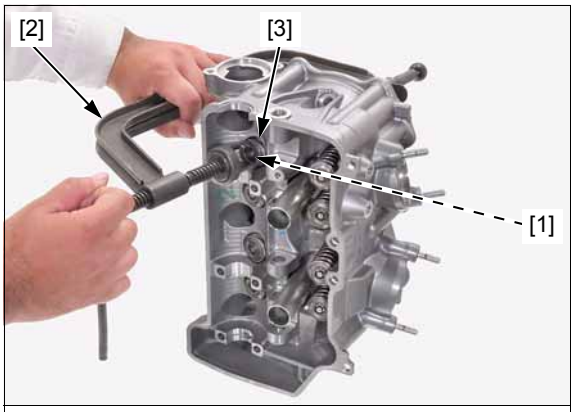
Install the tappet hole protector into the valve lifter bore (page 10-14).

Install the valve cotters [1] using the special tool as shown.

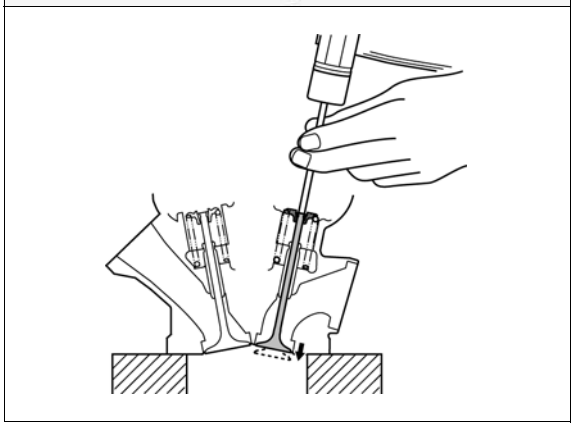
TOOLS:
Valve spring compressor [2] 07757-0010000

NOTE:
- To prevent loss of tension, do not compress the valve springs more than necessary.

Tap the tool gently to seat the valve cotters firmly using a hammer.



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



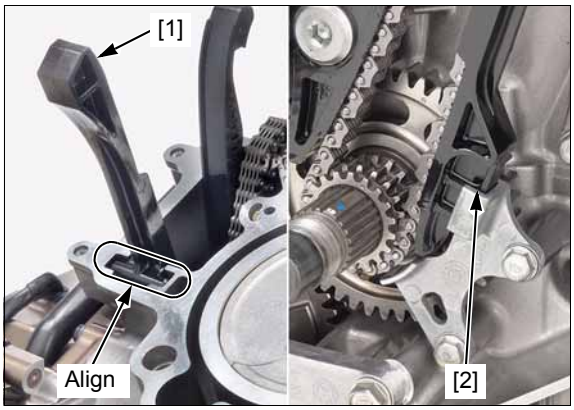
Install the following:

– Thermostat (page 8-5)
– Cam chain tensioner lifter (page 10-8)
– Spark plugs (page 3-6)

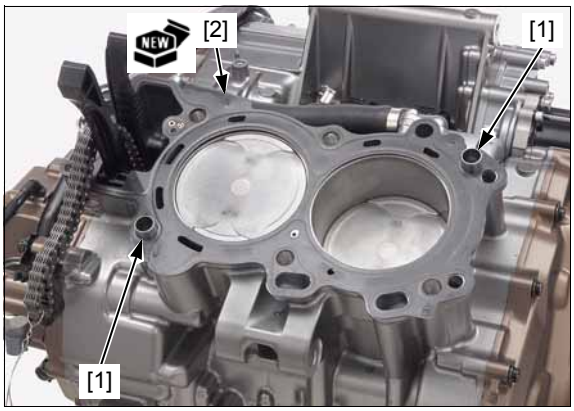
INSTALLATION

Install the cam chain guide [1].

NOTE:
- Align the cam chain guide end [2] with the groove in the crankcase.
- Align the cam chain guide tabs with the grooves in the crankcase.



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



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

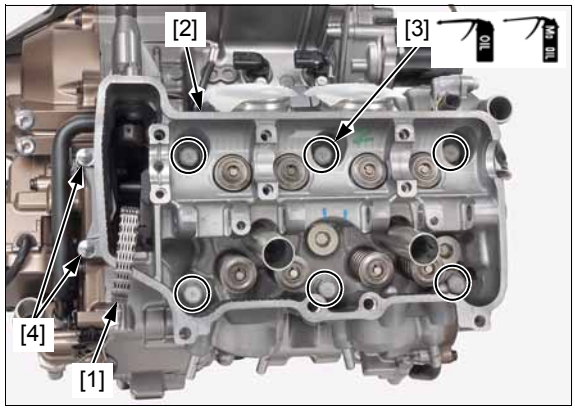
Apply molybdenum oil solution to the cylinder head bolts threads and seating surface.
Apply engine oil to the cylinder head bolt washers.

Install and tighten the cylinder head bolts [3] in a crisscross pattern in 2 or 3 steps to the specified torque.

TORQUE: 83 N·m (8.5 kgf·m, 61 lbf·ft)

Install and tighten the 6 mm bolts [4] securely.

Install the camshaft (page 10-9).
Install the engine (page 16-10).



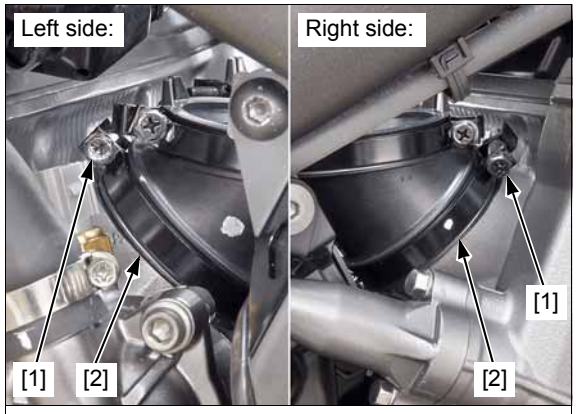
INSULATOR

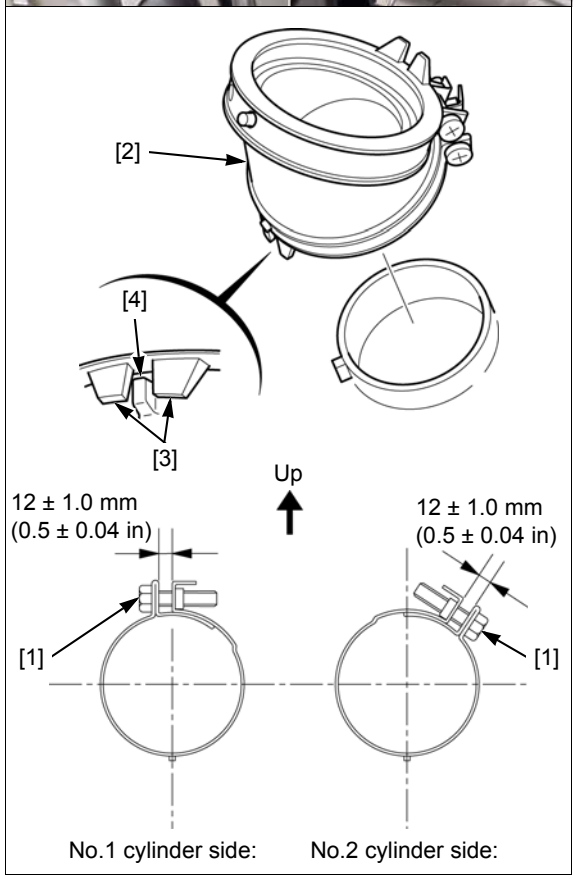
Remove the throttle body (page 7-12).

Loosen the band screws [1] and remove the insulators [2].

Installation is in the reverse order of removal.

NOTE:
- Align the insulator grooves [3] with the upper crankcase lugs [4].
- Install the insulators with the stamped mark side facing up.
- Make sure that the band screws is in position as shown.
- Tighten the insulator band screws to the specified range as shown.





MEMO

11. ALTERNATOR/STARTER CLUTCH

SERVICE INFORMATION ····· 11-2

TROUBLESHOOTING ····· 11-2

COMPONENT LOCATION ····· 11-3

ALTERNATOR COVER ····· 11-4

STATOR/CKP SENSOR ····· 11-7

FLYWHEEL ····· 11-7

STARTER CLUTCH ····· 11-9

SERVICE INFORMATION

GENERAL

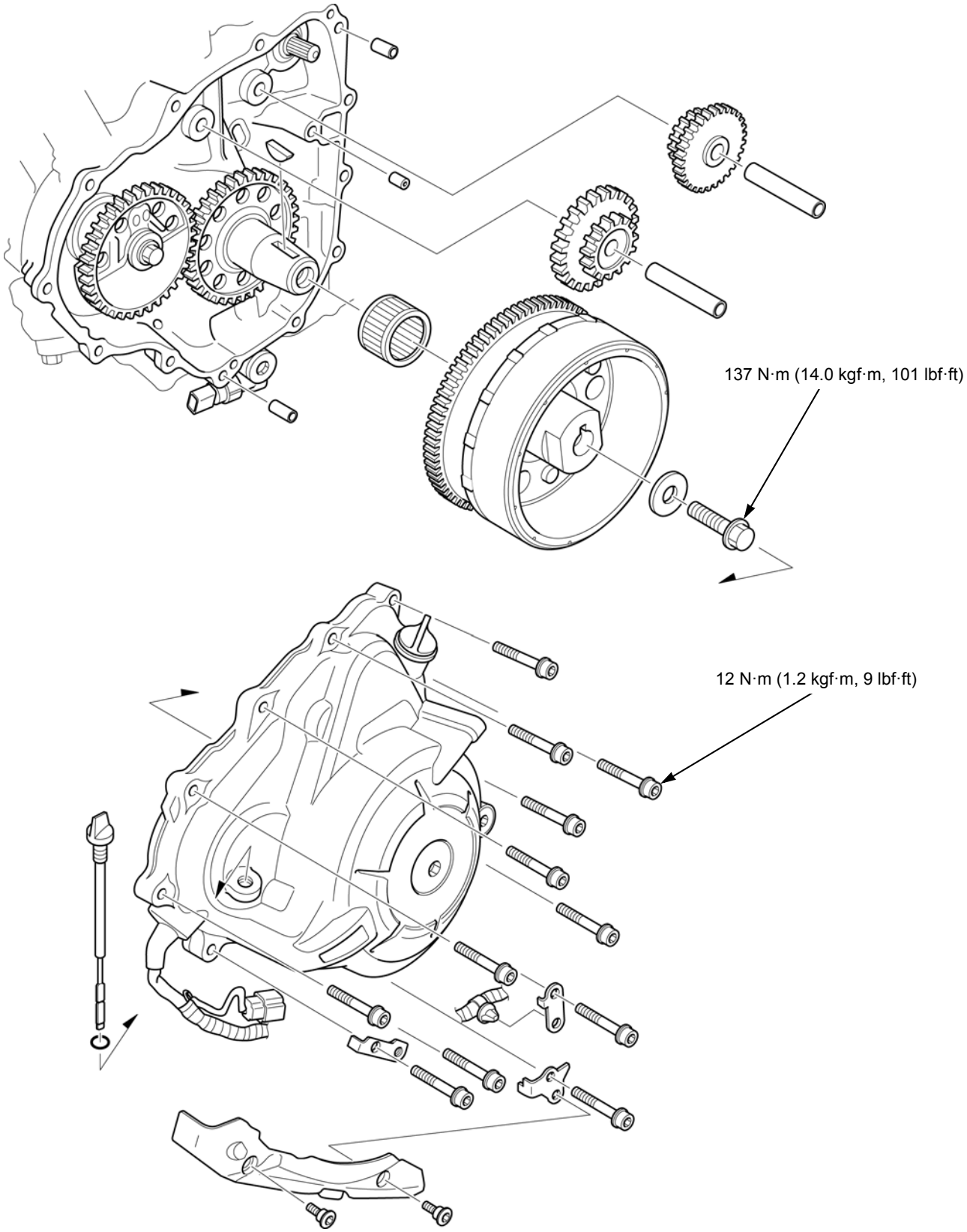
- This section covers service of the alternator and starter clutch. All service can be done with the engine installed in the frame.
- For alternator inspection (page 21-9).
- For CKP sensor inspection (page 5-7).
- For starter motor service (page 6-5).

TROUBLESHOOTING

Starter motor turns, but engine does not turn

- Faulty starter clutch
- Damaged starter reduction gear/shaft
- Damaged starter idle gear/shaft
- Damaged or faulty starter motor pinion gear
- Damaged starter driven gear

COMPONENT LOCATION



ALTERNATOR COVER

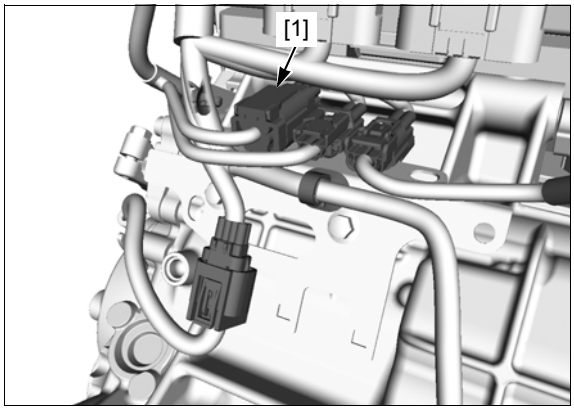
REMOVAL/INSTALLATION (CRF1000/A)

Drain the engine oil (page 3-12).
Remove the left rear cover (page 2-10).
Remove the gearshift spindle cover (page 12-17).
Disconnect the EOP switch terminal (page 22-19).

Disconnect the VS sensor 3P (Black) connector (page 4-42).

Remove the connector cover (page 5-8).

Disconnect the alternator assembly 6P (Black) connector [1].

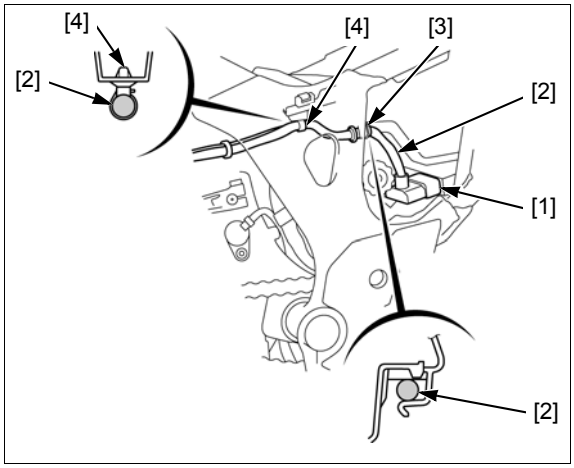


Disconnect the alternator 3P (Gray) connector [1].

Release the alternator assembly wire [2] from the wire clamp [3].

Release the wire clip [4].

Release the alternator assembly wire from the frame.



Remove the following:

– Dipstick [1]
– Alternator cover bolts (6 x 28 mm) [2]
– Alternator cover bolt (6 x 30 mm) [3] and alternator assembly wire cover stay A [4]
– Alternator cover bolt (6 x 30 mm) [5] and alternator assembly wire cover stay B [6]

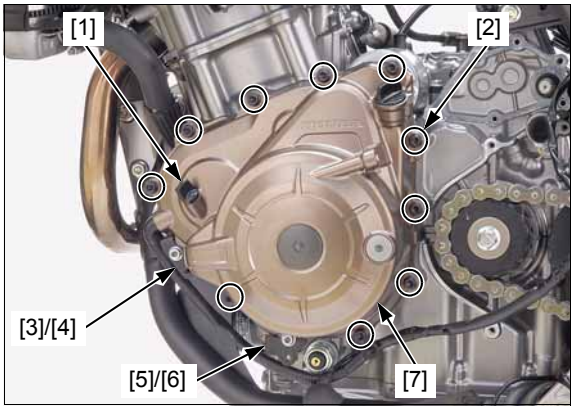
NOTE:

• Loosen the bolts in a crisscross pattern in 2 or 3 steps.

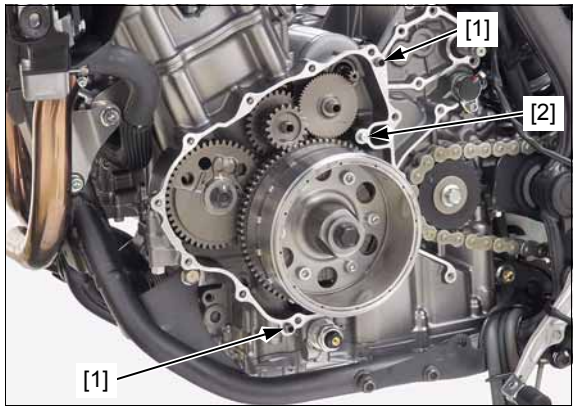
Remove the alternator cover [7].

NOTE:

• The alternator cover (stator) is magnetically attracted to the flywheel, be careful during removal.



Remove the dowel pins [1] and oil joint [2].

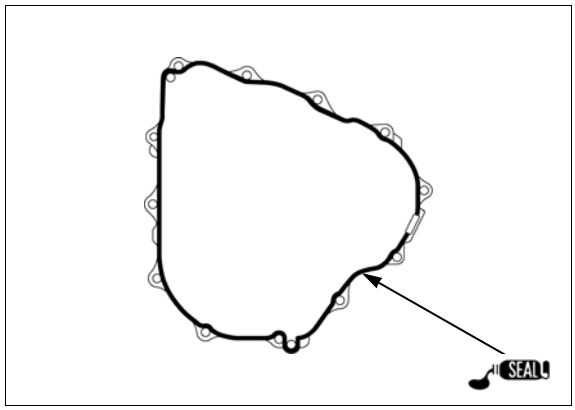


NOTE:

- Install the oil joint with the narrow hole side facing out.

Clean off any sealant from the alternator cover mating surfaces.

Installation is in the reverse order of removal.



NOTE:

- Apply liquid sealant (TB1207B manufactured by Three bond or equivalent) to the alternator cover mating surface as shown.
- Do not apply more liquid sealant than necessary.
- Route the wires properly (page 1-26).

TORQUE:

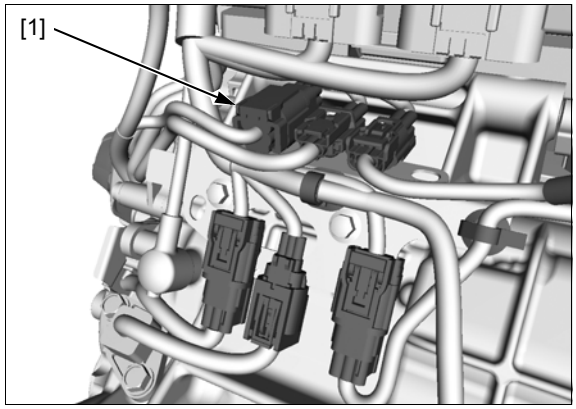
Alternator cover bolt:

12 N·m (1.2 kgf·m, 9 lbf·ft)

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-12).

REMOVAL/INSTALLATION (CRF1000D)

Drain the engine oil (page 3-12).



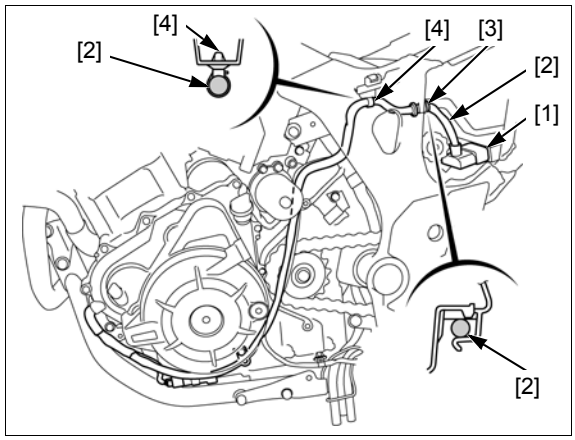
Disconnect the EOP sensor 3P (Black) connector (page 22-20)

Remove the following:

– Left rear cover (page 2-10)
– Shift control motor cover (page 13-71)
– Connector cover (page 5-8)

Disconnect the alternator assembly 6P (Black) connector [1].

Disconnect the alternator 3P (Gray) connector [1].



Release the alternator assembly wire [2] from the wire clamp [3].

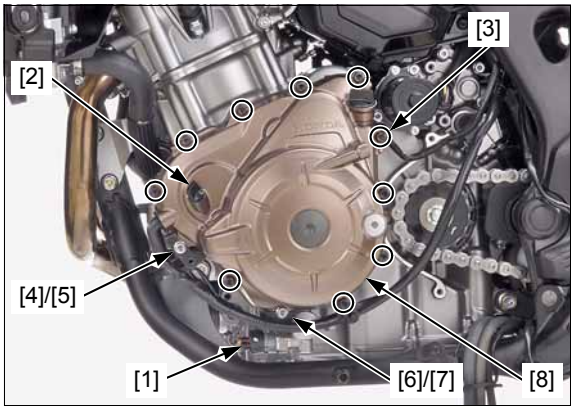
Release the wire clip [4].

Release the alternator assembly wire from the frame.

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

Remove the following:

– Dipstick [2]
– Alternator cover bolts (6 x 28 mm) [3]
– Alternator cover bolt (6 x 30 mm) [4] and alternator assembly wire cover stay A [5]
– Alternator cover bolt (6 x 30 mm) [6] and alternator assembly wire cover stay B [7]



NOTE:

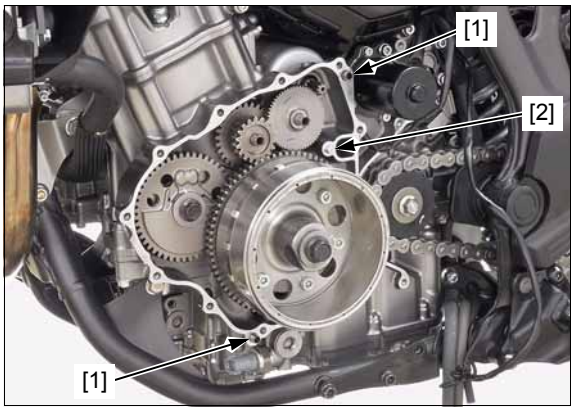
• Loosen the bolts in a crisscross pattern in 2 or 3 steps.

Remove the alternator cover [8].

NOTE:

• The alternator cover (stator) is magnetically attracted to the flywheel, be careful during removal.

Remove the dowel pins [1] and oil joint [2].

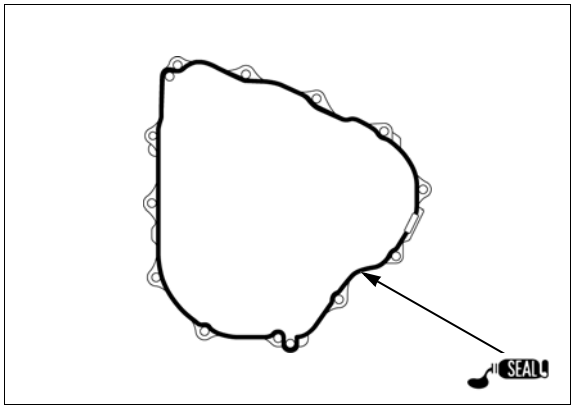


NOTE:

• Install the oil joint with the narrow hole side facing out.

Clean off any sealant from the alternator cover mating surfaces.

Installation is in the reverse order of removal.



NOTE:

• Apply liquid sealant (TB1207B manufactured by Three bond or equivalent) to the alternator cover mating surface as shown.
• Do not apply more liquid sealant than necessary.
• Route the wires properly (page 1-26).

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-12).

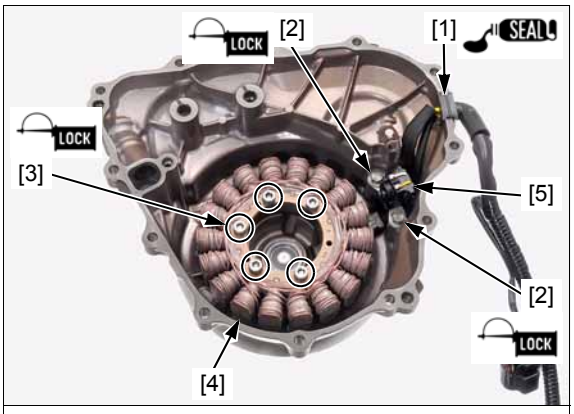
STATOR/CKP SENSOR

REMOVAL/INSTALLATION

Remove the alternator cover.

– CRF1000/A (page 11-4)
– CRF1000D (page 11-5)

Release the wire grommet [1] from the alternator cover groove.
Remove the CKP sensor mounting bolts [2].
Remove the stator mounting bolts [3].
Remove the stator [4]/CKP sensor [5] assembly.



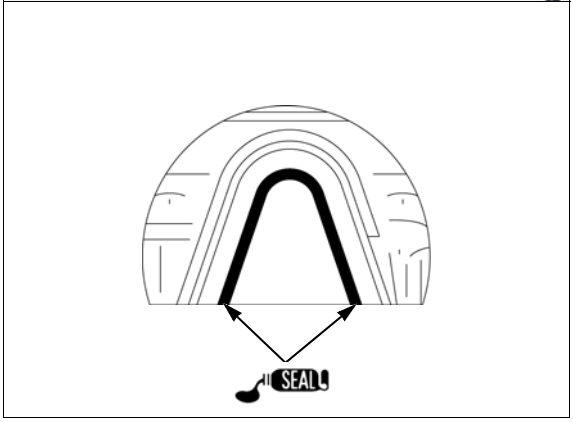
Apply a locking agent to the stator mounting bolts threads (page 1-20).
Install the stator/CKP sensor assembly and bolts.
Tighten the stator mounting bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Apply a locking agent to the CKP sensor mounting bolt threads (page 1-20).
Install the CKP sensor mounting bolts and tighten them to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Apply liquid sealant (TB1207B manufactured by Three bond or equivalent) to the grommet as shown, then install it into the groove of the cover.



Route the wires properly (page 1-26).

Install the alternator cover.

– CRF1000/A (page 11-4)
– CRF1000D (page 11-5)

FLYWHEEL

REMOVAL

Remove the alternator cover.

– CRF1000/A (page 11-4)
– CRF1000D (page 11-5)

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

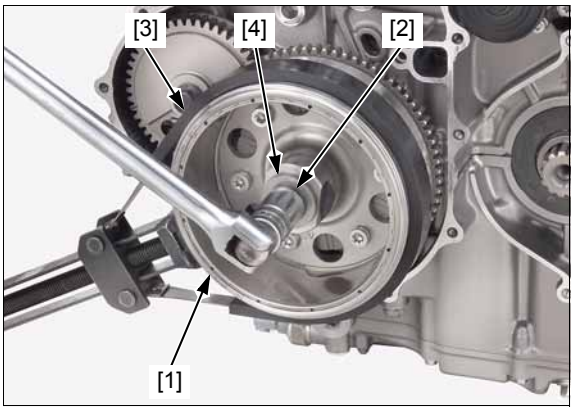
Remove the starter reduction gear shaft [3] and starter reduction gear A [4].



Hold the flywheel [1] using the special tool and loosen the flywheel mounting bolt [2].

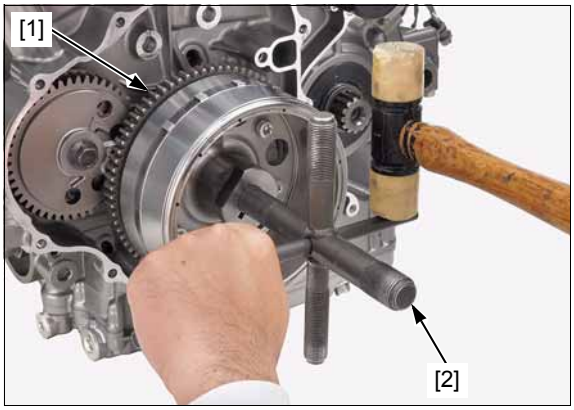
TOOL:
Flywheel holder [3] 07725-0040001

Remove the bolt and washer [4].



Remove the flywheel [1] using the special tool.

TOOL:
Rotor puller [2] **07733-0020001**

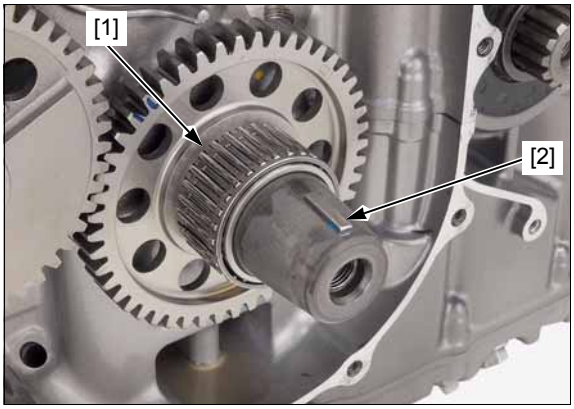


Remove the needle bearing [1].

Remove the woodruff key [2].

NOTE:

- Be careful not to damage the key groove and crankshaft.



INSPECTION

Inspect the following parts for scratch, damage, abnormal wear, or deformation.

– Starter reduction gear shaft
– Starter reduction gear
– Woodruff key
– Needle bearing

Replace if necessary.

INSTALLATION

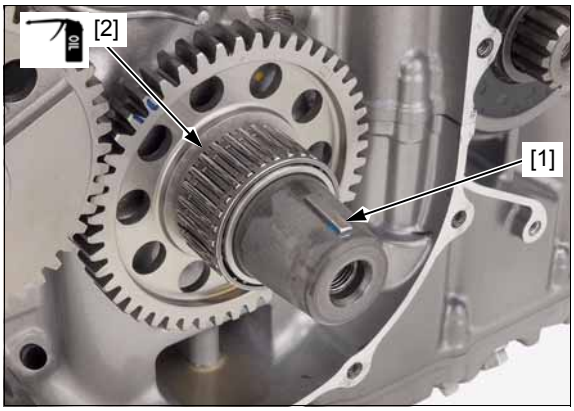
Install the woodruff key [1].

NOTE:

- Be careful not to damage the key groove and crankshaft.

Apply engine oil to the needle bearing rotating area.

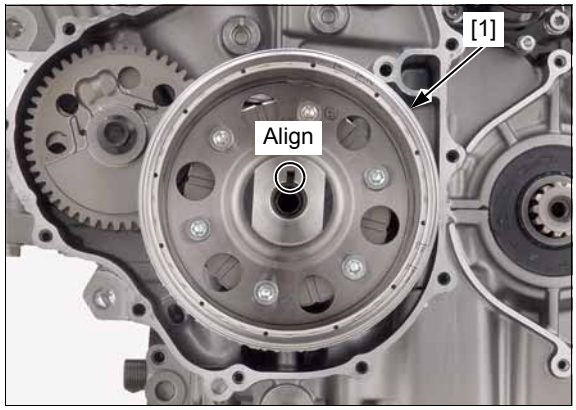
Install the needle bearing [2].



Clean any oil from the crankshaft and flywheel tapered area thoroughly.

Install the flywheel [1] to the crankshaft.

NOTE:
- Align the woodruff key with flywheel keyway.



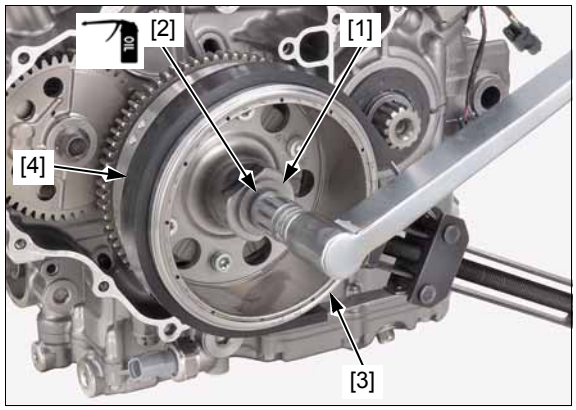
Apply engine oil to the flywheel mounting bolt threads and seating surface.

Install the washer [1] and flywheel mounting bolt [2].

Hold the flywheel [3] using the special tool and tighten the flywheel mounting bolt to the specified torque.

TOOL:
Flywheel holder [4] 07725-0040001

TORQUE: 137 N·m (14.0 kgf·m, 101 lbf·ft)



Apply molybdenum oil solution to the starter reduction gear shafts outer surfaces.

Install the starter reduction gear A [1] and shaft [2].

Install the starter reduction gear B [3] and shaft [4].

Install the alternator cover.

– CRF1000/A (page 11-4)
– CRF1000D (page 11-5)



STARTER CLUTCH

REMOVAL

Remove the flywheel (page 11-7).

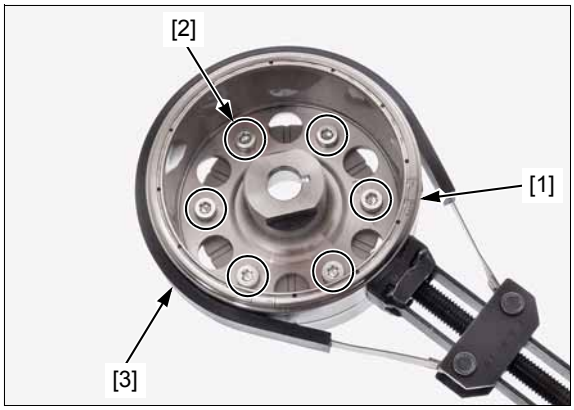
Make sure that the starter driven gear [1] turns counterclockwise smoothly and does not turn clockwise.

Remove the starter driven gear while turning the starter driven gear counterclockwise.



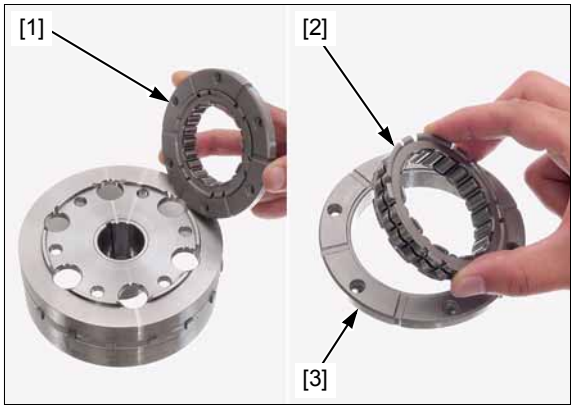
Hold the flywheel [1] using the special tool and remove the starter clutch torx bolt [2].

TOOL:
Flywheel holder [3] **07725-0040001**



Remove the starter clutch assembly [1].

Remove the starter one-way clutch [2] from the starter clutch outer [3].



INSPECTION

Inspect the following parts for scratch, damage, abnormal wear, or deformation.

- Starter driven gear
- Starter clutch outer
- Starter one-way clutch

Measure each part according to ALTERNATOR/ STARTER CLUTCH SPECIFICATIONS (page 1-8).

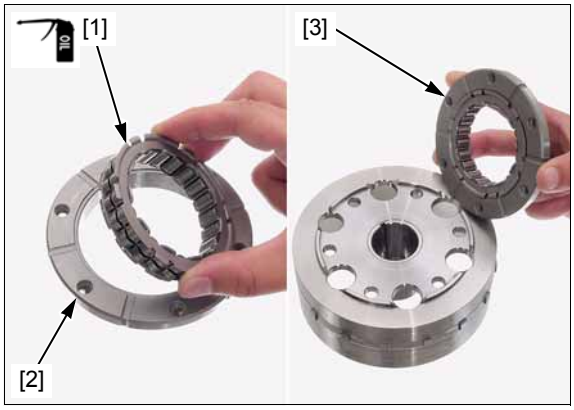
Replace any part if it is out of service limit.

INSTALLATION

Apply engine oil to the starter one-way clutch sliding surface.

Install the starter one-way clutch [1] to the starter clutch outer [2].

Install the starter clutch assembly [3].



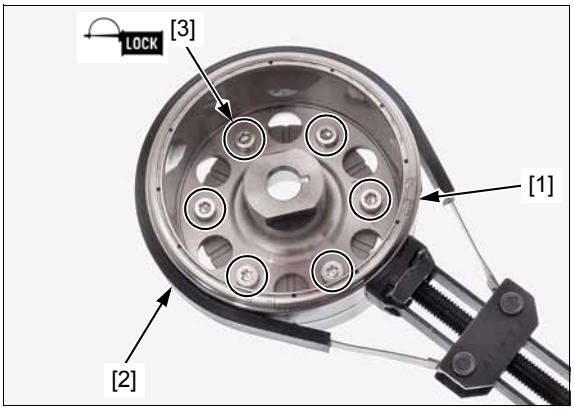
Hold the flywheel [1] using the special tool.

TOOL:
Flywheel holder [2] 07725-0040001

Apply locking agent to the starter clutch socket bolt threads (page 1-21).

Install and tighten the starter clutch torx bolt [3] to the specified torque.

TORQUE: 29 N·m (3.0 kgf·m, 21 lbf·ft)



Install the starter driven gear [1] into the starter clutch outer while turning the starter driven gear counterclockwise.

Recheck the one-way clutch operation (page 11-9).

Install the flywheel (page 11-8).



MEMO

12. CLUTCH/GEARSHIFT LINKAGE (CRF1000/A)

SERVICE INFORMATION ····· 12-2

TROUBLESHOOTING ····· 12-2

COMPONENT LOCATION ····· 12-3

RIGHT CRANKCASE COVER ····· 12-4

CLUTCH ····· 12-8

PRIMARY DRIVE GEAR ····· 12-15

GEARSHIFT LINKAGE ····· 12-17

GEARSHIFT PEDAL ····· 12-21

SERVICE INFORMATION

GENERAL

- This section covers service of the clutch and gearshift linkage. All service can be done with the engine installed in the frame.
- Engine oil viscosity and level have an effect on clutch disengagement. When the clutch does not disengage or the motorcycle creeps with clutch disengaged, inspect the engine oil level before servicing the clutch system.
- When using the lock nut wrench, use a deflecting beam type torque wrench 50 mm (2.0 in) long. The lock nut wrench increases the torque wrench's leverage, so the torque wrench reading will be less than the torque actually applied to the lock nut. The specification given below is the actual torque applied to the lock nut, not the reading on the torque wrench when used with the lock nut wrench. The procedure later in the text gives both actual and indicated torque readings.

TROUBLESHOOTING

Clutch lever is too hard to pull in
- Damaged, kinked or dirty clutch cable
- Improperly routed clutch cable
- Damaged clutch lifter mechanism
- Faulty clutch lifter bearing
- Clutch lifter piece installed improperly

Clutch slips when accelerating
- Clutch lifter sticking
- Worn clutch discs
- Weak clutch springs
- No clutch lever freeplay
- Engine oil mixed with molybdenum or graphite additive

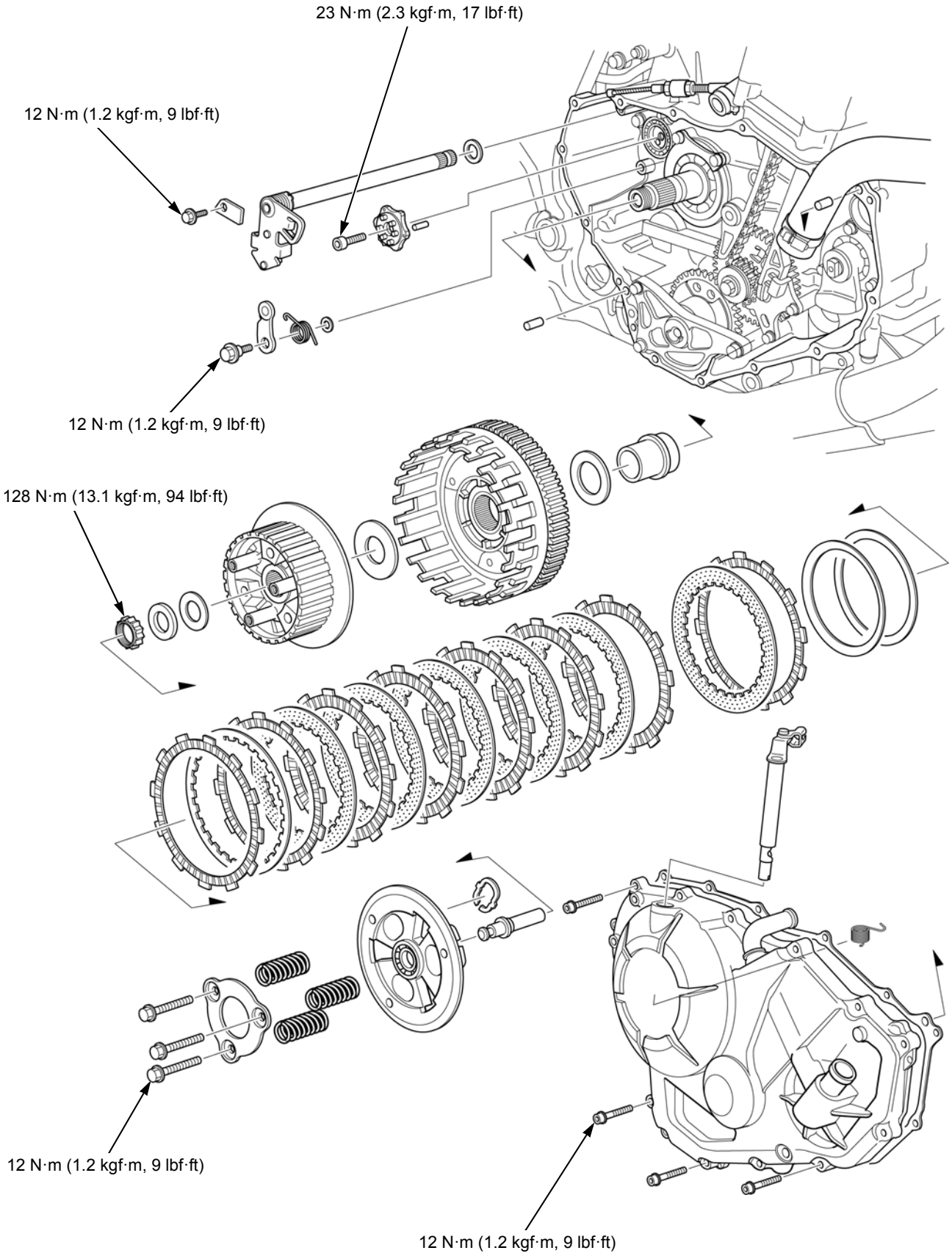
Clutch will not disengage or motorcycle creeps with clutch disengaged
- Excessive clutch lever freeplay (page 3-22)
- Clutch plate warped
- Engine oil level too high, improper engine oil viscosity or additive used
- Loose clutch center lock nut
- Damaged clutch lifter mechanism
- Clutch lifter rod installed improperly
- Worn clutch outer slot and clutch center grooves
- Improper clutch operation

Hard to shift
- Incorrect clutch cable adjustment
- Improper clutch operation
- Improper engine oil viscosity
- Damaged or bent shift forks (page 14-15)
- Bent shift fork shaft (page 14-15)
- Bent shift fork claw (page 14-15)
- Loose shift drum center bolt
- Damaged shift drum center
- Damaged shift drum guide grooves (page 14-15)
- Damaged or bent gearshift spindle
- Damaged clutch cam

Transmission jumps out of gear
- Worn shift drum stopper arm
- Weak or broken shift drum stopper arm return spring
- Loose shift drum center bolt
- Damaged shift drum center
- Bent shift fork shaft (page 14-15)
- Damaged or bent shift forks (page 14-15)
- Worn gear engagement dogs or slots
  - Mainshaft (page 14-16)
  - Countershaft (page 14-15)

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

COMPONENT LOCATION



RIGHT CRANKCASE COVER

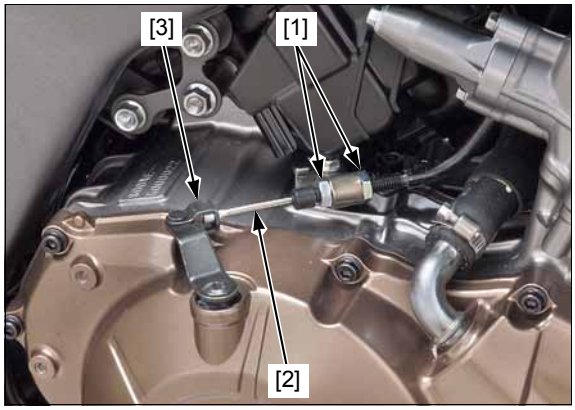
REMOVAL

Drain the engine oil (page 3-12).
Drain the coolant (page 8-4).

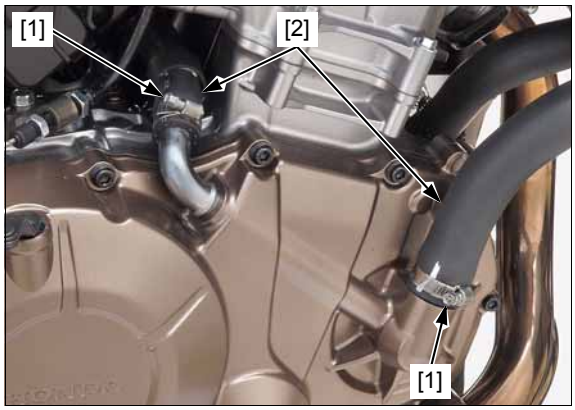
Remove the bolts [1] and engine right side rear cover [2].



Loosen the lock nuts [1] and release the clutch cable [2] from the clutch lifter lever [3].



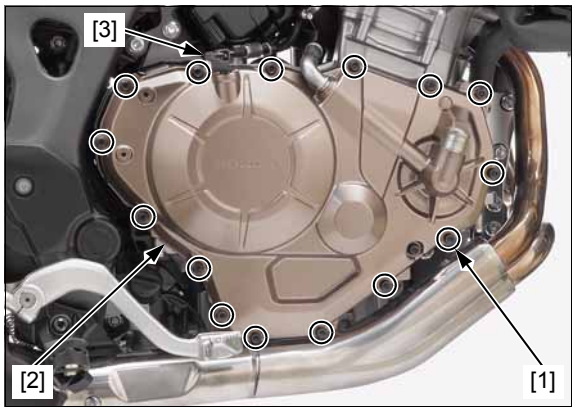
Loosen the hose band screws [1] and disconnect the water hoses [2].



Remove the bolts [1].

Be careful not to drop the return spring.

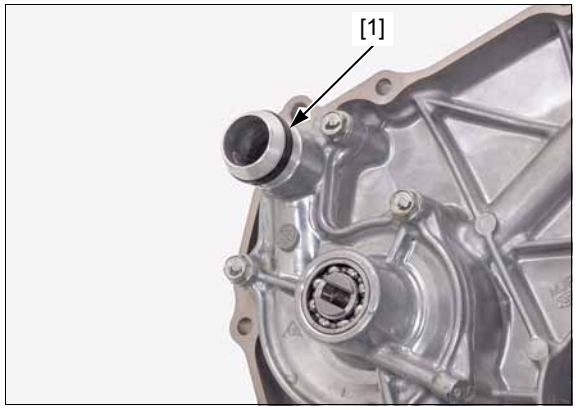
Remove the right crankcase cover [2] while turning the clutch lifter lever [3] counterclockwise to disengage the lifter lever slit from the clutch lifter pin.



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



Remove the O-ring [1].



CLUTCH LIFTER LEVER

Remove the clutch lifter lever [1] and return spring [2].

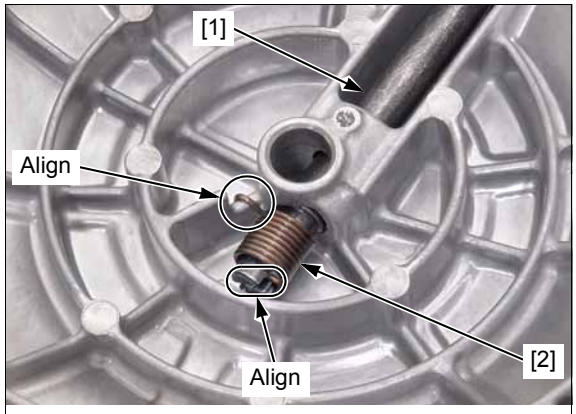
Remove the oil seal [3].

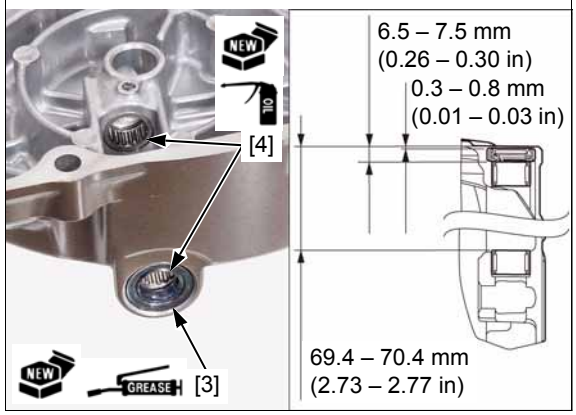
Check the needle bearings [4] and replace if necessary.

Installation is in the reverse order of removal.

NOTE:

- Coat new bearings with engine oil and install them to the specified depth as shown.
- Replace the oil seal with a new one and install it to the specified depth as shown.
- Apply grease to a new oil seal lips.
- Align the return spring end with the clutch lifter lever groove.
- Align the return spring hook with the right crankcase cover groove.





INSPECTION

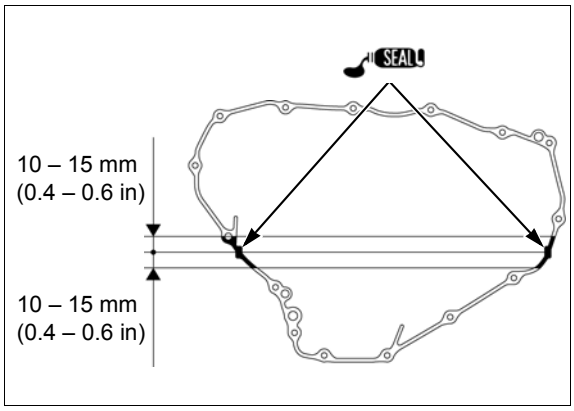
Inspect the following parts for scratch, damage, abnormal wear and deformation. Replace if necessary.

– Clutch lifter lever
– Return spring

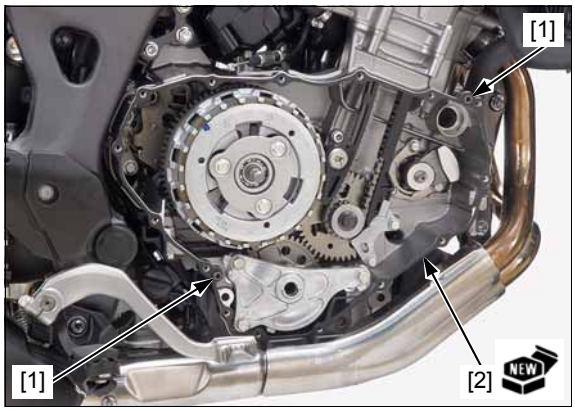
INSTALLATION

Clean the right crankcase cover mating surfaces thoroughly.

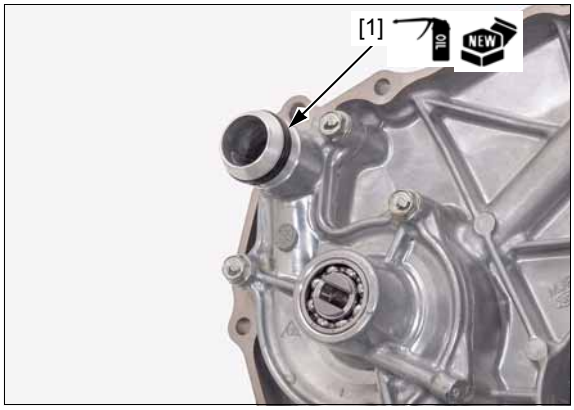
Apply liquid sealant (TB1207B manufactured by Three Bond or equivalent) to the right crankcase cover mating surface as shown.



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



Coat a new O-ring [1] with engine oil and install it onto the groove of the water pump cover.



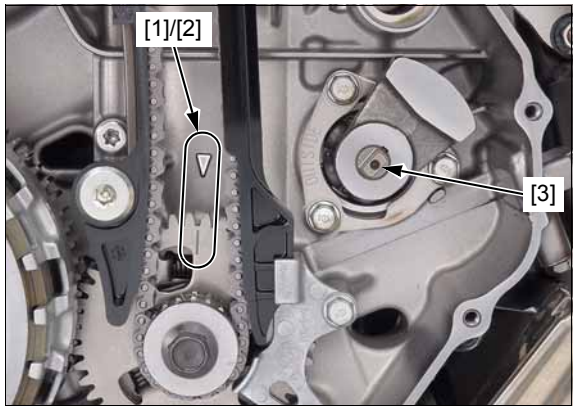
Remove the crankshaft hole cap and the timing hole cap (page 3-8).

Rotate the crankshaft counterclockwise and align the "T1" mark on the flywheel with the index mark on the alternator cover (page 3-8).

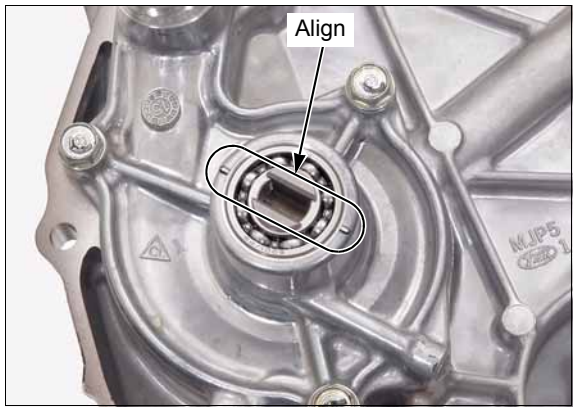
Make sure that the index line and mark are lined up.
– Primary drive gear index line [1]
– Crankcase "▽" mark [2]

Make sure that the front balancer shaft end [3] is in position as shown.

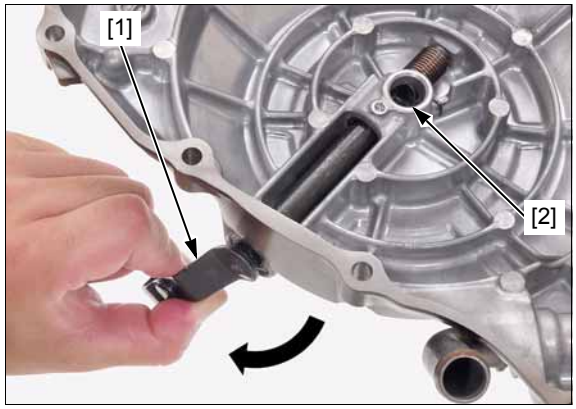
Install the crankshaft hole cap and the timing hole cap (page 3-10).



Rotate the water pump shaft and align the shaft slit with the pump cover index lines as shown.



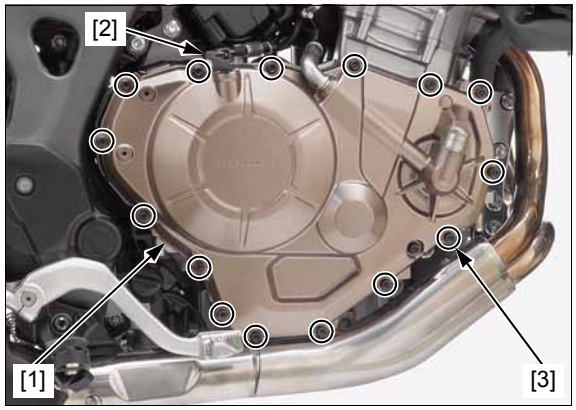
Turn the clutch lifter lever [1] clockwise so that the lever slit [2] is in position as shown.



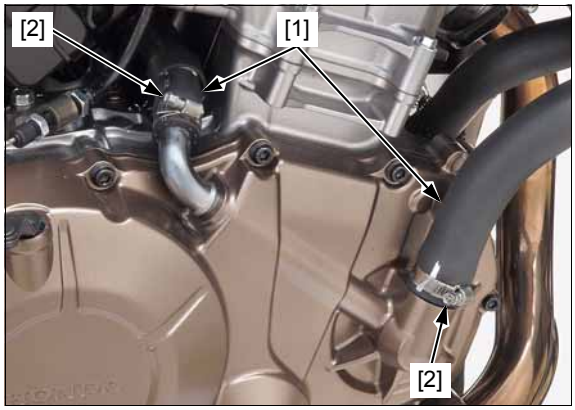
Install the right crankcase cover [1] by holding the clutch lifter lever [2].

Install the bolts [3] and tighten it in a crisscross pattern in 2 or 3 steps to the specified torque.

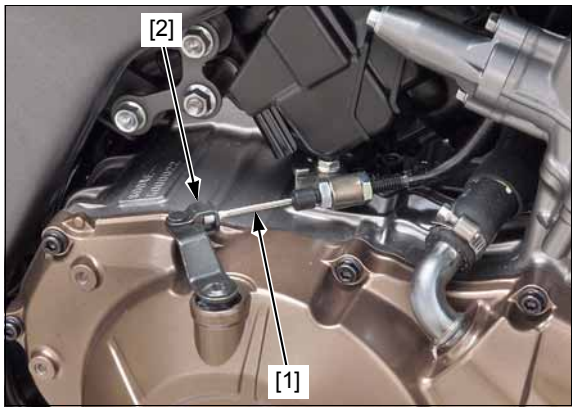
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Connect the water hoses [1] and tighten the hose band screws [2] to the specified range (page 8-8).



Connect the clutch cable [1] with the clutch lifter lever [2].



Install the bolts [1] and engine right side rear cover [2] and tighten the bolts to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-12).
Fill the recommended coolant mixture to the filler neck and bleed the air (page 8-4).
Adjust the clutch cable freeplay (page 3-22).



CLUTCH

REMOVAL

Remove the right crankcase cover (page 12-4).

Loosen the set plate bolts [1] in a crisscross pattern in 2 or 3 steps, and remove the bolts, set plate [2], and clutch springs [3].

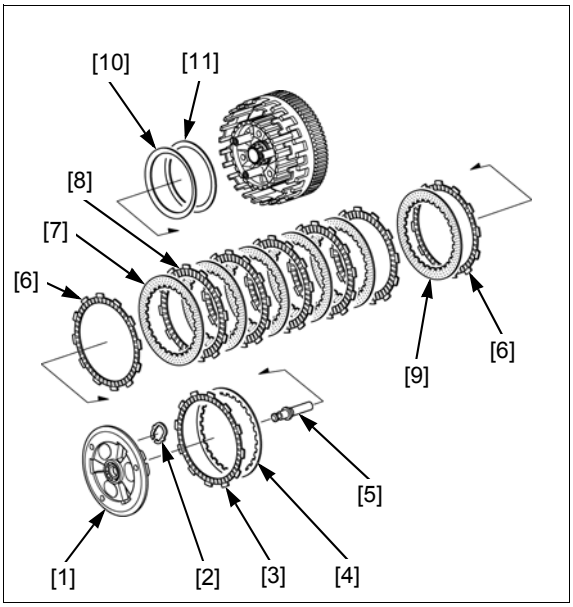


Remove the following:

– Clutch pressure plate [1]
– Clutch spring seats [2]
– Clutch disc B [3]
– Clutch plate C [4]
– Clutch lifter pin [5]
– Clutch discs A [6] (2 pcs)
– Clutch plates A [7] (5 pcs)
– Clutch discs C [8] (5 pcs)
– Clutch plate B [9]
– Judder spring [10]
– Judder spring seat [11]

NOTE:

• When removing the clutch discs and plates, note the number of the clutch discs and plates.



Be careful not to damage the mainshaft threads.

Unstake the clutch center lock nut [1].

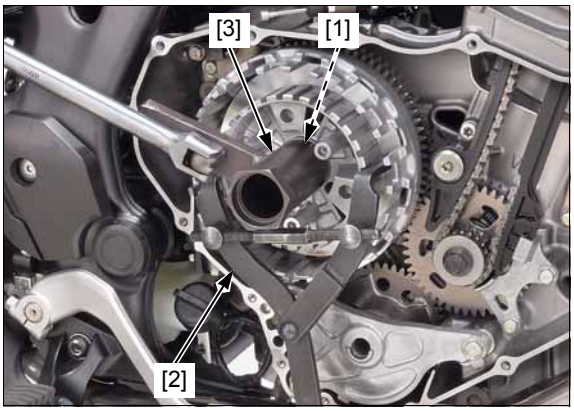


Install special tools and loosen the clutch center lock nut [1] while holding the clutch center with the special tool.

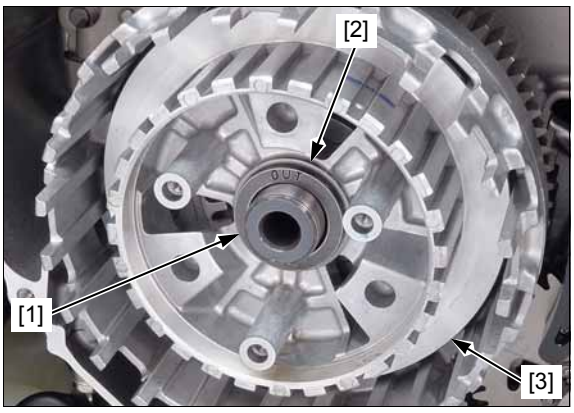
TOOLS:

Clutch center holder P.D. 48 - 135 [2]	**07724-0050002**
Lock nut wrench 30 x 40 mm [3]	**07916-9690000**

Remove the lock nut.

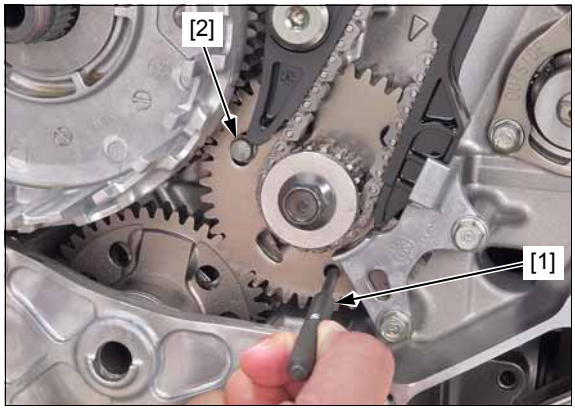


Remove the lock washer [1], washer [2], and clutch center [3].



Line up the primary drive gear and sub gear teeth by inserting a suitable pin [1] into the holes of gears.

Hold the primary drive gear and sub-gear with a 6 mm bolt [2].



Remove the washer [1] and clutch outer [2].



Remove the washer [1] and clutch outer guide [2].



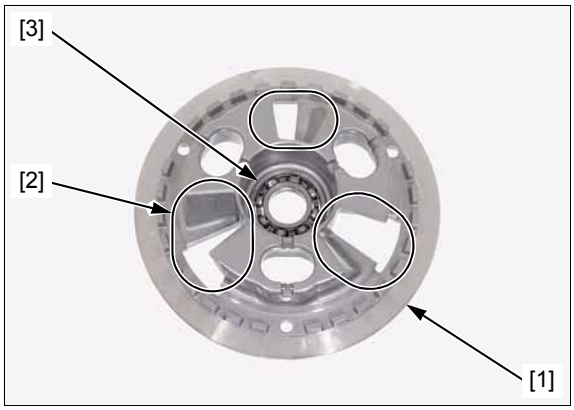
INSPECTION

Check the following of the clutch pressure plate [1] for scratch, damage, abnormal wear and deformation.

- Cam areas [2]
- Grooves
- Disc sliding surface
- Bearing [3]

Replace the clutch pressure plate if necessary.

For bearing replacement (page 12-11)



Check the following of the clutch center [1] for scratch, damage, abnormal wear and deformation.

– Cam areas [2]
– Grooves
– Disc sliding surface

Replace the clutch center if necessary.



Check the following of the clutch outer [1] for scratch, damage, abnormal wear and deformation.

– Grooves
– Needle bearing [2]
– Primary driven gear [3]

Replace the clutch outer if necessary.

For bearing replacement (page 12-12)



Inspect the following parts for scratch, damage, abnormal wear and deformation. Replace if necessary.

– Clutch springs
– Clutch spring seats
– Clutch lifter pin
– Clutch discs/plates
– Judder spring
– Judder spring seat
– Clutch outer guide

Measure each part according to CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS (page 1-8).

Replace any part if it is out of service limit.

NOTE:
- Replace the clutch springs as a set.
- Replace the clutch discs and plates as a set.

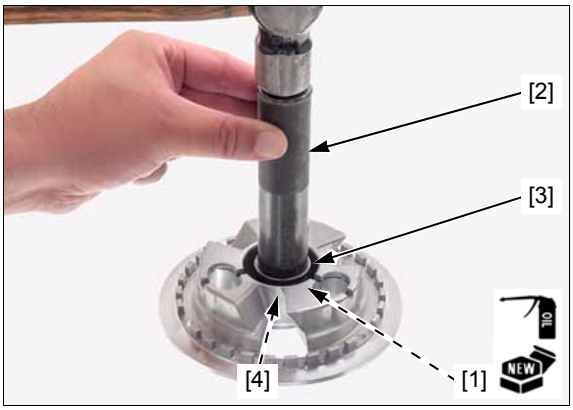
CLUTCH PRESSURE PRATE BEARING REPLACEMENT

Drive bearing out.

Coat a new bearing with engine oil.
Drive the bearing [1] into the clutch pressure plate with its marked side facing up until it is fully seated using special tools.

TOOLS:

Driver [2]	**07749-0010000**
Attachment, 32 x 35 mm [3]	**07746-0010100**
Pilot, 17 mm [4]	**07746-0040400**

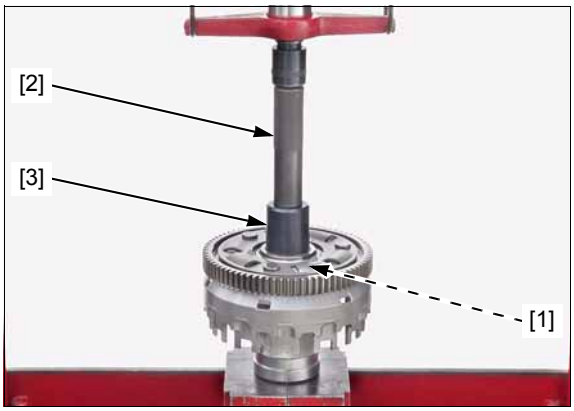


CLUTCH OUTER NEEDLE BEARING REPLACEMENT

Remove the needle bearing [1] out using a hydraulic press and special tools.

TOOLS:

Driver [2]	**07749-0010000**
Attachment, 42 mm [3]	**07QAD-P0A0100**

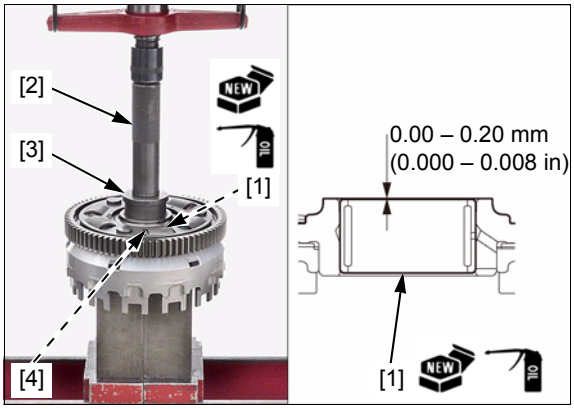


Coat a new needle bearing with engine oil.

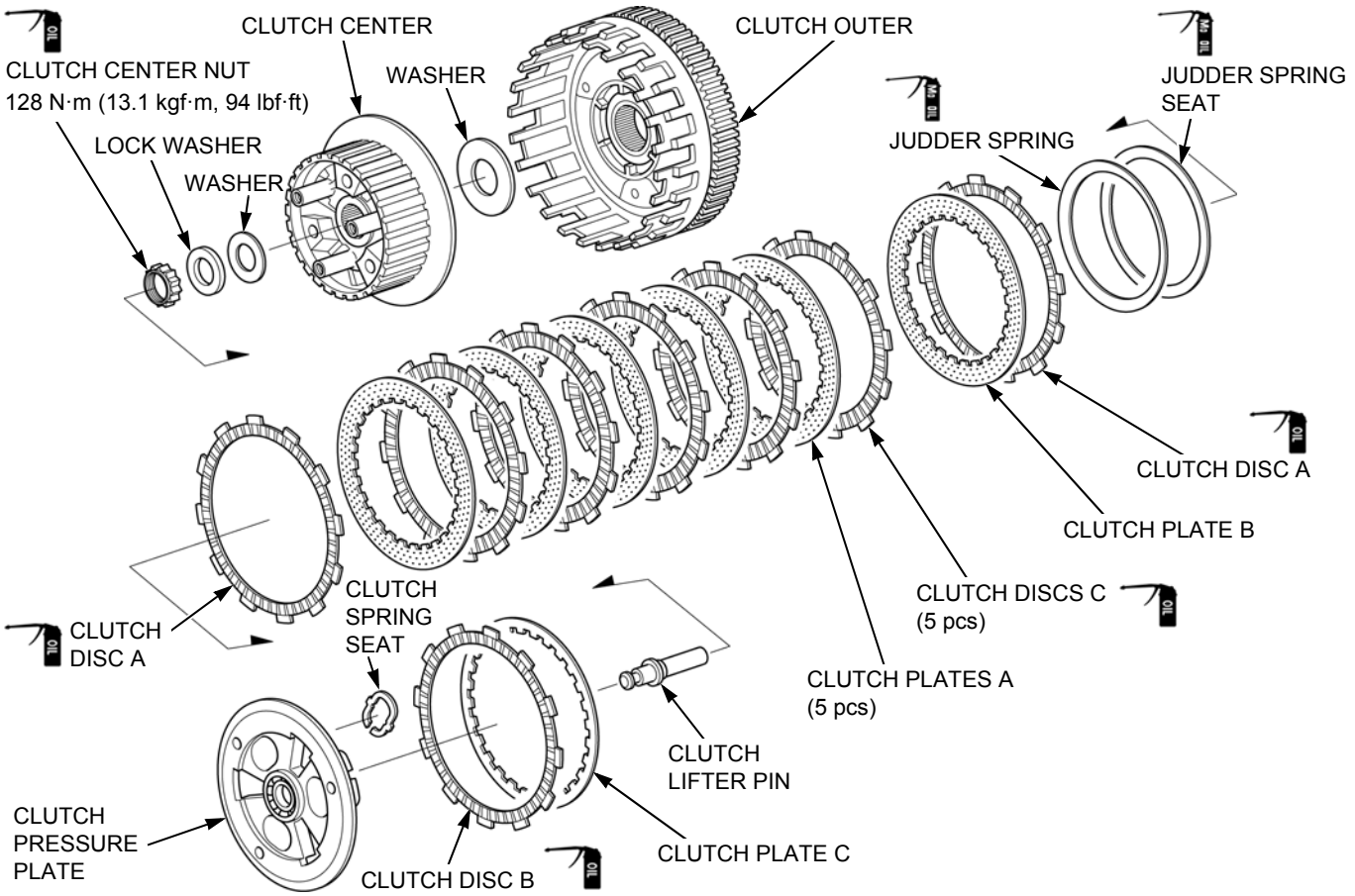
Install the needle bearing [1] into the clutch outer with the marked side facing up to the specified range using a hydraulic press and special tools as shown.

TOOLS:

Driver [2]	**07749-0010000**
Attachment, 42 x 47 mm [3]	**07746-0010300**
Pilot, 35 mm [4]	**07746-0040800**



INSTALLATION



Apply molybdenum oil solution to the clutch outer guide entire surface.

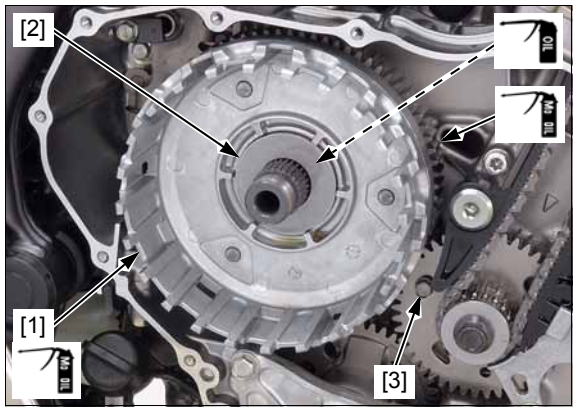
Install the clutch outer guide [1] and washer [2].



Apply engine oil to the clutch outer needle bearing.
Apply molybdenum oil solution to the primary driven gear teeth and clutch outer sliding area.

Install the clutch outer [1] and washer [2].

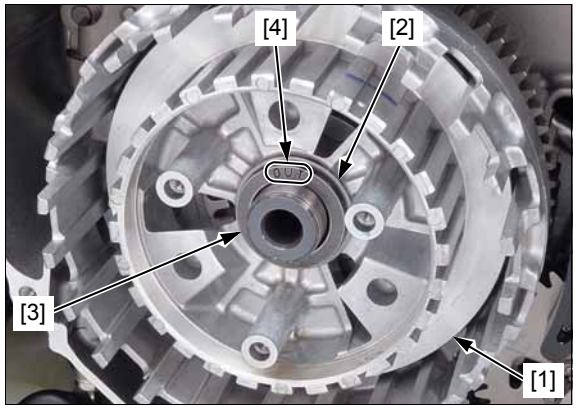
Remove the 6 mm bolt [3].



Install the clutch center [1], washer [2], and lock washer [3].

NOTE:

- Install the lock washer with its "OUT" mark [4] facing out.



Apply engine oil to a new clutch center lock nut threads and seating surface.

Install the clutch center lock nut [1] onto the mainshaft.

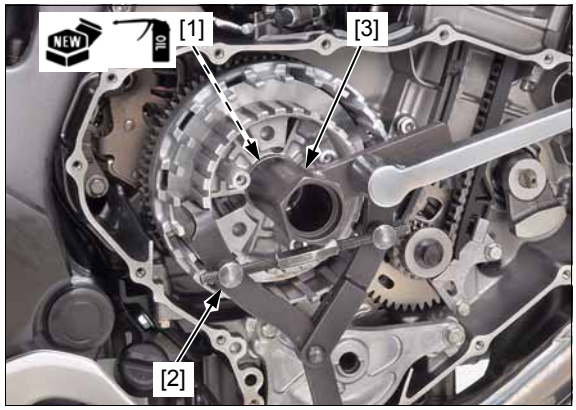
Install special tools and tighten the clutch center lock nut to the specified torque by holding the clutch center with the special tool.

TOOLS:

Clutch center holder P.D. 48 - 135 [2]	**07724-0050002**
Lock nut wrench 30 x 40 mm [3]	**07916-9690000**

TORQUE:

Actual: 128 N·m (13.1 kgf·m, 94 lbf·ft)
Indicated: 116 N·m (11.8 kgf·m, 86 lbf·ft)



Be careful not to damage the mainshaft threads.

Stake the clutch center lock nut [1] into the mainshaft groove.



Apply molybdenum oil solution to the entire surface of judder spring seat and judder spring.

Install the judder spring seat [1] and judder spring [2] onto the clutch center [3] as shown.

Apply engine oil to the entire surface of clutch discs.

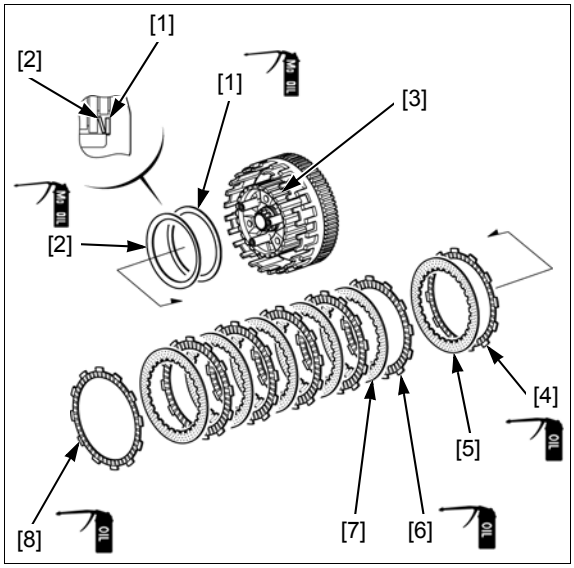
Install the clutch disc A [4] and plate B [5] onto the clutch center.

NOTE:

- Clutch disc A: smaller lining width than disc B
- Clutch plate B: surface treatment difference from clutch plate A

Install the clutch discs C [6] (5 pcs) and plates A [7] (5 pcs) alternately, starting with the disc C.

Install the clutch disc A [8].



Install the clutch lifter pin [1].

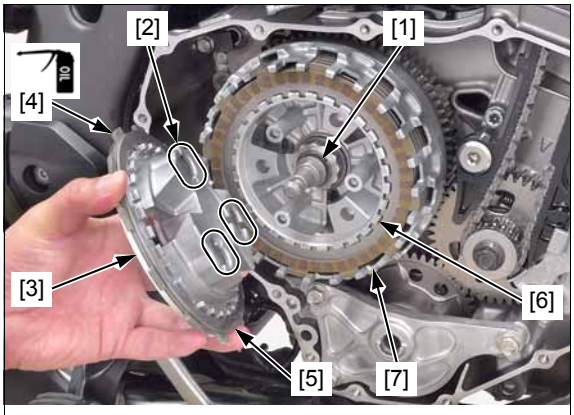
Install the spring seats [2] onto the clutch pressure plate [3] grooves.

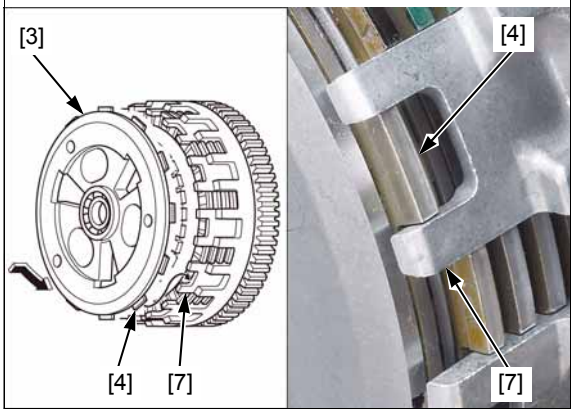
NOTE:

- Make sure that the spring seats are fully seated in the pressure plate grooves.

Apply engine oil to the entire surface of clutch disc B.
Install the clutch disc B [4] onto the clutch pressure plate.
Install the clutch plate C [5] by aligning its tabs with the pressure plate grooves.

Put the clutch pressure plate assembly onto the clutch center [6] by aligning each cam area and insert them by rotating counterclockwise.
Install the clutch disc B tabs into the shallow slots of the clutch outer [7] as shown.





Install the clutch springs [1], set plate [2] and set plate bolts [3].

Tighten the set plate bolts in a crisscross pattern in 2 or 3 steps to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 0.9 lbf·ft)



PRIMARY DRIVE GEAR

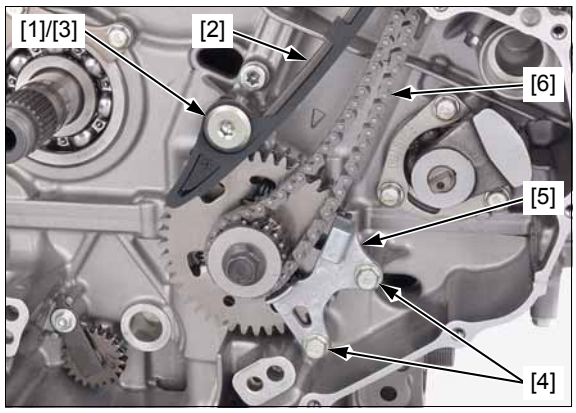
REMOVAL

Remove the following:

– Cylinder head (page 10-13)
– Rear balancer (page 14-9)
– Clutch (page 12-8)

Remove the cam chain tensioner pivot bolt [1], cam chain tensioner [2], and washer [3].

Remove the bolts [4], cam chain guide plate [5], and cam chain [6].



Line up the primary drive gear and sub gear teeth by inserting a suitable pin [1] into the holes of gears.

Hold the primary drive gear and sub-gear with a 6 mm bolt [2].

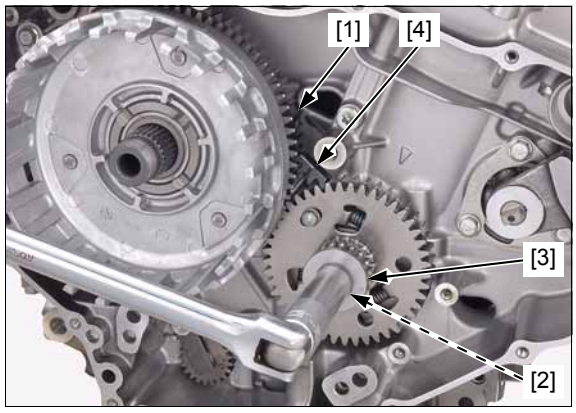


Temporarily install the clutch outer [1].

Install the special tool between the primary drive and driven gears, and remove the primary drive gear bolt [2] and washer [3].

TOOL:
Gear holder, 2.5 [4] 07724-0010100

Remove the gear holder and clutch outer.



Remove the timing sprocket [1].

Remove the primary drive gear and sub-gear [2].

Remove the 6 mm bolt [3].



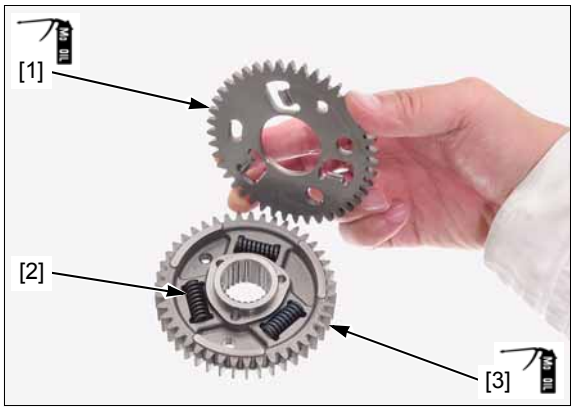
DISASSEMBLY/ASSEMBLY

Remove the primary drive sub-gear [1] and springs [2].

Installation is in the reverse order of removal.

NOTE:

- Apply molybdenum oil solution to the sliding surfaces of the primary drive gear and sub-gear.
- Install the sub-gear onto the primary drive gear [3] in the position as shown.
- Make sure that the index line on the primary drive sub-gear aligns with the wide tooth of the primary drive gear.



INSPECTION

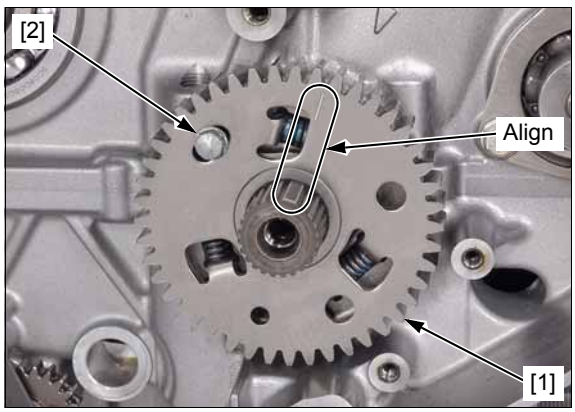
Inspect the following parts for scratch, damage, abnormal wear and deformation. Replace if necessary.

– Primary drive gear
– Primary drive sub-gear
– Springs

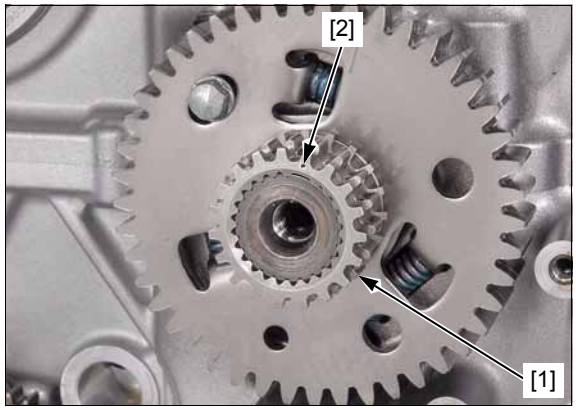
INSTALLATION

Install the primary drive gear and sub-gear [1] by aligning index line on the sub-gear with the wide tooth of the crankshaft.

Line up the primary drive gear and sub gear teeth and hold the primary drive gear and sub-gear with a 6 mm bolt [2] (page 12-15).



Install the timing sprocket [1] with its punch mark [2] facing out as shown



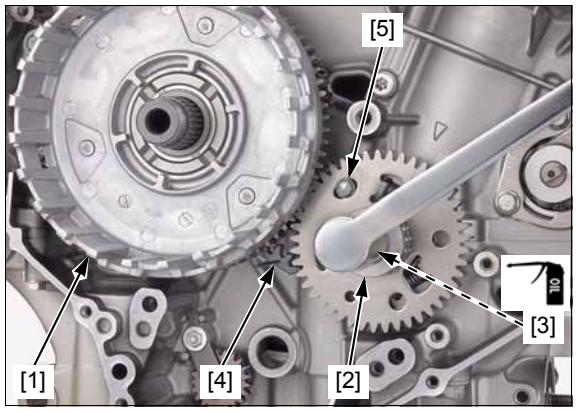
Temporarily install the clutch outer [1].

Apply engine oil to the primary drive gear bolt threads and seating surface.
Install the washer [2] and primary drive gear bolt [3].

Install the special tool between the primary drive and driven gears, and tighten the bolt to the specified torque.

TOOL:
Gear holder, 2.5 [4] 07724-0010100

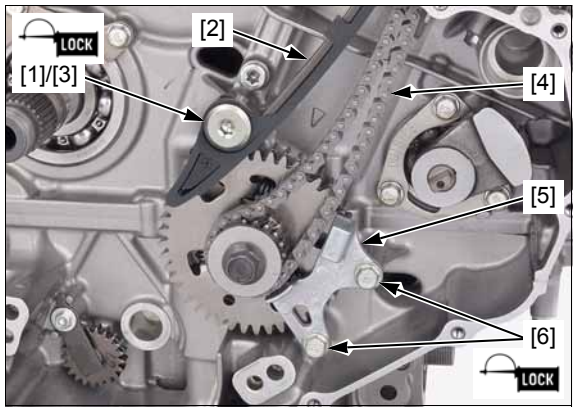
TORQUE: 103 N·m (10.5 kgf·m, 76 lbf·ft)



Remove the gear holder and clutch outer.
Remove the 6 mm bolt [5].

Apply locking agent to the cam chain tensioner pivot bolt threads (page 1-20).
Install the washer [1], cam chain tensioner [2], and cam chain tensioner pivot bolt [3].
Tighten the bolt to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)



Install the cam chain [4].

Apply locking agent to the cam chain guide plate bolts threads (page 1-20).
Install the cam chain guide plate [5] and bolts [6] and tighten the bolts securely.

Install the removed parts in the reverse order of removal.

GEARSHIFT LINKAGE

REMOVAL

Remove the following:

– Clutch (page 12-8)
– Gearshift arm (page 12-21)



Remove the bolts [1] and gearshift spindle cover [2].

Release the wire clip [3]

Clean off any dirt from the gearshift spindle serration [4].

Remove the bolt [1] and set plate [2].



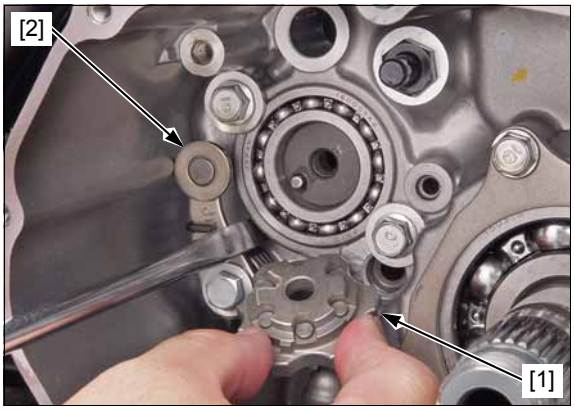
Pull the gearshift spindle assembly [1] and thrust washer [2] out of the crankcase.



Remove the shift drum center bolt [1].

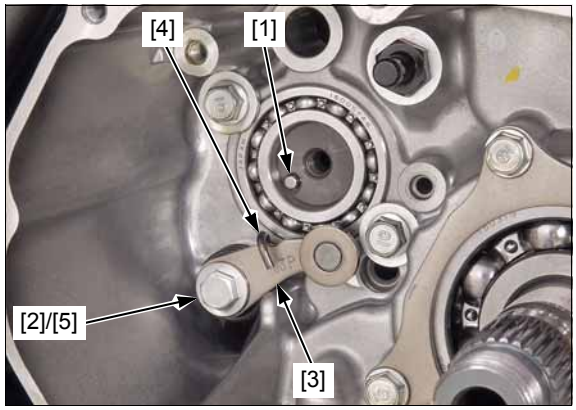


Remove the shift drum center [1] while holding the stopper arm [2] using a screwdriver as shown.



Remove the following:

– Dowel pin [1]
– Shift drum stopper arm pivot bolt [2]
– Shift drum stopper arm [3]
– Return spring [4]
– Washer [5]



Remove the oil seal [1].



INSPECTION

Inspect the following parts for damage, abnormal wear and deformation. Replace if necessary.

– Shift drum center
– Shift drum stopper arm
– Return spring
– Gearshift spindle

INSTALLATION

Install a new oil seal [1] until it is fully seated and apply grease to the oil seal lips.

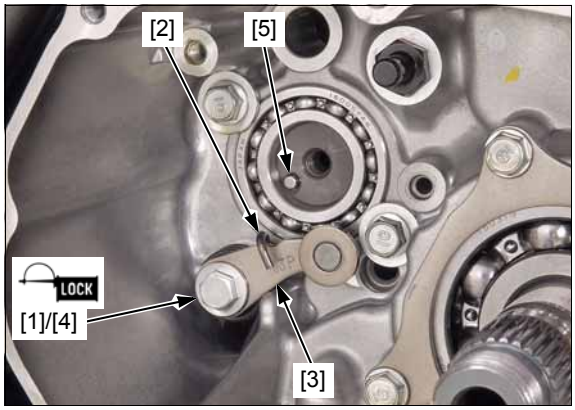


Apply locking agent to the shift drum stopper arm bolt threads (page 1-20).
Install the washer [1], return spring [2], shift drum stopper arm [3], and pivot bolt [4].
Tighten the pivot bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

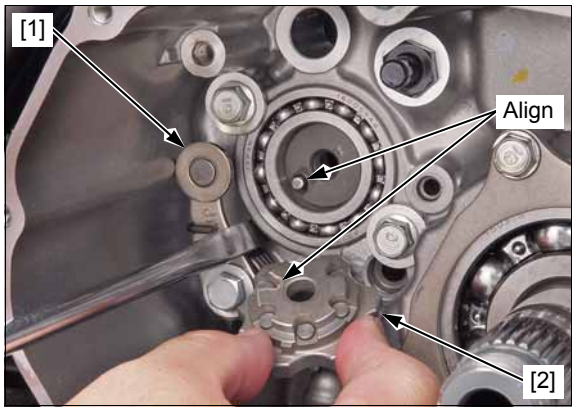
Check the stopper arm for proper operation.

Install the dowel pin [5].



Hold the stopper arm [1] using a screwdriver.

Install the shift drum center [2] by aligning its slot with the dowel pin.



Apply locking agent to the shift drum center bolt threads (page 1-21).

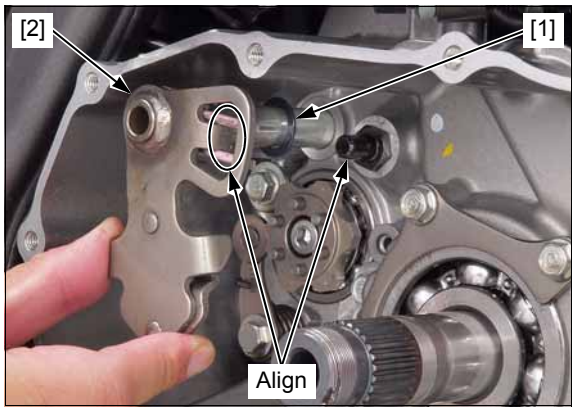
Install and tighten the shift drum center bolt [1] to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)



Install the thrust washer [1] onto the gearshift spindle [2].

Install the gearshift spindle into the crankcase by aligning the return spring ends with the spring pin.



Apply locking agent to the set plate bolt threads (page 1-20).

Install the set plate with its punch mark [3] facing out.

Install the set plate [1] and bolt [2] and tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Install the wire clip [1].

Install the gearshift spindle cover [2] and bolts [3] and tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Route the wire harness properly (page 1-26).

Install the following:
– Clutch (page 12-12)
– Gearshift arm (page 12-21)



GEARSHIFT PEDAL

REMOVAL/INSTALLATION

Remove the pinch bolt [1] and gearshift arm [2] from the gearshift spindle [3].

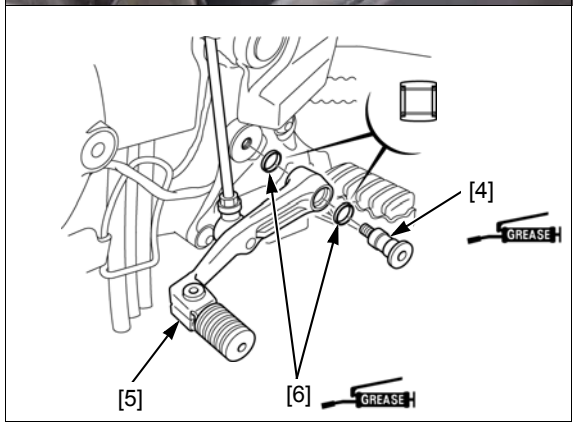
Remove the pivot bolt [4] and gearshift pedal [5]. Remove the dust seals [6].

Check the dust seals and tie-rod ball joint dust cover for deterioration or damage, replace them if necessary.

Installation is in the reverse order of removal.

NOTE:
- Apply grease to the dust seal lips.
- Install the dust seals with the seal lip side facing out.
- Apply grease to the gearshift pedal pivot sliding area (grease groove) of the pivot bolt.
- Align the slit of the gearshift arm with the punch mark on the spindle





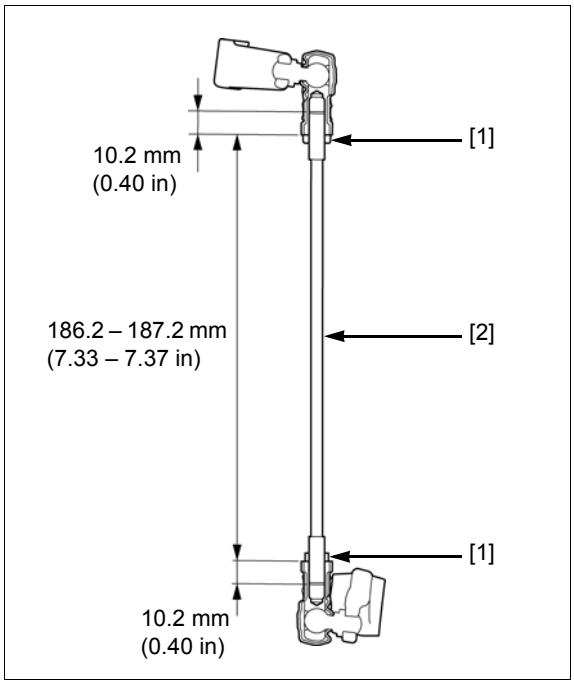
When adjusting the gearshift pedal height, perform procedures as follows:

The gearshift arm side lock nut has left hand threads.

Loosen the lock nuts [1].

Adjust the tie-rod [2] length so that the distance between the ball joint ends is standard length as shown.

After adjustment tighten the lock nuts securely.



13. DUAL CLUTCH TRANSMISSION (DCT) (CRF1000D)

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SERVICE INFORMATION

GENERAL

- This section covers service of the electrical and mechanical systems of the Dual Clutch Transmission (DCT).
- A faulty DCT system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- Read the "DCT Troubleshooting Information" carefully, and inspect and troubleshoot the DCT system according to the DTC. Observe each step of the procedures one by one. Note the DTC and probable faulty part before starting diagnosis and troubleshooting.
- The PCM may be damaged if dropped. Also, if a connector is disconnected when current is flowing, the excessive voltage may damage the PCM. Always turn off the ignition switch before servicing.
- If the PCM is replaced, perform the following procedure.
  – Key Registration Procedure (page 23-3)
  – Clutch Initialize Learning Procedure (CRF1000D) (page 13-82)
- The drive mode AT or MT are changed electrically with the A/M switch.
- Be sure to use the recommended tires, and the specified drive and driven sprocket to operate the dual clutch transmission system normally.
- For VS sensor service (page 4-42).
- For oil pump service (page 9-7).
- The following color codes are used throughout this section.

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

For DCT System Troubleshooting

- The DCT system is controlled by the PCM. Therefore, some detection items are shared in the PGM-FI and DCT systems, and they may affect the operation of both systems.
- Before starting any troubleshooting, check the following items and refer to the appropriate troubleshooting.
  – MIL blinks or DTC for the PGM-FI system (page 4-6).
  – Shift indicator blinks or DTC for the DCT system (page 13-7)
  – Symptom of the DCT system operation (page 13-3)
  – TXD line (page 22-14)
- Refer to the "PGM-FI Troubleshooting Information" for the "CIRCUIT INSPECTION" information (page 4-7).
- The gearshift mechanism included the following items. If the gearshift mechanism is faulty, refer to each component service.
  – Shift control motor/reduction gears (page 13-71)
  – Gearshift linkage (page 13-74)
  – Shift drum/shift fork (page 14-15)

Shift Control Motor Function Procedures

NOTE:
- If the PCM has a DTC, the function test does not work.
- The function test is not for the quality check of the shift control motor.

Conduct a test of the shift control motor when the following items have been serviced or replaced.

– Shift control motor
– Reduction gears
– TR sensor
– Shift spindle angle sensor

Connect the MCS (page 4-6), and perform the shift control motor function test.

Linear Solenoid Valve Function Procedures

NOTE:
- If the PCM has a DTC, the function test does not work.
- The function test is not for the quality check of the linear solenoid valve.
- Do not open the throttle while testing the linear solenoid valve function.

Conduct a test of the linear solenoid valves when the linear solenoid valves have been serviced or replaced.

Connect the MCS (page 4-6), and perform the linear solenoid valve function test.

DCT SYMPTOM TROUBLESHOOTING

Check the shift indicator "–" blinking of the combination meter (page 13-7).

If the shift indicator "–" is blinking, refer to the DTC index (page 13-10) and begin the appropriate troubleshooting procedure.

If there are no "–" blinking, inspect the engine oil condition and follow the symptom troubleshooting described below.

CLUTCH SLIPS AND MOTORCYCLE DOES NOT ACCELERATE

Check the clutch clearance (page 13-68).

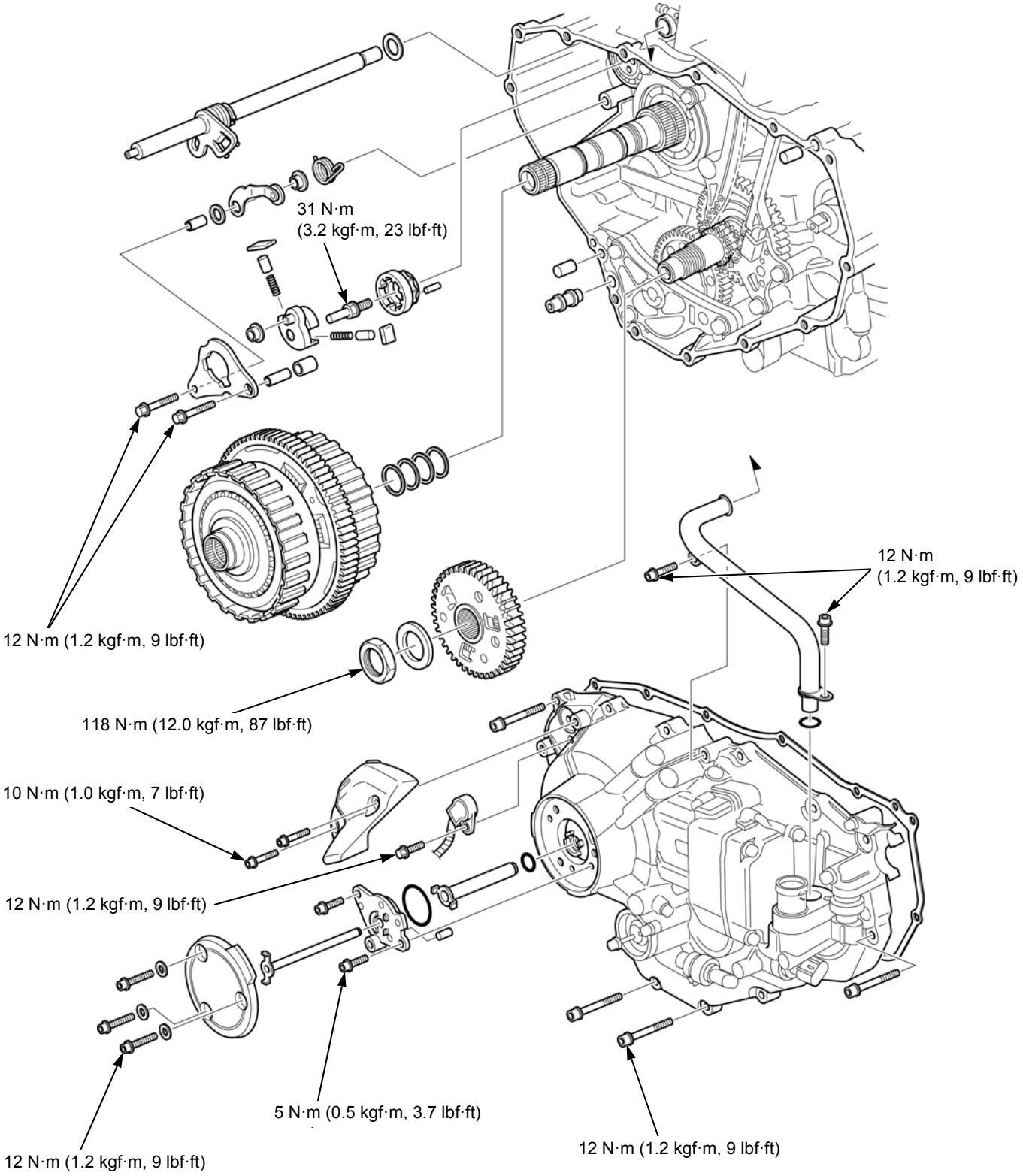
EXCESSIVE NOISE OR VIBRATION AROUND THE DCT SYSTEM

Inspect the following components:

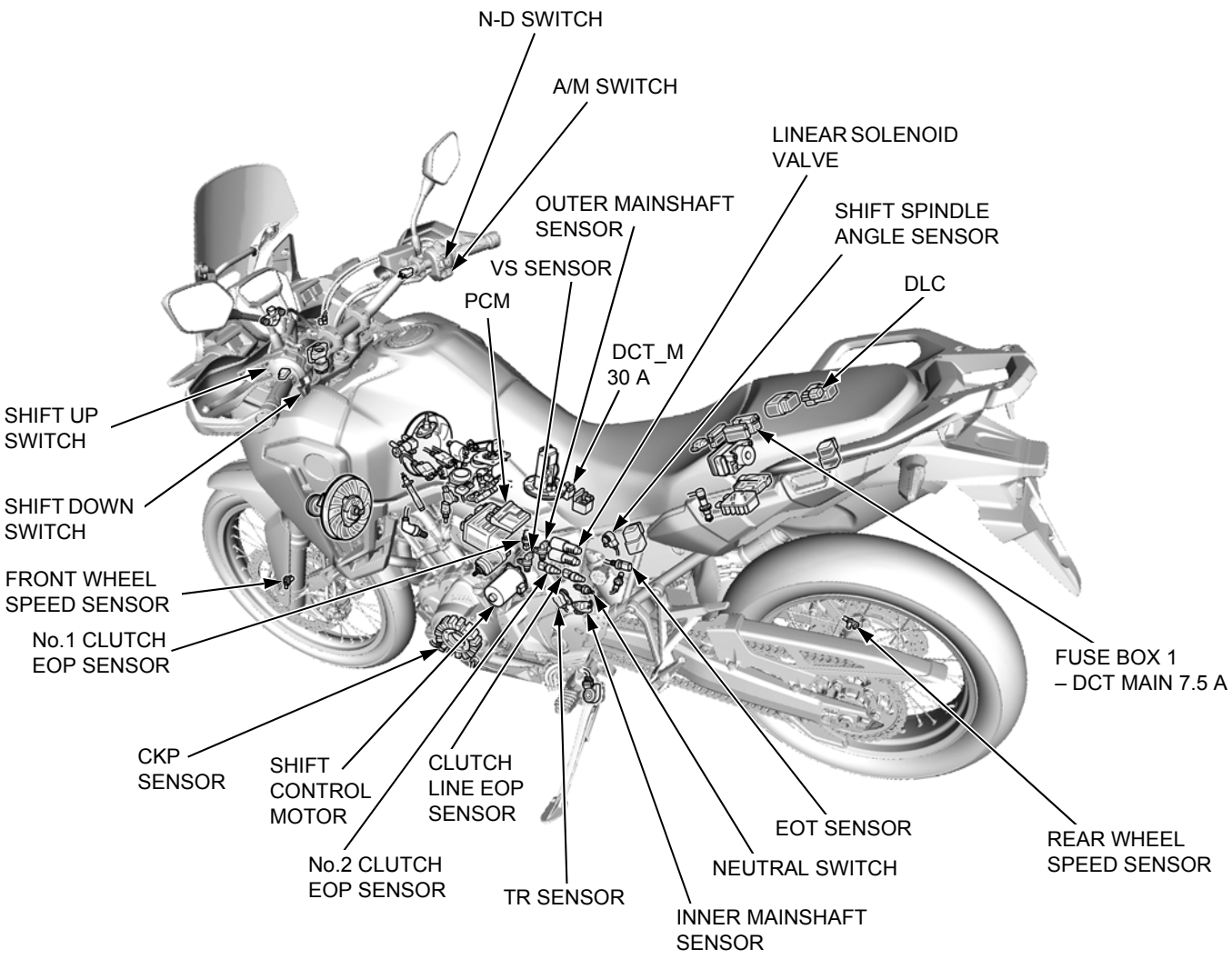
– Clutch clearance
– Dual clutch needle bearings for wear or damage
– Primary drive/sub-gear for wear or damage
– Primary driven gear for wear or damage
– Each fastener is tightened to the correct torque value

Replace the damaged components if necessary and tighten the loose fasteners to the specified torque.

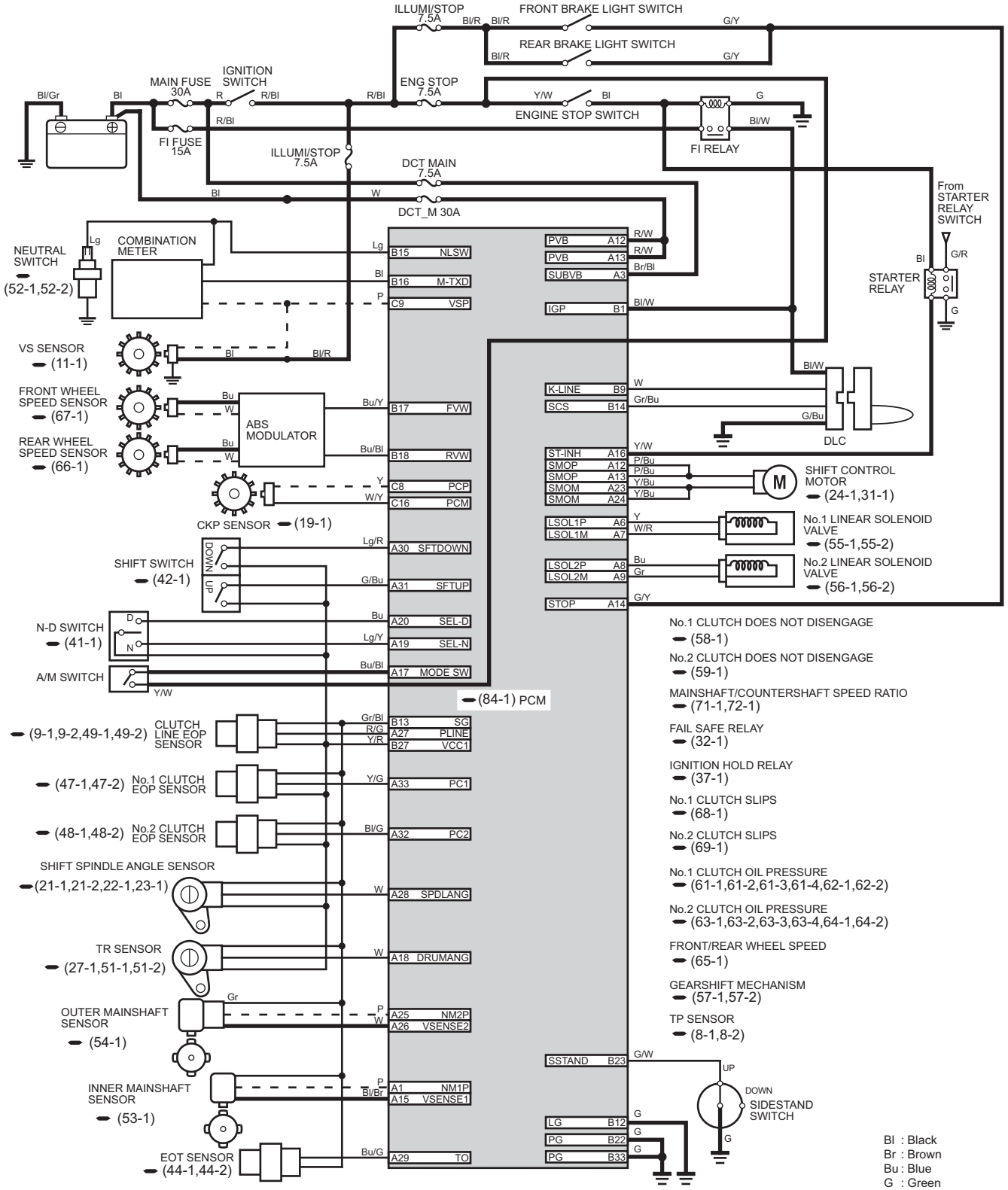
COMPONENT LOCATION



SYSTEM LOCATION



SYSTEM DIAGRAM



DCT 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 shift indicator "–" does not come on, check for poor contact or loose pins at all connectors related to the circuit that you are troubleshooting. If the shift indicator "–" 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 PCMs this can sometimes mean something works, but not the way it's supposed to.

If the shift indicator "–" has come on

Refer to DTC READOUT (page 13-8).

If the shift indicator "–" did not stay on

If the shift indicator "–" did not stay on, but there is a driveability problem, do the SYMPTOM TROUBLESHOOTING (page 13-3).

SYSTEM DESCRIPTION

SELF-DIAGNOSIS SYSTEM

The DCT system is equipped with the self-diagnostic system. When any abnormality occurs in the DCT system, the PCM have the shift indicator blinking "–" and stores a DTC in its erasable memory for the relevant system failure.

FAIL-SAFE FUNCTION

The DCT system is provided with a fail-safe function to secure a minimum running capability even when there is trouble in the system.

When the PCM detects a problem in the DCT system, the PCM stops the gearshift function, and hold the gear position. Also, the shift indicator blinks "–" to indicate the DTC.

Shift indicator Check

When the ignition switch is turned ON with the engine stop switch to "○", the shift indicator will stay on for a few seconds, then go off.

CURRENT DTC/STORED DTC

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

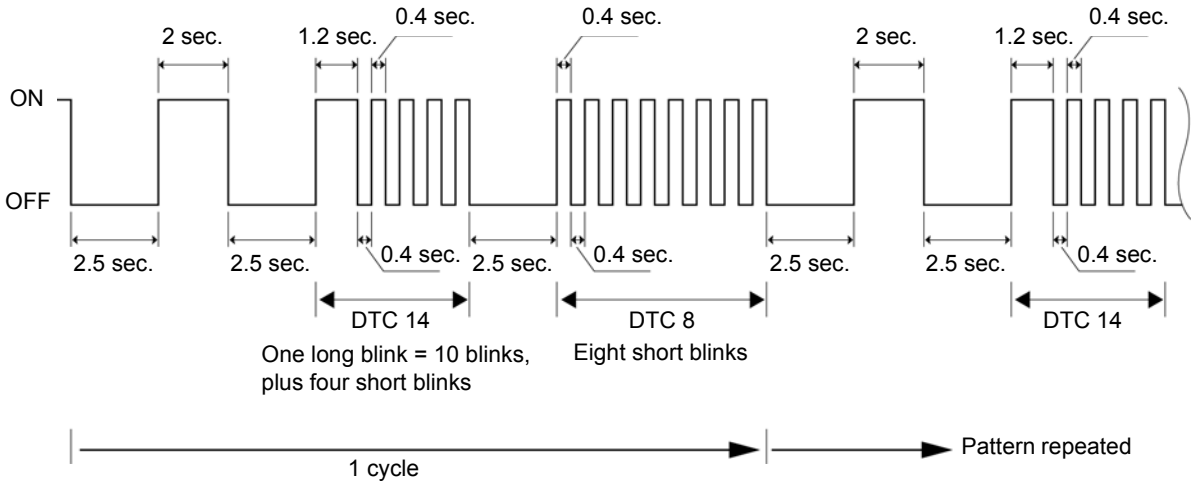
- If the PCM detects a current problem, the shift indicator "–" will come on and begin to blink when the sidestand is lowered. The shift indicator "–" blink pattern will indicate the current DTC.
- If the PCM does not detect any current but has a problem stored in its memory, the shift indicator "–" will not light and blink. If it is necessary to retrieve the past problem, readout the stored DTC by following the DTC readout procedure (page 13-8).

DTC (Diagnostic Trouble Code)

- The DTC is composed of a main code and a sub code and it is displayed as a hyphenated number when retrieved from the PCM with the MCS.
  The digits in front of the hyphen are the main code, they indicate the component of function failure.
  The digits behind the hyphen are the sub code, they detail the specific symptom of the component or function failure.
  For example, in the case of the shift spindle angle sensor:
  – DTC 21 – 1 = (Shift spindle angle sensor voltage) – (lower than the specified value)
  – DTC 21 – 2 = (Shift spindle angle sensor voltage) – (higher than the specified value)

Shift indicator "–" Blink Pattern

- If the MCS is not available, the DTC can be read from the PCM memory by the shift indicator "–" blink pattern.
- The number of shift indicator "–" blinks is the equivalent of the main code of the DTC (the sub code cannot be displayed by the shift indicator "–").
- The shift indicator "–" has two types of blinks, a long blink and short blink. The long blinking lasts for 1.2 seconds, the short blinking lasts for 0.4 seconds. One long blink is the equivalent of ten short blinks. For example, DTC 14 and DTC 8 are indicated in the following blink pattern.
- When there isn't a DTC, the shift indicator "–" lights for 2 seconds at intervals of 3 seconds (page 13-9).



MCS INFORMATION

Refer to the PGM-FI system (page 4-6).

NOTE:

The front wheel speed sensor signal can be disabled with the MCS for testing. Never ride the motorcycle with the PCM in this mode.

DTC READOUT

NOTE:

- If the shift indicator blinks, check the PGM-FI DTC (page 4-9). If there is any problem in the PGM-FI system, troubleshoot it first. Then recheck the DCT system after erasing the PGM-FI DTC.
- After performing diagnostic troubleshooting, erase the DTC(s) (page 13-9) and test-ride the motorcycle to be sure that the problem(s) have been removed.

Read the DTC and stored data with the MCS, and follow the troubleshooting index (page 13-10).

To read the DTC without the MCS, use the following procedure.

Reading DTC with the shift indicator "–"

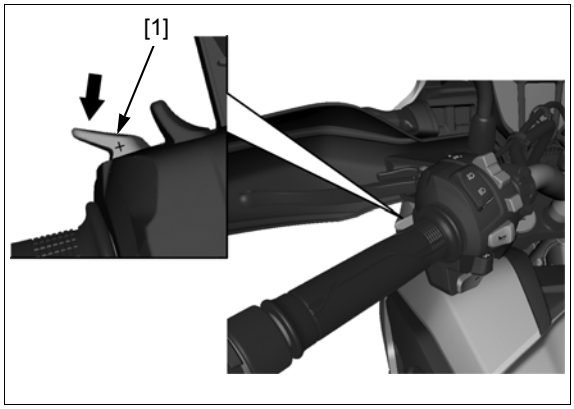
1. Turn the ignition switch OFF.

   Remove the main seat (page 2-4).
2. Connect the SCS connector to the DLC (page 4-6).
3. Make sure the engine stop switch is turned to "".
   While pushing the shift switch (+) [1], turn the ignition switch ON. Read and note the shift indicator "–" blinks and refer to the troubleshooting index (page 13-10).

NOTE:

- If the PCM has no DTC in its memory, the shift indicator "–" will start blinking (page 13-8).

4. Release the shift switch (+).



ERASING DTC

Connect the MCS to the DLC (page 4-6).

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

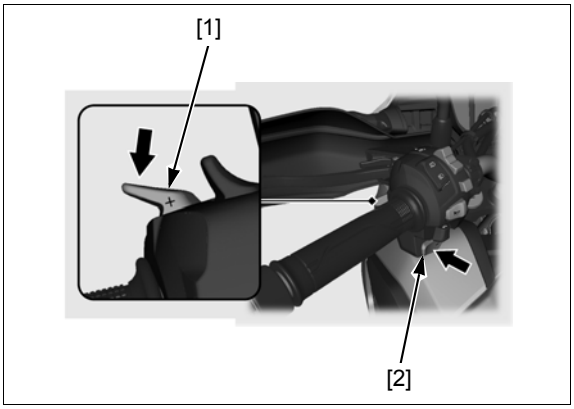
To erase the DTC without MCS, refer to the following procedure.

How to erase the DTC without MCS

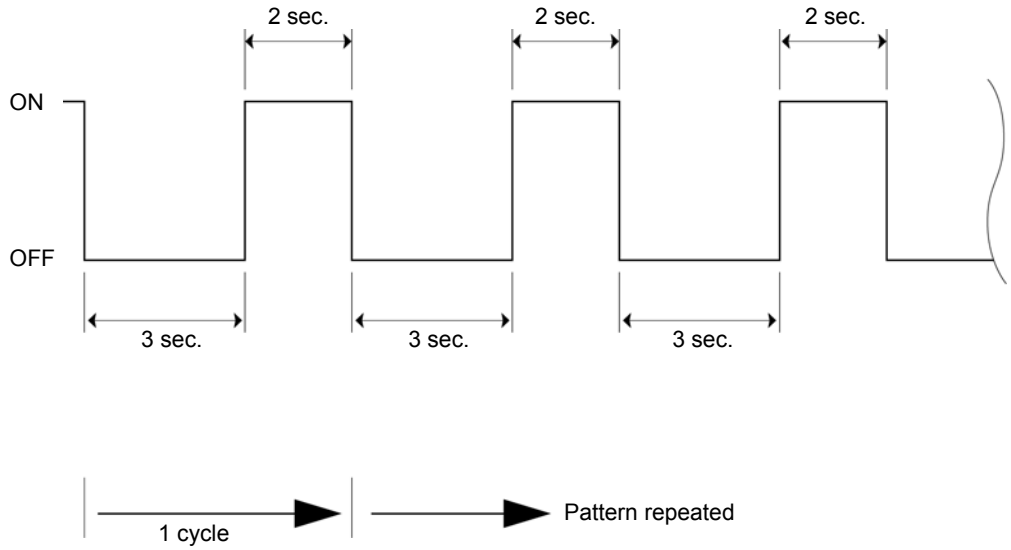
1. Connect the SCS connector to the DLC (page 4-6).

   Make sure the engine stop switch is turned to "".
   While pushing the shift switch (+) [1], turn the ignition switch ON and engine stop switch "".

2. Push the shift switch (–) [2].
3. Push the shift switch (+).



4. The self-diagnostic memory is erased if the shift indicator "–" goes off and starts blinking as shown.



NOTE:

Note that the self-diagnostic memory cannot be erased if the ignition switch is turned to "OFF" before the shift indicator "–" starts blinking.

5. Turn the ignition switch OFF.
6. Remove the special tool from the DLC.

DTC INDEX

- If the MCS is not used, perform all of the inspection on the corresponding main code (digits in front of hyphen) of the DTC.

DTC	Function Failure	Symptom/Fail-safe function	Refer to page
8-1	TP sensor low voltage (less than 0.112 V) • Loose or poor contact of the TP sensor connector • TP sensor or its circuit malfunction	• Gearshift function does not works	4-16
8-2	TP sensor high voltage (more than 4.971 V) • TP sensor or its circuit malfunction	• Gearshift function does not works	4-18
9-1	Clutch line EOP sensor low voltage (less than 0.298 V) • Clutch line EOP sensor or its circuit malfunction • Faulty PCM	• Gearshift function works normally	13-15
9-2	Clutch line EOP sensor high voltage (more than 4.702 V) • Loose or poor contact of the clutch line EOP sensor connector • Clutch line EOP sensor or its circuit malfunction • Faulty PCM	• Gearshift function works normally	13-16
11-1	VS sensor malfunction • Loose or poor contact of the VS sensor connector • VS sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not works	4-21
19-1	CKP sensor no signal • Loose or poor contact of the CKP sensor connector • Electromagnetic interference at CKP sensor • CKP sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work • Engine does not operate	13-17
21-1	Shift spindle angle sensor low voltage (less than 0.308 V) • Loose or poor contact of the shift spindle angle sensor connector • Shift spindle angle sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-18
21-2	Shift spindle angle sensor high voltage (more than 4.976 V) • Shift spindle angle sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-20
22-1	Shift spindle operation malfunction (after operating gearshift mechanism) • Gearshift mechanism malfunction • Shift spindle angle sensor malfunction	• Gearshift function does not work	13-20
23-1	Shift spindle operation malfunction (while operating gearshift mechanism) • Gearshift mechanism malfunction • Shift spindle angle sensor malfunction	• Gearshift function does not work	13-21
24-1	Shift control motor drive circuit • Shift control motor or its circuit malfunction • Shift control motor drive circuit in the PCM malfunction	• Gearshift function does not work	13-22
27-1	Shift drum position malfunction • TR sensor malfunction • Gearshift mechanism malfunction • Faulty PCM	• Gearshift function does not work	13-23
31-1	Shift control motor low voltage (less than 9.016 V) • Ignition hold relay circuit in the PCM malfunction • Blown fuse DCT M 30 A • Loose or poor contact of the PCM 33P (Blue) connector	• Gearshift function does not work	13-24
32-1	Fail safe relay circuit malfunction • PCM (DCT drive circuit) power input line malfunction • Blown fuse DCT M 30 A • Fail safe relay in the PCM malfunction	• Gearshift function does not work	13-25
37-1	Ignition hold relay malfunction • PCM (DCT drive circuit) sub power input line malfunction • Blown sub fuse DCT MAIN 7.5 A • Ignition hold relay in the PCM malfunction	• Gearshift function does not work	13-25
41-1	N-D switch malfunction • Loose or poor contact of the N-D switch connector • N-D switch or its circuit malfunction • Faulty PCM	• N-D switch does not work	13-26

DTC	Function Failure	Symptom/Fail-safe function	Refer to page
42-1	Shift switch malfunction • Loose or poor contact of the shift switch connector • Shift switch or its circuit malfunction • Faulty PCM	• Shift switch does not work	13-27
44-1	EOT sensor low voltage (less than 0.088 V) • EOT sensor or its circuit malfunction • Faulty PCM	• Gearshift function works normally	13-29
44-2	EOT sensor high voltage (more than 4.903 V) • Loose or poor contact of the EOT sensor connector • EOT sensor or its circuit malfunction • Faulty PCM	• Gearshift function works normally	13-30
47-1	No.1 clutch EOP sensor low voltage (less than 0.298 V) • No.1 clutch EOP sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-31
47-2	No.1 clutch EOP sensor high voltage (more than 4.702 V) • Loose or poor contact of the No.1 clutch EOP sensor connector • No.1 clutch EOP sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-32
48-1	No.2 clutch EOP sensor low voltage (less than 0.298 V) • No.2 clutch EOP sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-31
48-2	No.2 clutch EOP sensor high voltage (more than 4.702 V) • Loose or poor contact of the No.2 clutch EOP sensor connector • No.2 clutch EOP sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-32
49-1	Clutch line low oil pressure (when clutch is engaged) • Engine oil level low • Faulty oil pump • Faulty clutch oil circuit • Clutch line EOP sensor malfunction • Faulty PCM	• Gearshift function does not work	13-33
49-2	Clutch line low oil pressure (when engine is running) • Engine oil level low • Faulty oil pump • Faulty clutch oil circuit • Clutch line EOP sensor malfunction • Faulty PCM	• Gearshift function does not work	
51-1	TR sensor low voltage (less than 0.117 V) • Loose or poor contact of the TR sensor connector • TR sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-34
51-2	TR sensor high voltage (more than 4.976 V) • TR sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-36
52-1	Neutral switch stuck OFF • Loose or poor contact of the neutral switch connector • Neutral switch or its circuit malfunction • Faulty PCM	• Gearshift function works normally • Shift indicator blinking	13-36
52-2	Neutral switch stuck ON • Neutral switch or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-37
53-1	Inner mainshaft speed low • Loose or poor contact of the inner mainshaft sensor connector • Inner mainshaft sensor or its circuit malfunction • Electromagnetic interference • Faulty PCM	• Gearshift function does not work	13-37
54-1	Outer mainshaft speed low • Loose or poor contact of the outer mainshaft sensor connector • Outer mainshaft sensor or its circuit malfunction • Electromagnetic interference • Faulty PCM	• Gearshift function does not work	13-40

DTC	Function Failure	Symptom/Fail-safe function	Refer to page
55-1	No.1 linear solenoid valve current failure • Loose or poor contact of the No.1 linear solenoid valve connector • No.1 linear solenoid valve or its circuit malfunction • No.1 linear solenoid valve drive circuit in the PCM malfunction • Faulty PCM	• Gearshift function does not work	13-42
55-2	No.1 linear solenoid valve driver in the PCM failure • Loose or poor contact of the No.1 linear solenoid valve connector • Loose or poor contact of the PCM 33P connector • No.1 linear solenoid valve or its circuit malfunction • No.1 linear solenoid valve drive circuit in the PCM malfunction • Faulty PCM	• Gearshift function does not work	
56-1	No.2 linear solenoid valve current failure • Loose or poor contact of the No.1 linear solenoid valve connector • No.2 linear solenoid valve or its circuit malfunction • No.2 linear solenoid valve drive circuit in the PCM malfunction • Faulty PCM	• Gearshift function does not work	13-43
56-2	No.2 linear solenoid valve driver in the PCM failure • Loose or poor contact of the No.2 linear solenoid valve connector • Loose or poor contact of the PCM 33P connector • No.2 linear solenoid valve or its circuit malfunction • No.2 linear solenoid valve drive circuit in the PCM malfunction • Faulty PCM	• Gearshift function does not work	
57-1	Gearshift mechanism malfunction • Gearshift mechanism malfunction • TR sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-44
57-2	Gear position malfunction (jumps out of gear) • Gearshift mechanism malfunction • TR sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-44
58-1	No.1 clutch does not disengage (when shifting gear) • No.1 clutch sticking • Faulty clutch oil circuit	• Gearshift function does not work • Engine does not operate	13-44
59-1	No.2 clutch does not disengage (when shifting gear) • No.2 clutch sticking • Faulty clutch oil circuit	• Gearshift function does not work • Engine does not operate	
61-1	No.1 clutch oil pressure malfunction (at clutch initial diagnosis) • No.1 clutch EOP sensor malfunction • Faulty clutch oil circuit • Faulty PCM	• Gearshift function does not work	13-45
61-2	No.1 clutch no oil pressure • No.1 clutch EOP sensor malfunction • Faulty clutch oil circuit • No.1 linear solenoid valve or its circuit malfunction • Faulty PCM	• Gearshift function does not work	
61-3	No.1 clutch oil pressure degradation • No.1 clutch EOP sensor malfunction • Faulty clutch oil circuit • No.1 linear solenoid valve malfunction • Faulty PCM	• Gearshift function does not work	
61-4	No.1 clutch oil pressure canceling malfunction • No.1 clutch EOP sensor malfunction • Faulty clutch oil circuit • Loose or poor contact of the No.1 linear solenoid valve and clutch EOP sensor connectors • No.1 linear solenoid valve malfunction • Faulty PCM	• Gearshift function does not work • Engine does not operate	

DTC	Function Failure	Symptom/Fail-safe function	Refer to page
62-1	No.1 clutch oil pressure high • No.1 clutch EOP sensor malfunction • Faulty clutch oil circuit • No.1 linear solenoid valve malfunction • Faulty PCM	• Gearshift function does not work	13-45
62-2	No.1 clutch oil pressure high (Prevention of motorcycle creeps) • No.1 clutch EOP sensor malfunction • Faulty clutch oil circuit • No.1 linear solenoid valve malfunction • Faulty PCM	• Gearshift function does not work	
63-1	No.2 clutch oil pressure malfunction (at clutch initial diagnosis) • No.2 clutch EOP sensor malfunction • Faulty clutch oil circuit • Faulty PCM	• Gearshift function does not work	13-45
63-2	No.2 clutch no oil pressure • No.2 clutch EOP sensor malfunction • Faulty clutch oil circuit • No.2 linear solenoid valve or its circuit malfunction • Faulty PCM	• Gearshift function does not work	
63-3	No.2 clutch oil pressure degradation • No.2 clutch EOP sensor malfunction • Faulty clutch oil circuit • No.2 linear solenoid valve malfunction • Faulty PCM	• Gearshift function does not work	
63-4	No.2 clutch oil pressure canceling malfunction • No.2 clutch EOP sensor malfunction • Faulty clutch oil circuit • Loose or poor contact of the No.2 linear solenoid valve and clutch EOP sensor connectors • No.2 linear solenoid valve or its circuit malfunction • Faulty PCM	• Gearshift function does not work • Engine does not operate	
64-1	No.2 clutch oil pressure high • No.2 clutch EOP sensor malfunction • Faulty clutch oil circuit • No.2 linear solenoid valve malfunction • Faulty PCM	• Gearshift function does not work	13-45
64-2	No.2 clutch oil pressure high (Prevention of motorcycle creeps) • No.2 clutch EOP sensor malfunction • Faulty clutch oil circuit • No.2 linear solenoid valve malfunction • Faulty PCM	• Gearshift function does not work	
65-1	Front and rear wheel speed signal malfunction • Front wheel speed sensor or its circuit malfunction • VS sensor or its circuit malfunction • Faulty ABS modulator • Faulty PCM	• Gearshift function does not work	13-46
66-1	Rear wheel speed sensor no signal • Rear wheel speed sensor or its circuit malfunction • Loose or poor contact of the rear wheel speed sensor connector • Electromagnetic interference at rear wheel speed sensor • Faulty ABS modulator • Faulty rear pulser ring • Faulty PCM	• Gearshift function does not work	4-33
67-1	Front wheel speed sensor no signal • Front wheel speed sensor or its circuit malfunction • Loose or poor contact of the front wheel speed sensor connector • Electromagnetic interference at front wheel speed sensor • Faulty ABS modulator • Faulty front pulser ring • Faulty PCM	• Gearshift function does not work	4-35

DTC	Function Failure	Symptom/Fail-safe function	Refer to page
68-1	No.1 clutch operation malfunction (clutch slips) • VS sensor malfunction • Faulty No.1 clutch • Faulty PCM	• Gearshift function does not work	13-47
69-1	No.2 clutch operation malfunction (clutch slips) • VS sensor malfunction • Faulty No.2 clutch • Faulty PCM	• Gearshift function does not work	13-47
71-1	Inner mainshaft/countershaft speed ratio failure • VS sensor or its circuit malfunction • Inner mainshaft sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	13-48
72-1	Outer mainshaft/countershaft speed ratio failure • VS sensor or its circuit malfunction • Outer mainshaft sensor or its circuit malfunction • Faulty PCM	• Gearshift function does not work	
84-1	CPU in the PCM malfunction • Faulty PCM	• Gearshift system stops	13-48

DTC TROUBLESHOOTING

NOTE:

- If the PCM is replaced, perform the following:
  – Key Registration Procedure (page 23-6)
  – Clutch Initialize Learning Procedure (page 13-82)

DTC 9-1 (CLUTCH LINE EOP SENSOR LOW VOLTAGE)

1. Clutch Line EOP Sensor System Inspection

Connect the MCS and start the engine.
Check the clutch line EOP sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. Clutch Line EOP Sensor Inspection

Stop the engine.
Disconnect the clutch line EOP sensor 3P (Gray) connector (page 13-80).
Turn the ignition switch ON.
Check the clutch line EOP sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty clutch line EOP sensor

3. Clutch Line EOP Sensor Input Voltage Inspection

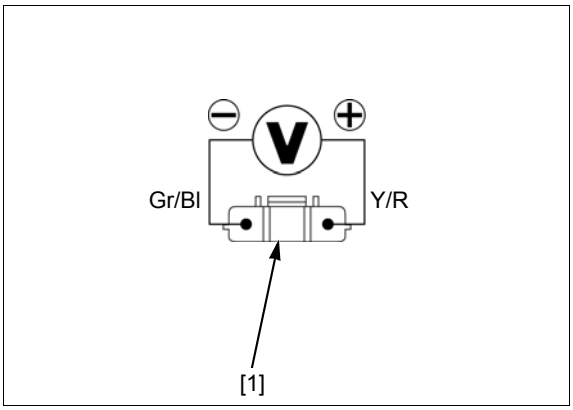
Measure the voltage at the wire harness side 3P (Gray) connector [1].

Connection: Yellow/red (+) – Gray/black (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 5.

NO – GO TO STEP 4.



4. Clutch Line EOP Sensor Input Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-39).
check for continuity between the wire harness side 3P (Gray) connector [1] and 33P (Black) connector [2].

TOOL:

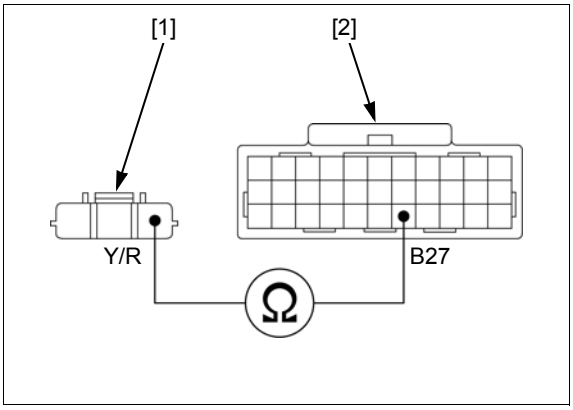
Test probe **07ZAJ-RDJA110**

Connection: Yellow/red – B27

Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Yellow/red wire



5. Clutch Line EOP Sensor Output Line Short Circuit Inspection

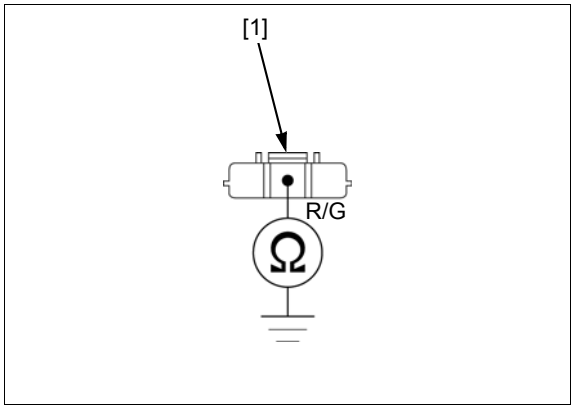
Turn the ignition switch OFF.
Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 3P (Gray) connector [1] and ground.

Connection: Red/green – Ground

Is there continuity?

YES – Short circuit in the Red/green wire

NO – Replace the PCM with a known good one (page 4-39) and recheck.



DTC 9-2 (CLUTCH LINE EOP SENSOR HIGH VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the clutch line EOP sensor 3P (Gray), PCM 33P (Black) and 33P (Gray) connectors, and recheck the DTC.

1. Clutch Line EOP Sensor System Inspection

Check the clutch line EOP sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. Clutch Line EOP Sensor Inspection

Turn the ignition switch OFF.
Disconnect the clutch line EOP sensor 3P (Gray) connector (page 13-80).
Connect the wire harness side 3P (Gray) connector [1] terminals with a jumper wire [2].

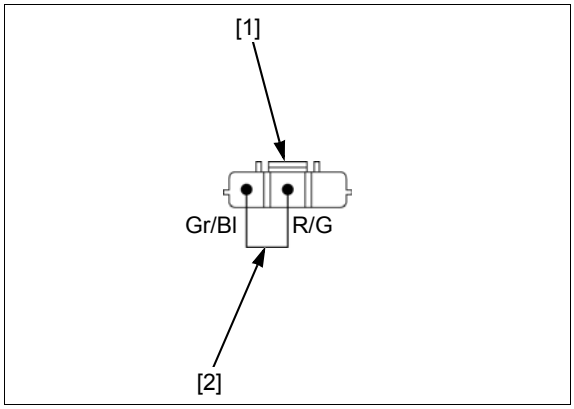
Connection: Red/green – Gray/black

Turn the ignition switch ON.
Check the clutch line EOP sensor with the MCS.

Is 0 V indicated?

YES – Faulty clutch line EOP sensor

NO – GO TO STEP 3.



3. Clutch Line EOP Sensor Ground Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 3P (Gray) connector [1] and 33P (Black) connector [2].

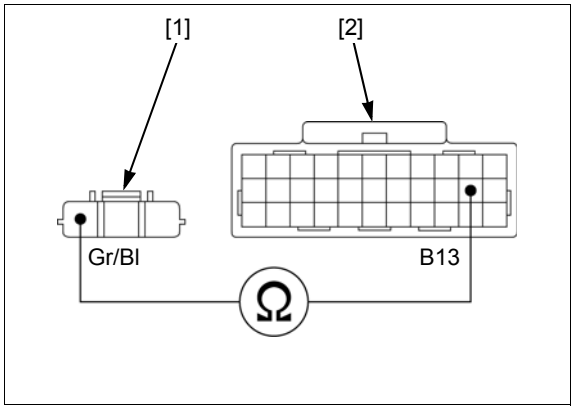
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Gray/black – B13

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Gray/black wire



4. Clutch Line EOP Sensor Output Line Open Circuit Inspection

Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 3P (Gray) connector [1] and 33P (Blue) connector [2].

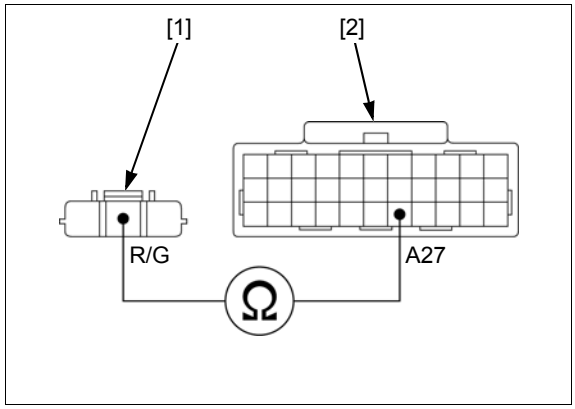
TOOL:
Test probe 07ZAJ-RDJA110

Connection: Red/green – A27

Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Red/green wire



DTC 19-1 (CKP SENSOR NO SIGNAL)

1. CKP sensor Peak Voltage Inspection

Disconnect the alternator assembly 6P (Black) connector (page 5-7).
Temporarily connect the battery cables.
Turn the ignition switch ON with the engine stop switch "".
Crank the engine with the starter motor and measure the CKP sensor peak voltage at the CKP sensor side 6P (Black) connector [1].

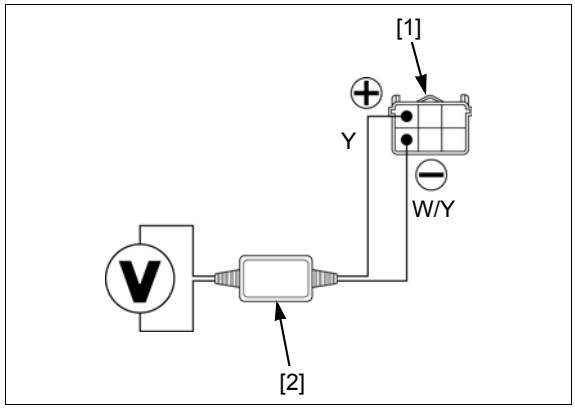
TOOLS:
Peak voltage adaptor [2] 07HGJ-0020100
with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)

Connection: Yellow (+) – White/yellow (–)

Is the voltage more than 0.7 V?

YES – GO TO STEP 2.

NO – Faulty CKP sensor



2. CKP sensor Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Gray) connector (page 4-39).
Check for continuity between the wire harness side 6P (Black) connector [1] and 33P (Gray) connector [2].

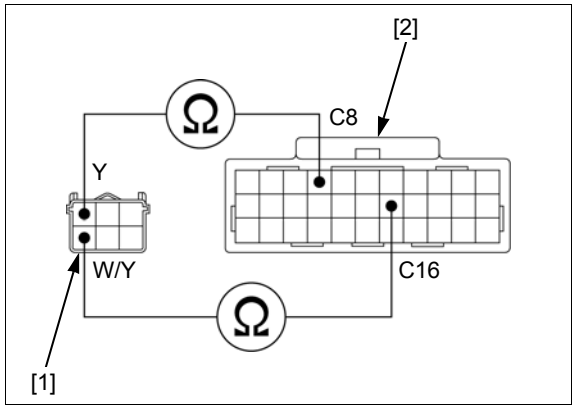
TOOL:
Test probe 07ZAJ-RDJA110

Connection: Yellow – C8
White/yellow – C16

Is there continuity?

YES – GO TO STEP 3.

NO –
- Open circuit in the Yellow wire
- Open circuit in the White/yellow wire



3. CKP sensor Line Short Circuit Inspection

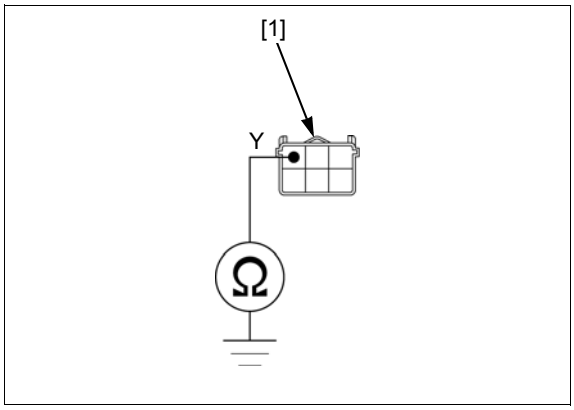
Check for continuity between the wire harness side 6P (Black) connector [1] and ground

Connection: Yellow – Ground

Is there continuity?

YES – Short circuit in the Yellow wire

NO – Replace the PCM with a known good one (page 4-39) and recheck.



DTC 21-1 (SHIFT SPINDLE ANGLE SENSOR LOW VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the shift spindle angle sensor 3P (Blue), PCM 33P (Black) and 33P (Gray) connectors, and recheck the DTC.

1. Shift Spindle Angle Sensor System Inspection

Check the shift spindle angle sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. Shift Spindle Angle Sensor Input Voltage Inspection

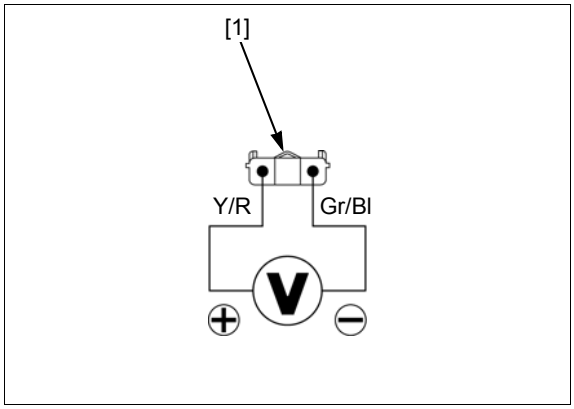
Turn the ignition switch OFF.
Disconnect the shift spindle angle sensor 3P (Blue) connector (page 13-79).
Turn the ignition switch ON.
Measure the voltage at the wire harness side 3P (Blue) connector [1].

Connection: Yellow/red (+) – Gray/black (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 3.

NO – GO TO STEP 4.



3. Shift Spindle Angle Sensor Input Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 3P (Blue) connector [1] and 33P (Black) connector [2].

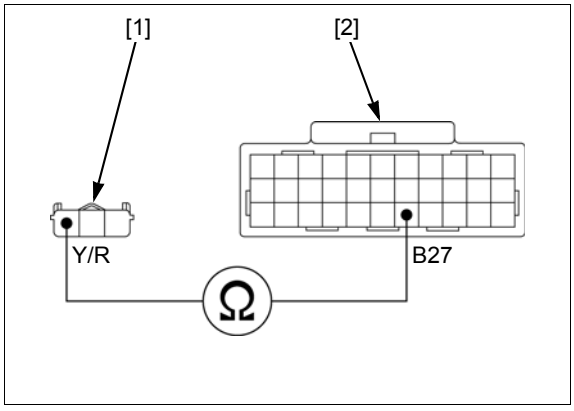
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Yellow/red – B27

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in the Yellow/red wire



4. Shift Spindle Angle Sensor Ground Line Open Circuit Inspection

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

TOOL:

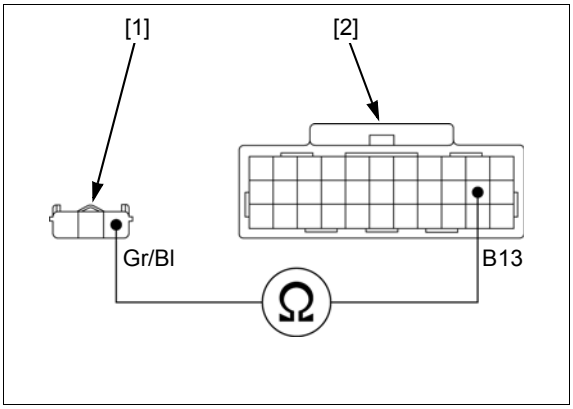
Test probe **07ZAJ-RDJA110**

Connection: Gray/black – B13

Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Green/white wire



5. Shift Spindle Angle Sensor Signal Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 3P (Blue) connector [1] and 33P (Blue) connector [2].

TOOL:

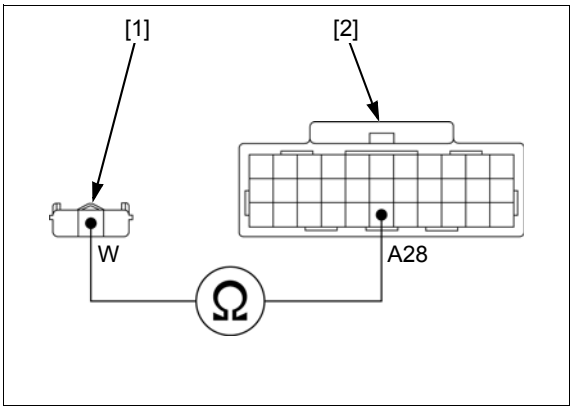
Test probe **07ZAJ-RDJA110**

Connection: White – A28

Is there continuity?

YES – GO TO STEP 6.

NO – Open circuit in the White wire



6. Shift Spindle Angle Sensor Output Line Short Circuit Inspection

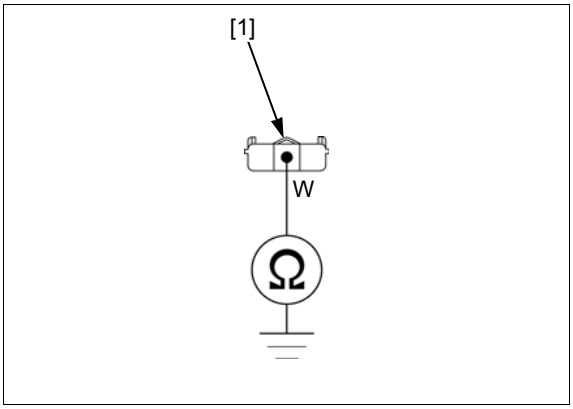
Check for continuity between the wire harness side 3P (Blue) connector [1] and ground.

Connection: White – Ground

Is there continuity?

YES – Short circuit in the White wire

NO – GO TO STEP 7.



7. Shift Spindle Angle Sensor Inspection

Replace the shift spindle angle sensor with a known good one (page 13-79).
Connect the 3P (Blue) connector, 33P (Black) connector and 33P (Blue) connector.
Check the shift spindle angle sensor with the MCS.

Is about 0 V indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Faulty original shift spindle angle sensor

DTC 21-2 (SHIFT SPINDLE ANGLE SENSOR HIGH VOLTAGE)

1. Shift Spindle Angle Sensor System Inspection

Check the shift spindle angle sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. Shift Spindle Angle Sensor Inspection

Replace the shift spindle angle sensor with a known good one (page 13-79).
Check the shift spindle angle sensor with the MCS.

Is about 5 V indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Faulty original shift spindle angle sensor

DTC 22-1 (SHIFT SPINDLE OPERATION MALFUNCTION: AFTER OPERATING GEARSHIFT MECHANISM)

1. Shift Spindle Angle Sensor System Inspection

Check the shift spindle angle sensor with the MCS.

Is Low voltage (about 0 V) or High voltage (about 5 V) indicated?

YES – • About 0 V: See DTC 21-1 (page 13-18).
• About 5 V: See DTC 21-2 (page 13-20).

NO – GO TO STEP 2.

2. Shift Control Motor/Reduction Gear Condition

Check the shift control motor and reduction gears are installed properly and are not damaged (page 13-71).

Are the shift control motor and reduction gears in normal condition?

YES – GO TO STEP 3.

NO – Install the shift control motor and reduction gears properly or replace faulty parts.

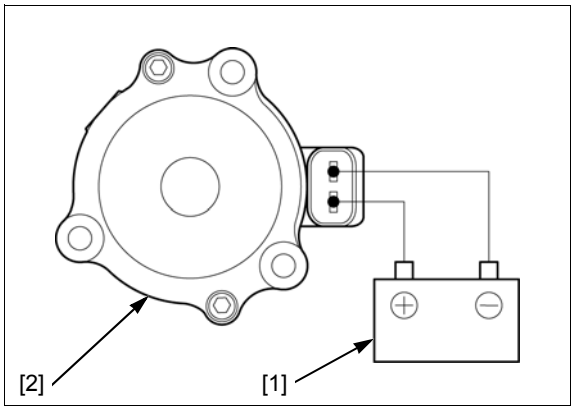
3. Shift Control Motor Inspection

Remove the shift control motor (page 13-71).
Connect a fully charged 12 V battery [1] to the shift control motor [2] 2P connector to check the motor operation.
Change the battery connection to check the reverse operation.

Does the shift control motor turn in both directions?

YES – GO TO STEP 4.

NO – Faulty shift control motor



4. Shift Spindle Angle Sensor System Inspection

Remove the shift spindle angle sensor with the connector connected (page 13-79).
Turn the ignition switch ON.
While turning the shift spindle angle sensor shaft, check the shift spindle angle sensor voltage with the MCS.

When turning the shaft clockwise:
Voltage increase
When turning the shaft counterclockwise:
Voltage decrease

Does the voltage vary properly?

YES – GO TO STEP 5.

NO – Faulty shift spindle angle sensor

5. Shift Spindle Angle Sensor Condition Inspection

Check that the shift spindle angle sensor is installed properly and is not damaged.

Is the shift spindle angle sensor in normal condition?

YES – GO TO STEP 6.

NO – Install the shift spindle angle sensor properly or replace it (page 13-79).

6. DTC Recheck

Recheck the DTC with the MCS.

Is DTC 22-1 indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Intermittent failure

DTC 23-1 (SHIFT SPINDLE OPERATION MALFUNCTION: WHILE OPERATING GEARSHIFT MECHANISM)

Refer to DTC 22-1 (page 13-20).

DTC 24-1 (SHIFT CONTROL MOTOR DRIVE CIRCUIT)

1. Shift Control Motor Line Open Circuit Inspection

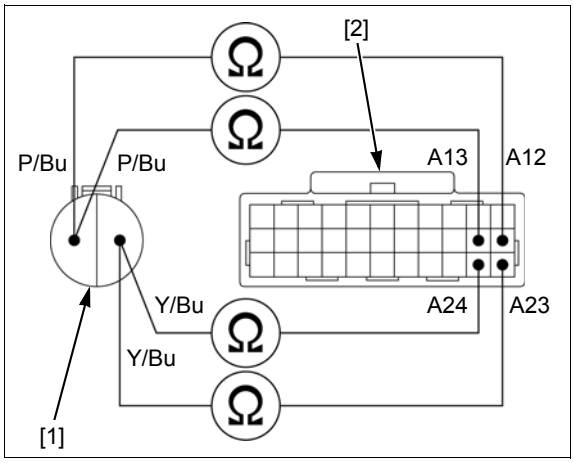
Disconnect the following:

– PCM 33P (Blue) connector (page 4-39)
– Shift control motor 2P (Black) connector (page 13-71)

Check for continuity between the wire harness side 2P (Black) connector [1] and PCM 33P (Blue) connector [2].

TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Pink/blue – A12
Pink/blue – A13
Yellow/blue – A23
Yellow/blue – A24



Is there continuity?

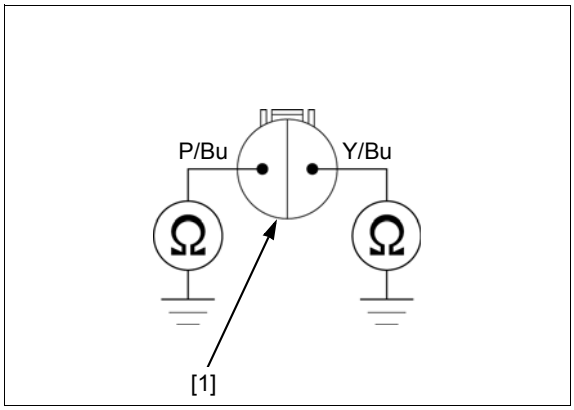
YES – GO TO STEP 2.

NO – • Open circuit in the Pink/blue wire
• Open circuit in the Yellow/blue wire

2. Shift Control Motor Line Short Circuit Inspection

Check for continuity at the wire harness side shift control motor 2P (Black) connector [1] terminals and ground.

Connection: Pink/blue – Ground
Yellow/blue – Ground



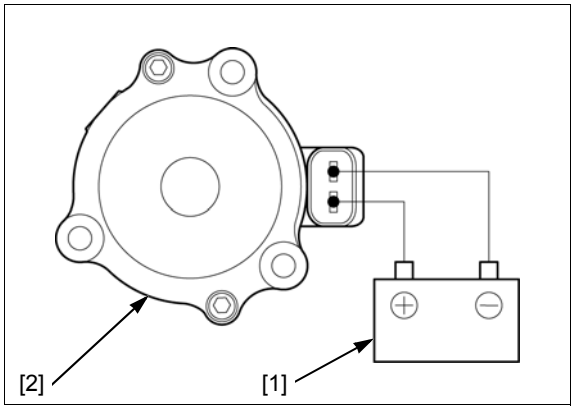
Is there continuity?

YES – • Short circuit in the Pink/blue wire
• Short circuit in the Yellow/blue wire

NO – GO TO STEP 3.

3. Shift Control Motor Inspection

Remove the shift control motor (page 13-71).
Connect a fully charged 12 V battery [1] to the shift control motor [2] 2P connector to check the motor operation.
Change the battery connection to check the reverse operation.



Does the shift control motor turn in both directions?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Faulty shift control motor

DTC 27-1 (SHIFT DRUM POSITION MALFUNCTION)

1. TR Sensor System Inspection

Check the TR sensor with the MCS.

Is Low voltage (about 0 V) or High voltage (about 5 V) indicated?

YES – • About 0 V: See DTC 51-1 (page 13-34).
• About 5 V: See DTC 51-2 (page 13-36).

NO – GO TO STEP 2.

2. Shift Control Motor/Reduction gear condition

Check the shift control motor and reduction gears are installed properly and are not damaged (page 13-71).

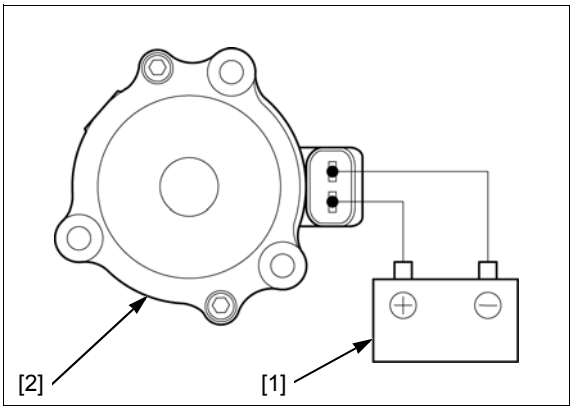
Are the shift control motor and reduction gears in normal condition?

YES – GO TO STEP 3.

NO – Install the shift control motor and reduction gears properly or replace faulty parts.

3. Shift Control Motor Inspection

Remove the shift control motor (page 13-71).
Connect a fully charged 12 V battery [1] to the shift control motor [2] 2P connector to check the motor operation.
Change the battery connection to check the reverse operation.



Does the shift control motor turn in both directions?

YES – GO TO STEP 4.

NO – Faulty shift control motor

4. TR Sensor System Inspection

Remove the TR sensor with the connector connected (page 13-79).
Turn the ignition switch ON.
While turning the TR sensor shaft, check the TR sensor voltage with the MCS.

When turning the shaft clockwise:
Voltage increase
When turning the shaft counterclockwise:
Voltage decrease

Does the voltage vary properly?

YES – GO TO STEP 5.

NO – Faulty TR sensor

5. TR Sensor Condition Inspection

Check that the TR sensor is installed properly and is not damaged.

Is the TR sensor in normal condition?

YES – GO TO STEP 6.

NO – Install the TR sensor properly or replace it (page 13-79).

6. DTC Recheck

Recheck the DTC with the MCS.

Is DTC 27-1 indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Intermittent failure

DTC 31-1 (SHIFT CONTROL MOTOR LOW VOLTAGE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the shift control motor 2P (Black) and PCM 33P (Blue) connectors, and recheck the DTC.

1. DTC Recheck

Erase the DTCs (page 13-9).
Check the DTC with the MCS.

Is DTC 32-1 or 37-1 indicated?

YES – • DTC 32-1 indicated (page 13-25).
• DTC 37-1 indicated (page 13-25).

NO – GO TO STEP 2.

2. Shift Control Motor Line Open Circuit Inspection

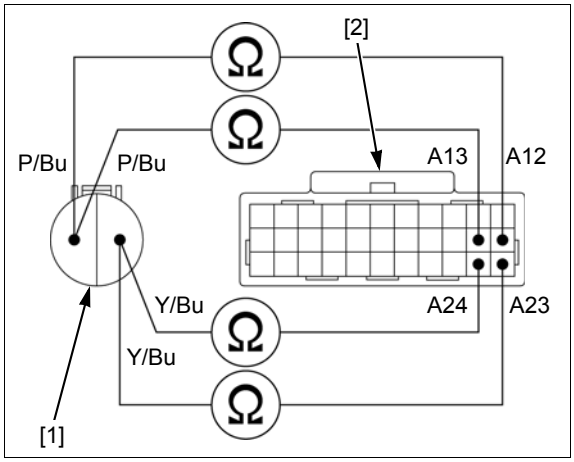
Disconnect the following:

– PCM 33P (Blue) connector (page 4-39)
– Shift control motor 2P (Black) connector (page 13-71)

Check for continuity between the wire harness side 2P (Black) connector [1] and PCM 33P (Blue) connector [2].

TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Pink/blue – A12
Pink/blue – A13
Yellow/blue – A23
Yellow/blue – A24



Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – • Open circuit in the Pink/blue wire
• Open circuit in the Yellow/blue wire

DTC 32-1 (FAIL SAFE RELAY CIRCUIT MALFUNCTION)

NOTE:

- Before starting the inspection, check for loose or poor contact on the PCM 33P (Blue) connector, and recheck the DTC.

1. **Shift Control Motor Power Supply Voltage Inspection**

   Check the shift control motor power supply voltage with the MCS.

   Is there battery voltage?

   YES – GO TO STEP 2.

   NO – • Open circuit in the Red/white wire between the PCM 33P (Blue) connector and fuse DCT M 30 A
   • Blown fuse DCT M 30 A

2. **DTC Recheck**

   Recheck the DTC with the MCS.

   Is DTC 32-1 indicated?

   YES – Replace the PCM with a known good one (page 4-39) and recheck.

   NO – Intermittent failure

DTC 37-1 (IGNITION HOLD RELAY MALFUNCTION)

NOTE:

- Before starting the inspection, check for loose or poor contact on the PCM 33P (Blue) connector, and recheck the DTC.

1. **PCM (DCT Drive Circuit) Sub Power Voltage Inspection**

   Check the PCM sub power voltage with the MCS.

   Is the battery voltage indicated?

   YES – GO TO STEP 2.

   NO – • Open circuit in the Brown/black wire between the PCM 33P (Blue) connector and fuse box
   • Blown sub fuse DCT MAIN 7.5 A

2. **DTC Recheck**

   Recheck the DTC with the MCS.

   Is DTC 37-1 indicated?

   YES – Replace the PCM with a known good one (page 4-39) and recheck.

   NO – Intermittent failure

DTC 41-1 (N-D SWITCH MALFUNCTION)

1. N-D Switch Power Input Voltage Inspection

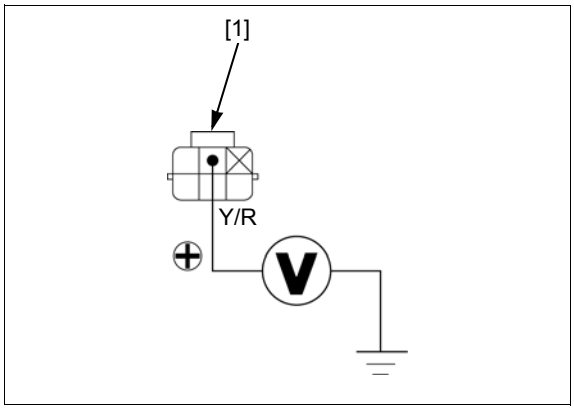
Disconnect the right handlebar switch 6P (Black) connector (page 22-24).
Turn the ignition switch ON with the engine stop switch "".
Measure the voltage between the wire harness side 6P (Black) connector [1] and ground.

Connection: Yellow/red (+) – Ground (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 3.

NO – GO TO STEP 2.



2. N-D Switch Power Input Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 6P (Black) connector [1] and 33P (Black) connector [2].

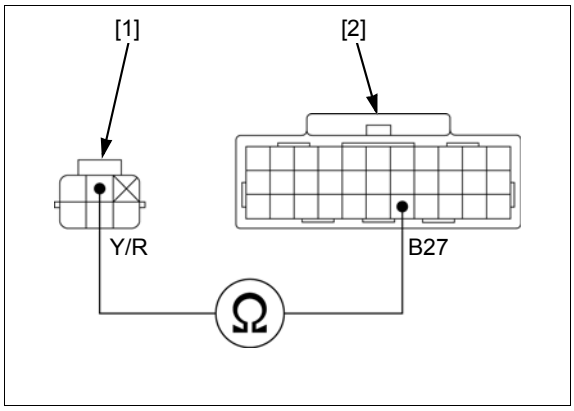
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Yellow/red – B27

Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Yellow/red wire



3. N-D Switch Inspection

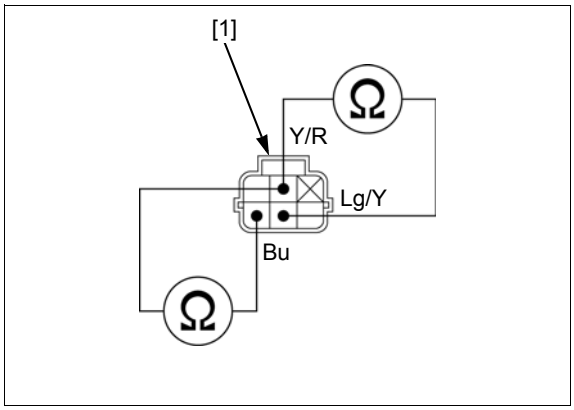
Turn the ignition switch OFF.
Check for continuity at the switch side 6P (Black) connector [1] in each switch position.

Connection:
N switch:
Light green/yellow – Yellow/red
D switch:
Blue – Yellow/red

Is there continuity with the switch pushed and no continuity with the switch released?

YES – GO TO STEP 4.

NO – Faulty N-D switch



4. N-D Switch Output Line Open Circuit Inspection

Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 6P (Black) connector [1] and 33P (Blue) connector [2].

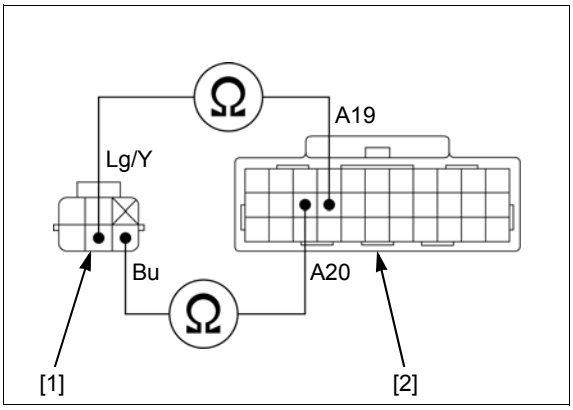
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Light green/yellow – A19
Blue – A20

Is there continuity?

YES – GO TO STEP 5.

NO – • Open circuit in the Light green/yellow wire
• Open circuit in the Blue wire



5. N-D Switch Output Line Short Circuit Inspection

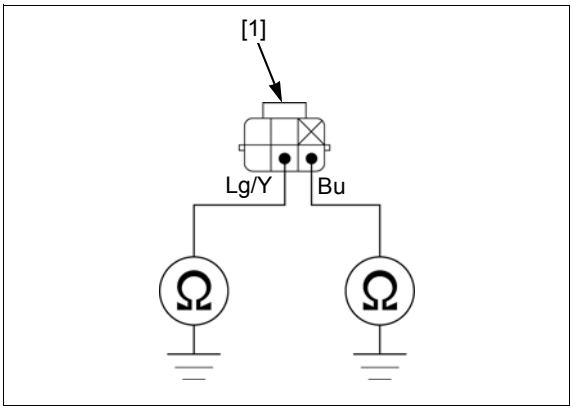
Check for continuity between the wire harness side 6P (Black) connector [1] and ground.

Connection: Light green/yellow – Ground
Blue – Ground

Is there continuity?

YES – • Short circuit in the Light green/yellow wire
• Short circuit in the Blue wire

NO – Replace the PCM with a known good one (page 4-39) and recheck.



DTC 42-1 (SHIFT SWITCH MALFUNCTION)

1. Shift Switch Power Input Voltage Inspection

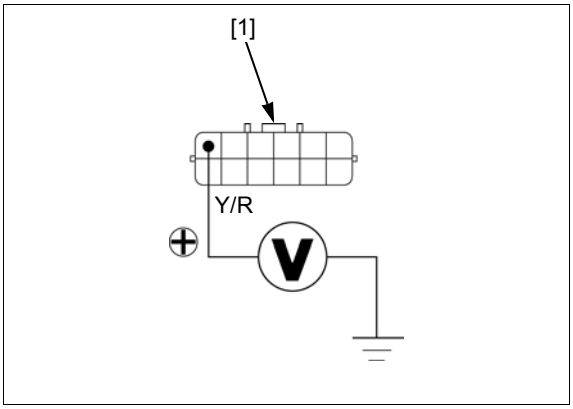
Disconnect the Left handlebar switch 12P (Black) connector (page 22-23).
Turn the ignition switch ON with the engine stop switch "".
Measure the voltage between the wire harness side 12P (Black) connector [1] and ground.

Connection: Yellow/red (+) – Ground (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 3.

NO – GO TO STEP 2.



2. Shift Switch Power Input Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 12P (Black) connector [1] and 33P (Black) connector [2].

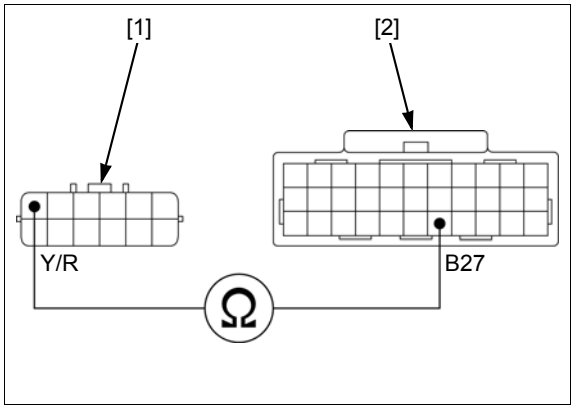
TOOL:
Test probe 07ZAJ-RDJA110

Connection: Yellow/red – B27

Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Yellow/red wire



3. Shift Switch Inspection

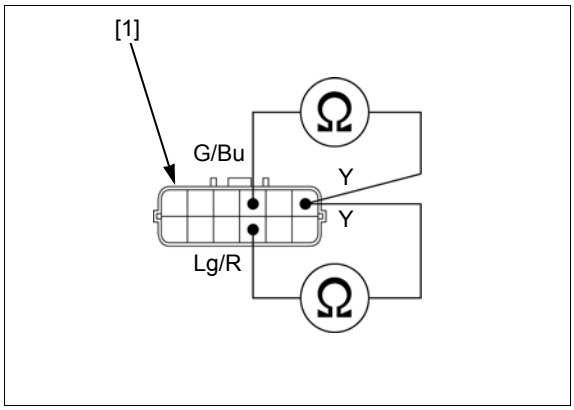
Turn the ignition switch OFF.
Check for continuity at the switch side 12P (Black) connector [1] in each switch position.

Connection:
"+" switch: Green/blue – Yellow
"–" switch: Light green/red – Yellow

Is there continuity with the switch pushed and no continuity with the switch released?

YES – GO TO STEP 4.

NO – Faulty shift switch



4. Shift Switch Input Line Open Circuit Inspection

Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 12P (Black) connector [1] and 33P (Blue) connector [2].

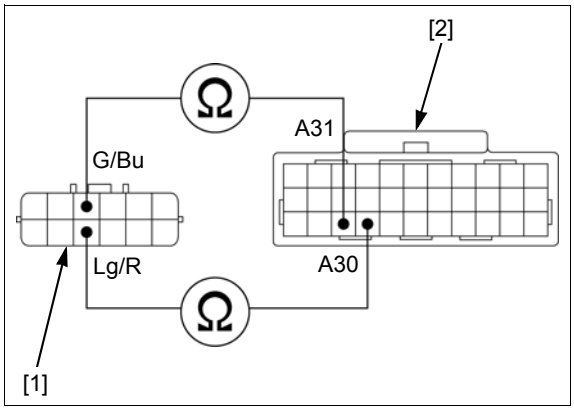
TOOL:
Test probe 07ZAJ-RDJA110

Connection: Green/blue – A31
Light green/red – A30

Is there continuity?

YES – GO TO STEP 5.

NO – • Open circuit in the Green/blue wire
• Open circuit in the Light green/red wire



5. Shift Switch Input Line Short Circuit Inspection

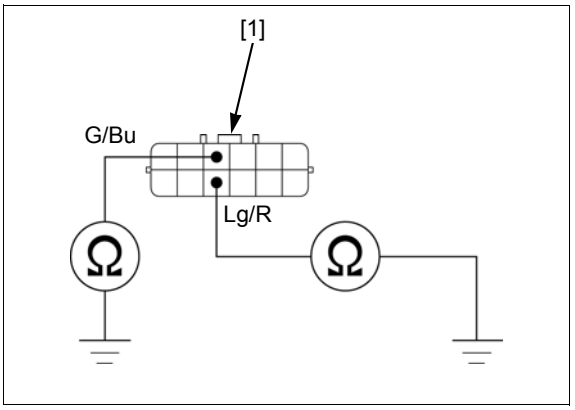
Check for continuity between the wire harness side 12P (Black) connector [1] and ground.

Connection: Green/blue – Ground
Light green/red – Ground

Is there continuity?

YES – • Short circuit in the Green/blue wire
• Short circuit in the Light green/red wire

NO – Replace the PCM with a known good one (page 4-39) and recheck.



DTC 44-1 (EOT SENSOR LOW VOLTAGE)

1. EOT Sensor System Inspection

Check the EOT sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. EOT Sensor Inspection

Turn the ignition switch OFF.
Disconnect the EOT sensor 2P (Black) connector (page 13-81).
Turn the ignition switch ON.
Check the EOT sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty EOT sensor

3. EOT Sensor Input Line Short Circuit Inspection

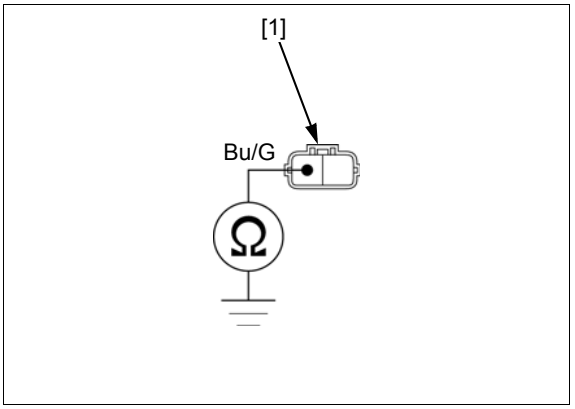
Turn the ignition switch OFF.
Disconnect the PCM 33P (Blue) connector (page 4-39).
Check the continuity between the wire harness side 2P (Black) connector [1] and ground.

Connection: Blue/green – Ground

Is there continuity?

YES – Short circuit in the Blue/green wire

NO – Replace the PCM with a known good one (page 4-39) and recheck.



DTC 44-2 (EOT SENSOR HIGH VOLTAGE)

NOTE:

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

1. EOT Sensor System Inspection

Check the EOT sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. EOT Sensor Inspection

Turn the ignition switch OFF.
Disconnect the EOT sensor 2P (Black) connector (page 13-81).
Short the wire harness side 2P (Black) connector [1] terminals with a jumper wire [2].

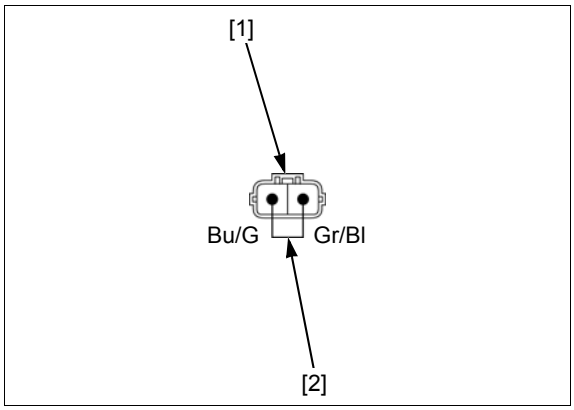
Connection: Blue/green – Gray/black

Turn the ignition switch ON.
Check the EOT sensor with the MCS.

Is about 0 V indicated?

YES – Faulty EOT sensor

NO – GO TO STEP 3.



3. EOT Sensor Input Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side EOT sensor 2P (Black) connector [1] and PCM 33P (Blue) connector [2].

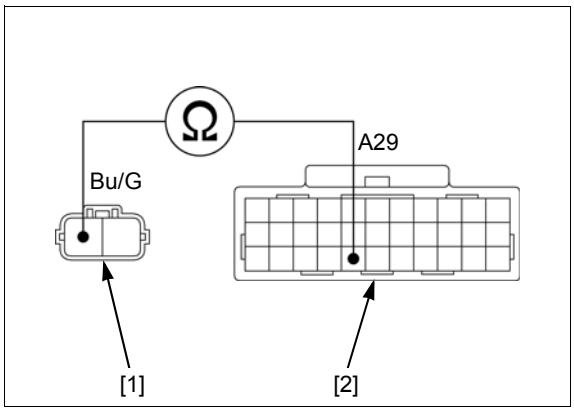
TOOL:
Test probe 07ZAJ-RDJA110

Connection: Blue/green – A29

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Blue/green wire



4. EOT Sensor Ground Line Open Circuit Inspection

Disconnect the PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 2P (Black) connector [1] and 33P (Black) connector [2].

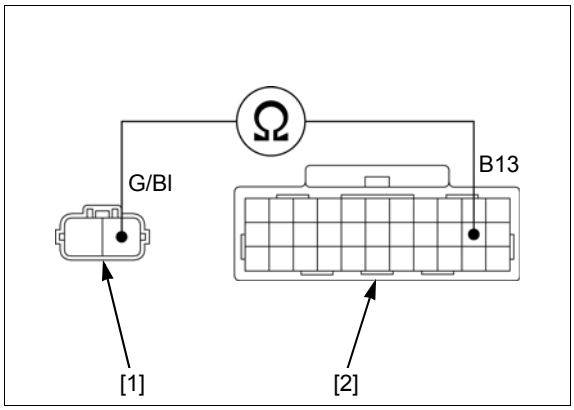
TOOL:
Test probe 07ZAJ-RDJA110

Connection: Gray/black– B13

Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Gray/black wire



DTC 47-1 or 48-1 (No.1 or No.2 CLUTCH EOP SENSOR LOW VOLTAGE)

1. Clutch EOP Sensor System Inspection

Connect the MCS and start the engine.
Check the clutch EOP sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. Clutch EOP Sensor Inspection

Stop the engine.
Disconnect the clutch EOP sensor 3P (No.1: Gray, No.2: Black) connector (page 13-80).
Turn the ignition switch ON.
Check the clutch EOP sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty clutch EOP sensor

3. Clutch EOP Sensor Input Voltage Inspection

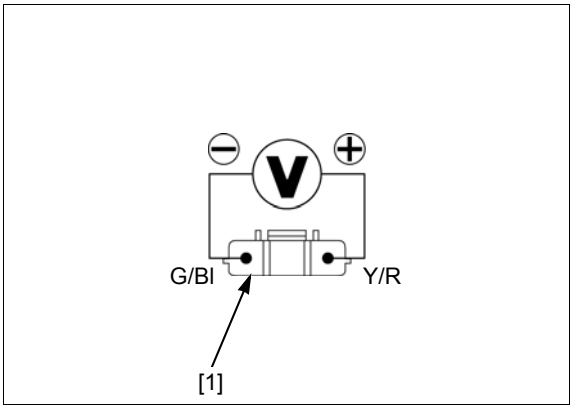
Measure the voltage between the wire harness side 3P connector [1].

Connection: Yellow/red (+) – Gray/black (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 5.

NO – GO TO STEP 4.



4. Clutch EOP Sensor Input Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 3P connector [1] and 33P (Black) connector [2].

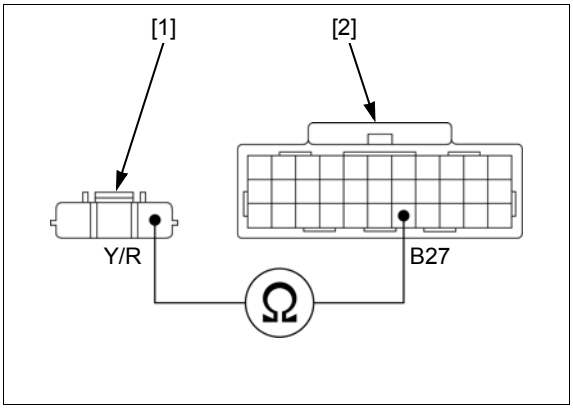
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Yellow/red – B27

Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

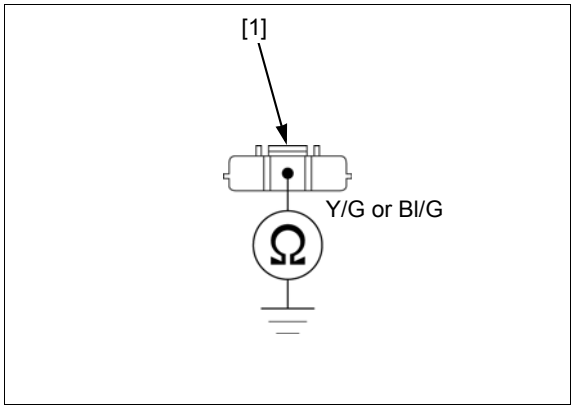
NO – Open circuit in the Yellow/red wire



5. Clutch EOP Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side sensor 3P connector [1] and ground.

Connection:
No.1 clutch EOP sensor:
Yellow/green – Ground
No.2 clutch EOP sensor:
Black/green – Ground



Is there continuity?

YES – • Short circuit in the Yellow/green wire
• Short circuit in the Black/green wire

NO – Replace the PCM with a known good one (page 4-39) and recheck.

DTC 47-2 or 48-2 (No.1 or No.2 CLUTCH EOP SENSOR HIGH VOLTAGE)

NOTE:
- Before starting the inspection, check for loose or poor contact on the clutch EOP sensor 3P (No.1: Gray, No.2: Black), and PCM 33P (Blue) and 33P (Black) connectors, and recheck the DTC.

1. Clutch EOP Sensor System Inspection

Check the clutch EOP sensor with the MCS.

Is about 5 V indicated?

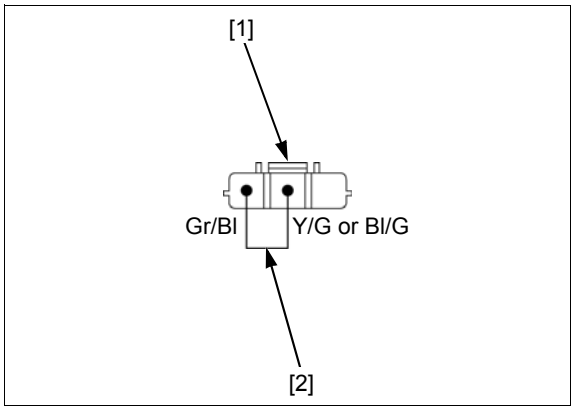
YES – GO TO STEP 2.

NO – Intermittent failure

2. Clutch EOP Sensor Inspection

Turn the ignition switch OFF.
Disconnect the clutch EOP sensor 3P connector (page 13-80).
Short the wire harness side 3P connector [1] terminals with a jumper wire [2].

Connection:
No.1 clutch EOP sensor:
Yellow/green – Gray/black
No.2 clutch EOP sensor:
Black/green – Gray/black



Turn the ignition switch ON.
Check the clutch EOP sensor with the MCS.

Is about 0 V indicated?

YES – Faulty clutch EOP sensor

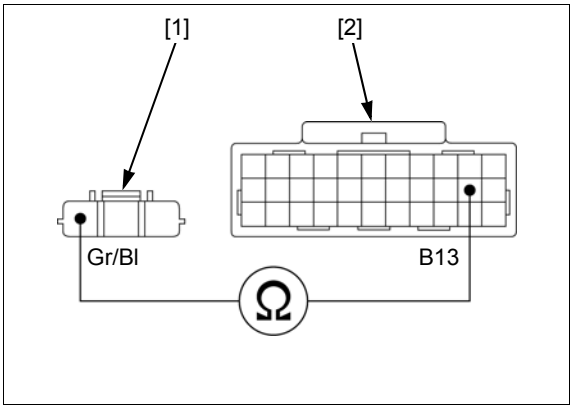
NO – GO TO STEP 3.

3. Clutch EOP Sensor Ground Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side clutch EOP sensor 3P (Gray) connector [1] and PCM 33P (Black) connector [2].

TOOL:
Test probe 07ZAJ-RDJA110

Connection: Gray/black – B13



Is there continuity?

YES – GO TO STEP 4.

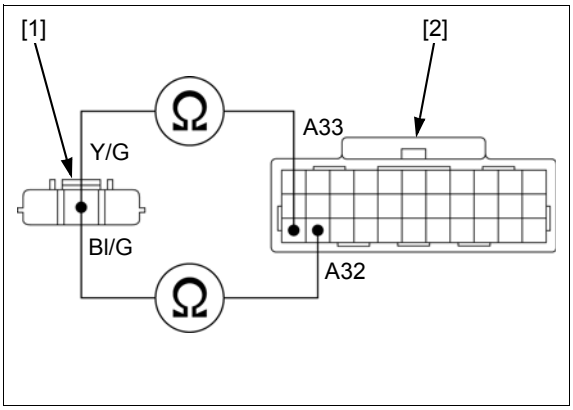
NO – Open circuit in the Gray/black wire

4. Clutch EOP Sensor Output Line Open Circuit Inspection

Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 3P connector [1] and 33P (Blue) connector [2].

TOOL:
Test probe 07ZAJ-RDJA110

Connection:
No.1 clutch EOP sensor:
Yellow/green – A33
No.2 clutch EOP sensor:
Black/green – A32



Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – • Open circuit in the Yellow/green wire
• Open circuit in the Black/green wire

DTC 49-1, 49-2 (CLUTCH LINE LOW OIL PRESSURE)

1. Clutch Line EOP Sensor System Inspection

Check the clutch line EOP sensor with the MCS.

Is Low voltage (about 0 V) or High voltage (about 5 V) indicated?

YES – • About 0 V (while engine running): See DTC 9-1 (page 13-15).
• About 5 V: See DTC 9-2 (page 13-16).

NO – GO TO STEP 2.

2. Engine Oil Level Inspection

Check the engine oil level (page 3-11).

Is the engine oil level correct?

YES – GO TO STEP 3.

NO – Add the recommended oil to the upper level.

3. Clutch Line Oil Filter Condition Inspection

Check the clutch oil filter (page 3-13).

Is the oil filter in good condition?

YES – GO TO STEP 4.

NO – Replace the clutch oil filter.

4. Clutch Line EOP Sensor Inspection

Replace the clutch line EOP sensor with a known good one (page 13-80).
Erase the DTC (page 13-9).
Test-ride the motorcycle above 2,000 min^{-1} (rpm) and stop the engine.
Check the DTC with the MCS.

Is DTC 49-1 or 49-2 indicated?

YES – GO TO STEP 5.

NO – Faulty original clutch line EOP sensor

5. PCM Inspection

Replace the PCM with a known good one (page 4-39).
Test-ride the motorcycle above 2,000 min^{-1} (rpm) and stop the engine.
Check the DTC with the MCS.

Is DTC 49-1 or 49-2 indicated?

YES –
- Oil pressure relief valve stuck open
- Damaged oil pump
- Internal oil leak in the clutch oil line

NO – Faulty original PCM

DTC 51-1 (TR SENSOR LOW VOLTAGE)

NOTE:
- Before starting the inspection, check for loose or poor contact on the TR sensor 3P (Black), PCM 33P (Blue) and 33P (Black) connectors, and recheck the DTC.

1. TR Sensor System Inspection

Check the TR sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. TR Sensor Input Voltage Inspection

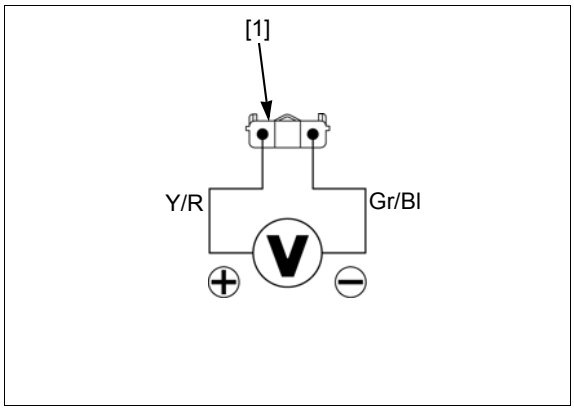
Turn the ignition switch OFF.
Disconnect the TR sensor 3P (Black) connector (page 13-79).
Turn the ignition switch ON.
Measure the voltage at the wire harness side 3P (Black) connector [1].

Connection: Yellow/red (+) – Gray/black (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 5.

NO – GO TO STEP 3.



3. TR Sensor Input Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 33P (Black) connector [2].

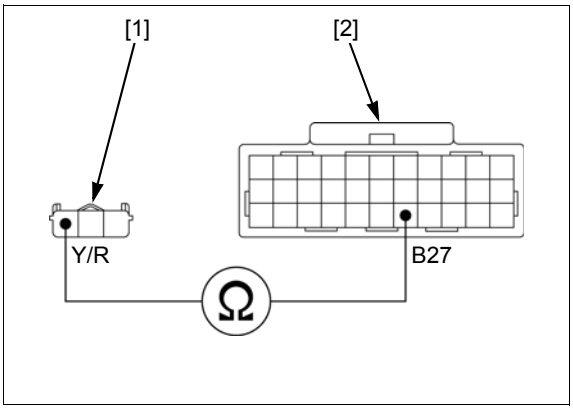
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Yellow/red – B27

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Yellow/red wire



4. TR Sensor Ground Line Open Circuit Inspection

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

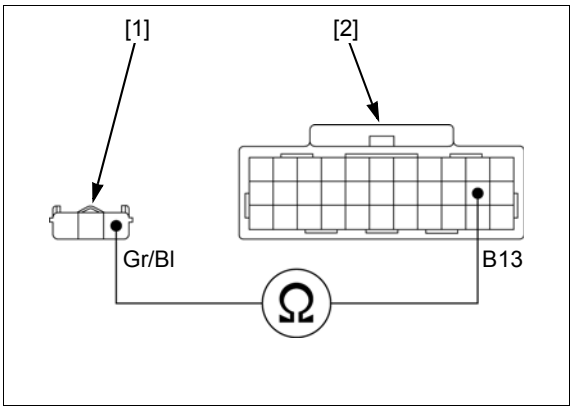
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Gray/black – B13

Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Gray/black wire



5. TR Sensor Signal Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 33P (Blue) connector [2].

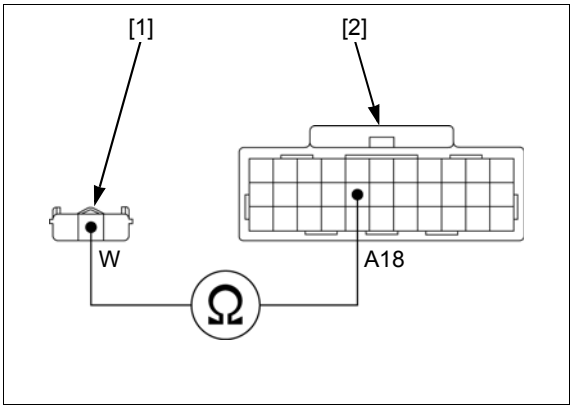
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: White – A18

Is there continuity?

YES – GO TO STEP 6.

NO – Open circuit in the White wire



6. TR Sensor Output Line Short Circuit Inspection

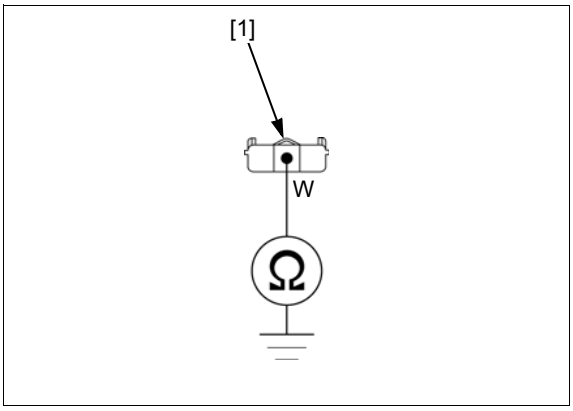
Check for continuity between the wire harness side 3P (Black) connector [1] and ground.

Connection: White – Ground

Is there continuity?

YES – Short circuit in the White wire

NO – GO TO STEP 7.



7. TR Sensor Inspection

Replace the TR sensor with a known good one (page 13-79).
Connect the 3P (Black) connector, 33P (Black) connector and 33P (Blue) connector.
Check the TR sensor with the MCS.

Is about 0 V indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Faulty original TR sensor

DTC 51-2 (TR SENSOR HIGH VOLTAGE)

1. TR Sensor System Inspection

Check the TR sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. TR Sensor Inspection

Replace the TR sensor with a known good one (page 13-79).
Turn the ignition switch ON.
Check the TR sensor with the MCS.

Is about 5 V indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Faulty original TR sensor

DTC 52-1 (NEUTRAL SWITCH STUCK OFF)

NOTE:

- Before starting the inspection, check for loose or poor contact on the neutral switch terminal and PCM 33P (Black) connector, and recheck the DTC.

1. DTC Recheck

Recheck the DTC with the MCS.

Is DTC 52-1 indicated?

YES – GO TO STEP 2.

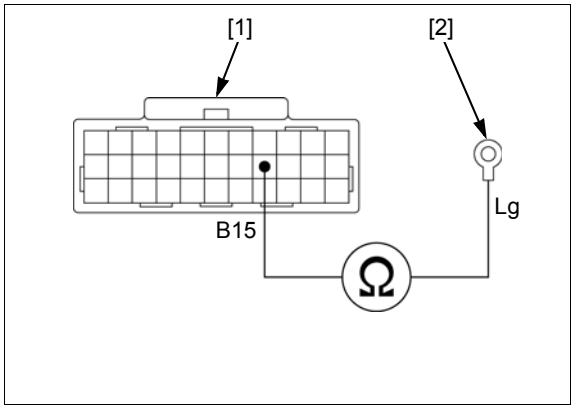
NO – Intermittent failure

2. Neutral Switch Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Black) connector (page 4-39).
Remove the neutral switch connector (page 13-82).
Check for continuity between the wire harness side 33P (Black) connector [1] and neutral switch terminal [2].

Connection: B15 – Light green

TOOL:
Test probe **07ZAJ-RDJA110**



Is there continuity?

YES – GO TO STEP 3.

NO – Open circuit in the Light green wire

3. Neutral Switch Inspection

Replace the neutral switch with a known good one (page 13-82).
Connect the PCM 33P (Black) connector.
Turn the ignition switch ON.
Recheck the DTC with the MCS.

Is DTC 52-1 indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Faulty original neutral switch

DTC 52-2 (NEUTRAL SWITCH STUCK ON)

1. Neutral Switch Line Short Circuit Inspection

Remove the neutral switch terminal (page 13-82).
Check for continuity between the neutral switch terminal and ground.

Connection: Light green – Ground

Is there continuity?

YES – Short circuit in the Light green wire

NO – GO TO STEP 2.

2. Neutral Switch Inspection

Replace the neutral switch with a known good one (page 13-82).
Install the neutral switch terminal (page 13-82).
Check the DTC with the MCS.

Is DTC 52-2 indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Faulty original neutral switch

DTC 53-1 (INNER MAINSHAFT SENSOR SPEED LOW)

NOTE:

- Before starting the inspection, check for loose or poor contact on the inner mainshaft sensor 3P (Black), PCM 33P (Blue) and 33P (Black) connectors, and recheck the DTC.

1. DTC Recheck

Erase the DTC (page 13-9).
Test-ride the motorcycle and stop the engine.
Check the DTC with the MCS.

Is DTC 53-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. Inner Mainshaft Sensor Input Voltage Inspection

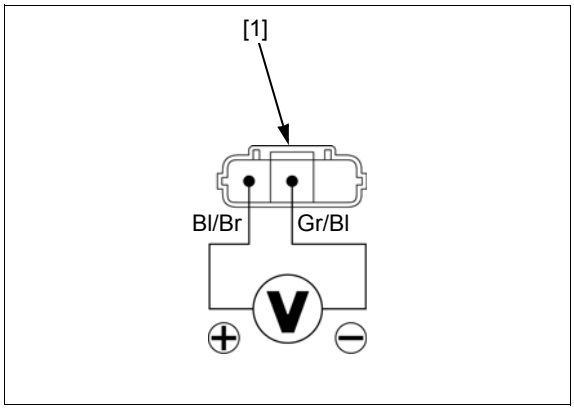
Turn the ignition switch OFF.
Disconnect the inner mainshaft sensor 3P (Black) connector (page 13-78).
Turn the ignition switch ON.
Measure the voltage at the wire harness side 3P (Black) connector [1].

Connection: Black/brown(+) – Gray/black (–)

Is there about battery voltage?

YES – GO TO STEP 5.

NO – GO TO STEP 3.



3. Inner Mainshaft Sensor Input Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 3P (Blue) connector [1] and 33P (Blue) connector [2].

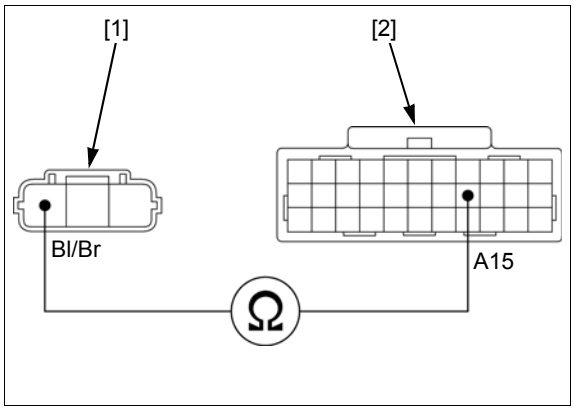
TOOL:
Test probe 07ZAJ-RDJA110

Connection: Black/brown – A15

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Black/brown wire



4. Inner Mainshaft Sensor Ground Line Open Circuit Inspection

Disconnect the PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 33P (Black) connector [2].

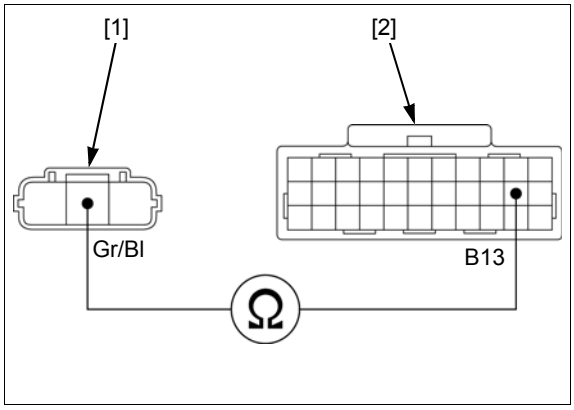
TOOL:
Test probe 07ZAJ-RDJA110

Connection: Gray/black – B13

Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Gray/black wire



5. Inner Mainshaft Sensor Output Line Inspection

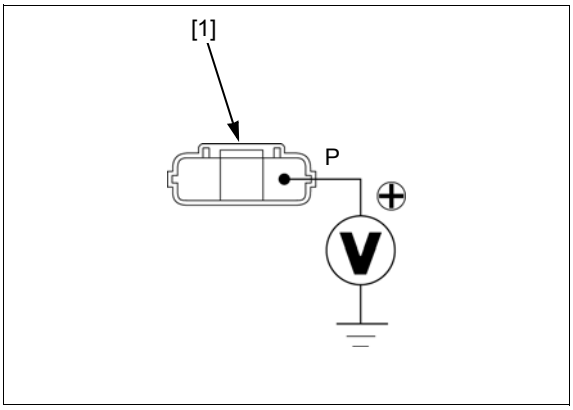
Measure the voltage between the wire harness side 3P (Black) connector [1] and ground.

Connection: Pink (+) – Ground (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 8.

NO – GO TO STEP 6.



6. Inner Mainshaft Sensor Output Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 3P (Blue) connector [2].

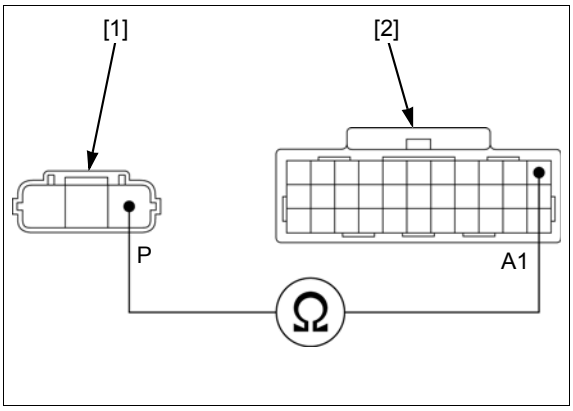
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Pink – A1

Is there continuity?

YES – GO TO STEP 7.

NO – Open circuit in the Pink wire



7. Inner Mainshaft Sensor Output Line Short Circuit Inspection

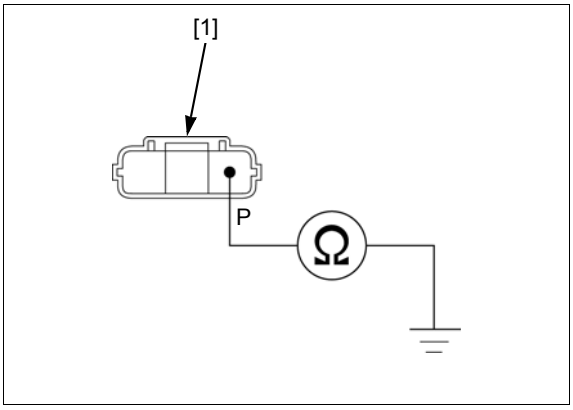
Check for continuity between the wire harness side 3P (Black) connector [1] and ground.

Connection: Pink – Ground

Is there continuity?

YES – Short circuit in the Pink wire

NO – Replace the PCM with a known good one (page 4-39) and recheck.



8. Inner Mainshaft Sensor Inspection

Turn the ignition switch OFF.
Replace the inner mainshaft sensor with a known good one (page 13-78).
Erase the DTC (page 13-9).
Test-ride the motorcycle and stop the engine.
Check the DTC with the MCS.

Is DTC 53-1 indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Faulty original inner mainshaft sensor

DTC 54-1 (OUTER MAINSHAFT SENSOR SPEED LOW)

NOTE:

- Before starting the inspection, check for loose or poor contact on the outer mainshaft sensor 3P (Black), PCM 33P (Blue) and 33P (Black) connectors, and recheck the DTC.

1. DTC Recheck

Erase the DTC (page 13-9).
Test-ride the motorcycle and stop the engine.
Check the DTC with the MCS.

Is DTC 54-1 indicated?

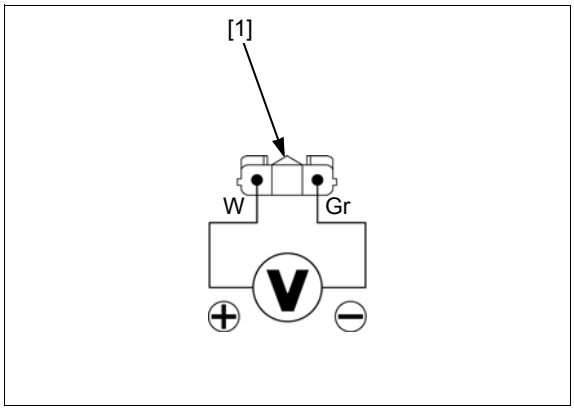
YES – GO TO STEP 2.

NO – Intermittent failure

2. Outer Mainshaft Sensor Input Voltage Inspection

Turn the ignition switch OFF.
Disconnect the outer mainshaft sensor 3P (Black) connector (page 13-78).
Temporarily install the removed electrical parts in the reverse order of removal.
Turn the ignition switch ON.
Measure the voltage at the wire harness side 3P (Black) connector [1].

Connection: White (+) – Gray (–)



Is there about battery voltage?

YES – GO TO STEP 5.

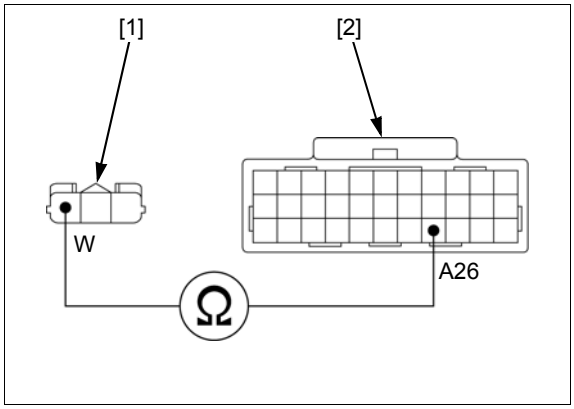
NO – GO TO STEP 3.

3. Outer Mainshaft Sensor Input Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 33P (Blue) connector [2].

TOOL:
Test probe **07ZAJ-RDJA110**

Connection: White – A26



Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the White wire

4. Outer Mainshaft Sensor Ground Line Open Circuit Inspection

Disconnect the PCM 33P (Black) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 33P (Black) connector [2]

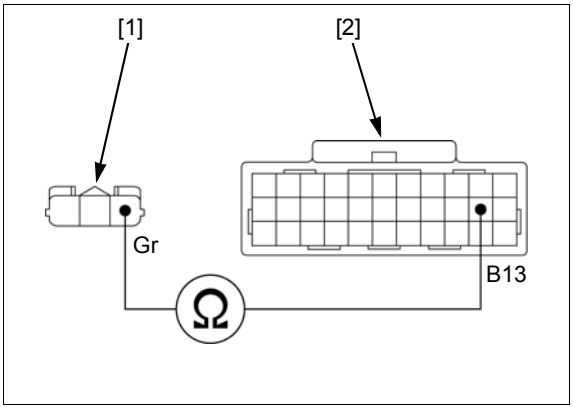
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Gray – B13

Is there continuity?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Open circuit in the Gray wire



5. Outer Mainshaft Sensor Output Line Inspection

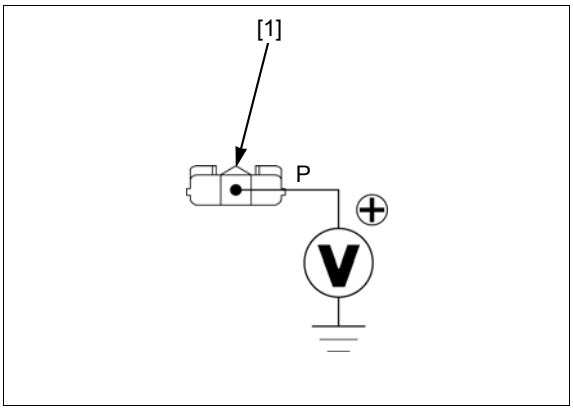
Measure the voltage between the wire harness side 3P (Black) connector [1] and ground.

Connection: Pink (+) – Ground (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 8.

NO – GO TO STEP 6.



6. Outer Mainshaft Sensor Output Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 3P (Black) connector [1] and 33P (Blue) connector [2].

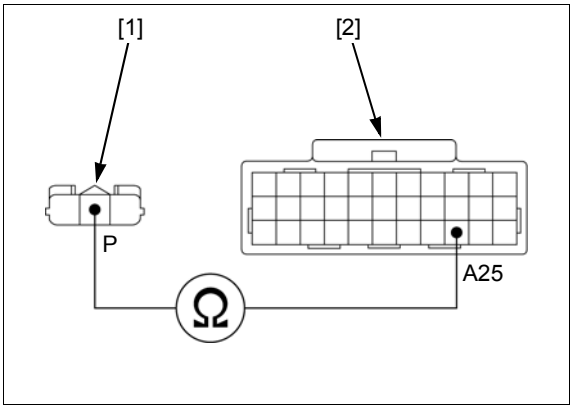
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Pink – A25

Is there continuity?

YES – GO TO STEP 7.

NO – Open circuit in the Pink wire



7. Outer Mainshaft Sensor Output Line Short Circuit Inspection

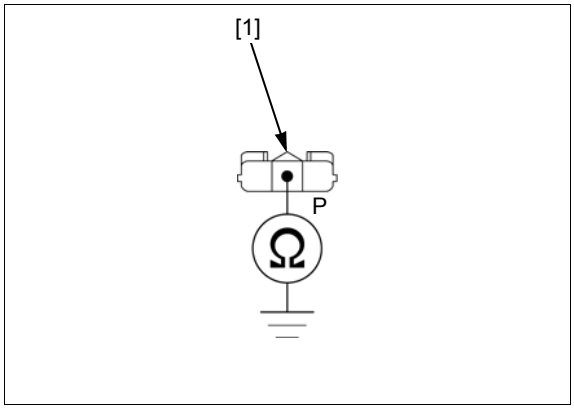
Check for continuity between the wire harness side 3P (Black) connector [1] and ground

Connection: Pink – Ground

Is there continuity?

YES – Short circuit in the Pink wire

NO – Replace the PCM with a known good one (page 4-39) and recheck.



8. Outer Mainshaft Sensor Condition Inspection

Turn the ignition switch OFF.
Replace the outer mainshaft sensor with a known good one (page 13-78).
Erase the DTC (page 13-9).
Test-ride the motorcycle and stop the engine.
Check the DTC with the MCS.

Is DTC 54-1 indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Faulty original outer mainshaft sensor

DTC 55-1, 55-2 (No.1 LINEAR SOLENOID VALVE)

NOTE:

- Before starting the inspection, check for loose or poor contact on the linear solenoid valve 4P (Black) and PCM 33P (Blue) connectors, and recheck the DTC.

1. DTC Recheck

Recheck the DTC with the MCS.

Is DTC 55-1 or 55-2 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. No.1 Linear Solenoid Valve Inspection

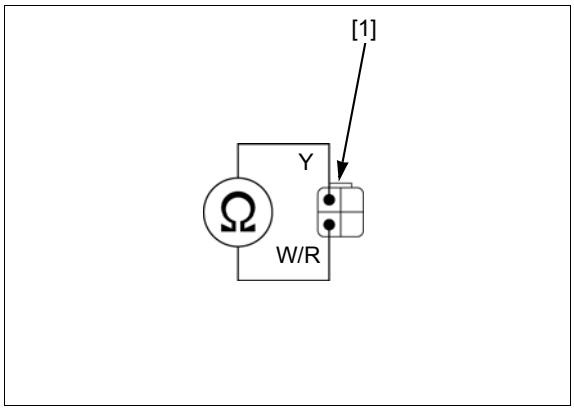
Turn the ignition switch OFF.
Disconnect the linear solenoid valve 4P (black) connector (page 13-60).
Measure the resistance at the linear solenoid valve side 4P (black) connector [1].

Connection: Yellow – White/red

Is the resistance within* 5.0 – 5.6 Ω (20°C/68°F)*?

YES – GO TO STEP 3.

NO – Faulty linear solenoid valve



3. No.1 Linear Solenoid Valve Line Open Circuit Inspection

Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 4P (black) connector [1] and 33P (Blue) connector [2].

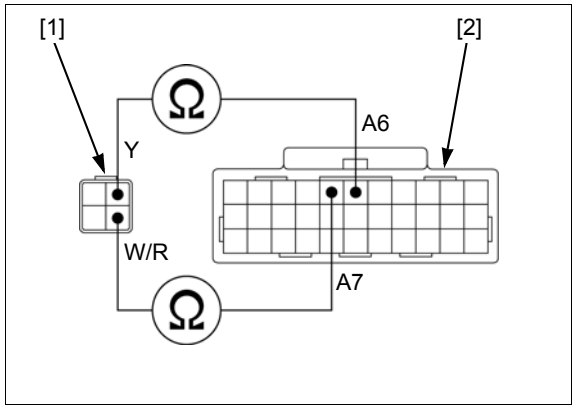
TOOL:
Test probe 07ZAJ-RDJA110

Connection: Yellow – A6
White/red – A7

Is the continuity normal?

YES – GO TO STEP 4.

NO –
- Open circuit in the Yellow wire
- Open circuit in the White/red wire



4. No.1 Linear Solenoid Valve Line Short Circuit Inspection

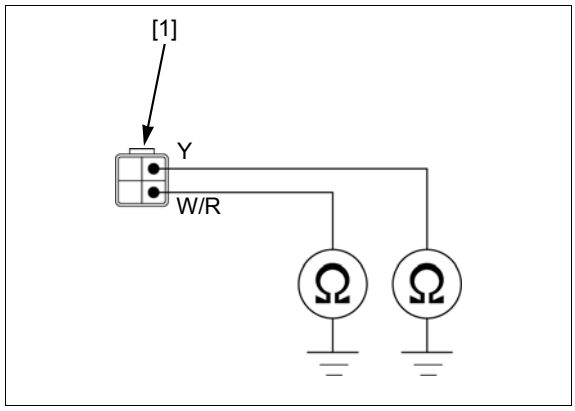
Check for continuity between the wire harness side 4P (black) connector [1] and ground.

Connection: Yellow – Ground
White/red – Ground

Is there continuity?

YES –
- Short circuit in the Yellow wire
- Short circuit in the White/red wire

NO – Replace the PCM with a known good one (page 4-39) and recheck.



DTC 56-1, 56-2 (No.2 LINEAR SOLENOID VALVE)

NOTE:
- Before starting the inspection, check for loose or poor contact on the linear solenoid valve 4P (Black) and PCM 33P (Blue) connectors, and recheck the DTC.

1. DTC Recheck

Recheck the DTC with the MCS.

Is DTC 56-1 or 56-2 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. No.2 Linear Solenoid Valve Inspection

Turn the ignition switch OFF.
Disconnect the linear solenoid valve 4P (black) connector (page 13-60).
Measure the resistance at the linear solenoid valve side 4P (black) connector [1].

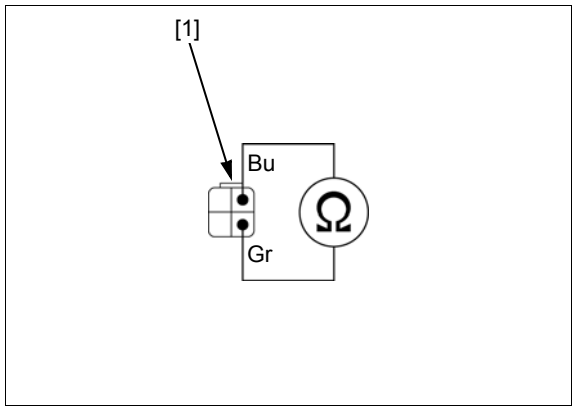
Connection: Blue – Gray

Standard: 5.0 – 5.6 Ω (20°C/68°F)

Is the resistance within* 5.0 – 5.6 Ω (20°C/68°F)*?

YES – GO TO STEP 3.

NO – Faulty linear solenoid valve



3. No.2 Linear Solenoid Valve Input/ground Line Open Circuit Inspection

Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side 4P (black) connector [1] and 33P (Blue) connector [2].

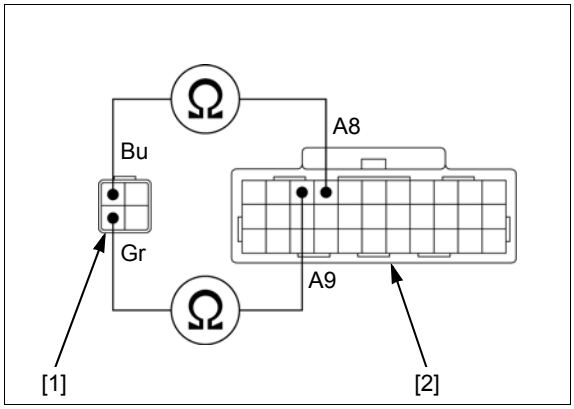
TOOL:
Test probe **07ZAJ-RDJA110**

Connection: Blue – A8
Gray – A9

Is the continuity normal?

YES – GO TO STEP 4.

NO – • Open circuit in the Blue wire
• Open circuit in the Gray wire



4. No.2 Linear Solenoid Valve Input/ground Line Short Circuit Inspection

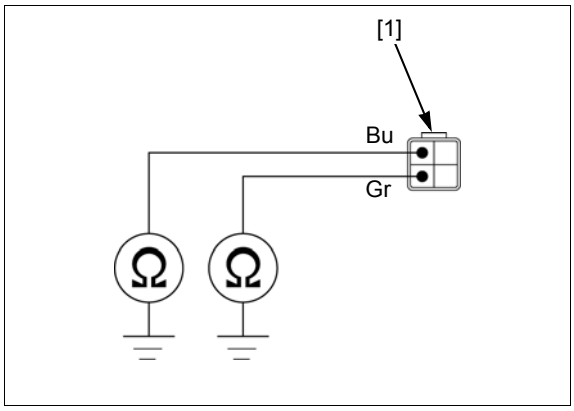
Check for continuity between the wire harness side 4P (black) connector [1] and ground.

Connection: Blue – Ground
Gray – Ground

Is there continuity?

YES – • Short circuit in the Blue wire
• Short circuit in the Gray wire

NO – Replace the PCM with a known good one (page 4-39) and recheck.



DTC 57-1 (GEARSHIFT MECHANISM MALFUNCTION)

Refer to DTC 27-1 (page 13-23).

DTC 57-2 (GEAR POSITION MALFUNCTION; JUMPS OUT OF GEAR)

Refer to DTC 27-1 (page 13-23).

DTC 58-1 or DTC 59-1 (No.1 or No.2 CLUTCH DOES NOT DISENGAGE; WHEN SHIFTING GEAR)

1. Clutch Condition Inspection

Remove the dual clutch assembly and inspect the clutch for sticking (page 13-63).

Is the No.1 clutch stuck?

YES – Faulty clutch

NO – GO TO STEP 2.

2. Clutch Oil Line Inspection

Check the clutch oil passages in the right crankcase cover and mainshaft for clogging.

Is the oil passage clogged?

YES – Clean the oil passage.

NO – Replace the PCM with a known good one (page 4-39) and recheck.

DTC 61-1, 61-2, 61-3, 61-4, 62-1, 62-2 (No.1 CLUTCH OIL PRESSURE MALFUNCTION)

1. DTC Recheck

Recheck the DTC with the MCS.

Is DTC 47-1, 47-2, 55-1 or 55-2 indicated?

YES – • DTC 47-1 is indicated (page 13-31).
• DTC 47-2 is indicated (page 13-32).
• DTC 55-1 is indicated (page 13-42).
• DTC 55-2 is indicated (page 13-42).

NO – GO TO STEP 2.

2. No.1 Clutch EOP Sensor Inspection

Replace the No.1 clutch EOP sensor with a known good one (page 13-80).
Erase the DTC (page 13-9).
Test-ride the motorcycle and stop the engine.
Check the DTC with the MCS.

Is DTC 61-1, 61-2, 61-3, 61-4, 62-1 or 62-2 indicated?

YES – GO TO STEP 3.

NO – Faulty original No.1 clutch EOP sensor

3. PCM Inspection

Replace the PCM with a known good one (page 4-39).
Test-ride the motorcycle and stop the engine.
Check the No.1 clutch EOP sensor with the MCS.

Is DTC 61-1, 61-2, 61-3, 61-4, 62-1 or 62-2 indicated?

YES – • Faulty No.1 linear solenoid valve
• Clogged No.1 clutch oil line
• Internal oil leak in the No.1 clutch oil line

NO – Faulty original PCM

DTC 63-1, 63-2, 63-3, 63-4, 64-1, 64-2 (No.2 CLUTCH OIL PRESSURE MALFUNCTION)

1. DTC Recheck

Recheck the DTC with the MCS.

Is DTC 48-1, 48-2, 56-1 or 56-2 indicated?

YES – • DTC 48-1 is indicated (page 13-31).
• DTC 48-2 is indicated (page 13-32).
• DTC 56-1 is indicated (page 13-43).
• DTC 56-2 is indicated (page 13-43).

NO – GO TO STEP 2.

2. No.2 Clutch EOP Sensor Inspection

Replace the No.2 clutch EOP sensor with a known good one (page 13-80).
Erase the DTC (page 13-9).
Test-ride the motorcycle and stop the engine.
Check the DTC with the MCS.

Is DTC 63-1, 63-2, 63-3, 63-4, 64-1 or 64-2 indicated?

YES – GO TO STEP 3.

NO – Faulty original No.2 clutch EOP sensor

3. PCM Inspection

Replace the PCM with a known good one (page 4-39).
Test-ride the motorcycle and stop the engine.
Check the No.2 clutch EOP sensor with the MCS.

Is DTC 63-1, 63-2, 63-3, 63-4, 64-1 or 64-2 indicated?

YES –
- Faulty No.2 linear solenoid valve
- Clogged No.2 clutch oil line
- Internal oil leak in the No.2 clutch oil line

NO – Faulty original PCM

DTC 65-1 (FRONT AND REAR WHEEL SPEED SIGNAL MALFUNCTION)

NOTE:
- Before starting the inspection, check that the tire sizes are correct, and the drive and driven sprockets are the specified ones.

1. DTC Recheck

Erase the DTC (page 13-9).
Test-ride the motorcycle above 20 km/h (12 mph) for more than 20 seconds.
Stop the engine.
Check the DTC with the MCS.

Is DTC 11-1 or 67-1 indicated?

YES –
- DTC 11-1 is indicated (page 4-21).
- DTC 67-1 is indicated (page 4-35).

NO – GO TO STEP 2.

2. Front Wheel Speed Sensor Condition Inspection

Inspect the area around the front wheel speed sensor.
Check that there is no iron or other magnetic deposits between the pulser ring and wheel speed sensor, and check 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.

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. VS Sensor Condition Inspection

Remove the VS sensor (page 4-42).
Check the VS sensor for damage or contaminated.

Is the VS sensor in good condition?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

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

DTC 68-1 (No.1 CLUTCH OPERATION MALFUNCTION; CLUTCH SLIPS)

1. DTC Recheck

Erase the DTC (page 13-9).
Test-ride the motorcycle above 20 km/h (12 mph) for more than 20 seconds.
Stop the engine.
Check the DTC with the MCS.

Is DTC 11-1 indicated?

YES – Refer to DTC 11-1 troubleshooting (page 4-21).

NO – GO TO STEP 2.

2. Clutch Condition Inspection

Disassemble and check the No.1 clutch assembly (page 13-63).

Is the No.1 clutch in good condition?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Replace the faulty part.

DTC 69-1 (No.2 CLUTCH OPERATION MALFUNCTION; CLUTCH SLIPS)

1. DTC Recheck

Erase the DTC (page 13-9).
Test-ride the motorcycle above 20 km/h (12 mph) for more than 20 seconds.
Stop the engine.
Check the DTC with the MCS.

Is DTC 11-1 indicated?

YES – Refer to DTC 11-1 troubleshooting (page 4-21).

NO – GO TO STEP 2.

2. Clutch Condition Inspection

Disassemble and check the No.2 clutch assembly (page 13-63).

Is the No.2 clutch in good condition?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Replace the faulty part.

DTC 71-1, 72-1 (INNER, OUTER MAINSHAFT/COUNTERSHAFT SPEED RATIO FAILURE)

1. DTC Recheck 1

Check the DTC with the MCS.

Is DTC 53-1, 54-1 or 66-1 indicated?

YES – • DTC 53-1 is indicated (page 13-37).
• DTC 54-1 is indicated (page 13-40).
• DTC 11-1 is indicated (page 4-21).

NO – GO TO STEP 2.

2. DTC Recheck 2

Erase the DTC (page 13-9).
Test-ride the motorcycle above 20 km/h (12 mph) for more than 20 seconds.
Stop the engine.
Check the DTC with the MCS.

Is DTC 71-1 or 72-1 indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Intermittent failure

DTC 84-1 (CPU IN THE PCM MALFUNCTION)

1. DTC Recheck

Erase the DTC (page 13-9).
Check the DTC with the MCS.

Is DTC 84-1 indicated?

YES – Replace the PCM with a known good one (page 4-39) and recheck.

NO – Intermittent failure

MODE/SHIFT INDICATOR CIRCUIT TROUBLESHOOTING

If the mode indicator does not operate, check that the combination meter shows following when the ignition switch is turned ON with the engine stop switch "".

– MIL, engine oil pressure, engine coolant temperature, and torque control indicator stay on
– HISS, torque control OFF, S/D/G indicator do not come on
– Current/average fuel mileage displays "– –.–" (when running the engine)
– Remaining fuel displays " –.–"
– Available driving distance displays " – –"
– Shift indicator "–" is blinking
– Torque control level and engine coolant temperature gauge displays blinking

If so, check the TXD line (page 22-14).

If not so, replace the combination meter.

A/M SWITCH TROUBLESHOOTING

If the engine can be started but AT/MT mode cannot be changed, perform this troubleshooting.

NOTE:

- Before starting the inspection, check for loose or poor contact on the right handlebar switch and PCM 33P connectors, and recheck the A/M switch operation.
- If the PCM is replaced, perform the Clutch Initialize Learning Procedure (page 13-82).

1. A/M switch Power Input Voltage Inspection

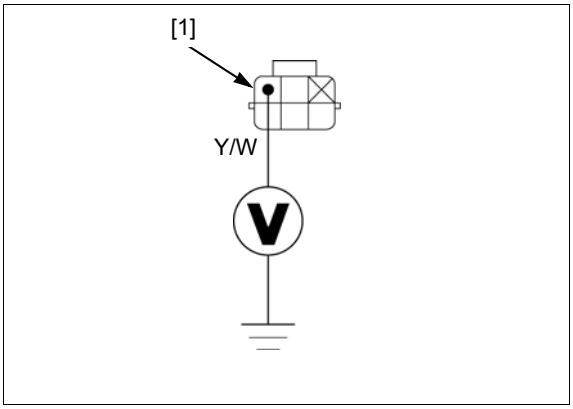
Disconnect the right handlebar switch 6P (Black) connector (page 22-24).
Turn the ignition switch ON with the engine stop switch "".
Measure the voltage between the wire harness side 6P (Black) connector [1] and ground.

Connection: Yellow/white (+) – Ground (–)

Is there battery voltage?

YES – GO TO STEP 2.

NO – Open circuit in the Yellow/white wire between the right handlebar switch connector and fuse box (ENG STOP 7.5 A)



2. A/M switch Inspection

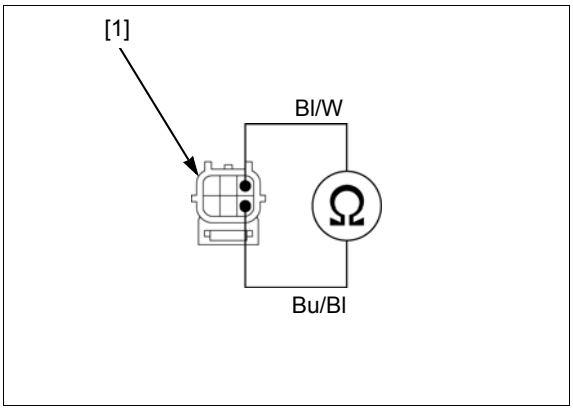
Turn the ignition switch OFF.
Check for continuity at the switch side right handlebar switch 6P (Black) connector [1] in each switch position.

Connection: Black/white – Blue/black

Is there continuity with the switch pushed and no continuity with the switch released?

YES – GO TO STEP 3.

NO – Faulty A/M switch



3. A/M switch Input Line Open Circuit Inspection

Disconnect the PCM 33P (Blue) connector (page 4-39).
Check for continuity between the wire harness side right handlebar switch 6P (Black) connector [1] and PCM 33P (Blue) connector [2].

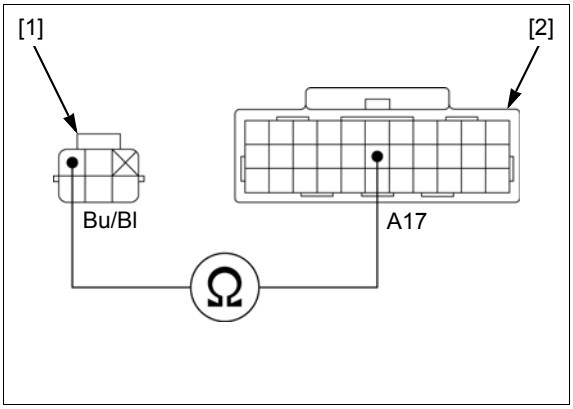
Connection: Blue/black – A17

TOOL:
Test probe **07ZAJ-RDJA110**

Is there continuity?

YES – Replace the PCM (page 4-39) with a known good one and recheck.

NO – Open circuit in the White/yellow wire

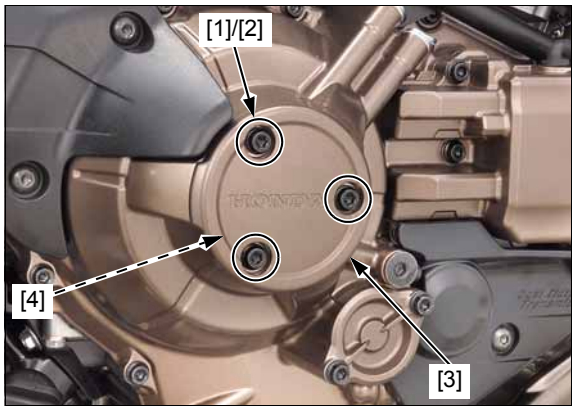


CLUTCH OIL FEED PIPE

REMOVAL

Remove the following:

– Bolts [1]
– Sealing washers [2]
– Feed pipe cover [3]
– O-ring [4]



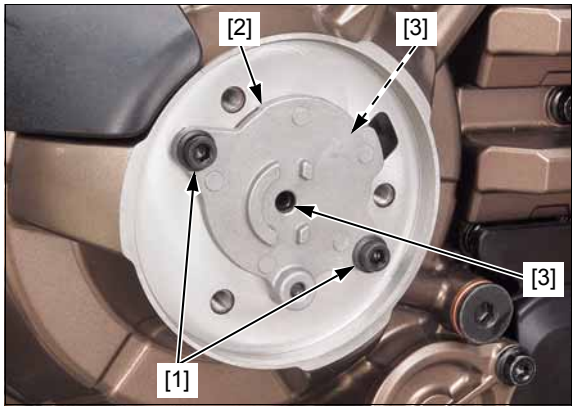
– Inner clutch oil feed pipe [1]

NOTE:

• Be careful not to bend or damage the inner clutch oil feed pipe.



– Bolts [1]
– Feed pipe guide plate [2]
– O-rings [3]



– Outer clutch oil feed pipe [1]
– O-ring [2]

NOTE:

• Be careful not to bend or damage the outer clutch oil feed pipe.



INSPECTION

Inspect the following parts for scratches, bending or clogging.

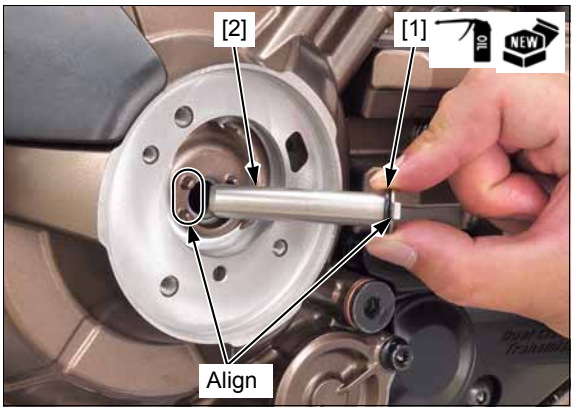
– Inner clutch oil feed pipe
– Outer clutch oil feed pipe

Measure each part according to DUAL CLUTCH TRANSMISSION SPECIFICATIONS (page 1-8).
Replace any part if it is out of service limit.

INSTALLATION

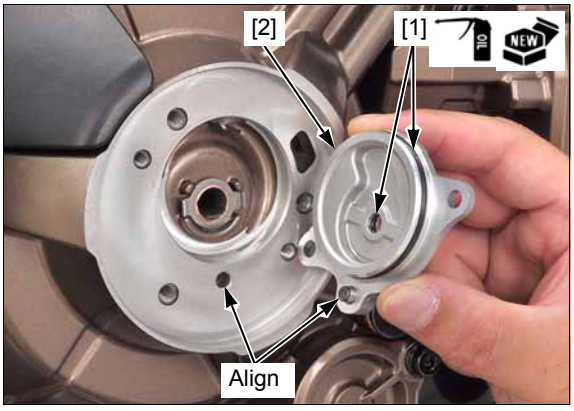
Apply engine oil to a new O-ring [1] and install it to the outer clutch oil feed pipe [2].

Install the outer clutch oil feed pipe into the right crankcase cover by aligning the feed pipe bosses with the right crankcase cover grooves.



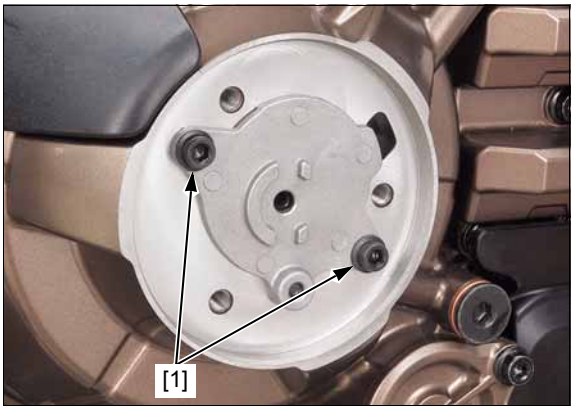
Apply engine oil to new O-rings [1] and install them to the feed pipe guide plate grooves.

Install the feed pipe guide plate [2] by aligning its pin with the right crankcase cover hole.



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

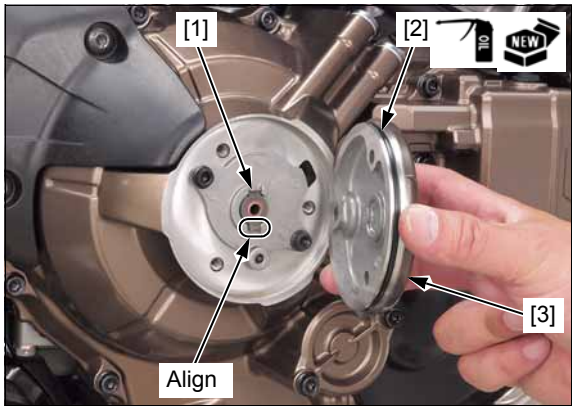
TORQUE: 5.0 N·m (0.5 kgf·m, 3.7 lbf·ft)



Install the inner clutch oil feed pipe [1] to the feed pipe guide plate by aligning the feed pipe bosses with the guide plate grooves.

Apply engine oil to a new O-ring [2] and install it to the feed pipe cover groove.

Install the feed pipe cover [3].

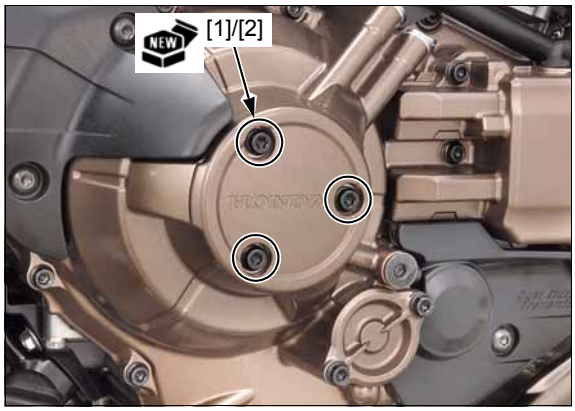


Install the following:

– New sealing washers [1]
– Bolts [2]

Tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



RIGHT CRANKCASE COVER

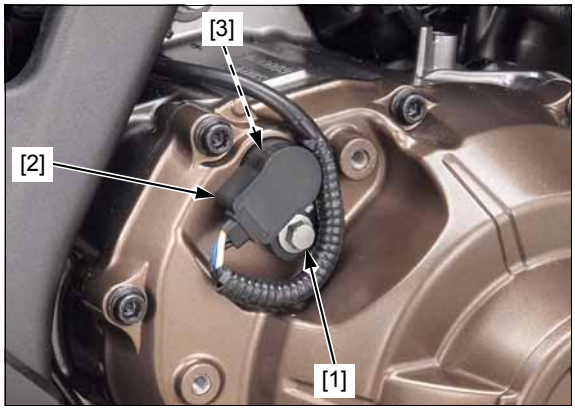
REMOVAL

Drain the engine oil (page 3-12).
Drain the coolant (page 8-4).

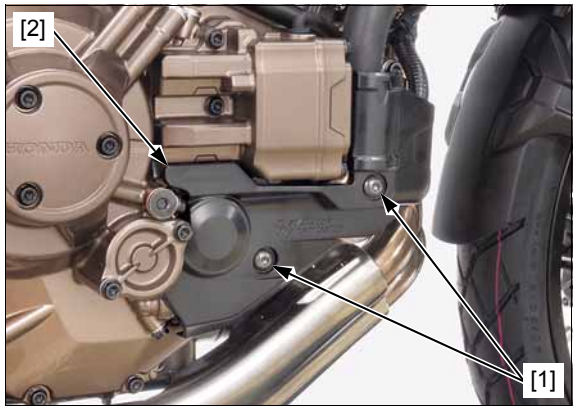
Remove the bolts [1] and engine right side rear cover [2].



Remove the bolt [1], shift spindle angle sensor [2], and O-ring [3].



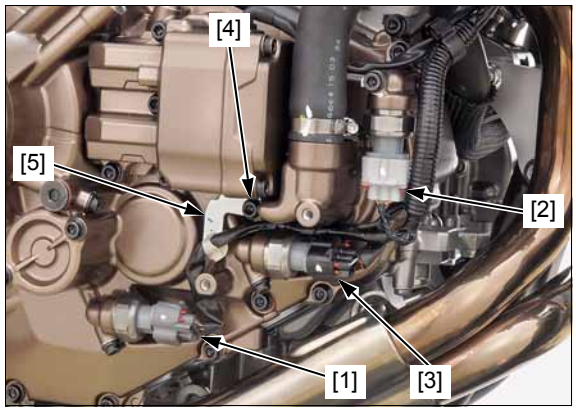
Remove the bolts [1] and clutch EOP sensor cover [2].



Disconnect the following:

– Clutch line EOP sensor 3P (Gray) connector [1]
– No.1 Clutch EOP sensor 3P (Gray) connector [2]
– No.2 Clutch EOP sensor 3P (Black) connector [3]

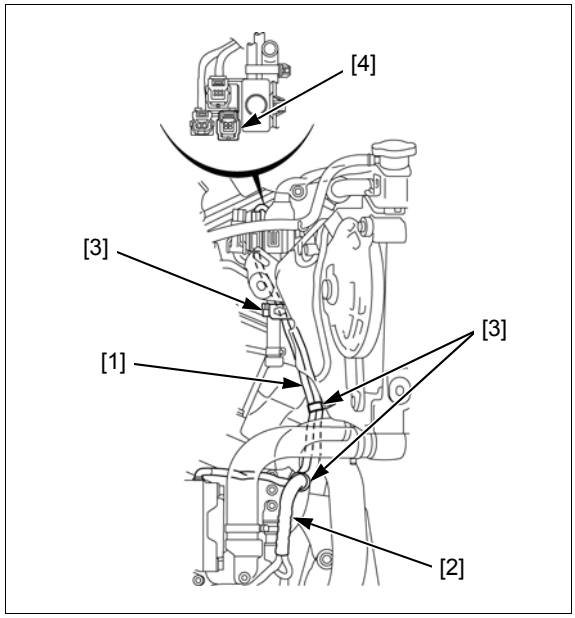
Remove the bolt [4] and wire stay [5].



Release the linear solenoid valve wire [1] and main wire harness [2] from the clamps [3].

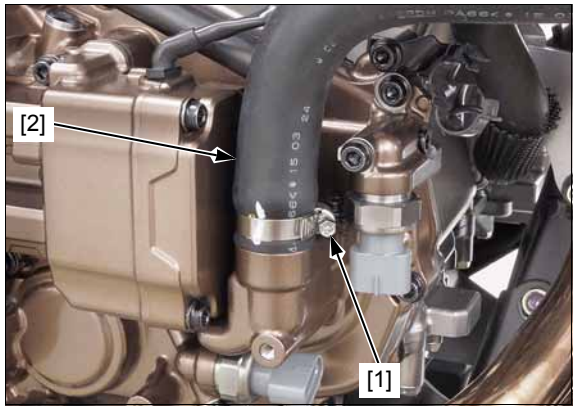
Disconnect the linear solenoid valve 4P (Black) connector [4].

Remove the clutch oil feed pipe (page 13-50).



Loosen the hose band screw [1].

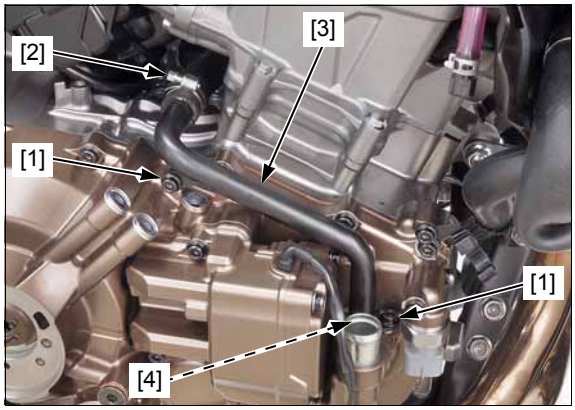
Disconnect the radiator lower hose [2].



Remove the bolts [1].

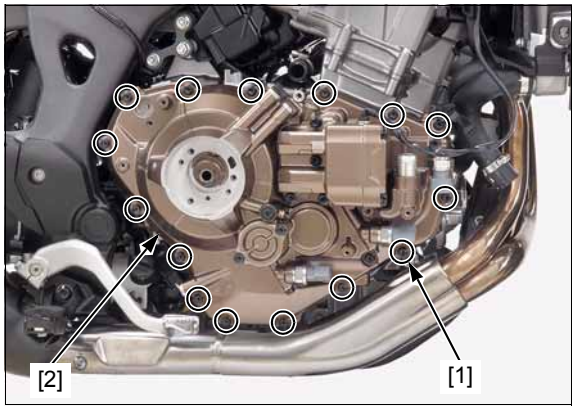
Loosen the hose band screw [2].

Disconnect the water pipe [3] and remove the O-ring [4].



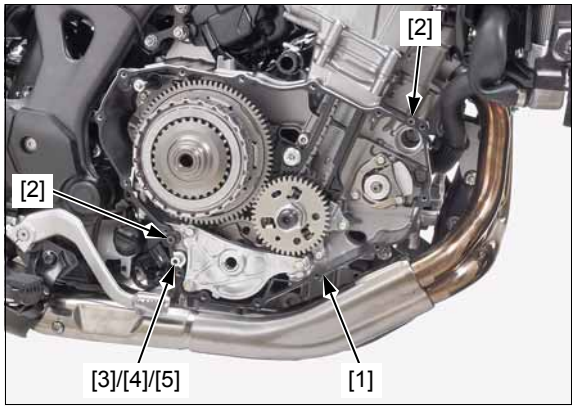
Do not allow dust or dirt to enter the oil passages.

Remove the bolts [1] and right crankcase cover [2].

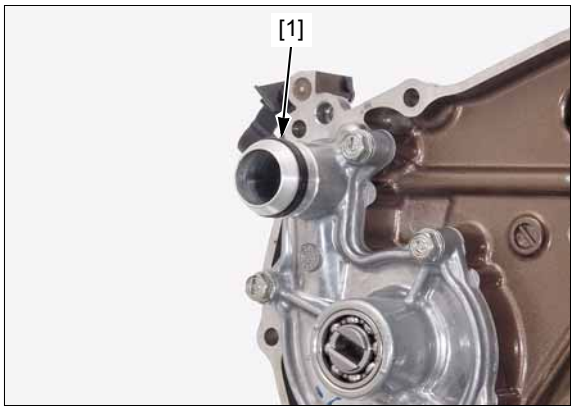


Remove the gasket [1], dowel pins [2], and oil joint [3].

Remove the O-rings [4] and back up rings [5] from the oil joint.

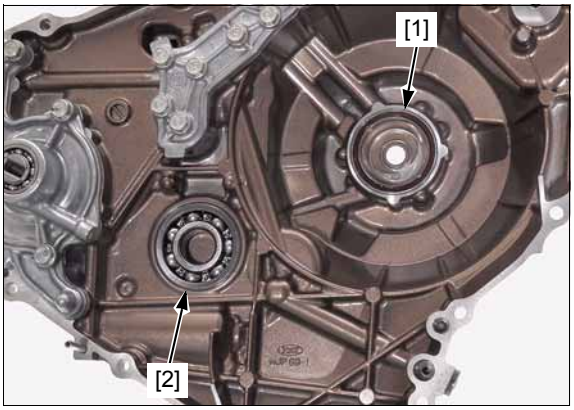


Remove the O-ring [1].



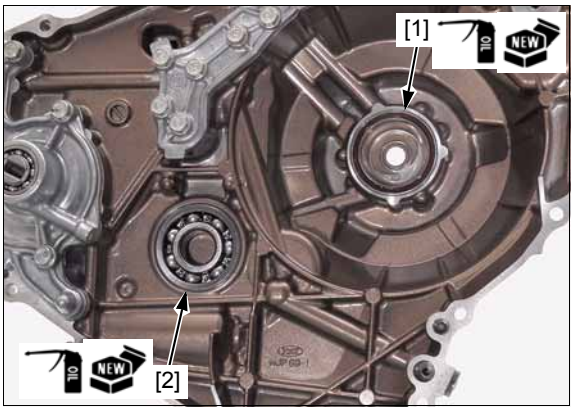
Check the bearings and replace if necessary (page 13-55).

– Bearing (40 x 52 x 7 mm) [1]
– Bearing (6304) [2]



BEARING REPLACEMENT

Remove the bearings using special tools.



TOOLS:

Remover weight	**07741-0010201**
Bearing (40 x 52 x 7 mm) [1]:	
Bearing remover shaft	**07JAC-PH80200**
Adjustable bearing puller, 20 – 40 mm	**07JAC-PH80100**
Bearing (6304) [2] :	
Bearing remover set, 20 mm	**07936-3710600**
Remover handle	**07936-3710100**

Apply engine oil to a new bearings.
Drive in the bearings with the marking side facing up until it is fully seated using special tools.

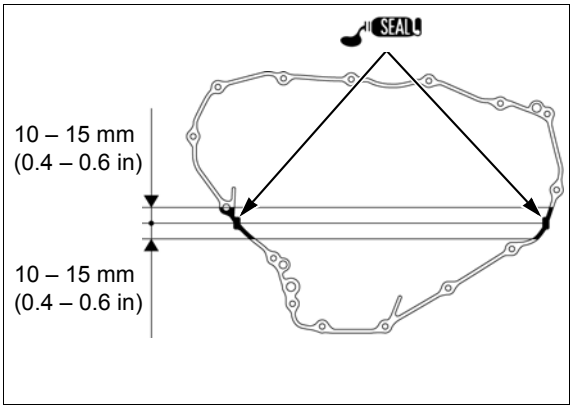
TOOLS:

Driver	**07749-0010000**
Attachment, 52 x 55 mm	**07746-0010400**
Bearing (40 x 52 x 7 mm) [1]:	
Pilot, 40 mm	**07746-0040900**
Bearing (6304) [2] :	
Pilot, 20 mm	**07746-0040500**

INSTALLATION

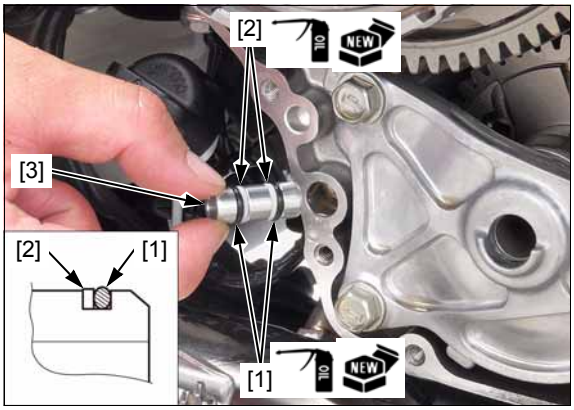
Clean the right crankcase cover mating surfaces thoroughly.

Apply liquid sealant (TB1207B manufactured by Three Bond or equivalent) to the right crankcase cover mating surface as shown.

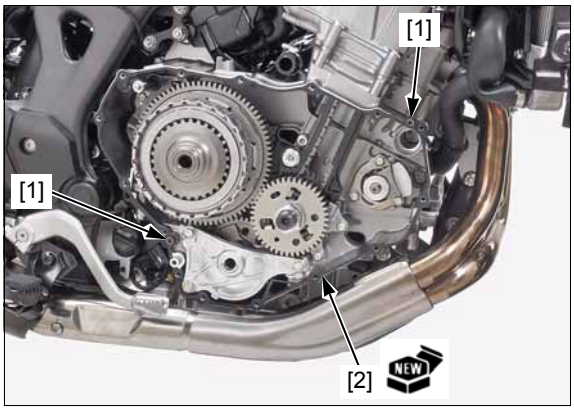


Apply engine oil to new O-rings [1] and new back up rings [2] and install them onto the oil joint [3] as shown.

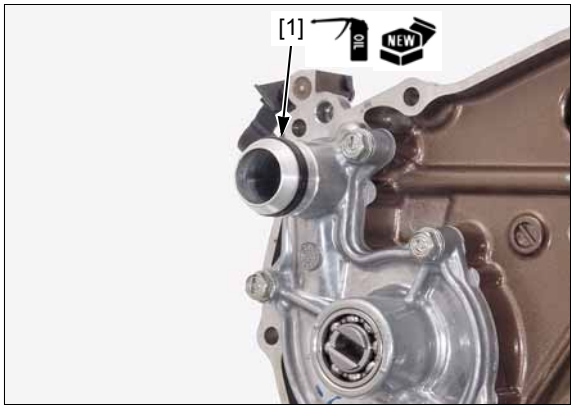
Install the oil joint into the crankcase hole.



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



Coat a new O-ring [1] with engine oil and install it onto the groove of the water pump cover.



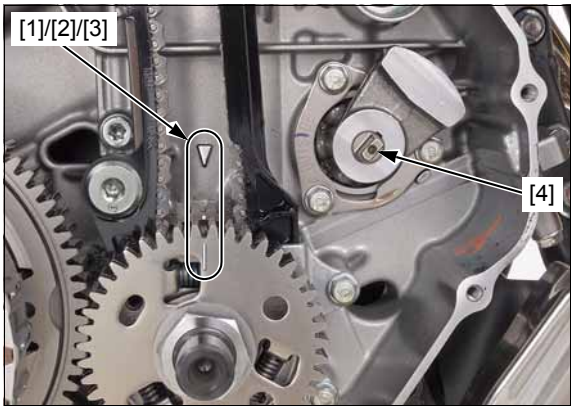
Remove the crankshaft hole cap and the timing hole cap (page 3-8).

Rotate the crankshaft counterclockwise and align the "T1" mark on the flywheel with the index mark on the alternator cover.

Make sure that the index line and marks are lined up.
– Primary drive gear index line [1]
– Oil pump drive gear punch mark [2]
– Crankcase "▽" mark [3]

Make sure that the front balancer shaft end [4] is in position as shown.

Install the crankshaft hole cap and the timing hole cap (page 3-10).



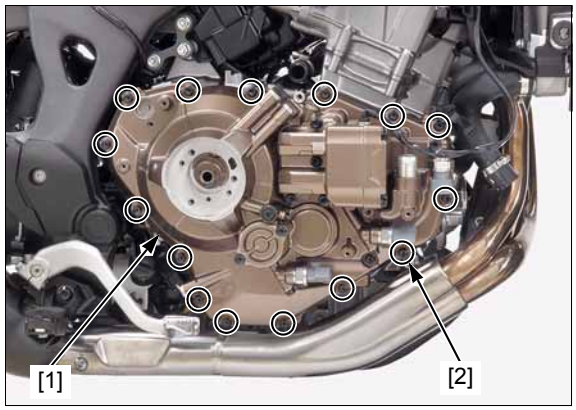
Rotate the water pump shaft and align the shaft slit with the pump cover index line as shown.



Install the right crankcase cover [1].

Install the bolts [2] and tighten them in a crisscross pattern in 2 or 3 steps to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Coat a new O-ring [1] with engine oil and install it onto the water pipe [2].

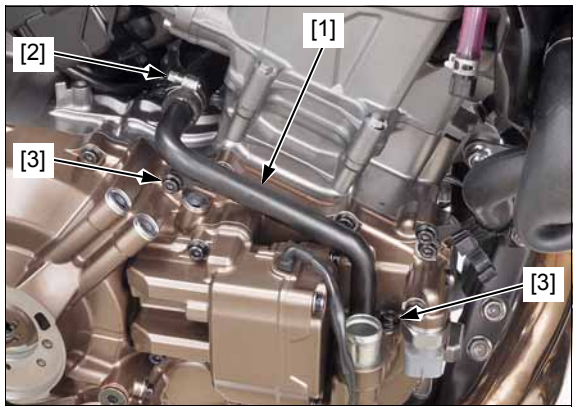


Install the water pipe [1].

Tighten the hose band screw [2] to the specified range (page 8-8).

Install the bolts [3] and tighten them to the specified torque.

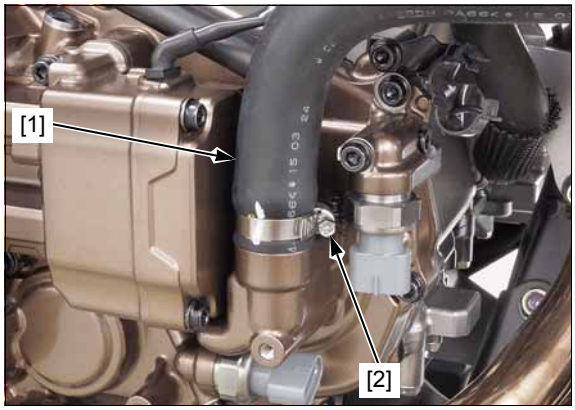
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Connect the radiator lower hose [1].

Tighten the hose band screw [2] to the specified range (page 8-8).

Install the clutch oil feed pipe (page 13-51).

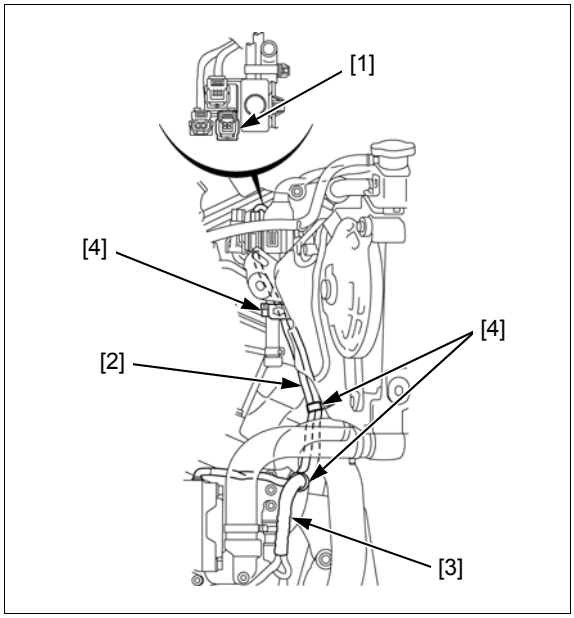


Connect the linear solenoid valve 4P (Black) connector [1].

Clamp the linear solenoid valve wire [2] and main wire harness [3] with the clamps [4].

NOTE:

- Route the wire properly (page 1-26).

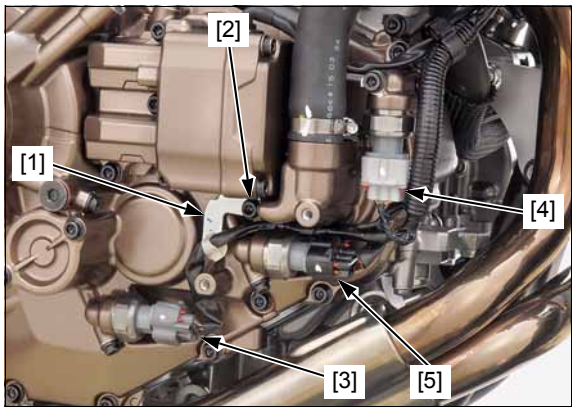


Install the wire stay [1] and bolt [2], and tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

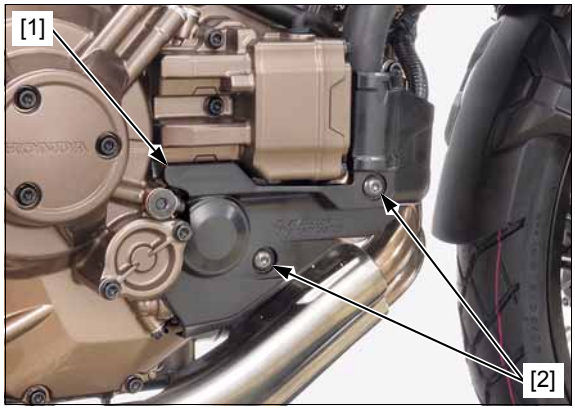
Connect the following:

– Clutch line EOP sensor 3P (Gray) connector [3]
– No.1 Clutch EOP sensor 3P (Gray) connector [4]
– No.2 Clutch EOP sensor 3P (Black) connector [5]



Install the clutch EOP sensor cover [1] and bolts [2] and tighten the bolts to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

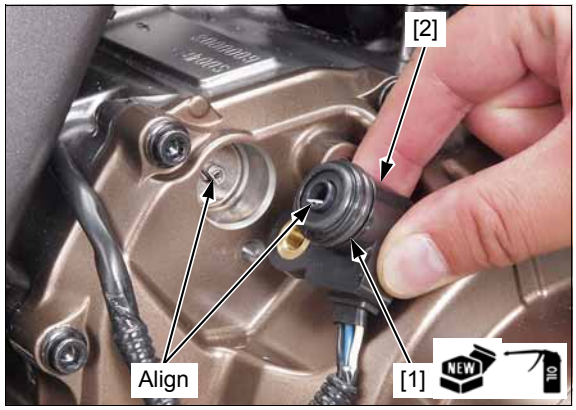


Apply engine oil to a new O-ring [1] and install it onto the shift spindle angle sensor [2].

Install the shift spindle angle sensor.

NOTE:

- Align the flat surfaces of the shift spindle angle sensor and gearshift spindle end.

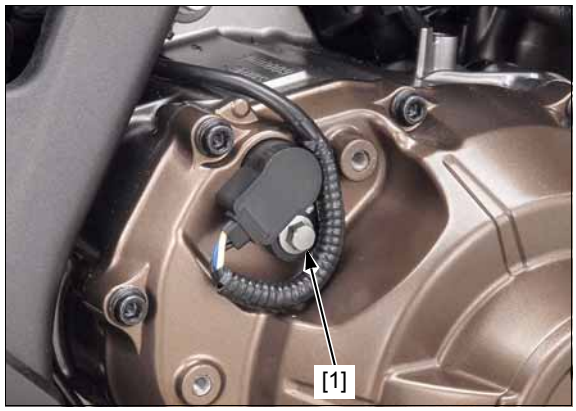


Install the bolt [1] and tighten it to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

NOTE:

- Route the hoses and wires properly (page 1-26).



Install the engine right side rear cover [1] and bolts [2] and tighten the bolts to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-12).
Fill the recommended coolant mixture to the filler neck and bleed the air (page 8-4).



LINEAR SOLENOID VALVE

REMOVAL

NOTE:

- Keep dust and dirt away from all the parts.
- Be careful not to damage the mating surfaces of the valve body components.

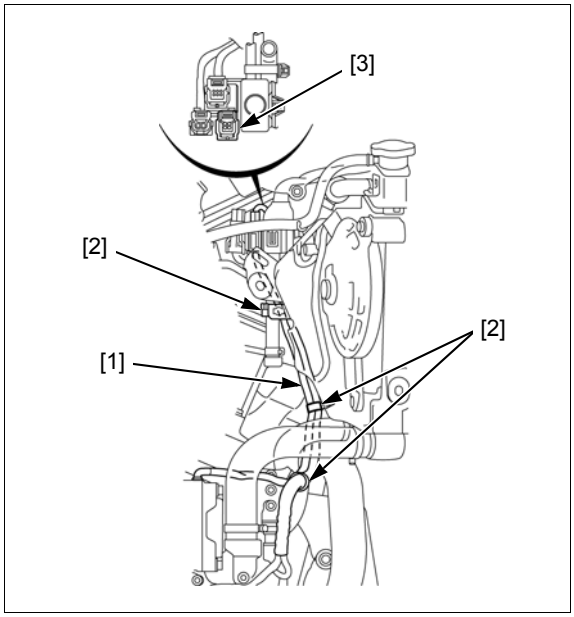
Drain the engine oil (page 3-12).

Remove the right middle cowl (page 2-6).

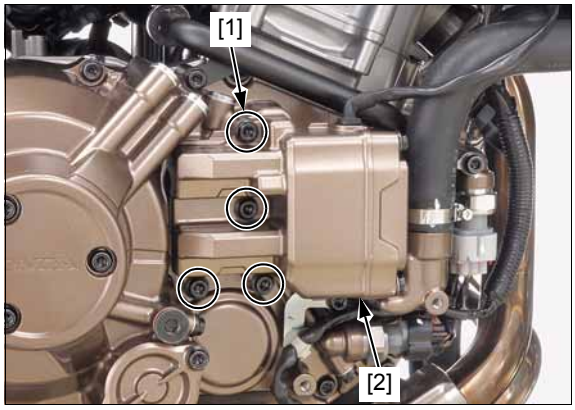
Remove the clutch EOP sensor cover (page 13-80).

Release the linear solenoid valve wire [1] from the clamps [2].

Disconnect the linear solenoid valve 4P (Black) connector [3].



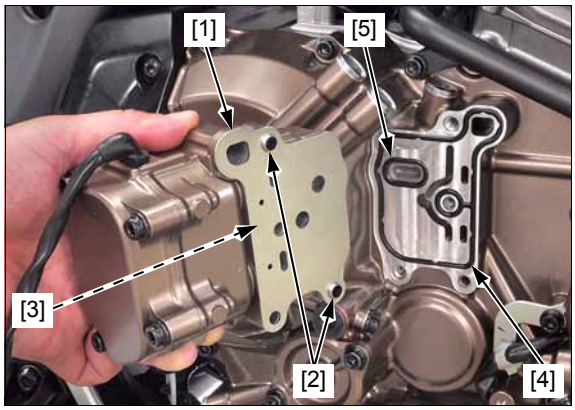
Remove the bolts [1] and linear solenoid valve body [2].



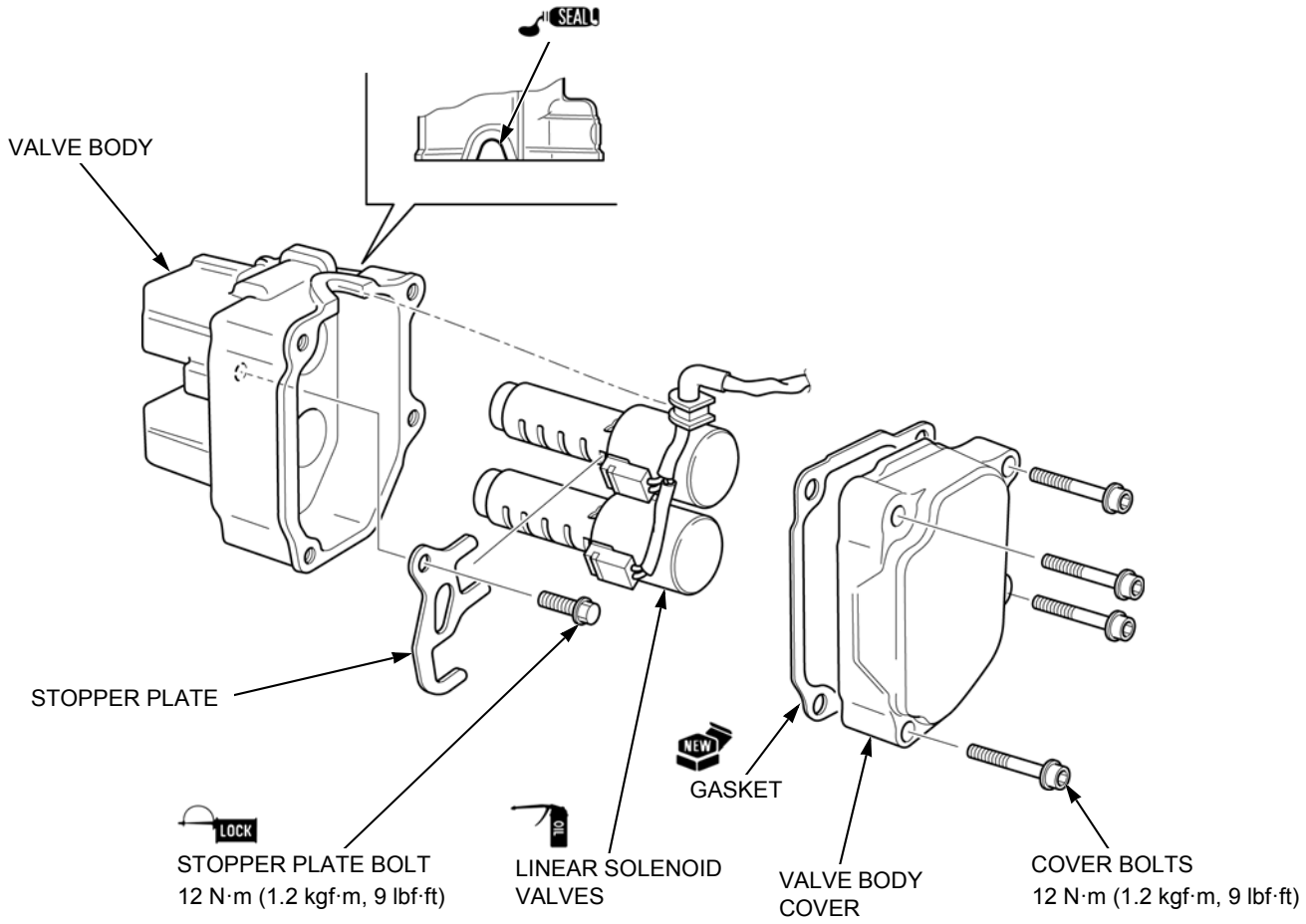
Remove the separator plate [1], dowel pins [2], and O-ring [3].

Remove the O-ring [4] and spool valve filter/packing [5].

Remove the packing from the spool valve filter.
Check the spool valve filter and replace if necessary.



DISASSEMBLY/ASSEMBLY



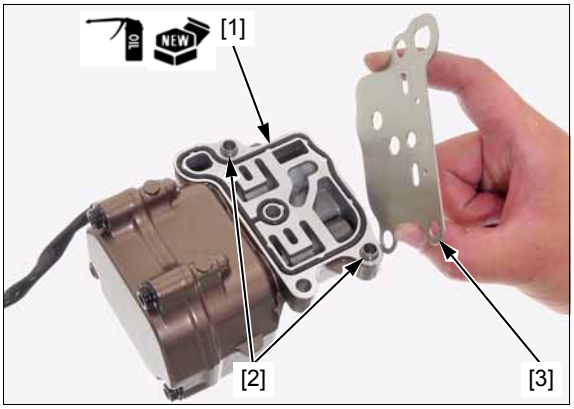
NOTE:

- Clean all the parts with compressed air. Make sure that there is no dust or lint on any parts.
- Apply locking agent to the solenoid valve stopper plate bolt threads (page 1-20).

INSTALLATION

Coat a new O-ring [1] with engine oil, and install it onto the linear solenoid valve body.

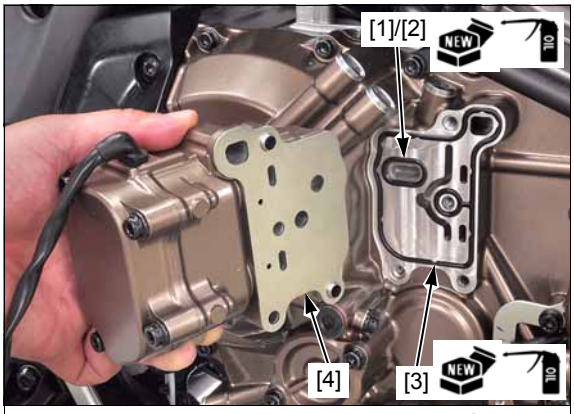
Install the dowel pins [2] and separator plate [3] onto the linear solenoid valve body.

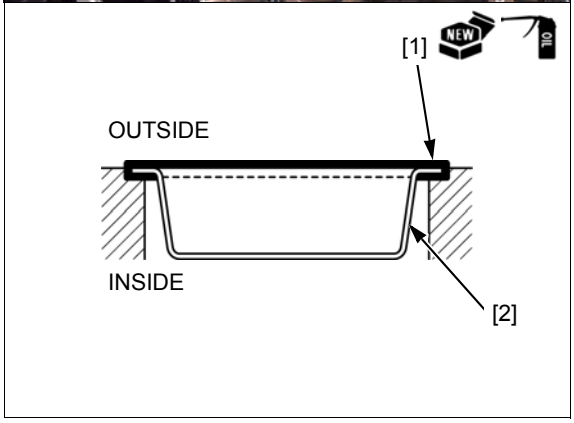


Coat a new packing [1] with engine oil and install it onto the spool valve filter [2].
Install the spool valve filter/packing onto the right crankcase cover as shown.

Install the O-ring [3].

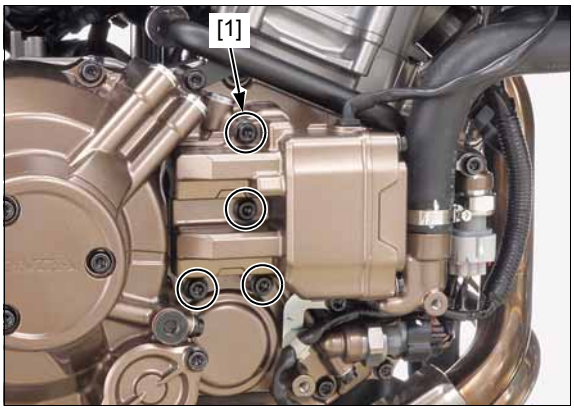
Install the linear solenoid valve body [4].





Install the bolts [1] and tighten it to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

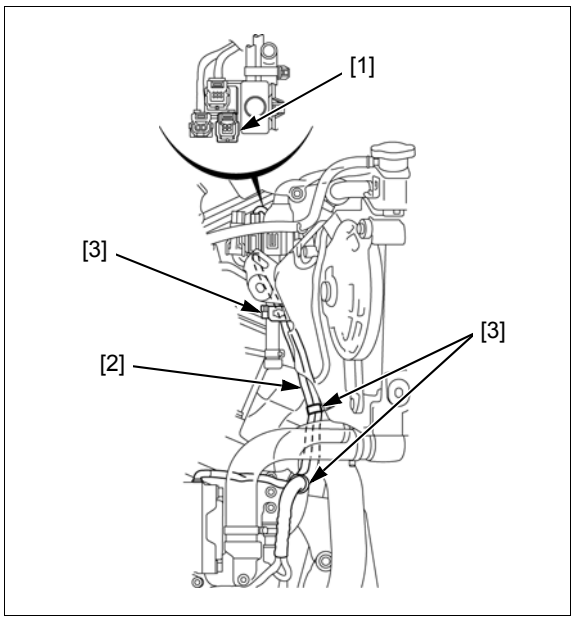


Connect the linear solenoid valve 4P (Black) connector [1].

Clamp the linear solenoid valve wire [2] with the clamps [3].

Install the clutch EOP sensor cover (page 13-80).

Fill the engine with the recommended engine oil and check that there are no oil leaks (page 3-12).

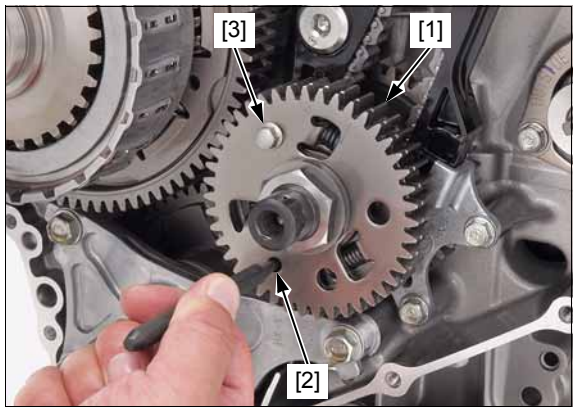


DUAL CLUTCH/PRIMARY DRIVEN GEAR

REMOVAL

Remove the right crankcase cover (page 13-52).

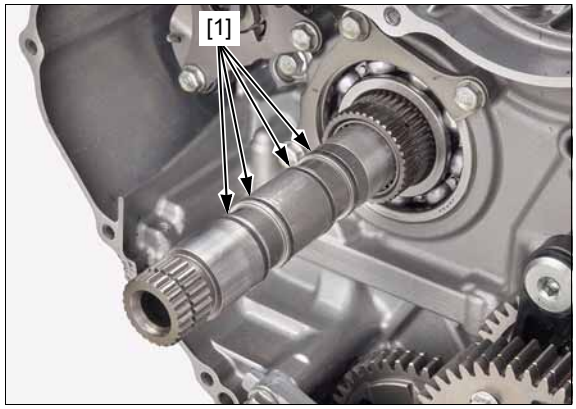
Align the gear teeth of the primary drive gear and sub-gear [1] by prying the gears through the holes [2] and hold them with a 6 mm bolt [3].



Remove the dual clutch assembly [1] from the mainshaft.

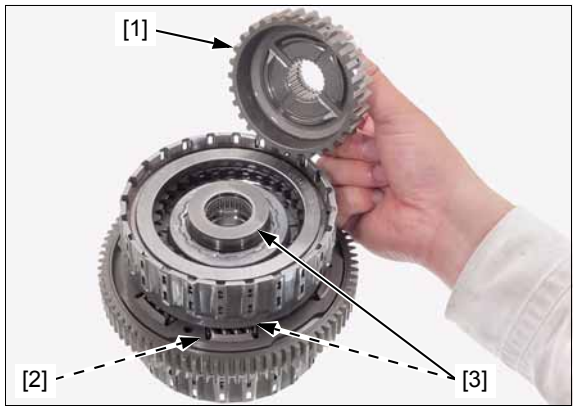


Remove the seal rings [1] from the mainshaft grooves.



DISASSEMBLY

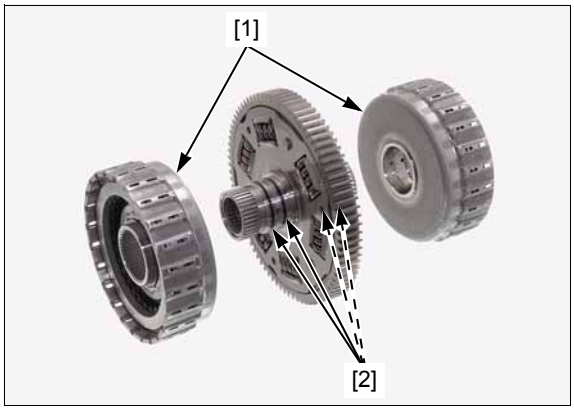
Remove clutch guide 1 [1], clutch guide 2 [2], and washers [3] from the clutches.



Remove the clutch assemblies [1] and O-rings [2] from the primary driven gear.

NOTE:

- The No.1 clutch assembly (for inner mainshaft) and No.2 clutch assembly (for outer mainshaft) are the same parts.

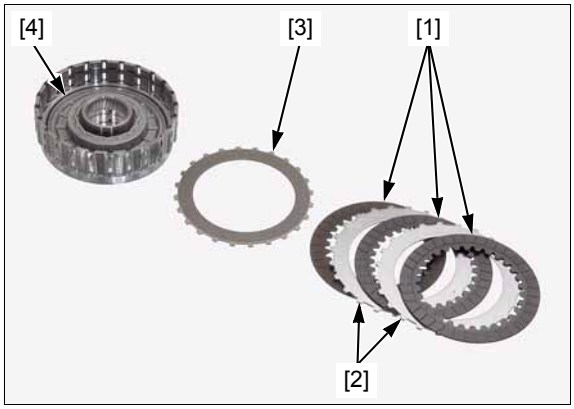


Remove the following:

– Snap ring [1]
– End plate [2]



– Clutch discs [1]
– Clutch plates A [2]
– Clutch plate B [3]
– Wave spring [4]



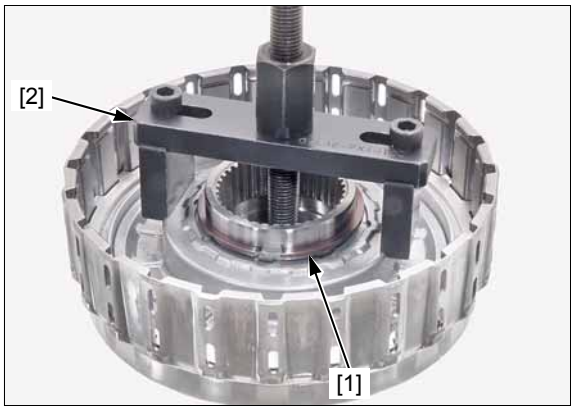
To prevent loss of spring tension, do not compress the spring assembly more than necessary.

Set the special tools onto the clutch as shown and remove the snap ring [1] by compressing the return spring assembly.

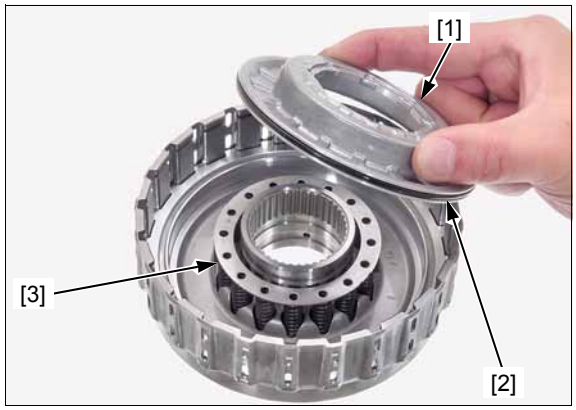
TOOL:

Clutch compressor set [2] **07LAE-PX40000**

Remove the special tools.



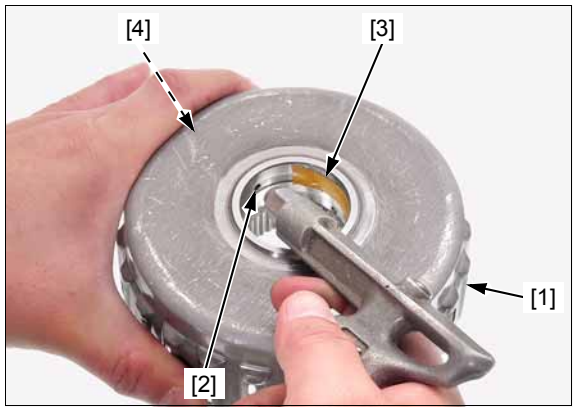
Remove the return spring retainer [1], O-ring [2], and return spring [3].



Wrap a shop towel around the clutch guide [1].

Be careful not to damage the piston sliding surface.

Apply air pressure to the oil hole [2] while closing the other holes with a tape [3] to remove the clutch piston [4].



Remove the clutch piston [1] and O-rings [2].

Clean all the parts in solvent thoroughly and blow dry them with compressed air.



INSPECTION

Inspect the following parts for scratches, damage, abnormal wear and deformation. Replace if necessary.

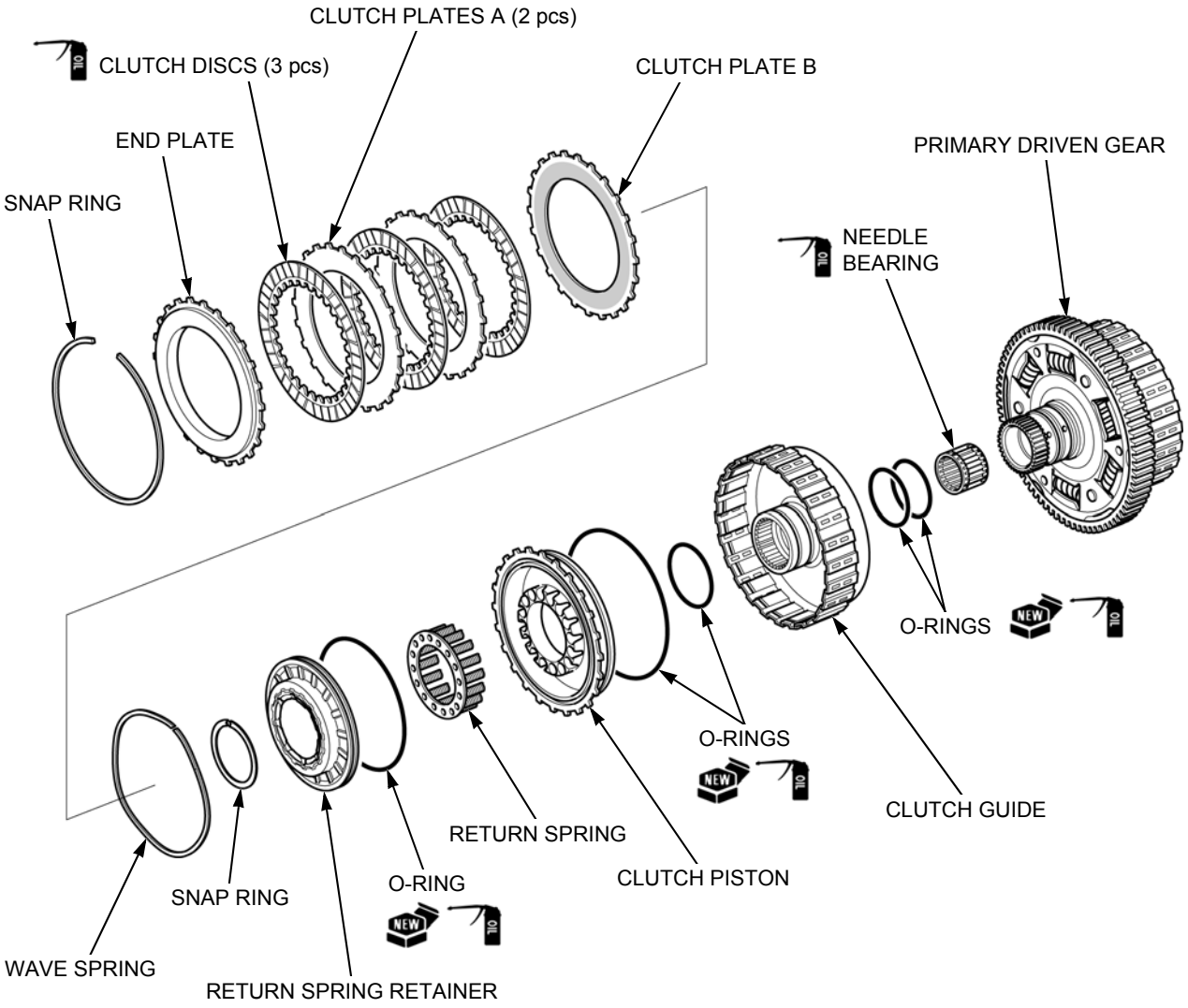
– Clutch guide
– Clutch piston
– Return spring
– Return spring retainer
– Wave spring
– Clutch discs
– Clutch plates
– End plate

Measure each part according to DUAL CLUTCH TRANSMISSION SPECIFICATIONS (page 1-8).
Replace any part if it is out of service limit.

NOTE:

• Replace the clutch discs and plates as a set.

ASSEMBLY



Clean the inner surface of the clutch guide thoroughly and blow through the oil holes.

Coat new O-rings [1] with engine oil and install them into the clutch guide and piston grooves.

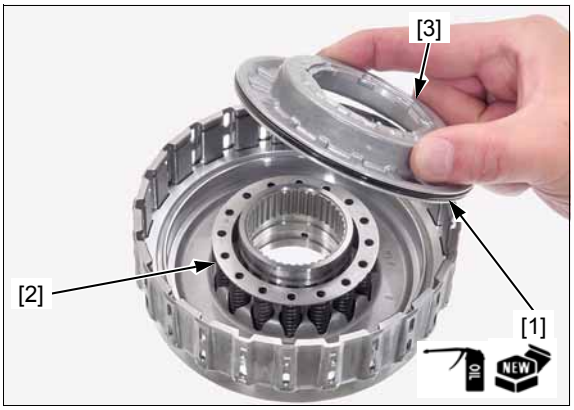
Place the piston [2] into the clutch guide [3].

Push the piston in the clutch guide to ensure proper seating.



Coat a new O-ring [1] with engine oil and install it into the return spring retainer groove.

Install the return spring [2] and spring retainer [3] in the clutch guide.

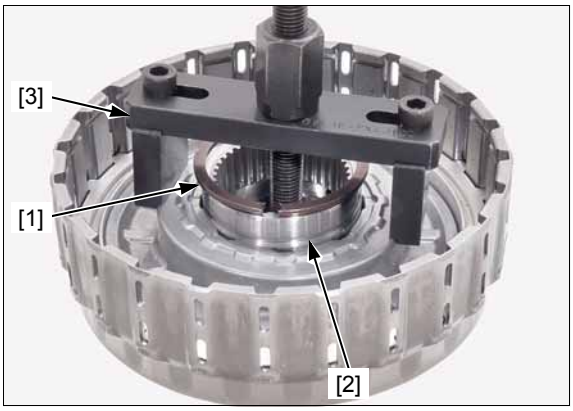


Place the snap ring [1] onto the clutch.

To prevent loss of spring tension, do not compress the spring assembly more than necessary.

Set the special tools onto the clutch as shown and install the snap ring into the clutch guide groove [2] by compressing the return spring.

TOOL:
Clutch compressor set [3] 07LAE-PX40000



Make sure that the snap ring is fully seated in the clutch guide groove.

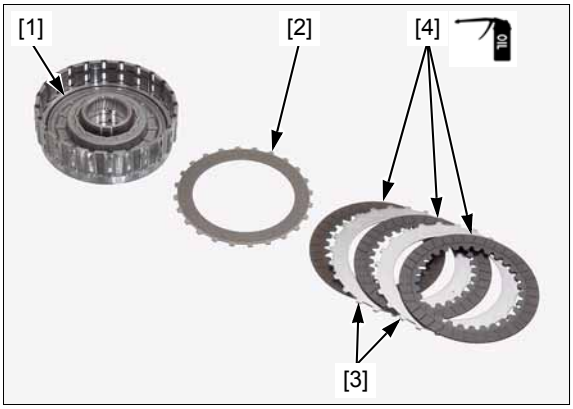
Remove the special tools.

Install the wave spring [1].

Coat the clutch discs with engine oil.

Install the clutch plate B [2], plate A [3], and discs [4] alternately, starting with the plate B.

NOTE:
- Clutch plate B: surface treatment difference from clutch plate A.



Install end plate [1] with the marking side facing out.

Install the snap ring [2].

Make sure that the snap ring is fully seated in the clutch guide groove.

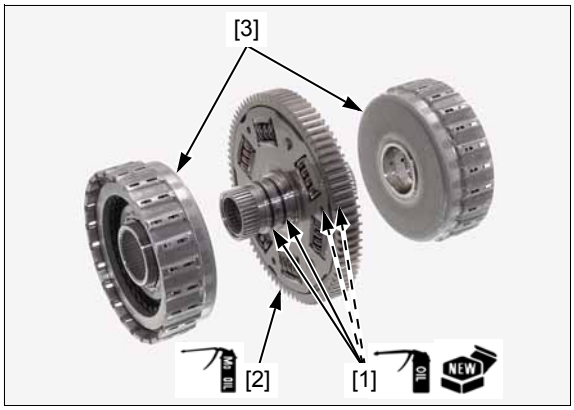
Check the clutch initial clearance (page 13-68).



Coat new O-rings [1] with engine oil and install them into the grooves in the primary driven gear [2].

Apply molybdenum oil solution to the primary driven gear teeth, friction springs, and boss sliding area.

Install the clutch assemblies [3] onto the primary driven gear.



Apply engine oil to the needle bearings in the primary driven gear.

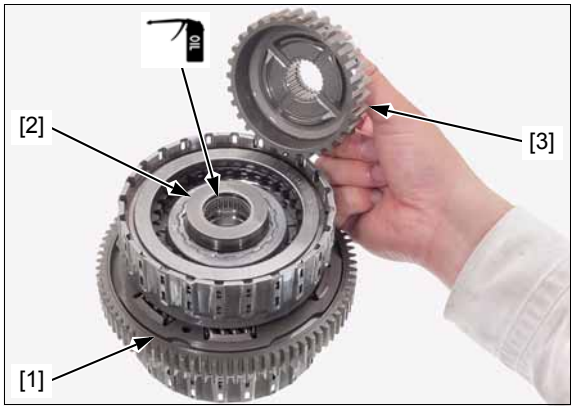
NOTE:

- The primary driven gear has the index line [1] on its flange for the installation direction. The dual clutch assembly should be installed with the index line facing the outside.

Line up the clutch disc tabs.

Install the washer [2] onto the clutch assembly.

Install clutch guide 1 [3] into the clutch on the index line side by aligning the gear teeth with the clutch disc tabs.



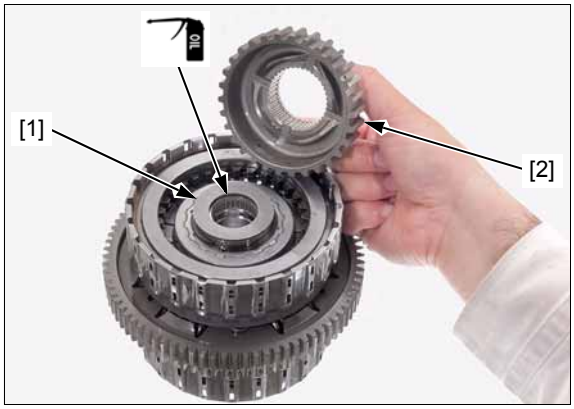
Turn over the dual clutch assembly while holding clutch guide 1.

Apply engine oil to the needle bearings in the primary driven gear.

Line up the clutch disc tabs.

Install the washer [1] onto the clutch assembly.

Install clutch guide 2 [2] into the clutch by aligning the gear teeth with the clutch disc tabs.



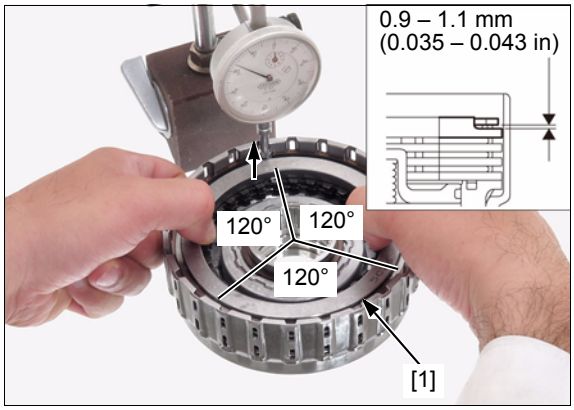
CLUTCH INITIAL CLEARANCE

Set a dial indicator on the end plate [1] with the plate lowered.
Lift the end plate against the snap ring and read the clearance, and record it.

Perform this inspection at the three points in 120° apart.

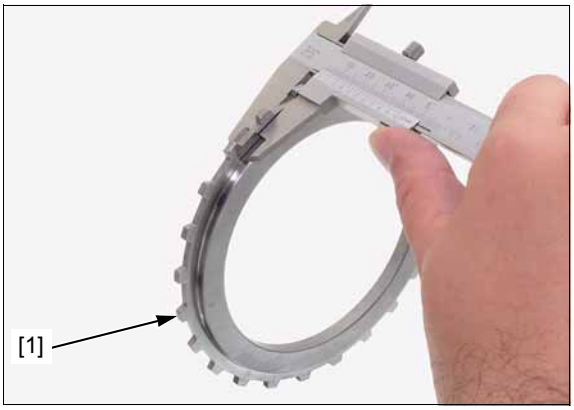
STANDARD: 0.9 – 1.1 mm (0.035 – 0.043 in)

If the clearance is not within the standard value, select the replacement end plate as follows:



Remove the snap ring and end plate (page 13-63).

Measure the flange thickness of the end plate [1] at several points and record it.



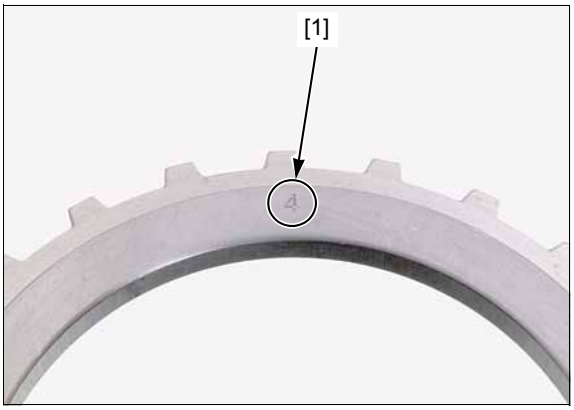
Calculate the new plate thickness using the equation below. Choose a new plate as close to this dimension as possible.

A = (B – 1.0) + C

A: New plate thickness
B: Recorded clearance
C: Old plate thickness

If the calculated dimension is over the thickest plate thickness, replace the clutch discs and plates as a set.

Select the end plate from the table below.



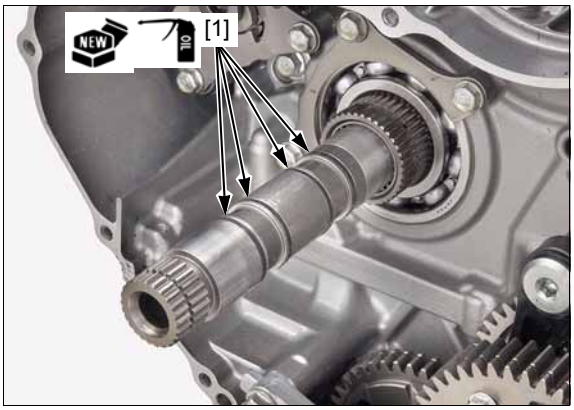
Mark [1]	Thickness
10	2.4 mm
11	2.5 mm
1	2.6 mm
2	2.7 mm
3	2.8 mm
4	2.9 mm
5	3.0 mm
6	3.1 mm
7	3.2 mm
8	3.3 mm
9	3.4 mm

Install the removed parts in the reverse order of removal.

INSTALLATION

Apply engine oil to new seal rings [1] and install them into the mainshaft grooves.

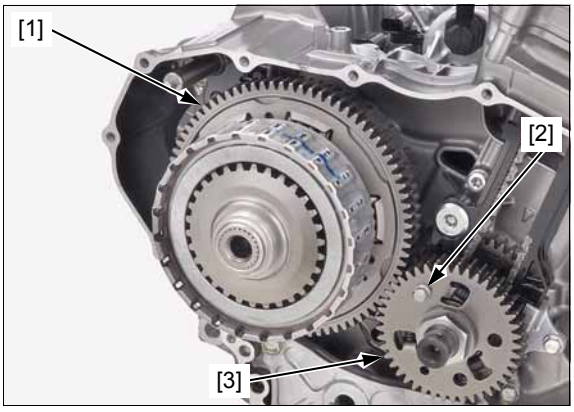
Push in the seal rings to seat them into the grooves.



Install the dual clutch assembly [1] onto the mainshaft, being careful not to damage the seal rings.

Remove the 6 mm bolt [2] to free the primary drive gear and sub-gear [3].

Install the right crankcase cover (page 13-55).



PRIMARY DRIVE GEAR

REMOVAL

Remove the right crankcase cover (page 13-52).

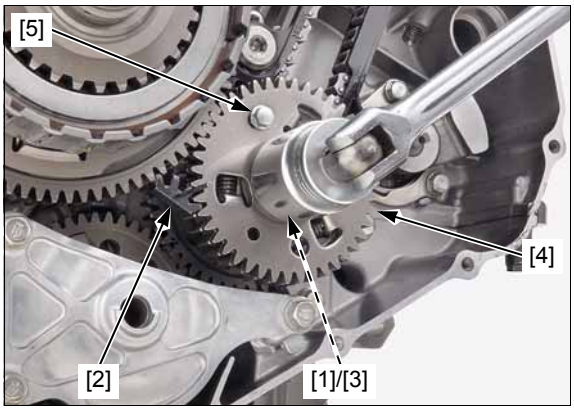
Hold the primary drive gear and sub-gear with a 6 mm bolt (page 13-63).

Install the special tool between the primary drive and driven gears, and loosen the primary drive gear nut (left-hand thread) [1].

TOOL:
Gear holder, 2.5 [2] **07724-0010100**

Remove the primary drive gear nut, washer [3], and primary drive gear/sub-gear [4] from the crankshaft.

Remove the 6 mm bolt [5].



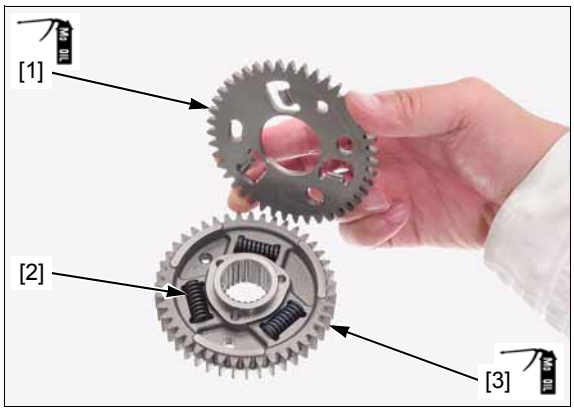
DISASSEMBLY/ASSEMBLY

Remove the primary drive sub-gear [1] and springs [2].

Installation is in the reverse order of removal.

NOTE:

- Apply molybdenum oil solution to the sliding surfaces of the primary drive gear and sub-gear.
- Install the sub-gear onto the primary drive gear [3] in the position as shown.
- Make sure that the index line on the primary drive sub-gear aligns with the wide tooth of the primary drive gear.



INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation. Replace if necessary.

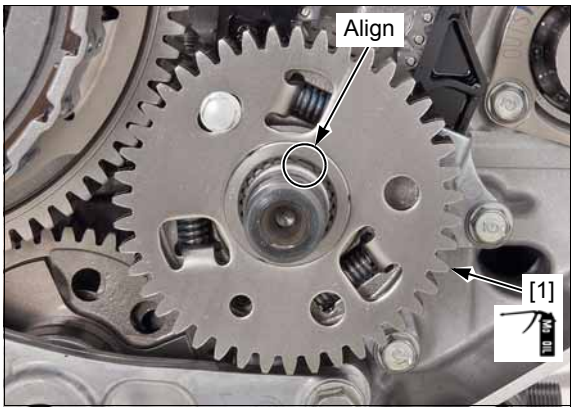
– Primary drive gear
– Primary drive sub-gear
– Springs

INSTALLATION

Apply molybdenum oil solution to the primary drive gear sliding surface.

Install the primary drive gear/sub-gear [1] onto the crankshaft by aligning their wide grooves with the wide tooth.

Hold the primary drive gear and sub-gear with a 6 mm bolt (page 13-63).



Apply engine oil to the primary drive gear nut threads and seating surface.
Install the washer [1] and primary drive gear nut [2].

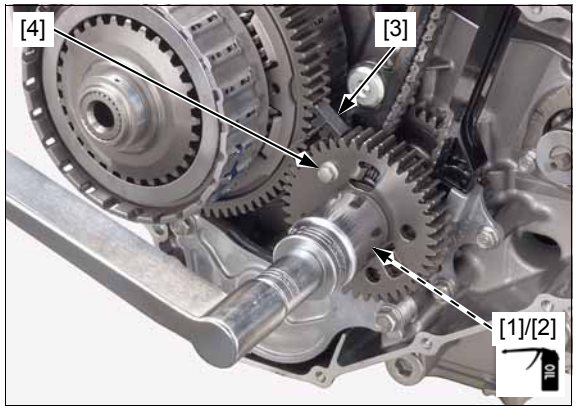
Install the special tool between the primary drive and driven gears, and tighten the nut (left-hand thread) to the specified torque.

TOOL:
Gear holder, 2.5 [3] 07724-0010100

TORQUE: 118 N·m (12.0 kgf·m, 87 lbf·ft)

Remove the 6 mm bolt [4] to free the primary drive gear and sub-gear.

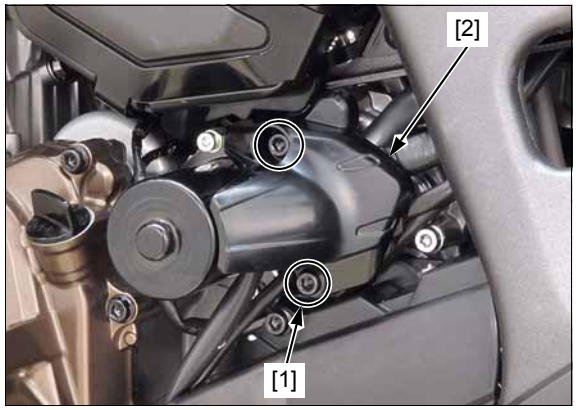
Install the right crankcase cover (page 13-55).



SHIFT CONTROL MOTOR/REDUCTION GEARS

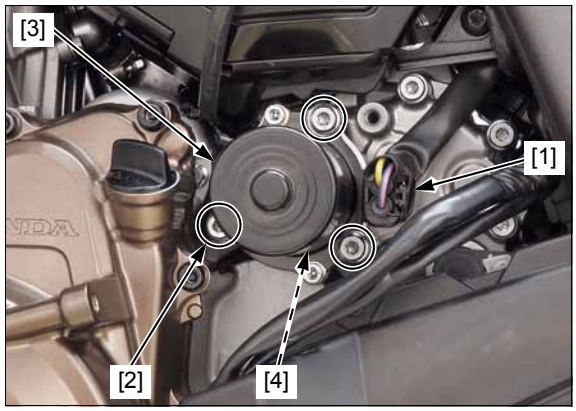
REMOVAL

Remove the bolts [1] and shift control motor cover [2].

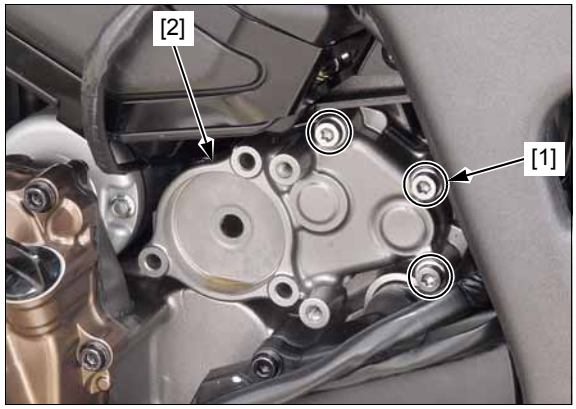


Disconnect the shift control motor 2P (Black) connector [1].

Remove the torx bolts [2], shift control motor [3], and O-ring [4].

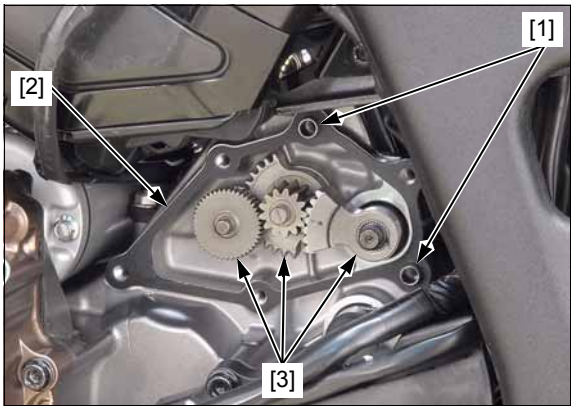


Remove the torx bolts [1] and reduction gear cover [2].



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

Remove the reduction gears [3].



Check the bearings and replace if necessary.

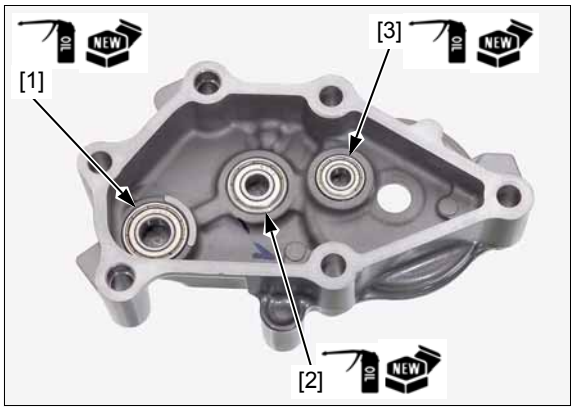
– Radial ball bearing (699ZZ) [1]
– Radial ball bearing (607ZZ) [2]
– Radial ball bearing (696ZZ) [3]

Do not use a torch to heat the upper crankcase; it may cause warping.

Heat the reduction gear cover to 80°C (176°F) evenly using a heat gun.

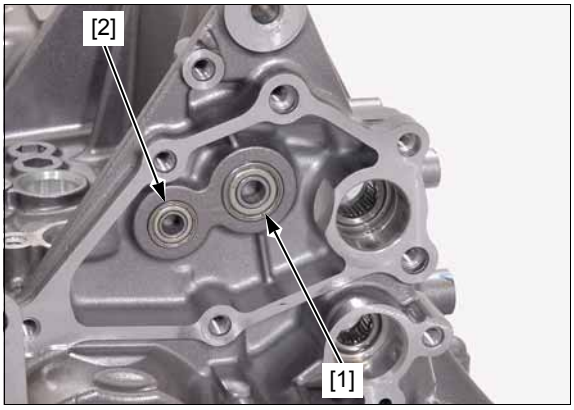
Tap the reduction gear cover lightly and remove the bearings.

Apply engine oil to new bearings.
Drive in new bearings squarely with the marking side facing up until they are fully seated.



Check the bearings and replace if necessary (page 14-19).

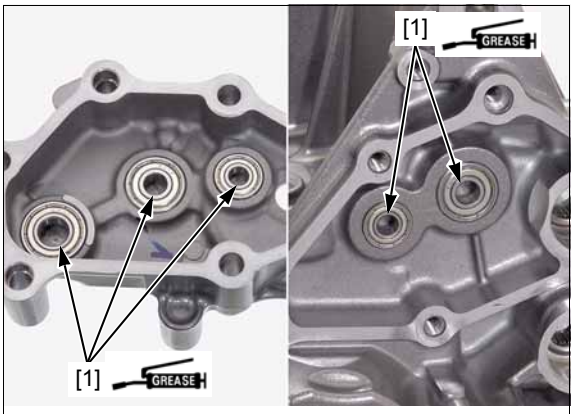
– Radial ball bearing (607ZZ) [1]
– Radial ball bearing (696ZZ) [2]



INSTALLATION

Apply 2 – 4 g (0.07 – 0.14 oz) of specified grease to the reduction gear journals [1] and teeth.

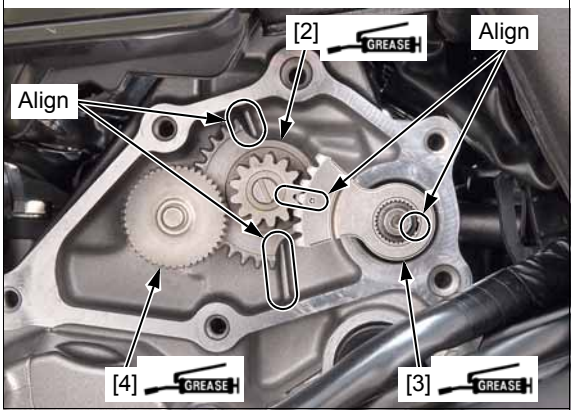
SPECIFIED GREASE:
UNIREX N3 manufactured by ExxonMobil or equivalent



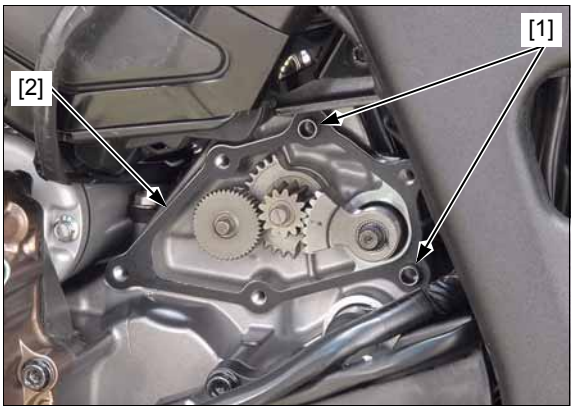
Install the reduction gear B [2] by aligning the gear ends with the ribs of the crankcase.

Install the reduction gear C [3] by aligning each clinched tooth of the gear C and gearshift spindle.
Check that the punch marks on the gear C and gear B tooth line up as shown.

Install reduction gear A [4].

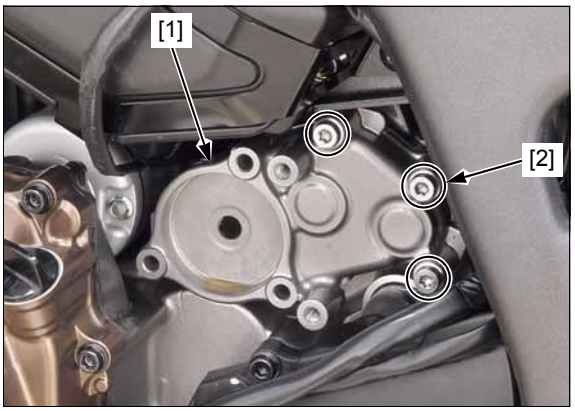


Install the dowel pins [1] and gasket [2].



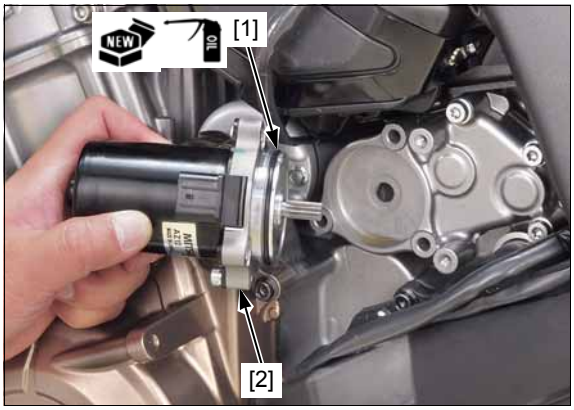
Install the reduction gear cover [1] and torx bolts [2], then tighten the torx bolts.

TORQUE: 14 N·m (1.4 kgf·m, 10 lbf·ft)



Coat a new O-ring [1] with engine oil and install it into the groove in the shift control motor [2].

Install the shift control motor onto the shift control motor cover.



Install the torx bolts [1] and tighten it to the specified torque.

TORQUE: 14 N·m (1.4 kgf·m, 10 lbf·ft)

Connect the shift control motor 2P (Black) connector [2].

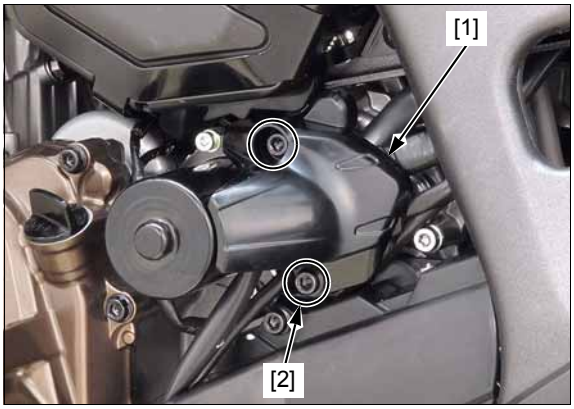


Install the shift control motor cover [1] and bolts [2] and tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

NOTE:

- Route the wire properly (page 1-26)

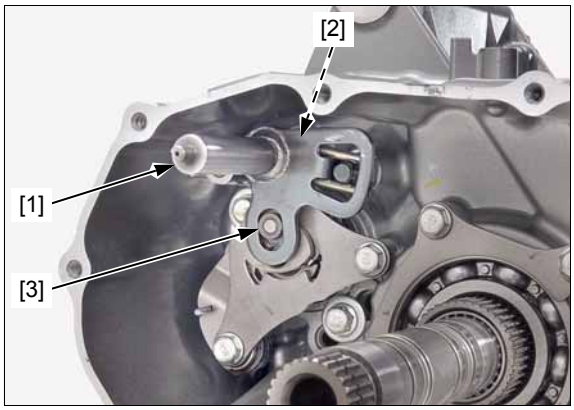


GEARSHIFT LINKAGE

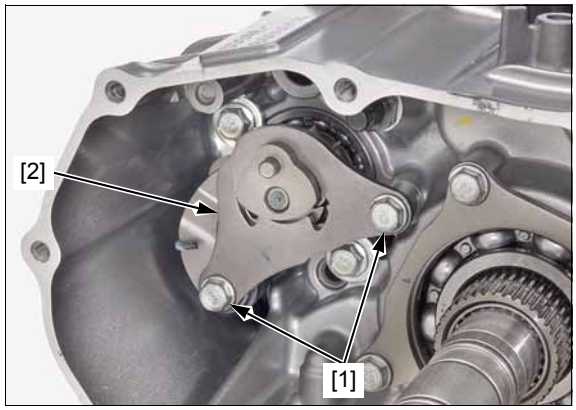
REMOVAL

Remove the following:

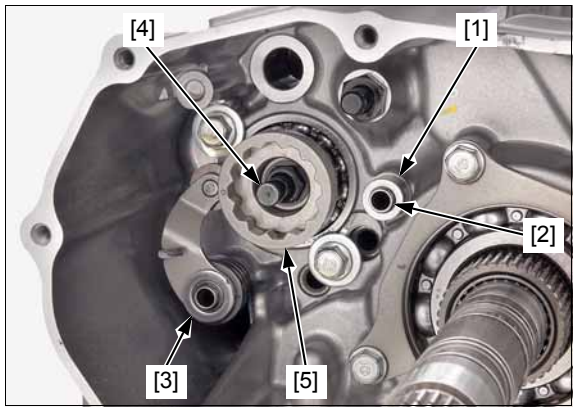
– Shift control motor/reduction gears (page 13-71)
– Dual clutch (page 13-63)
– Gearshift spindle [1]
– Washer [2]
– Drum shifter collar [3]



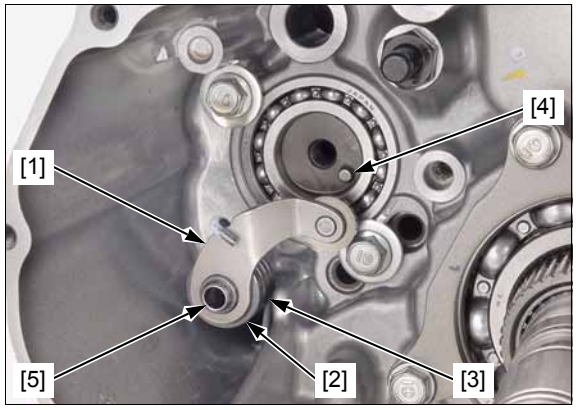
– Bolts [1]
– Drum shifter guide plate/drum shifter assembly [2]



– Guide plate distance collar [1]
– Dowel pin [2] (if necessary)
– Stopper arm side collar [3]
– Shift drum center bolt [4]
– Shift drum center [5]



– Shift drum stopper arm [1]
– Stopper arm collar [2]
– Stopper arm return spring [3]
– Shift drum center dowel pin [4]
– Dowel pin [5] (if necessary)



Remove the oil seal [1].

Check the gearshift spindle needle bearing [2] and replace if necessary (page 14-19).



INSPECTION

Inspect the following parts for scratch, damage, abnormal wear, or deformation.

- Gearshift spindle, spindle arm, return spring
- Drum shifter guide plate
- Drum shifter
- Ratchet pawls
- Plungers
- Plunger springs

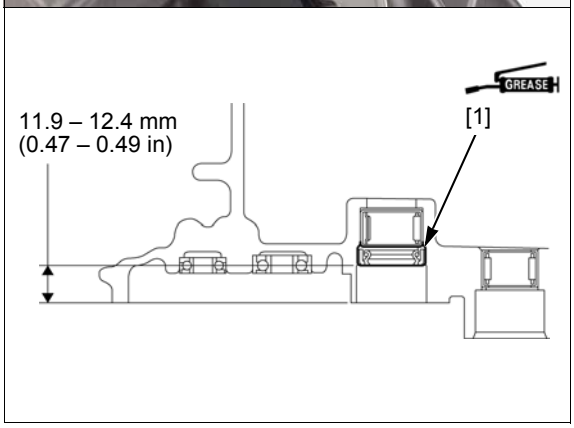
Replace if necessary.

INSTALLATION

Install the oil seal [1] until it is in position as shown.

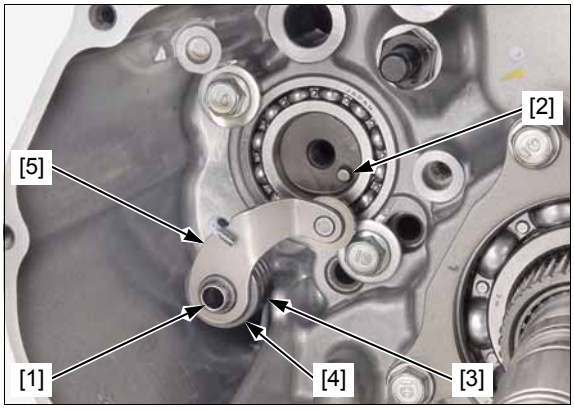
Apply grease to the oil seal lips.



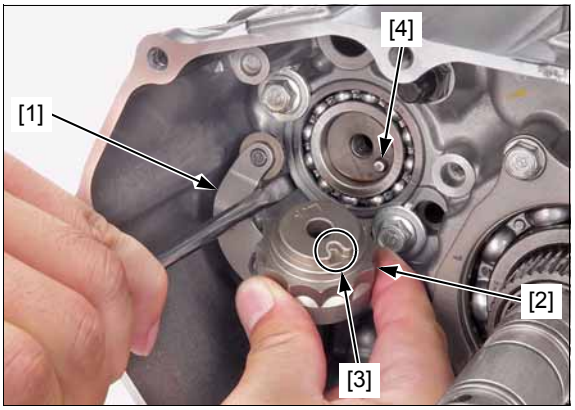


Install the following:

- Dowel pin [1]
- Shift drum center dowel pin [2]
- Stopper arm return spring [3]
- Stopper arm collar [4]
- Shift drum stopper arm [5]



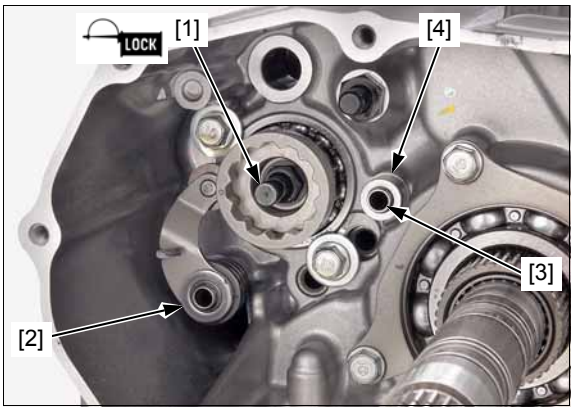
Hold the shift drum stopper arm [1] with a screwdriver and install the shift drum center [2] by aligning the groove [3] with the dowel pin [4].



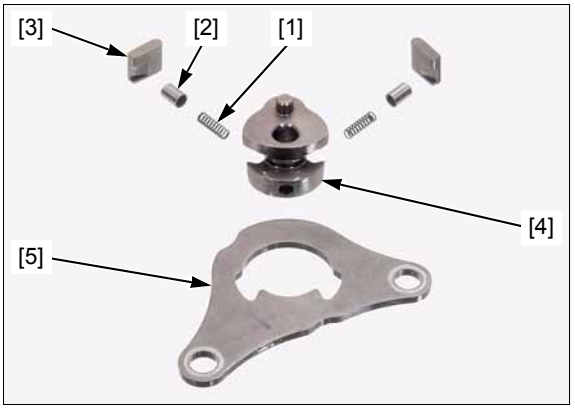
Apply locking agent to the threads of the shift drum center bolt [1] (page 1-21).
Install the shift drum center bolt and tighten it to the specified torque.

TORQUE: 31 N·m (3.2 kgf·m, 23 lbf·ft)

Install the stopper arm side collar [2], dowel pin [3], and guide plate distance collar [4].



Install the plunger springs [1], plungers [2], and ratchet pawls [3] into the drum shifter [4] and set them in the drum shifter guide plate [5].



Install the drum shifter guide plate/drum shifter assembly [1].

Apply locking agent to the threads of the guide plate bolts [2] (page 1-20).
Install the bolts and tighten them.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

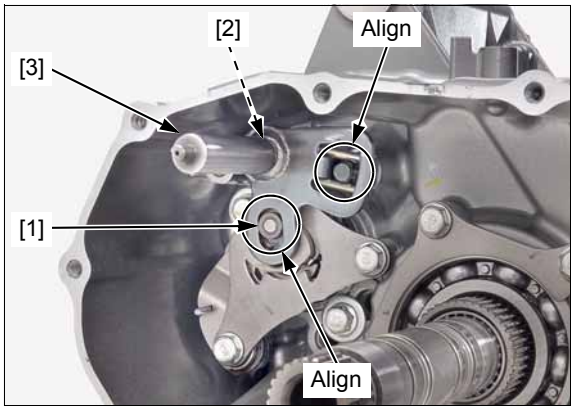


Install the drum shifter collar [1] onto the drum shifter.

Install the washer [2] onto the gearshift spindle [3] and insert the spindle into the crankcase while aligning the return spring ends with spring pin and the spindle arm hole with the drum shifter collar.

Install the following:

– Dual clutch (page 13-69)
– Reduction gears/shift control motor (page 13-73)



MAINSHAFT SENSOR

INNER MAINSHAFT SENSOR REMOVAL/INSTALLATION

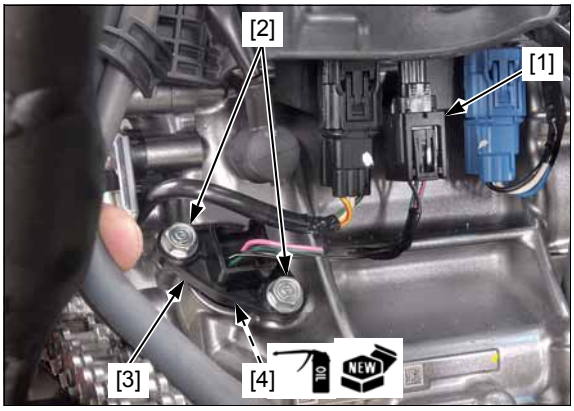
Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.
Remove the rear shock absorber (page 18-8).

Release the inner mainshaft sensor 3P (Black) connector [1] from the connector clip stay and disconnect it.

Remove the bolts [2], inner mainshaft sensor [3], and O-ring [4].

Installation is in the reverse order of removal.

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



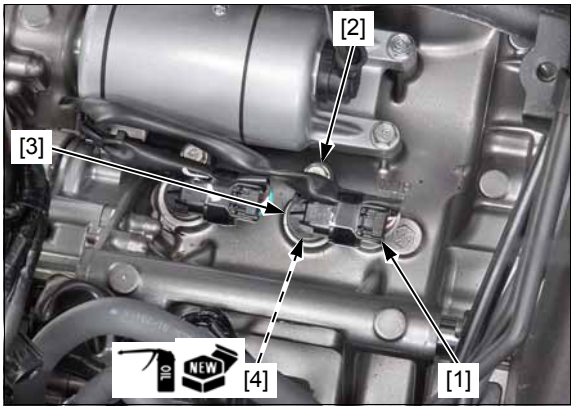
OUTER MAINSHAFT SENSOR REMOVAL/INSTALLATION

Remove the battery box (page 21-6).

Disconnect the outer mainshaft sensor 3P (Black) connector [1].
Remove the bolt [2] and outer mainshaft sensor [3], and O-ring [4].

Installation is in the reverse order of removal.

NOTE:
- The outer mainshaft sensor and VS sensor are the same parts.
- Replace the O-ring with a new one.
- Apply engine oil to a new O-ring.



TR SENSOR

REMOVAL/INSTALLATION

Remove the left rear cover (page 2-10).
Remove the shift control motor cover (page 13-71).

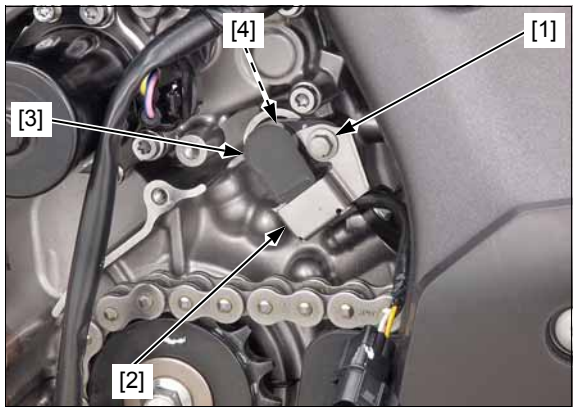
Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.
Remove the rear shock absorber (page 18-8).

Release the TR sensor 3P (Black) connector [1] from the connector clip stay and disconnect it.



Remove the following:

– Bolt [1]
– Sensor cover [2]
– TR sensor [3]
– O-ring [4]



Installation is in the reverse order of removal.

NOTE:

- Always replace the O-ring [1] with a new one.
- Apply engine oil to a new O-ring.
- Align the flat surfaces of the TR sensor and shift drum end.
- Route the wires properly (page 1-26).

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



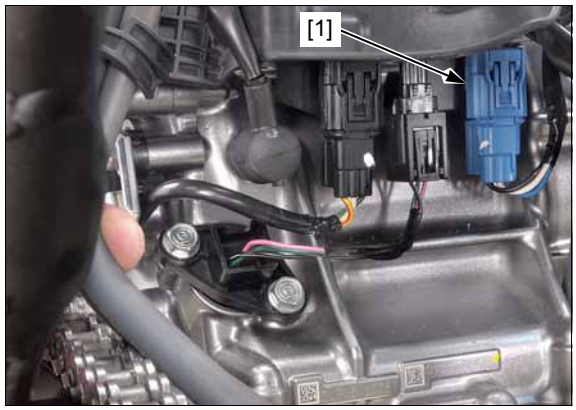
SHIFT SPINDLE ANGLE SENSOR

REMOVAL/INSTALLATION

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

Remove the rear shock absorber (page 18-8).

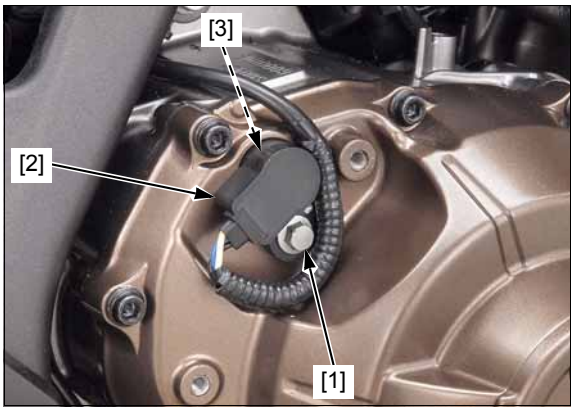
Release the shift spindle angle sensor 3P (Blue) connector [1] from the connector clip stay, and disconnect it.



Remove the bolts [1] and engine right side rear cover [2].



Remove the bolt [1], shift spindle angle sensor [2], and O-ring [3].



Installation is in the reverse order of removal.

NOTE:

- Always replace the O-ring [1] with a new one.
- Apply engine oil to a new O-ring.
- Align the flat surfaces of the shift spindle angle sensor and gearshift spindle end.
- Route the hoses and wires properly (page 1-26).

TORQUE:

Shift spindle angle sensor bolt:
12 N·m (1.2 kgf·m, 9 lbf·ft)

Engine right side rear cover bolt:
10 N·m (1.0 kgf·m, 7 lbf·ft)

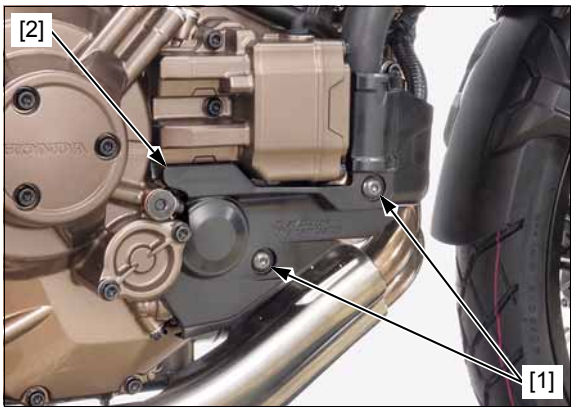


CLUTCH EOP SENSOR

REMOVAL/INSTALLATION

Drain the engine oil (page 3-12).

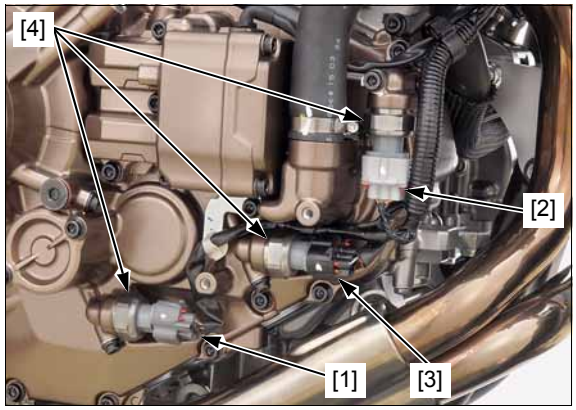
Remove the bolts [1] and clutch EOP sensor cover [2].



Disconnect the following:

– Clutch line EOP sensor 3P (Gray) connector [1]
– No.1 Clutch EOP sensor 3P (Gray) connector [2]
– No.2 Clutch EOP sensor 3P (Black) connector [3]

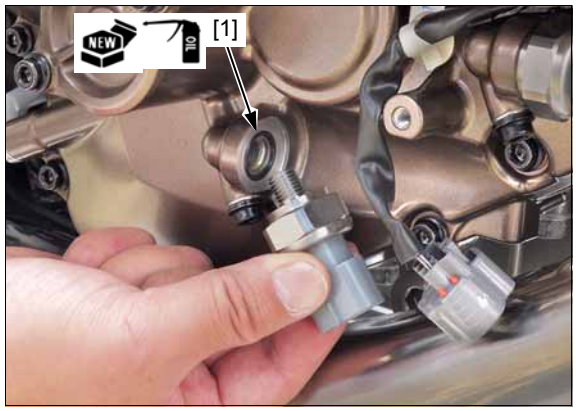
Remove the clutch EOP sensors [4] and O-rings from the right crankcase cover.



NOTE:

- These three clutch EOP sensors are the same parts.

Installation is in the reverse order of removal.



NOTE:

- Replace the O-ring [1] with a new one.
- Coat a new O-ring with engine oil.
- Route the wire properly (page 1-26).

TORQUE:
No.1/No.2 clutch EOP sensor:
20 N·m (2.0 kgf·m, 15 lbf·ft)
Clutch line EOP sensor:
20 N·m (2.0 kgf·m, 15 lbf·ft)
Clutch EOP sensor cover bolt:
10 N·m (1.0 kgf·m, 7 lbf·ft)

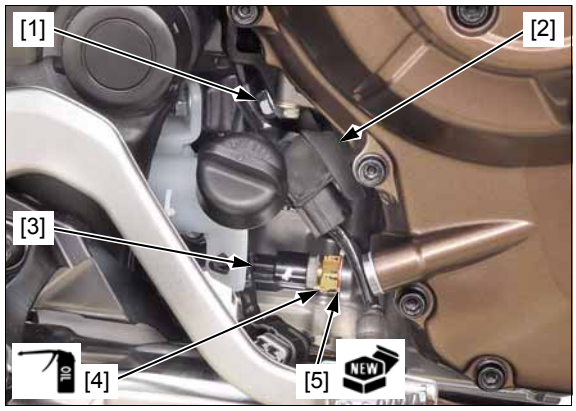
EOT SENSOR

REMOVAL/INSTALLATION

Disconnect the O_2 sensor 4P (Black) connector (page 2-17).
Drain the engine oil (page 3-12).

Remove the bolt [1] and connector stay [2].

Disconnect the EOT sensor 2P (Black) connector [3].
Remove the EOT sensor [4] and sealing washer [5] from the crankcase.



Installation is in the reverse order of removal.

NOTE:

- Apply engine oil to the EOT sensor threads and seating surface.
- Replace the sealing washer with a new one.

TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)

NEUTRAL SWITCH

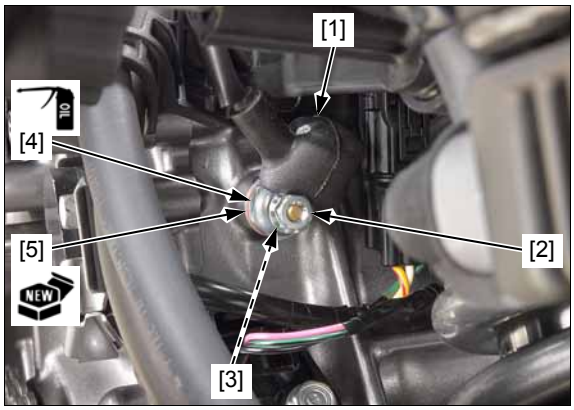
REMOVAL/INSTALLATION

Release the rubber cap [1].

Remove the nut [2] and disconnect the neutral switch terminal [3].

Remove the neutral switch [4] and sealing washer [5].

Installation is in the reverse order of removal.



NOTE:

- Apply engine oil to the neutral switch threads and seating surface.
- Replace the sealing washer with a new one.

TORQUE:

Neutral switch:
12 N·m (1.2 kgf·m, 9 lbf·ft)

Neutral switch terminal nut:
1.7 N·m (0.2 kgf·m, 1.3 lbf·ft)

CLUTCH INITIALIZE LEARNING (PCM)

NOTE:

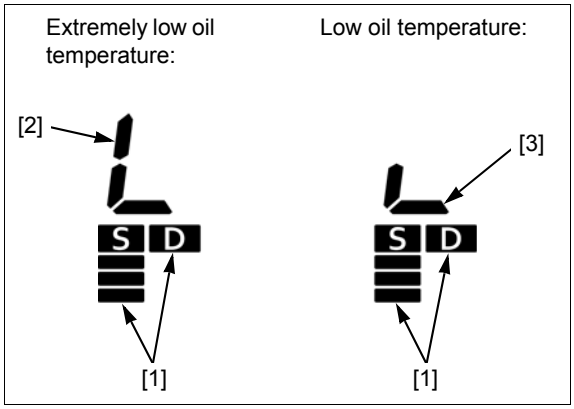
- If the PCM and/or clutch assembly are replaced, perform this procedure.
- Before starting this procedure, check the following:
  – PGM-FI system and DCT system have no DTC.
  – Engine idle speed is normal.
  – Transmission is in neutral and cooling fan stops.
- Do not operate the throttle during clutch initialize learning

1. Warm up the engine to the normal operating temperature (engine oil temperature: 50 – 110°C/122 – 230°F) and stop it.

NOTE:

If the PCM is replaced with a new one, when the ignition switch is turned on the "D" and "S" indicators [1] will come on to indicate that the clutch initialization learning procedure is necessary.

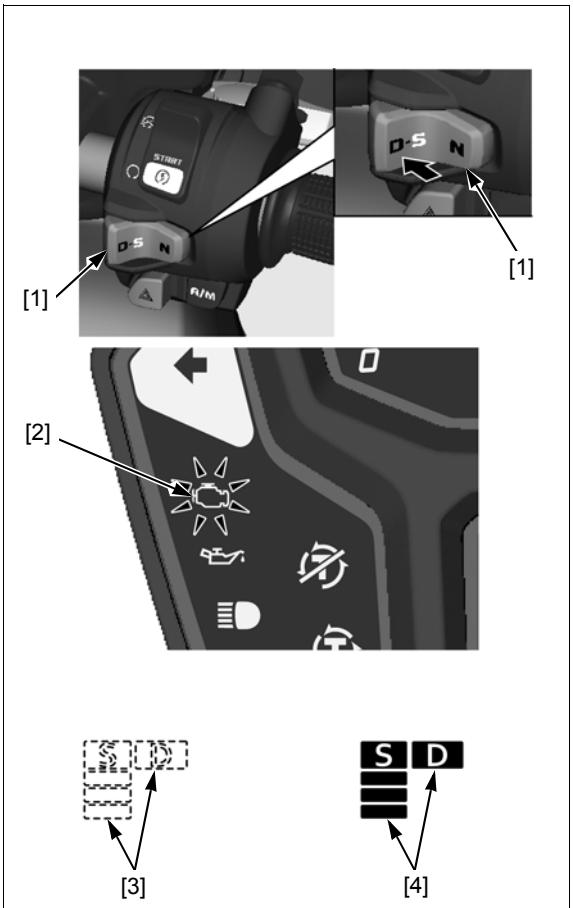
Furthermore, if the large "L" (extremely low oil temperature indicator) [2], or small "L" (low oil temperature indicator) [3] is displayed on the shift indicator, the engine must be warmed before proceeding.



2. Turn the ignition switch ON with the engine stop switch "○" while pushing the D switch [1] of the N-D switch. The MIL [2] will come on.

   Release the D switch after the MIL goes off.

- When only the dual clutch assembly is replaced:
  No indication appears on the shift indicator [3].
- When the PCM is replaced:
  The "D" and "S" indicators [4] come on.



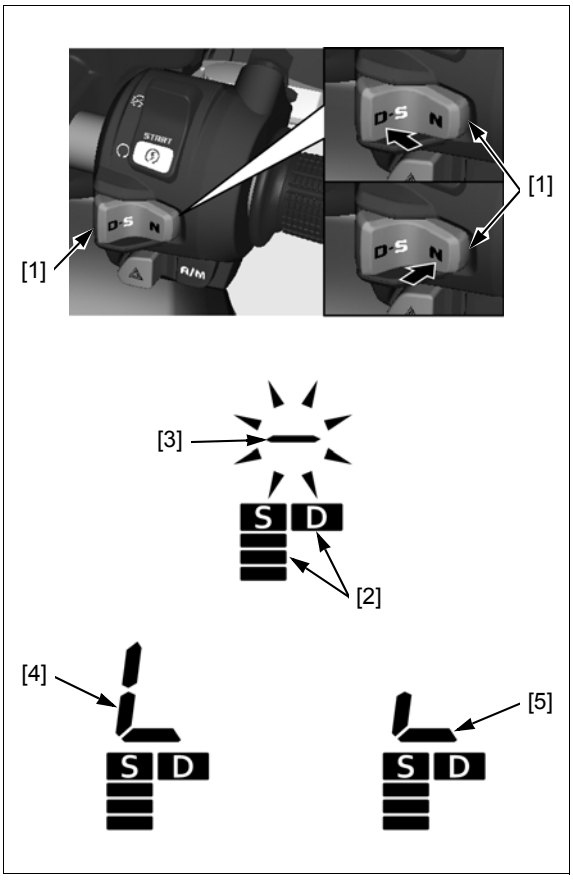
3. Operate the N-D switch [1] in the sequence as follows:

– Push the D switch
– Push the D switch
– Push the N switch
– Push the D switch
– Push the N switch

- When only the dual clutch assembly is replaced:
  The PCM is ready to clutch initialize learning when the "D" and "S" indicators [2] lights, and the "–" [3] is displayed on the shift indicator and blinks an interval of 2 seconds.
- When the PCM is replaced:
  The PCM is ready to clutch initialize learning when the "–" is displayed on the shift indicator and blinks an interval of 2 seconds.

NOTE:

When the engine is not warmed up enough, the large "L" [4] (extremely low oil temperature) or small "L" [5] (low oil temperature) is displayed on the shift indicator. If so, warm up the engine until the "L" on the shift indicator goes off. Stop the engine and perform steps 2 and 3 again.

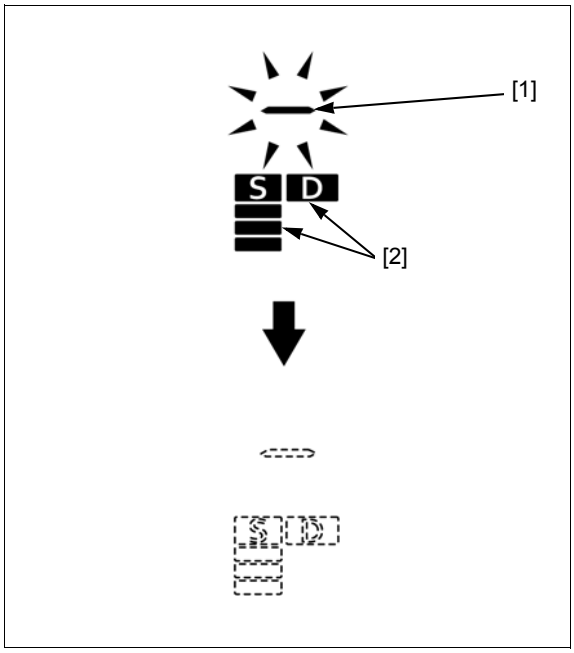


4. Start the engine and let it idle. The "–" [1] on the shift indicator starts blinking an interval of 2 seconds. The Clutch Initialize Learning is successful, when the "–", "D" and "S" indicators [2] go off.
   Stop the engine.

NOTE:

The clutch initialize learning is unsuccessful, if the "–" starts blinking an interval of 0.5 second or it goes off, and the "D" and "S" indicators stay on. Perform the initialize learning procedure from step 2 again.

5. Stop the engine.
6. Restart the engine, push the D switch of the N-D switch and check that the "D" indicator comes on.



14. CRANKCASE/TRANSMISSION/BALANCER

SERVICE INFORMATION ····· 14-2

TROUBLESHOOTING ····· 14-3

COMPONENT LOCATION ····· 14-4

BALANCER ····· 14-6

CRANKCASE SEPARATION ····· 14-13

TRANSMISSION ····· 14-15

CRANKCASE ASSEMBLY ····· 14-27

SERVICE INFORMATION

GENERAL (CRF1000/A)

- The crankcase must be separated to service the following:
  – Transmission
  – Crankshaft (page 15-4)
  – Piston/cylinder (page 15-12)
- The following components must be removed before separating the crankcase:
  – Engine (page 16-5)
  – Clutch (page 12-8)
  – Gearshift linkage (page 12-17)
  – Primary drive gear (page 12-15)
  – Balancer (page 14-6)
  – Flywheel (page 11-7)
  – Cylinder head (page 10-13)
  – Oil pump (page 9-5)
  – Starter motor (page 6-5)
  – VS sensor (page 4-42)
  – Gear position switch (page 22-25)
- 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.

GENERAL (CRF1000D)

- The crankcase must be separated to service the following:
  – Transmission
  – Crankshaft (page 15-4)
  – Piston/cylinder (page 15-12)
- The following components must be removed before separating the crankcase:
  – Engine (page 16-5)
  – Dual clutch (page 13-63)
  – Gearshift linkage (page 13-74)
  – Primary drive gear (page 13-70)
  – Balancer (page 14-6)
  – Flywheel (page 11-7)
  – Cylinder head (page 10-13)
  – Oil pump (page 9-5)
  – Starter motor (page 6-5)
  – Shift control motor/reduction gears (page 13-71)
  – Mainshaft sensors (page 13-78)
  – VS sensor (page 4-42)
  – Neutral switch (page 13-82)
- 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.

TROUBLESHOOTING

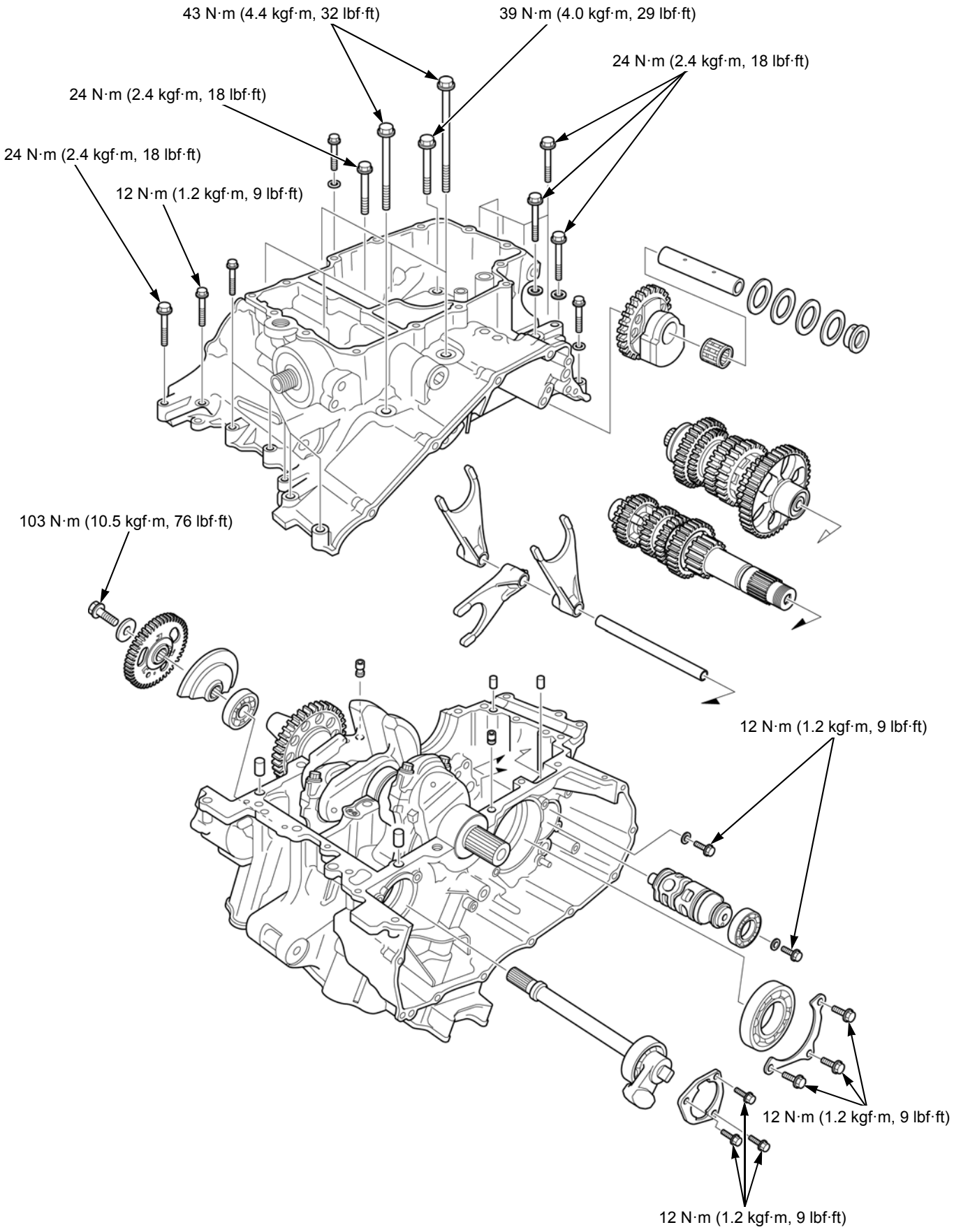
Hard to shift
- Improper clutch operation
- Incorrect engine oil weight
- Bent shift fork
- Bent shift fork shaft
- Bent shift fork claw
- Damaged shift drum groove
- Bent gearshift spindle
  - CRF1000/A (page 12-17)
  - CRF1000D (page 13-74)

Transmission jumps out of gear
- Worn gear dogs
- Worn gear shifter groove
- Bent shift fork shaft
- Worn or bent shift forks
- Broken shift drum stopper arm
  - CRF1000/A (page 12-17)
  - CRF1000D (page 13-74)
- Broken shift drum stopper arm return spring
  - CRF1000/A (page 12-17)
  - CRF1000D (page 13-74)
- Broken gearshift spindle return spring
  - CRF1000/A (page 12-17)
  - CRF1000D (page 13-74)

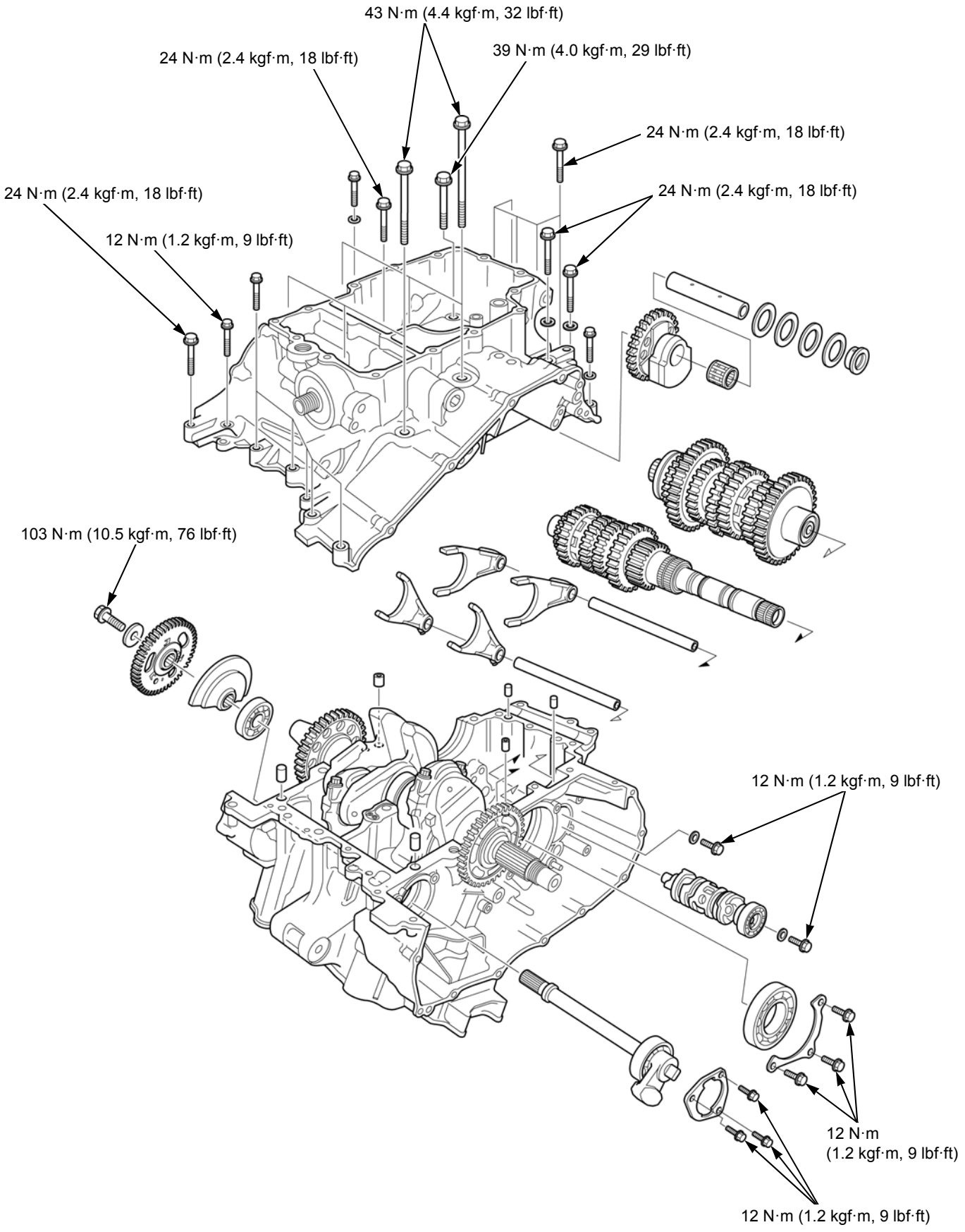
Excessive engine noise
- Worn or damaged transmission gear
- Worn or damaged transmission bearings
- Incorrect balancer installation

COMPONENT LOCATION

CRF1000/A:



CRF1000D:


43 N·m (4.4 kgf·m, 32 lbf·ft)
24 N·m (2.4 kgf·m, 18 lbf·ft)
39 N·m (4.0 kgf·m, 29 lbf·ft)
24 N·m (2.4 kgf·m, 18 lbf·ft)
24 N·m (2.4 kgf·m, 18 lbf·ft)
24 N·m (2.4 kgf·m, 18 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
103 N·m (10.5 kgf·m, 76 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
12 N·m
(1.2 kgf·m, 9 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)

BALANCER

FRONT BALANCER

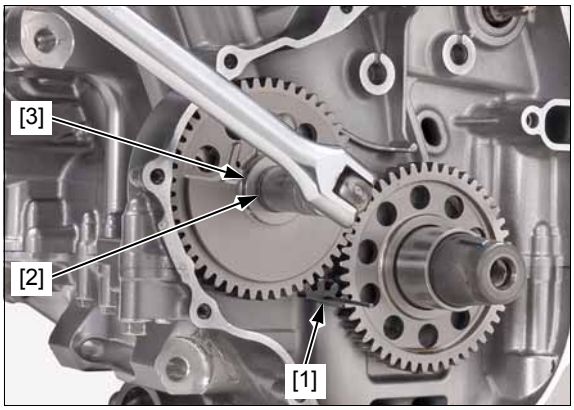
REMOVAL

Remove the flywheel (page 11-7).

Install the special tool between the front balancer drive and driven gears.

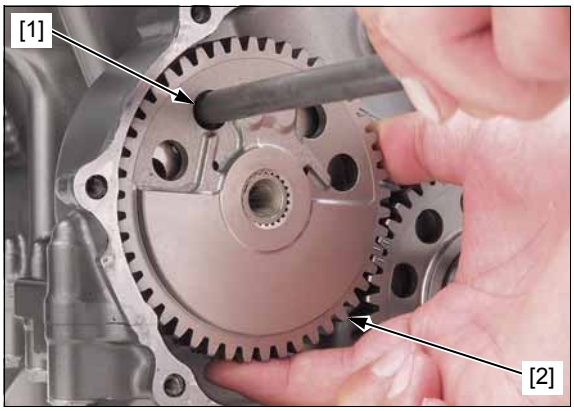
TOOL:
Gear holder, 2.5 [1] **07724-0010100**

Remove the front balancer gear bolt [2] and washer [3].

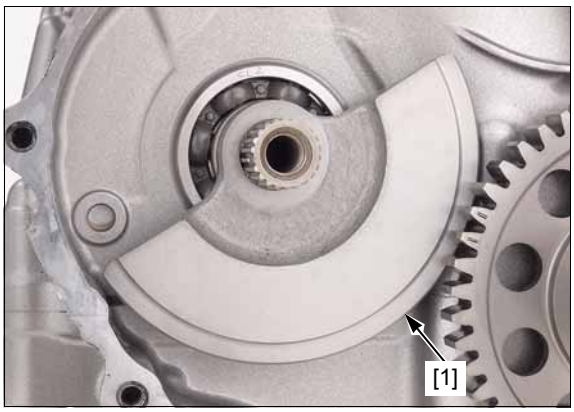


Line up the front balancer driven gear and sub gear teeth by inserting a suitable pin [1] into the holes of gears.

Remove the front balancer driven gear [2].



Remove the left front balancer [1].



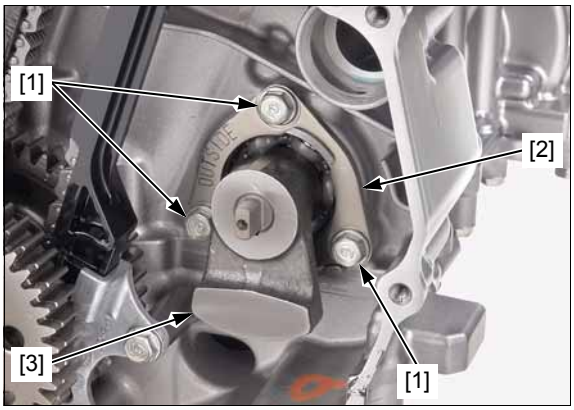
Remove the right crankcase cover.

– CRF1000/A (page 12-4)
– CRF1000D (page 13-52)

Remove the front balancer bearing set plate bolts [1] and set plate [2].

Remove the front balancer shaft/bearing assembly [3].

Remove the left front balancer bearing.



FRONT BALANCER DRIVEN GEAR DISASSEMBLY

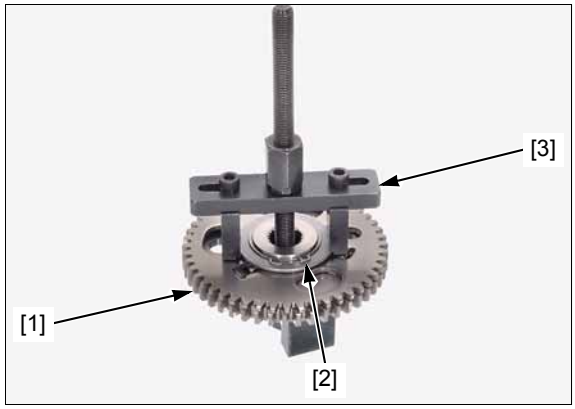
Remove the front balancer driven gear (page 14-6).

To prevent loss of spring tension, do not compress the spring assembly more than necessary.

Set the special tools onto the front balancer driven gear [1] as shown and remove the snap ring [2] by compressing the return spring assembly.

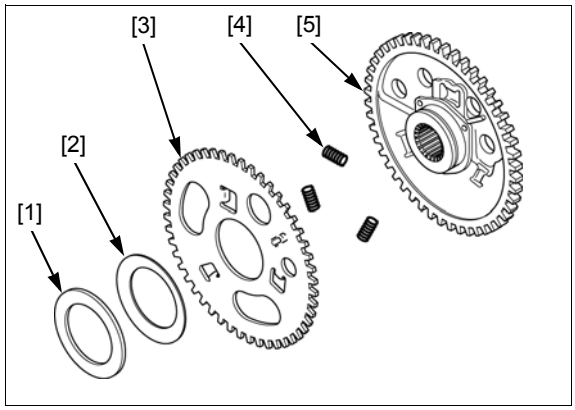
TOOL:
Clutch compressor set [3] 07LAE-PX40000

Remove the special tools.



Disassemble the following:

– Washer [1]
– Friction spring [2]
– Front balancer sub driven gear [3]
– Springs [4]
– Front balancer driven gear [5]



INSPECTION

Inspect the following parts for scratch, damage, abnormal wear, or deformation.

– Balancer driven gear
– Balancer driven sub-gear
– Springs
– Balancer shaft
– Balancer shaft bearings

Replace if necessary.

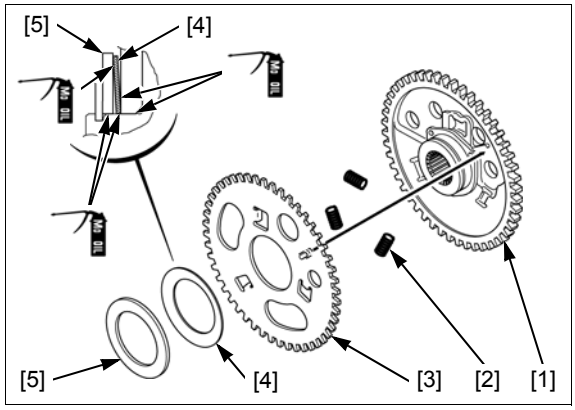
FRONT BALANCER DRIVEN GEAR ASSEMBLY

Assemble the following:

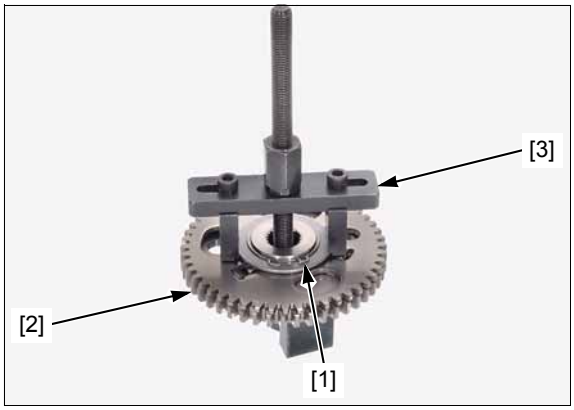
– Front balancer driven gear [1]
– Springs [2]
– Front balancer sub driven gear [3]
– Friction spring [4]
– Washer [5]

NOTE:

- Apply molybdenum oil solution to the balancer driven gear, sub driven gear, friction spring, and washer sliding surface.
- Install the sub driven gear by aligning its boss as shown.
- Install the friction spring as shown.



Place the snap ring [1] onto the front balancer driven gear assembly [2].



To prevent loss of spring tension, do not compress the spring assembly more than necessary.

Set the special tools onto the front balancer driven gear assembly as shown and install the snap ring into the its guide groove by compressing the friction spring.

TOOL:
Clutch compressor set [3] 07LAE-PX40000

NOTE:

- Install the snap ring with the chamfered edge facing opposite side of the washer and make sure that it is firmly seated in the groove.

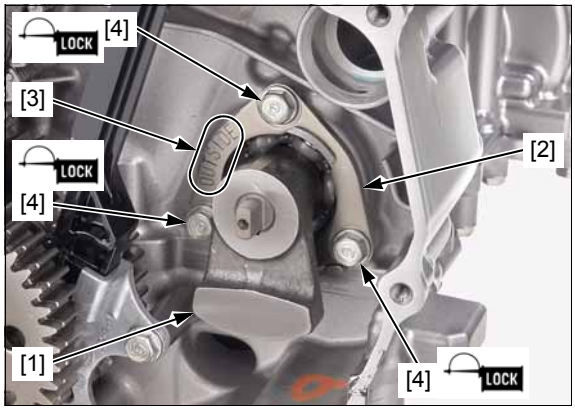
Remove the special tools.

INSTALLATION

Install the left front balancer bearing with the marked side facing out.

Install the right front balancer shaft/bearing assembly [1].

Apply locking agent to the front balancer bearing set plate bolts threads (page 1-20).
Install the set plate [2] with its "OUTSIDE" mark [3] facing out.
Install the front balancer bearing set plate bolts [4] and tighten them to the specified torque.

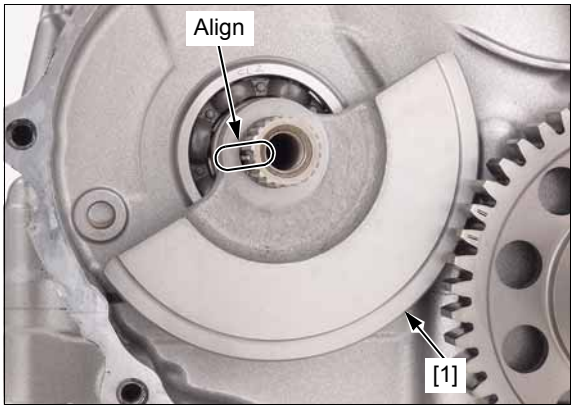


TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the right crankcase cover.

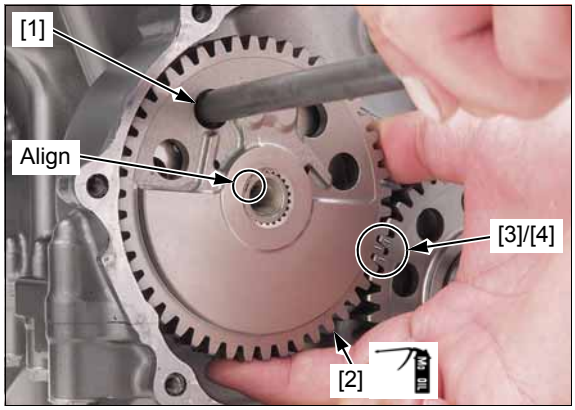
– CRF1000/A (page 12-6)
– CRF1000D (page 13-55)

Install the left front balancer [1] by aligning its wide tooth with the front balancer shaft clinched tooth.



Apply molybdenum oil solution to the front balancer driven gear sliding area and thrust surface.

Line up the front balancer driven gear and sub gear teeth by inserting a suitable pin [1] into the holes of gears.
Install the front balancer driven gear [2].



NOTE:

- Align the front balancer driven gear wide tooth with the front balancer shaft clinched tooth.
- Make sure that the balancer driven gear index line [3] is positioned between the balancer drive gear index lines [4].

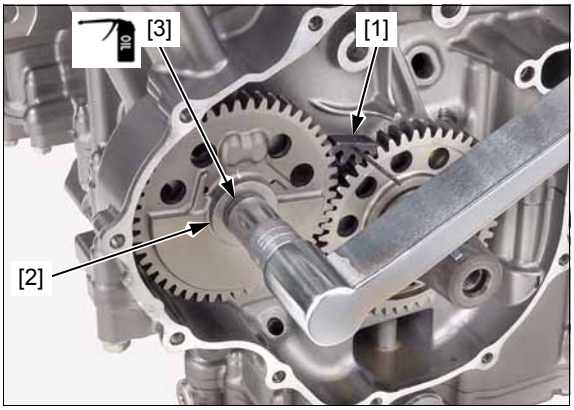
Install the special tool between the front balancer drive and driven gears.

TOOL:
Gear holder, 2.5 [1] 07724-0010100

Apply engine oil to the front balancer shaft bolt threads and seating surface.
Install the washer [2] and front balancer gear bolt [3].
Tighten the bolt to the specified torque.

TORQUE: 103 N·m (10.5 kgf·m, 76 lbf·ft)

Install the flywheel (page 11-7).



REAR BALANCER

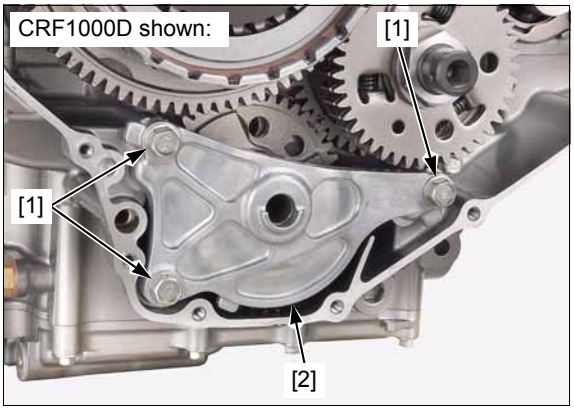
REMOVAL/DISASSEMBLY

Remove the right crankcase cover.

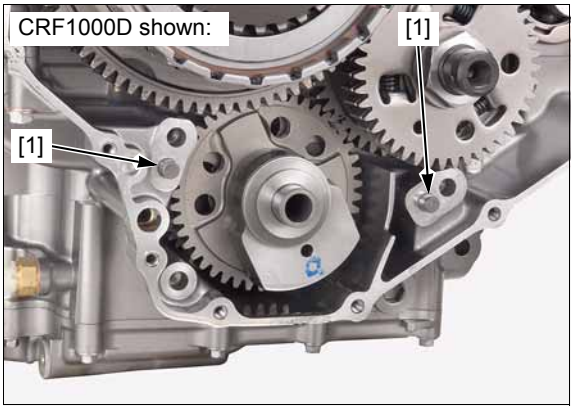
– CRF1000/A (page 12-4)
– CRF1000D (page 13-52)

CRF1000/A: Line up the primary drive gear and sub gear teeth (page 12-10).

Remove the bolts [1] and rear balancer shaft holder [2].

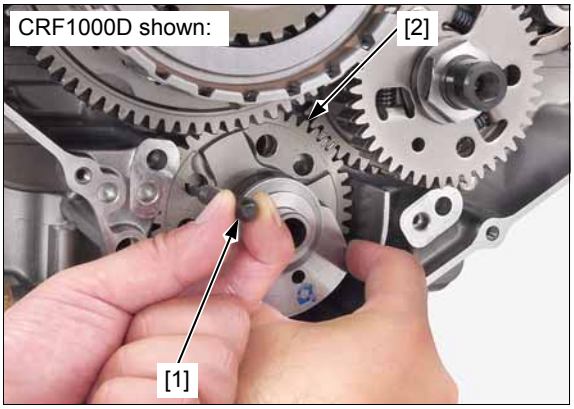


Remove the dowel pins [1].



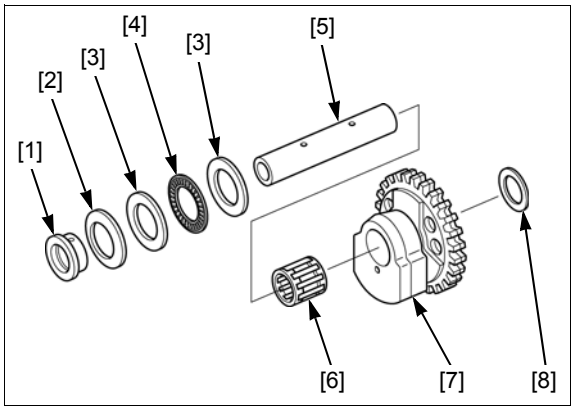
Line up the rear balancer driven gear and sub gear teeth by inserting a suitable pin [1] into the holes of gears.

Remove the rear balancer driven gear assembly [2].

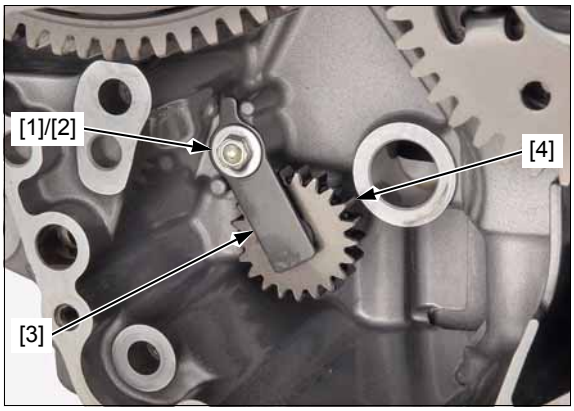


Disassemble the following:

- Collar [1]
- Thrust spring [2]
- Washers A [3]
- Thrust bearing [4]
- Rear balancer shaft [5]
- Needle bearing [6]
- Rear balancer driven gear assembly [7]
- Washer B [8]



- Bolt [1]
- Washer [2]
- Set plate [3]
- Oil pump driven gear [4]



REAR BALANCER DRIVEN GEAR DISASSEMBLY

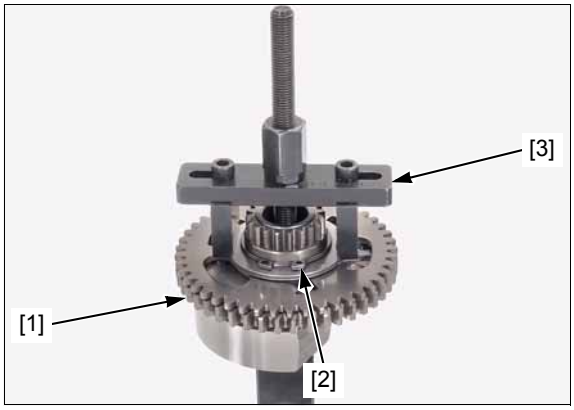
Remove the rear balancer driven gear (page 14-9).

To prevent loss of spring tension, do not compress the spring assembly more than necessary.

Set the special tools onto the rear balancer driven gear [1] as shown and remove the snap ring [2] by compressing the return spring assembly.

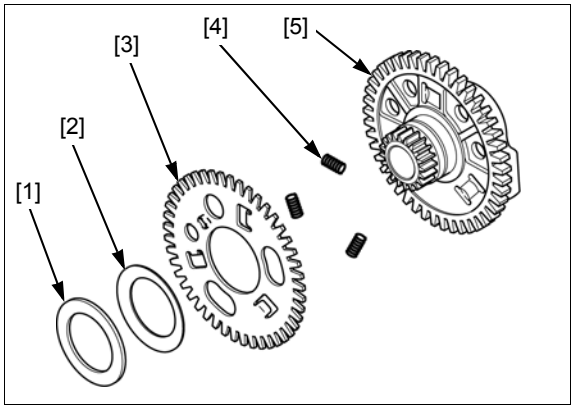
TOOL:
Clutch compressor set [3] 07LAE-PX40000

Remove the special tools.



Disassemble the following:

- Washer [1]
- Friction spring [2]
- Rear balancer sub driven gear [3]
- Springs [4]
- Rear balancer driven gear [5]



INSPECTION

Inspect the following parts for scratch, damage, abnormal wear, or deformation.

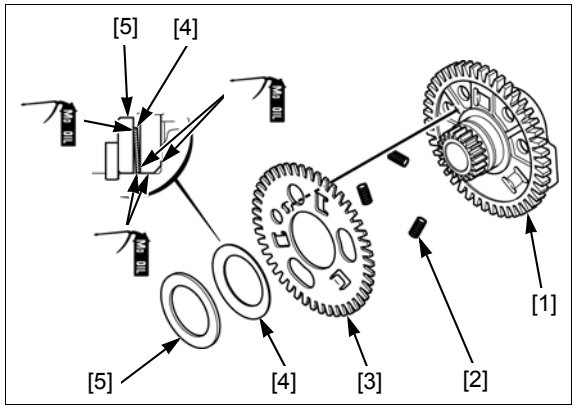
– Balancer driven gear
– Balancer sub driven gear
– Springs
– Balancer shaft
– Bearings

Replace if necessary.

REAR BALANCER DRIVEN GEAR ASSEMBLY

Assemble the following:

– Rear balancer driven gear [1]
– Springs [2]
– Rear balancer sub driven gear [3]
– Friction spring [4]
– Washer [5]



NOTE:

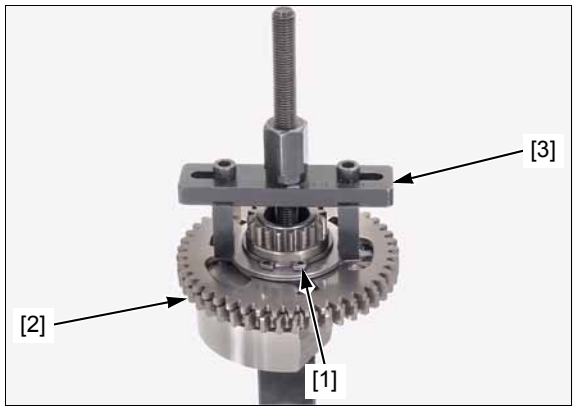
- Apply molybdenum oil solution to the balancer driven gear, sub driven gear, friction spring, and washer sliding surface.
- Install the sub driven gear by aligning its boss as shown.
- Install the friction spring as shown.

Place the snap ring [1] onto the rear balancer driven gear assembly [2].

To prevent loss of spring tension, do not compress the spring assembly more than necessary.

Set the special tools onto the front balancer driven gear assembly as shown and install the snap ring into the its guide groove by compressing the friction spring.

TOOL:
Clutch compressor set [3] 07LAE-PX40000



NOTE:

- Install the snap ring with the chamfered edge facing opposite side of the washer and make sure that it is firmly seated in the groove.

Remove the special tools.

ASSEMBLY/INSTALLATION

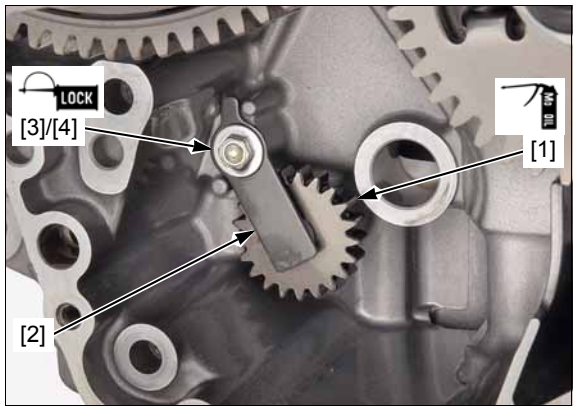
Apply molybdenum oil solution to the oil pump driven gear shaft outer surface.

Install the oil pump driven gear [1].

Apply locking agent to the bolt threads (page 1-20)

Install the set plate [2], washer [3], and bolt [4] and tighten the bolt to the specified torque.

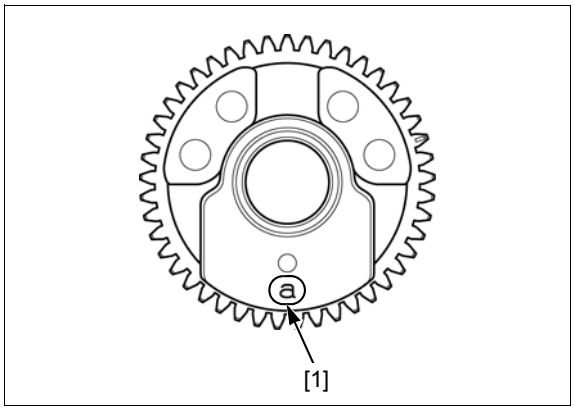
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



If you are replacing the rear balancer driven gear and/or needle bearing, record the corresponding balancer driven gear I.D. code [1] from the balancer weight.

If you are reusing the rear balancer driven gear, measure the balancer journal I.D. with a micrometer.

Cross-reference the balancer journal I.D. and needle bearing codes to determine the replacement needle bearing color code [1].



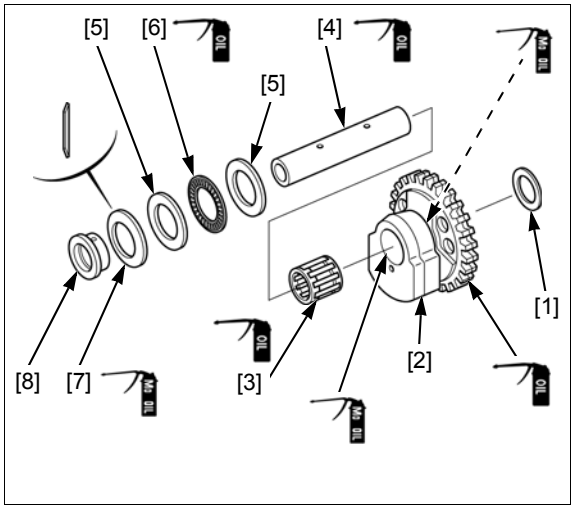
NEEDLE BEARING O.D.:
91015-MJP-G510-M1: Thickest
91016-MJP-G510-M1: ↕
91017-MJP-G510-M1: Thinnest

REAR BALANCER NEEDLE BEARING SELECTION TABLE:

	REAR BALANCER DRIVEN GEAR I.D. CODE		
	a	b	c
	27.000 – 27.005 mm (1.0630 – 1.0632 in)	26.996 – 27.000 mm (1.0628 – 1.0630 in)	26.992 – 26.996 mm (1.0627 – 1.0628 in)
NEEDLE BEARING PARTS NO.	91015-MJP-G510-M1	91016-MJP-G510-M1	91017-MJP-G510-M1

Assemble the following:

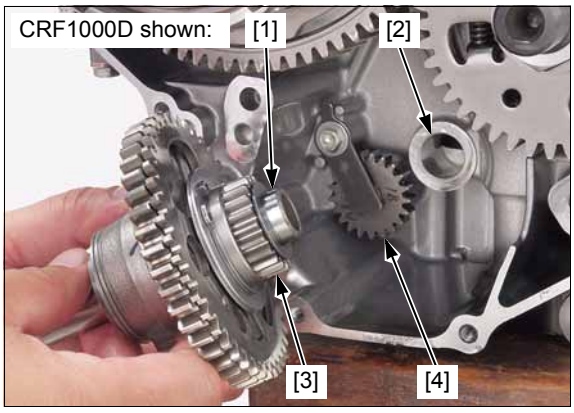
– Washer B [1]
– Rear balancer driven gear assembly [2]
– Needle bearing [3]
– Rear balancer shaft [4]
– Washers A [5]
– Thrust bearing [6]
– Thrust spring [7]
– Collar [8]



NOTE:
- Coat the shaft, bearings, and gear teeth with engine oil.
- Apply molybdenum oil solution to the thrust spring sliding surface.
- Apply molybdenum oil solution to the rear balancer driven gear sliding area and thrust surface.
- Install the friction spring as shown.

Insert the rear balancer driven gear assembly shaft end [1] into the hole [2] of the lower crankcase.

NOTE:
- Engage the oil pump drive [3] and driven gear [4].

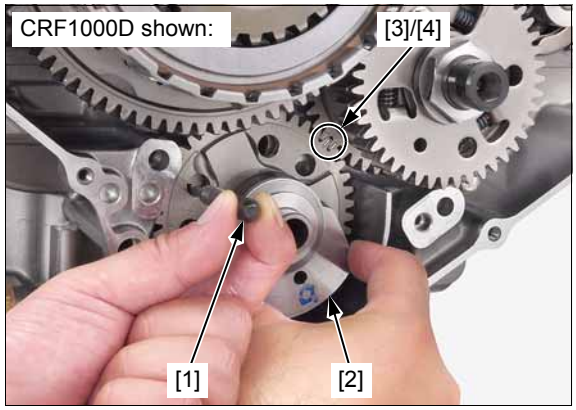


Line up the rear balancer driven gear and sub gear teeth by inserting a suitable pin [1] into the holes of gears.

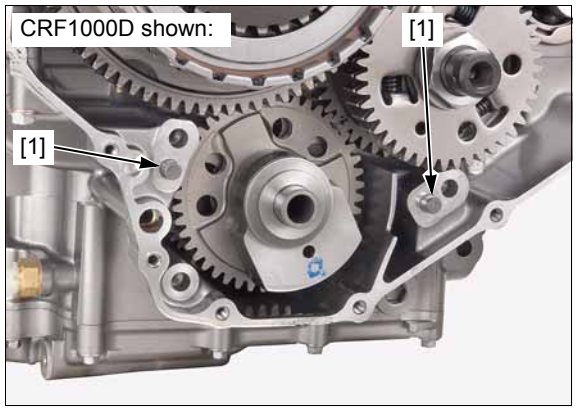
Install the rear balancer driven gear assembly [2].

NOTE:

- Make sure that the index line [3] on the balancer drive gear is positioned between the index lines [4] on the balancer driven gear as shown.



Install the dowel pins [1].

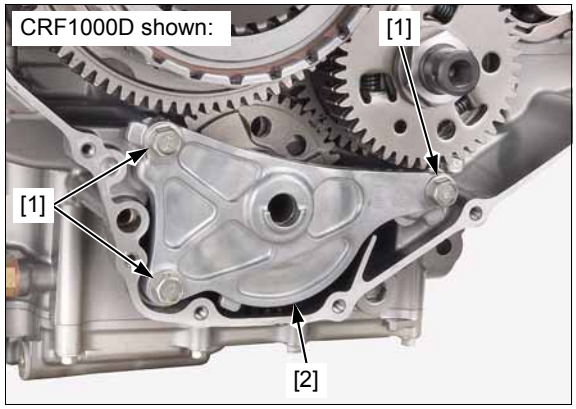


Install the bolts [1] and rear balancer shaft holder [2] and tighten the bolts to the specified torque.

TORQUE: 29 N·m (3.0 kgf·m, 21 lbf·ft)

CRF1000/A: Remove the 6 mm bolt from the primary drive gear.

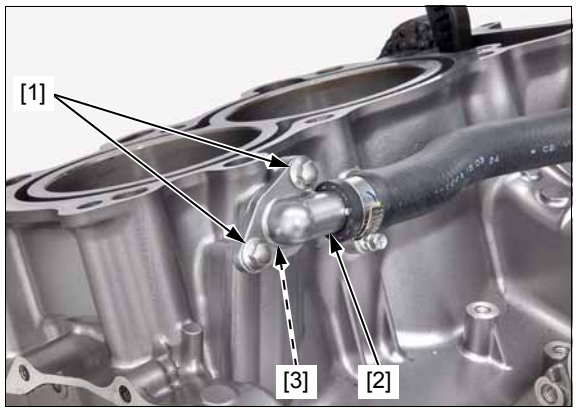
Install the right crankcase cover.
– CRF1000/A (page 12-6)
– CRF1000D (page 13-55)



CRANKCASE SEPARATION

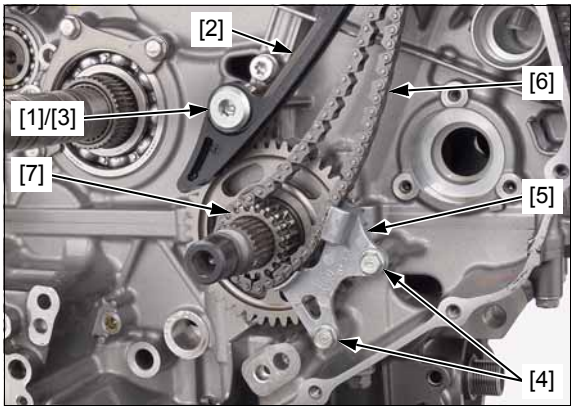
For Service Information for removal of the necessary parts before separating the crankcase (page 14-2).

Remove the bolts [1], water hose flange [2], and O-ring [3].



CRF1000D: Remove the cam chain tensioner pivot bolt [1], cam chain tensioner [2], and washer [3].

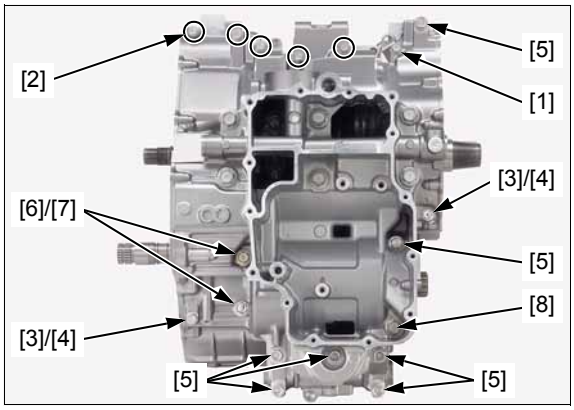
Remove the bolts [4], cam chain guide plate [5], cam chain [6], and timing sprocket [7].



Place the engine upside down.

Loosen the crankcase bolts in a crisscross pattern in 2 or 3 steps, and remove the bolts and washers.

– 6 x 40 mm bolt (Blue paint) [1]
– Five 6 x 35 mm bolts [2]
– Two 6 mm bolts [3] and sealing washers [4]
– Seven 8 mm bolts [5]
– Two 8 mm bolts [6] and sealing washers [7]
– 10 mm bolt [8]

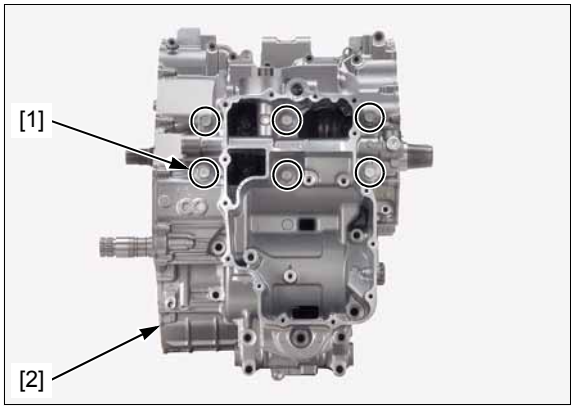


Loosen the crankcase main journal bolts [1] in a crisscross pattern in 2 or 3 step, and remove them.

Separate the lower crankcase [2] from the upper crankcase.

NOTE:

• Do not pry the crankcase halves with a screwdriver.

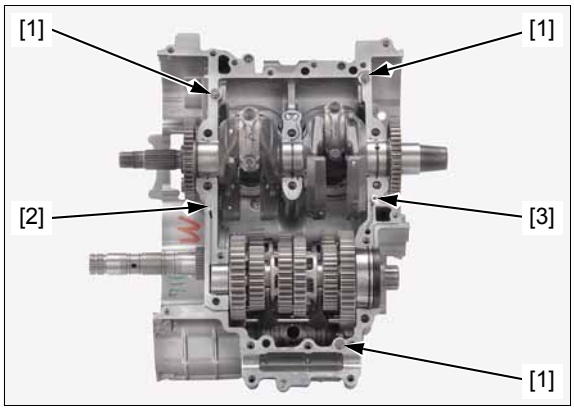


Remove the dowel pins [1], oil joint A [2], and oil joint B [3].

Clean any sealant off from the crankcase mating surface.

Clean the oil orifices in solvent thoroughly.

Check the oil orifices for clog, and replace them if necessary.



TRANSMISSION

REMOVAL/DISASSEMBLY

COUNTERSHAFT

Separate the crankcase halves (page 14-13).

Remove the countershaft assembly [1].

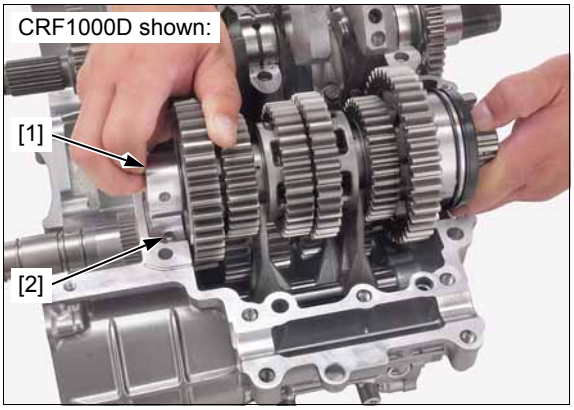
Remove the dowel pin [2].

Disassemble the countershaft assembly.

Clean all disassembled parts in solvent thoroughly.

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.



SHIFT FORK/SHIFT DRUM

CRF1000/A: Remove the countershaft (page 14-15).

Remove the shift drum bearing setting bolt [1] and washer [2].



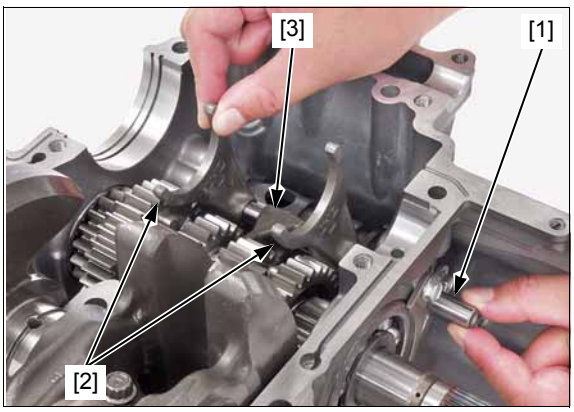
CRF1000D: Remove the countershaft (page 14-15).

Remove the shift drum bearing setting bolt [1] and washer [2].



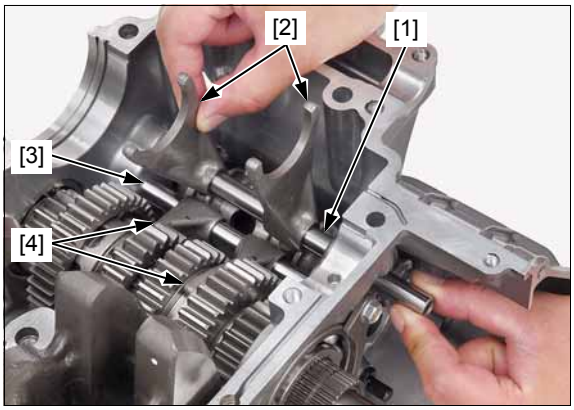
CRF1000/A: Remove the following:

– Shift fork shaft [1]
– Countershaft shift forks [2]
– Mainshaft shift fork [3]



CRF1000D: Remove the following:

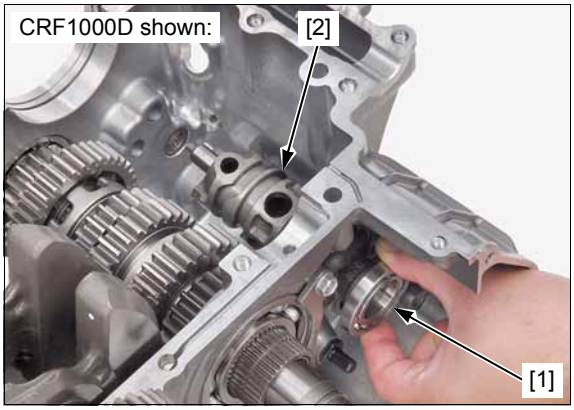
- Countershaft shift fork shaft [1]
- Countershaft shift forks [2]
- Mainshaft shift fork shaft [3]
- Mainshaft shift forks [4]



Remove the shift drum bearing setting bolt [1] and washer [2].



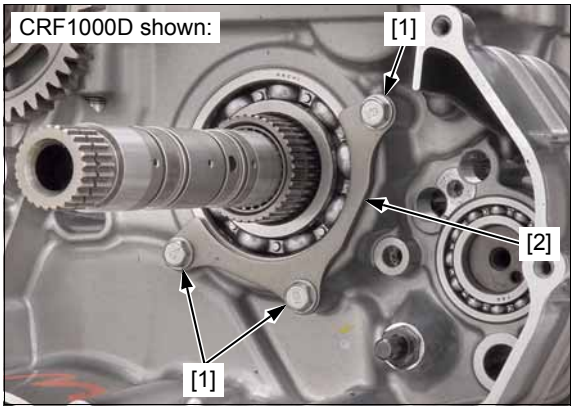
Remove the shift drum bearing [1] and shift drum [2].



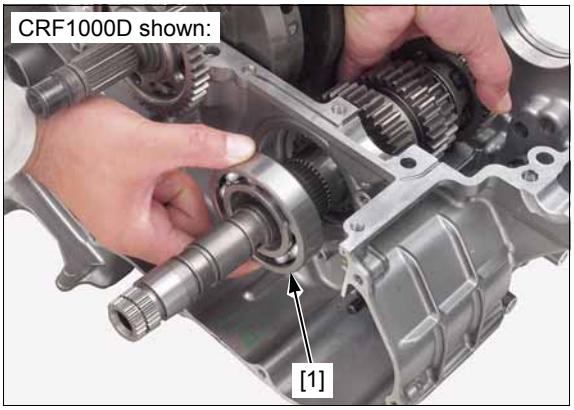
MAINSHAFT

Remove the shift forks/shift drum (page 14-15).

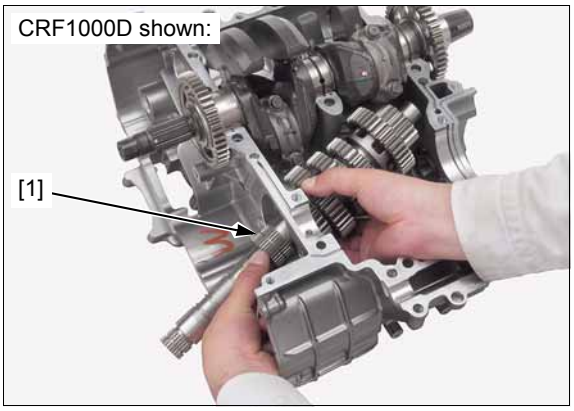
Remove the mainshaft bearing set plate bolts [1] and set plate [2].



Remove the right mainshaft bearing [1] from the upper crankcase.



Remove the mainshaft assembly [1].



Disassemble the mainshaft assembly.

Clean all disassembled parts in solvent thoroughly.

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

Inspect the following parts for scratch, damage, abnormal wear, or deformation.

– Transmission gears
– Transmission bushings
– Transmission bearings
– Shift drum/bearing
– Shift forks
– Shift fork shafts

Measure each part according to CRANKCASE/ TRANSMISSION SPECIFICATIONS.

– CRF1000/A (page 1-8)
– CRF1000D (page 1-9)

Replace any part if it is out of service limit.

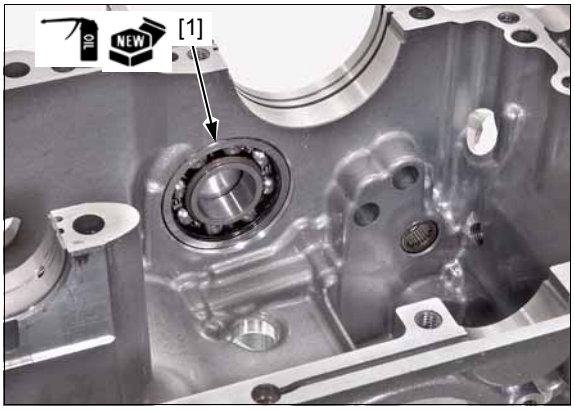
UPPER CRANKCASE BEARING REPLACEMENT

Remove the following:

– Transmission (page 14-15)
– Crankshaft (page 15-4)
– Piston (page 15-12)

LEFT MAINSHAFT BEARING

Remove the left mainshaft bearing [1] using the special tools.



TOOLS:

Bearing remover shaft set, 25 mm	**07936-ZV10100**
Remover weight	**07741-0010201**

Apply engine oil to a new left mainshaft bearing.

Drive in a new bearing squarely with the marking side facing toward the inside of the crankcase.

Drive in the left mainshaft bearing until it is fully seated using the special tools.

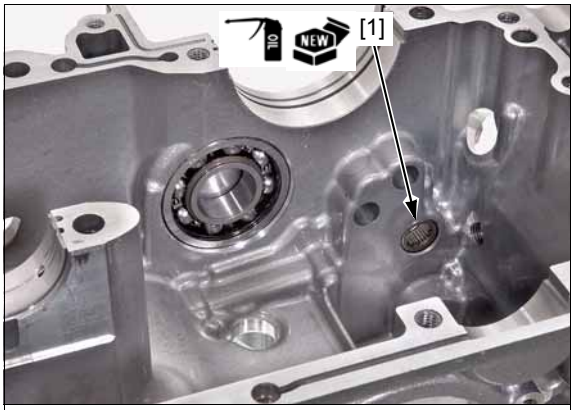
TOOLS:

Driver, 15 x 280L	**07949-3710001**
Attachment, 52 x 55 mm	**07746-0010400**
Pilot, 25 mm	**07746-0040600**

Install the removed parts in the reverse order of removal.

SHIFT DRUM NEEDLE BEARING (CRF1000D)

Drive out the shift drum needle bearing [1].



Apply engine oil to a new needle bearing.

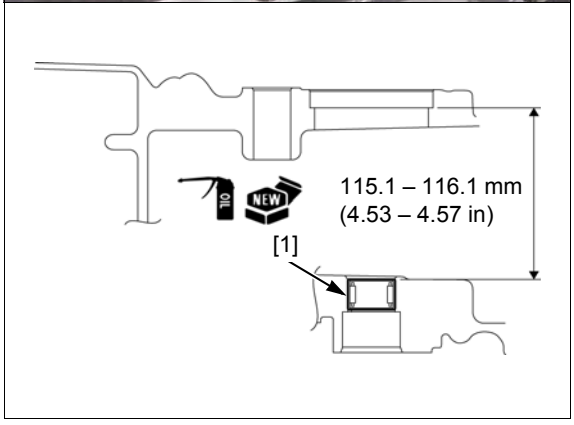
Drive in the needle bearing squarely with the marking side facing toward the outside of the crankcase.

Drive in the needle bearing until it is in position as shown using the special tools.

TOOLS:

Driver, 15 x 280L	**07949-3710001**
Pilot, 12 mm	**07746-0040200**

Install the removed parts in the reverse order of removal.



SHIFT CONTROL MOTOR REDUCTION GEAR BEARING (CRF1000D)

Do not use a torch to heat the upper crankcase; it may cause warping.

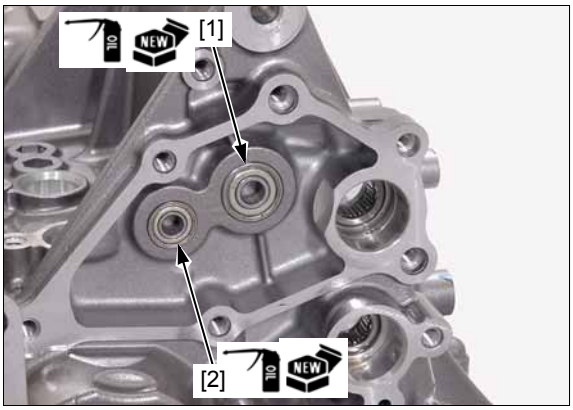
Heat the upper crankcase to 80°C (176°F) evenly using a heat gun.

Tap the upper crankcase lightly and remove the bearings.

– Radial ball bearing (607ZZ) [1]
– Radial ball bearing (696ZZ) [2]

Apply engine oil to new bearings.
Drive in the bearings squarely with the marking side facing up until they are fully seated.

Install the removed parts in the reverse order of removal.



GEARSHIFT SPINDLE NEEDLE BEARING (CRF1000D)

Do not use a torch to heat the upper crankcase; it may cause warping.

Heat the upper crankcase to 80°C (176°F) evenly using a heat gun.

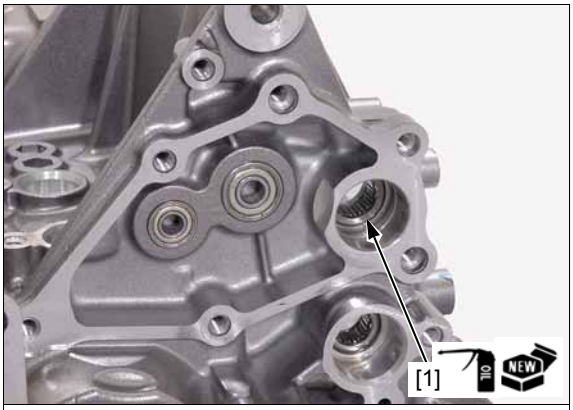
Tap the upper crankcase lightly and remove the gearshift spindle needle bearing [1].

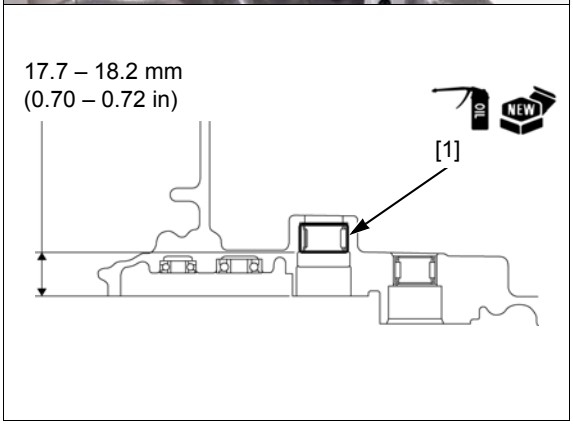
Apply engine oil to a new needle bearing.

Drive in the needle bearing with the marking side facing toward the outside of the crankcase until it is in position as shown.

TOOLS:
Seal driver, 14 x 22 mm 07PPD-YE10100

Install the removed parts in the reverse order of removal.





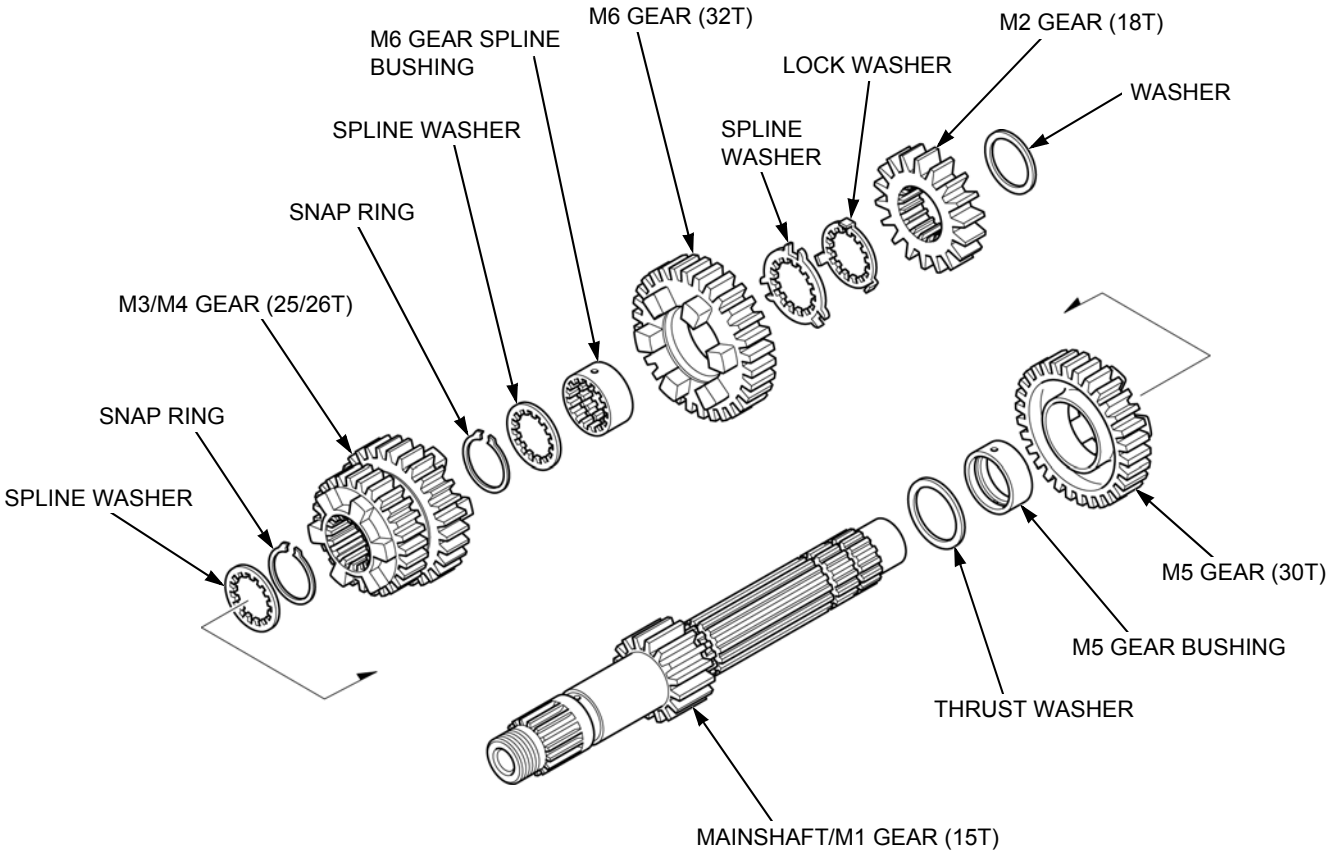
TRANSMISSION ASSEMBLY

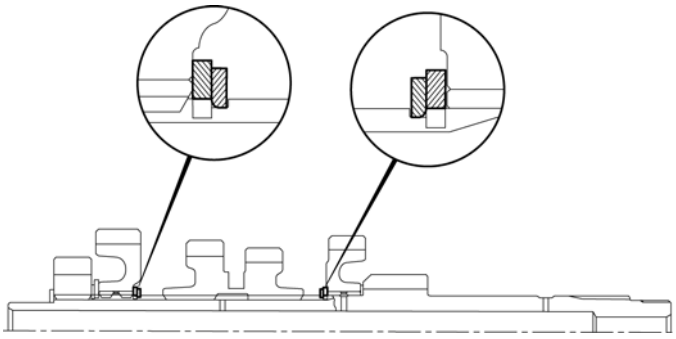
Apply engine oil to the gear teeth, rotating surface and bearing.

Apply molybdenum oil solution to the spline bushing outer surface, bushing inner and outer surface, shift fork grooves.

Assemble the mainshaft and countershaft.

MAINSHAFT (CRF1000/A)

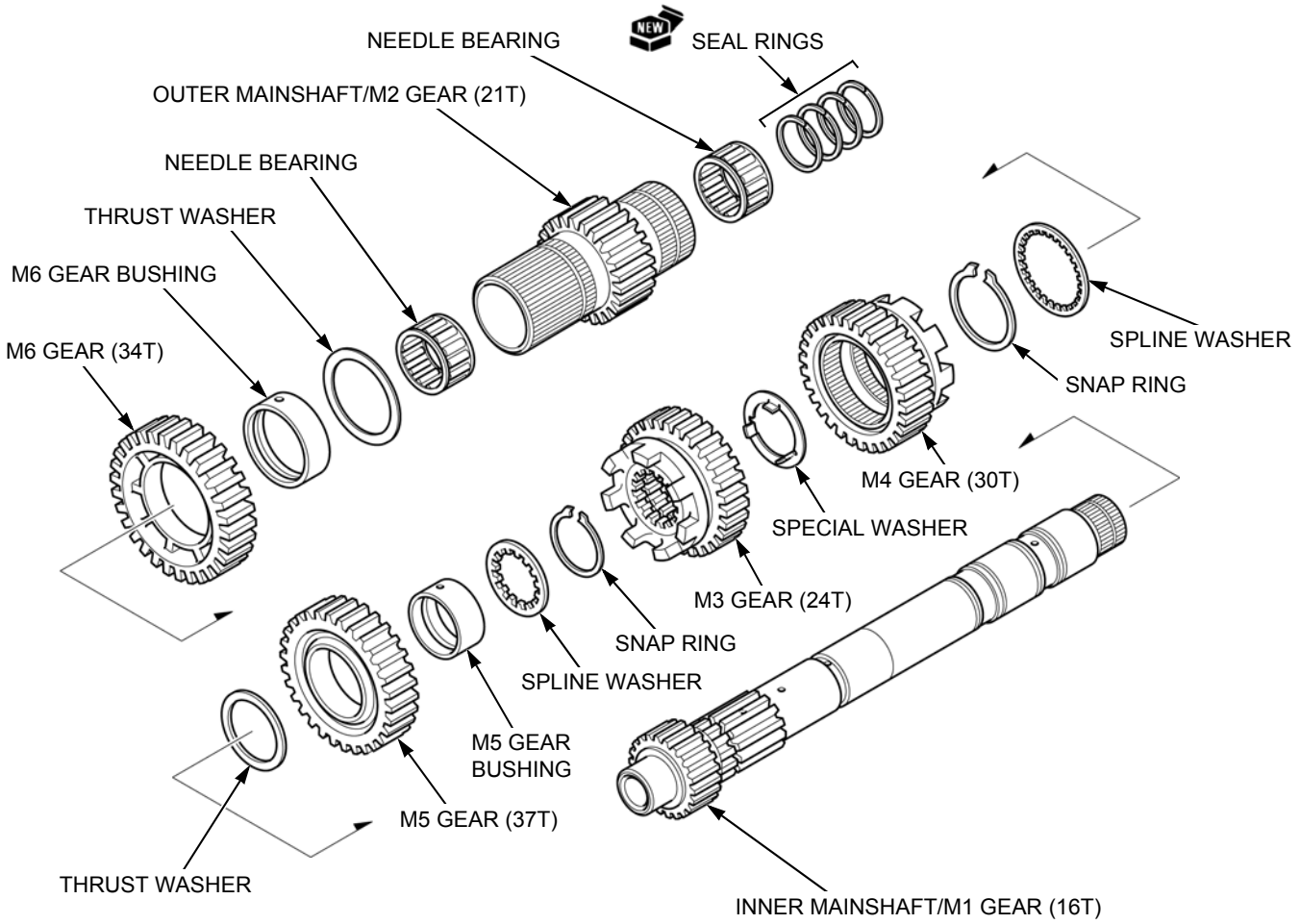




: Gear teeth, rotating surfaces

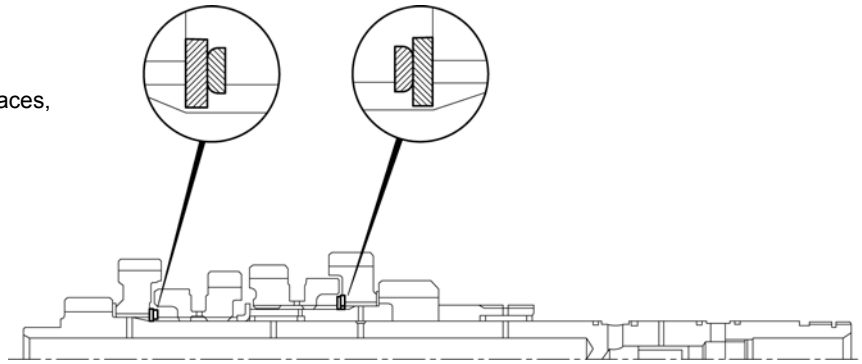
: Bushing surfaces, needle bearing surfaces, and shifter gear grooves/spline area

MAINSHAFT (CRF1000D)

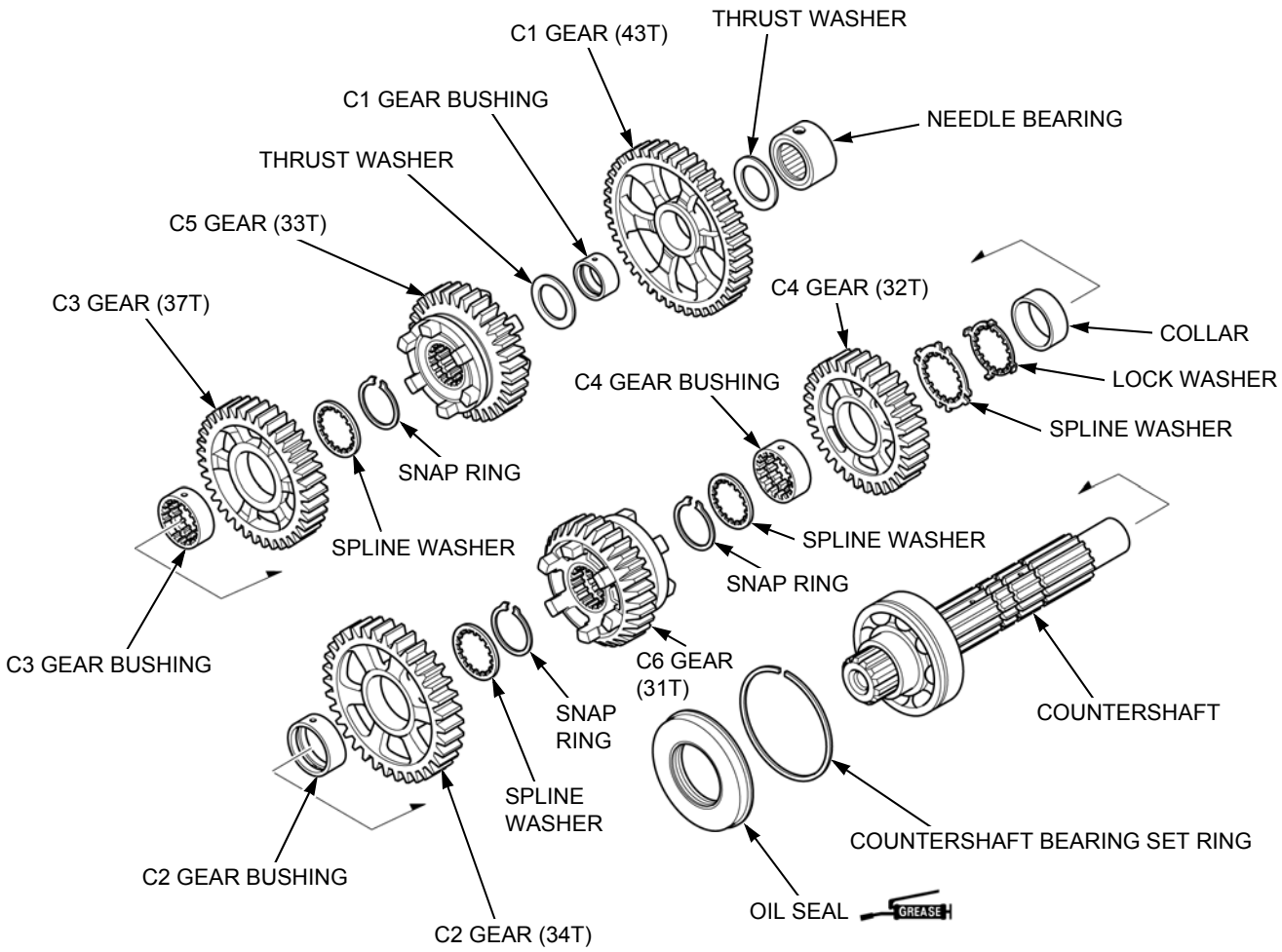


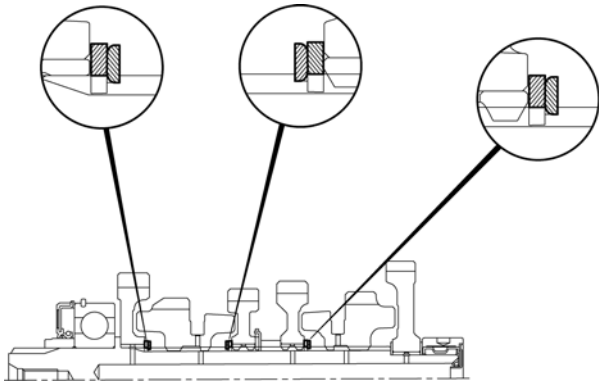
OIL : Gear teeth, rotating surfaces

MOLY : Bushing surfaces, needle bearing surfaces, and shifter gear grooves/spline area



COUNTERSHAFT (CRF1000/A)

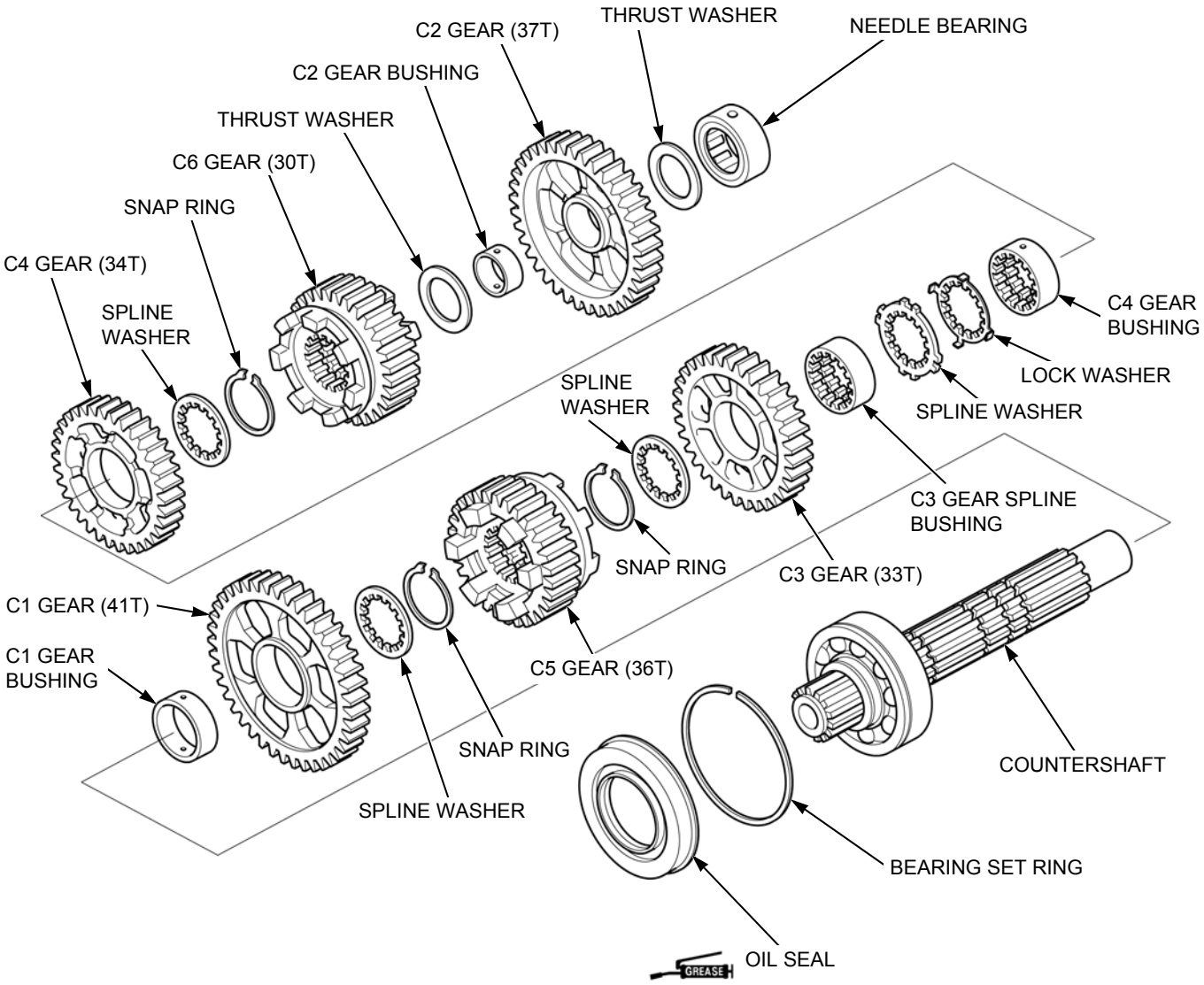




: Gear teeth, rotating surfaces

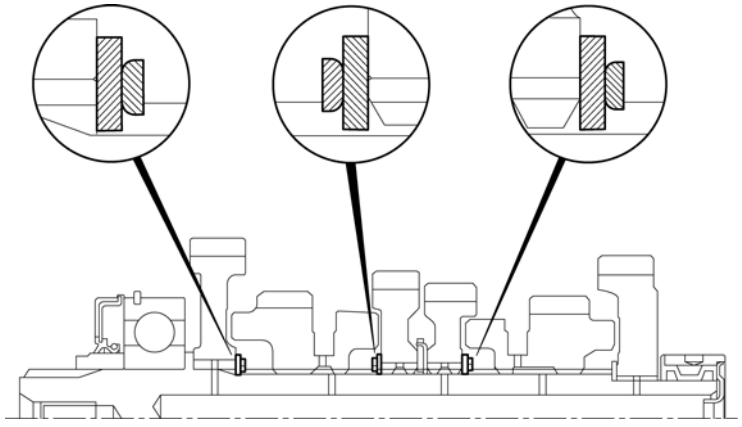
: Bushing surfaces, needle bearing surfaces, and shifter gear grooves/spline area

COUNTERSHAFT (CRF1000D)



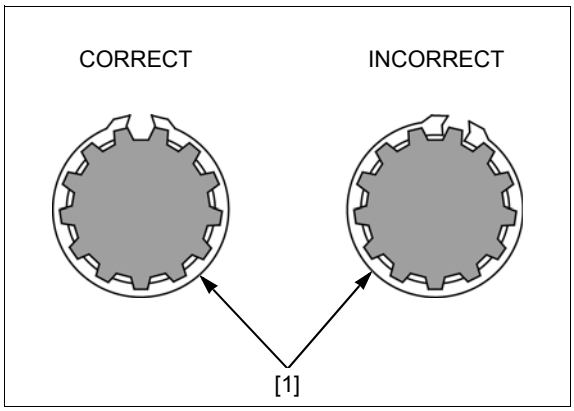
: Gear teeth, rotating surfaces

: Bushing surfaces, needle bearing surfaces, and shifter gear grooves/spline area



NOTE:

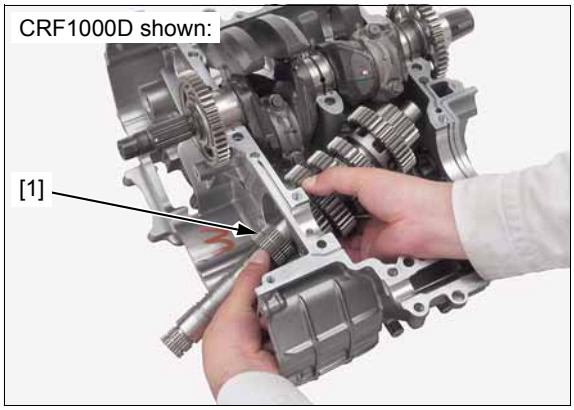
- Align the lock washer tabs with the spline washer grooves.
- Always install the thrust washers and snap rings with the chamfered (rolled) edge facing away from the thrust load.
- Install the snap rings [1] so that the end gap aligns with the groove of the splines.
- Make sure that the snap rings are fully seated in the shaft groove after installing them.



INSTALLATION

MAINSHAFT

Install the mainshaft assembly [1] into the upper crankcase.

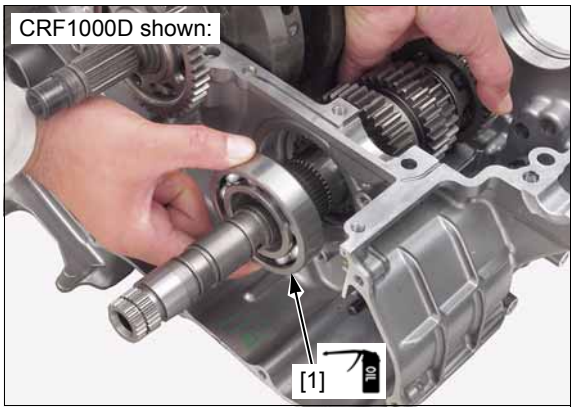


Apply engine oil to the right mainshaft bearing [1].

Install the right mainshaft bearing into the upper crankcase.

NOTE:

- Install the bearing into the crankcase with the marked side facing out.

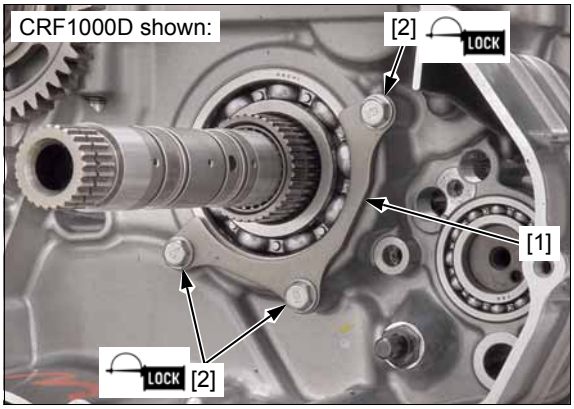


Apply locking agent to the mainshaft bearing set plate bolts threads (page 1-20).

Install the mainshaft bearing set plate [1].

Install the mainshaft bearing set plate bolts [2] and tighten them to the specified torque.

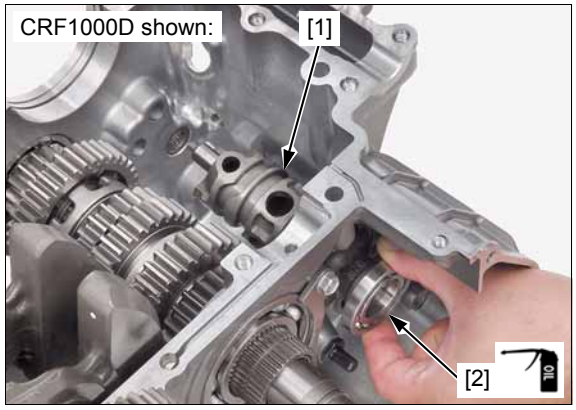
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



SHIFT DRUM/SHIFT FORK

Apply engine oil to the shift drum bearing.

Install the shift drum [1] and shift drum bearing [2] into the lower crankcase.

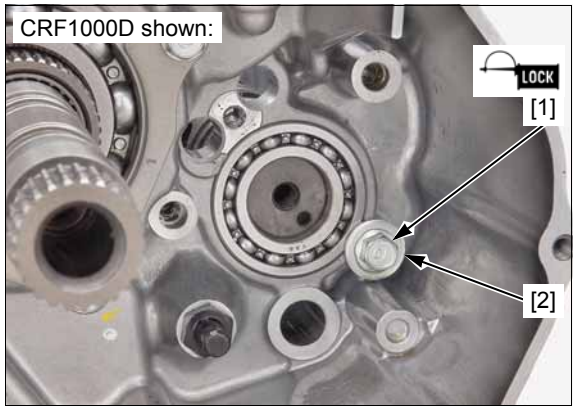


Apply locking agent to the shift drum bearing setting bolt threads (page 1-20).

Install the shift drum bearing setting bolt [1] and washer [2].

Tighten the bolt to the specified torque.

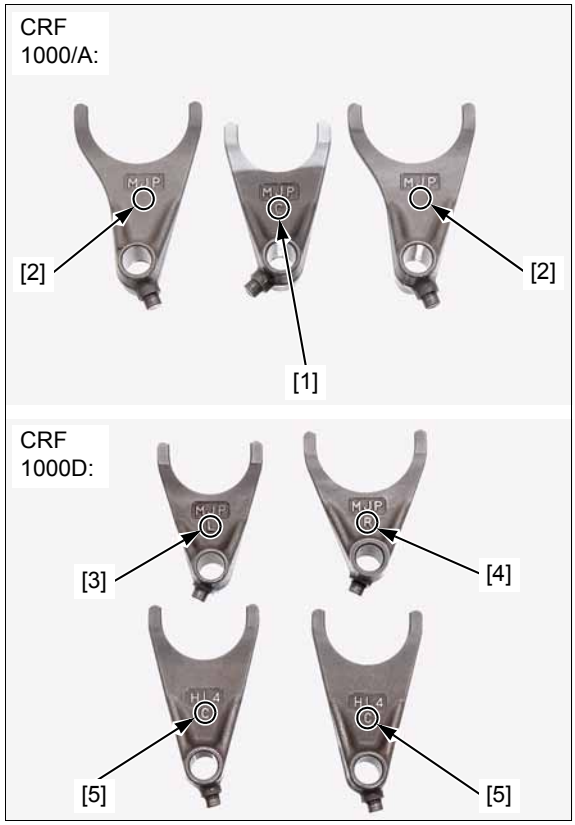
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



The shift forks have the following identification marks:

CRF1000/A:
– "C" mark [1]: mainshaft shift fork
– No mark [2]: left/right countershaft shift fork

CRF1000D:
– "L" mark [3]: left mainshaft shift fork
– "R" mark [4]: right mainshaft shift fork
– "C" mark [5]: countershaft shift fork

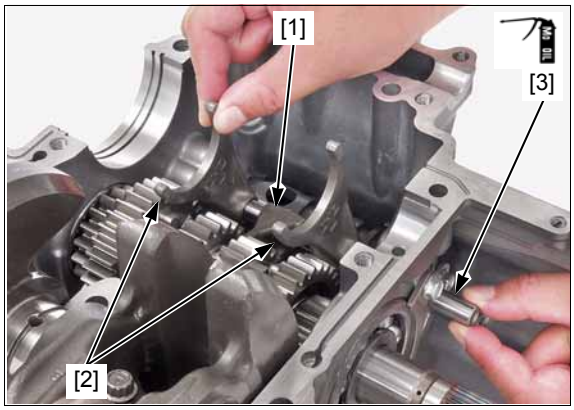


CRF1000/A: Apply molybdenum oil solution to the shift fork shaft outer surface.

Install the mainshaft shift fork [1] into the M3/M4 gear with the identification marks facing toward the right side of the engine.
Install the countershaft shift forks [2] with the identification marks facing toward the left side of the engine.
Insert the mainshaft shift fork shaft [3].

NOTE:

- Make sure that each shift fork guide pin is positioned in the correct guide grooves of the shift drum.



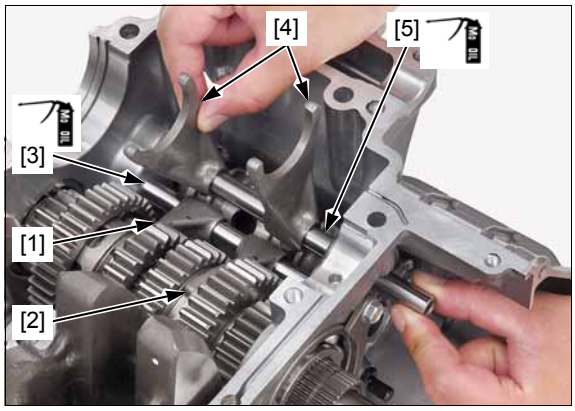
CRF1000D: Install the following with the identification marks facing toward the right side of the engine:

– Left mainshaft shift fork [1] into the M3 gear
– Right mainshaft shift fork [2] into the M4 gear

Apply molybdenum oil solution to the shift fork shafts outer surface.
Insert the mainshaft shift fork shaft [3].
Install the countershaft shift forks [4] with the identification marks facing toward the left side of the engine, then insert the shaft [5].

NOTE:

- Make sure that each shift fork guide pin is positioned in the correct guide grooves of the shift drum.

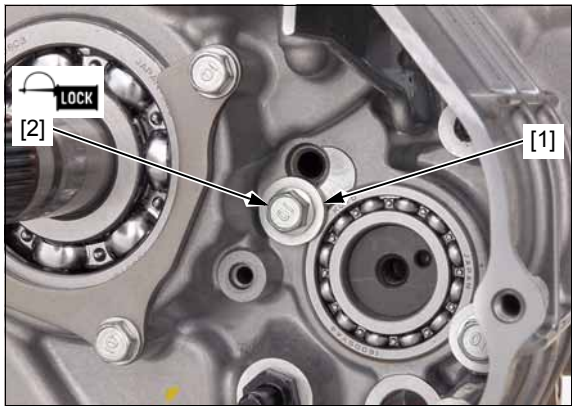


CRF1000/A: Apply locking agent to the shift drum bearing setting bolt threads (page 1-20).

Install the washer [1] and shift drum bearing setting bolt [2].

Tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



CRF1000D: Apply locking agent to the shift drum bearing setting bolt threads (page 1-20).

Install the washer [1] and shift drum bearing setting bolt [2].

Tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



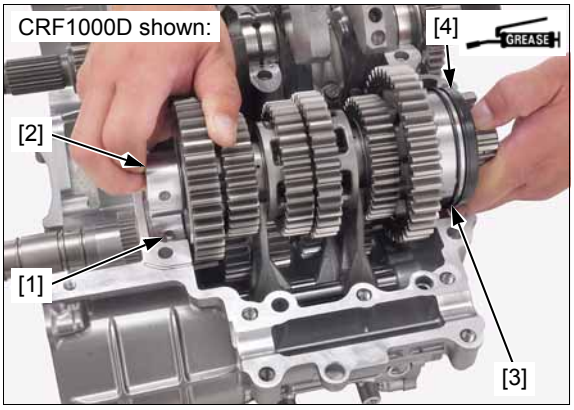
COUNTERSHAFT

Install the dowel pin [1] onto the upper crankcase hole.

Install the countershaft assembly [2].

NOTE:
- Align the needle bearing cap hole with the dowel pin.
- Align the set ring [3] with the upper crankcase groove.
- Align the oil seal [4] flange with the upper crankcase groove.
- Apply grease to the oil seal lips.

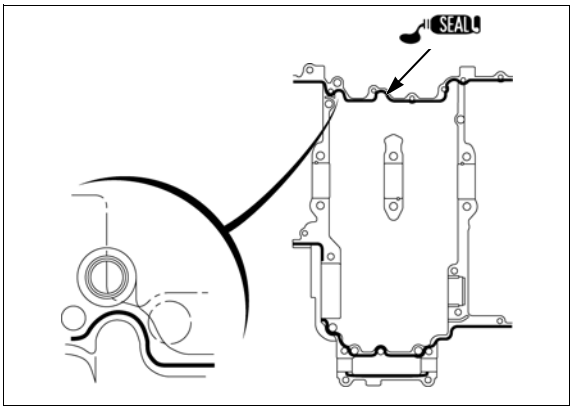
Install the removed parts in the reverse order of removal.



CRANKCASE ASSEMBLY

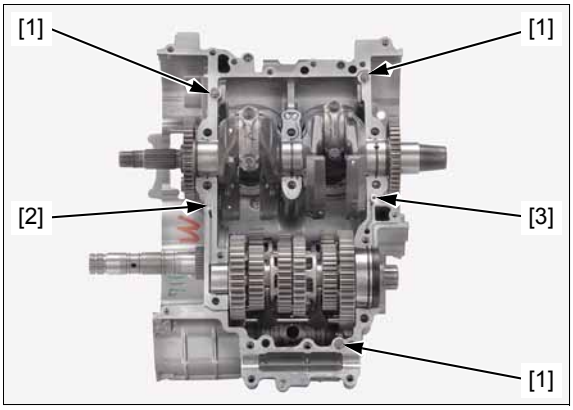
Apply liquid sealant (TB1207B manufactured by Three Bond or equivalent) to the crankcase mating surface as shown.

NOTE:
- Do not apply more liquid sealant than necessary.
- Do not apply liquid sealant to the crankcase main journal bolts area and the oil passage area.



Install the dowel pins [1], oil joint A [2], and oil joint B [3] onto the upper crankcase.

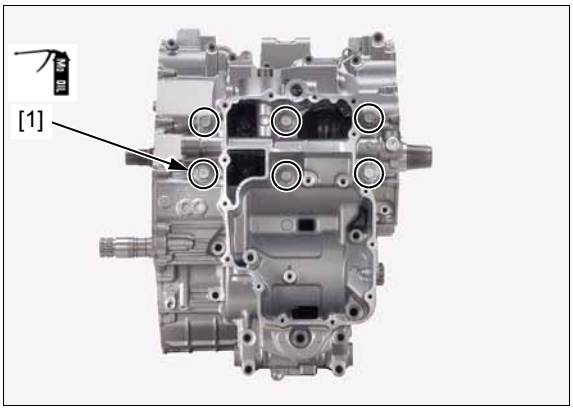
NOTE:
- Install the oil joint A with its narrow hole side facing upper crankcase.



Apply molybdenum oil solution to the main journal bearing sliding surfaces on the lower crankcase.
Install the lower crankcase onto the upper crankcase.
Make sure the upper and lower crankcases are seated securely.

Apply molybdenum oil solution to the crankcase main journal bolt threads and seating surfaces.
Install the crankcase main journal bolts [1].
Tighten the bolts in a crisscross pattern in 2 or 3 steps to the specified torque.

TORQUE: 43 N·m (4.4 kgf·m, 32 lbf·ft)

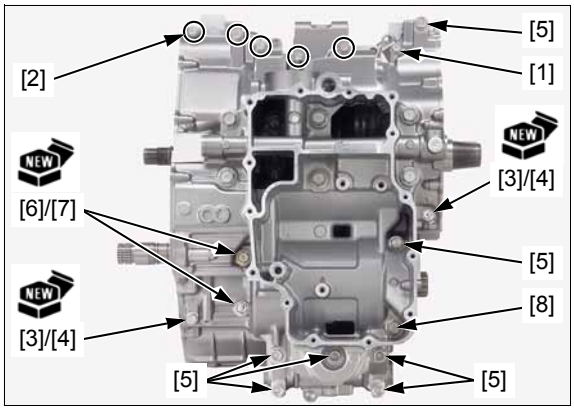


Install the following:

– 6 x 40 mm bolt (Blue paint) [1]
– Five 6 x 35 mm bolts [2]
– Two 6 mm bolts [3] and new sealing washers [4]
– Seven 8 mm bolts [5]
– Two 8 mm bolts [6] and new sealing washers [7]
– 10 mm bolt [8]

Tighten the crankcase bolts in a crisscross pattern in 2 or 3 steps.

TORQUE:
Crankcase 6 x 40 mm bolt:
12 N·m (1.2 kgf·m, 9 lbf·ft)
Crankcase 8 mm bolt:
24 N·m (2.4 kgf·m, 18 lbf·ft)
Crankcase 10 mm bolt:
39 N·m (4.0 kgf·m, 29 lbf·ft)



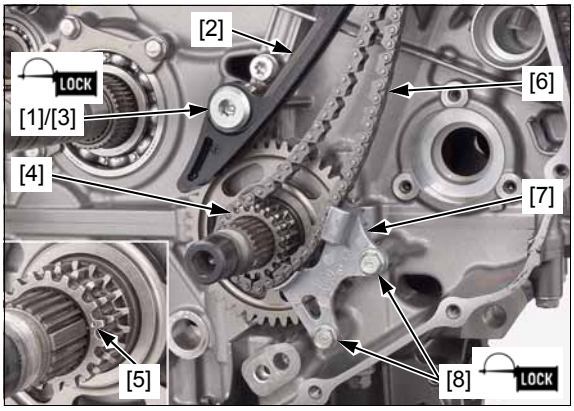
CRF1000D: Apply locking agent to the cam chain tensioner pivot bolt threads (page 1-20).
Install the washer [1], cam chain tensioner [2], and cam chain tensioner pivot bolt [3].
Tighten the bolt to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Install the timing sprocket [4] with its punch mark [5] facing outside as shown

Install the cam chain [6].

Apply locking agent to the cam chain guide plate bolts threads (page 1-20).
Install the cam chain guide plate [7] and bolts [8] and tighten the bolts securely.



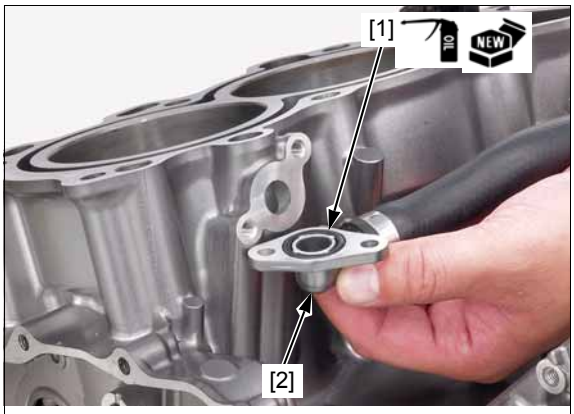
Coat a new O-ring [1] with engine oil and install it into the groove in the water hose flange [2].

Install the water hose flange and bolts [3] and tighten the bolts securely.

Install the following:

CRF1000/A:
– Primary drive gear (page 12-16)
– Clutch (page 12-12)
– Gearshift linkage (page 12-19)
– Front/rear balancer (page 14-6)
– Flywheel (page 11-7)
– Cylinder head (page 10-13)
– Oil pump (page 9-5)
– Starter motor (page 6-5)
– VS sensor (page 4-42)
– Gear position switch (page 22-25)

CRF1000D:
– Primary drive gear (page 13-70)
– Dual clutch (page 13-69)
– Gearshift linkage (page 13-76)
– Front/rear balancer (page 14-6)
– Flywheel (page 11-7)
– Cylinder head (page 10-13)
– Oil pump (page 9-5)
– Starter motor (page 6-5)
– Shift control motor/reduction gears (page 13-73)
– Mainshaft sensors (page 13-78)
– VS sensor (page 4-42)
– Neutral switch (page 13-82)





15. CRANKSHAFT/PISTON/CYLINDER

SERVICE INFORMATION ····· 15-2

TROUBLESHOOTING ····· 15-2

COMPONENT LOCATION ····· 15-3

CRANKSHAFT ····· 15-4

MAIN JOURNAL BEARING ····· 15-6

CRANKPIN BEARING ····· 15-9

PISTON/CYLINDER ····· 15-12

SERVICE INFORMATION

GENERAL

- The crankcase must be separated to service the crankshaft and pistons and connecting rods.
- Mark and store the connecting rods, bearing caps, and bearing inserts to be sure of their correct locations for reassembly.
- The crankpin and main journal bearing inserts are select fit and are identified by color codes. Select replacement bearings from the code tables. After selecting new bearings, recheck the oil clearance with plastigauge. Incorrect oil clearance can cause major engine damage.
- Clean the oil passages in the upper crankcase with compressed air before installing the pistons.

TROUBLESHOOTING

Cylinder compression is too low, hard to starting, or poor performance at low speed
- Leaking cylinder head gasket
- Loose spark plug
- Worn, stuck or broken piston ring
- Worn or damaged cylinder and piston

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

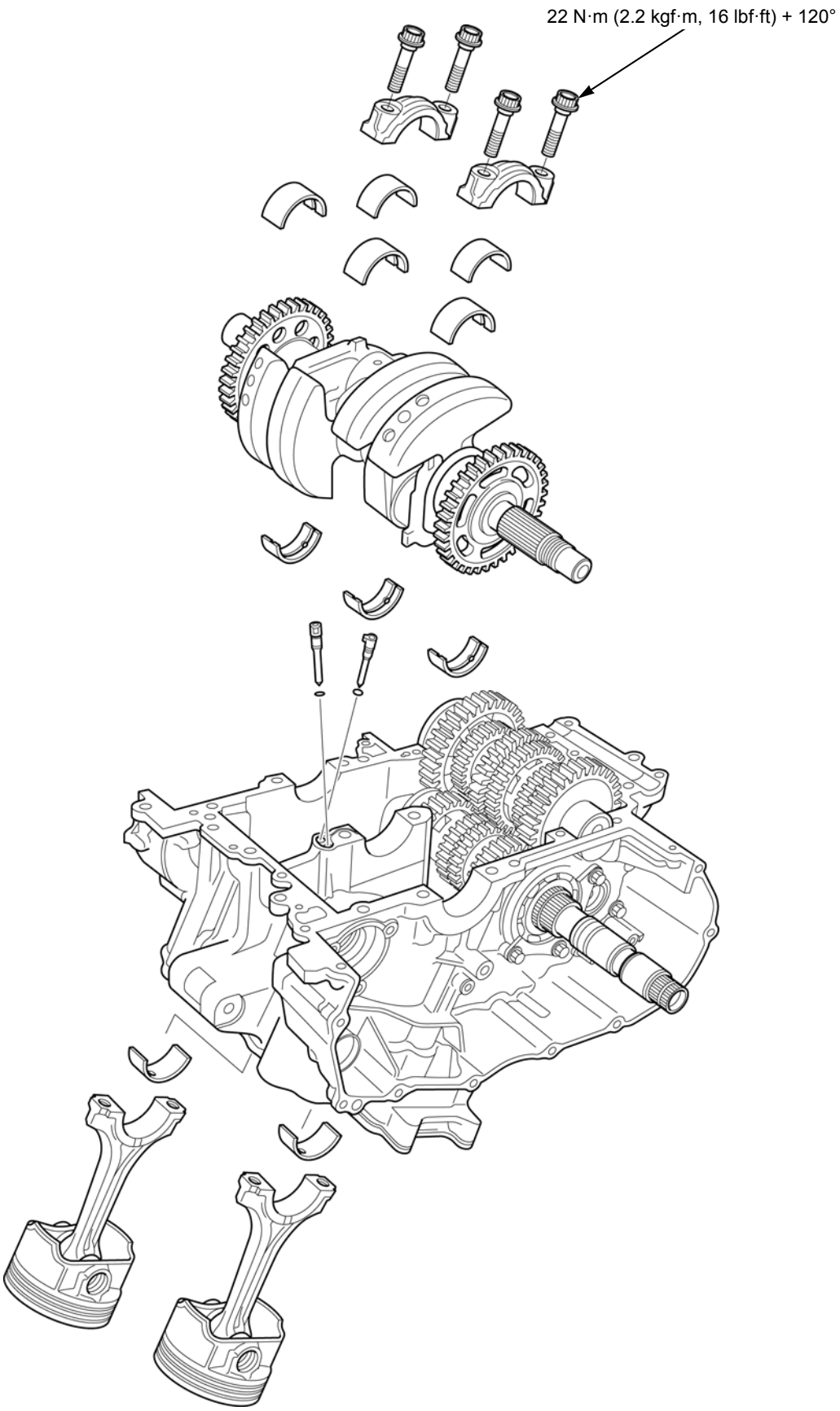
Excessive smoke
- Worn cylinder, piston, or piston ring
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall

Abnormal noise
- Worn piston pin or piston pin hole
- Worn connecting rod small end
- Bent connecting rod
- Worn cylinder, piston, or piston rings
- Worn main journal bearings
- Worn crankpin bearings

Engine vibration
- Excessive crankshaft runout

COMPONENT LOCATION

CRF1000D shown:



CRANKSHAFT

Separate the crankcase halves (page 14-13).

SIDE CLEARANCE INSPECTION

Measure the connecting rod side clearance.

SERVICE LIMIT: 0.35 mm (0.014 in)

If the clearance exceeds the service limit, replace the connecting rod.
Recheck and if still out of limit, replace the crankshaft.



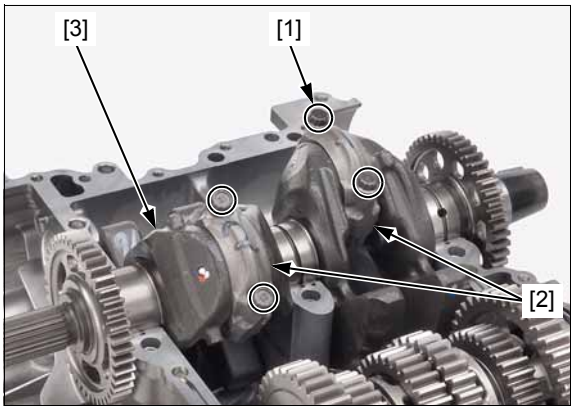
REMOVAL

NOTICE

Mark the bearing caps and bearings as you remove them to indicate the correct cylinder for reassembly.

Remove the crankpin bearing cap bolts [1] and bearing caps [2].

Remove the crankshaft [3].



INSPECTION

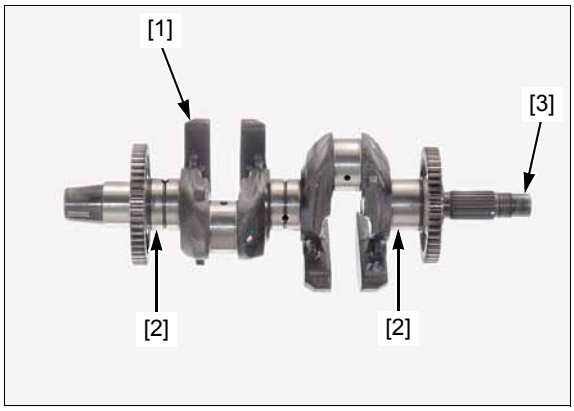
Support the crankshaft [1] on both end journals [2].

Set a dial gauge on the crankshaft.

Rotate the crankshaft two revolutions (720°) and read the runout.

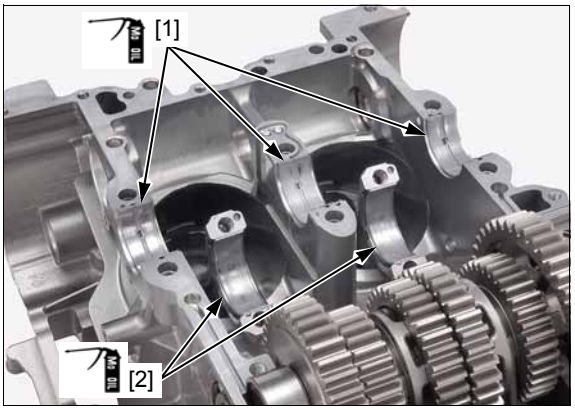
SERVICE LIMIT:
[3]: 0.05 mm (0.002 in)

Check the balancer drive gear teeth for abnormal wear or damage.

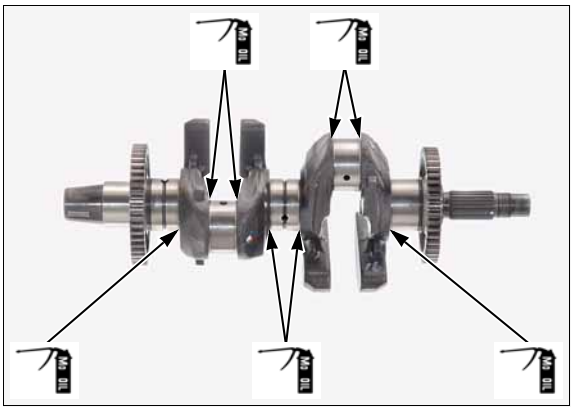


INSTALLATION

Apply molybdenum oil solution to the main journal bearing [1] sliding surfaces on the upper crankcase and crankpin bearing [2] sliding surfaces on the connecting rods.



Apply molybdenum oil solution to the thrust surfaces of the crankshaft as shown.



Be careful not to damage the crankpin, main journal and bearing inserts.

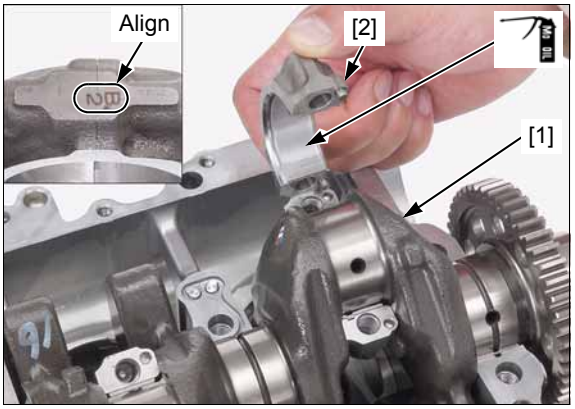
Install the crankshaft [1] onto the upper crankcase and set the connecting rods onto the crankpins.

Apply molybdenum oil solution to the crankpin bearing sliding surfaces on the crankpin bearing caps [2].

Install the crankpin bearing caps.

NOTE:

- Align the I.D. code number on the crankpin bearing caps and connecting rods.

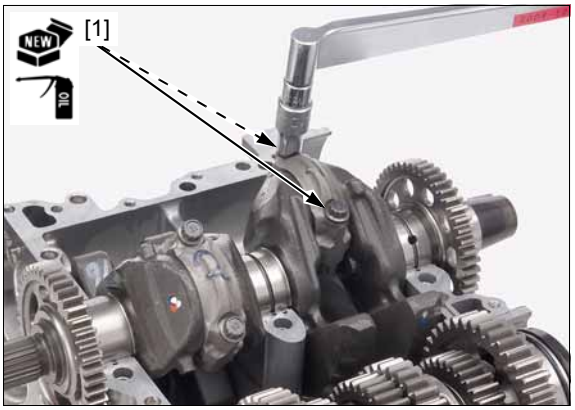


Apply engine oil to new crankpin bearing cap bolt threads and seating surfaces.

Install and tighten the crankpin bearing cap bolts [1] to the specified torque in 2 or 3 steps alternately.
Further tighten the bolts 120°.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft) + 120°

Assemble the crankcase halves (page 14-27).



MAIN JOURNAL BEARING

NOTICE

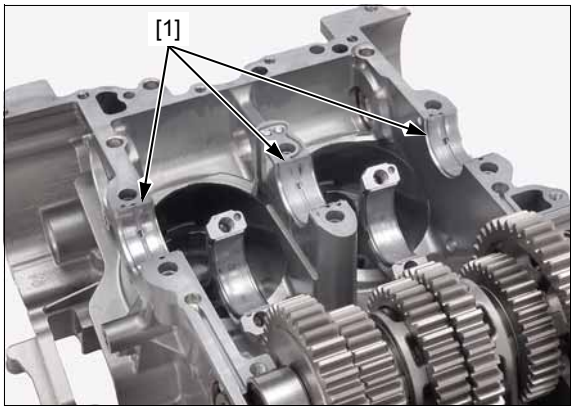
Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.

Remove the crankshaft (page 15-4).

BEARING INSPECTION

Inspect the main journal bearing inserts [1] on the upper and lower crankcase halves for unusual wear or peeling.

Check the bearing tabs for damage.



OIL CLEARANCE INSPECTION

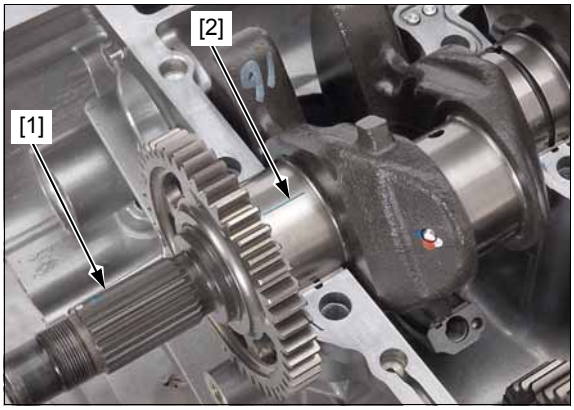
Clean off any oil from the bearing inserts and main journals.

Install the crankshaft [1] onto the upper crankcase.

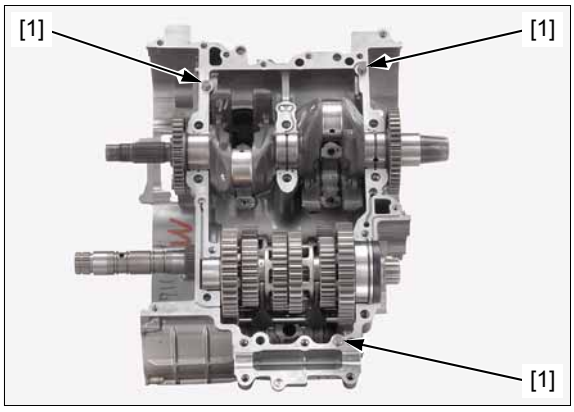
Put a strip of plastigauge [2] lengthwise on each main journal avoiding the oil hole.

NOTE:

- Do not rotate the crankshaft during inspection.



Install the dowel pins [1].

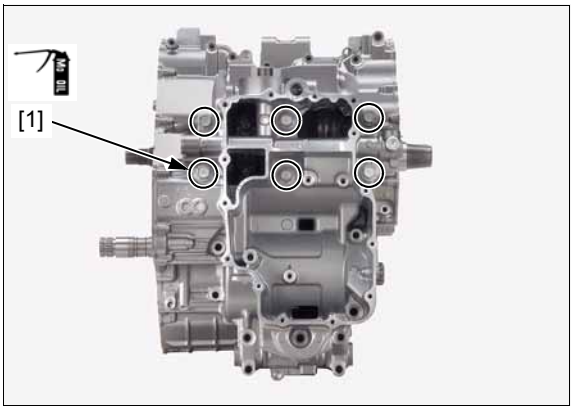


Install the lower crankcase onto the upper crankcase.
Make sure that the upper and lower crankcase are seated securely.

Apply molybdenum oil solution to the crankcase main journal bolt threads and seating surfaces.
Install the crankcase main journal bolts [1].
Tighten the bolts in a crisscross pattern in 2 or 3 steps to the specified torque.

TORQUE: 43 N·m (4.4 kgf·m, 32 lbf·ft)

Remove the bolts and lower crankcase.



Measure the compressed plastigauge at its widest point on each main journal to determine the oil clearance.

SERVICE LIMIT: 0.05 mm (0.002 in)

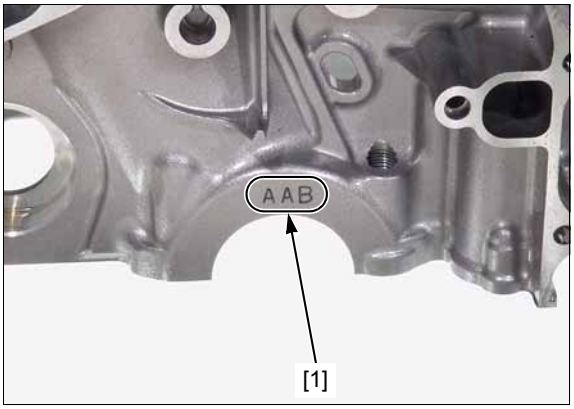
If the oil clearance exceeds the service limit, select a replacement bearing.



BEARING SELECTION

Letters (A, B or C) on the left side of upper crankcase are bearing support I.D. codes from left to right.

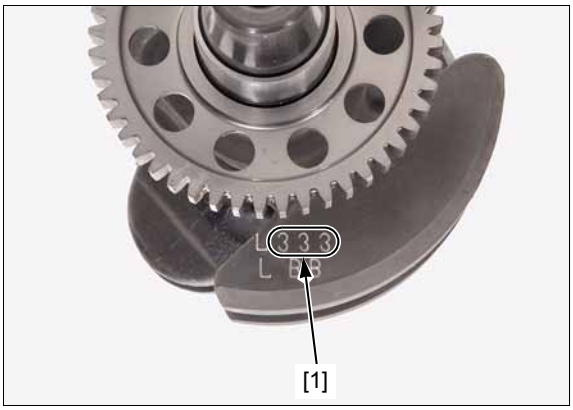
Record the crankcase bearing support I.D. code letters [1] from left side of the upper crankcase as shown.



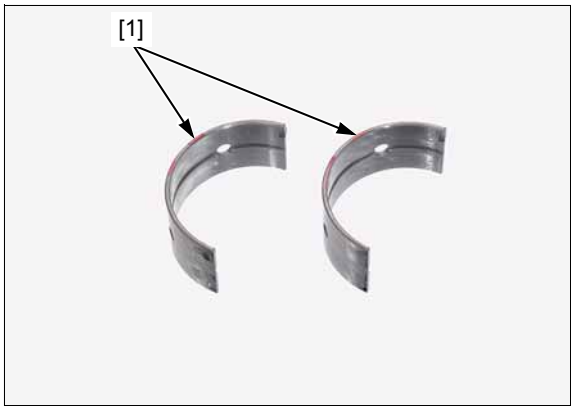
Numbers (1, 2 or 3) on the crank weight are main journal O.D. codes from left to right.

If you are replacing the crankshaft, record the corresponding main journal O.D. code numbers [1] from the crank weight.

If you are reusing the crankshaft, measure the main journal O.D. with a micrometer.



Cross-reference the main journal and bearing support codes to determine the replacement bearing color code [1].



MAIN JOURNAL BEARING THICKNESS:

- **A: Blue: Thickest**
- **B: Black:**
- **C: Brown:**
- **D: Green:**
- **E: Yellow: Thinnest**

MAIN JOURNAL BEARING SELECTION TABLE:

			BEARING SUPPORT I.D. CODE		
			A	B	C
			47.000 – 47.006 mm (1.8504 – 1.8506 in)	47.006 – 47.012 mm (1.8506 – 1.8509 in)	47.012 – 47.018 mm (1.8509 – 1.8511 in)
MAIN JOURNAL O.D. CODE	1	44.004 – 44.010 mm (1.7324 – 1.7327 in)	E (Yellow)	D (Green)	C (Brown)
	2	43.998 – 44.004 mm (1.7322 – 1.7324 in)	D (Green)	C (Brown)	B (Black)
	3	43.992 – 43.998 mm (1.7320 – 1.7322 in)	C (Brown)	B (Black)	A (Blue)

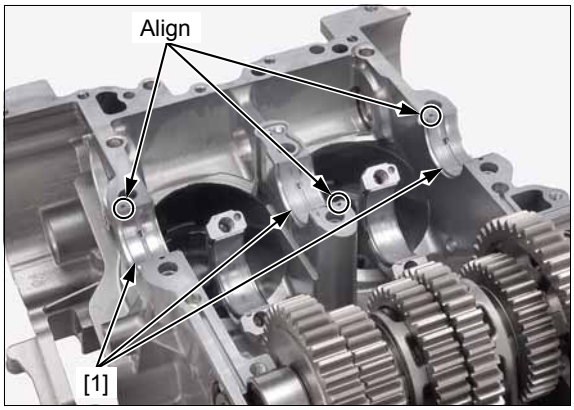
NOTICE

After selecting new bearings, recheck the clearance with a plastigauge. Incorrect clearance can cause severe engine damage.

BEARING INSTALLATION

Clean the bearing outer surfaces and crankcase bearing supports.

Install the main journal bearing inserts [1] onto the crankcase bearing supports, aligning each tab with each groove.



CRANKPIN BEARING

NOTICE

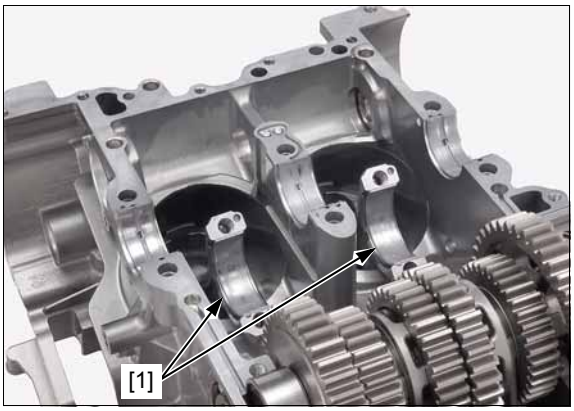
Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.

Remove the crankshaft (page 15-4).

BEARING INSPECTION

Check the bearing inserts [1] for unusual wear or peeling.

Check the bearing tabs for damage.



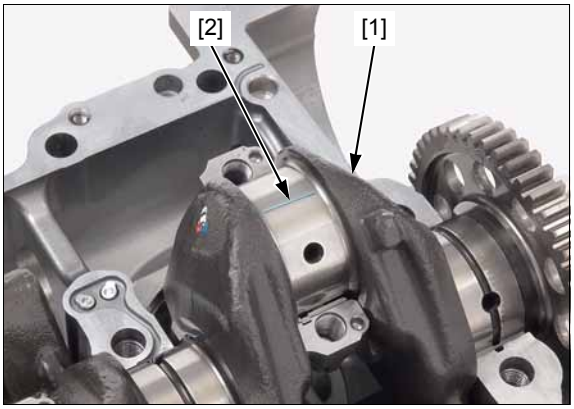
OIL CLEARANCE INSPECTION

Clean off any oil from the bearing inserts and crankpins.

Carefully install the crankshaft [1] onto the upper crankcase.

Set the connecting rods onto the crankpins.

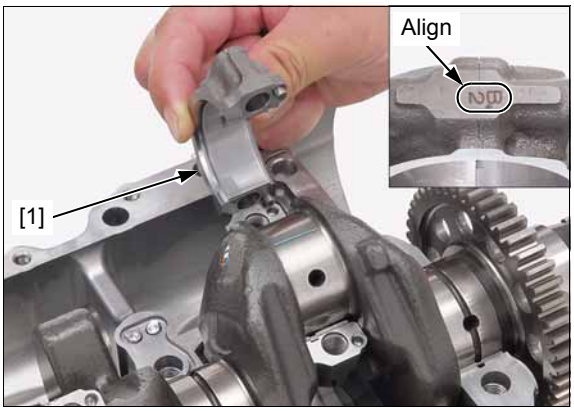
Put a strip of plastigauge [2] lengthwise on each crankpin avoiding the oil hole.



NOTE:

- Do not rotate the crankshaft during inspection.

Install the crankpin bearing caps [1].



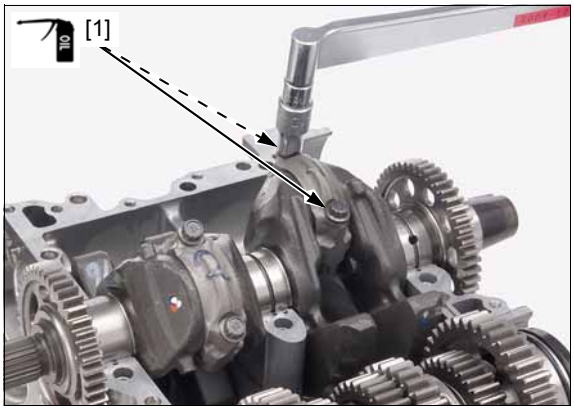
NOTE:

- Align the I.D. code number on the crankpin bearing caps and connecting rods.

Apply engine oil to the crankpin bearing cap bolt (reuse) threads and seating surfaces.

Install and tighten the crankpin bearing cap bolts [1] to the specified torque in 2 or 3 steps alternately.
Further tighten the bolts 90°.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft) + 90°



Remove the bearing caps and measure the compressed plastigauge at its widest point on the crankpin to determine the oil clearance.

SERVICE LIMIT: 0.065 mm (0.0026 in)

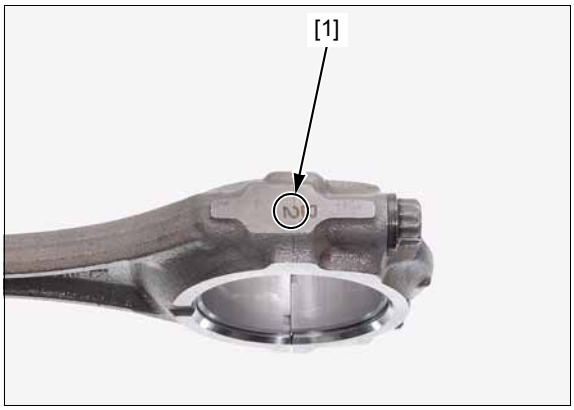
If the oil clearance exceeds the service limit, select the correct replacement bearings.



BEARING SELECTION

Numbers (1, 2, 3 or 4) on the connecting rods are the connecting rod I.D. codes.

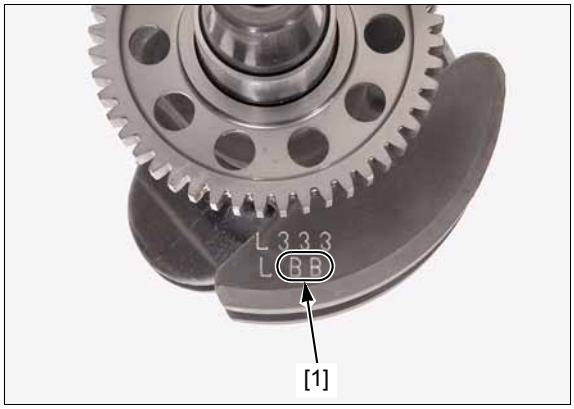
Record the connecting rod I.D. code number [1] or measure the I.D. with the crankpin bearing cap installed without bearing inserts.



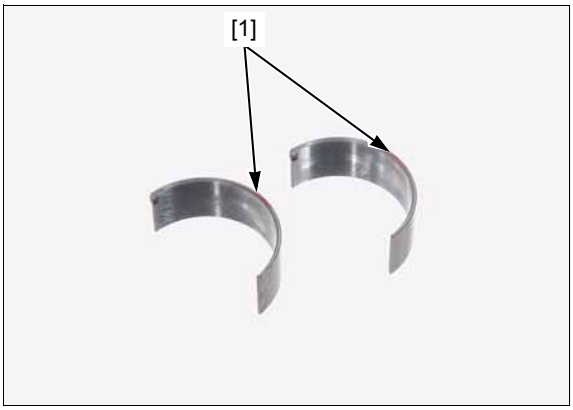
Letters (A, B, C or D) on the crank weight are the crankpin O.D. codes from left to right.

If you are replacing the crankshaft, record the corresponding crankpin O.D. code letter [1].

If you are reusing the crankshaft, measure the crankpin O.D. with a micrometer.



Cross-reference the connecting rod and crankpin codes to determine the replacement bearing color code [1].



CRANKPIN BEARING THICKNESS:

A: Blue: Thickest
B: Black:
C: Brown: ↕
D: Green:
E: Yellow: Thinnest

CRANKPIN BEARING SELECTION TABLE:

			CONNECTING ROD I.D. CODE		
			1	2	3
			47.000 – 47.006 mm (1.8504 – 1.8506 in)	47.006 – 47.012 mm (1.8506 – 1.8509 in)	47.012 – 47.018 mm (1.8509 – 1.8511 in)
CRANKPIN O.D. CODE	A	43.992 – 43.998 mm (1.7320 – 1.7322 in)	E (Yellow)	D (Green)	C (Brown)
	B	43.986 – 43.992 mm (1.7312 – 1.7320 in)	D (Green)	C (Brown)	B (Black)
	C	43.980 – 43.986 mm (1.7314 – 1.7312 in)	C (Brown)	B (Black)	A (Blue)

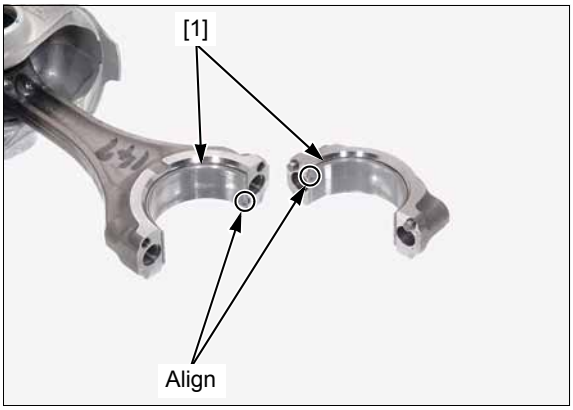
NOTICE

After selecting new bearings, recheck the clearance with a plastigauge. Incorrect clearance can cause severe engine damage.

BEARING INSTALLATION

Clean the bearing outer surfaces, crankpin bearing cap and connecting rod.

Install the crankpin bearings [1] onto the bearing cap and connecting rod, aligning each tab with each groove.



PISTON/CYLINDER

PISTON/CONNECTING ROD REMOVAL

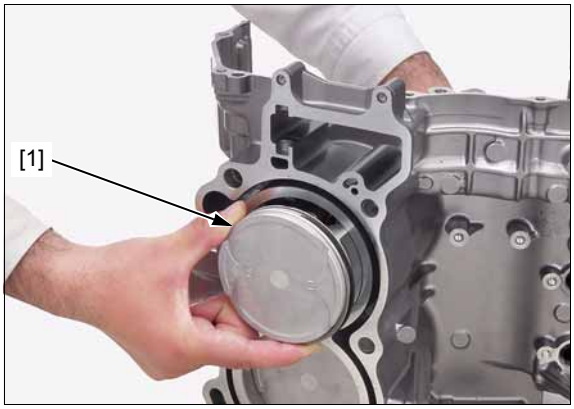
NOTICE

- *Before piston removal, place a clean shop towel around the connecting rod to prevent damaging the cylinder sleeve.*
- *Do not try to remove the piston/connecting rod assembly from bottom of the cylinder; the assembly will get stuck in the gap between the cylinder liner and the upper crankcase.*
- *Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.*

Remove the following:

– Transmission (page 14-15)
– Crankshaft (page 15-4)

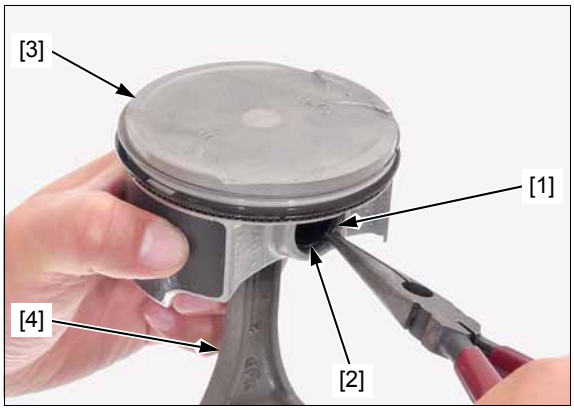
Remove the piston/connecting rod assembly [1] from the top of the cylinder.



PISTON REMOVAL

Remove the piston pin clips [1] with pliers.

Push the piston pin [2] out of the piston [3] and connecting rod [4], and remove the piston.



PISTON RING REMOVAL

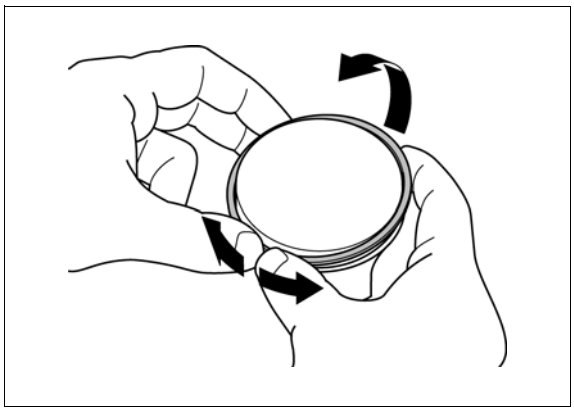
Be careful not to damage the piston ring by spreading the ends too far.

Spread each piston ring ends and remove them by lifting up at a point opposite the gap.

Clean carbon deposits from the piston ring grooves with a ring that will be discarded.

NOTE:

- Never use a wire brush; it will scratch the groove.



INSPECTION

Inspect the following parts for scratches, damage, abnormal wear, or deformation.

– Cylinder
– Piston
– Piston rings
– Piston pin
– Connecting rod small end

Measure each part and calculate the clearance according to CRANKSHAFT/PISTON/CYLINDER SPECIFICATIONS (page 1-9).

Replace any part if it is out of service limit.

PISTON RING INSTALLATION

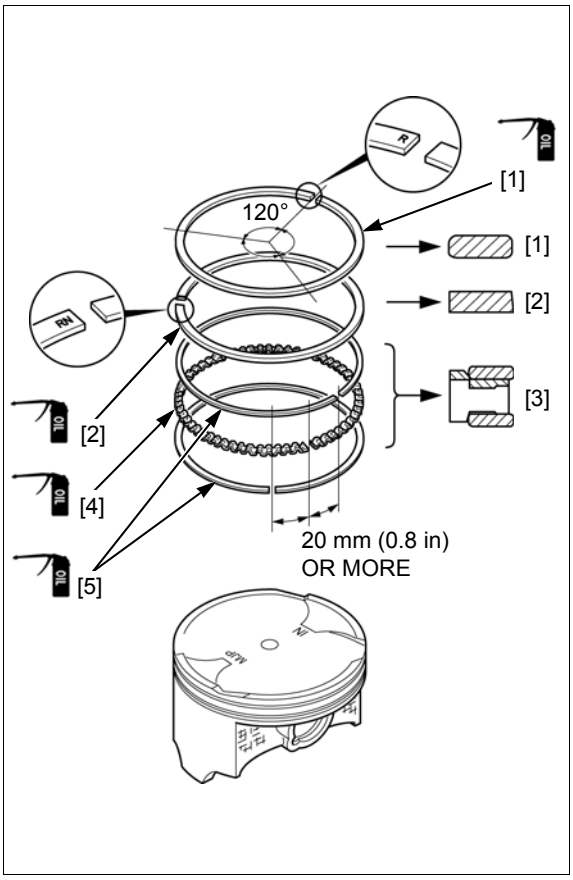
Clean the piston ring grooves thoroughly and install the piston rings.

NOTE:

- Apply engine oil to the piston ring entire surfaces and piston ring grooves.
- Avoid piston and piston ring damage during installation.
- Install the piston rings with the marked side facing up.
  – "R" mark: top ring [1]
  – "RN" mark: second ring [2]
- To install the oil ring [3], install the spacer [4] first, then install the side rails [5].

Stagger the piston ring end gaps 120° apart from each other.
Stagger the side rail end gaps as shown.

After installation, the rings should rotate freely in the ring groove.

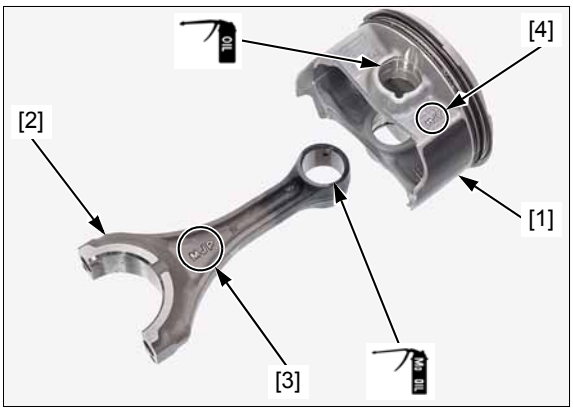


PISTON INSTALLATION

Apply engine oil to the piston pin hole inner surface.

Apply molybdenum oil solution to the connecting rod small end inner surface.

Assemble the piston [1] and connecting rod [2] with the connecting rod "MJP" mark [3] facing to the piston "MJP" mark [4] side.



Apply molybdenum oil solution to the piston pin outer surface.

Install the piston pin [1] and secure it using new piston pin clips [2].

NOTE:

- Make sure that the piston pin clips are seated securely.
- Do not align the piston pin clip end gap with the piston cut-out [3].

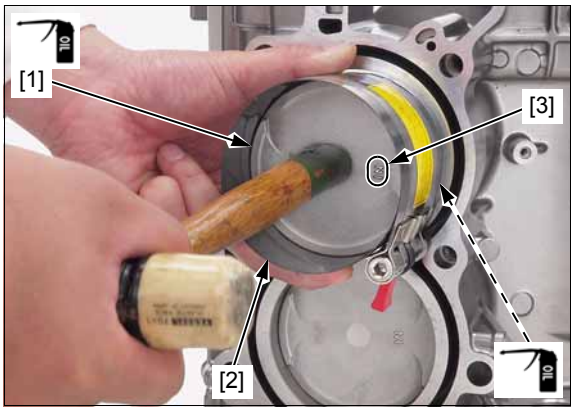


PISTON/CONNECTING ROD INSTALLATION

Apply engine oil to the piston and cylinder sliding surface.

Install the piston/ connecting rod assembly with the "IN" mark [3] facing the intake side.

Install the piston/connecting rod assemblies [1] into the cylinders using a commercially available piston ring compressor tool [2].
When reusing the connecting rods, they must be installed in their original locations.



NOTICE

- *While installing the piston, be careful not to damage the top surface of the cylinder, especially around the cylinder bore.*
- *Be careful not to damage the cylinder sleeve with the connecting rod bolt threads.*

Make sure the piston ring compressor tool sits flush on the top surface of the cylinder.

Use the handle of a plastic hammer or equivalent tool to tap the piston into the cylinder.

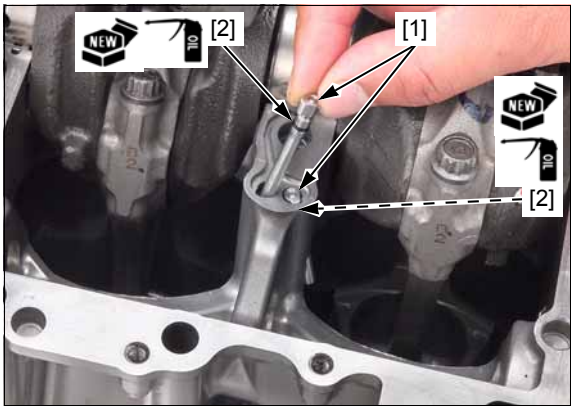
Install the following:

– Crankshaft (page 15-5)
– Transmission (page 14-24)

PISTON OIL JET REMOVAL/ INSTALLATION

Remove the piston oil jets [1] and O-rings [2].

Apply engine oil to new O-rings and install them onto the piston oil jets.
Install the piston oil jets into the holes of upper crankcase as shown.



16. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION ····· 16-2

COMPONENT LOCATION ····· 16-3

ENGINE REMOVAL ····· 16-5

ENGINE INSTALLATION ····· 16-10

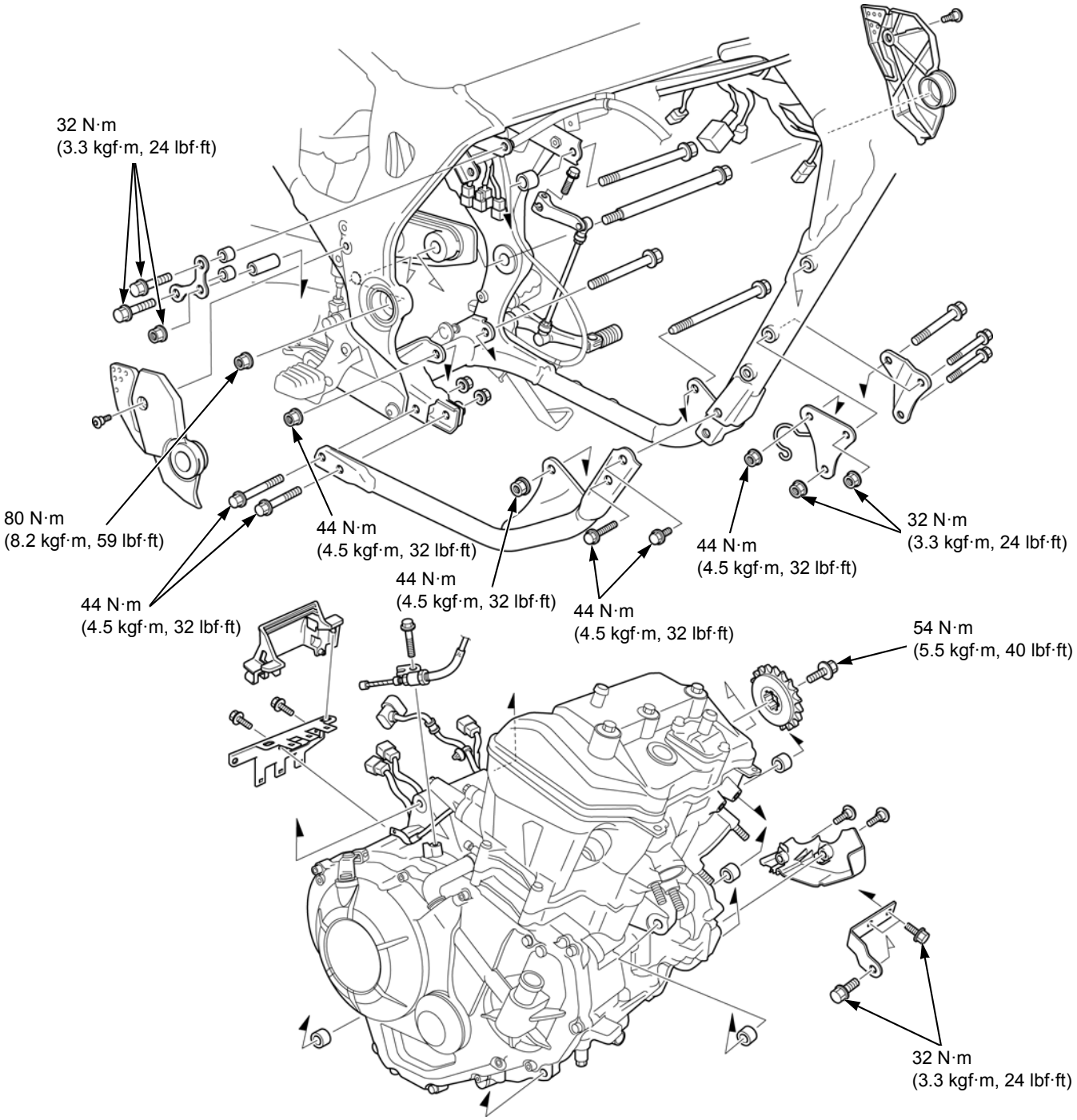
SERVICE INFORMATION

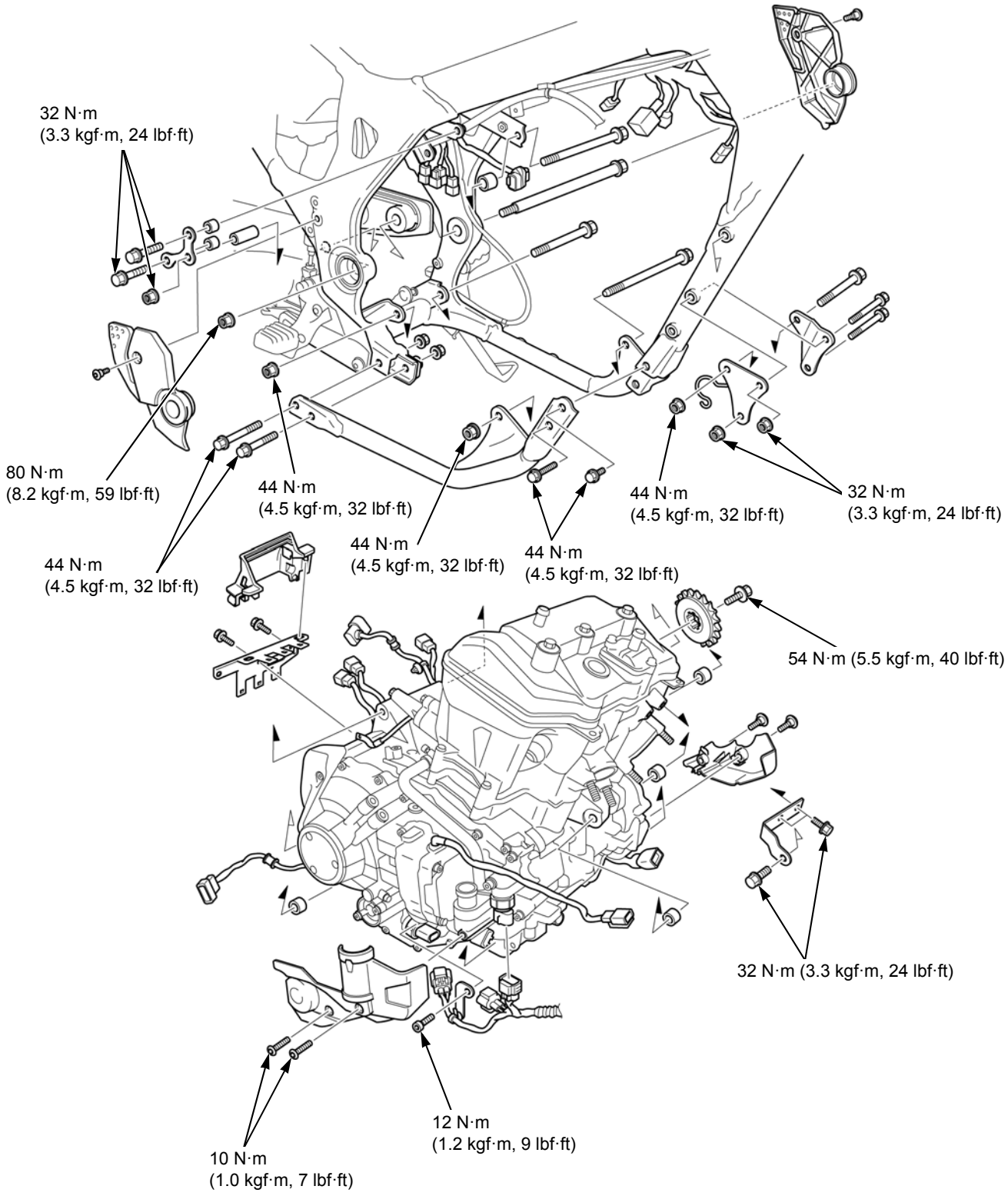
GENERAL

- 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.
  - Starter motor (page 6-5)
  - Throttle body (page 7-12)
  - Water pump (page 8-10)
  - Oil pump (CRF1000/A) (page 9-5)
  - Oil pump (CRF1000D) (page 9-7)
  - Rocker arm (page 10-6)
  - Camshaft (page 10-9)
  - Clutch (CRF1000/A) (page 12-8)
  - Dual clutch (CRF1000D) (page 13-63)
  - Primary drive gear (CRF1000/A) (page 12-15)
  - Primary drive gear (CRF1000D) (page 13-70)
  - Shift control motor/reduction gears (CRF1000D) (page 13-71)
  - Gearshift linkage (CRF1000/A) (page 12-17)
  - Gearshift linkage (CRF1000D) (page 13-74)
  - Flywheel (page 11-7)
  - Stator/CKP sensor (page 11-7)
  - Balancer (page 14-6)
- The following components require engine removal for service.
  - Cylinder head/valves (page 10-13)
  - Transmission (page 14-15)
  - Crankshaft (page 15-4)
  - Piston/cylinder (page 15-12)

COMPONENT LOCATION

CRF1000/A



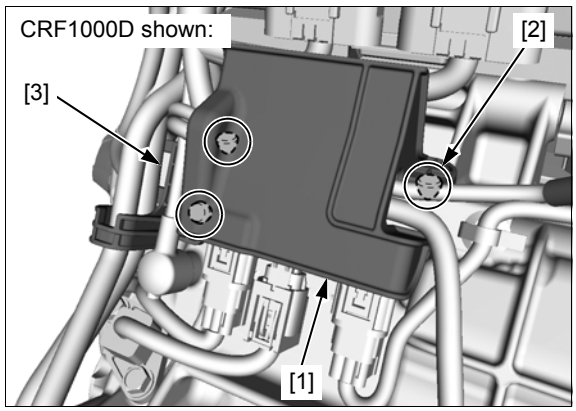

32 N·m
(3.3 kgf·m, 24 lbf·ft)
80 N·m
(8.2 kgf·m, 59 lbf·ft)
44 N·m
(4.5 kgf·m, 32 lbf·ft)
44 N·m
(4.5 kgf·m, 32 lbf·ft)
44 N·m
(4.5 kgf·m, 32 lbf·ft)
44 N·m
(4.5 kgf·m, 32 lbf·ft)
44 N·m
(4.5 kgf·m, 32 lbf·ft)
32 N·m
(3.3 kgf·m, 24 lbf·ft)
54 N·m (5.5 kgf·m, 40 lbf·ft)
32 N·m (3.3 kgf·m, 24 lbf·ft)
12 N·m
(1.2 kgf·m, 9 lbf·ft)
10 N·m
(1.0 kgf·m, 7 lbf·ft)

ENGINE REMOVAL

Support the motorcycle using a safety stand or hoist.

Remove the following:
- Muffler/exhaust pipe (page 2-16)
- Engine oil filter (page 3-12)
- Ignition coil tray (page 5-9)
- Radiator (page 8-6)
- Radiator reserve tank (page 8-10)
- Gearshift spindle cover (CRF1000/A) (page 12-17)
- Shift pedal (CRF1000/A) (page 12-21)
- Rear brake pedal (page 19-15)
- Battery box (page 21-6)
- EOP switch (CRF1000/A) (page 22-19)
- EOP sensor (CRF1000D) (page 22-20)

Remove the connector cover [1] by releasing its bosses [2] and slit [3] from the connector clip stay.

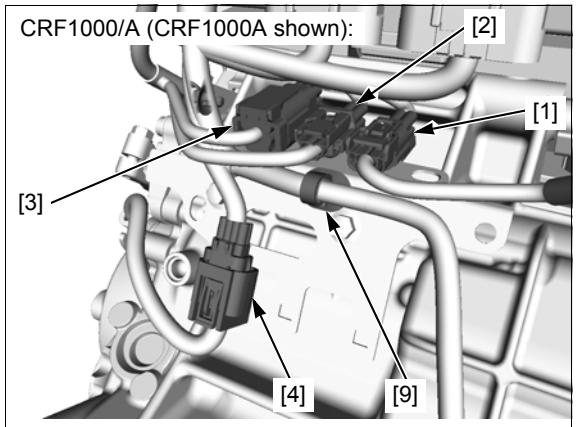


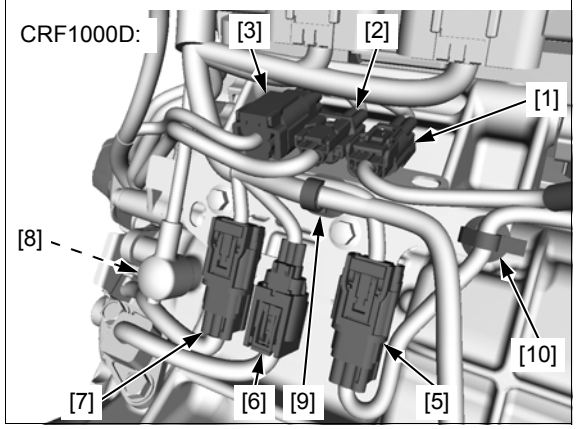
Disconnect the following connectors:

- Rear brake switch 2P (Gray) connector [1]
- Sidestand switch 2P (Black) connector [2]
- Alternator assembly 6P (Black) connector [3]
- Gear position switch 8P (Black) (CRF1000/A) [4]
- Shift spindle angle sensor 3P (Blue) connector (CRF1000D) [5]
- Inner mainshaft sensor 3P (Black) connector (CRF1000D) [6]
- TR sensor 3P (Black) connector (CRF1000D) [7]
- Neutral switch terminal (CRF1000D) [8]

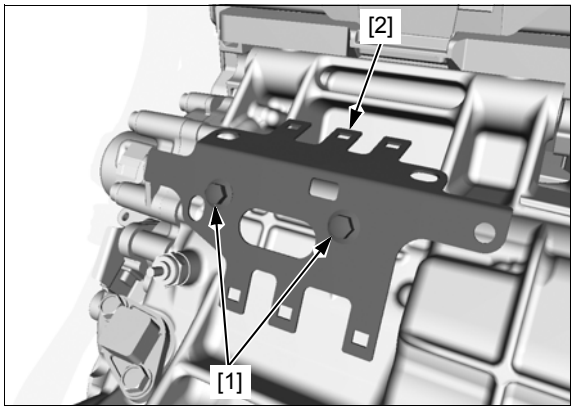
Release the O_2 sensor wire clip [9] from the connector clip stay.

CRF1000D: Release the shift spindle angle sensor wire clip [10] from the connector clip stay.





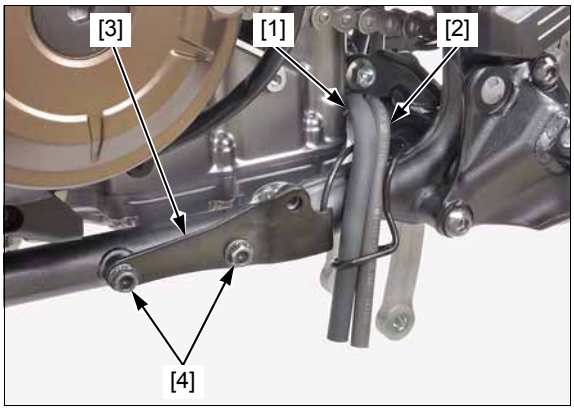
Remove the bolts [1] and connector clip stay [2].



Release the fuel tank drain hose [1] and breather hose [2] from the bracket [3].

Remove the bolts [4] and bracket.

Release the alternator assembly wire from the frame:
– CRF1000/A (page 11-4)
– CRF1000D (page 11-5)



Disconnect the following:

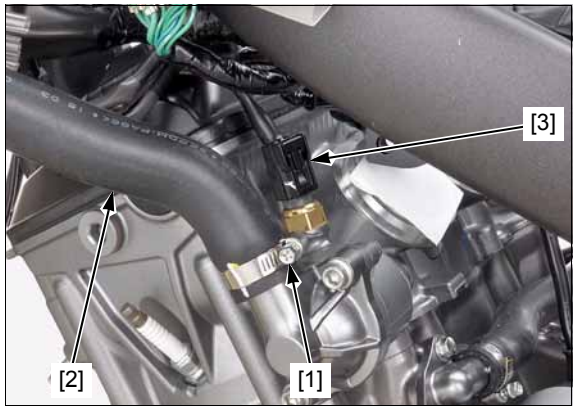
– VS sensor 3P (Black) connector [1]
– Outer mainshaft 3P (Black) connector (CRF1000D) [2]
– Shift control motor 2P (Black) connector (CRF1000D) [3]





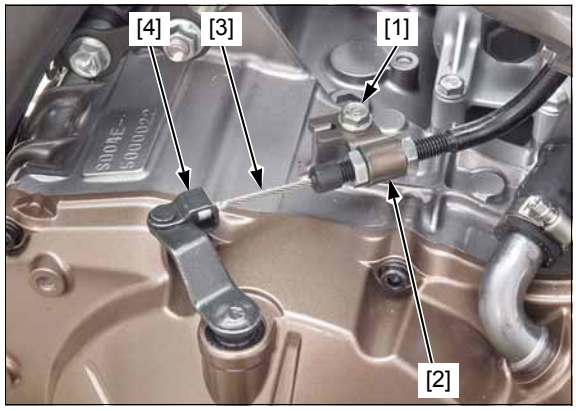
Loosen the hose band screw [1] and disconnect the radiator upper hose [2].

Disconnect the ECT sensor 2P (Black) connector [3].



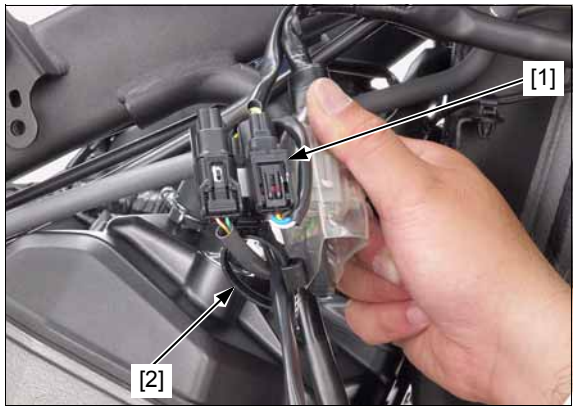
CRF1000/A: Remove the bolt [1] and clutch cable holder [2].

Disconnect the clutch cable [3] from the clutch lifter lever [4].



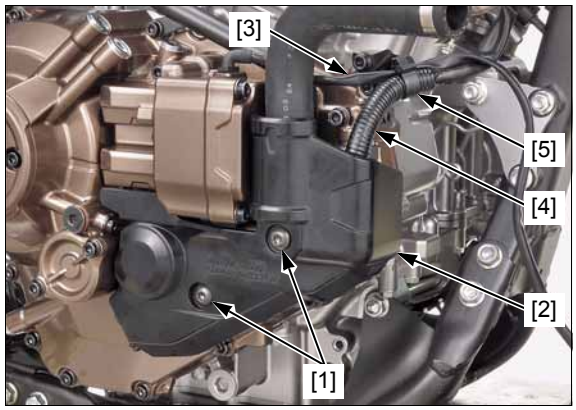
CRF1000D: Disconnect linear solenoid 4P (Black) connector [1].

Remove the wire band [2].



CRF1000D: Remove the bolts [1] and clutch EOP sensor cover [2].

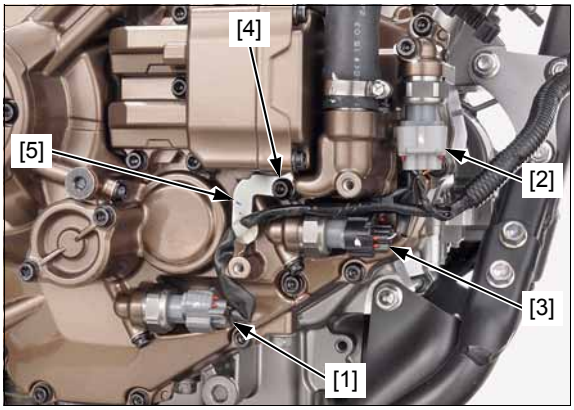
Release the linear solenoid wire [3] and main wire harness [4] from the clamp [5].



CRF1000D: Disconnect the following:

– Clutch line EOP sensor 3P (Gray) connector [1]
– No.1 clutch EOP sensor 3P (Gray) connector [2]
– No.2 clutch EOP sensor 3P (Black) connector [3]

Remove the bolt [4] and stay [5].

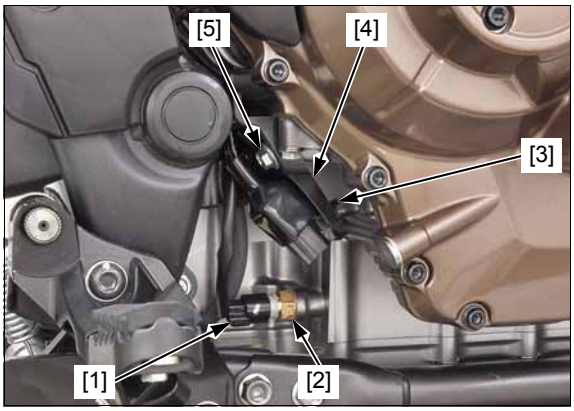


CRF1000D: Disconnect the EOT sensor 2P (Black) connector [1].

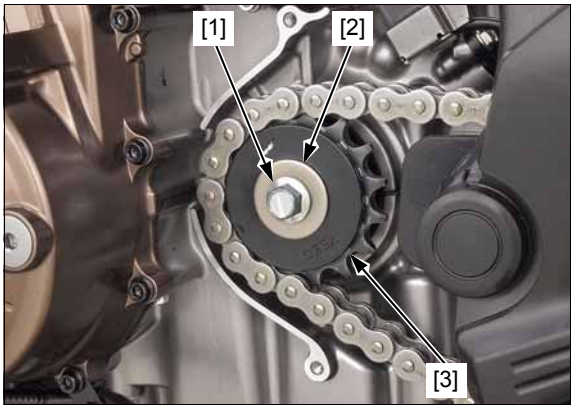
CRF1000D: Remove the EOT sensor [2].

Release the O_2 sensor 4P (Black) connector clip [3] from the stay [4].

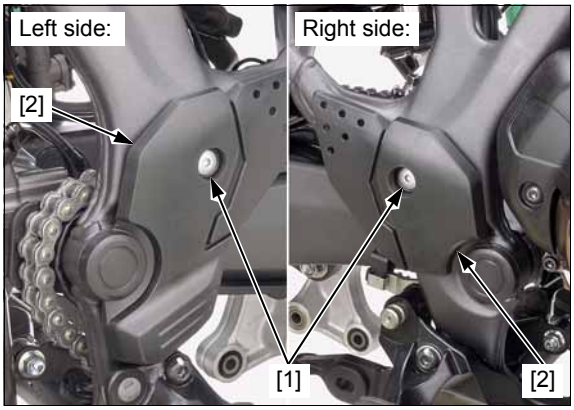
Remove the bolt [5] and stay.



Remove the drive sprocket bolt [1], washer [2], and drive sprocket [3] from the countershaft and drive chain.



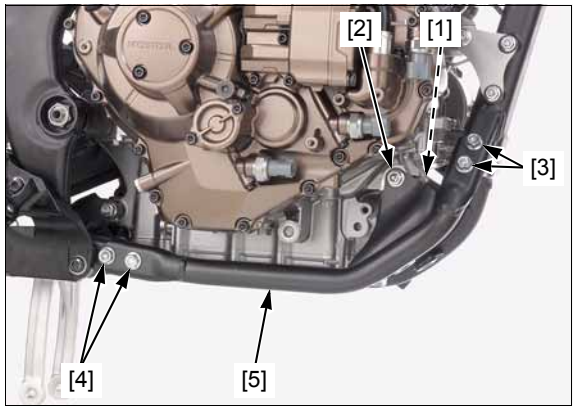
Remove the bolts [1] and left/right heel guards [2].



Remove the following:

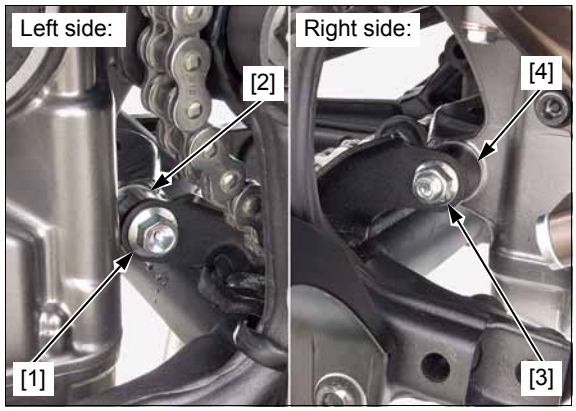
– Front lower bolt (10 x 138 mm) [1]
– Front lower nut (10 mm) [2]
– Right lower frame bolts (front side, 10 x 20 mm, 10 x 40 mm) [3]
– Right lower frame bolts (rear side, 10 x 60 mm, 10 x 75 mm) [4]
– Right lower frame [5]

Support the engine using a jack or other adjustable support.



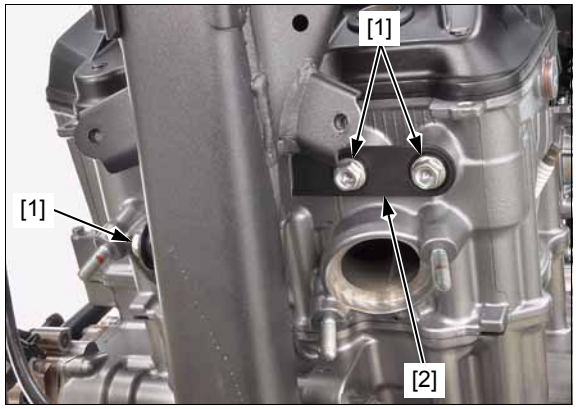
Remove the following:

– Rear lower bolt (10 x 153 mm) [1]
– Collar (left side, "L" mark) [2]
– Rear lower nut (10 mm) [3]
– Collar (right side, black) [4]



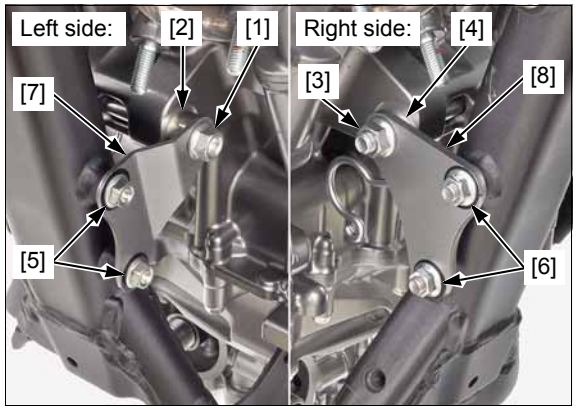
Remove the following:

– Front upper bolts (8 x 18 mm) [1]
– Stay [2]



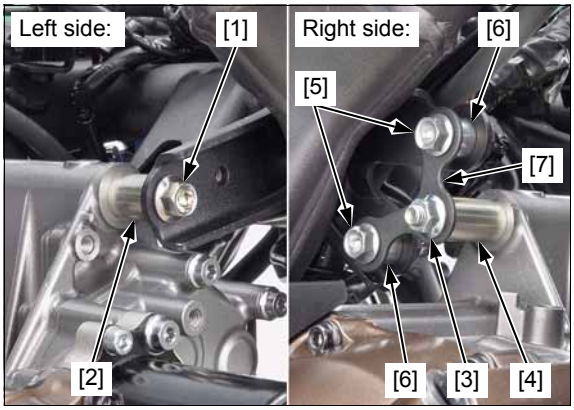
Remove the following:

– Front middle bolt (10 x 100 mm) [1]
– Collar (left side, long) [2]
– Front middle nut (10 mm) [3]
– Collar (right side, short) [4]
– Front middle bolts (8 x 87 mm) [5]
– Front middle nuts (8 mm) [6]
– Stay (left side) [7]
– Stay (right side) [8]



Remove the following:

– Rear upper bolt (8 x 217 mm) [1]
– Collar (left side) [2]
– Rear upper nut (8 mm) [3]
– Collar (right side, long) [4]
– Rear upper bolts (8 x 25 mm) [5]
– Collars (right side, short) [6]
– Stay (right side) [7]



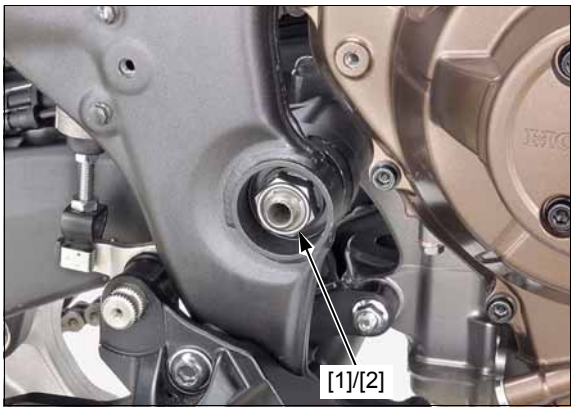
Remove the swingarm pivot nut [1], pivot bolt [2].

Pull the swingarm rearward.

During engine removal, hold the engine securely and be careful not to damage the frame and engine.

Carefully maneuver the engine and remove it out of the frame to the right.

NOTE:
- Note the direction of the bolts.
- Mark and store all the bolts, nuts, and collars to ensure that they are reinstalled in their original locations.



ENGINE INSTALLATION

Place the jack or other adjustable support under the engine.

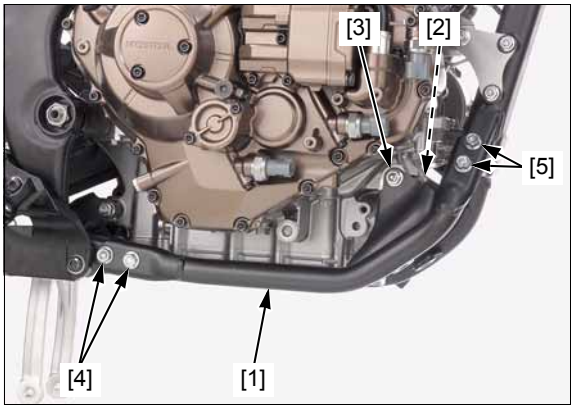
During engine installation, hold the engine securely and be careful not to damage the frame and engine.

Place the engine in the frame, then loosely install all the bolts, nuts and collars into the correct position.

NOTE:
- All the bolts and nuts loosely install, then tighten the bolts and nuts to the specified torque in the specified sequence.
- Carefully align the mounting points with the jack to prevent damage to engine, frame, water hoses, brake pipes, wires, and cables.
- Route the hoses, wires, and cables properly (page 1-26)
- The jack height must be continually adjusted to relieve stress for ease bolt installation.

Loosely install the following.

– Right lower frame [1]
– Front lower bolt (10 x 138 mm) [2]
– Front lower nut (10 mm) [3]
– Right lower frame bolts (rear side, 10 x 60 mm, 10 x 75 mm) [4]
– Right lower frame bolts (front side, 10 x 20 mm, 10 x 40 mm) [5]



Tighten the right lower frame bolts (rear side) first, then front side bolts to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)

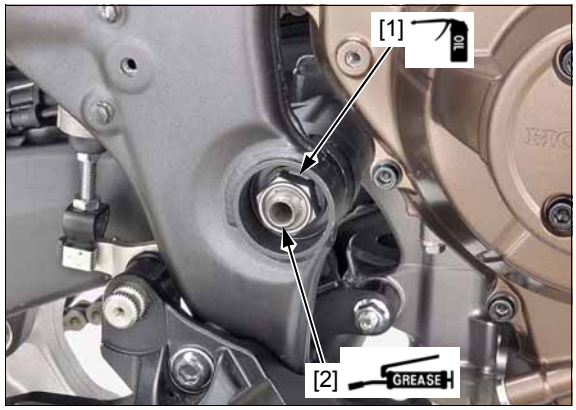
Remove the jack under the engine, place the motorcycle in an upright position.

Tighten the swingarm pivot nut to the specified torque.

TORQUE: 80 N·m (8.2 kgf·m, 59 lbf·ft)

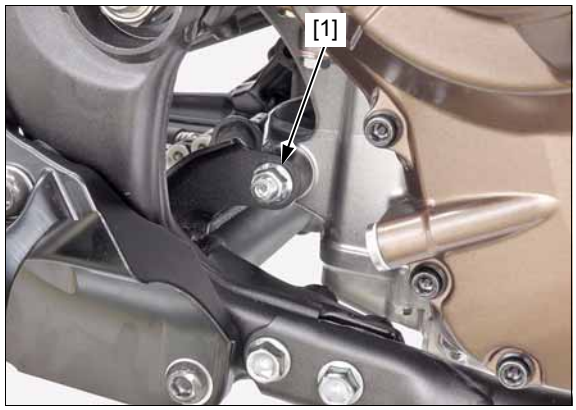
NOTE:

- Apply engine oil to the swingarm pivot nut [1] threads and seating surface.
- Apply a thin coat of grease to the swingarm pivot bolt [2] sliding surface.



Tighten the rear lower nut (10 mm) [1] to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)



Tighten the front lower nut (10 mm) [1] to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)

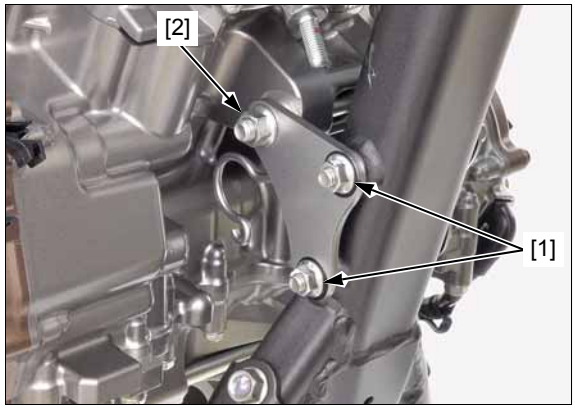


Tighten the front middle nuts (8 mm) [1] to the specified torque.

TORQUE: 32 N·m (3.3 kgf·m, 24 lbf·ft)

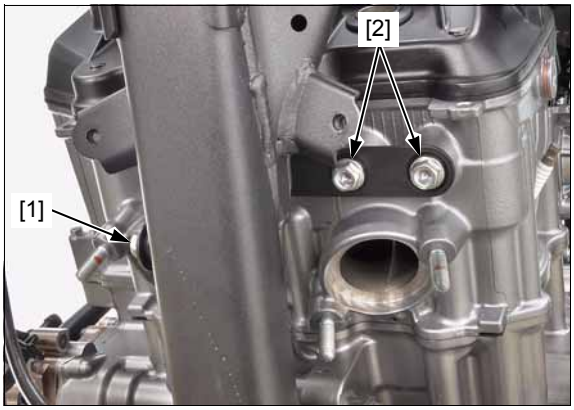
Tighten the front middle nuts (10 mm) [2] to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)



Tighten the front upper bolt (right side) [1] first, then the left side bolts [2] to the specified torque.

TORQUE: 32 N·m (3.3 kgf·m, 24 lbf·ft)

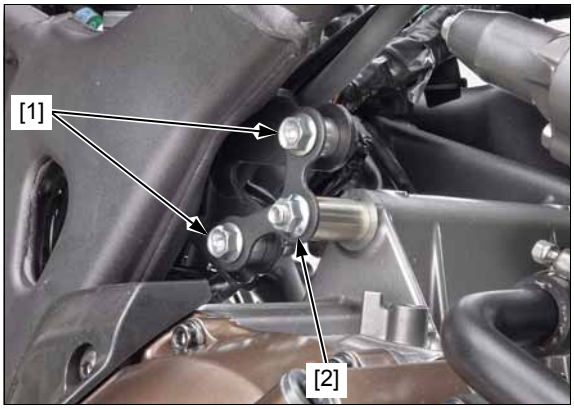


Tighten the rear upper bolts (8 x 25 mm) [1] to the specified torque.

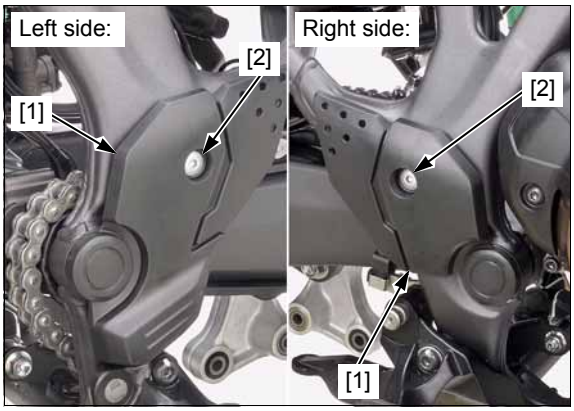
TORQUE: 32 N·m (3.3 kgf·m, 24 lbf·ft)

Tighten the rear upper nut (8 mm) [2] to the specified torque.

TORQUE: 32 N·m (3.3 kgf·m, 24 lbf·ft)



Install the left/right heel guards [1] and bolts [2], and tighten the bolts securely.

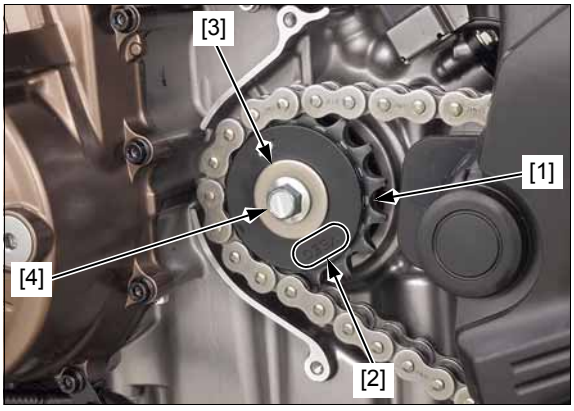


Install the drive sprocket [1] to the drive chain and countershaft with the mark [2] side facing outside.

Install the washer [3] and drive sprocket bolt [4].

Tighten the drive sprocket bolt to the specified torque.

TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)



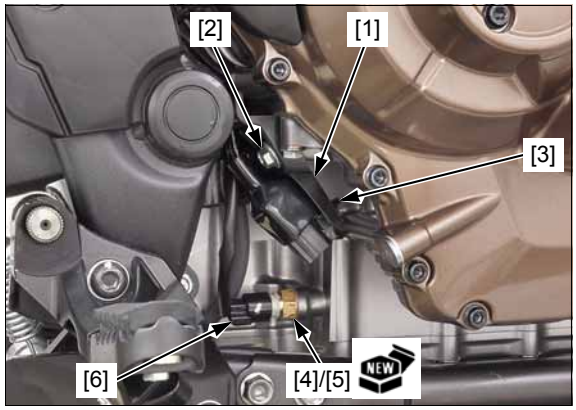
Install the stay [1] and bolt [2], and tighten the bolt securely.

Install the O_2 sensor 4P (Black) connector clip [3] to the stay.

CRF1000D: Install the EOT sensor [4] and a new sealing washer [5], and tighten it to the specified torque.

TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)

CRF1000D: Connect the EOT sensor 2P (Black) connector [6].

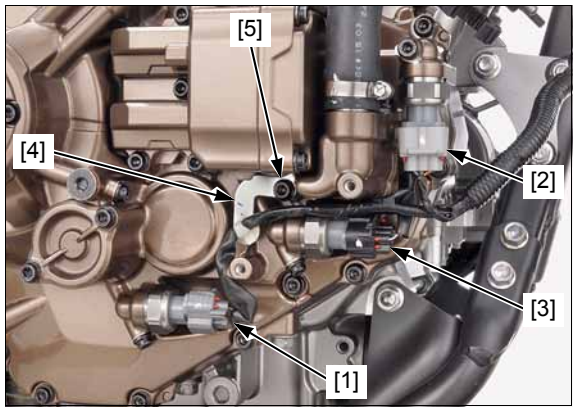


CRF1000D: Connect the following:

– Clutch line EOP sensor 3P (Gray) connector [1]
– No.1 clutch EOP sensor 3P (Gray) connector [2]
– No.2 clutch EOP sensor 3P (Black) connector [3]

Install the stay [4] and bolt [5], and tighten the bolt to the specified torque.

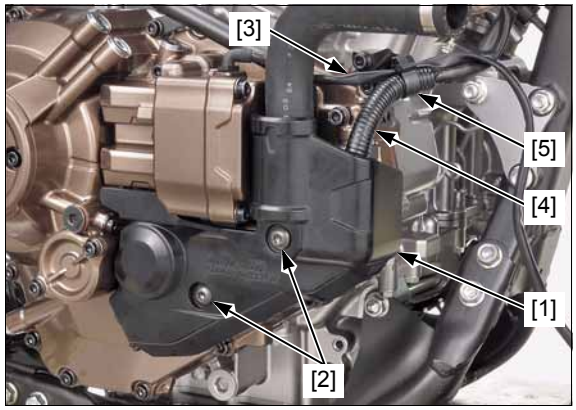
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



CRF1000D: Install the clutch EOP sensor cover [1] and bolts [2], and tighten the bolts to the specified torque.

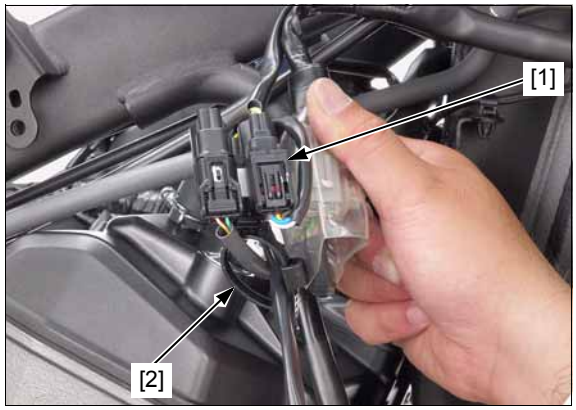
TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Clamp the linear solenoid wire [3] and main wire harness [4] with the wire clamp [5].



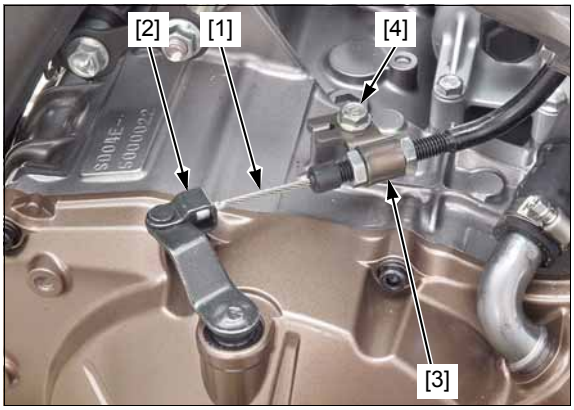
CRF1000D: Connect linear solenoid 4P (Black) connector [1].

Install the wire band [2].



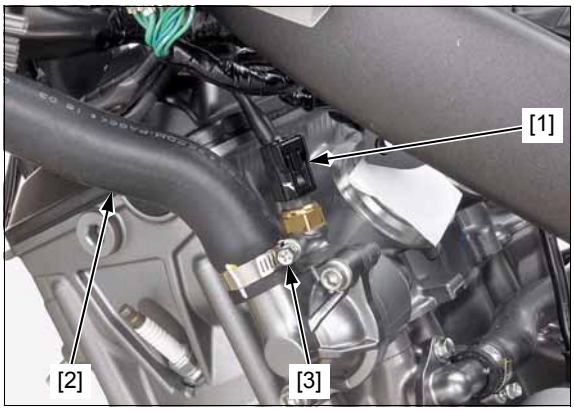
CRF1000/A: Connect the clutch cable [1] to the clutch lifter arm [2].

Install the clutch cable holder [3] and bolt [4] and tighten the bolt securely.



Connect the ECT sensor 2P (Black) connector [1].

Connect the radiator upper hose [2] and tighten the hose band screw [3] to the specified range (page 8-8).



Connect the following:

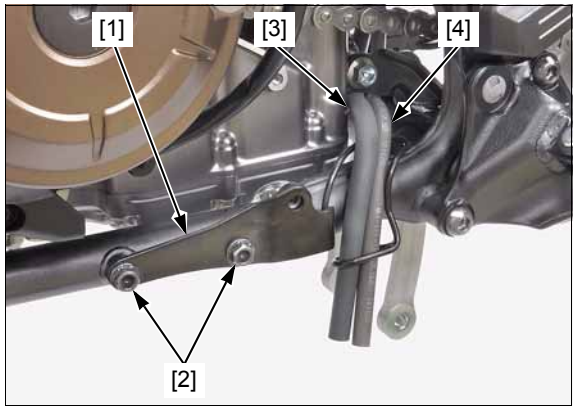
– VS sensor 3P (Black) connector [1]
– Outer mainshaft 3P (Black) connector (CRF1000D) [2]
– Shift control motor 2P (Black) connector (CRF1000D) [3]



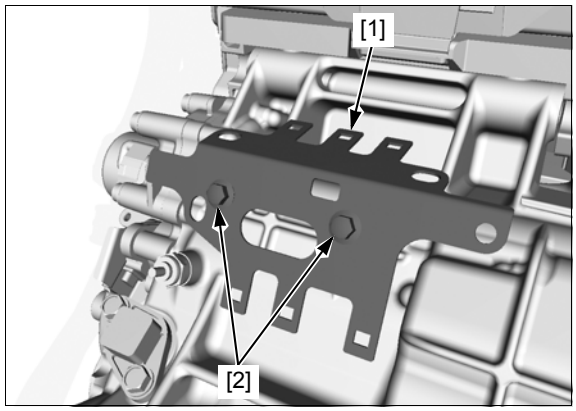


Install the bracket [1] and bolts [2], and tighten the bolts securely.

Install the fuel tank drain hose [3] and breather hose [4] to the bracket.



Install the connector clip stay [1] and bolts [2], and tighten the bolts securely.

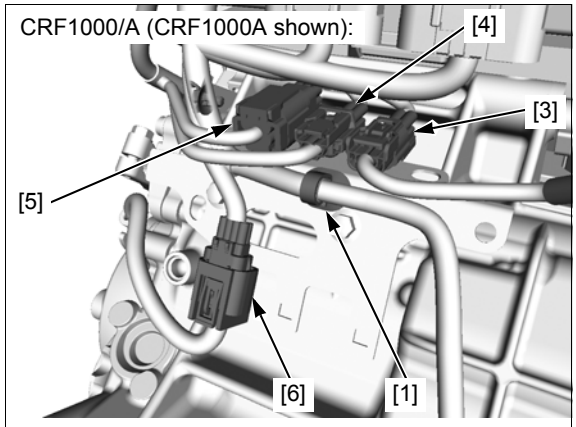


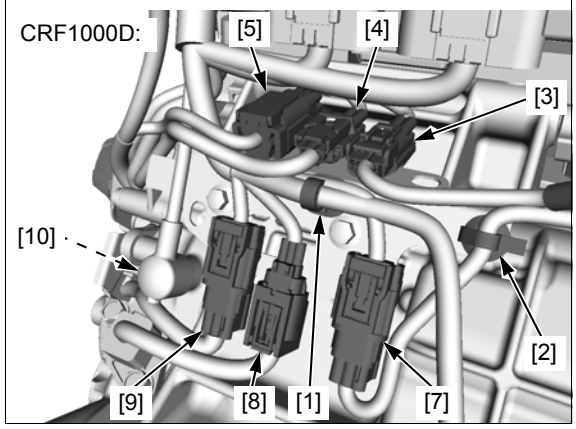
Install the O_2 sensor wire clip [1] to the connector clip stay.

CRF1000D: Install the shift spindle angle sensor wire clip [2] to the connector clip stay.

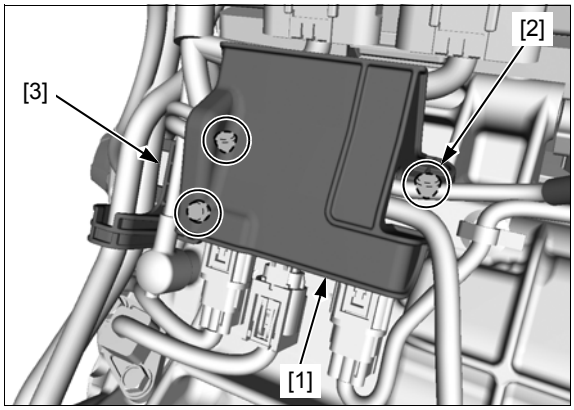
Connect the following connectors:

- Rear brake switch 2P (Gray) connector [3]
- Sidestand switch 2P (Black) connector [4]
- Alternator assembly 6P (Black) connector [5]
- Gear position switch 8P (Black) (CRF1000/A) [6]
- Shift spindle angle sensor 3P (Blue) connector (CRF1000D) [7]
- Inner mainshaft sensor 3P (Black) connector (CRF1000D) [8]
- TR sensor 3P (Black) connector (CRF1000D) [9]
- Neutral switch terminal (CRF1000D) [10]





Install the connector cover [1] by aligning its bosses [2] and slit [3] with the connector clip stay holes and tab.



Install the alternator assembly wire onto the frame:
– CRF1000/A (page 11-4)
– CRF1000D (page 11-5)

Install the following:
– Muffler/exhaust pipe (page 2-16)
– Engine oil filter (page 3-12)
– Ignition coil tray (page 5-9)
– Radiator (page 8-6)
– Radiator reserve tank (page 8-10)
– Shift pedal (CRF1000/A) (page 12-21)
– Gearshift spindle cover (CRF1000/A) (page 12-21)
– Rear brake pedal (page 19-15)
– Battery box (page 21-6)
– EOP switch (CRF1000/A) (page 22-19)
– EOP sensor (CRF1000D) (page 22-20)

Install the removed parts in the reverse order of removal.

17. FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION ····· 17-2

TROUBLESHOOTING ····· 17-2

COMPONENT LOCATION ····· 17-3

HANDLEBAR ····· 17-4

FRONT WHEEL ····· 17-10

FORK ····· 17-14

STEERING STEM ····· 17-22

SERVICE INFORMATION

GENERAL

- When servicing the front wheel, fork or steering stem, support the motorcycle using a safety stand or hoist.
- Aluminum taper handle is equipped in this motorcycle. The scratches or bend of the handlebar may cause breakage. Replace the damaged handlebar with a new one.
- 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 and pedal after removing the caliper and front wheel.
- After the front wheel installation, check the brake operation by applying the brake lever.
- For brake system information (page 19-2).

TROUBLESHOOTING

Hard steering
- Steering head bearing adjustment nut too tight
- Worn or damaged steering head bearings
- Bent steering stem
- Insufficient tire pressure
- Faulty tire

Steers to one side or does not track straight
- Damaged or loose steering head bearings
- Loose steering stem adjusting nut
- Bent forks
- Unevenly adjusted right and left forks
- Bent axle
- Worn or damaged wheel bearings
- Bent frame

Front wheel wobbling
- Bent rim
- Bent spoke
- Worn or damaged front wheel bearings
- Insufficient tire pressure
- Faulty tire
- Unbalanced front tire and wheel

Front wheel hard to turn
- Faulty front wheel bearing
- Bent front axle
- Front brake drag

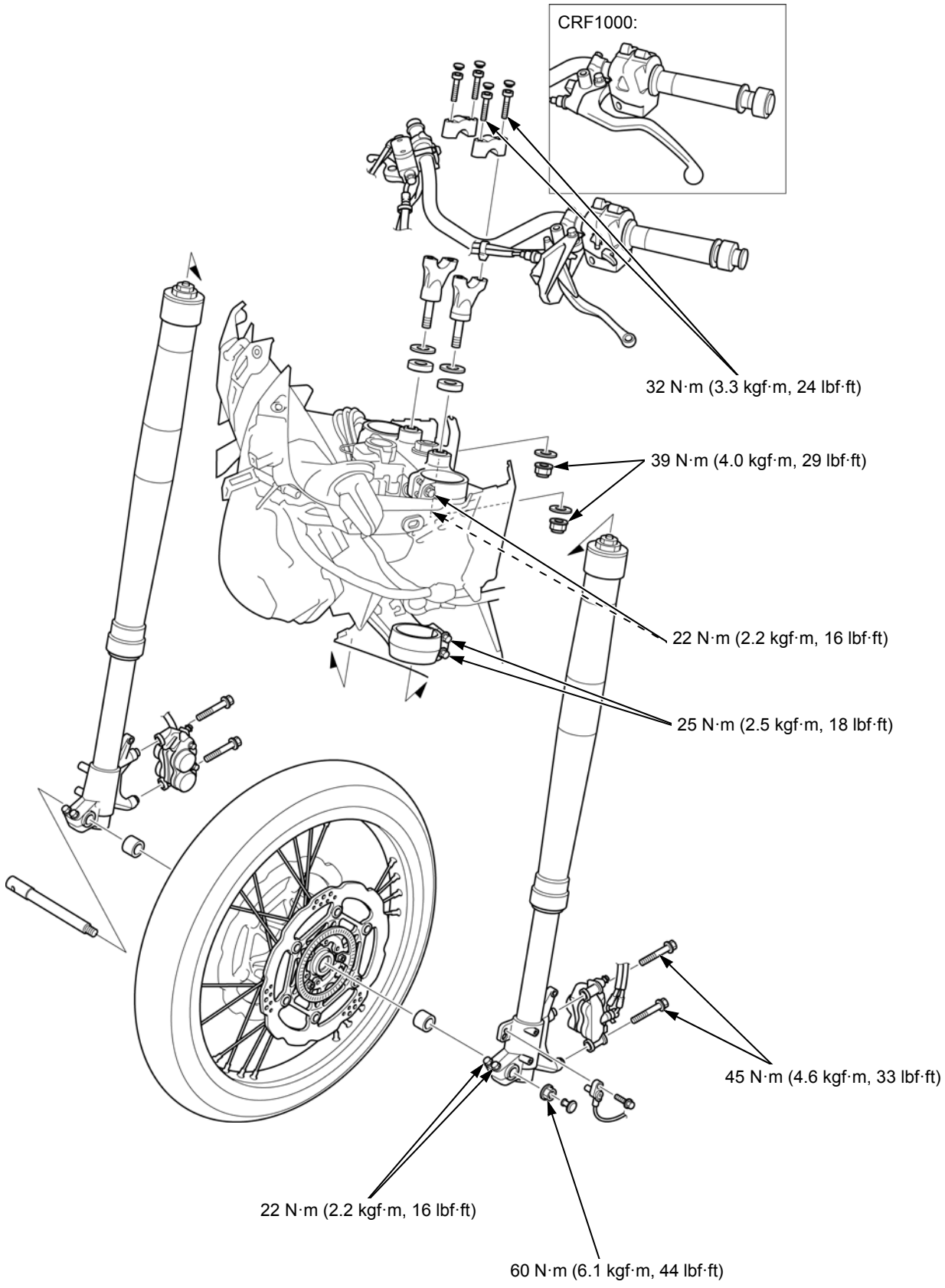
Soft suspension
- Insufficient fluid in fork
- Incorrect fork fluid weight
- Weak fork springs
- Insufficient tire pressure

Stiff suspension
- Bent fork pipes
- Too much fluid in fork
- Incorrect fork fluid weight
- Clogged fork fluid passage

Front suspension noise
- Insufficient fluid in fork
- Loose fork fasteners

COMPONENT LOCATION

CRF1000D (ED model) shown:



HANDLEBAR

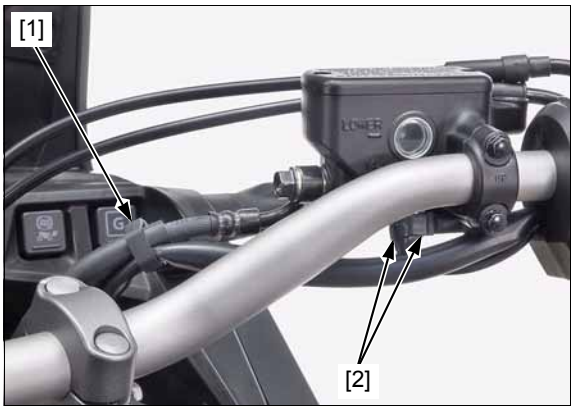
REMOVAL

Remove the rearview mirrors [1].



Remove the knuckle guards (page 2-5).

Remove the wire clamp [1] and disconnect the front brake light switch connectors [2].

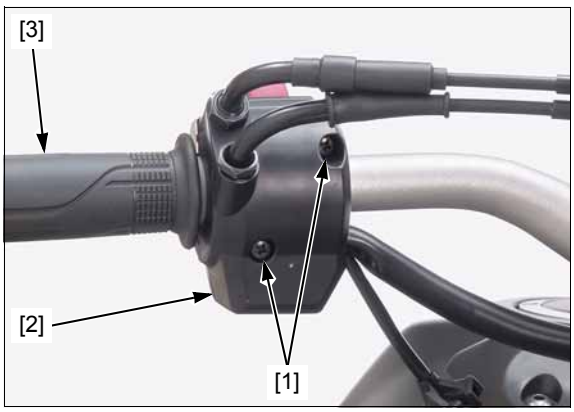


Remove the bolts [1], holder [2], and front brake master cylinder [3].

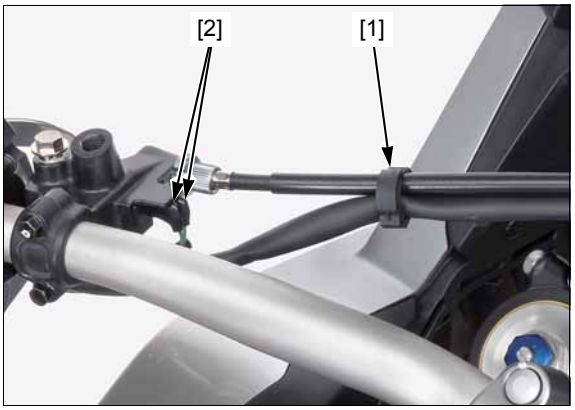


Remove the screw/washers [1] and separate the right handlebar switch housing [2].

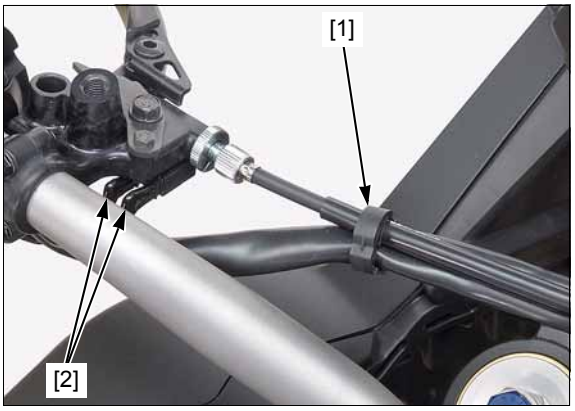
Remove the switch housing/throttle grip pipe [3].



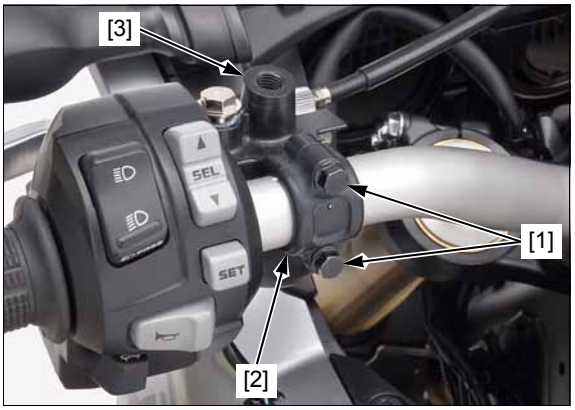
CRF1000/A: Remove the wire clamp [1] and disconnect the clutch switch connectors [2].



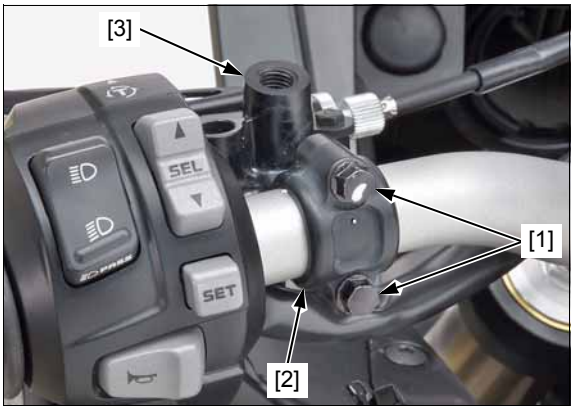
CRF1000D: Remove the wire clamp [1] and disconnect the parking brake switch connectors [2].



CRF1000/A: Remove the bolts [1], holder [2], and clutch lever assembly [3].

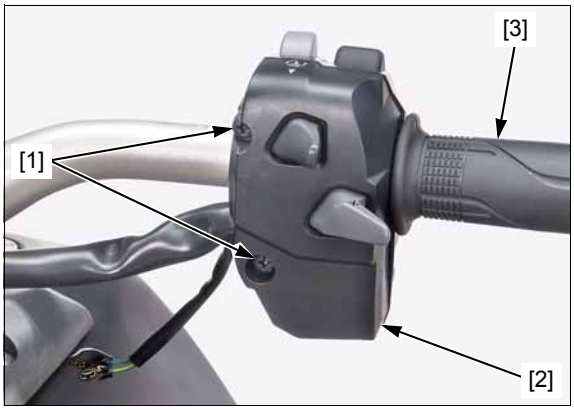


CRF1000D: Remove the bolts [1], holder [2], and parking brake lever assembly [3].



Remove the screw/washers [1] and left handlebar switch housing [2].

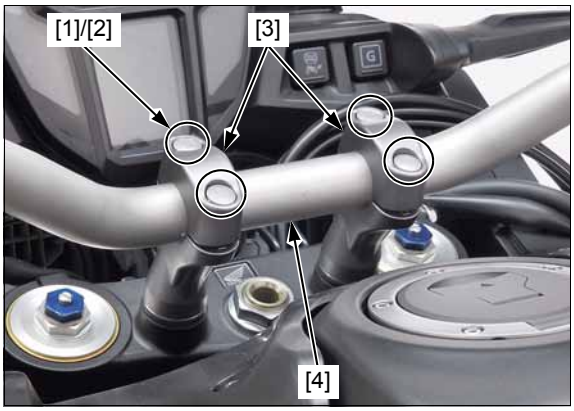
Remove the handlebar grip [3] if it necessary.



Remove the caps [1].

Remove the bolts [2], handlebar upper holders [3], and handlebar [4].

Check the handlebar for scratches or bend. If the handlebar is damaged, replace with a new one (page 17-7).



HANDLEBAR WEIGHT REMOVAL/ INSTALLATION

Remove the following:

– Handlebar weight bolt [1]
– Rubber [2] (except CRF1000)
– Handlebar weight A [3]
– Snap ring [4]
– Handlebar weight rubbers [5]
– Handlebar weight B [6]
– O-ring [7]

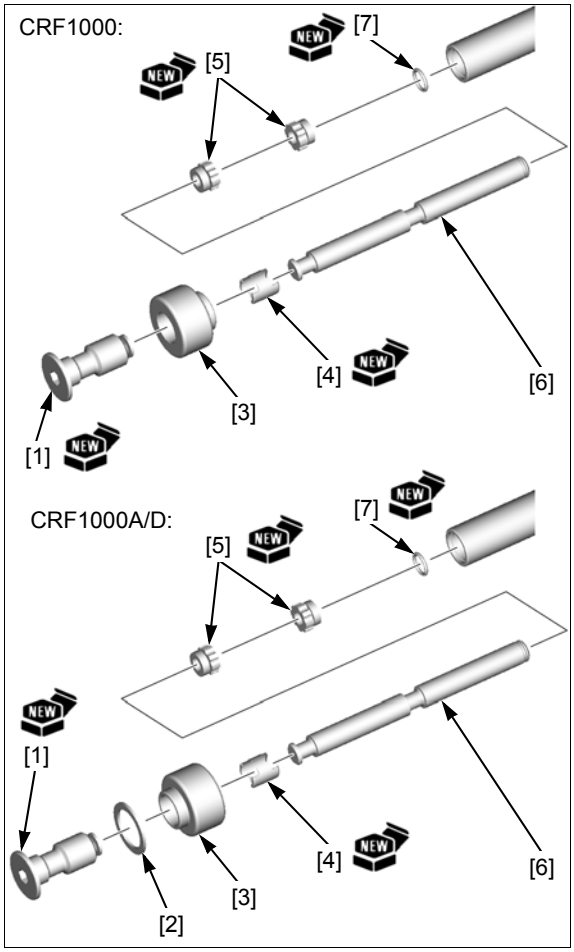
Installation is in the reverse order of removal.

NOTE:

- Always replace the handlebar weight bolt, O-ring, snap ring, and handlebar weight rubbers with new ones.
- Install the handlebar weight rubbers as shown.

TORQUE:

Handlebar weight bolt:
55 N·m (5.6 kgf·m, 41 lbf·ft)



HANDLEBAR LOWER HOLDER REMOVAL/INSTALLATION

Remove the handlebar (page 17-4).

Temporarily install the handlebar [1] and handlebar upper holders [2] that you removed and tighten the socket bolts [3].

Remove the nuts [4], washers [5], lower holders [6]/ handlebar assembly, washers [7], and damper rubbers [8] from the top bridge.

Remove the handlebar from the lower holders.

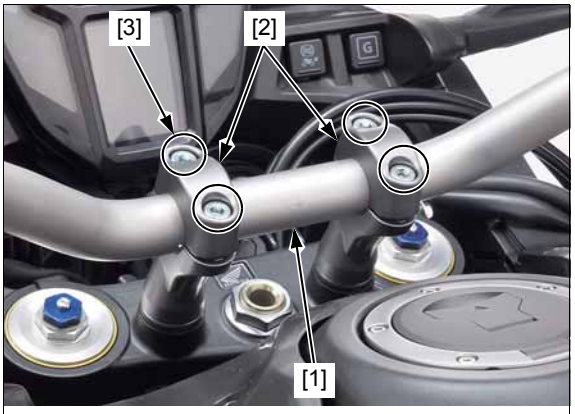
Install the damper rubbers, washers, and lower holders to the top bridge.

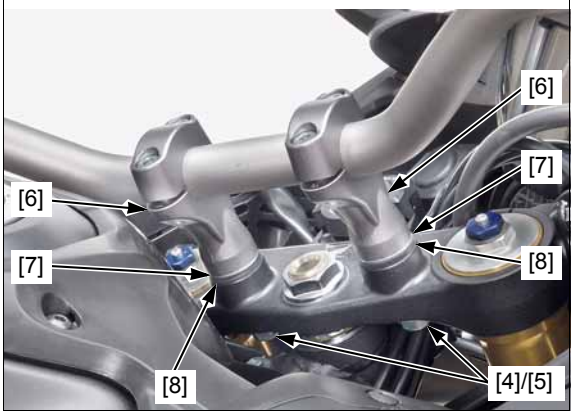
Temporarily install the handlebar on the lower holders to secure the lower holders.

Install the washers and nuts and tighten the nuts to the specified torque.

TORQUE: 39 N·m (4.0 kgf·m, 29 lbf·ft)

Remove the handlebar from the lower holders.





INSTALLATION

NOTE:

- The scratches or bend of the handlebar may cause breakage. Replace the damaged handlebar with a new one.
- Route the hoses, cables, and wires properly (page 1-26).

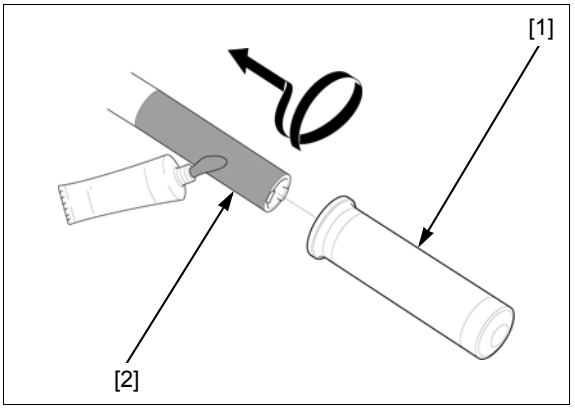
Clean the inside surface of the handlebar grip [1].

Apply Honda Bond A or an equivalent to the inside surface of the grip and outside surface of the handlebar [2].

Wait 3 – 5 minutes and install the grip.

Allow the adhesive to dry for 1 hour before using.

Rotate the grip for even application of the adhesive.



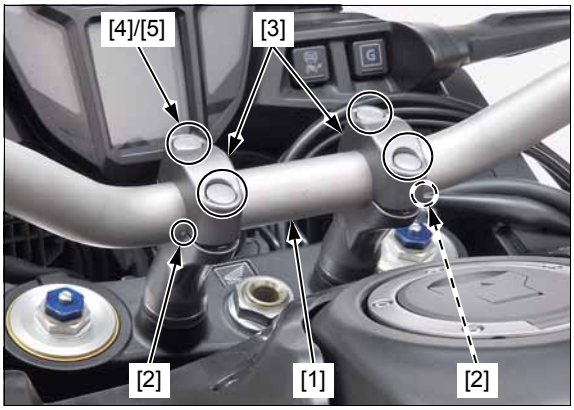
Place the handlebar [1] on the lower holders while aligning its paint mark [2] on the handlebar with the edge of the lower holders.

Install the handlebar upper holders [3].

Install the socket bolts [4].
Tighten the front bolts first, then tighten the rear bolts to the specified torque.

TORQUE: 32 N·m (3.3 kgf·m, 24 lbf·ft)

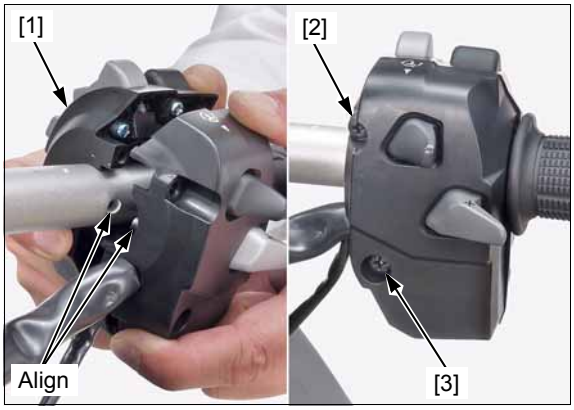
Install the caps [5].



Install the left handlebar switch housing [1] by aligning its locating pin with the hole in the handlebar.

Tighten the upper screw/washer [2] first, then the lower screw/washer [3] to the specified torque.

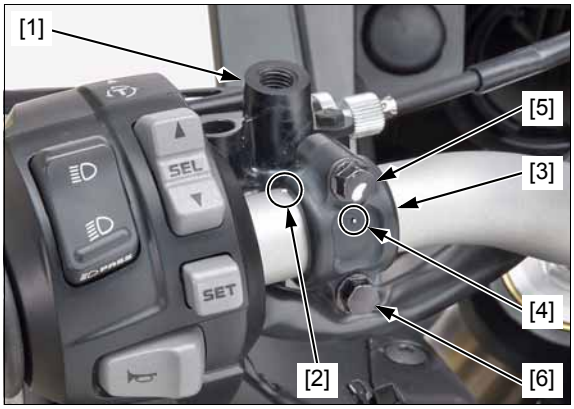
TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)



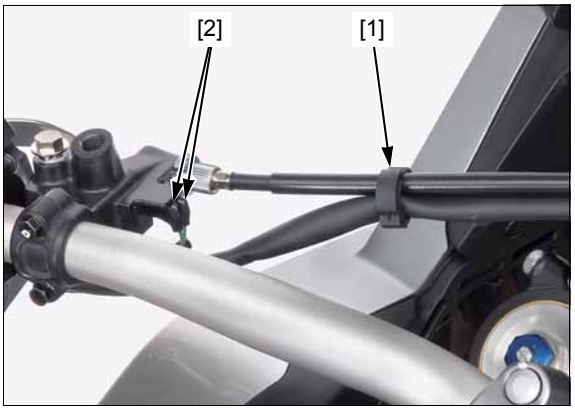
CRF1000/A: Install the clutch lever assembly [1] by aligning its end with the paint mark [2] on the handlebar.
Install the holder [3] with its punch mark [4] facing up.
Tighten the upper bolt [5] first, then the lower bolt [6].



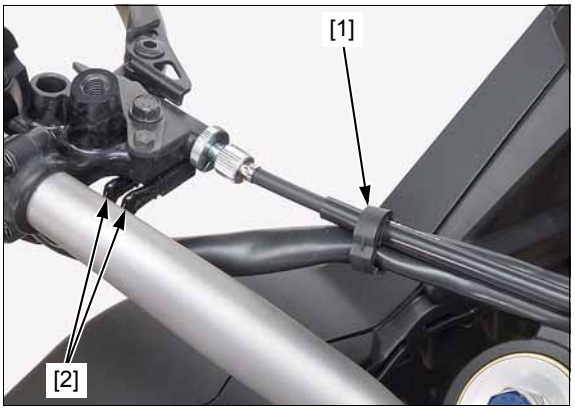
CRF1000D: Install the parking brake lever assembly [1] by aligning its end with the paint mark [2] on the handlebar.
Install the holder [3] with its punch mark [4] facing up.
Tighten the upper bolt [5] first, then the lower bolt [6].



CRF1000/A: Install the wire clamp [1] and connect the clutch switch connectors [2].



CRF1000D: Install the wire clamp [1] and connect the parking brake switch connectors [2].



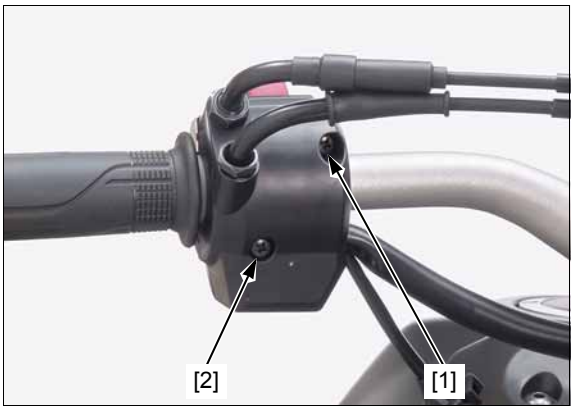
Apply grease to the throttle pipe flange groove.

Install the right handlebar switch housing/throttle pipe [1] aligning its location pin with the hole in the handlebar.



Tighten the upper screw/washer [1] first, then the lower screw/washer [2] to the specified torque.

TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)



Install the front brake master cylinder [1] by aligning its end with the paint mark [2] on the handlebar.

Install the holder [3] with its "UP" mark [4] facing up.

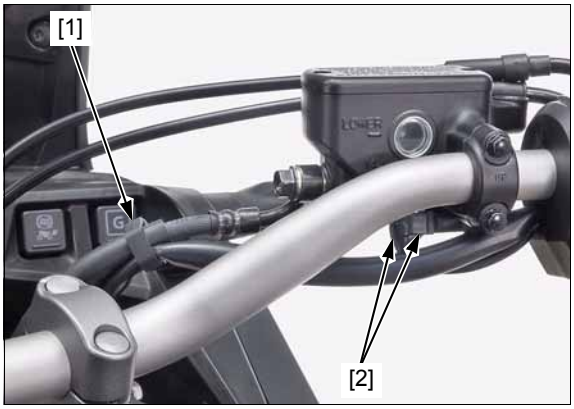
Tighten the upper bolt [5] first, then the lower bolt [6] to the specified torque.

TORQUE: 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)



Install the wire clamp [1] and connect the front brake light switch connectors [2].

Install the knuckle guards (page 2-5).



Install the rearview mirrors [1].



FRONT WHEEL

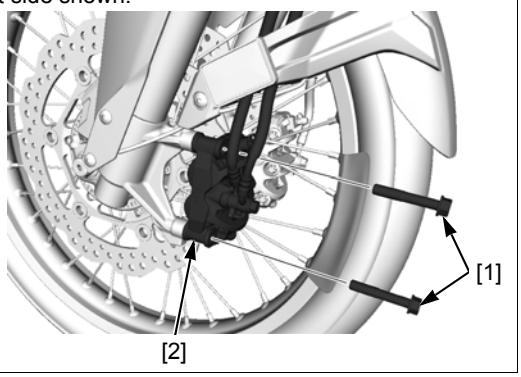
REMOVAL

Remove the front brake caliper mounting bolts [1] and slide the brake caliper/bracket assembly [2].

NOTE:

- Do not suspend the brake caliper/bracket assembly from the brake hose. Do not twist the brake hose.
- Do not operate the brake lever after removing the front wheel.

Left side shown:



ED model: Remove the axle cap [1].

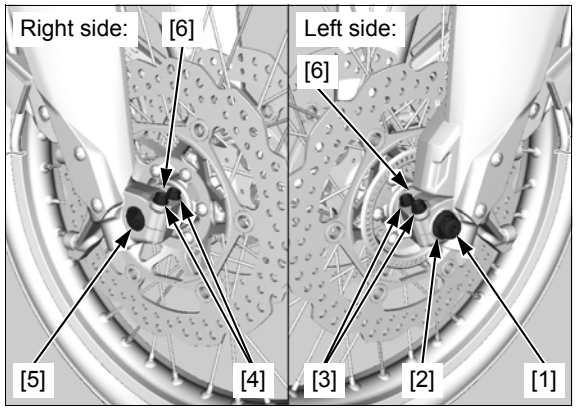
Remove the front axle nut [2].

Loosen the left front axle holder pinch bolts [3].

Loosen the right front axle holder pinch bolts [4].

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

Remove the front axle [5], front wheel, and side collars [6].



INSPECTION

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.

Inspect the following parts for damage, abnormal wear, deformation, or bend.

– Front axle
– Front wheel

Measure each part according to FRONT WHEEL/ SUSPENSION/STEERING SPECIFICATIONS (page 1-10).

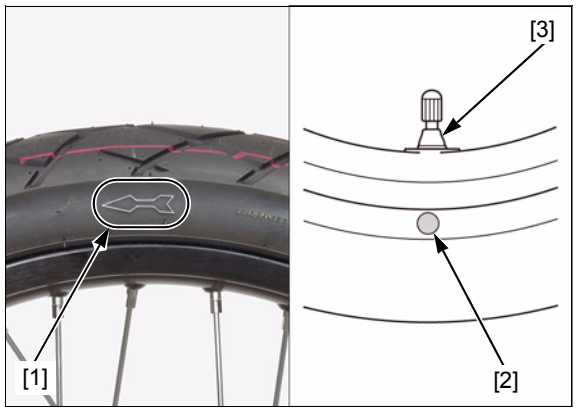
Replace any part if it is out of service limit.

WHEEL BALANCE

NOTE:
- Carefully check balance before installing the wheel.
- The wheel balance must be checked when the tire is remounted.

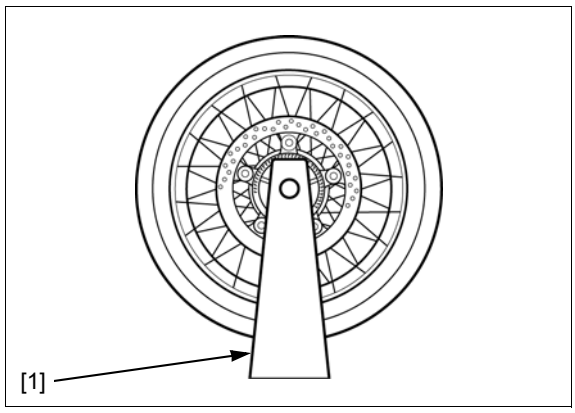
Note the rotating direction mark [1] on the tire, and upon tire installation, always fit the tire so that the mark faces in the normal rotating direction.

NOTE:
- For optimum balance, the tire balance mark [2] (light mass point: a paint dot on the side wall) must be located next to the valve stem [3]. Remount the tire if necessary.

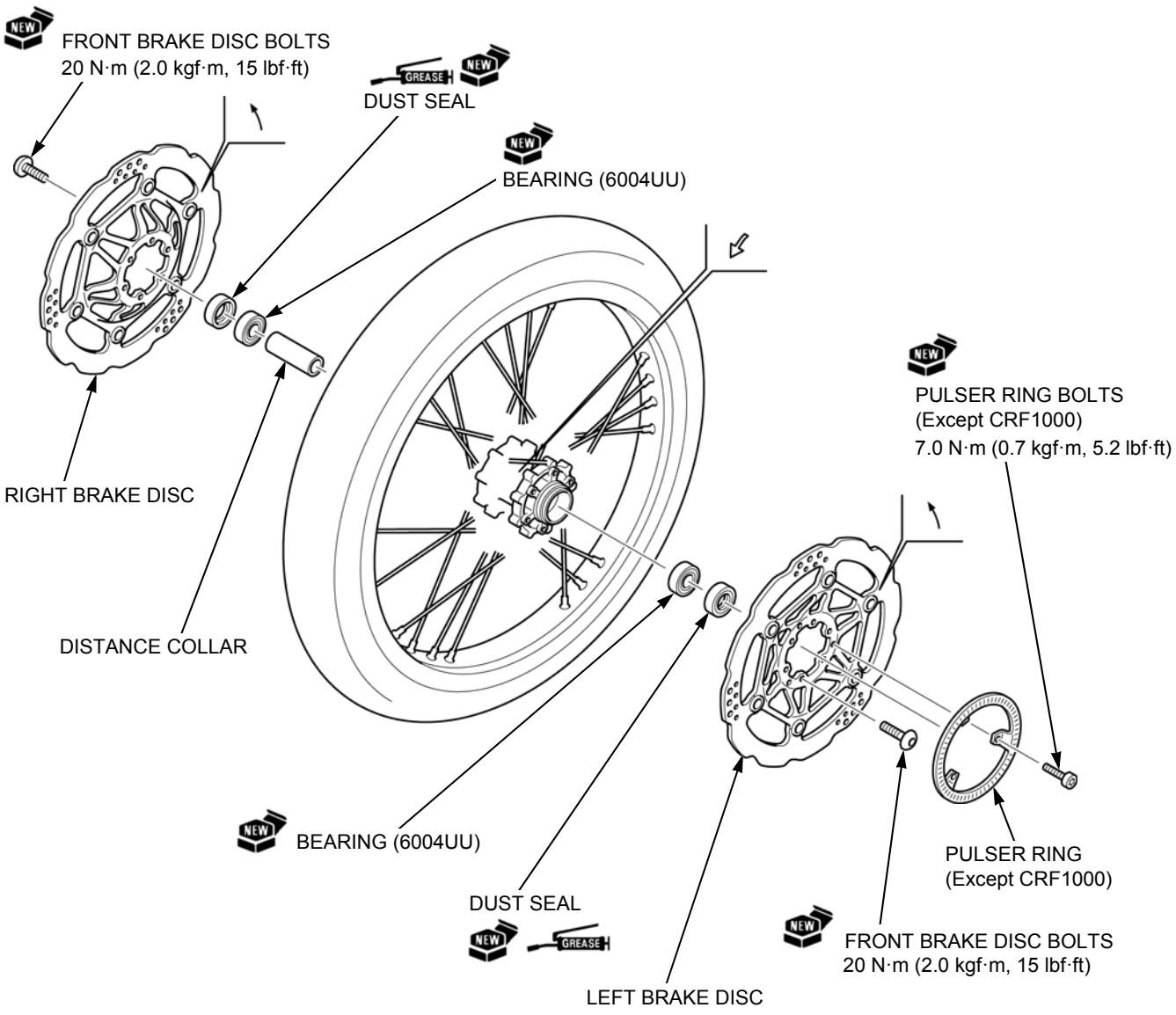


Mount the wheel, tire, and brake disc assembly on an inspection stand [1].
Spin the wheel, allow it to stop, and mark the lowest (heaviest) part of the wheel with chalk.
Do this 2 or 3 times to verify the heaviest area.
If the wheel is balanced, it will not stop consistently in the same position.

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 (2.1 oz) to the wheel.



DISASSEMBLY/ASSEMBLY



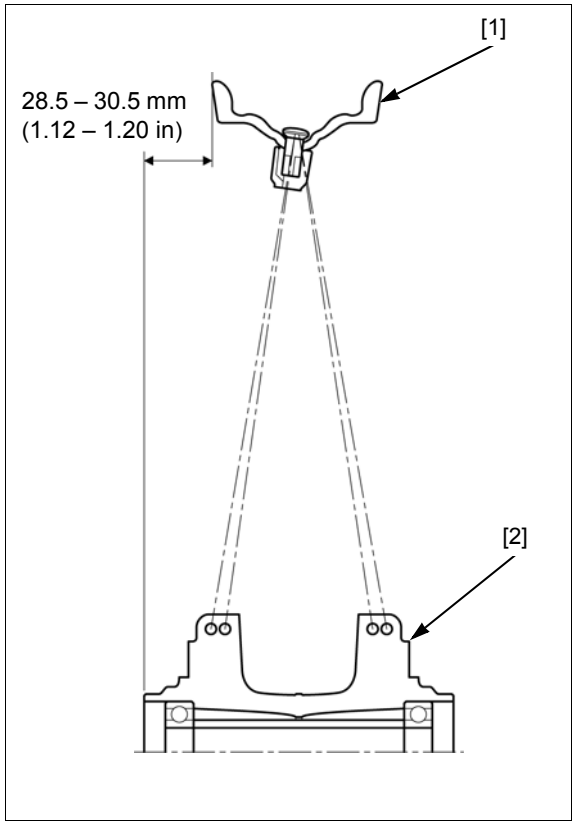
NOTE:

- Install the dust seals until they are flush with the wheel hub surface.
- Apply grease to the dust seal lips.
- Install the brake disc with the "⇨" mark [1] facing the normal rotating direction.

WHEEL CENTER ADJUSTMENT

Place the rim [1] on a work bench.
Place the hub [2] in the center of the rim, and begin the lacing with new spokes.

Adjust the hub position so the distance from the hub left end surface to the side of the rim is 28.5 – 30.5 mm (1.12 – 1.20 in) as shown.



WHEEL BEARING REPLACEMENT

Replace the wheel bearings in pairs. Do not reuse old bearings.

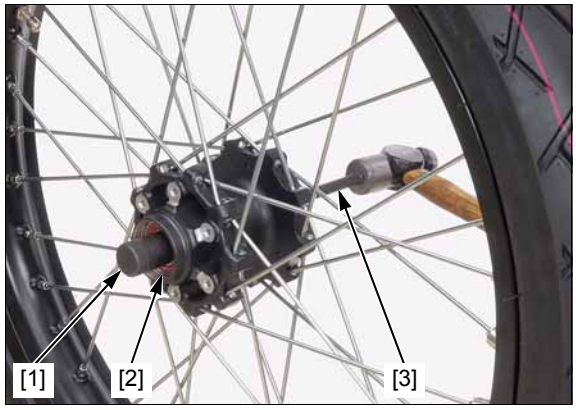
Install the bearing remover head [1] into the bearing [2].

From the opposite side, install the bearing remover shaft [3] and drive the bearing out of the wheel hub.

TOOLS:

Bearing remover head, 20 mm	**07746-0050600**
Bearing remover shaft	**07746-0050100**

Remove the distance collar and drive out the other bearing.



Never install the old bearings. Once the bearings have been removed, the bearings must be replaced with new ones.

Drive in a new left bearing [1] squarely with the marked side facing up until fully seated.

Install the distance collar.

Drive in a new right bearing squarely with the marked side facing up until it is seated on the collar.

TOOLS:

Driver [2]	**07749-0010000**
Attachment, 42 x 47 mm [3]	**07746-0010300**
Pilot, 20 mm [4]	**07746-0040500**

NOTE:
Replace the wheel bearings in pairs.



INSTALLATION

Install the side collars [1] to the front wheel.

Apply a thin coat of grease to the front axle sliding surface.

Install the front wheel between the forks.

Align the surfaces of the axle and right fork [3] as shown.

Install the front axle [2] from right side.

Tighten the right front axle holder pinch bolts [4] to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Install and tighten the axle nut [5] to the specified torque.

TORQUE: 60 N·m (6.1 kgf·m, 44 lbf·ft)

Loosen the right front axle holder pinch bolts.

Tighten the left front axle holder pinch bolts [6] to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Install the front brake calipers (page 19-18).

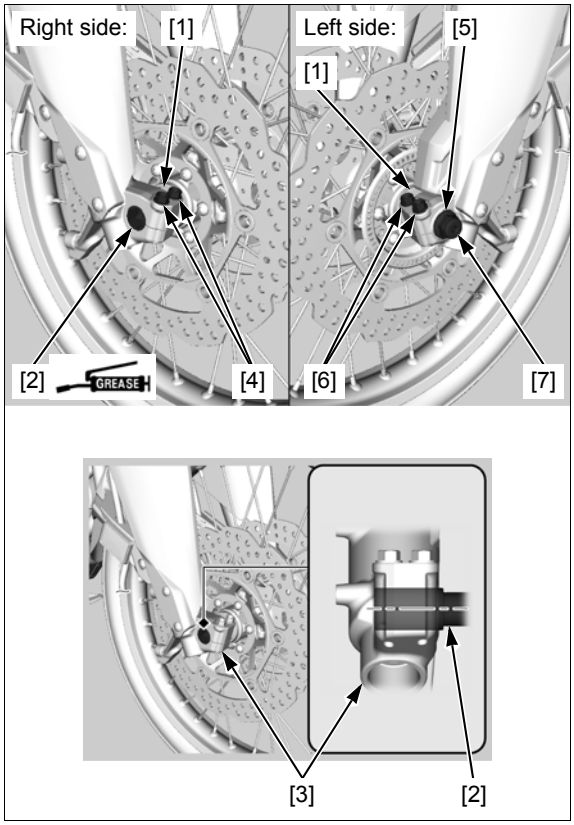
With the front brake applied, pump the forks up and down several times to seat the axle and check brake operation.

Tighten the right front axle holder pinch bolts to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

ED model: Install the axle cap [7].

Check the clearance gap between the front wheel speed sensor bracket and pulser ring (page 20-21).



FORK

REMOVAL

Remove the following:

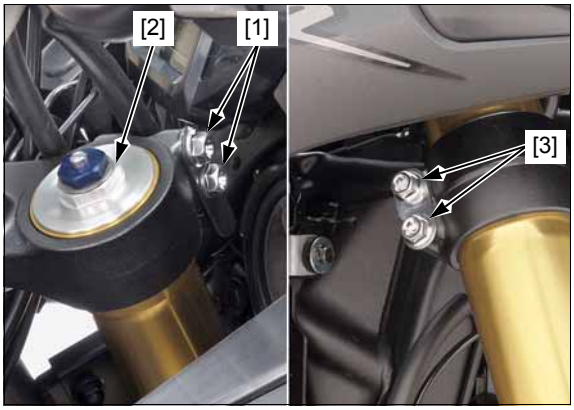
- Front fender (page 2-9)
- Front wheel (page 17-10)
- Front speed sensor (CRF1000A/D) (page 20-20)

Loosen the top bridge pinch bolts [1].

Be careful not to damage the fork bolt when loosening it.

If the fork will be disassembled, loosen the fork bolts [2] at this point, but do not remove yet.

Loosen the fork bottom bridge pinch bolts [3] by holding the forks then remove it.



When disassembling the fork, turn the pre-load adjuster [1] and rebound adjuster [2] counterclockwise to the softest position (be sure to record the number of turns from the starting position).



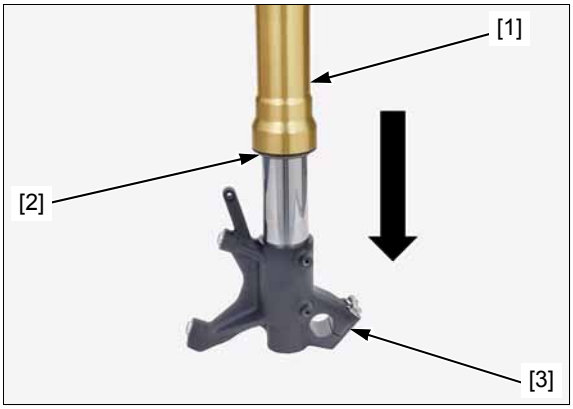
DISASSEMBLY

Be careful not to damage the fork bolt when removing it.

Remove the fork bolt [1].



Push the outer pipe [1] slowly down, and gently seat the dust seal [2] onto the axle holder [3].



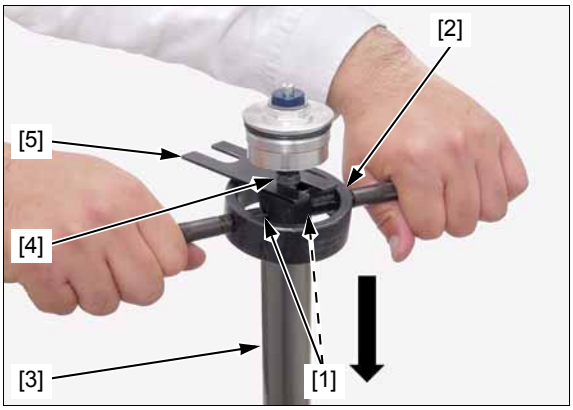
Attach the special tool to the spring collar holes [1].

TOOL:
Spring collar holder [2] **070MF-MBZC110**

Compress the spring collar [3] with the spring collar holder.

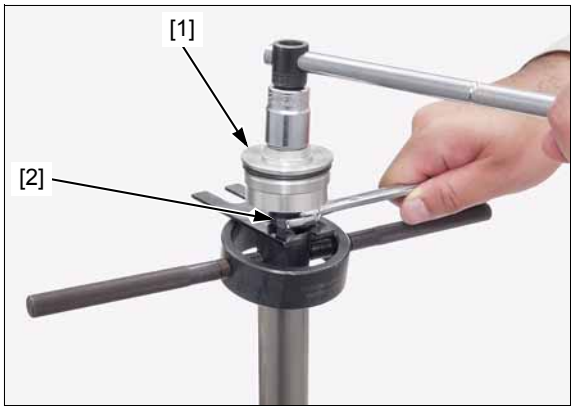
Insert the special tool between the lock nut [4] and spring collar.

TOOL:
Stopper plate [5] **070MF-MBZC130**



Be careful not to damage the fork bolt when loosening it.

Loosen the fork bolt [1] while holding the lock nut [2].

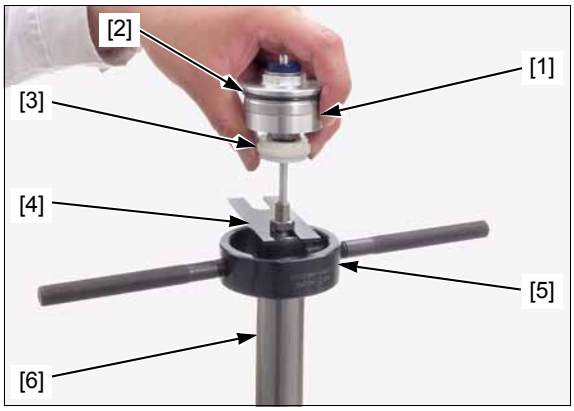


Remove the following:

– Fork bolt assembly [1]
– O-ring [2]
– Spring seat stopper [3]

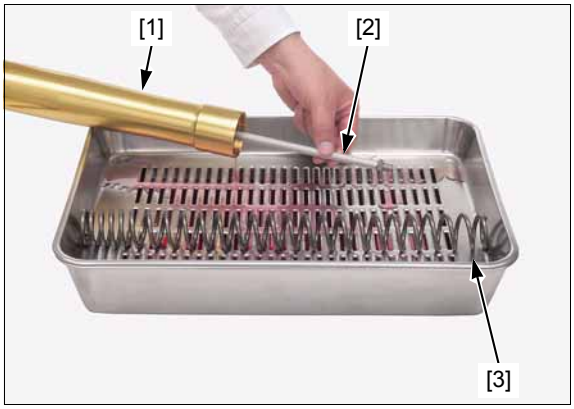
Remove the stopper plate [4] and spring collar holder [5].

Remove the spring collar [6].



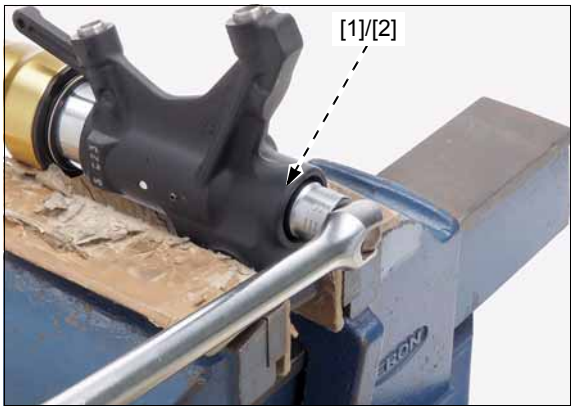
Pour out the fork fluid by pumping the outer pipe [1] several times.
Pour out the fork fluid from the fork damper by pumping the damper rod [2] several times.

Remove the fork spring [3].

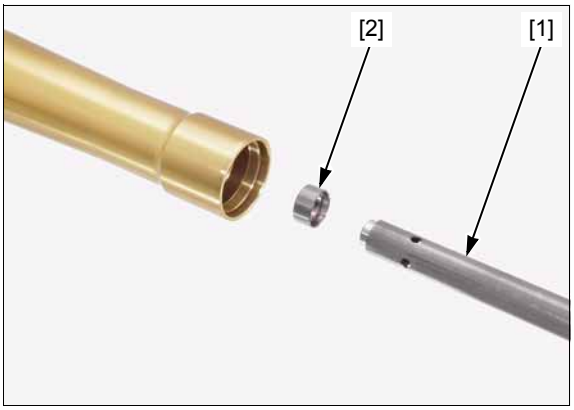


Hold the axle holder in a vise with soft jaws or a shop towel.

Remove the fork center bolt [1] and sealing washer [2].



Remove the fork damper assembly [1] and centering plate [2].



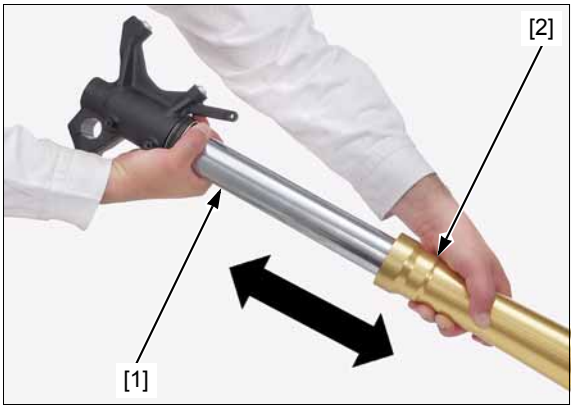
Remove the dust seal [1].

Do not scratch the fork pipe sliding surface.

Remove the oil seal stopper ring [2].



Pull the slide pipe assembly [1] out until you feel resistance from the slider bushing. Then move it in and out, tapping the bushing lightly until the outer pipe [2] separates from the slide pipe assembly.
The guide bushing will be forced out by the slider bushing.

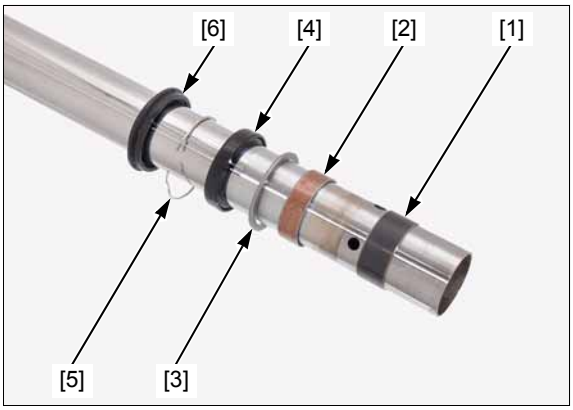


Remove the following:

– Slider bushing [1]
– Guide bushing [2]
– Back-up ring [3]
– Oil seal [4]
– Stopper ring [5]
– Dust seal [6]

NOTE:

• Do not remove the slider bushing unless it is necessary to replace with a new one.



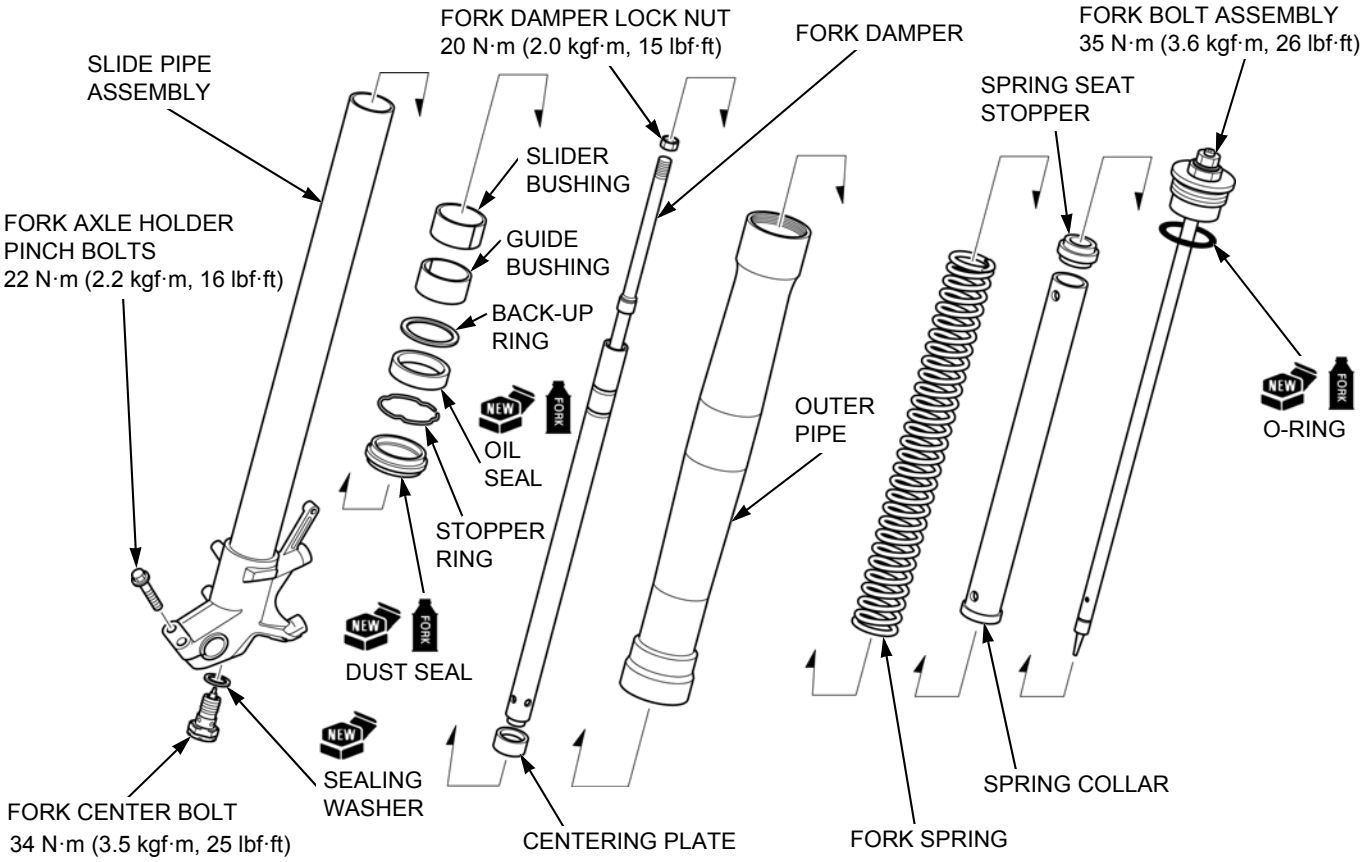
INSPECTION

Inspect the following parts for damage, abnormal wear, deformation, looseness or bend.

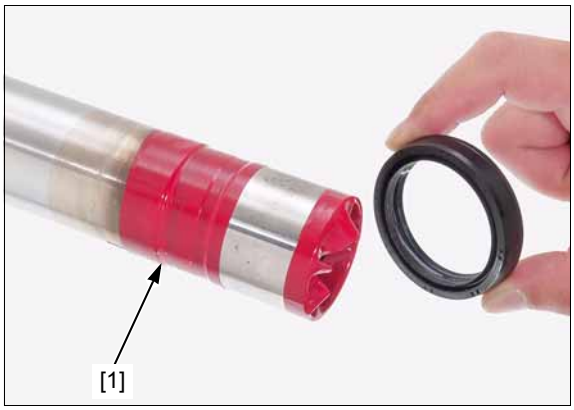
– Fork bolt assembly
– Outer pipe/slide pipe assembly
– Fork dumper
– Spring seat stopper
– Spring collar
– Fork spring
– Guide bushing
– Slider bushing
– Back-up ring

Measure each part according to FRONT WHEEL/ SUSPENSION/STEERING SPECIFICATIONS (page 1-10).
Replace any part if it is out of service limit.

ASSEMBLY



- Before assembly, wash all parts with a high flash point or non-flammable solvent and blow them dry.
- When installing the fork dust seal and oil seal, wrap the edge and groove of the slide pipe with tape [1].



Apply fork fluid to new dust seal and oil seal lips.

Install the oil seal with its marked side facing toward the axle holder.

Install the dust seal [1], stopper ring [2] and oil seal [3].

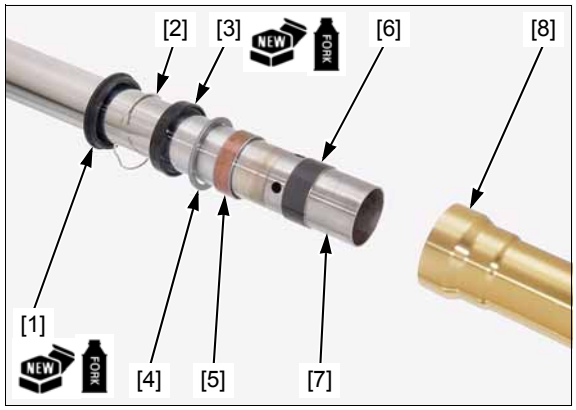
Install the back-up ring [4], guide bushing [5].

Install the slider bushing [6] if it is removed.

NOTE:

- Remove any burrs from the bushing mating surface, being careful not to peel off the coating.
- Do not open the slider bushing slit more than necessary.

Install the slide pipe assembly [7] into the outer pipe [8].



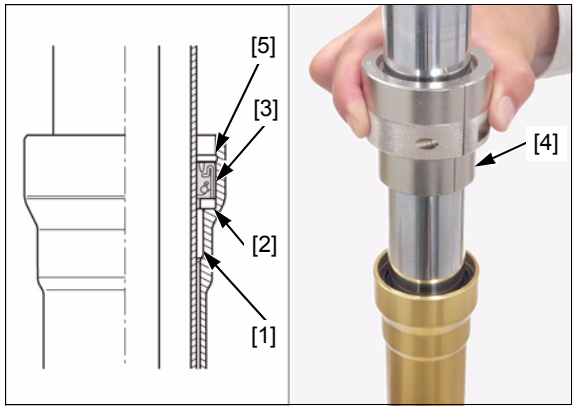
Put the guide bushing [1], back-up ring [2] and oil seal [3] on the outer pipe.
Put the special tool on the oil seal.

TOOL:

Fork seal driver, 45.2 mm [4] 07KMD-KZ30100

See illustration for correct seating.

Drive the oil seal with the guide bushing and back-up ring into the outer pipe until the stopper ring groove [5] is visible using the special tools.



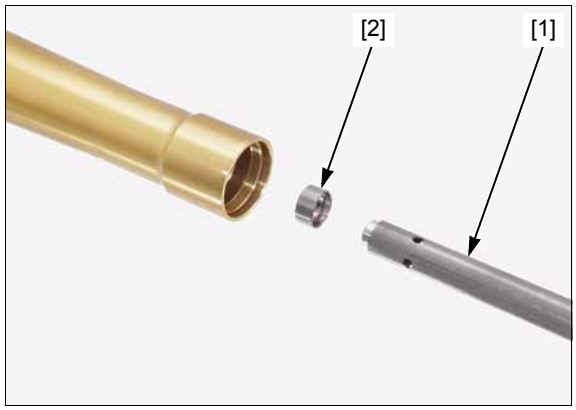
Do not scratch the fork pipe sliding surface.

Install the stopper ring [1] into the groove securely.

Install the dust seal [2].



Install the fork damper assembly [1] and centering plate [2].

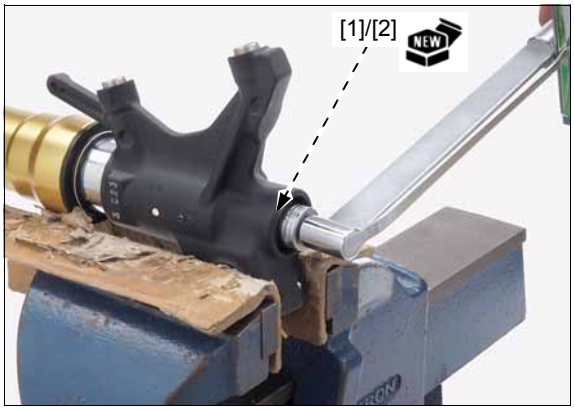


Install the socket bolt [1] with a new sealing washer [2].

Hold the axle holder in a vise with soft jaws or a shop towel.

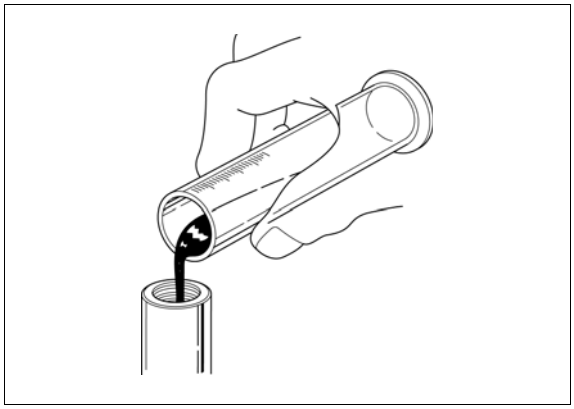
Tighten the center bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)



Pour the specified amount of recommended fork fluid.

RECOMMENDED FORK FLUID:
Honda Ultra Cushion Oil 10W (SS-47)
FORK FLUID CAPACITY:
721 ± 2.5 cm³ (24.4 ± 0.1 US oz, 25.4 ± 0.1 Imp oz)



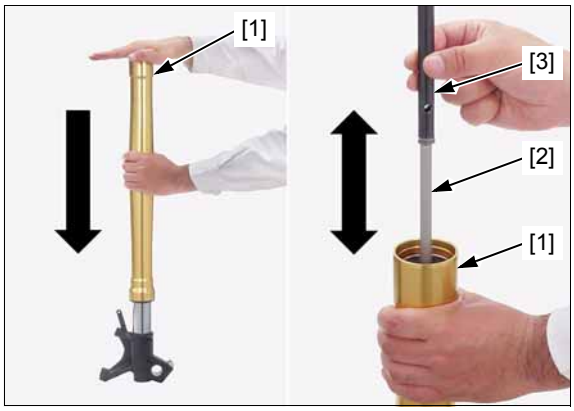
Bleed the air from the fork as follows:

1. Extend the fork, cover the top of the outer pipe [1] with your hand and compress the fork slowly.
2. Remove your hand and extend the fork slowly.

   Repeat above procedure 2 or 3 times.
3. Install the special tool to the fork damper rod [2].

   TOOL:
   Damper rod holder [3] 070MF-MBZC120

   Pump the fork damper rod slowly 8 – 10 times.

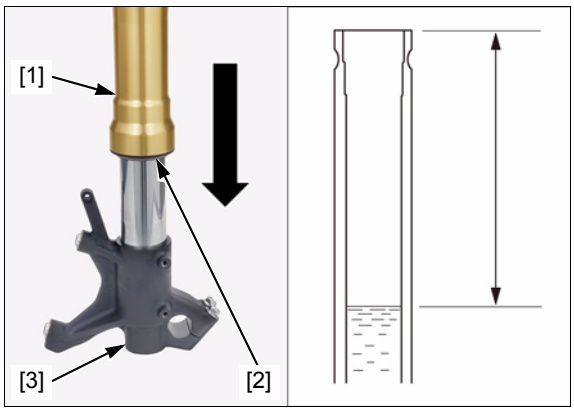


Slowly push the outer pipe [1], and gently seat the dust seal [2] onto the axle holder [3] and leave it for 5 minutes.

Be sure the oil level is the same in the both forks.

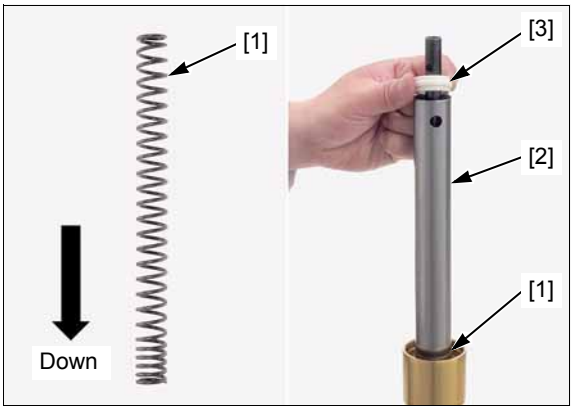
After the oil level stabilizes, measure the oil level from the top of the outer pipe.

FORK FLUID LEVEL:
95.0 mm (3.74 in)



Install the fork spring [1] into the slide pipe assembly with the tightly wound side facing down.

Install the spring collar [2] and spring seat stopper [3].



Clench the lock nut [1] until it is fully seated.

Attach the special tool to the spring collar holes [2].

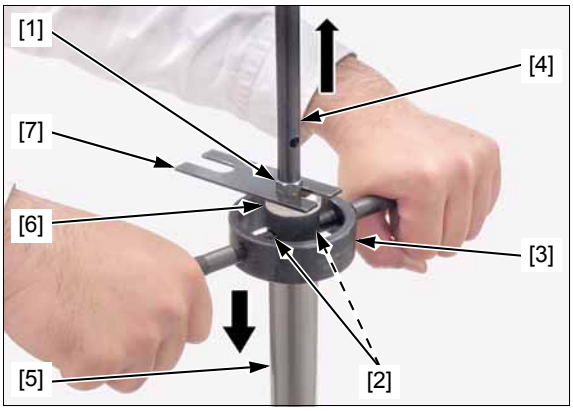
TOOL:
Spring collar holder [3] 070MF-MBZC110

While pulling the damper rod holder [4] up, compress the spring collar [5] with the special tool.

Insert the special tool between the lock nut and spring seat stopper [6].

TOOL:
Stopper plate [7] 070MF-MBZC130

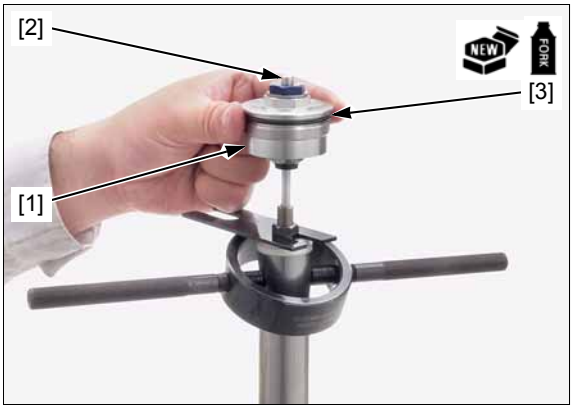
Remove the damper rod holder.



When installing the fork bolt assembly [1], turn the rebound adjuster [2] counterclockwise to the softest position.

Apply fork fluid to a new O-ring [3] and install it to the fork bolt assembly.

Install the fork bolt assembly to the fork damper until it is fully seated.

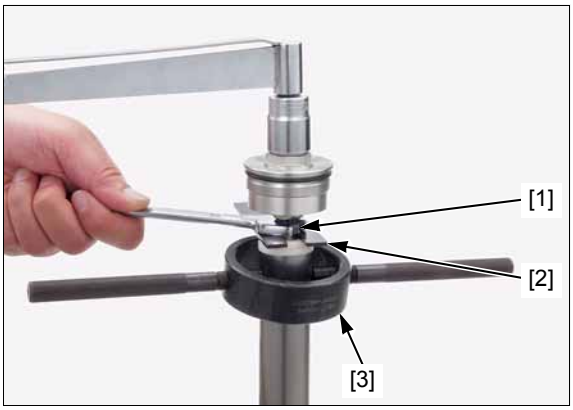


Be careful not to damage the fork bolt when tightening it.

Tighten the fork bolt to the specified torque while holding the lock nut [1].

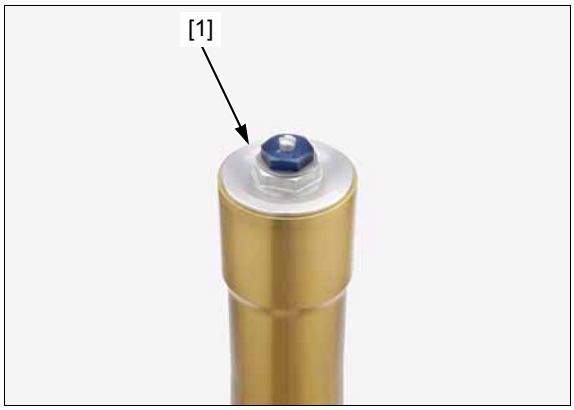
TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

Remove the stopper plate [2] and spring collar holder [3].



Tighten the fork bolt after installing the fork slider into the steering stem.

Install the fork bolt [1].



INSTALLATION

Install the forks through the bottom bridge and top bridge so that the end of the outer pipe [1] is aligned with the top bridge [2] upper surface.

Tighten the bottom bridge pinch bolts [3] to the specified torque.

TORQUE: 25 N·m (2.5 kgf·m, 18 lbf·ft)

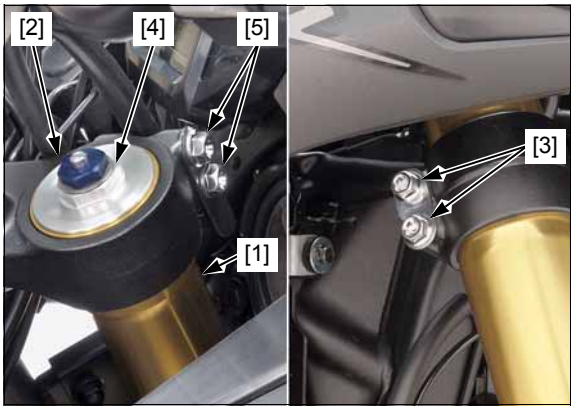
Be careful not to damage the fork bolt when tightening it.

If the fork bolt [4] is loosened, tighten it to the specified torque.

TORQUE: 35 N·m (3.6 kgf·m, 26 lbf·ft)

Tighten the top bridge pinch bolts [5] to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



Return the pre-load and rebound damping adjusters to the original positions as noted during disassembly.

- Front speed sensor (CRF1000A/D) (page 20-20)
- Front wheel (page 17-14)
- Front fender (page 2-9)

STEERING STEM

REMOVAL

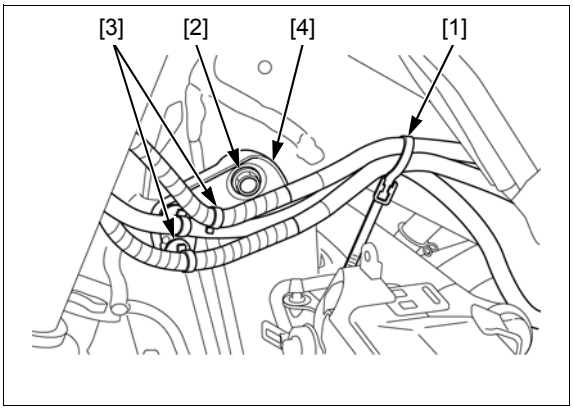
Remove the air cleaner case (page 7-11).
Remove the handlebar lower holder (page 17-7).

Disconnect the immobilizer receiver 4P (Black) [1] and ignition switch 2P (Brown) [2] connectors.



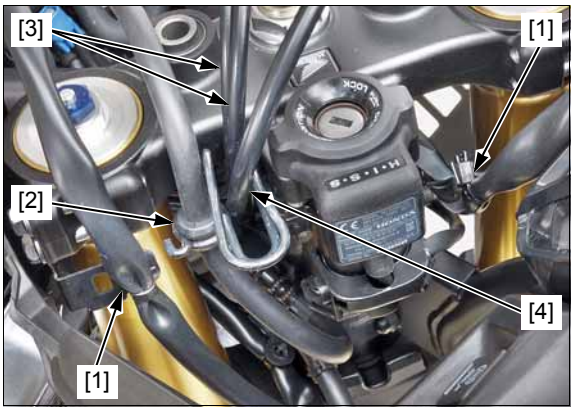
Remove the wire band [1].

Remove the bolt [2].
Release the wire clips [3] from the stay [4].



Release the following:

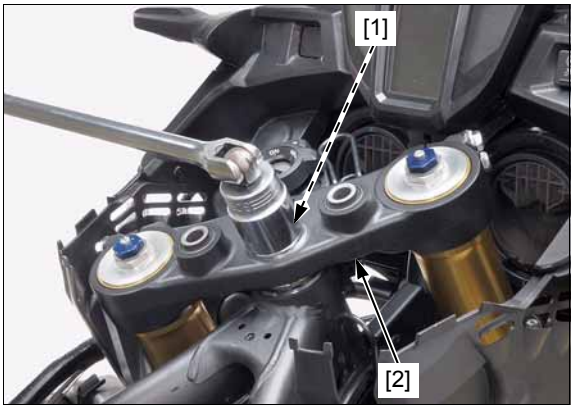
– Handlebar switch wire clips [1]
– Front brake hose A [2]
– Throttle cables [3]
– Clutch cable [4] (CRF1000/A)
– Parking brake cable [4] (CRF1000D)



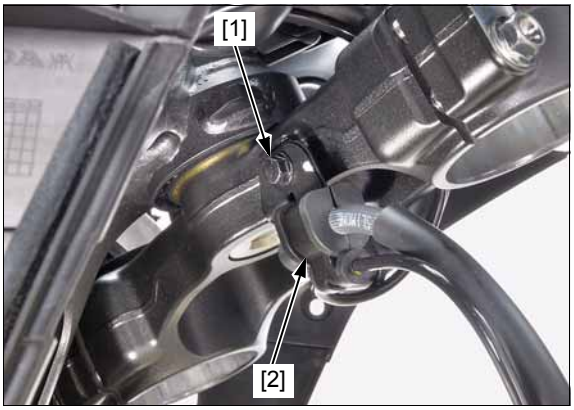
Remove the steering stem nut [1].

Remove the forks (page 17-14).

Remove the top bridge [2].



Remove the bolt [1] and brake hose clamp [2].



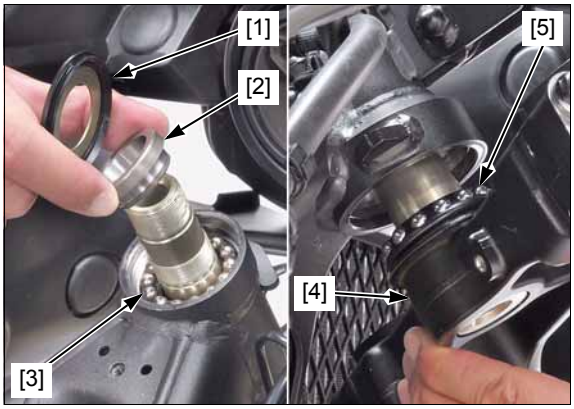
Loosen and remove the steering stem adjusting nut [1] using the special tool.

TOOL:
Steering stem socket [2] **07916-KA50100**



Remove the following:

- Upper dust seal [1]
- Upper inner race [2]
- Upper bearing [3]
- Steering stem [4]
- Lower bearing [5]

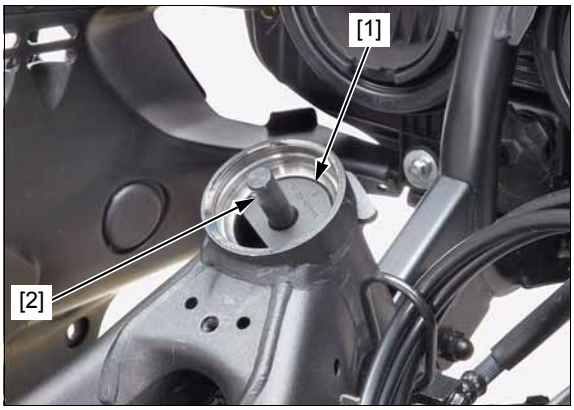


BEARING REPLACEMENT

Replace the bearing outer and inner races as a set.

Remove the upper outer race using a special tool.

TOOLS:
Remover attachment [1] **07953-MJ10100**
Remover handle [2] **07953-MJ10200**



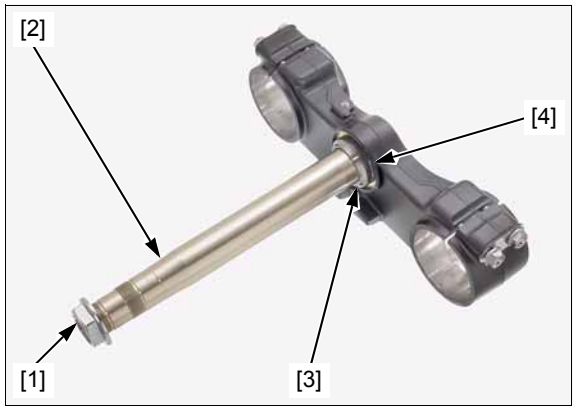
Remove the lower outer race using the special tool and suitable shaft.

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 lower dust seal [4].

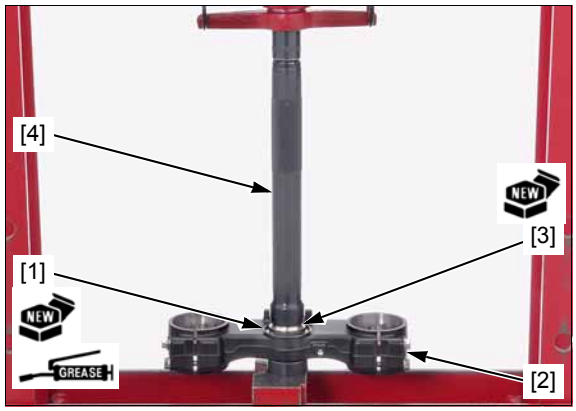


Apply specified grease to a new lower dust seal lips (page 1-23).

Install the dust seal [1] to the steering stem [2].

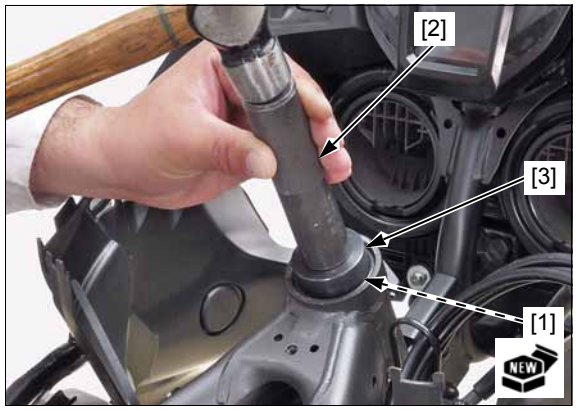
Install a new lower inner race [3] using a hydraulic press and special tool.

TOOL:
Inner driver, 30 x 36 x 300 L [4] 07946-MB00000



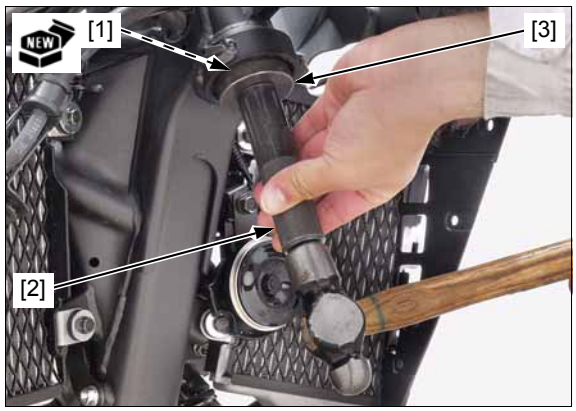
Drive in a new upper outer race [1] using the special tools.

TOOLS:
Driver [2] 07749-0010000
Attachment, 42 x 47 mm [3] 07746-0010300

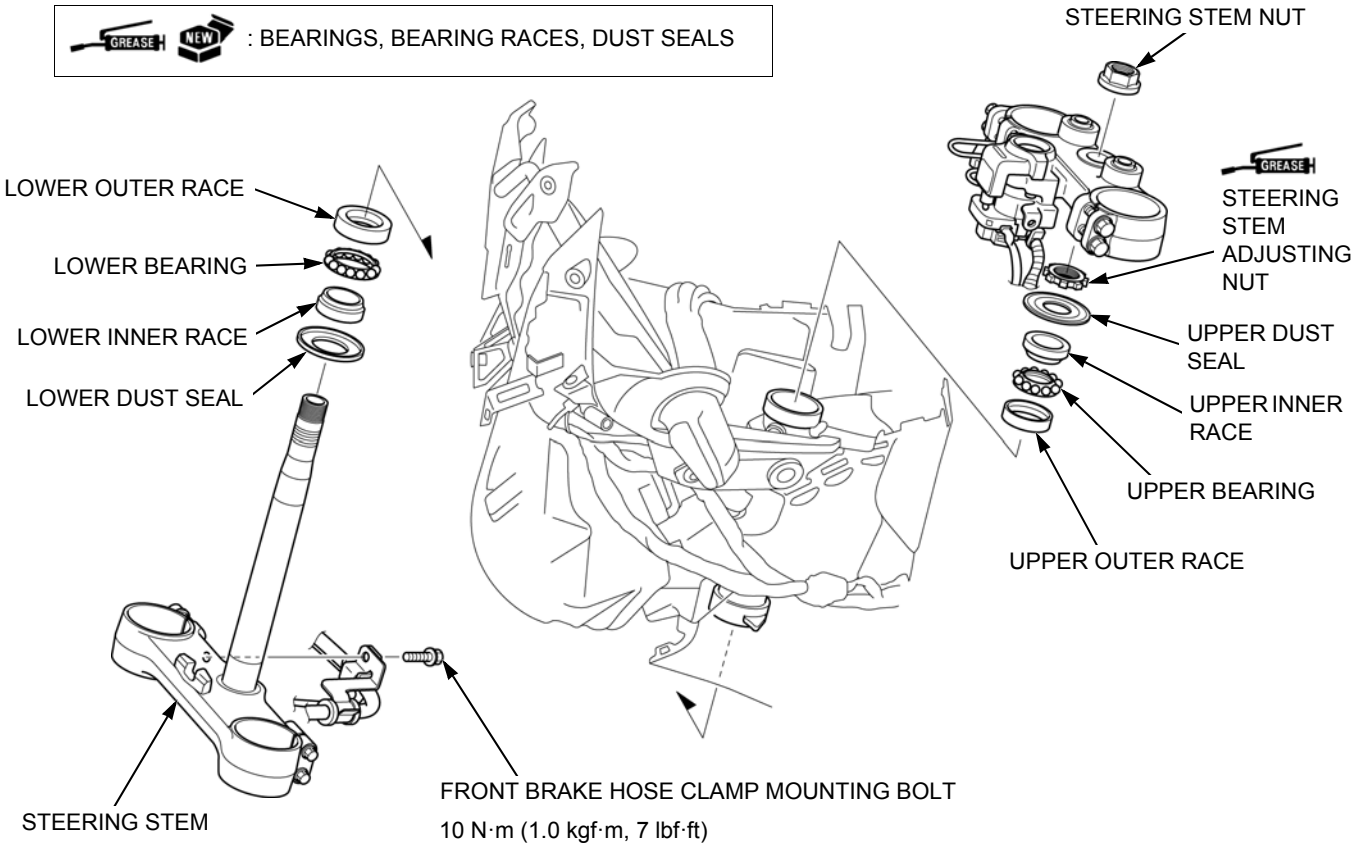


Drive in a new lower outer race [1] using the special tools.

TOOLS:
Driver [2] 07749-0010000
Attachment, 52 x 55 mm [3] 07746-0010400



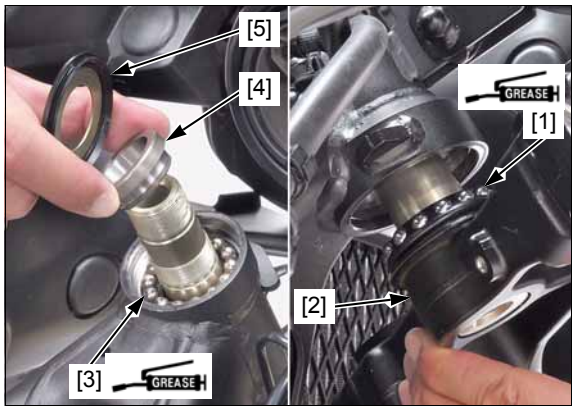
INSTALLATION



Apply specified grease (page 1-23) to the upper and lower bearings and bearing races.

Install the following:

– Lower bearing [1]
– Steering stem [2]
– Upper bearing [3]
– Upper inner race [4]
– Upper dust seal [5]



Apply 0.10 – 0.30 g (0.004 – 0.011 oz) of urea based multi-purpose extreme pressure grease NLGI #2 (EXCELITE EP2 manufactured by KYODO YUSHI CO., LTD. or equivalent) to the steering stem adjusting nut [1] threads.

Tighten the adjusting nut to the initial torque by holding the steering stem.

TOOL:
Steering stem socket [2] 07916-KA50100

TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)



Move the steering stem [1] right and left, lock-to-lock, five times to seat the bearings.

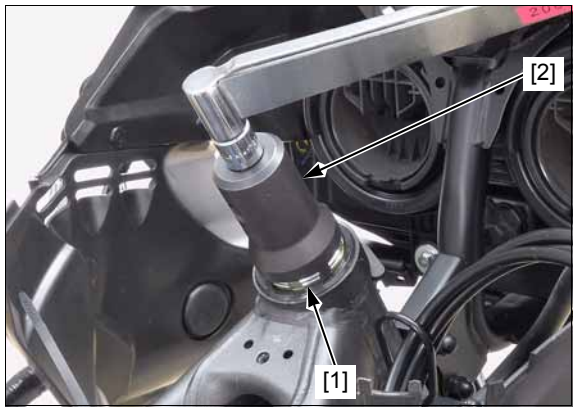


Retighten the steering stem adjusting nut [1] to the specified torque using a special tool.

TOOL:
Steering stem socket [2] 07916-KA50100

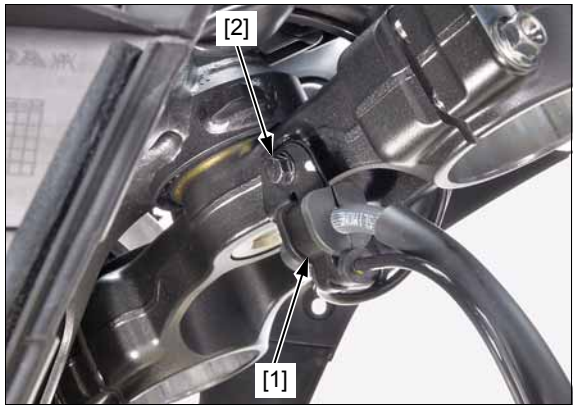
TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)

Recheck that the steering stem moves smoothly without play or binding.



Install the brake hose clamp [1] and bolt [2] and tighten the bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



Install the top bridge [1].

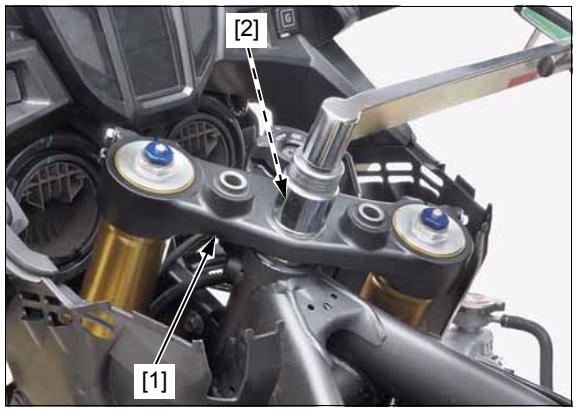
Install the steering stem nut [2], but do not tighten it yet.

Install the forks (page 17-22).

Tighten the steering stem nut to the specified torque.

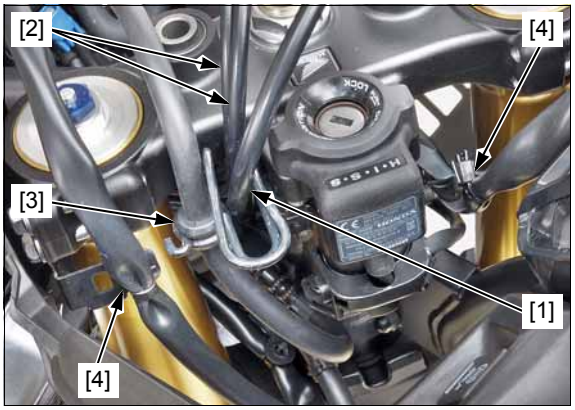
TORQUE: 100 N·m (10.2 kgf·m, 74 lbf·ft)

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 following:

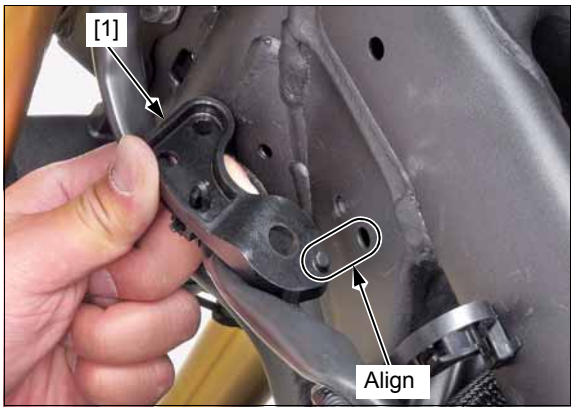
– Clutch cable [1] (CRF1000/A)
– Parking brake cable [1] (CRF1000D)
– Throttle cables [2]
– Front brake hose A [3]
– Handlebar switch wire clips [4]



Install the stay [1].

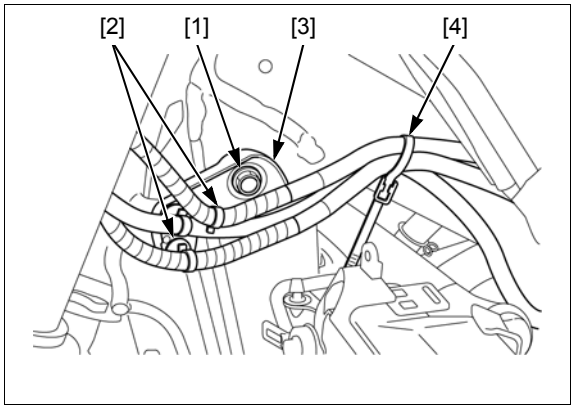
NOTE:

• Align the boss of stay with the hole of the frame.



Install the bolt [1] and tighten it securely.
Install the wire clips [2] to the stay [3].

Install the wire band [4].



Connect the immobilizer receiver 4P (Black) [1] and ignition switch 2P (Brown) [2] connectors and install them to the ignition coil tray.

Install the air cleaner case (page 7-11).
Install the handlebar lower holder (page 17-7).



18. REAR WHEEL/SUSPENSION

SERVICE INFORMATION ····· 18-2

TROUBLESHOOTING ····· 18-2

COMPONENT LOCATION ····· 18-3

REAR WHEEL ····· 18-4

SHOCK ABSORBER ····· 18-8

CUSHION LINKAGE ····· 18-9

SWINGARM ····· 18-12

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 Honda Genuine replacement bolts and nuts for all suspension pivot and mounting point.
- For brake system information (page 19-2).
- For wheel balance inspection (page 17-11).
- For driven sprocket inspection (page 3-17).

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
- Unbalanced tire and wheel
- Faulty tire
- Worn wheel bearings
- Worn driven flange bearings
- Insufficient tire pressure
- Damaged suspension or swingarm pivot bearings
- Wheel nut not tightened properly
- Bent frame or swingarm
- Bent spoke

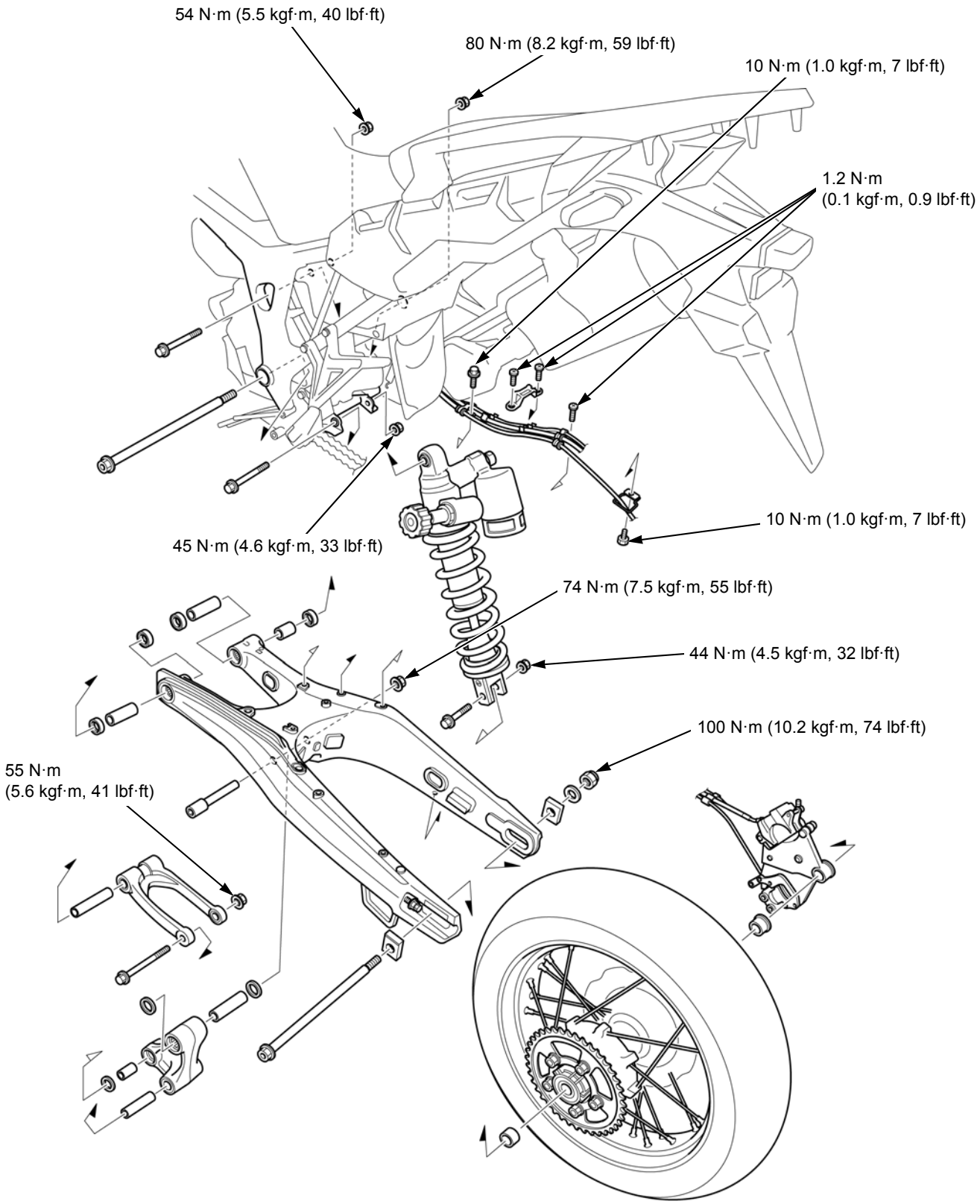
Wheel turns hard
- Faulty wheel bearings
- Faulty driven flange bearings
- Bent axle
- Brake drag (page 19-2)
- Drive chain too tight (page 3-16)

Soft suspension
- Improper shock absorber spring preload
- Incorrect suspension adjustment
- Weak shock absorber spring
- Oil leakage from damper unit
- Insufficient tire pressure
- Faulty tire

Stiff suspension
- Incorrect suspension adjustment
- Bent damper rod
- Damaged bushing
- Damaged shock absorber or swingarm pivot bearing
- Improperly tightened swingarm pivot
- Bent swingarm pivot or frame
- Tire pressure too high
- Faulty suspension linkage

Rear suspension noisy
- Loose suspension fasteners
- Worn shock absorber mount bushings
- Faulty rear shock absorber

COMPONENT LOCATION



REAR WHEEL

REMOVAL

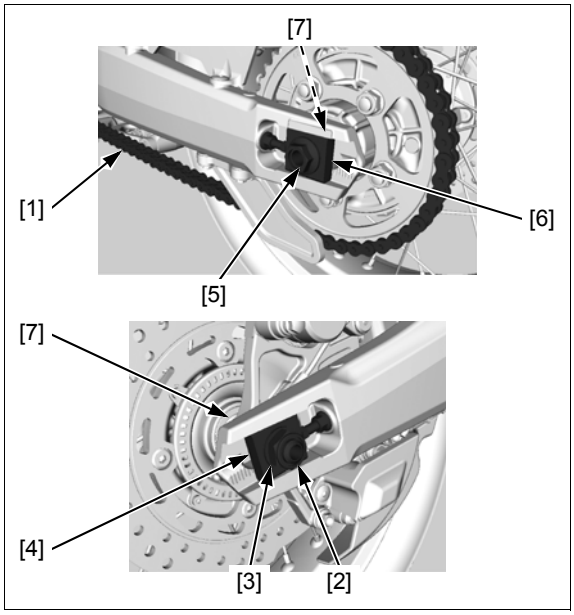
Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

Fully slacken the drive chain (page 3-16).

Push the rear wheel forward.
Derail the drive chain [1] from the driven sprocket.

Remove the rear axle nut [2], washer [3], and right adjusting plate [4].

Remove the rear axle [5], left adjusting plate [6], rear wheel, and side collars [7].



NOTE:

- Do not suspend the brake caliper/bracket assembly from the brake hose. Do not twist the brake hose.
- Do not operate the brake pedal after removing the rear wheel.
- CRF1000D: Do not operate the parking brake lever after removing the rear wheel.

INSPECTION

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.

Inspect the following parts for damage, abnormal wear, deformation or bends.

– Rear axle
– Rear wheel

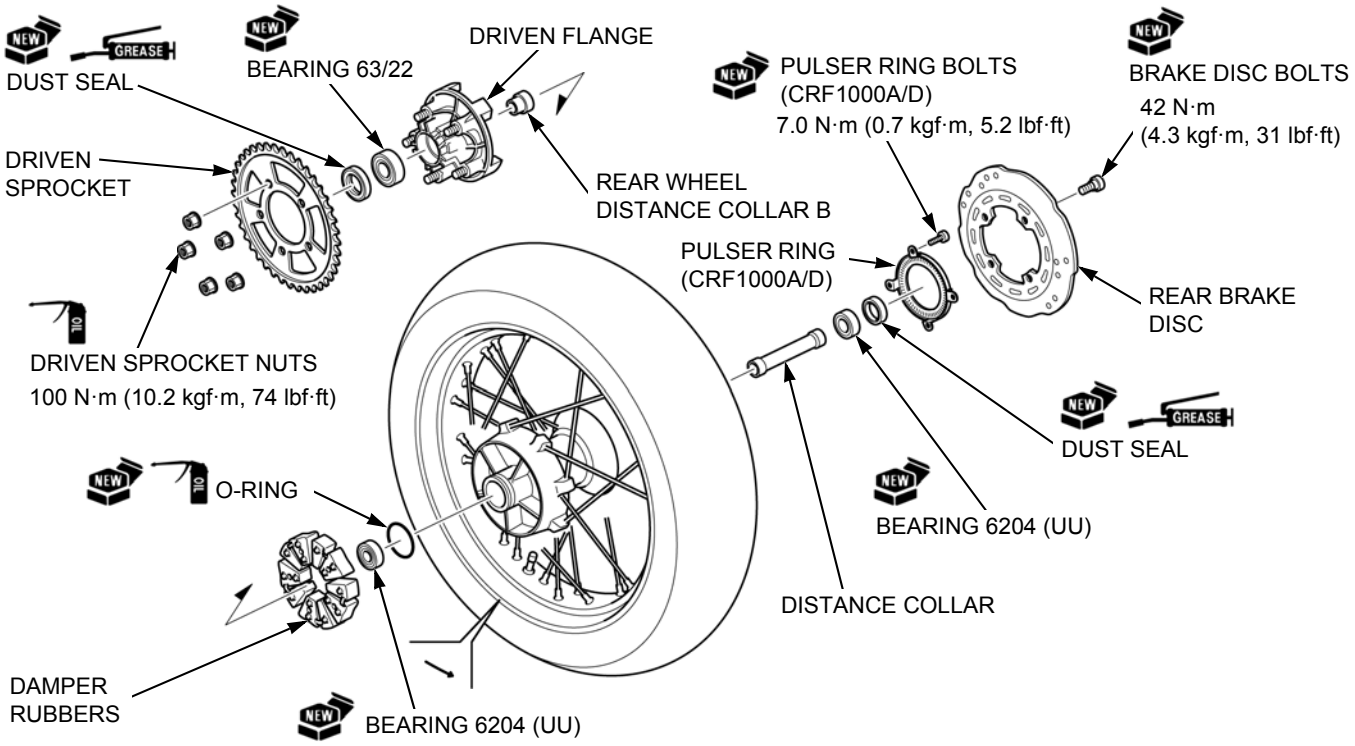
Measure each part according to REAR WHEEL/ SUSPENSION SPECIFICATIONS (page 1-26).

Replace any part if it is out of service limit.

Refer to the wheel balance service (page 17-11).

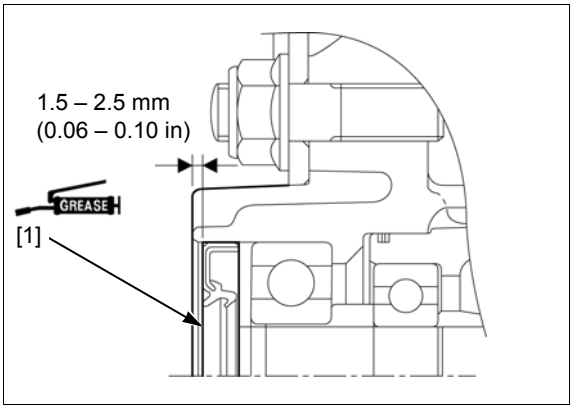
DISASSEMBLY/ASSEMBLY

NOTE:
Install the driven sprocket on the driven flange with the stamped mark facing out.



NOTE:

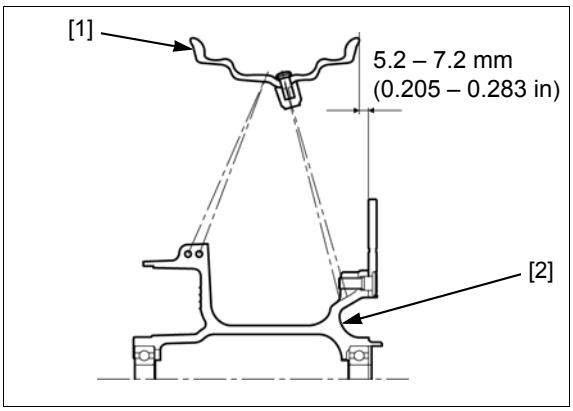
- Install the rear wheel dust seal [1] until to the specified range as shown.
- Install the driven flange dust seal until it is flush with the wheel hub surface.
- Apply grease to the dust seal lips
- Install the brake disc with the "⇨" mark facing the normal rotating direction.



WHEEL CENTER ADJUSTMENT

Place the rim [1] on a work bench.
Place the hub [2] in the center of the rim, and begin the lacing with new spokes.

Adjust the hub position so the distance from the hub left end surface to the side of the rim is 5.2 – 7.2 mm (0.205 – 0.283 in) as shown.



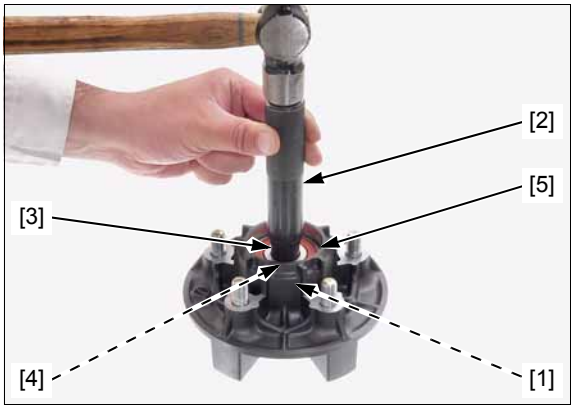
WHEEL BEARING REPLACEMENT

Drive out the rear wheel distance collar B [1] by using the special tools.

TOOLS:

Driver [2]	**07749-0010000**
Attachment, 22 x 24 mm [3]	**07746-0010800**
Pilot, 17 mm [4]	**07746-0040400**

Drive out the bearing [5].



Replace the wheel bearings in pairs. Do not reuse old bearings.

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.

TOOLS:

Bearing remover head, 20 mm	**07746-0050600**
Bearing remover shaft	**07GGD-0010100**

Remove the distance collar and drive out the other bearing.



Never install the old bearing, once the bearing has been removed, the bearing must be replaced with new ones.

Drive in a new right side bearing [1] squarely 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 distance collar.

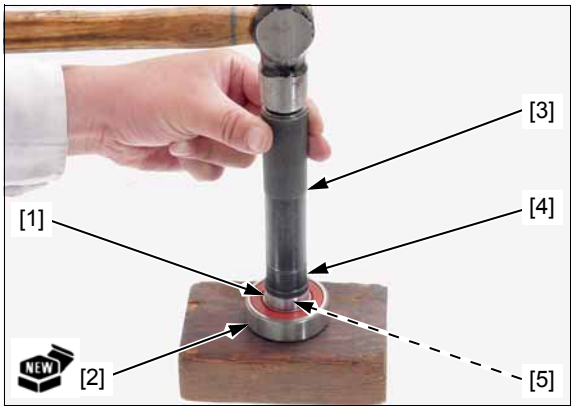
Drive in a new left side bearing squarely until it is seated on the distance collar.



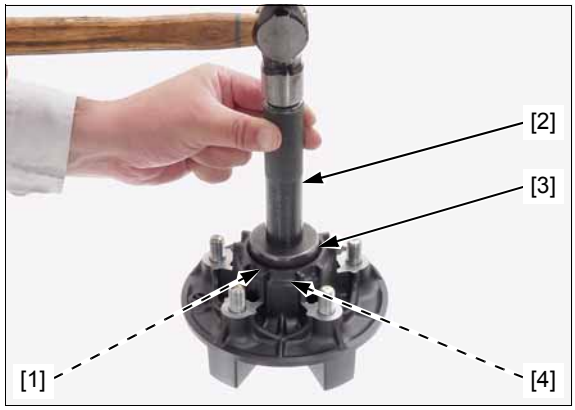
Drive in the rear wheel distance collar B [1] to a new bearing [2].

TOOLS:

Driver [3]	**07749-0010000**
Attachment, 28 x 30 mm [4]	**07946-1870100**
Pilot, 20 mm [5]	**07746-0040500**



Drive in the bearing/collar [1] squarely with its collar side facing down until it is fully seated.



TOOLS:

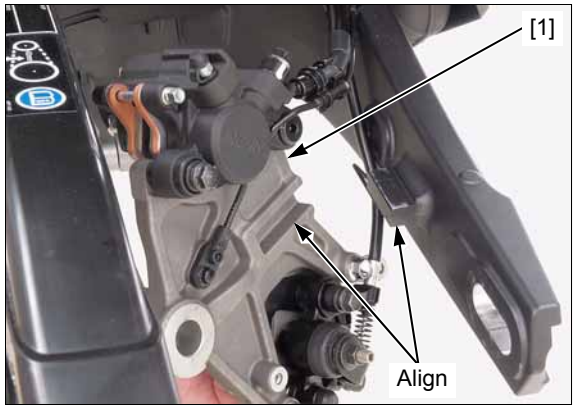
Driver [2]	**07749-0010000**
Attachment, 52 x 55 mm [3]	**07746-0010400**
Pilot, 22 mm [4]	**07746-0041000**

INSTALLATION

Install the brake bracket [1] to the swingarm.

NOTE:

- Align the bracket groove with swingarm tab.



Install the side collars [1] to the rear wheel.

Be careful not to damage the brake pads.

Apply a thin coat of grease to the rear axle outer surface.

Install the rear wheel in the swingarm aligning the brake disc between the brake pads.

Install the drive chain [2] over the driven sprocket.

Install the rear axle [3] from the left side through the left adjusting plate [4], swingarm and rear wheel.

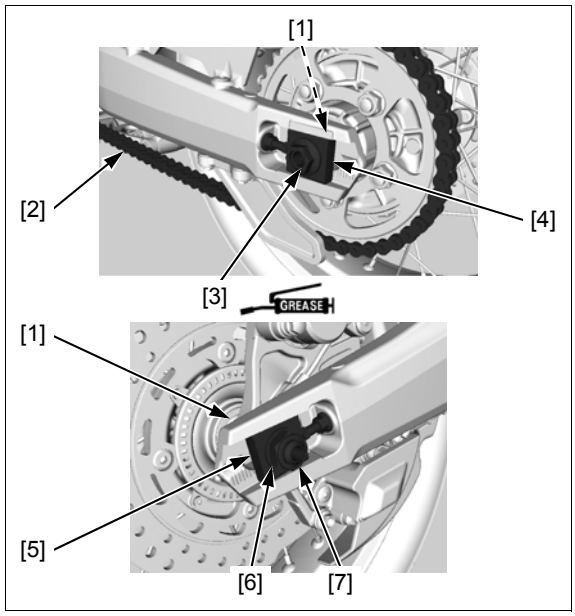
Install the right adjusting plate [5], washer [6], and rear axle nut [7].

Adjust the drive chain slack (page 3-16).

Tighten the nut to the specified torque.

TORQUE: 100 N·m (10.2 kgf·m, 74 lbf·ft)

Check the clearance gap between the rear wheel speed sensor bracket and pulser ring (page 20-23).



SHOCK ABSORBER

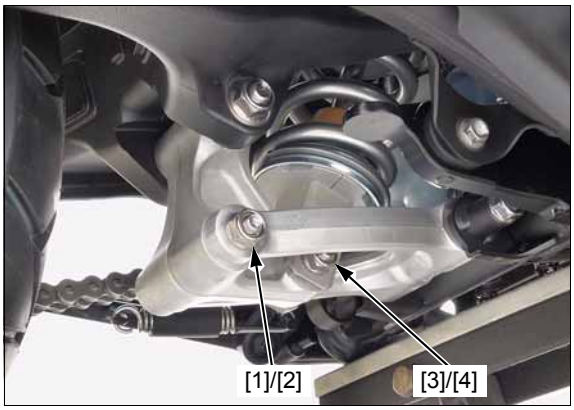
REMOVAL/INSTALLATION

Remove the regulator/rectifier (page 21-8).

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

Remove the lower cushion arm bolt [1] and nut [2].

Remove the shock absorber lower mounting bolt [3] and nut [4].



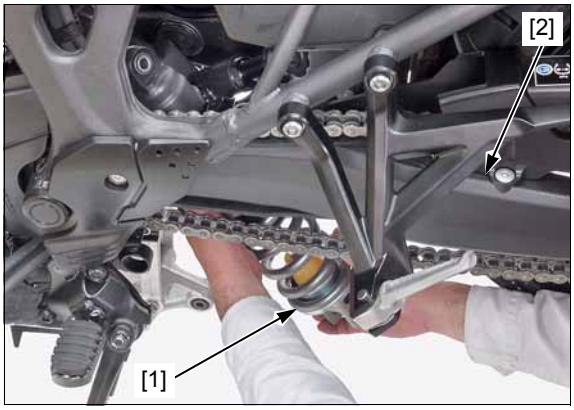
Remove the shock absorber upper mounting bolt [1] and nut [2].



Remove the rear shock absorber [1] by lifting the swingarm [2].

Installation is in the reverse order of removal.

TORQUE:
Shock absorber upper mounting nut:
54 N·m (5.5 kgf·m, 40 lbf·ft)
Shock absorber lower mounting nut:
44 N·m (4.5 kgf·m, 32 lbf·ft)
Lower cushion arm nut:
55 N·m (5.6 kgf·m, 41 lbf·ft)



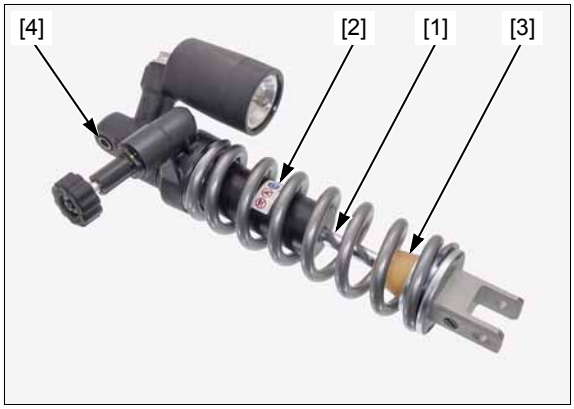
INSPECTION

Visually inspect the shock absorber for wear or damage.

Check the following:

– Damper rod [1] for bends 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 assembly if necessary.



CUSHION LINKAGE

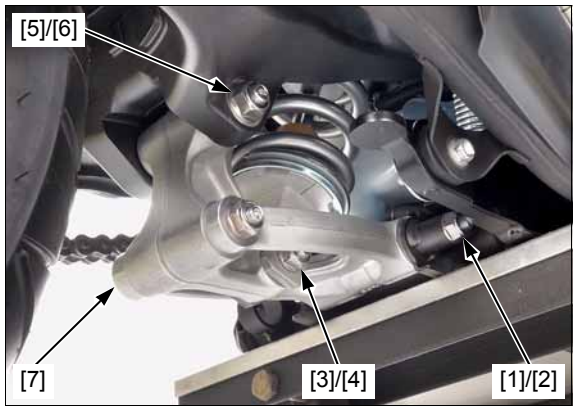
REMOVAL

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

Remove the sidestand (page 2-19).

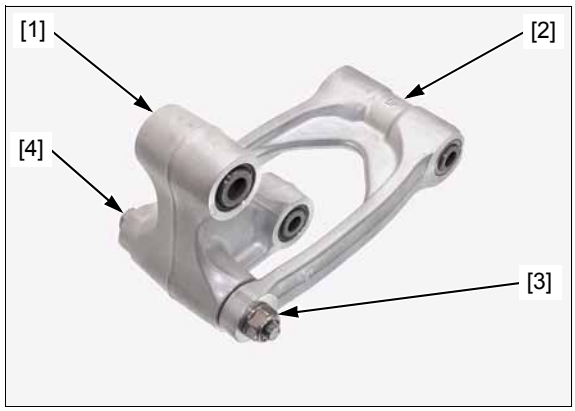
Remove the following:

– Cushion connecting rod mounting nut [1] and bolt [2]
– Rear shock absorber lower mounting nut [3] and bolt [4]
– Upper cushion arm nut [5] and bolt [6]
– Cushion arm/connecting rod [7]



DISASSEMBLY/INSPECTION

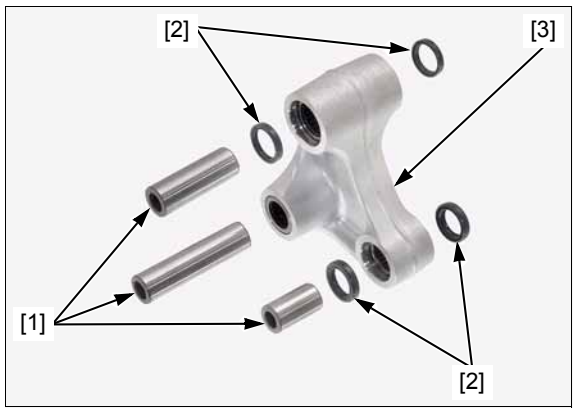
Disassemble the cushion arm [1] and connecting rod [2] by removing the lower cushion arm nut [3] and bolt [4].



Remove the collars [1] and dust seals [2] from the cushion arm [3].
Check the collars and dust seals for wear or damage and replace if necessary.

Check the cushion arm for cracks or damage and replace if necessary.

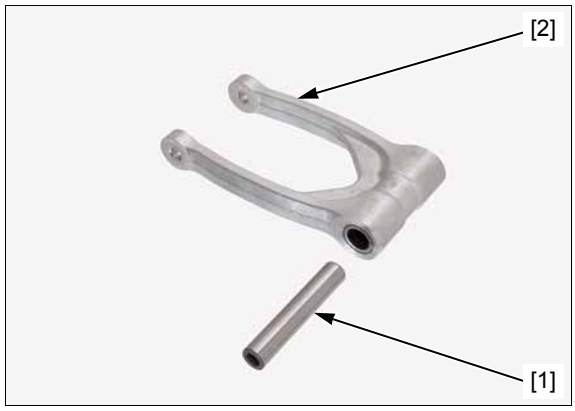
Check the needle bearings for damage or loose fit.



Remove the collar [1] from the cushion connecting rod [2].
Check the collar for wear or damage and replace if necessary.

Check the cushion connecting rod for cracks or damage and replace if necessary.

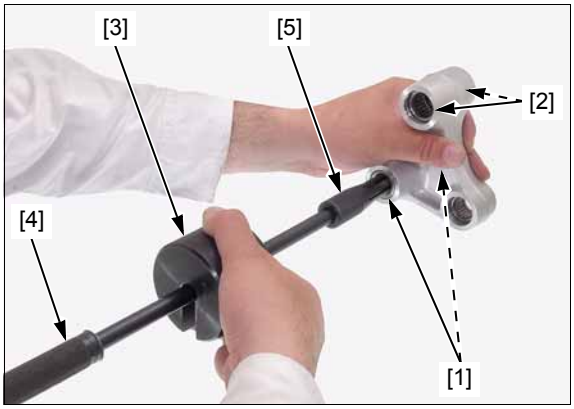
Check the needle bearings for damage or loose fit.



BEARING REPLACEMENT

CUSHION ARM

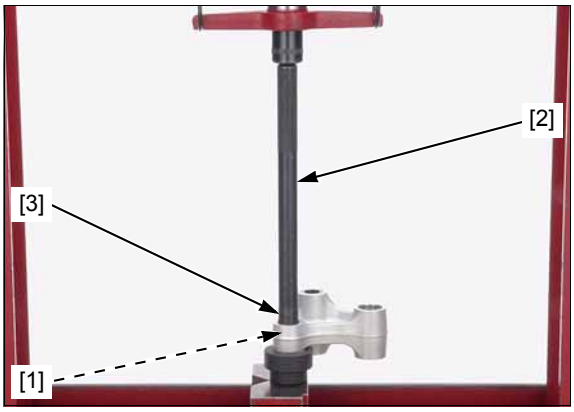
Remove the needle bearings (17 x 24 x 30 mm) [1] and (20 x 26 x 20 mm) [2] using the special tools.



TOOLS:

Remover weight [3]	**07741-0010201**
Remover handle [4]	**07936-3710100**
Needle bearing (17 x 24 x 30 mm):	
Bearing remover set, 17 mm [5]	**07936-3710300**
Needle bearing (20 x 26 x 20 mm):	
Bearing remover set, 20 mm [5]	**07936-3710600**

Remove the needle bearing (17 x 24 x 17 mm) [1] using the special tools and hydraulic press.



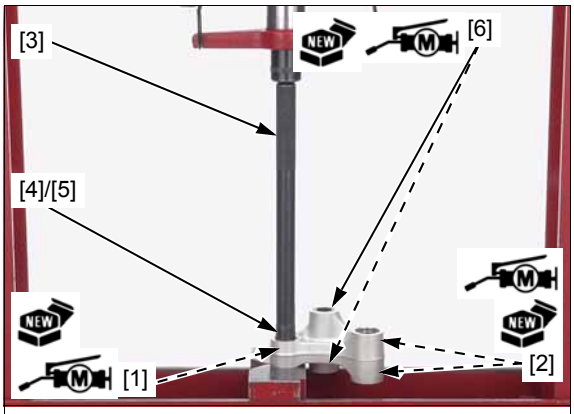
TOOLS:

Driver handle 15 x 280L [2]	**07949-3710001**
Attachment, 22 x 24 mm [3]	**07746-0010800**

Never install the old bearing, once the bearing has been removed, the bearing must be replaced with a new one.

Apply molybdenum disulfide grease to new needle bearings rotating area.

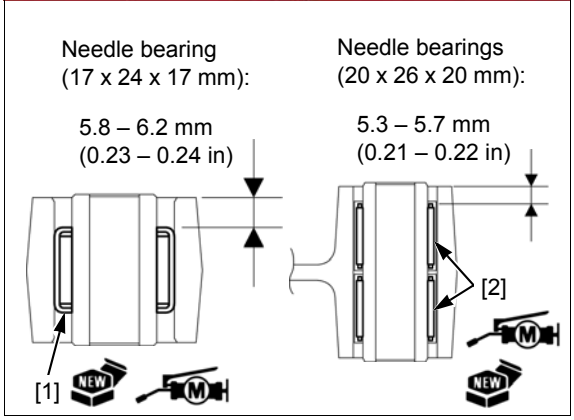
Install the needle bearings (17 x 24 x 17 mm) [1] and (20 x 26 x 20 mm) [2] with its marked side facing up to the specified range using the special tools and hydraulic press as shown.



TOOLS:

Driver handle 15 x 280L [3]	**07949-3710001**
Attachment, 22 x 24 mm [4]	**07746-0010800**
Needle bearing (17 x 24 x 30 mm):	
Pilot, 17 mm [5]	**07746-0040400**
Needle bearing (20 x 26 x 20 mm):	
Pilot, 20 mm [5]	**07746-0040500**

Install the needle bearings (17 x 24 x 30 mm) [6] with its marked side facing up until it is flush with the cushion arm surface using the special tools and hydraulic press.



TOOLS:

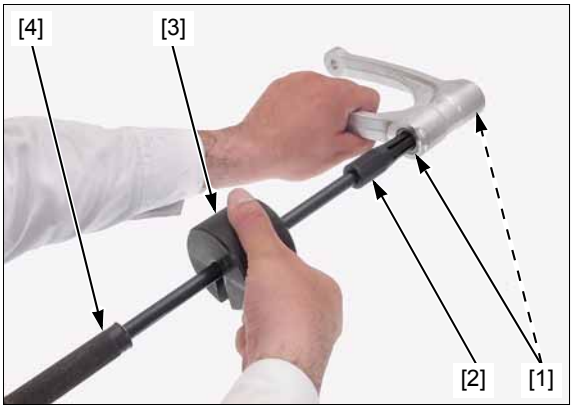
Driver handle 15 x 280L [3]	**07949-3710001**
Attachment, 32 x 35 mm [4]	**07746-0010100**
Pilot, 17 mm [5]	**07746-0040400**

CUSHION CONNECTING ROD

Remove the needle bearings (17 x 24 x 30 mm) [1].

TOOLS:

Bearing remover set, 17 mm [2]	**07936-3710300**
Remover weight [3]	**07741-0010201**
Remover handle [4]	**07936-3710100**



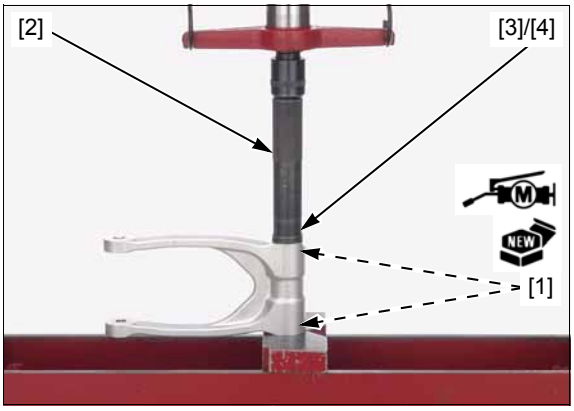
Never install the old bearing, once the bearing has been removed, the bearing must be replaced with a new one.

Apply molybdenum disulfide grease to new needle bearings rotating area.

Install the needle bearings (17 x 24 x 30 mm) [1] with its marked side facing up until it is flush with the cushion arm surface using the special tools and hydraulic press as shown.

TOOLS:

Driver [2]	**07949-0010000**
Attachment, 32 x 35 mm [3]	**07746-0010100**
Pilot, 17 mm [4]	**07746-0040400**

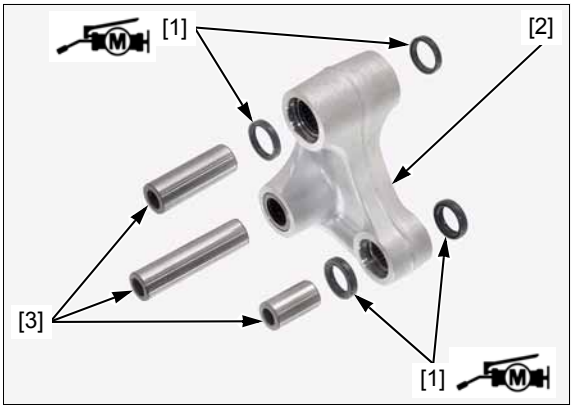


ASSEMBLY/INSTALLATION

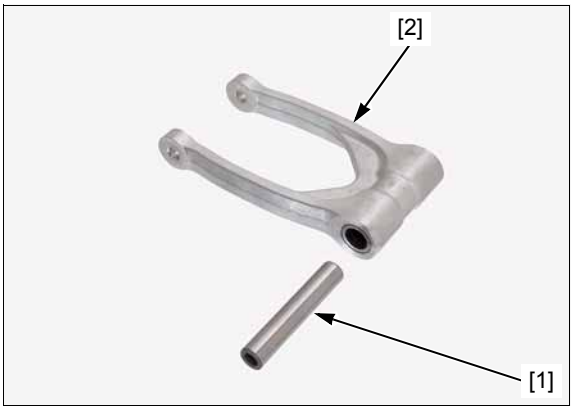
Install the dust seals [1] into the cushion arm [2] until they are fully seated.

Apply molybdenum disulfide grease to dust seal lips.

Install the collars [3].



Install the collar [1] into the cushion connecting rod [2].



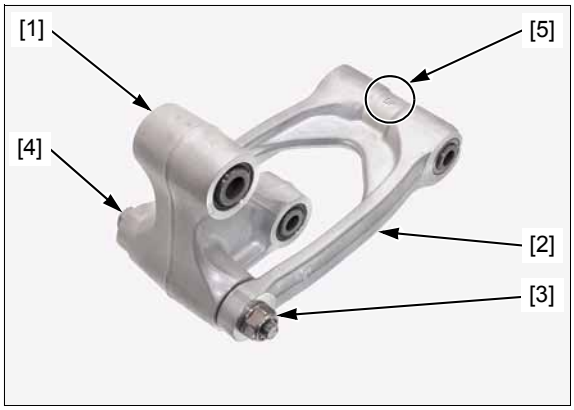
Assemble the cushion arm [1] and connecting rod [2] by installing the lower cushion arm nut [3] and bolt [4] as shown.

NOTE:

- Assemble the cushion arm and connecting rod with "UP" mark [5] of the arm facing up.

Tighten the nut to the specified torque.

TORQUE: 55 N·m (5.6 kgf·m, 41 lbf·ft)



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

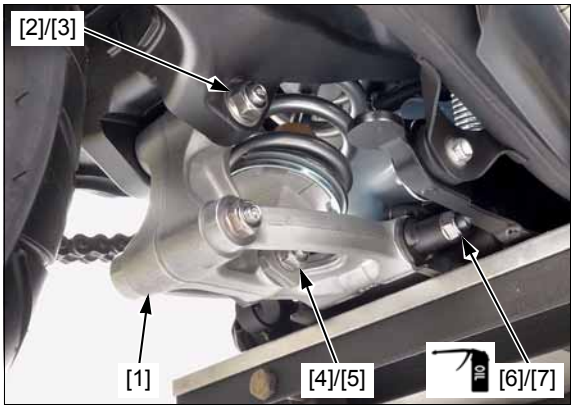
Apply engine oil to the cushion connecting rod mounting nut threads and seating surface.

Install the following:

– Cushion arm/connecting rod [1]
– Upper cushion arm nut [2] and bolt [3]
– Rear shock absorber lower mounting nut [4] and bolt [5]
– Cushion connecting rod mounting nut [6] and bolt [7]

TORQUE:

Upper cushion arm nut:
74 N·m (7.5 kgf·m, 55 lbf·ft)
Rear shock absorber lower mounting nut:
44 N·m (4.5 kgf·m, 32 lbf·ft)
Cushion connecting rod mounting nut:
45 N·m (4.6 kgf·m, 33 lbf·ft)



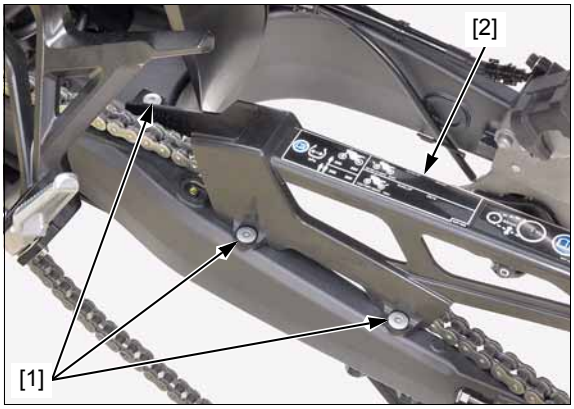
Install the sidestand (page 2-19).

SWINGARM

REMOVAL

Remove the left rear cover (page 2-10).
Remove the rear wheel (page 18-4).

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



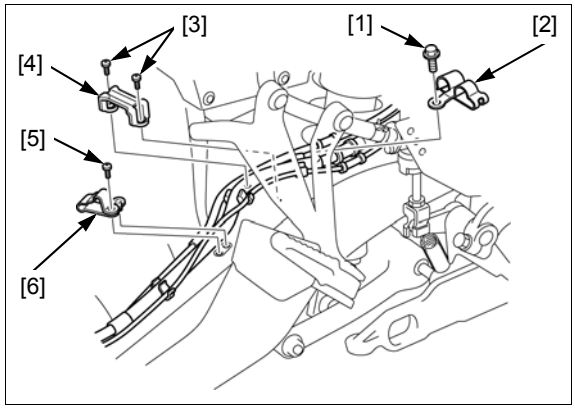
Remove the socket bolts [1] and left/right heel guards [2].



Remove the bolt [1] and brake hose clamp [2].

Remove the screws [3] and brake hose guide [4].

Remove the screw [5] and brake hose clamp [6].



CRF1000D: Remove the bolt [1] and parking brake cable guide [2].



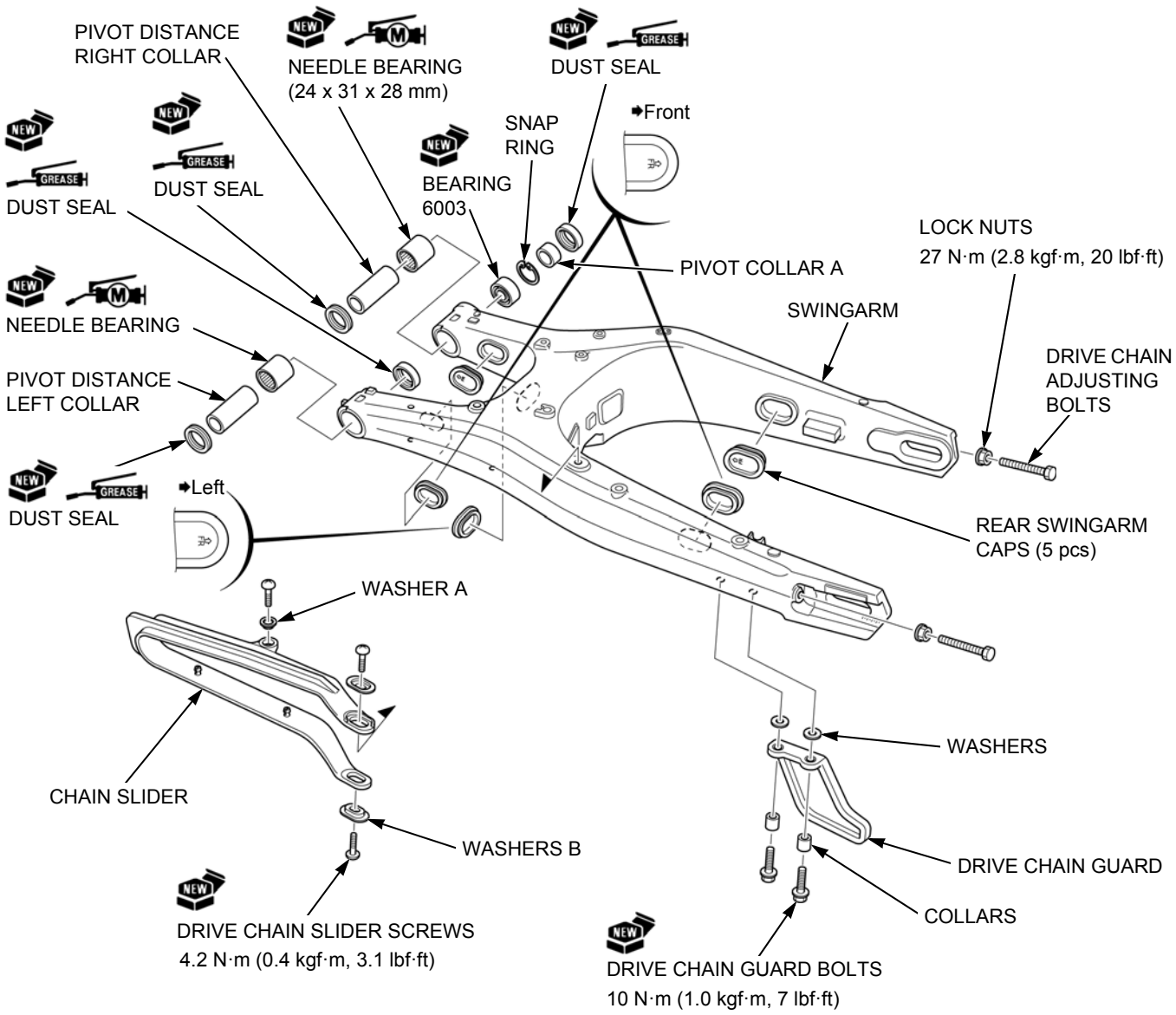
Remove the upper cushion arm nut [1] and bolt [2].



Remove the swingarm pivot nut [1], pivot bolt [2], and swingarm [3].



DISASSEMBLY/ASSEMBLY



NOTE:

- Install the dust seals until it is flush with the swingarm surface.
- Apply ThreeBond 1521 or an equivalent to the swingarm cap mating surface.

INSPECTION

Inspect the following parts for damage, abnormal wear, or deformation and replace if necessary.

– Dust seals
– Pivot collars
– Swingarm
– Bearings
– Drive chain slider

PIVOT BEARING REPLACEMENT

Remove the snap ring [1] from the right pivot.



Remove the ball bearing 6003 [1] out of the right pivot using a hydraulic press and special tool.

TOOLS:

Driver, 15 x 280L [2]	**07949-3710001**
Attachment, 22 x 24 mm [3]	**07746-0010800**
Pilot, 17 mm [4]	**07746-0040400**



Remove the needle bearing (24 x 31 x 28 mm) [1] out of the right pivot using the special tool.

TOOLS:

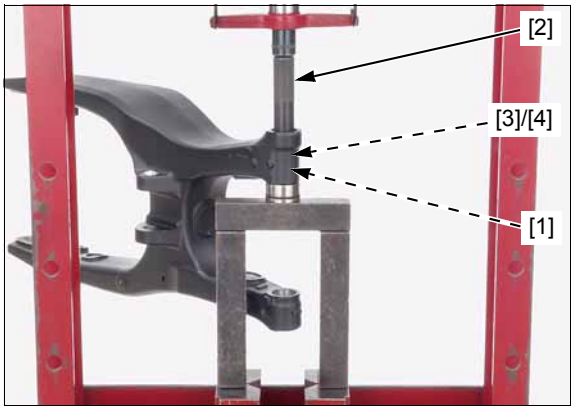
Driver, 15 x 280L [2]	**07949-3710001**
Attachment, 28 x 30 mm [3]	**07946-1870100**
Pilot, 22 mm [4]	**07746-0041000**



Remove the needle bearing [1] out of the left pivot using a hydraulic press and special tool.

TOOLS:

Driver [2]	**07749-0010000**
Attachment, 32 x 35 mm [3]	**07746-0010100**
Pilot, 25 mm [4]	**07746-0040600**

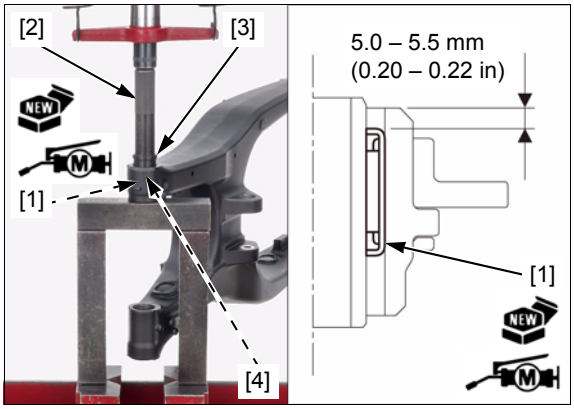


Apply molybdenum disulfide grease to a new needle bearing rotating area.

Install the needle bearing [1] into the left pivot with the marked side facing up to the specified range using a hydraulic press and special tools as shown.

TOOLS:

Driver [2]	**07749-0010000**
Attachment, 32 x 35 mm [3]	**07746-0010100**
Pilot, 25 mm [4]	**07746-0040600**

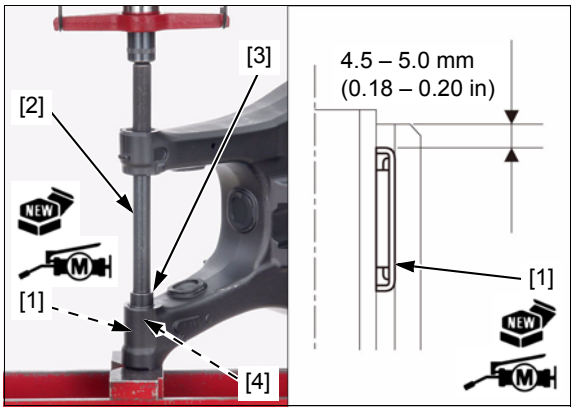


Apply molybdenum disulfide grease to a new needle bearing (24 x 31 x 28 mm) rotating area.

Install the needle bearing (24 x 31 x 28 mm) [1] into the right pivot with the marked side facing up to the specified range using a hydraulic press and special tools as shown.

TOOLS:

Driver, 15 x 280L [2]	**07949-3710001**
Attachment, 28 x 30 mm [3]	**07946-1870100**
Pilot, 22 mm [4]	**07746-0041000**

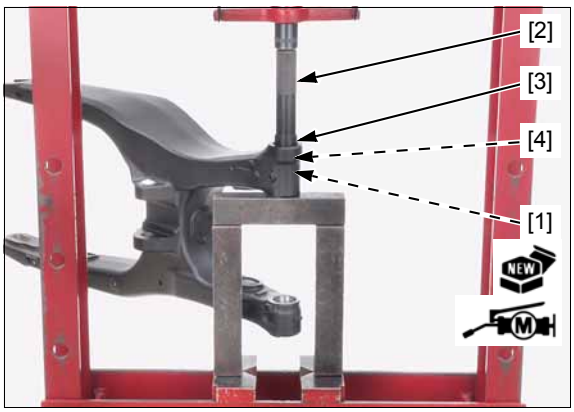


Apply molybdenum disulfide grease to a new ball bearing rotating area.

Install the ball bearing 6003 [1] into the right pivot with the marked side facing out until it is fully seated using a hydraulic press and special tools as shown.

TOOLS:

Driver [2]	**07749-0010000**
Attachment, 32 x 35 mm [3]	**07746-0010100**
Pilot, 17 mm [4]	**07746-0040400**



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.



INSTALLATION

Apply a thin coat of grease to the swingarm pivot bolt sliding surface.

Set the drive chain [1] onto the swingarm [2] and install the swingarm to the frame.

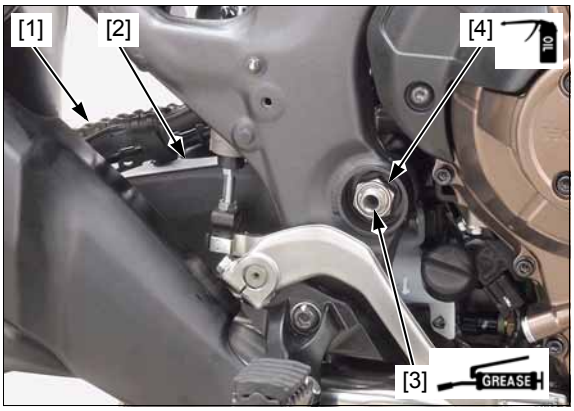
Install the swingarm pivot bolt [3] from the left side.

Apply engine oil to the swingarm pivot nut threads and seating surface.

Install the swingarm pivot nut [4].

Tighten the swingarm pivot nut to the specified torque.

TORQUE: 80 N·m (8.2 kgf·m, 59 lbf·ft)



Set the cushion arm and install the upper cushion arm bolt [1] from the left side.

Install and tighten the upper cushion arm mounting nut [2] to the specified torque.

TORQUE: 74 N·m (7.5 kgf·m, 55 lbf·ft)



CRF1000D: Install the parking brake cable guide [1] and bolt [2].

Tighten the bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



Route the hose, wire, and cable properly (page 1-26).

Install brake hose clamp [1] and a new screw [2] and tighten the screw to the specified torque.

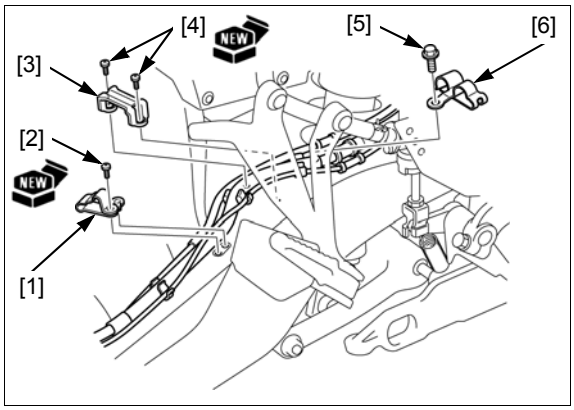
TORQUE: 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)

Install brake hose guide [3] and new screws [4] and tighten the screws to the specified torque.

TORQUE: 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)

Install the bolt [5] and brake hose clamp [6] and tighten the bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

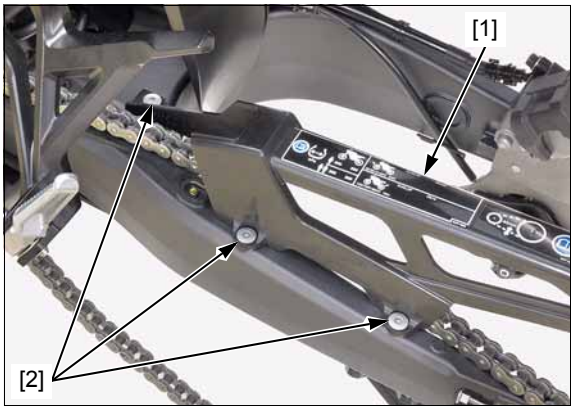


Install the left/right heel guards [1] and socket bolts [2] and tighten the bolts securely.



Install the drive chain case [1] and socket bolts [2] and tighten the bolt securely.

Install the rear wheel (page 18-7).
Install the left rear cover (page 2-10).



19. HYDRAULIC BRAKE

SERVICE INFORMATION ····· 19-2

TROUBLESHOOTING ····· 19-2

COMPONENT LOCATION ····· 19-3

BRAKE FLUID REPLACEMENT/AIR BLEEDING ····· 19-6

BRAKE PAD/DISC ····· 19-8

FRONT MASTER CYLINDER ····· 19-13

REAR BRAKE PEDAL ····· 19-15

REAR MASTER CYLINDER ····· 19-16

FRONT BRAKE CALIPER ····· 19-18

REAR BRAKE CALIPER ····· 19-20

PARKING BRAKE LEVER (CRF1000D) ····· 19-22

PARKING BRAKE CALIPER (CRF1000D) ····· 19-23

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 contaminates (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 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 conventional brake components of the brake system. For Anti-lock Brake System (ABS) service (page 20-2).

TROUBLESHOOTING

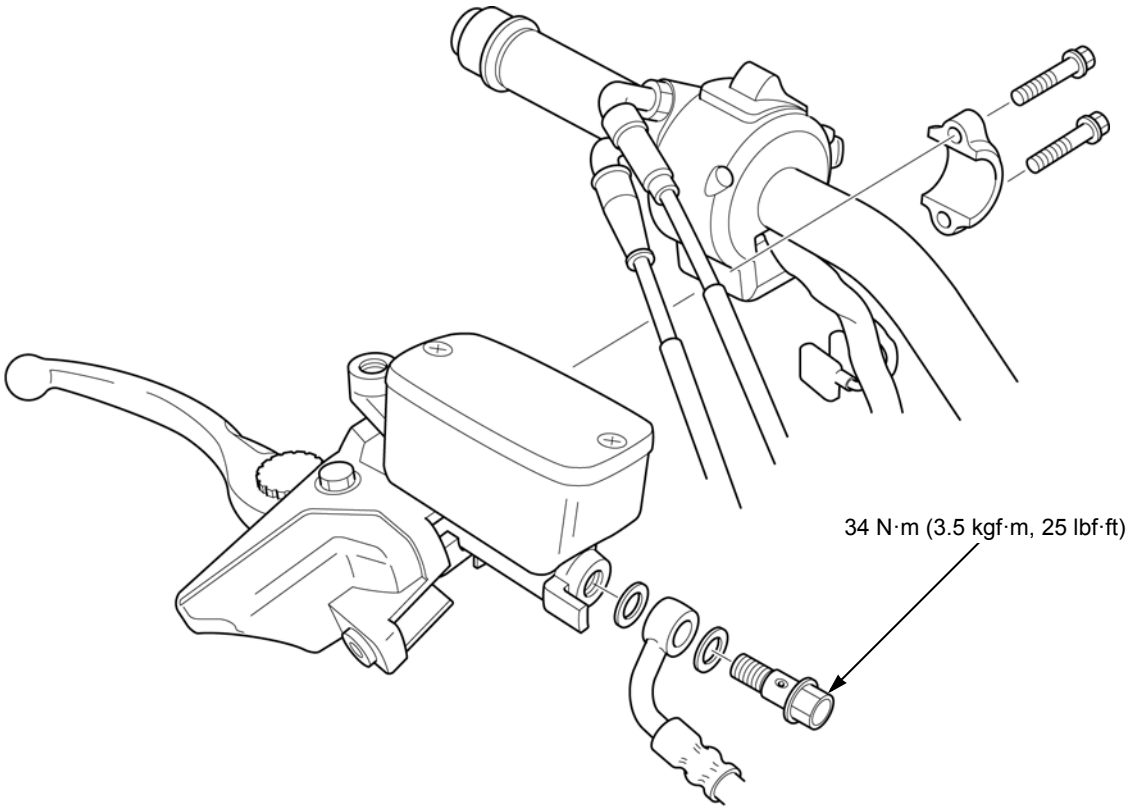
Brake lever/pedal soft or spongy
- Air in hydraulic system
- Low brake fluid level
- Leaking hydraulic system
- Clogged fluid passage
- Contaminated brake pad/disc
- Worn caliper piston seals
- Worn master cylinder piston cups
- Worn brake pad/disc
- Contaminated caliper
- Caliper not sliding properly
- Warped/deformed brake disc
- Sticking/worn caliper piston
- Sticking/worn master piston
- Contaminated master cylinder
- Bent brake lever/pedal

Brake lever/pedal hard
- Clogged/restricted hydraulic system
- Sticking/worn caliper piston
- Caliper not sliding properly
- Clogged/restricted fluid passage
- Worn caliper piston seal
- Sticking/worn master piston
- Bent brake lever/pedal

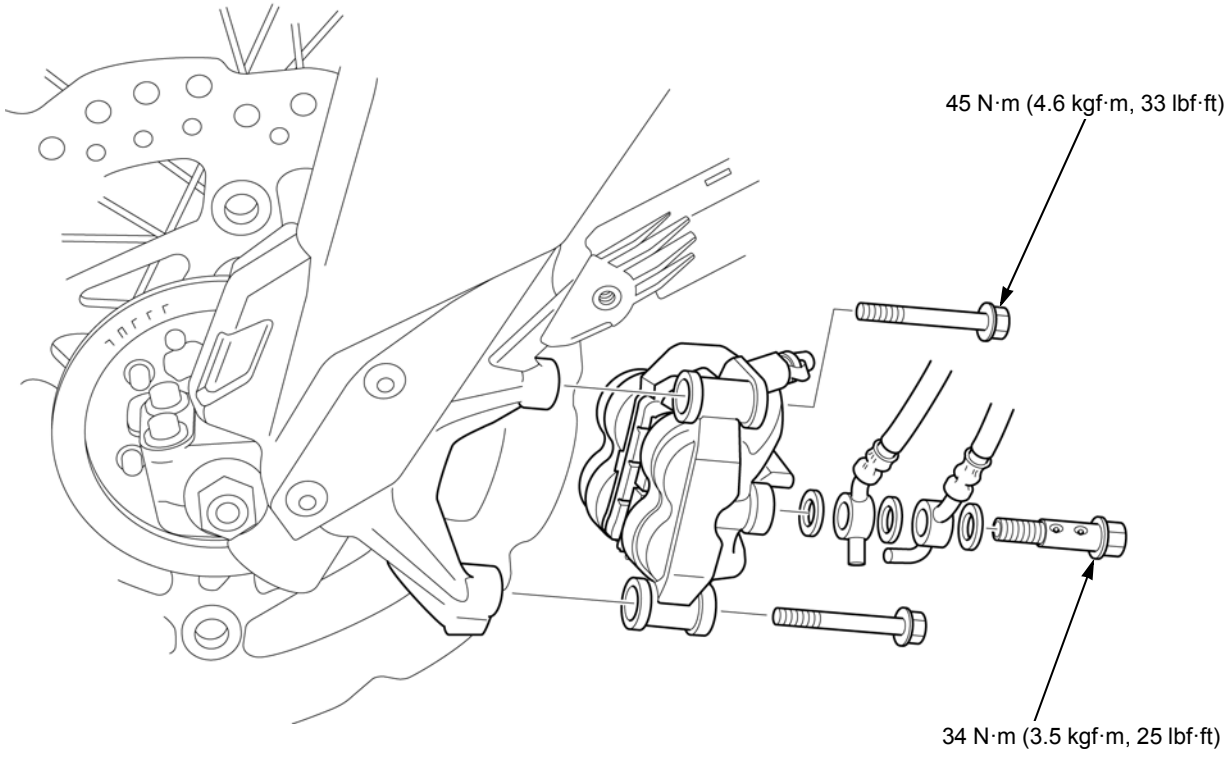
Brake drag
- Contaminated brake pad/disc
- Misaligned wheel
- Clogged/restricted brake hose joint
- Warped/deformed brake disc
- Caliper not sliding properly
- Clogged/restricted brake hydraulic system
- Sticking/worn caliper piston
- Clogged master cylinder port

COMPONENT LOCATION

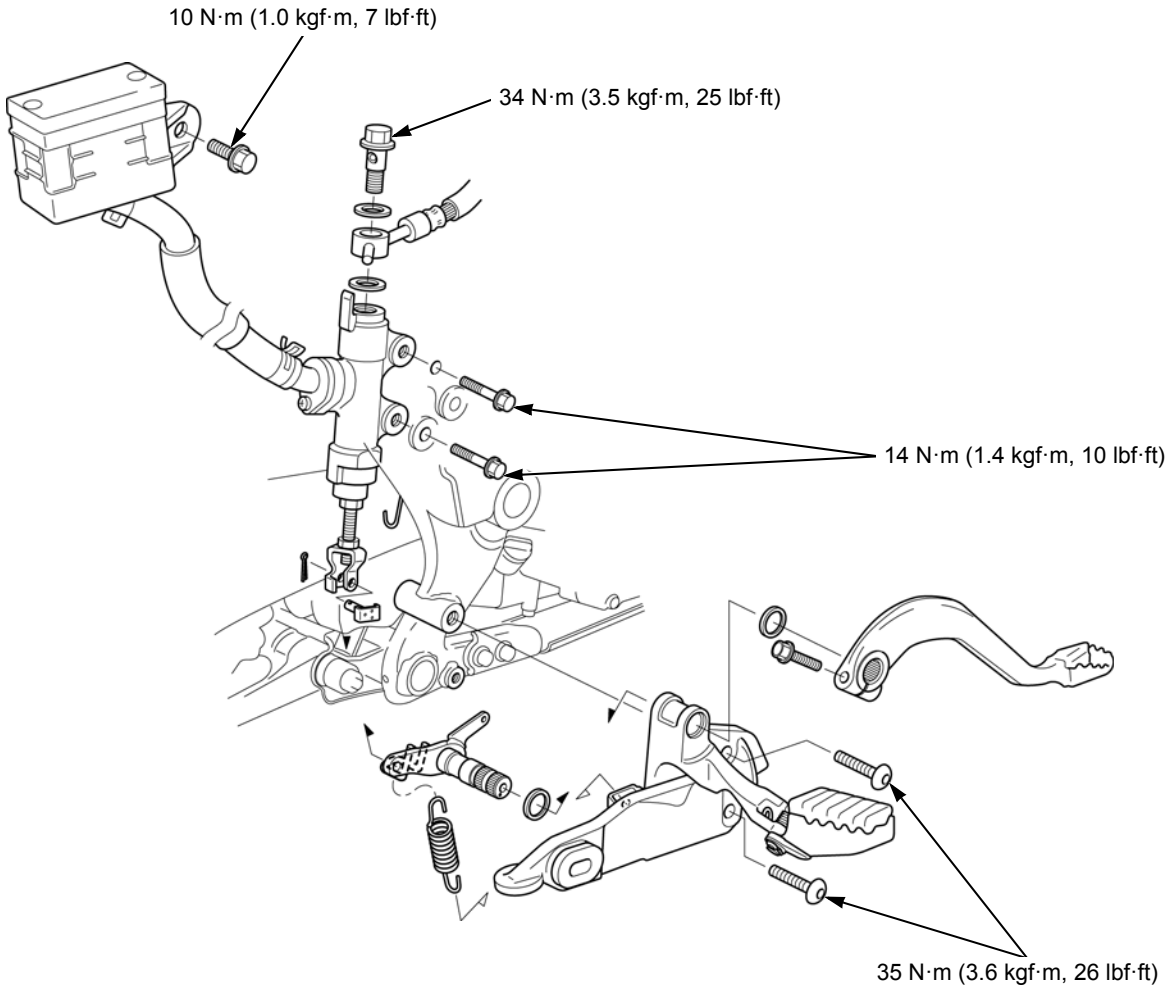
FRONT:

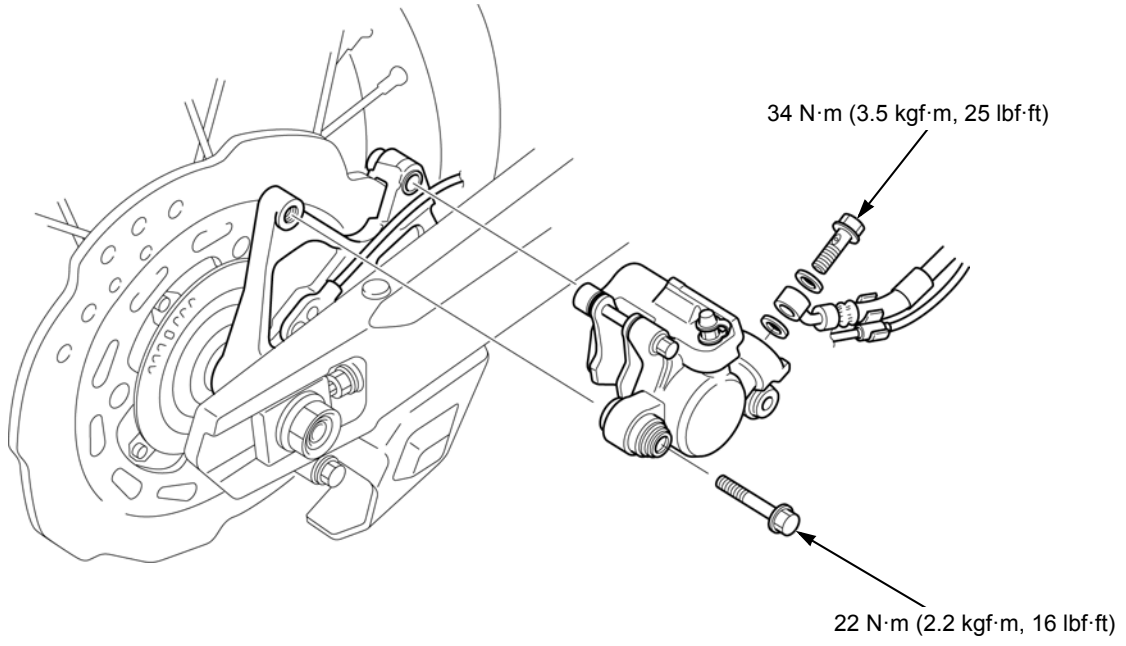


Left side shown:

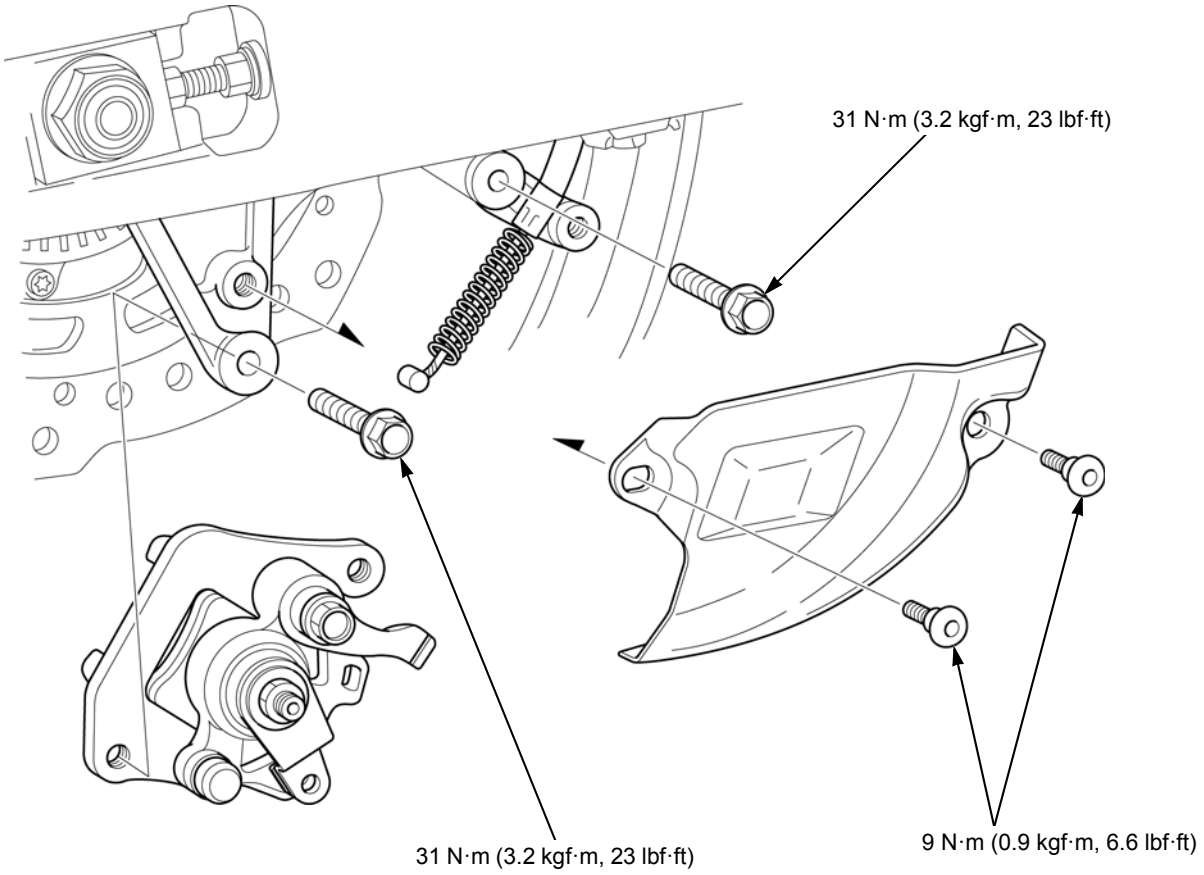


REAR:


10 N·m (1.0 kgf·m, 7 lbf·ft)
34 N·m (3.5 kgf·m, 25 lbf·ft)
14 N·m (1.4 kgf·m, 10 lbf·ft)
35 N·m (3.6 kgf·m, 26 lbf·ft)


34 N·m (3.5 kgf·m, 25 lbf·ft)
22 N·m (2.2 kgf·m, 16 lbf·ft)

CRF1000D:


31 N·m (3.2 kgf·m, 23 lbf·ft)
31 N·m (3.2 kgf·m, 23 lbf·ft)
9 N·m (0.9 kgf·m, 6.6 lbf·ft)

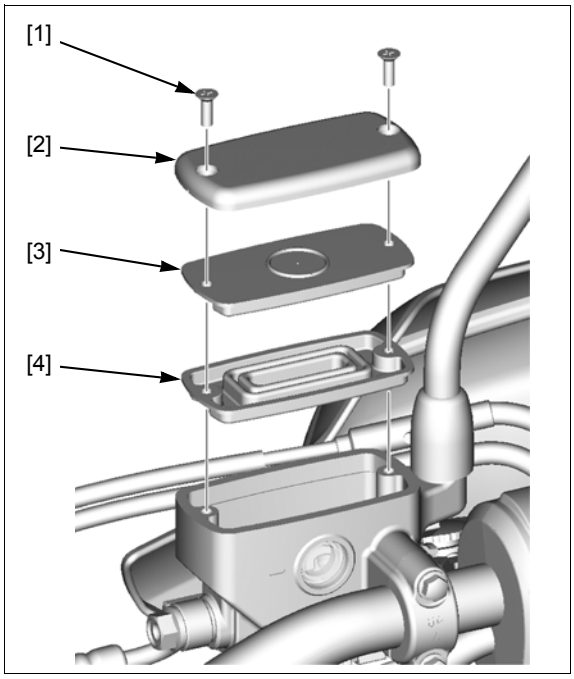
BRAKE FLUID REPLACEMENT/AIR BLEEDING

BRAKE FLUID DRAINING

Front brake: Turn the handlebar until the reservoir is parallel to the ground.

Remove the following:

– Screws [1]
– Reservoir cap [2]
– Set plate [3]
– Diaphragm [4]

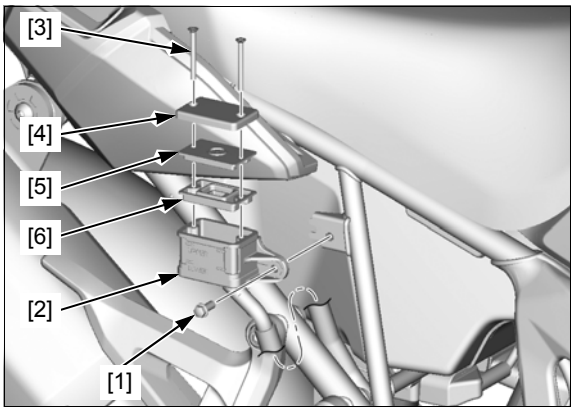


Rear brake: Support the motorcycle in an upright position.

Remove the mounting bolt [1] and release the rear brake reserve tank [2] from the rear frame.

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

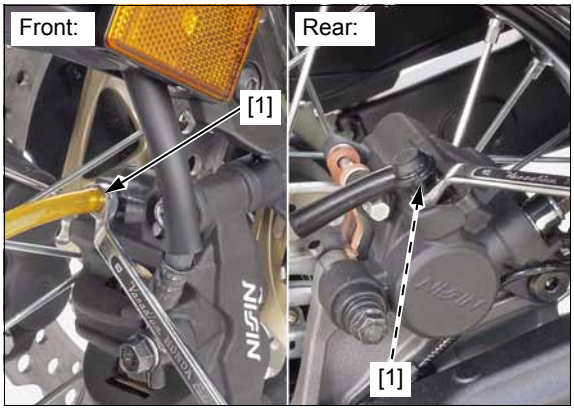
Temporarily install the reserve tank and bolt, and tighten the bolt.



Connect a bleed hose to the caliper bleed valve [1].

Loosen the bleed valve and pump the brake lever/pedal until no more fluid flows out of the bleed valve.

Tighten the bleed valve.



BRAKE FLUID FILLING/AIR BLEEDING

Fill the reservoir with DOT 4 brake fluid to the upper level line [1] from a sealed container.

Connect a commercially available brake bleeder to the bleed valve [2].
Operate the brake bleeder and loosen the bleed valve.

If an automatic refill system is not used, add fluid when the fluid level in the reservoir is low.

- 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.

If air enters the bleeder from around the bleed valve threads, seal the threads with teflon tape.

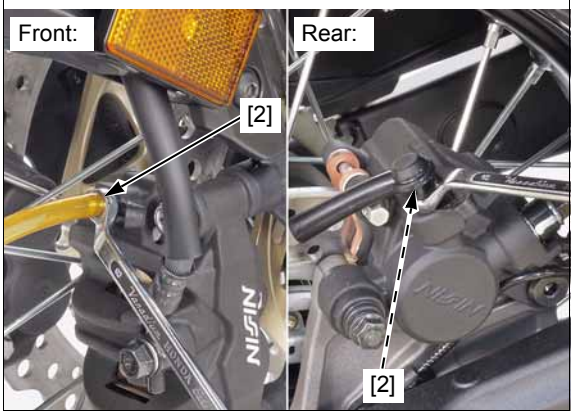
Perform the bleeding procedure until the system is completely flushed/bled.
Close the bleed valve and operate the brake lever/pedal. If it still feels spongy, bleed the system again.

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)

Fill the reservoir with DOT 4 brake fluid to the upper level line from a sealed container.





If the brake bleeder is not available, perform the following procedure.

Fill the reservoir with DOT 4 brake fluid to the upper level line [1] from a sealed container.

Pump up the system pressure with the brake lever/pedal until the lever/pedal resistance is felt.

Connect a bleed hose 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.

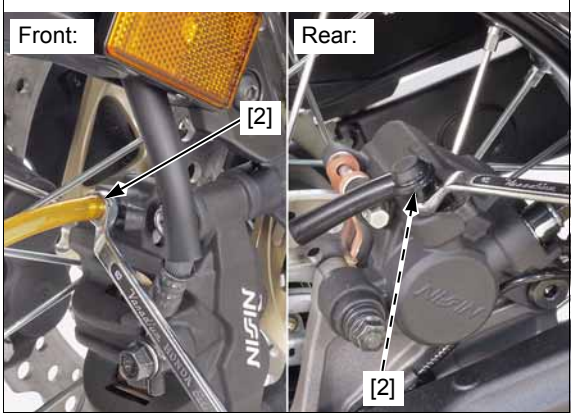
2. Release the brake lever/pedal slowly and wait several seconds after it reaches the end of its travel.
3. Repeat the steps 1 and 2 until there are no air bubbles in the bleed hose.

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)

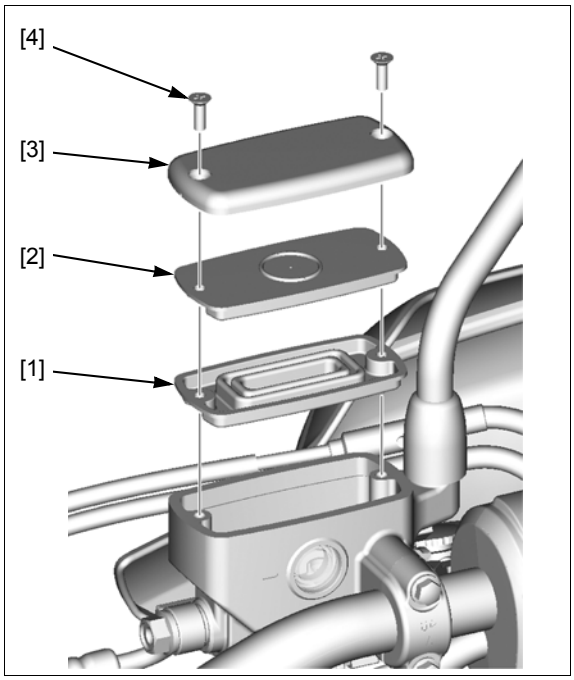
Fill the reservoir with DOT 4 brake fluid to the upper level line from a sealed container.





Front brake: Install the diaphragm [1], set plate [2], and reservoir cap [3] and tighten the screws [4] to the specified torque.

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



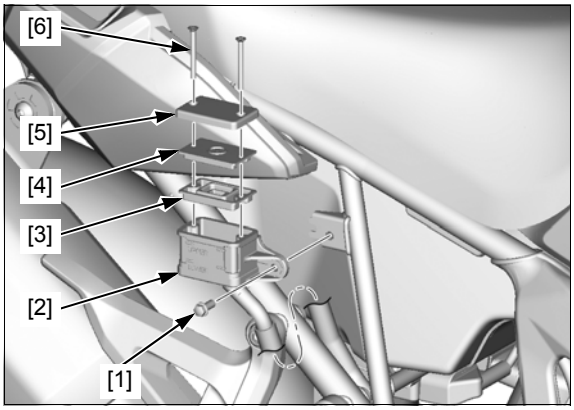
Rear brake: Remove the mounting bolt [1] and rear brake reserve tank [2].

Install the diaphragm [3], set plate [4], reservoir cap [5], and screws [6] and tighten the screws to the specified torque.

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

Install the rear brake reserve tank and mounting bolt and tighten the bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



BRAKE PAD/DISC

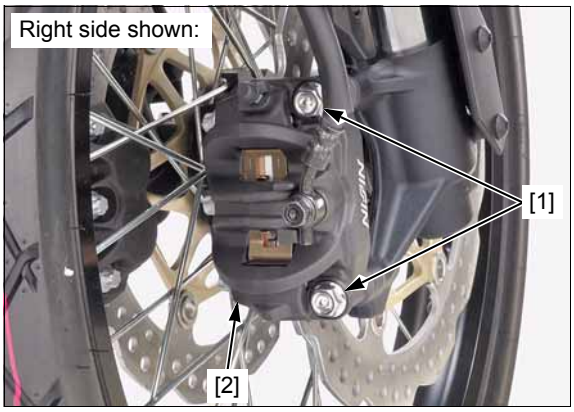
NOTE:

- Always replace the brake pads in pairs to assure even disc pressure.
- Check the brake fluid level in the brake master cylinder reservoir as this operation causes the level to rise.

FRONT BRAKE PAD REMOVAL/ INSTALLATION

Do not operate the brake lever after removing the brake caliper.

Remove the brake caliper mounting bolts [1] and brake calipers [2].

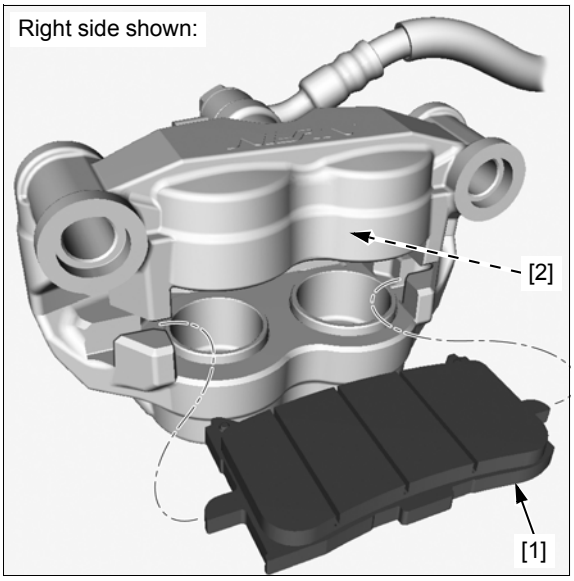


Remove the brake pads [1].

Check the pad spring [2] and replace if necessary.

Align the pad lugs with the caliper grooves.

Install new brake pads to the brake caliper so their ends seat against the pad spring.

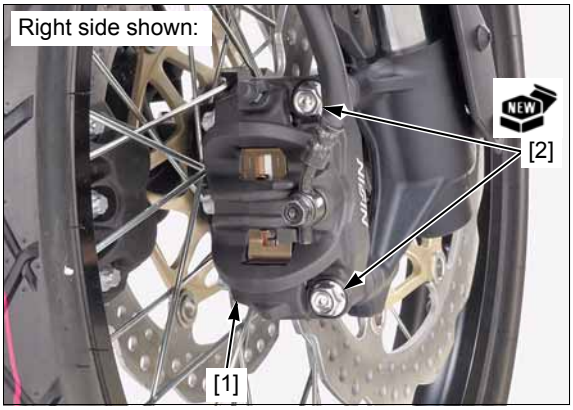


Install the brake caliper [1] and new mounting bolts [2].

Tighten the bolts to the specified torque.

TORQUE: 45 N·m (46 kgf·m, 33 lbf·ft)

Operate the brake lever to seat the caliper pistons against the pads.

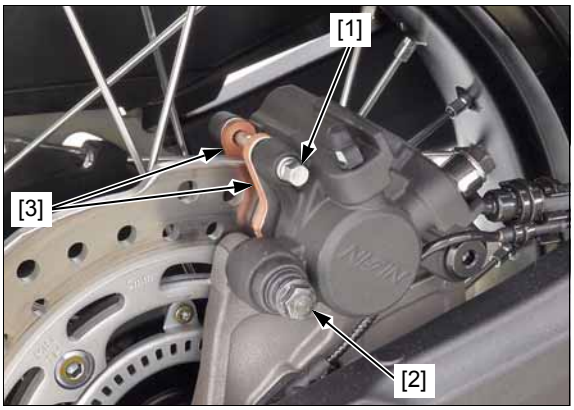


REAR BRAKE PAD REMOVAL/ INSTALLATION

Remove the brake pad pin [1] and rear brake caliper mounting bolt [2].

Do not operate the brake pedal after removing the brake pads.

Lift the caliper and remove the brake pads [3].



Make sure that the retainer and pad spring are installed to the brake caliper.

Install new brake pads [1] to the brake caliper so their ends seat against the retainer.

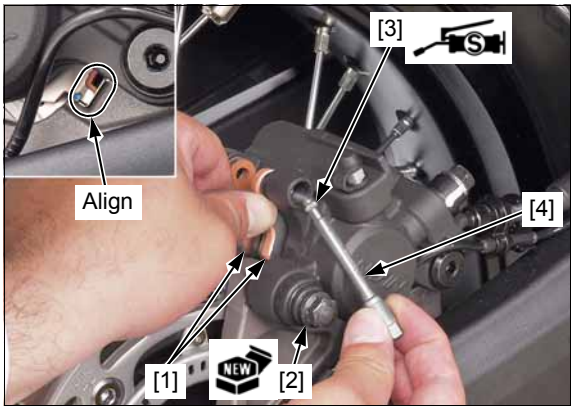
Lower the caliper.

Loosely install a new rear brake caliper mounting bolt [2].

Check that the brake pad pin stopper ring [3] is in good condition, replace it if necessary.

Apply silicone grease to the brake pad pin stopper ring and install it to the brake pad pin [4] groove.

Install the brake pad pin by pushing the pads to align the brake pad pin holes of the pads and brake caliper.



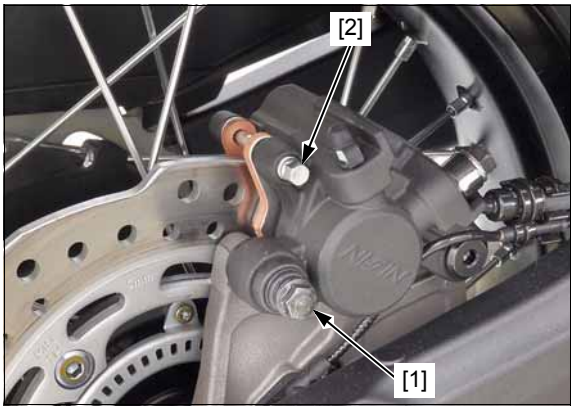
Tighten the rear brake caliper mounting bolt [1] to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Tighten the brake pad 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.



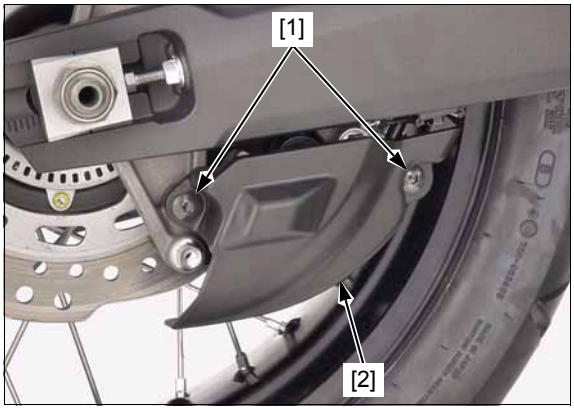
PARKING BRAKE PAD/PIN REPLACEMENT (CRF1000D)

REMOVAL

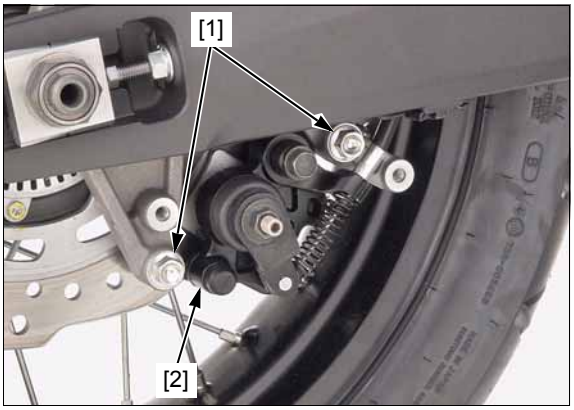
Loosen the parking brake pad pins [1].



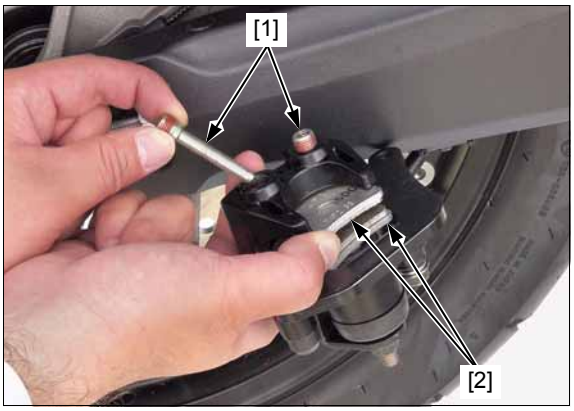
Remove the socket bolts [1] and parking brake caliper cover [2].



Remove the brake caliper mounting bolts [1] and caliper [2] from the bracket.



Remove the pad pins [1] and pads [2].

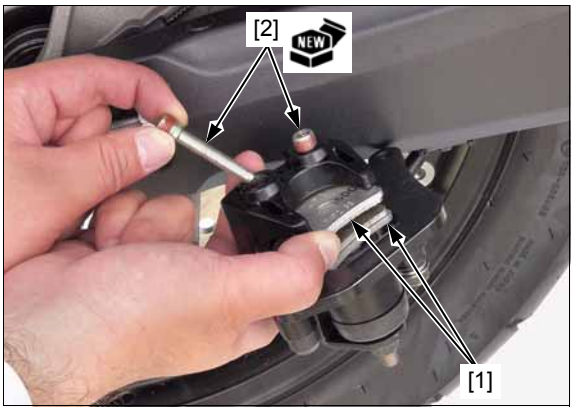


INSTALLATION

Make sure the pad spring is installed in position.

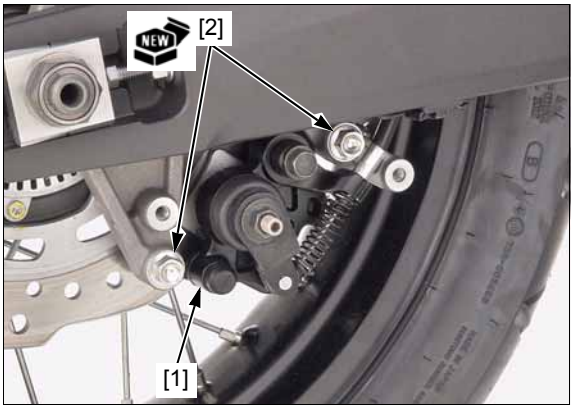
Install new parking brake pads [1].

Install new pad pins [2].



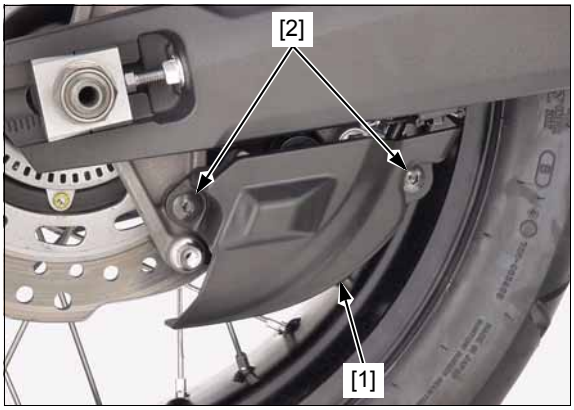
Install the parking brake caliper [1] and new mounting bolts [2] and tighten the bolts to the specified torque.

TORQUE: 31 N·m (3.2 kgf·m, 23 lbf·ft)



Install the parking brake caliper cover [1] and socket bolts [2] and tighten the bolts to the specified torque.

TORQUE: 9 N·m (0.9 kgf·m, 6.6 lbf·ft)



Tighten the pad pins [1] to the specified torque.

TORQUE: 17.2 N·m (1.8 kgf·m, 13 lbf·ft)

Check the parking brake lock operation (page 3-21).



BRAKE DISC INSPECTION

Visually inspect the brake discs for damage or cracks.

Measure the brake disc according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-10) and replace if necessary.

FRONT MASTER CYLINDER

REMOVAL/INSTALLATION

Drain the brake fluid from the front brake line hydraulic system (page 19-6).

Disconnect the brake light switch connectors [1].

When removing the oil bolt, cover the end of the brake hose to prevent contamination.

Remove the brake hose oil bolt [2], sealing washers [3], and brake hose [4].

Remove the bolts [5], holder [6], and master cylinder [7].

Installation is in the reverse order of removal.

NOTE:

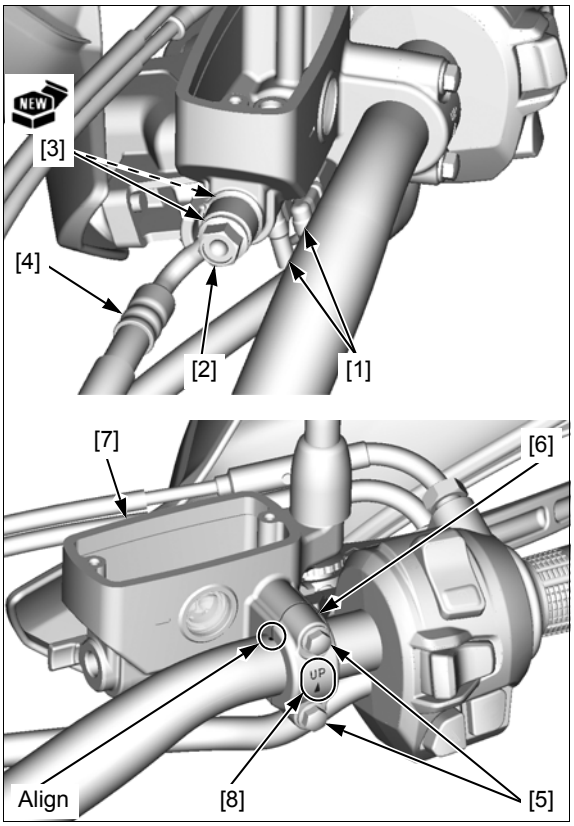
- Always replace the sealing washers with new ones.
- Install the brake hose eyelet joint against the master cylinder stopper.
- Install the master cylinder holder with the "UP" mark [8] facing up.
- Align the end of the master cylinder with the handlebar punch mark.
- When tightening the front master cylinder holder bolts, tighten the upper bolt first, then the lower bolt to the specified torque.

TORQUE:

Front brake master cylinder holder bolt:
9.8 N·m (1.0 kgf·m, 7 lbf·ft)

Brake hose oil bolt:
34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill the reservoir to the upper level and bleed the front brake system (page 19-7).



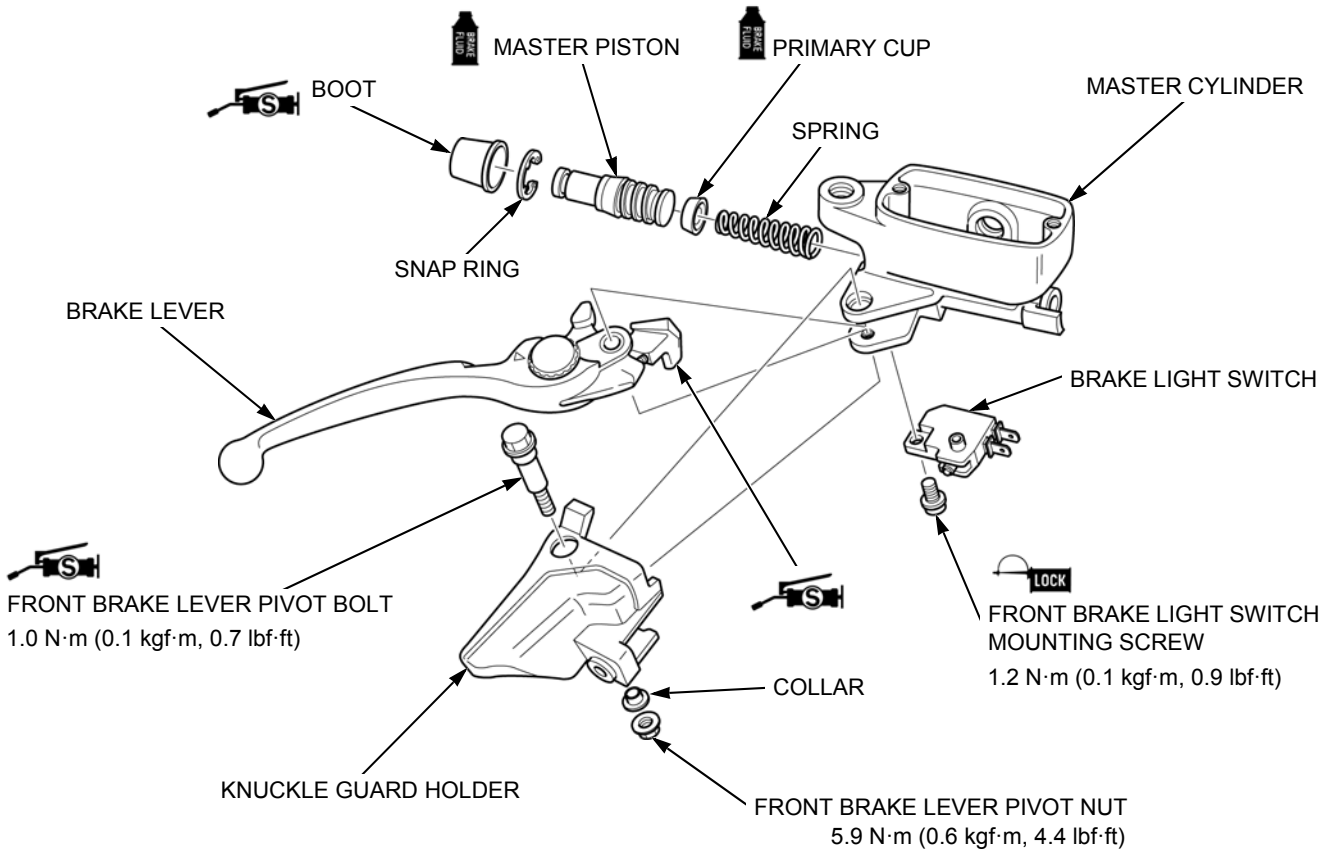
DISASSEMBLY/ASSEMBLY

NOTE:

- When removing and installing the snap ring, use the special tool.

TOOL:
Snap ring pliers 07914-SA50001

- Install the snap ring with the chamfered edge facing the thrust load side and be certain it is firmly seated in the groove. Do not reuse the snap ring which could easily spin in the groove.
- Replace the piston and cups as a set.
- Do not allow the piston cup lips to turn inside out.
- Align the switch boss with the master cylinder hole properly.



INSPECTION

Inspect the following parts for scoring, scratches, deterioration, or damage.

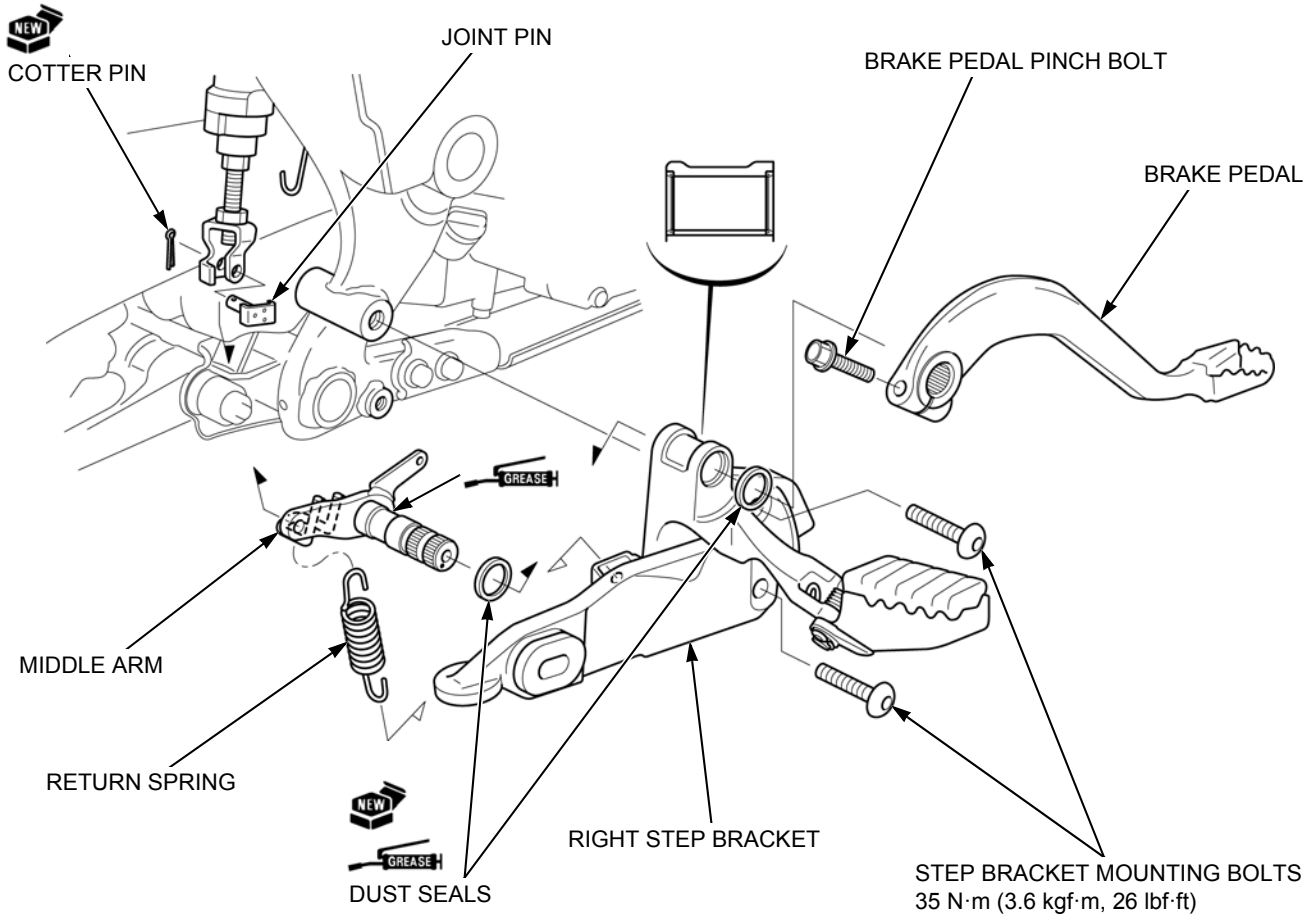
– Master cylinder
– Master piston
– Piston cups
– Spring
– Boot

Measure each part according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-10).

Replace any part if it is out of service limit.

REAR BRAKE PEDAL

REMOVAL/INSTALLATION



NOTE:

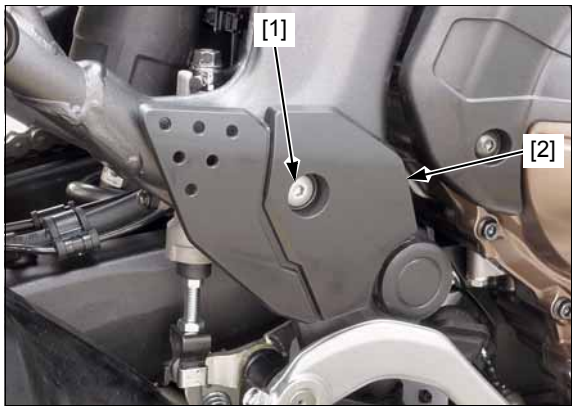
- Align the brake pedal slit with the middle arm punch mark.
- Always replace the cotter pin with a new one.
- Always replace the dust seal with a new one.
- Apply grease to the dust seal lips.
- Apply grease to the middle arm pivot sliding surface.

REAR MASTER CYLINDER

REMOVAL/INSTALLATION

Drain the rear brake line hydraulic system (page 19-6).

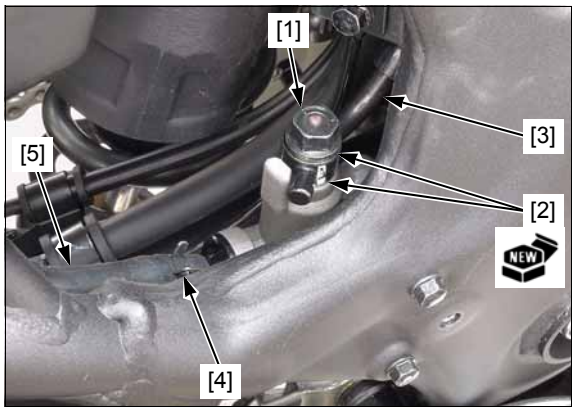
Remove the bolt [1] and heel guard [2].



Avoid spilling fluid on painted, plastic, or rubber parts.

Remove the oil bolt [1], sealing washers [2] and brake hose [3].

Remove the hose clamp [4] and rear master cylinder hose [5].



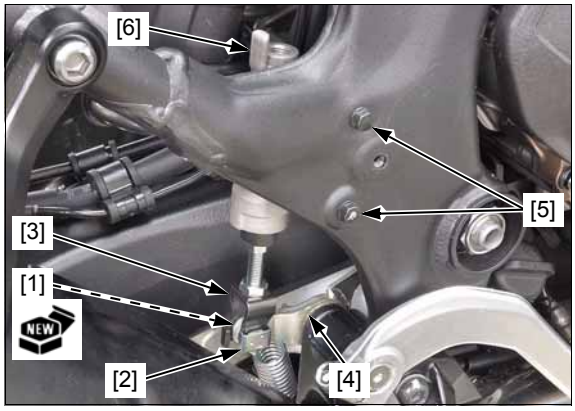
Remove the cotter pin [1] and joint pin [2], and disconnect the brake rod joint [3] from the middle arm [4].

Remove the bolts [5] and rear master cylinder [6].

Installation is in the reverse order of removal.

NOTE:

- Always replace the cotter pin and sealing washers with a new one.
- Tighten rear master cylinder mounting bolts and brake hose oil bolt to the specified torque.



TORQUE:

Rear master cylinder mounting bolt:
14 N·m (1.4 kgf·m, 10 lbf·ft)

Brake hose oil bolt:
34 N·m (3.5 kgf·m, 25 lbf·ft)

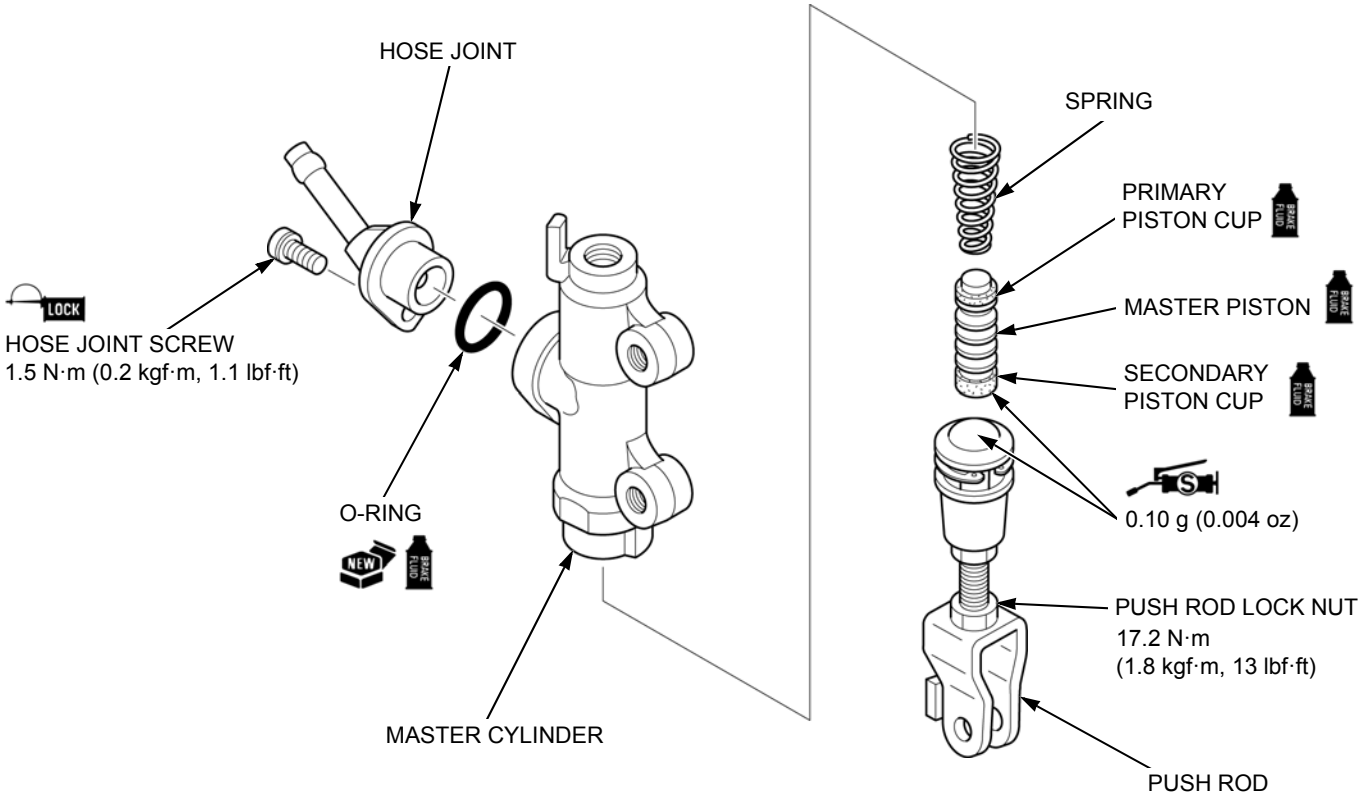
DISASSEMBLY/ASSEMBLY

NOTE:

- When removing and installing the snap ring, use the special tool.

TOOL:
Snap ring pliers 07914-SA50001

- Install the snap ring with the chamfered edge facing the thrust load side and be certain it is firmly seated in the groove. Do not reuse the snap ring which could easily spin in the groove.
- Replace the piston, spring, and cup as a set.
- Do not allow the piston cup lips to turn inside out.
- Apply locking agent to the rear master cylinder hose joint screw threads (page 1-20).

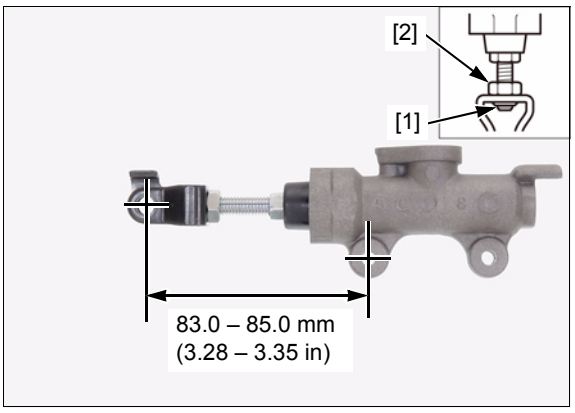


When the push rod has been disassembled, adjust the push rod length so that the distance from the center of the master cylinder lower mounting bolt hole to the center of the joint pin hole is standard length as shown.

If the length is adjusted to the longer position, make sure that the lower end of the push rod thread [1] is visible inside the joint.

After adjustment, tighten the push rod lock nut [2] to the specified torque.

TORQUE: 17.2 N·m (1.8 kgf·m, 13 lbf·ft)



INSPECTION

Check the following parts for scoring, scratches, deterioration, or damage.

– Master cylinder
– Master piston
– Piston cups
– Spring
– Boot

Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-10).

Replace any part if it is out of service limit.

FRONT BRAKE CALIPER

REMOVAL/INSTALLATION

Drain the brake fluid from the front brake line hydraulic system (page 19-6).

Avoid spilling fluid on painted, plastic, or rubber parts. Place a shop towel over these parts whenever the system is serviced.

Remove the oil bolt [1] and sealing washers [2] and disconnect the brake hose [3].

Remove the bolts [4] and front brake caliper [5].

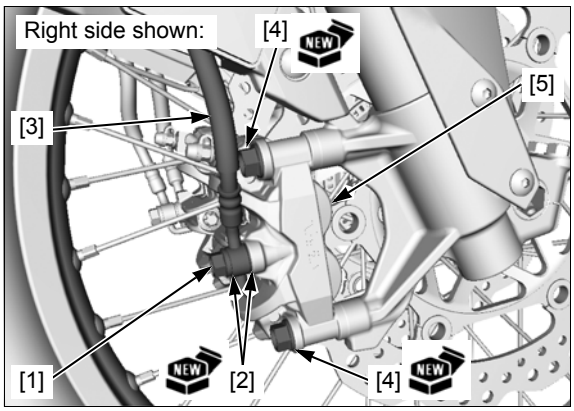
Install the brake caliper onto the fork.
Install and tighten new brake caliper mounting bolts to the specified torque.

TORQUE: 45 N·m (4.6 kgf·m, 33 lbf·ft)

Install the brake hose to the caliper body with new sealing washers and oil bolt.
Push the hose eyelet against the stopper on the caliper body, then tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

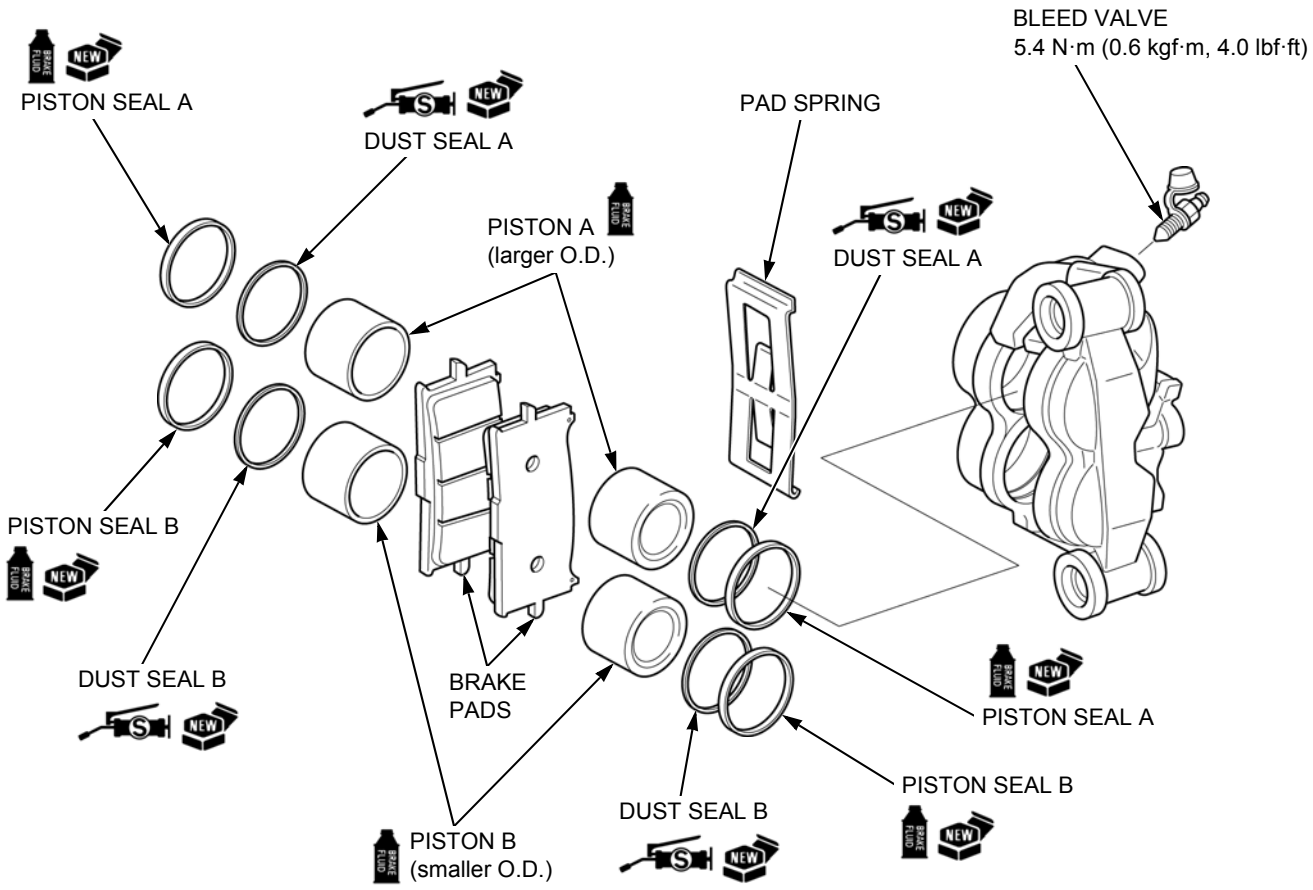
Fill and bleed the brake fluid to the front brake line hydraulic system (page 19-7).



DISASSEMBLY/ASSEMBLY

NOTE:

- Be careful not to damage each piston.
- Do not use high pressure air or bring the nozzle too close to the inlet.
- Mark the pistons to ensure correct reassembly.
- Be careful not to damage the piston sliding surface.
- Install each piston seal, dust seal and caliper piston in their proper locations.
- Piston A: larger O.D.
- Piston B: smaller O.D.



INSPECTION

Check the following parts for scoring, scratches, deterioration, or damage.

– Caliper cylinders
– Caliper pistons

Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-10).

Replace any part if it is out of service limit.

REAR BRAKE CALIPER

REMOVAL/INSTALLATION

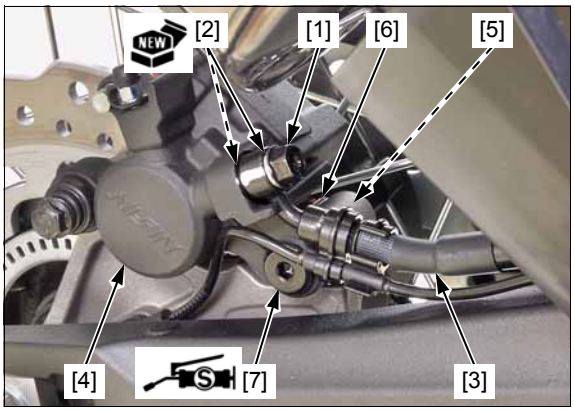
Drain the brake fluid from the pedal brake line hydraulic system (page 19-6).

Avoid spilling fluid on painted, plastic, or rubber parts. Place a shop towel over these parts whenever the system is serviced.

Remove the oil bolt [1], sealing washers [2] and brake hose [3].

Remove the brake pads (page 19-9).

Lift the rear brake caliper [4] and remove it by pulling right.



NOTE:

- Check the caliper pin boot [5] for deteriorated or damaged, replace it with a new one if necessary.
- If the pad retainer [6] is removed, apply ThreeBond 1521 or an equivalent to the retainer seating surface.
- Apply 0.4 g (0.01 oz) of silicone grease to the sliding area of the caliper pin bolt [7].

Install the rear brake caliper.

Install the brake pads (page 19-9).

Install the brake hose eyelet to the caliper body with new sealing washers and oil bolt.
Push the hose eyelet joint against the caliper body, then tighten the oil bolt to the specified torque.

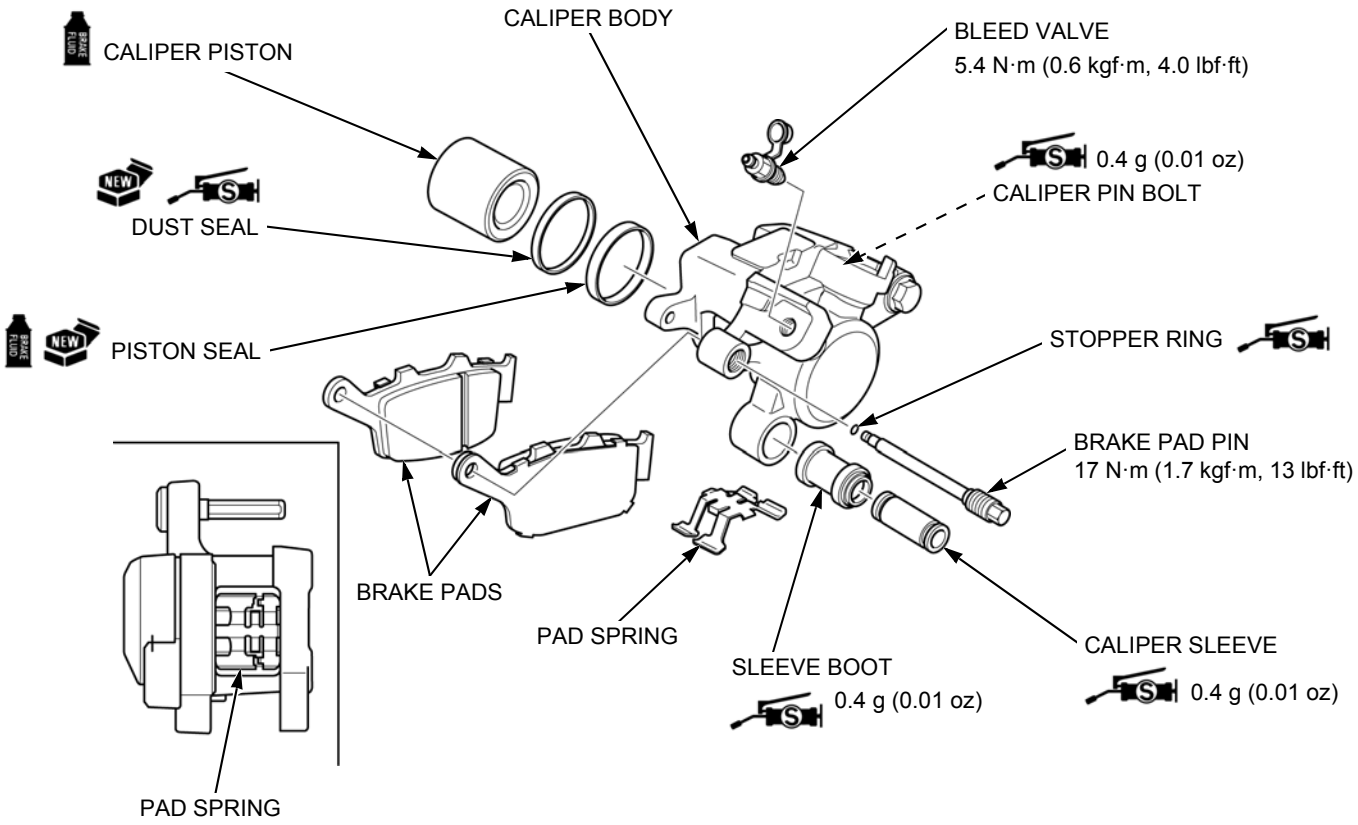
TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill brake fluid and bleed air from the rear brake line hydraulic system (page 19-7).

DISASSEMBLY/ASSEMBLY

NOTE:

- Be careful not to damage the piston sliding surface
- When removing the caliper piston with compressed air, place a shop towel over the piston to prevent damaging the piston and caliper body. Do not use high pressure or bring the nozzle too close to the fluid inlet.
- Install the piston with the opening toward the pads.
- Apply 0.4 g (0.01 oz) of silicone grease to the sliding area of the caliper sleeve.
- Apply 0.4 g (0.01 oz) of silicone grease to the rear brake caliper pin bolt sliding surface.



INSPECTION

Check the following parts for scoring, scratches, deterioration, or damage.

– Caliper cylinder
– Caliper piston

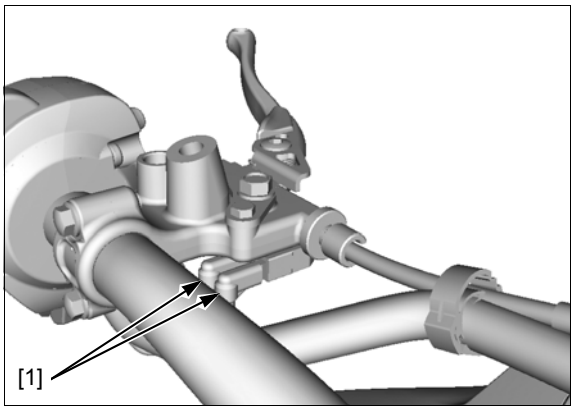
Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-10) and replace if necessary.

PARKING BRAKE LEVER (CRF1000D)

REMOVAL

Remove the knuckle guard (page 2-5).
Remove the rearview mirror (page 17-4).

Disconnect the parking brake switch connectors [1].

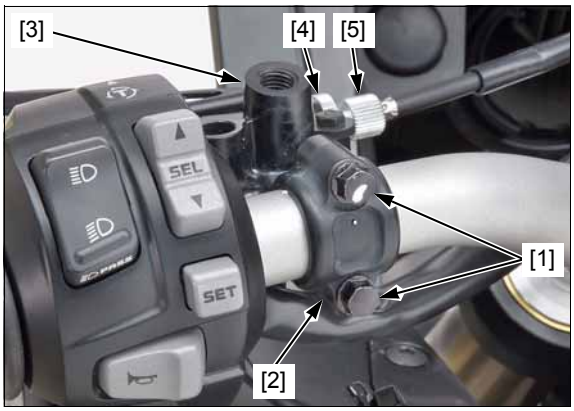


Remove the bolts [1], holder [2], and parking brake lever assembly [3].

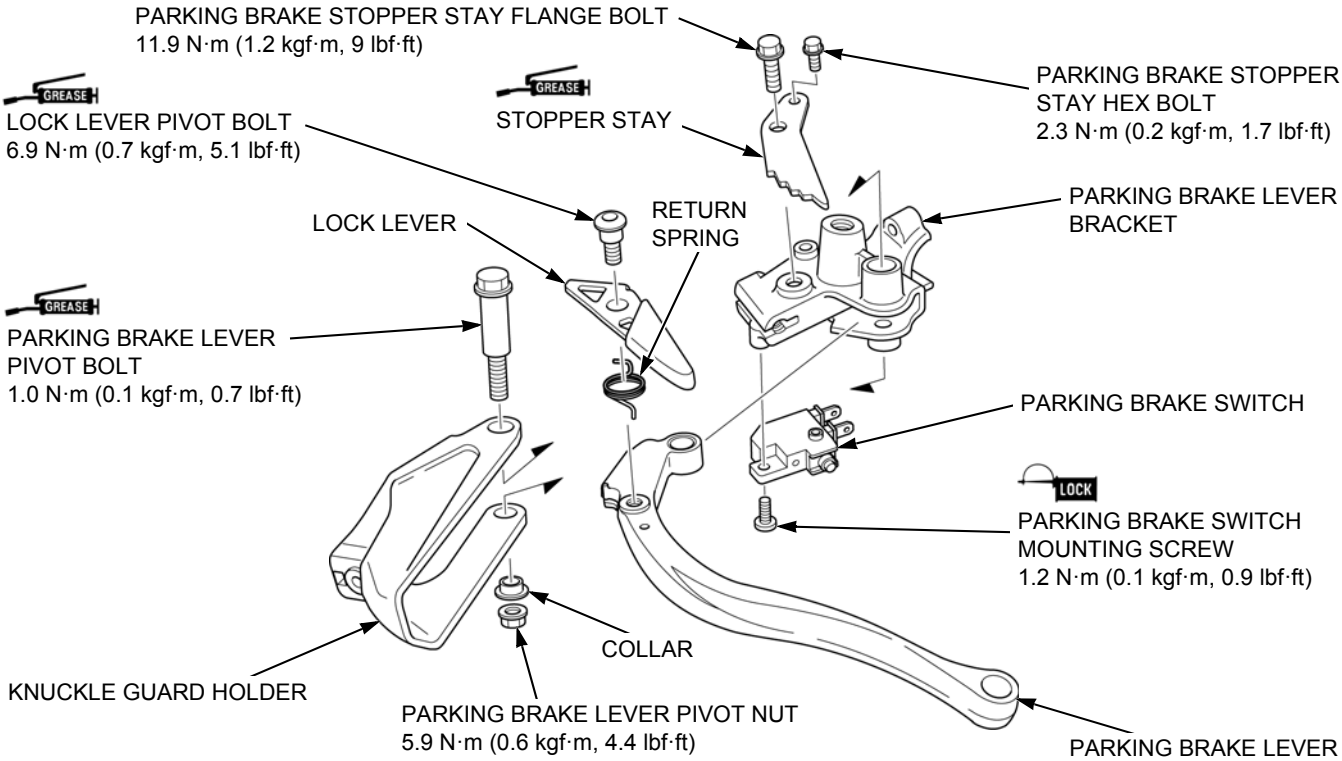
Loosen the lock nut [4] and disconnect the parking brake cable by turning the adjuster [5].

Installation is in the reverse order of removal.

Check the parking brake lock operation (page 3-21).



DISASSEMBLY/ASSEMBLY



NOTE:

- Apply locking agent to the parking brake switch mounting screw threads (page 1-20).

INSTALLATION

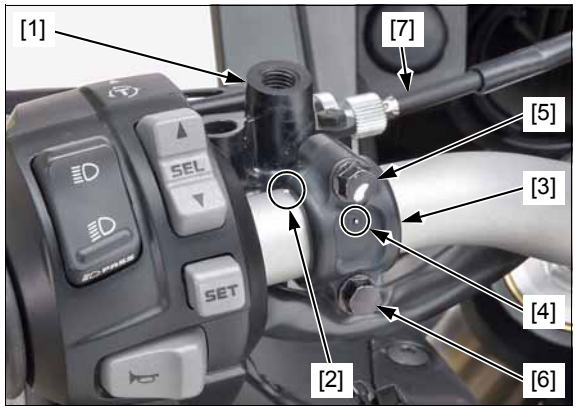
Install the parking brake lever assembly [1] by aligning its end with the paint mark [2] on the handlebar.

Install the holder [3] with its punch mark [4] facing up.

Tighten the upper bolt [5] first, then the lower bolt [6].

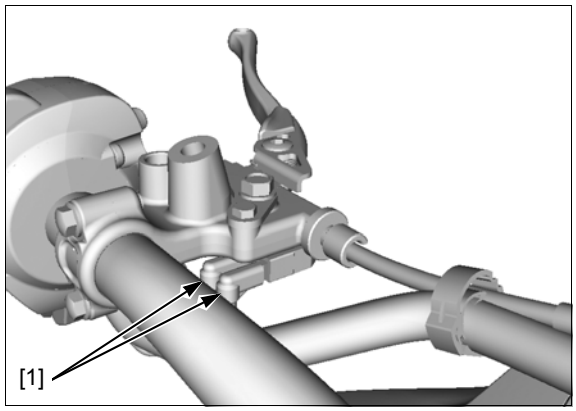
Connect the parking brake cable [7] to the brake lever.

Check the brake lock operation (page 3-21).



Connect the parking brake switch connectors [1].

Install the knuckle guard (page 2-5).
Install the rearview mirror (page 17-10).



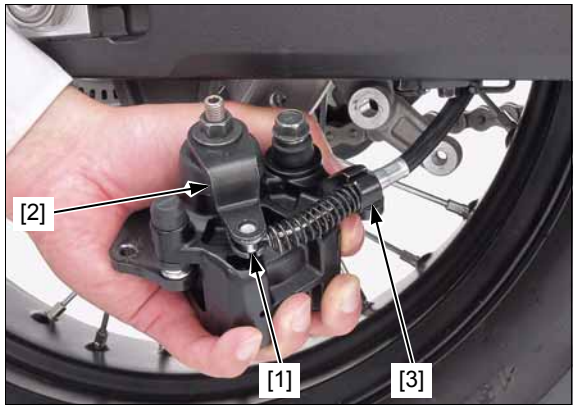
PARKING BRAKE CALIPER (CRF1000D)

REMOVAL/INSTALLATION

Remove the parking brake pads (page 19-10).

Release the parking brake cable [1] from the cable stay [2] of the caliper body and disconnect it from the brake arm [3].

Installation is in the reverse order of removal.



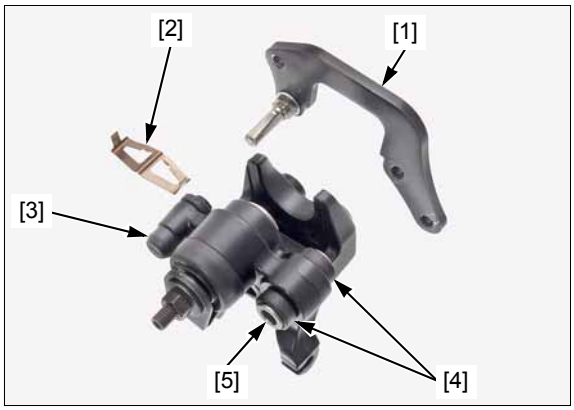
DISASSEMBLY

Remove the caliper pin bolt [1].



Remove the following:

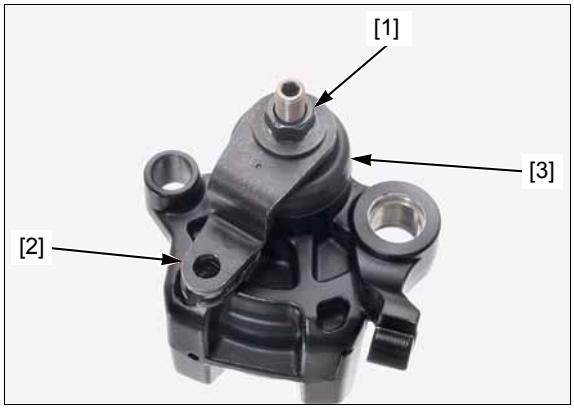
- Caliper bracket [1]
- Pad spring [2]
- Bracket pin boot [3]
- Caliper pin boot [4]
- Collar [5]



Remove the adjuster lock nut [1] while holding the brake arm [2].

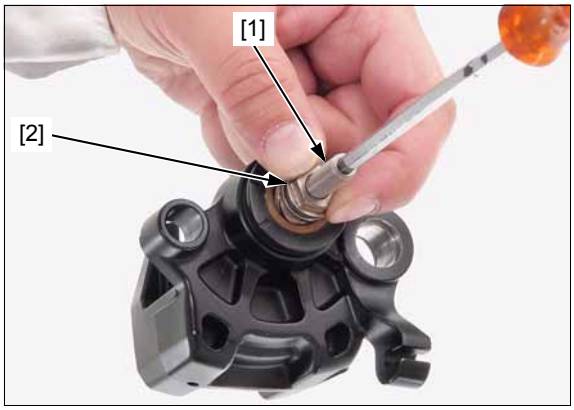
Remove the brake arm.

Remove the brake shaft boot [3].



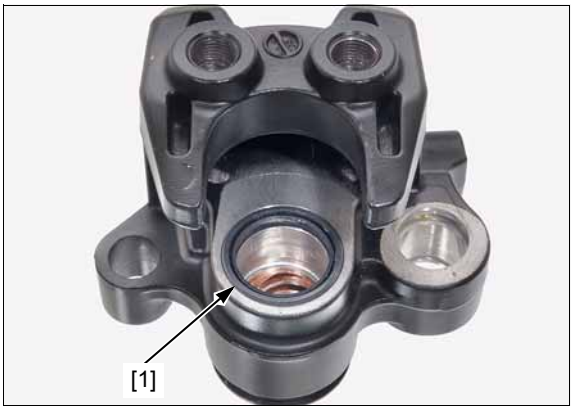
Remove the push rod [1] while holding the brake shaft [2].

Remove the push rod/piston assembly.



Remove the dust seal [1].

Clean the caliper cylinder and brake shaft sliding surface.



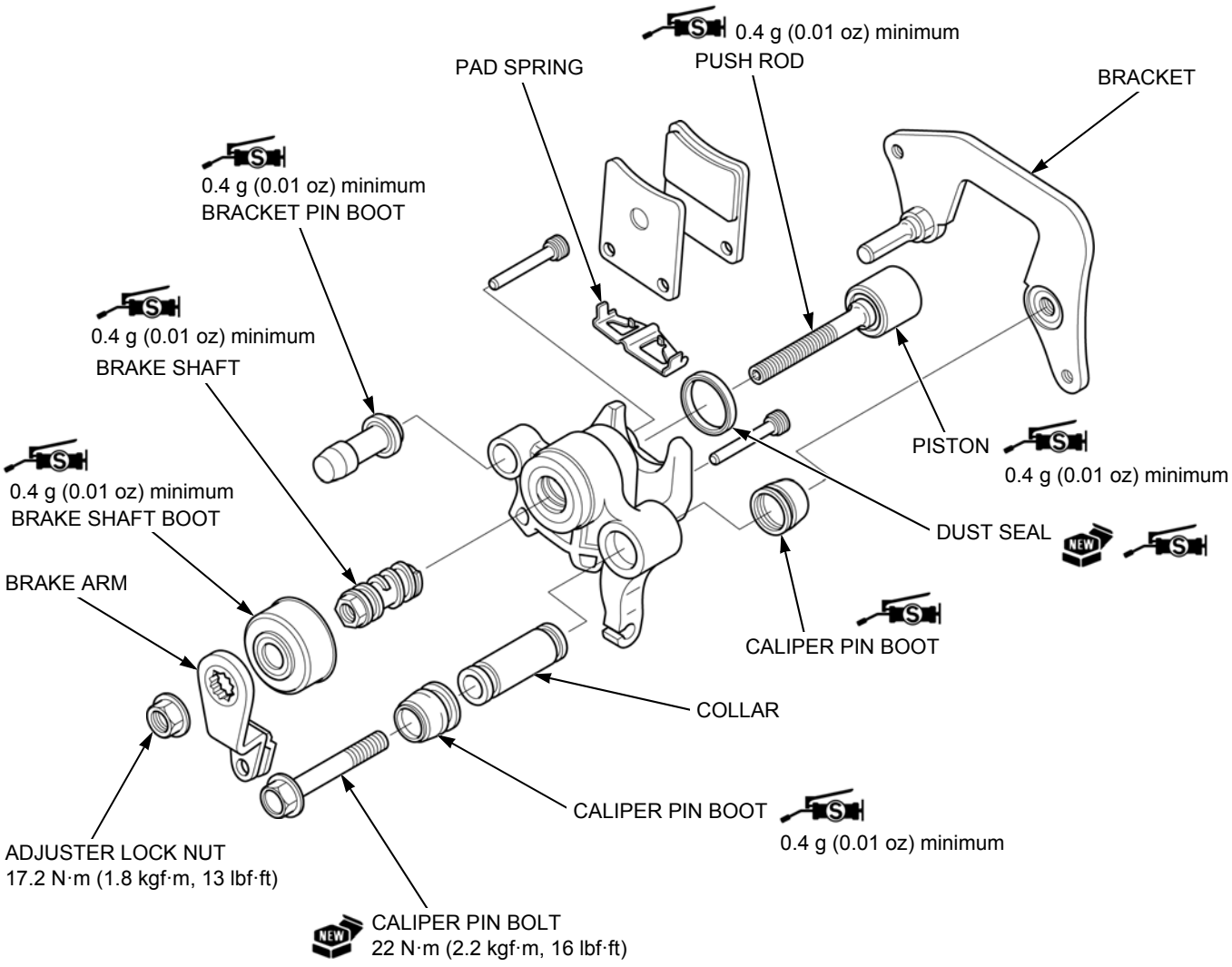
INSPECTION

Inspect the following parts for scoring, scratches, or damage.

– Caliper cylinder
– Caliper piston

Replace if necessary.

ASSEMBLY



Apply silicone grease to new dust seal lips.

Install the dust seal [1] into the seal groove in the caliper.



Apply 0.4 g minimum of silicone grease to the parking brake shaft outer surface.

Install the parking brake shaft [1] to the caliper [2] and screw it in completely.

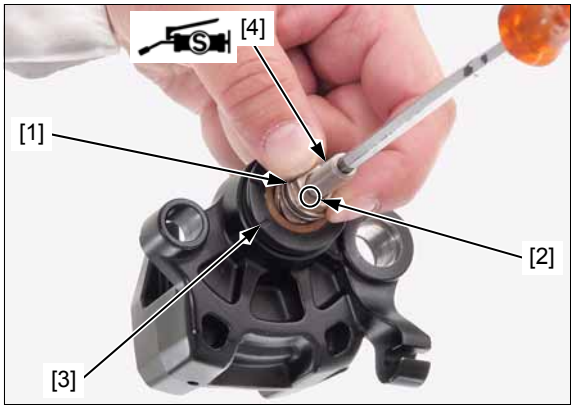
Make sure that the punch mark [3] of the brake shaft is positioned opposite the index line [4].



Apply 0.4 g minimum of silicone grease to the push rod rolling surface and piston sliding surface.

Turn the brake shaft [1] clockwise and align the punch mark [2] with the index line [3].

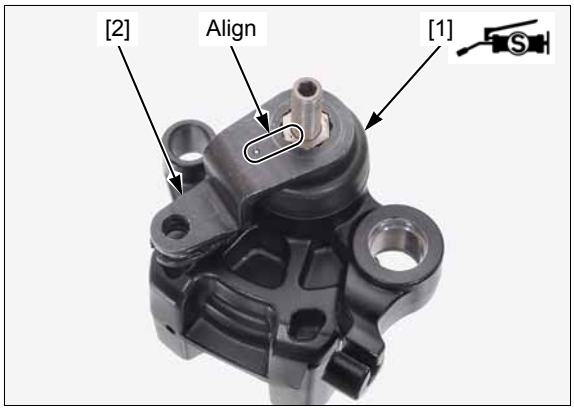
Install the push rod [4] while holding the brake shaft.



Apply 0.4 g minimum of silicone grease to the brake shaft boot lips.

Install the brake shaft boot [1] to the caliper groove.

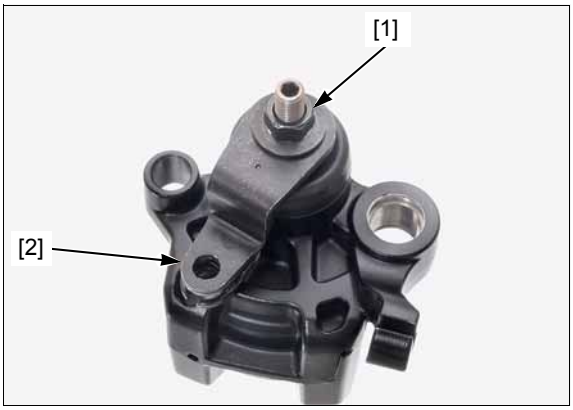
Install the brake arm [2] by aligning the punch marks as shown.



Install the adjuster lock nut [1].

Tighten the adjuster lock nut to the specified torque while holding the brake arm [2].

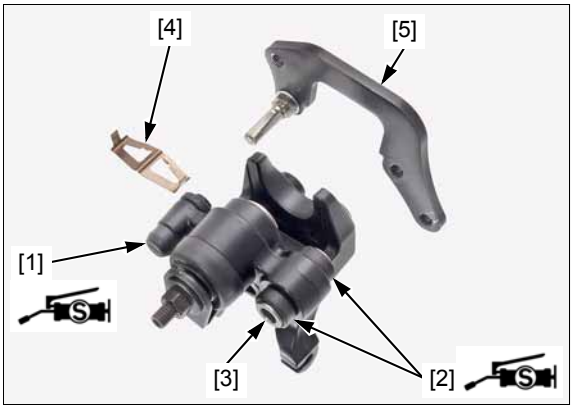
TORQUE: 17.2 N·m (1.8 kgf·m, 13 lbf·ft)



Apply 0.4 g minimum of silicone grease to the bracket and caliper pin boot insides.

Install the following:

– Bracket pin boot [1]
– Caliper pin boot [2]
– Collar [3]
– Pad spring [4]
– Caliper bracket [5]



Tighten the parking brake caliper pin bolt [1] to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



MEMO

20. ANTI-LOCK BRAKE SYSTEM (ABS) (CRF1000A/D)

SERVICE INFORMATION ····· 20-2

SYSTEM LOCATION ····· 20-3

SYSTEM DIAGRAM ····· 20-4

ABS TROUBLESHOOTING INFORMATION ····· 20-5

DTC INDEX ····· 20-8

ABS INDICATOR CIRCUIT TROUBLESHOOTING ····· 20-10

DTC TROUBLESHOOTING ····· 20-12

WHEEL SPEED SENSOR ····· 20-20

ABS MODULATOR ····· 20-24

SERVICE INFORMATION

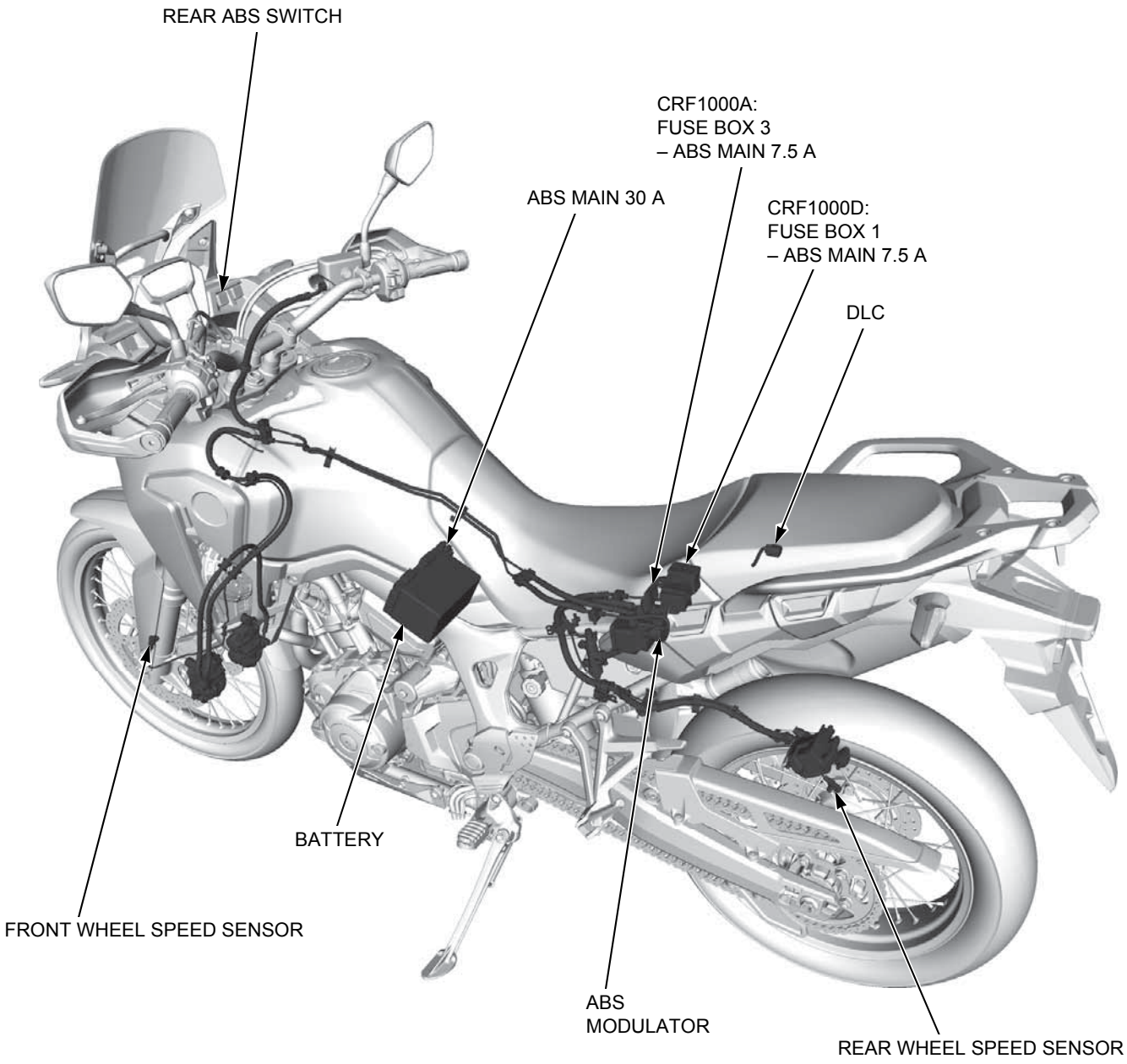
GENERAL

NOTICE

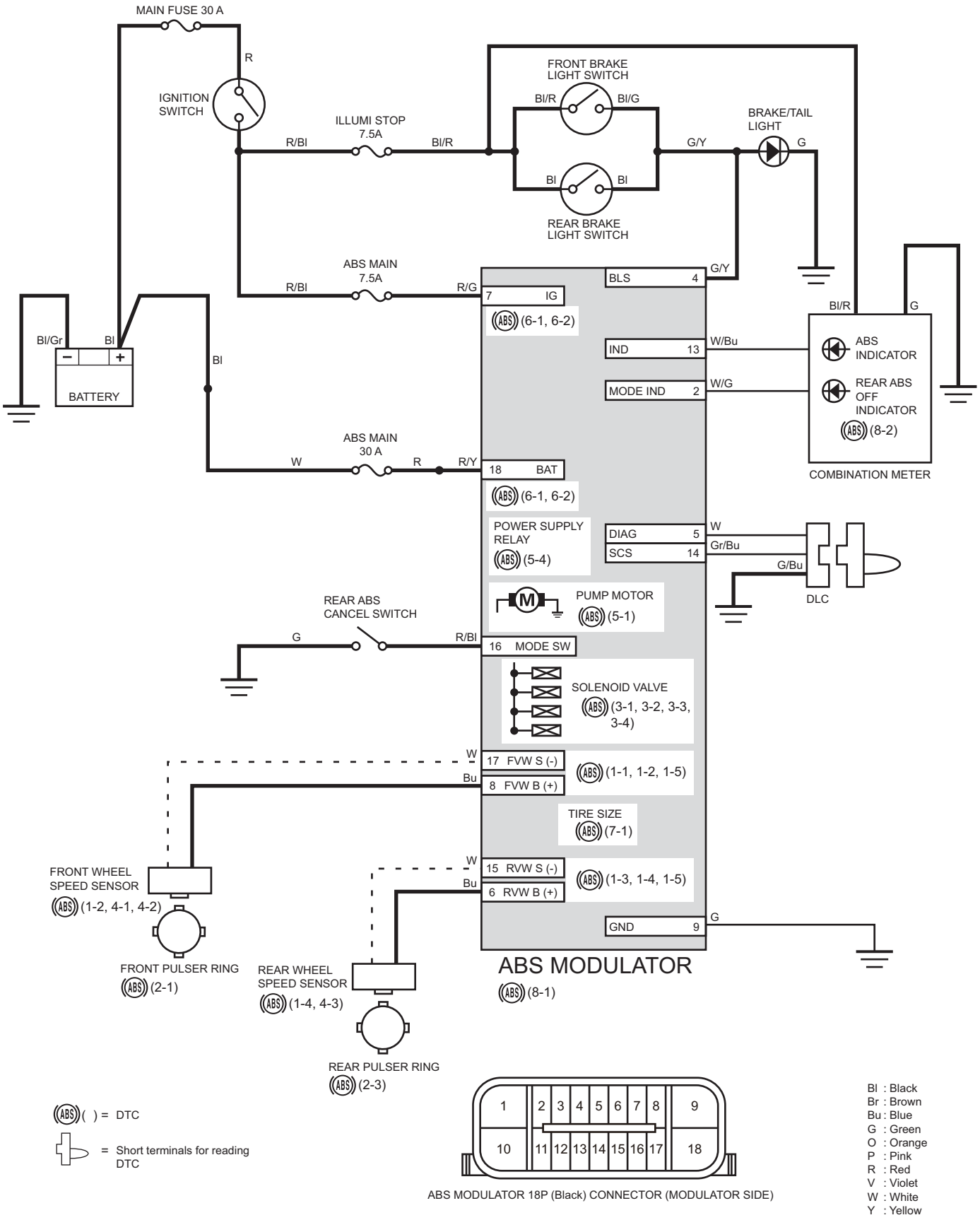
- *The ABS modulator may be damaged if dropped. Also if a connector is disconnected when current is flowing, the excessive voltage may damage the control unit. Always turn off the ignition switch before servicing.*
- *Spilling brake fluid will severely damage plastic parts and painted surfaces. It is also harmful to some rubber parts.*
- The ABS control unit is integrated in the ABS modulator. Do not disassemble the ABS modulator. Replace the ABS modulator as an assembly when the it is faulty.
- The ABS control unit performs pre-start self-diagnosis to check whether the ABS functions normally until the motorcycle speed reaches 10 km/h (6 mph). After pre-start self-diagnosis, the ABS control unit monitors the ABS functions and motorcycle running condition constantly until the ignition switch is turned OFF (ordinary self-diagnosis).
- When the ABS control unit detects a problem, it stops the ABS function, switches back to the conventional brake operation, and turns on or blinks the ABS indicator. Take care during the test-ride.
- When the ABS control unit detects a problem in the rear ABS off indicator circuit, it stops the rear ABS off mode function, switches back to the normal ABS operation, and turns on or blinks the ABS indicator and goes off rear ABS off indicator.
- Read "ABS TROUBLESHOOTING INFORMATION" carefully, inspect and troubleshoot the ABS according to the diagnostic troubleshooting flow chart. Observe each step of the procedures one by one. Write down the DTC and probable faulty part before starting diagnosis and troubleshooting.
- Use a fully charged battery. Do not diagnose with a charger connected to the battery.
- After troubleshooting, erase the DTC and test-ride the motorcycle to check that the ABS indicator operates normally during pre-start self-diagnosis (page 20-5).
- Problems not caused by the faulty ABS (e.g. brake disc squeak, unevenly worn brake pad) cannot be detected by the ABS diagnosis system.
- Before wheel speed sensor servicing, check the following:
  – Iron or other magnetic deposits between the pulser ring and wheel speed sensor
  – Pulser ring slots for obstructions
  – Installation condition of the pulser ring or wheel speed sensor for looseness
  – Pulser ring and sensor tip for deformation or damage
- Be careful not to damage the pulser ring when removing and installing the wheel.
- For pulser ring service:
  – Front pulser ring (page 17-12)
  – Rear pulser ring (page 18-5)
- The following color codes are used throughout this section.

Bl = Black	Bu = Blue	Br = Brown	G = Green	O = Orange	P = Pink
R = Red	V = Violet	W = White	Y = Yellow		

SYSTEM LOCATION



SYSTEM DIAGRAM



ABS TROUBLESHOOTING INFORMATION

SYSTEM DESCRIPTION

SUMMARY OF ABS PRE-START SELF-DIAGNOSIS SYSTEM

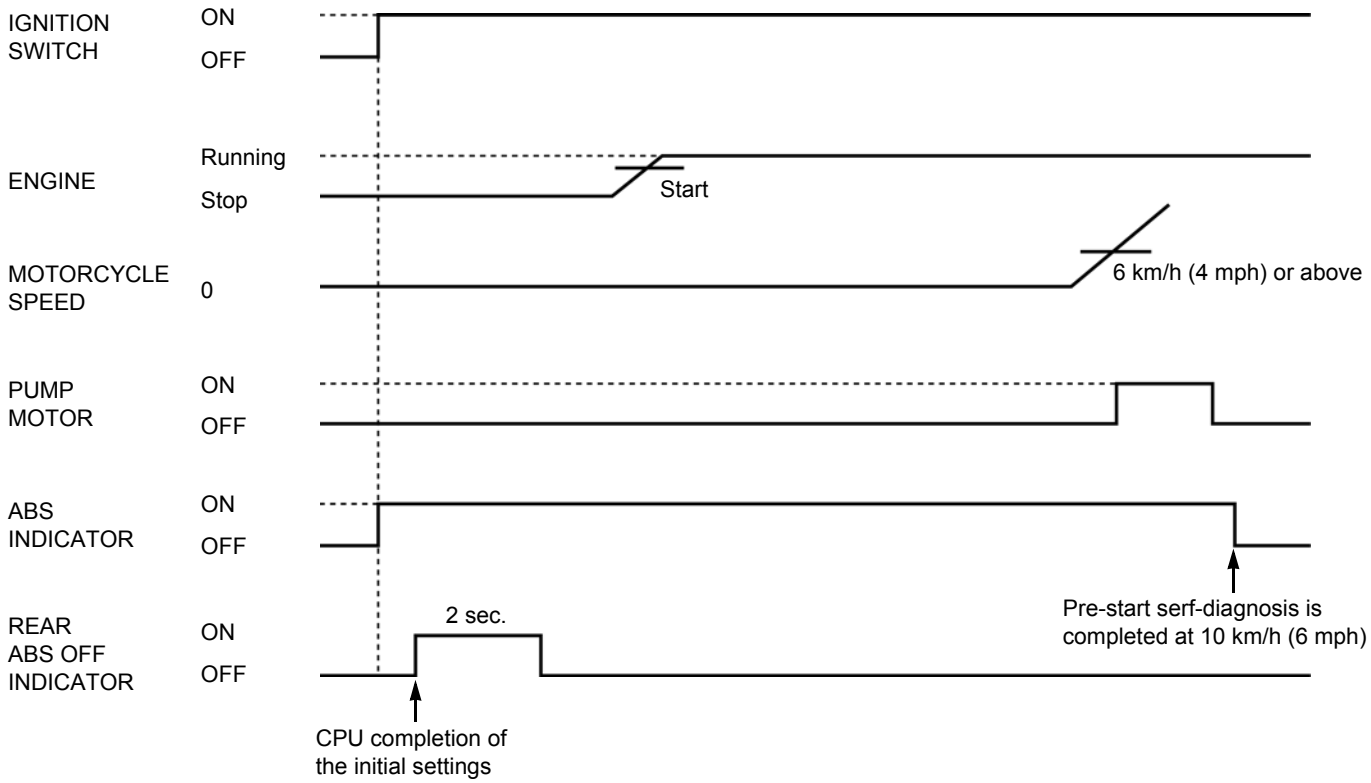
The ABS pre-start self-diagnosis system diagnoses the electrical system as well as the operating status of the modulator. When there is any abnormality, the problem and the associated part can be detected by reading the Diagnostic Trouble Code (DTC).

When the motorcycle is running, pulse signals generated at the front and rear wheel speed sensors are sent to the ABS control unit. When the motorcycle speed reaches approximately 6 km/h (4 mph), the ABS control unit operates the pump motor to check it. When the motorcycle speed reaches 10 km/h (6 mph), the ABS control unit turns off the ABS indicator if the system is normal and the pre-start self-diagnosis is completed.

If any problem is detected, the ABS indicator brinks or comes on and stays on to notify the rider of the problem.
The ordinary self-diagnosis is also made while the motorcycle is running after the pre-start diagnosis is completed. When the ABS indicator brinks or stays on, the cause of the problem can be identified by retrieving the DTC (page 20-6).

If the ABS indicators do not come on when the ignition switch is turned ON, or the indicator stays on after the pre-start self-diagnosis is completed although the ABS is normal, the indicator circuit may be faulty. Follow the troubleshooting (page 20-10).

Pre-start serf-diagnosis when the system is normal:



PRE-START SELF-DIAGNOSIS PROCEDURE (Daily check)

1. Turn the ignition switch ON and engine stop switch "".
2. Make sure the ABS indicator and rear ABS off indicator comes on.
3. After CPU initial settings completes, the rear ABS off indicator will go off after approximately 2 seconds if system is normal.
4. Start the engine.
5. Ride the motorcycle and increase the motorcycle speed to approximately 10 km/h (6 mph).
6. The ABS is normal if the ABS indicator goes off.

MCS INFORMATION

Refer to the PGM-FI system (page 4-6).

DTC READOUT

NOTE:

- The DTC is not erased by turning the ignition switch to OFF while the DTC is being output. Note that turning the ignition switch ON again does not indicate the DTC. To show the DTC again, repeat the DTC readout procedures from the beginning.
- Be sure to record the indicated DTC.
- After diagnostic troubleshooting, erase the DTC and perform the pre-start self-diagnosis procedure to be sure that there is no problem in the ABS (page 20-5).
- Do not apply the brake during DTC readout.

Connect the MCS to the DLC (page 4-6).

Read the DTC, stored data and follow the DTC index (page 20-8).

If the MCS is not available, perform the following.

Reading DTC with the ABS indicator

1. Turn the ignition switch OFF.

   Remove the main seat (page 2-4).

   Connect the SCS connector to the DLC (page 4-6).

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

   The ABS indicator should come on for 2 seconds (start signal), then goes off for 3.6 seconds and starts DTC indication.

   The DTC is indicated by the number of the times of the ABS indicator blinking.

   If the DTC is not stored, the ABS indicator stays on.

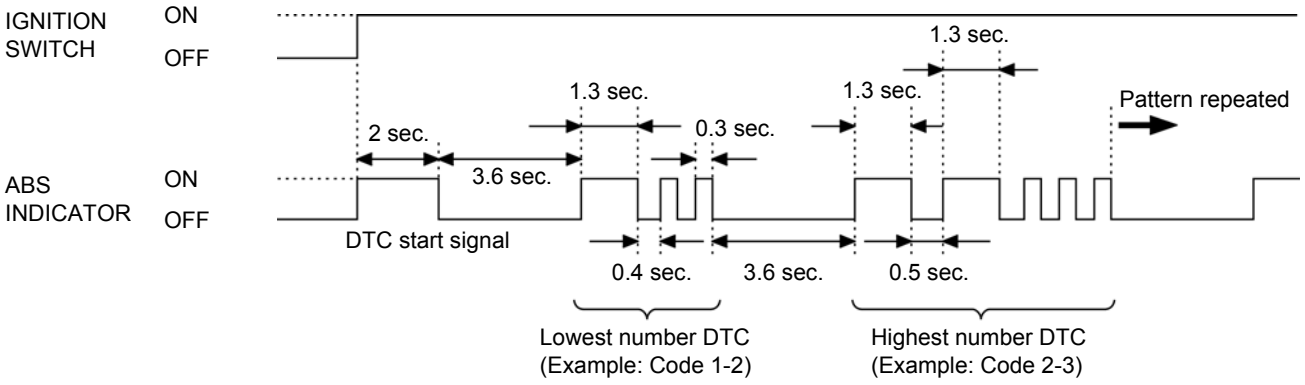
3. Turn the ignition switch OFF and disconnect the SCS connector.

   Install the removed parts in the reverse order of removal.

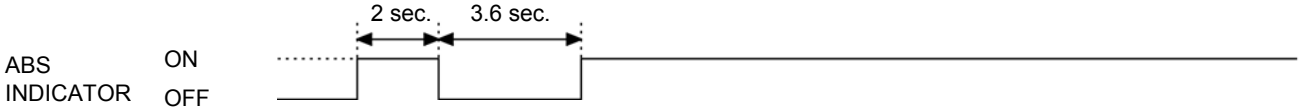
DTC INDICATION PATTERN

NOTE:

- The ABS indicator indicates the DTC by blinking a specified number of times.
  The indicator has two types of blinking, a long blink and short blink. The long blink lasts for 1.3 seconds, the short blink lasts for 0.3 seconds. For example, when one long blink is followed by two short blinks, the DTC is 1-2 (one long blink = 1 blink, plus two short blinks = 2 blinks).
- When the ABS control unit stores some DTCs, the ABS indicator shows the DTCs in the order from the lowest number to highest number. For example, when the ABS indicator indicates code 1-2, then indicates code 2-3, two failures have occurred.



When the DTC is not stored:



ERASING STORED DTC

NOTE:

- The stored DTC can not be erased by simply disconnecting the battery negative (–) cable.

Connect the MCS to the DLC (page 4-6).

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

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

How to erase the DTC without MCS

1. Connect the SCS connector to the DLC (page 4-6).
2. Turn the ignition switch ON and engine stop switch "" while squeezing either brake lever. The ABS indicator should come on for 2 seconds and go off.
3. Release the brake lever immediately after the ABS indicator goes off. The ABS indicator should come on.
4. Squeeze the brake lever immediately after the ABS indicator comes on. The ABS indicator should go off.
5. Release the brake lever immediately after the ABS indicator goes off.

   When the DTC is erased, the ABS indicator blinks 2 times and stays on.

   If the ABS indicator does not blink 2 times, the self-diagnostic memory has not been erased, so try again.
6. Turn the ignition switch OFF and disconnect the SCS connector.

   Install the removed parts in the reverse order of removal.

CIRCUIT INSPECTION

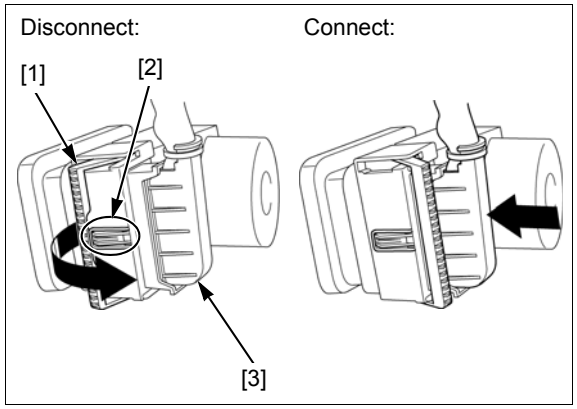
INSPECTION AT ABS MODULATOR CONNECTOR

Remove the ETC tray (page 2-11).

Turn the ignition switch OFF.

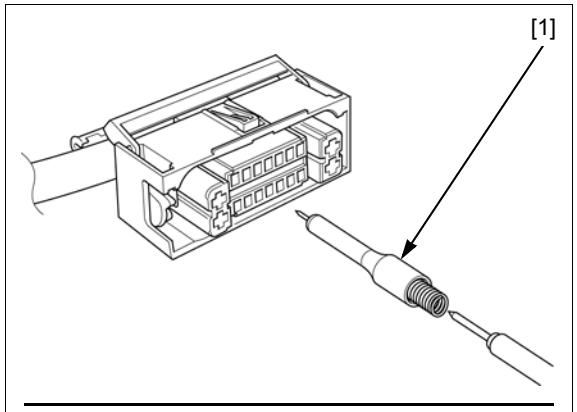
Disconnecting procedure:
Turn the lock lever [1] to this side while pressing the lock tab [2] to release it. Be sure the lock lever is turned all the way and disconnect the ABS modulator 18P (Black) connector [3].

Connecting procedure:
Be sure to seat the lock lever against the wire side of the connector fully. Connect the ABS modulator 18P (Black) connector by pressing it straight at the area as shown (arrow) until the lock tab clicks.
Make sure the connector is locked securely.

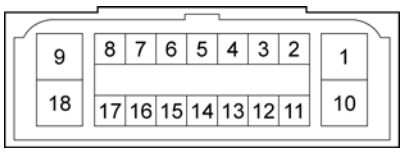


- Always clean around and keep any foreign material away from the connector before disconnecting it.
- A faulty ABS is often related to poorly connected or corroded connections. Check those connections before proceeding.
- In testing at ABS modulator 18P (Black) connector terminals (wire harness side; except No. 9 and No. 18 terminals), always use the test probe [1]. Insert the test probe into the connector terminal, then connect the digital multimeter probe to the test probe.

TOOL:
Test probe **07ZAJ-RDJA110**



TERMINAL LAYOUT:



(Terminal side of the wire harness)

DTC INDEX

NOTE:

- The ABS indicator might blink in the following cases. Correct the faulty part.
  – Incorrect tire pressure.
  – Tires not recommended for the motorcycle were installed (incorrect tire size).
  – Deformation of the wheel or tire.
- The ABS indicator might blink while riding under the following conditions. This is temporary failure. Be sure to erase the DTC (page 20-6).
  Then, test-ride the motorcycle above 10 km/h (6 mph) and check the DTC (page 20-6). Ask the rider for the riding conditions in detail when the motorcycle is brought in for inspection.
  Ask the rider for the riding conditions in detail when the motorcycle is brought in for inspection.
  – The motorcycle has continuously run bumpy roads.
  – The front wheel leaves the ground for a long time when riding (wheelie).
  – Only either the front or rear wheel rotates.
  – The ABS operates continuously.
  – The ABS control unit has been disrupted by an extremely powerful radio wave (electromagnetic interference).

DTC	Function failure	Detection		Symptom/Fail-safe function	Refer to
		A	B		
–	ABS indicator malfunction • ABS modulator voltage input line • Indicator related wires • Combination meter • ABS modulator • Sub fuse ABS MAIN 7.5 A			• ABS indicator never comes ON at all	20-10
				• ABS indicator stays ON at all	20-10
1-1	Front wheel speed sensor circuit malfunction • Wheel speed sensor or related wires	○	○	• Stops ABS operation	20-12
1-2	Front wheel speed sensor malfunction • Wheel speed sensor, pulser ring or related wires • Electromagnetic interference		○	• Stops ABS operation	20-12
1-3	Rear wheel speed sensor circuit malfunction • Wheel speed sensor or related wires	○	○	• Stops ABS operation	20-14
1-4	Rear wheel speed sensor malfunction • Wheel speed sensor, pulser ring or related wires • Electromagnetic interference		○	• Stops ABS operation	20-14
1-5	Front or rear wheel speed sensor circuit malfunction (short circuit) • Wheel speed sensor or related wires	○	○	• Stops ABS operation	20-15
2-1	Front pulser ring • Pulser ring or related wires		○	• Stops ABS operation	20-12
2-3	Rear pulser ring • Pulser ring or related wires		○	• Stops ABS operation	20-14
3-1 3-2 3-3 3-4	Solenoid valve malfunction (ABS modulator)	○	○	• Stops ABS operation	20-16
4-1	Front wheel lock • Riding condition		○	• Stops ABS operation	20-12
4-2	Front wheel lock (Wheelie) • Riding condition		○		
4-3	Rear wheel lock • Riding condition		○	• Stops ABS operation	20-14
5-1	Pump motor lock • Pump motor (ABS modulator) or related wires • Fuse ABS MAIN 30 A	○	○	• Stops ABS operation	20-17

DTC	Function failure	Detection		Symptom/Fail-safe function	Refer to
		A	B		
5-4	Power supply relay malfunction • Power supply relay (ABS modulator) or related wires • Fuse ABS MAIN 30 A	○	○	• Stops ABS operation	20-17
6-1	Power circuit under voltage • Input voltage (too low) • Sub fuse ABS MAIN 7.5 A	○	○	• Stops ABS operation	20-18
6-2	Power circuit over voltage • Input voltage (too high)	○	○	• Stops ABS operation	
7-1	Tire malfunction • Tire size		○	• Stops ABS operation	20-18
8-1	ABS control unit malfunction • ABS modulator	○	○	• Stops ABS operation	20-19
8-2	Rear ABS off indicator • Rear ABS off indicator or related wire	○	○	• Rear ABS off mode function does not work	20-19

(A) Pre-start self-diagnosis (page 20-5)

(B) Ordinary self-diagnosis: diagnoses while the motorcycle is running (after pre-start self-diagnosis)

ABS INDICATOR CIRCUIT TROUBLESHOOTING

ABS INDICATOR DOES NOT COME ON (when the ignition switch turned ON)

NOTE:

- Before starting this inspection, check the initial function of the combination meter (page 22-12).

1. Indicator Operation Inspection

Turn the ignition switch OFF.
Disconnect the ABS modulator 18P (Black) connector (page 20-7).
Turn the ignition switch ON and engine stop switch "".
Check the ABS indicator.

Does the ABS indicator come on?

YES – Faulty ABS modulator

NO – GO TO STEP 2.

2. Indicator Signal Line Short Circuit Inspection

Turn the ignition switch OFF.
Check for continuity between the wire harness side 18P (Black) connector [1] and ground.

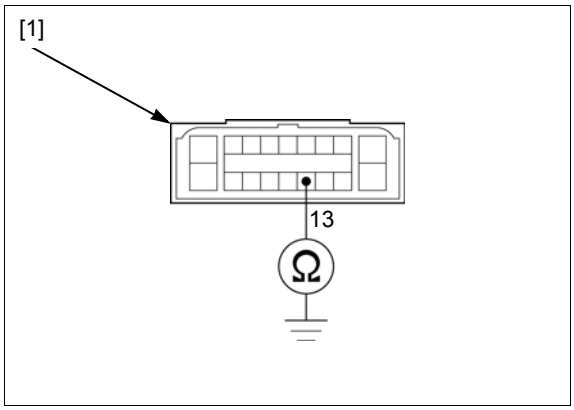
TOOL:
Test probe **07ZAJ-RDJA110**

CONNECTION: 13 – Ground

Is there continuity?

YES – Short circuit in the White/blue wire

NO – Faulty combination meter



ABS INDICATOR STAYS ON (Indicator does not go off when the motorcycle is running, but DTC is not stored)

1. Service Check Line Short Circuit Inspection

Turn the ignition switch OFF.
Disconnect the ABS modulator 18P (Black) connector (page 20-7).
Check for continuity between the wire harness side 18P (Black) connector [1] and ground.

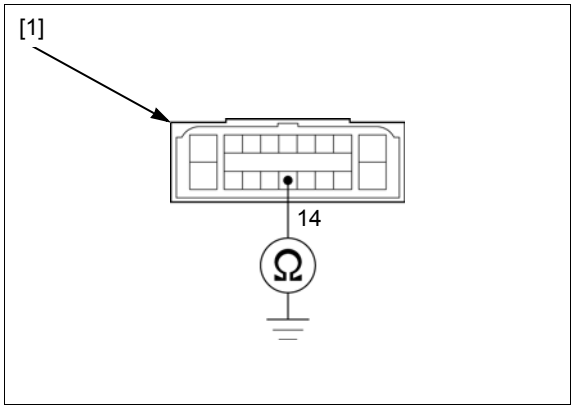
TOOL:
Test probe **07ZAJ-RDJA110**

CONNECTION: 14 – Ground

Is there continuity?

YES – Short circuit in the Gray/blue wire

NO – GO TO STEP 2.



2. Indicator Signal Line Open Circuit Inspection

Short the wire harness side 18P (Black) connector [1] to the ground with a jumper wire [2].

TOOL:
Test probe **07ZAJ-RDJA110**

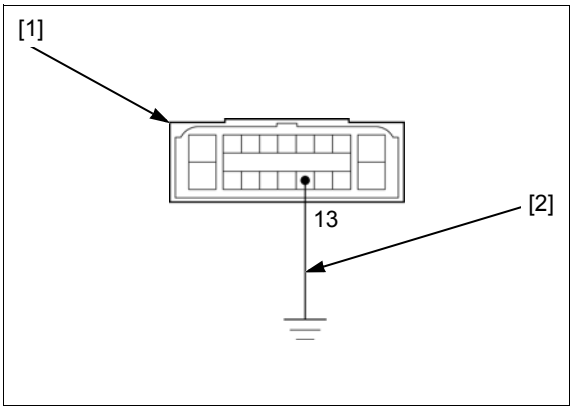
CONNECTION: 13 – Ground

Turn the ignition switch ON and engine stop switch "".
Check the ABS indicator.

Does it go off?

YES – GO TO STEP 3.

NO – • Open circuit in the White/blue wire
• Faulty combination meter (if the White/blue wire is OK)



3. Modulator Ground Line Open Circuit Inspection

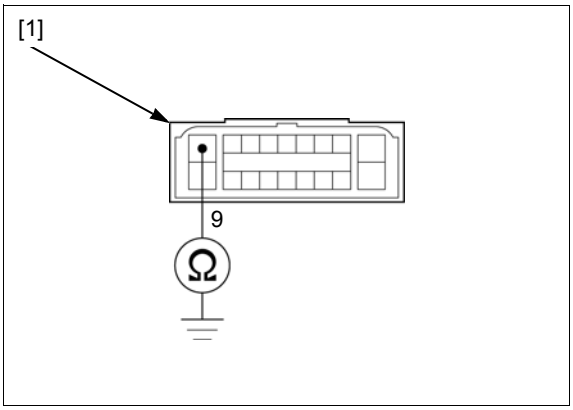
Turn the ignition switch OFF.
Check for continuity between the wire harness side 18P (Black) connector [1] and ground.

CONNECTION: 9 – Ground

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Green wire



4. Fuse Inspection

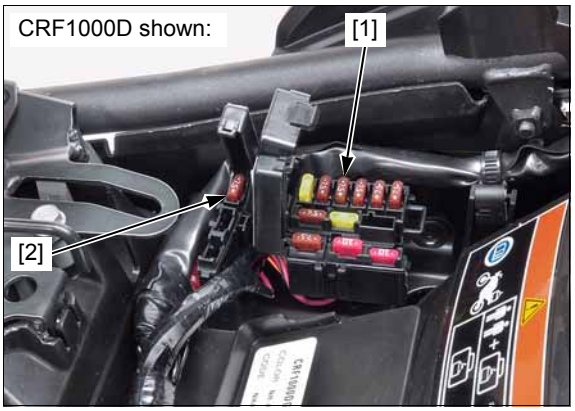
Remove the main seat (page 2-4).
Remove the fuse box cover and check for a blown sub fuse ABS MAIN 7.5 A.

– CRF1000A [1]
– CRF1000D [2]

Is the fuse blown?

YES – GO TO STEP 5.

NO – GO TO STEP 6.



5. Power Input Line Short Circuit Inspection

With the sub fuse ABS MAIN 7.5 A removed, check for continuity between the wire harness side 18P (Black) connector [1] and ground.

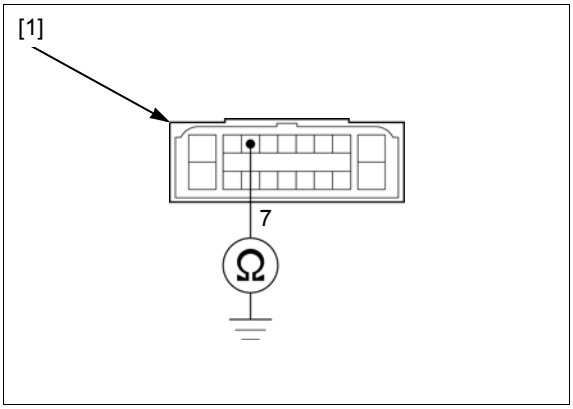
TOOL:
Test probe **07ZAJ-RDJA110**

CONNECTION: 7 – Ground

Is there continuity?

YES – Short circuit in Red/green wire

NO – Intermittent failure. Replace the sub fuse ABS MAIN 7.5 A with a new one and recheck.



6. Power Input Line Open Circuit Inspection

Install the sub fuse ABS MAIN 7.5 A.
Turn the ignition switch ON.
Measure the voltage between the wire harness side 18P (Black) connector [1] and ground.

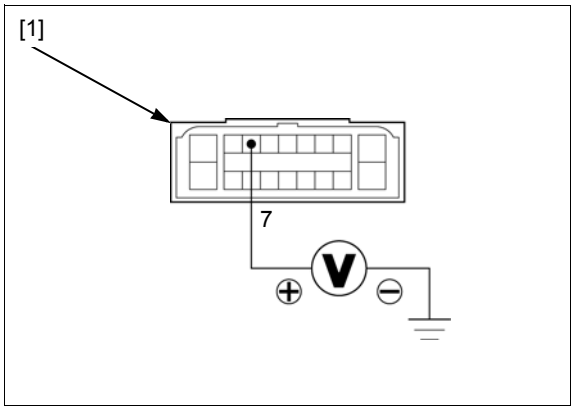
TOOL:
Test probe 07ZAJ-RDJA110

CONNECTION: 7 (+) – Ground (–)

Is there battery voltage?

YES – Faulty ABS modulator

NO – Open circuit in Red/green wire



DTC TROUBLESHOOTING

NOTE:
- Perform inspection with the ignition switch OFF, unless otherwise specified.
- All connector diagrams in the troubleshooting are viewed from the terminal side.
- When the ABS modulator assembly is detected to be faulty, recheck the wire harness and connector connections closely before replacing it.
- After diagnostic troubleshooting, erase the DTC (page 20-6).
  Then test-ride the motorcycle to check that the ABS indicator operates normally during pre-start self-diagnosis (page 20-5).

DTC 1-1, 1-2, 2-1, 4-1 or 4-2 (Front Wheel Speed Sensor Circuit/Front Wheel Speed Sensor/Front Pulser Ring/Front Wheel Lock)

NOTE:
- The ABS indicator might blink under unusual riding conditions (page 20-8). This is temporary failure.
  Erase the DTC (page 20-6).
  Then test-ride the motorcycle above 10 km/h (6 mph) to check that the ABS indicator operates normally (page 20-5).
- If DTC 4-1 is indicated, check the front brake for drag.

1. Front Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)

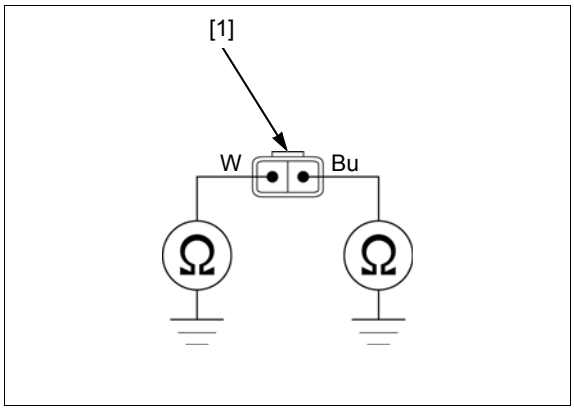
Turn the ignition switch OFF.
Disconnect the front wheel speed sensor 2P (Black) connector (page 20-20).
Check for continuity between each terminal of the sensor side 2P (Black) connector [1] and ground.

CONNECTION: White – Ground
Blue – Ground

Is there continuity?

YES – Faulty front wheel speed sensor

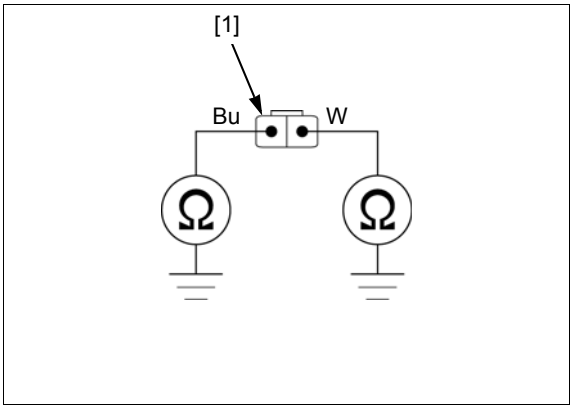
NO – GO TO STEP 2.



2. Front Wheel Speed Sensor Line Short Circuit Inspection

Disconnect the ABS modulator 18P (Black) connector (page 20-7).
Check for continuity between each terminal of the wire harness side 2P (Black) connector [1] and ground.

CONNECTION: White – Ground
Blue – Ground



Is there continuity?

YES – • Short circuit in the White wire
• Short circuit in the Blue wire

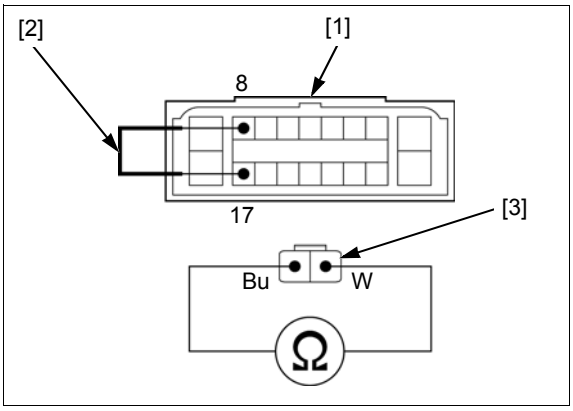
NO – GO TO STEP 3.

3. Front Wheel Speed Sensor Line Open Circuit Inspection

Short the wire harness side 18P (Black) connector [1] terminals with a jumper wire [2].

TOOL:
Test probe **07ZAJ-RDJA110**

CONNECTION: 8 – 17



Check for continuity at the wire harness side 2P (Black) connector [3].

CONNECTION: Blue – White

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Blue or White wire

4. Failure Reproduction with a New Speed Sensor

Replace the front wheel speed sensor with a new one (page 20-20).
Connect the 18P (Black) and 2P (Black) connectors.
Erase the DTC (page 20-6).
Test-ride the motorcycle above 10 km/h (6 mph).
Recheck the DTC (page 20-6).

Is the DTC 1-1, 1-2, 2-1, 4-1 or 4-2 indicated?

YES – Faulty ABS modulator

NO – Faulty original front wheel speed sensor

DTC 1-3, 1-4, 2-3, or 4-3 (Rear Wheel Speed Sensor Circuit/Rear Wheel Speed Sensor/Rear Pulser Ring/Rear Wheel Lock)

NOTE:

- The ABS indicator might blink under unusual riding conditions (page 20-8). This is temporary failure.
  Erase the DTC (page 20-6).
  Then test-ride the motorcycle above 10 km/h (6 mph) to check that the ABS indicator operates normally (page 20-5).
- If DTC 4-3 is indicated, check the rear brake for drag.

1. Rear Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)

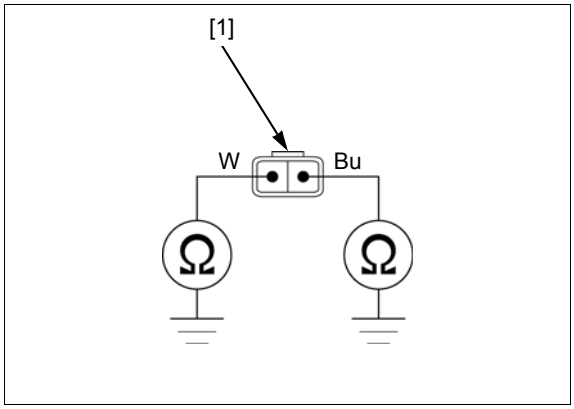
Turn the ignition switch OFF.
Disconnect the rear wheel speed sensor 2P (Black) connector (page 20-22).
Check for continuity between each terminal of the sensor side 2P (Black) connector [1] and ground.

CONNECTION: White – Ground
Blue – Ground

Is there continuity?

YES – Faulty rear wheel speed sensor

NO – GO TO STEP 2.



2. Rear Wheel Speed Sensor Line Short Circuit Inspection

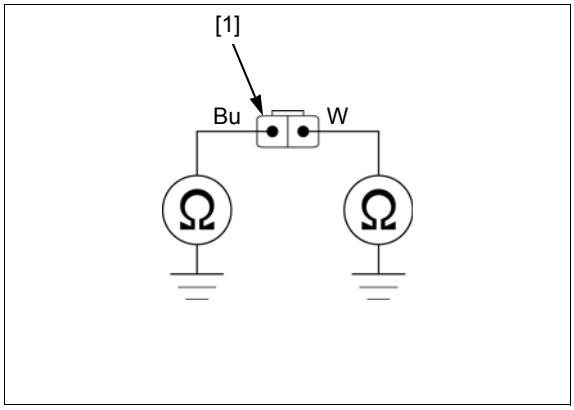
Check for continuity between each terminal of the wire harness side 2P (Black) connector [1] and ground.

CONNECTION: White – Ground
Blue – Ground

Is there continuity?

YES – • Short circuit in the White wire
• Short circuit in the Blue wire

NO – GO TO STEP 3.



3. Rear Wheel Speed Sensor Line Open Circuit Inspection

Short the wire harness side 18P (Black) connector [1] terminals with a jumper wire [2].

TOOL:
Test probe **07ZAJ-RDJA110**

CONNECTION: 6 – 15

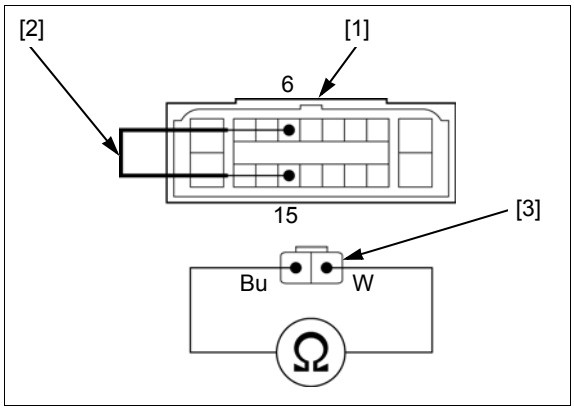
Check for continuity at the wire harness side 2P (Black) connector [3].

CONNECTION: Blue – White

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Blue or White wire



4. Failure Reproduction with a New Speed Sensor

Replace the rear wheel speed sensor with a new one (page 20-22).
Connect the 18P (Black) and 2P (Black) connectors.
Erase the DTC (page 20-6).
Test-ride the motorcycle above 10 km/h (6 mph).
Recheck the DTC (page 20-6).

Is the DTC 1-3, 1-4, 2-3, or 4-3 indicated?

YES – Faulty ABS modulator

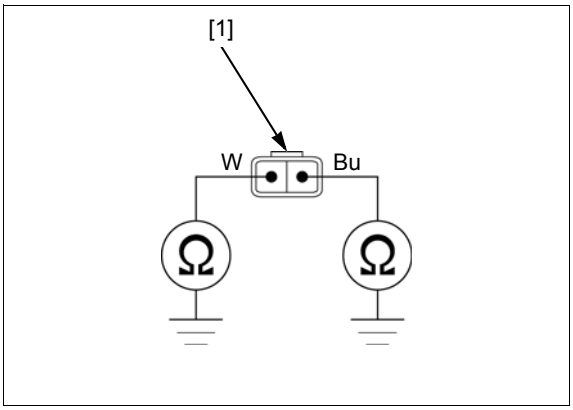
NO – Faulty original rear wheel speed sensor

DTC 1-5 (Front or Rear Wheel Speed Sensor Circuit: Short)

1. Front Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)

Turn the ignition switch OFF.
Disconnect the front wheel speed sensor 2P (Black) connector (page 20-20).
Check for continuity between each terminal of the sensor side 2P (Black) connector [1] and ground.

CONNECTION: White – Ground
Blue – Ground



Is there continuity?

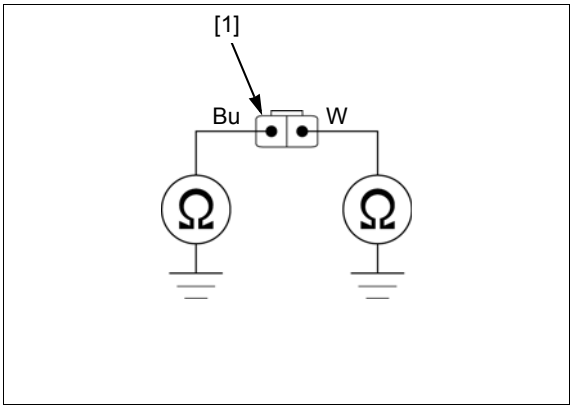
YES – Faulty front wheel speed sensor

NO – GO TO STEP 2.

2. Front Wheel Speed Sensor Line Short Circuit Inspection

Disconnect the ABS modulator 18P (Black) connector (page 20-7).
Check for continuity between each terminal of the wire harness side 2P (Black) connector [1] and ground.

CONNECTION: White – Ground
Blue – Ground



Is there continuity?

YES – • Short circuit in the White wire
• Short circuit in the Blue wire

NO – GO TO STEP 3.

3. Rear Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)

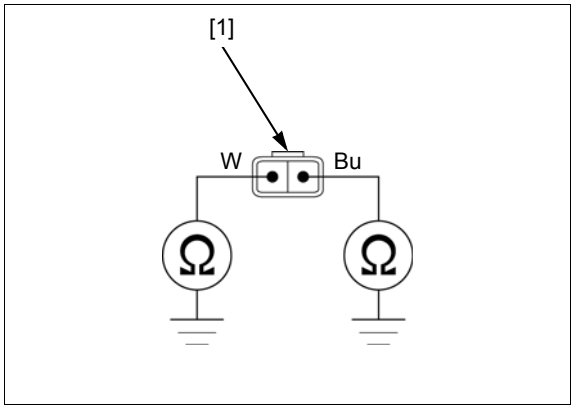
Disconnect the rear wheel speed sensor 2P (Black) connector (page 20-22).
Check for continuity between each terminal of the sensor side 2P (Black) connector [1] and ground.

CONNECTION: White – Ground
Blue – Ground

Is there continuity?

YES – Faulty rear wheel speed sensor

NO – GO TO STEP 4.



4. Rear Wheel Speed Sensor Line Short Circuit Inspection

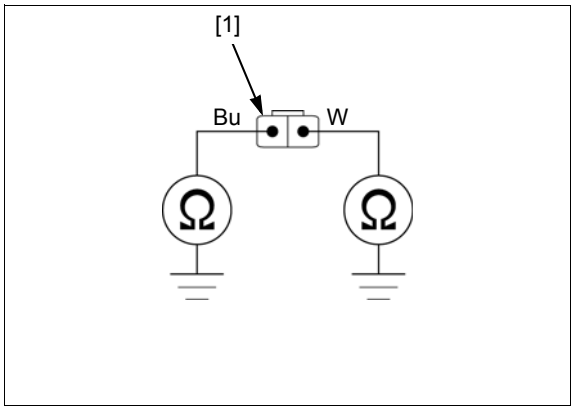
Check for continuity between each terminal of the wire harness side 2P (Black) connector [1] and ground.

CONNECTION: White – Ground
Blue – Ground

Is there continuity?

YES – • Short circuit in the White wire
• Short circuit in the Blue wire

NO – Faulty ABS modulator



DTC 3-1, 3-2, 3-3 or 3-4 (Solenoid Valve)

1. Failure Reproduction

Erase the DTC (page 20-6).
Test-ride the motorcycle above 10 km/h (6 mph).
Recheck the DTC (page 20-6).

Is the DTC 3-1, 3-2, 3-3 or 3-4 indicated?

YES – Faulty ABS modulator

NO – Solenoid valve is normal (intermittent failure).

DTC 5-1 or 5-4 (Pump Motor Lock/ Power Supply Relay)

1. Fuse Inspection

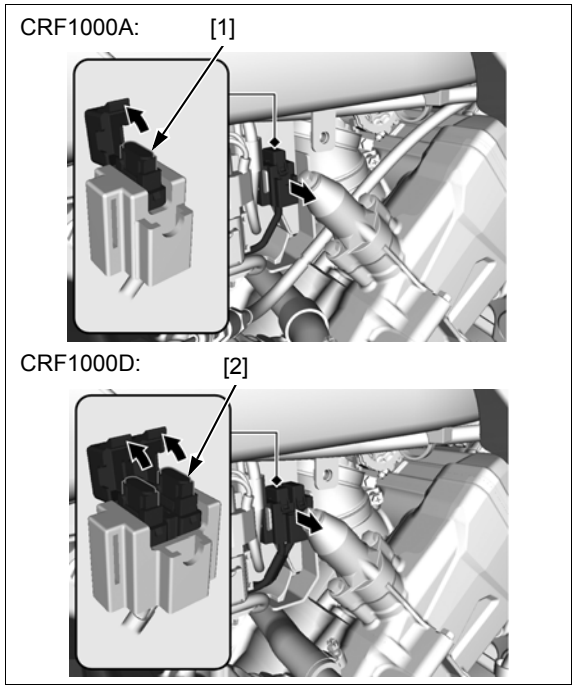
Turn the ignition switch OFF.
Remove the battery box cover (page 6-7).
Remove the fuse case cover and check for a blown fuse ABS MAIN 30 A.

– CRF1000A [1]
– CRF1000D [2]

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 3.



2. Motor Power Input Line Short Circuit Inspection

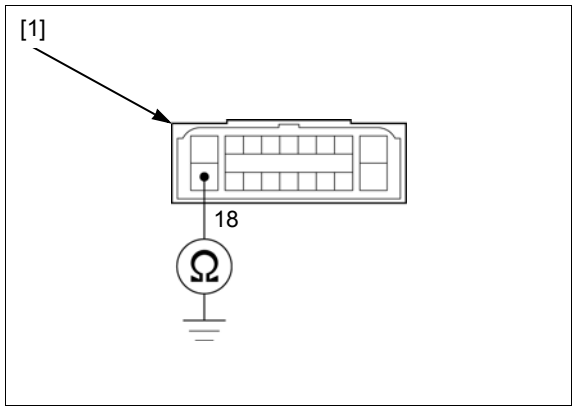
Disconnect the ABS modulator 18P (Black) connector (page 20-7).
With the fuse ABS MAIN 30 A removed, check for continuity between the wire harness side 18P (Black) connector [1] and ground.

CONNECTION: 18 – Ground

Is there continuity?

YES – Short circuit in the Red/yellow wire between the ABS fuse case and 18P (Black) connector

NO – Intermittent failure. Replace the fuse ABS MAIN 30 A with a new one and recheck.



3. Motor Power Input Line Open Circuit Inspection

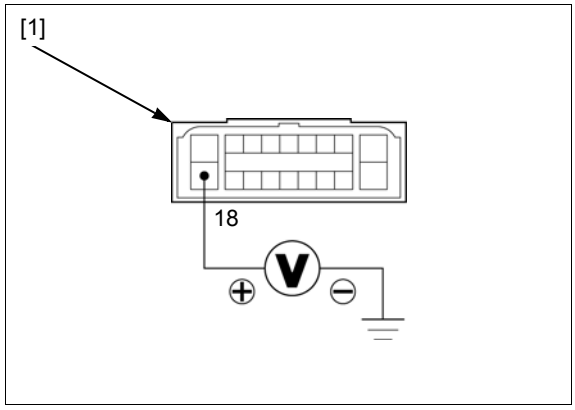
Install the fuse ABS MAIN 30 A.
Disconnect the ABS modulator 18P (Black) connector (page 20-7).
Measure the voltage between the wire harness side 18P (Black) connector [1] and ground.

CONNECTION: 18 (+) – Ground (–)

Is there battery voltage?

YES – GO TO STEP 4.

NO – Open circuit in the Black or Red/yellow wire between the battery and 18P (Black) connector



4. Failure Reproduction

Turn the ignition switch OFF.
Connect the 18P (Black) connector.
Erase the DTC (page 20-6).
Test-ride the motorcycle above 10 km/h (6 mph).
Recheck the DTC (page 20-6).

Is the DTC 5-1 or 5-4 indicated?

YES – Faulty ABS modulator

NO – Pump moor and poser supply relay is normal (intermittent failure)

DTC 6-1 or 6-2 (Power Circuit)

1. Input Voltage Inspection

Inspect the battery voltage (page 21-6).

Is the battery voltage normal?

YES – GO TO STEP 2.

NO – Replace the battery (page 21-5).

2. Charging Voltage Inspection

Inspect the battery charging voltage (page 21-8).

Is the voltage above 15.5 V?

YES – Faulty regulator/rectifier

NO – GO TO STEP 3.

3. Failure Reproduction

Erase the DTC (page 20-6).
Test-ride the motorcycle above 10 km/h (6 mph).
Recheck the DTC (page 20-6).

Is the DTC 6-1 or 6-2 indicated?

YES – Faulty ABS modulator

NO – Power circuit is normal (intermittent failure)

DTC 7-1 (Tire Size)

NOTE:

- Check the following and correct the faulty part.
  – Incorrect tire pressure
  – Tires not recommended for the motorcycle were installed (incorrect tire size).
  – Deformation of the wheel or tire

1. Failure Reproduction

If the above items are normal, recheck the DTC:
Erase the DTC (page 20-6).
Test-ride the motorcycle above 10 km/h (6 mph).
Recheck the DTC (page 20-6).

Is the DTC 7-1 indicated?

YES – Faulty ABS modulator

NO – Tire size is normal (intermittent failure)

DTC 8-1 (ABS Control Unit)

1. Failure Reproduction

Erase the DTC (page 20-6).
Test-ride the motorcycle above 10 km/h (6 mph).
Recheck the DTC (page 20-6).

Is the DTC 8-1 indicated?

YES – Faulty ABS modulator

NO – ABS control unit is normal (intermittent failure)

DTC 8-2 (Rear ABS Off Indicator)

1. Rear ABS Off Indicator Inspection 1

Turn the ignition switch OFF.
Disconnect the ABS modulator 18P (Black) connector (page 20-7).
Turn the ignition switch ON and check the rear ABS off indicator.

Is the rear ABS off indicator indicated?

YES – GO TO STEP 2.

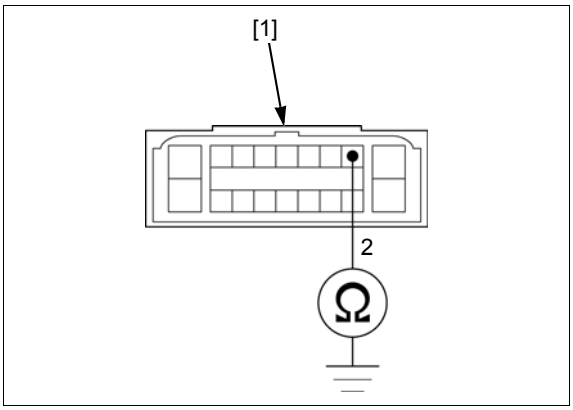
NO – GO TO STEP 3.

2. Rear ABS Off Indicator Line Short Circuit Inspection

Turn the ignition switch OFF.
Disconnect the combination meter 32P (Gray) connector (page 22-12).
Check tor continuity between the wire harness side 18P (Black) [1] connector and ground

TOOL:
Test probe **07ZAJ-RDJA110**

CONNECTION: 2 – Ground



Is there continuity?

YES – Short circuit in the White/green wire

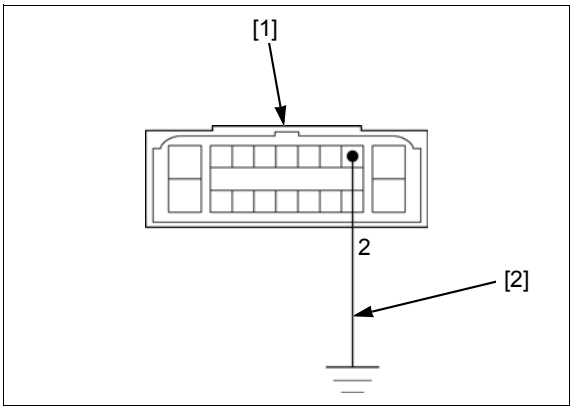
NO – Replace the combination meter with a new one and recheck.

3. Rear ABS Off Indicator Inspection 2

Ground the wire harness side 18P (Black) connector [1] with a jumper wire [2].

TOOL:
Test probe **07ZAJ-RDJA110**

CONNECTION: 2 – Ground



Check the rear ABS off indicator.

Is the rear ABS off indicator off mode indicated?

YES – GO TO STEP 5.

NO – GO TO STEP 4.

4. Rear ABS Off Indicator Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the combination meter 32P (Gray) connector (page 22-12).
Check tor continuity between the wire harness side 18P (Black) [1] and 32P (Gray) [2] connectors.

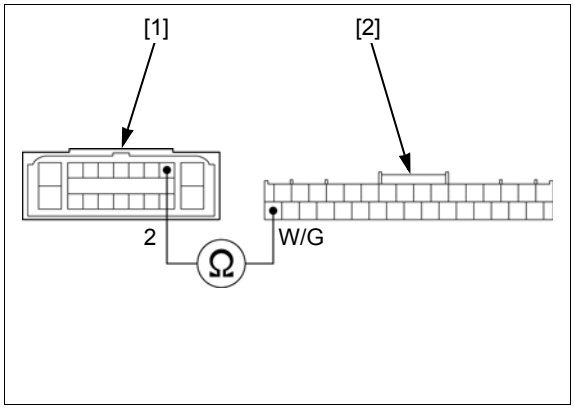
TOOL:
Test probe **07ZAJ-RDJA110**

CONNECTION: 2 – White/Green

Is there continuity?

YES – Replace the combination meter with a new one and recheck.

NO – Open circuit in the White/green wire



5. Failure Reproduction

Erase the DTC (page 20-6).
Recheck the DTC (page 20-6).

Is the DTC 8-2 indicated?

YES – Faulty ABS modulator

NO – ABS control unit is normal (intermittent failure)

WHEEL SPEED SENSOR

WHEEL SPEED SENSOR REPLACEMENT

NOTE:

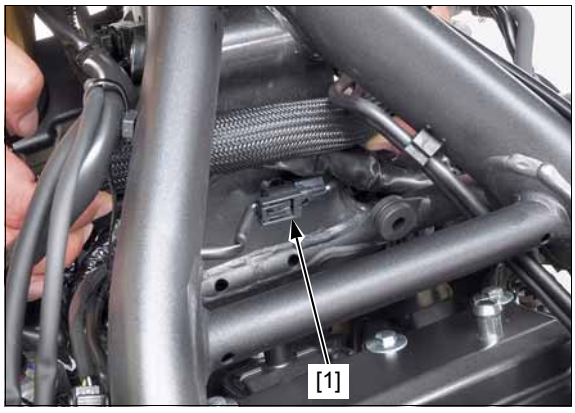
Refer to procedure for the pulser ring removal/ installation.

– Front pulser ring (page 17-12)
– Rear pulser ring (page 18-5)

FRONT WHEEL SPEED SENSOR REMOVAL/ INSTALLATION

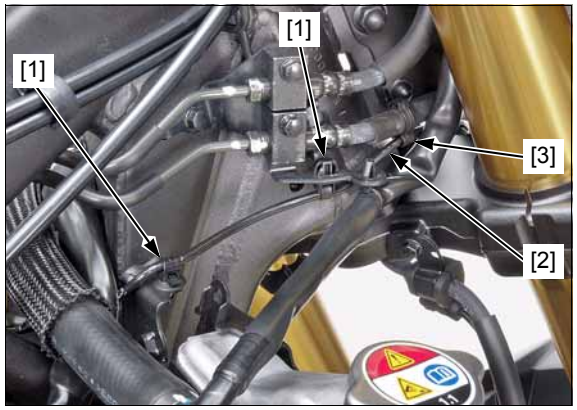
Remove the front fender (page 2-9).
Remove the ignition coil tray (page 5-9).

Disconnect the front wheel speed sensor 2P (Black) connector [1] from the clip and disconnect it.



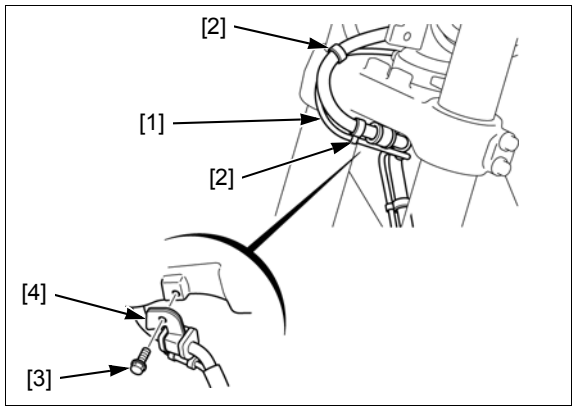
Release the wire clips [1].

Release the sensor wire [2] from the clamp [3].



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

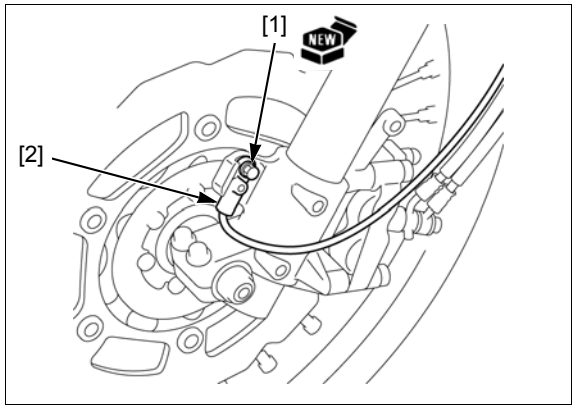
Remove the bolt [3] and release the sensor wire from the brake hose clamp [4].



Remove the bolt [1] and front wheel speed sensor [2].

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.



NOTE:

- Route the hose and wire properly (page 1-26).
- Always replace the front wheel speed sensor bolt with a new one.
- Check the clearance gap between the sensor bracket and pulser ring is 0.40 – 1.15 mm (0.016 – 0.045 in).
- The clearance gap cannot be adjusted.
  If it is not within specification, check related part for deformation, looseness, or damage.

TORQUE:

Front brake hose clamp mounting bolt:
10 N·m (1.0 kgf·m, 7 lbf·ft)

Front wheel speed sensor mounting bolt:
10 N·m (1.0 kgf·m, 7 lbf·ft)

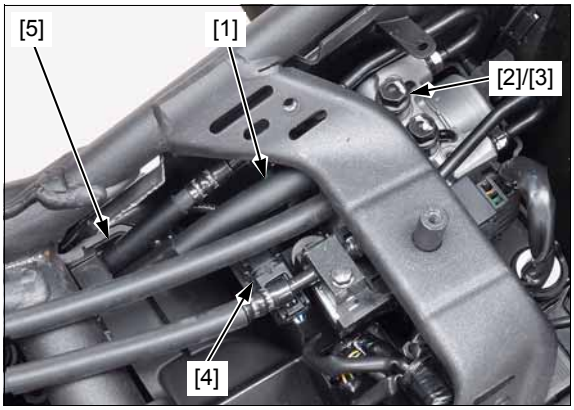
REAR WHEEL SPEED SENSOR REMOVAL

Drain the brake fluid from the brake hydraulic system (page 19-6)
Remove the rear wheel (page 18-4).

Disconnect the rear brake hose B [1] from the ABS modulator by removing the oil bolt [2] and sealing washers [3].

Disconnect the rear wheel speed sensor 2P (Black) connector [4].

Release the rear brake hose B and speed sensor wire through the hole [5] of rear fender B.



NOTICE

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

Release the wire clip [1].

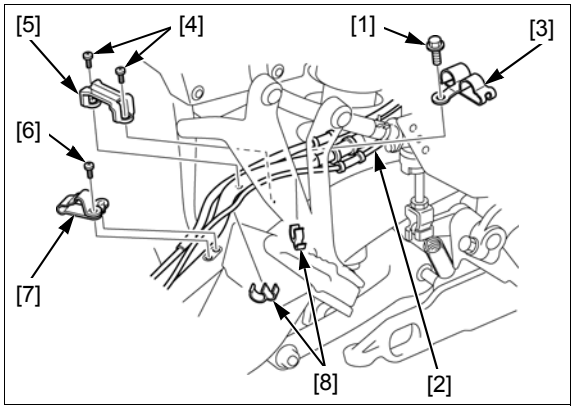


Remove the bolt [1] and release the sensor wire [2] from the brake hose clamp [3].

Remove the screws [4] and brake hose guide [5].

Remove the screw [6] and release the sensor wire from the brake hose clamp [7].

Remove the clips [8].

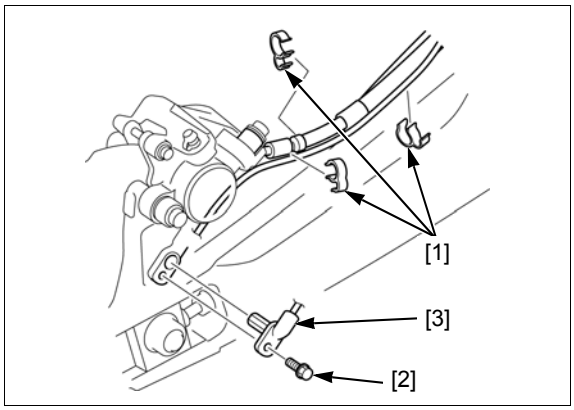


Remove the clips [1].

Release the rear brake bracket from the swingarm.

Remove the bolt [2] and rear wheel speed sensor [3].

Clean around the mounting area of the caliper bracket thoroughly and be sure that no foreign material is allowed to enter the mounting hole.



REAR WHEEL SPEED SENSOR INSTALLATION

NOTE:

- Route the hose, cable, and wire properly (page 1-26).

Install rear wheel speed sensor [1] and a new bolt [2]. Tighten the bolt to the specified torque.

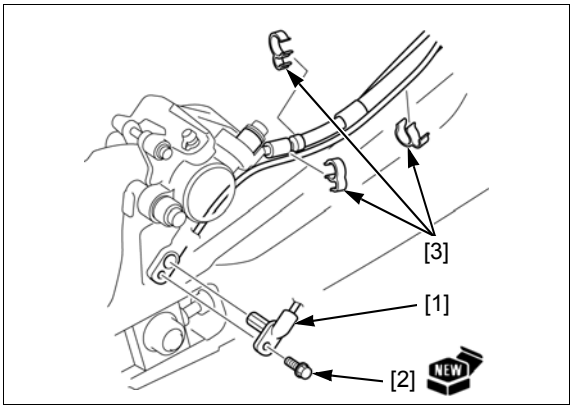
TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the rear brake bracket on the swingarm.

Install the clamps [3].

NOTE:

- Check the clearance gap between the sensor bracket and pulser ring is 0.40 – 1.06 mm (0.016 – 0.042 in).
- The clearance gap cannot be adjusted.
  If it is not within specification, check related part for deformation, looseness, or damage.



Clamp the sensor wire [1] with the brake hose clamps.

Install brake hose clamp [2] and a new screw [3] with the sensor wire and tighten the screw to the specified torque.

TORQUE: 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)

Install brake hose guide [4] and new screws [5] and tighten the screws to the specified torque.

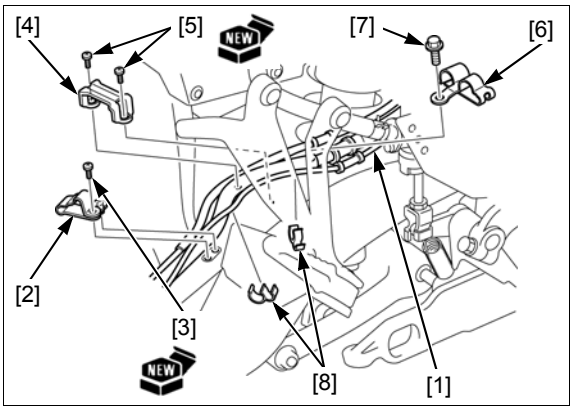
TORQUE: 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)

Install the brake hose clamp [6] with the sensor wire and bolt [7] and tighten the bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the wire clips [8].

Install the wire clip [1].





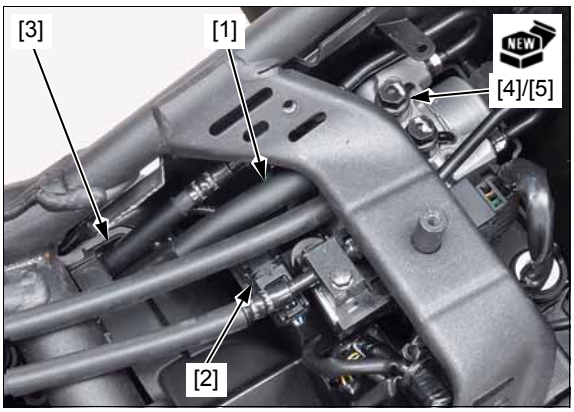
Install the rear brake hose B [1] and rear wheel speed sensor 2P (Black) connector [2] through the hole [3] of rear fender B.

Connect the 2P (Black) connector.

Install new sealing washers [4], oil bolt [5], and rear brake hose B and tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Install the rear wheel (page 18-4).
Fill brake fluid and bleed air from the brake hydraulic system (page 19-7)



ABS MODULATOR

REMOVAL/INSTALLATION

NOTICE

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

NOTE:

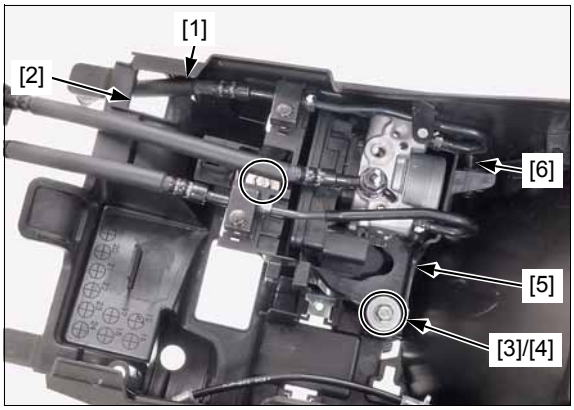
- When removing the oil bolt, cover the end of the brake hose to prevent contamination.
- Be careful not to bend or damage the brake pipes during assembly or removal.

Remove the rear fender B (page 2-13).

Release the rear brake hose A [1] through the hole [2] of rear fender B.

Remove the bolts [3] and washers [4].

Remove the ABS modulator assembly [5] by releasing its grommet from the rear fender boss [6].



Remove the following:

– Bolts [1]
– Brake pipe joint nuts (modulator side) [2]
– Front brake hose B/front brake pipe B [3]
– Rear brake hose A/rear brake pipe [4]
– Oil bolt [5] and sealing washers [6]
– Front brake hose C [7]

Remove the following from the modulator tray [8]:

– Bolts [9]
– ABS modulator [10]
– Collars [11]
– Grommets [12]

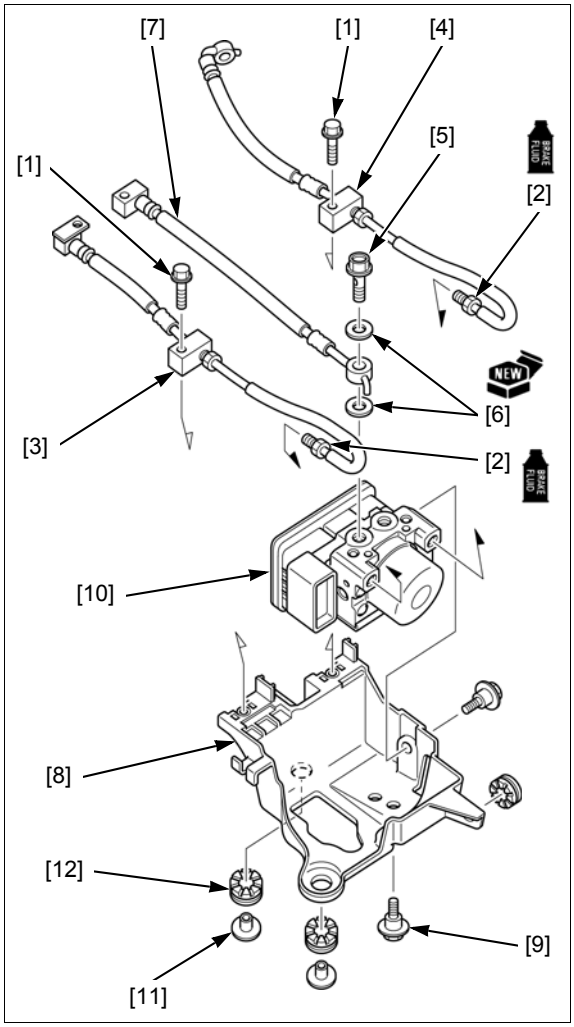
Installation is in the reverse order of removal.

NOTE:

- Apply brake fluid to the joint nut threads.
- Replace the sealing washers with new ones.

TORQUE:

Brake hose oil bolt:
34 N·m (3.5 kgf·m, 25 lbf·ft)
Brake pipe joint nut:
14 N·m (1.4 kgf·m, 10 lbf·ft)



21. BATTERY/CHARGING SYSTEM

SERVICE INFORMATION ····· 21-2

TROUBLESHOOTING ····· 21-3

SYSTEM LOCATION ····· 21-4

SYSTEM DIAGRAM ····· 21-4

BATTERY ····· 21-5

CHARGING SYSTEM INSPECTION ····· 21-7

REGULATOR/RECTIFIER ····· 21-8

ALTERNATOR CHARGING COIL ····· 21-9

SERVICE INFORMATION

GENERAL

⚠WARNING

- The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.
- The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.
  – If electrolyte gets on your skin, flush with water.
  – If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician immediately.
- Electrolyte is poisonous.
  – If swallowed, drink large quantities of water or milk and call your local Poison Control Center or call a physician immediately.

NOTICE

- *Always turn OFF the ignition switch before disconnecting any electrical component.*
- *Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.*

- For extended storage, remove the battery, give it a full charge, and store it in a cool, dry space. For maximum service life, charge the stored battery every two weeks or keep it connected to a battery tender.
- For a battery remaining in a stored motorcycle, disconnect the battery negative (–) cable from the battery terminal.
- The maintenance free (MF) battery must be replaced when it reaches the end of its service life.
- The battery can be damaged if overcharged or undercharged, or if left to discharge for long period. These same conditions contribute to shortening the "life span" of the battery. Even under normal use, the performance of the battery deteriorates after 2 – 3 years.
- Battery voltage may recover after battery charging, but under heavy load, the battery voltage will drop quickly and eventually die out. For this reason, the charging system is often suspected as the problem. Battery overcharge often results from problems in the battery itself, which may appear to be an overcharging symptom. If one of the battery cells is shorted and battery voltage does not increase, the regulator/rectifier supplies excess voltage to the battery. Under these conditions, the electrolyte level goes down quickly.
- Before troubleshooting the charging system, check for proper use and maintenance of the battery. Check if the battery is frequently under heavy load, such as having the headlight and taillight ON for long periods of time without riding the motorcycle.
- The battery will self-discharge when the motorcycle is not in use. For this reason, charge the battery every two weeks to prevent sulfation from occurring.
- When checking the charging system, always follow the steps in the troubleshooting flow chart (page 21-3).
- For alternator service (page 11-2).

BATTERY CHARGING

- Turn power ON/OFF at the charger, not at the battery terminal.
- For battery charging, do not exceed the charging current and time specified on the battery. Using excessive current or extending the charging time may damage the battery.
- Quick charging should only be done in an emergency; slow charging is preferred.

BATTERY TESTING

Refer to the battery tester's Operation Manual for the recommended battery testing procedure.
The recommended battery tester puts a "load" on the battery so the actual battery condition of the load can be measured.

RECOMMENDED BATTERY TESTER: BM-210 or BATTERY MATE or equivalent

TROUBLESHOOTING

BATTERY IS DAMAGED OR WEAK

1. BATTERY TEST

Remove the battery (page 21-5).

Check the battery condition using the recommended battery tester.

RECOMMENDED BATTERY TESTER: BM-210 or BATTERY MATE or equivalent

Is the battery good condition?

YES – GO TO STEP 2.

NO – Faulty battery

2. CURRENT LEAKAGE TEST

Install the battery (page 21-5).

Check the battery current leakage test (page 21-7).

Is the current leakage below 0.66 mA?

YES – GO TO STEP 3.

NO – GO TO STEP 6.

3. CHARGING VOLTAGE INSPECTION

Measure and record the battery voltage using a digital multimeter (page 21-7).

Start the engine.

Measure the charging voltage (page 21-8).

Compare the measurement to result 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 4.

4. REGULATOR/RECTIFIER SYSTEM INSPECTION

Check the voltage and resistance at the regulator/rectifier connector (page 21-8).

Are the results of checked voltage and resistance correct?

YES – GO TO STEP 5.

NO –
- Open circuit in related wire
- Loose or poor contacts of related terminal
- Shorted wire harness

5. ALTERNATOR CHARGING COIL INSPECTION

Check the alternator charging coil (page 21-9).

Is the alternator charging coil resistance within 0.1 – 1.0 Ω (20°C/68°F)?

YES – Faulty regulator/rectifier

NO – Faulty charging coil

6. CURRENT LEAKAGE TEST WITHOUT REGULATOR/RECTIFIER CONNECTOR

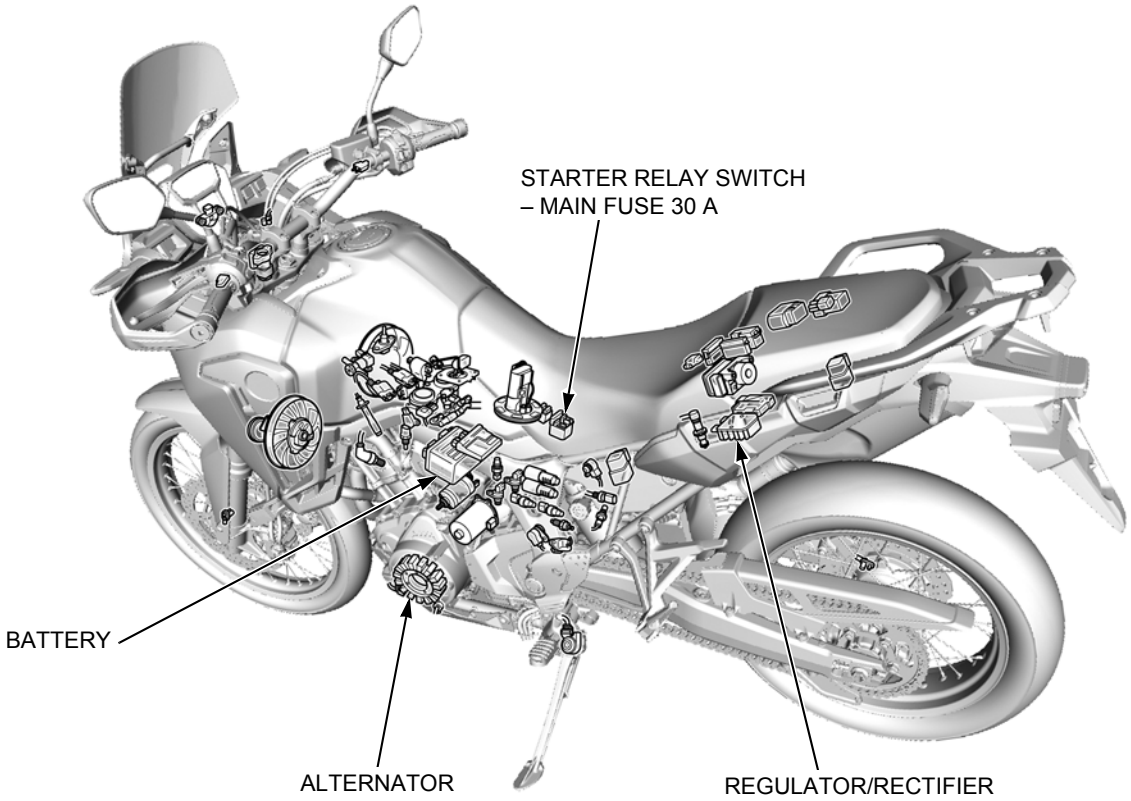
Disconnect the regulator/rectifier 3P (Black) connector and recheck the battery current leakage.

Is the current leakage below 0.66 mA?

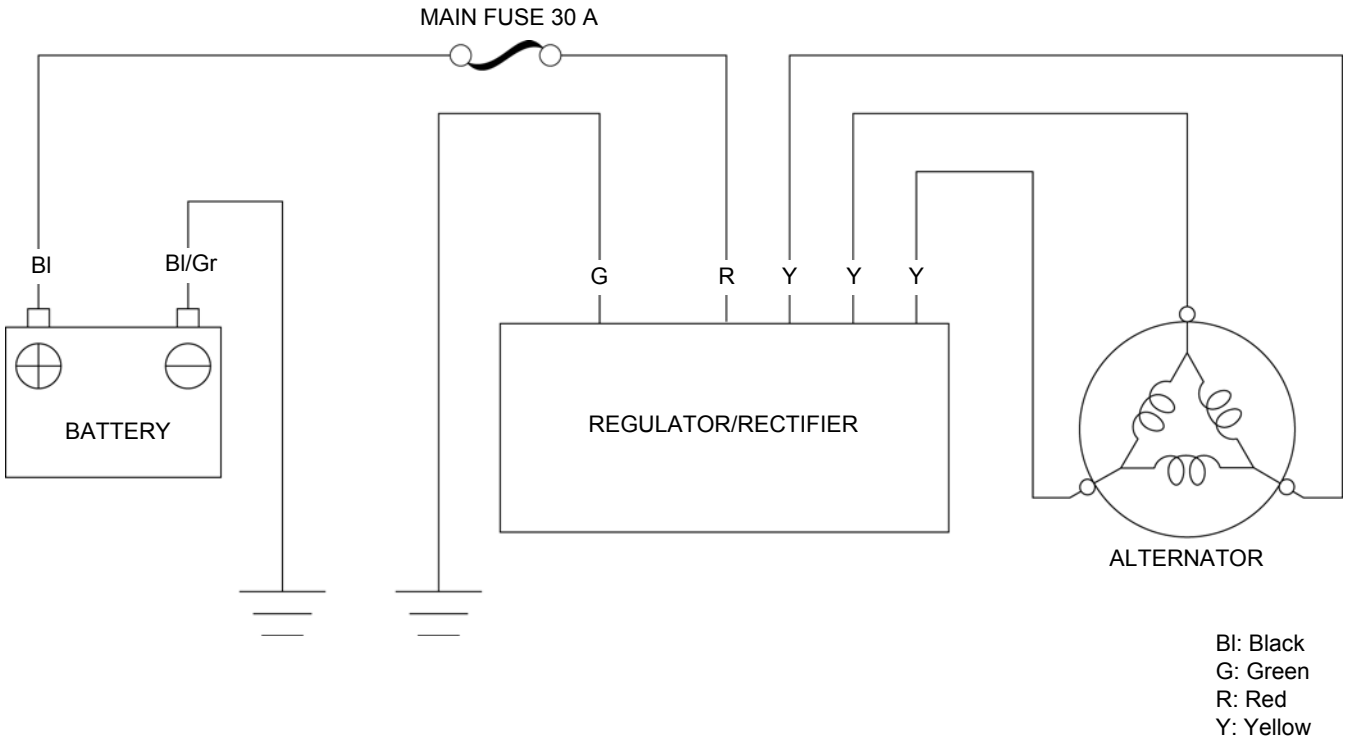
YES – Faulty regulator/rectifier

NO –
- Shorted wire harness
- Faulty ignition switch

SYSTEM LOCATION



SYSTEM DIAGRAM



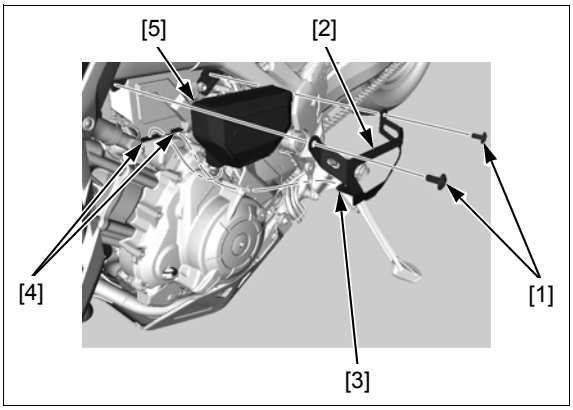
BATTERY

BATTERY REMOVAL/INSTALLATION

Remove the bolts [1].

Remove the tool box band [2] by releasing tab [3] from the guide [4].

Remove the tool box [5].

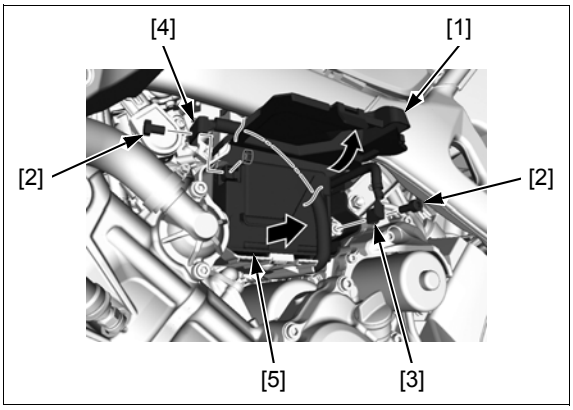


Always turn the ignition switch OFF before removing the battery.

Open the battery box lid [1].

Remove the bolts [2] and disconnect the negative (-) ground terminal [3] first.
Then remove the bolt [4] and disconnect the positive (+) terminal [5].

Remove the battery case [6] by pulling it out.



Remove the bolt [1] and battery negative (-) cable [2].

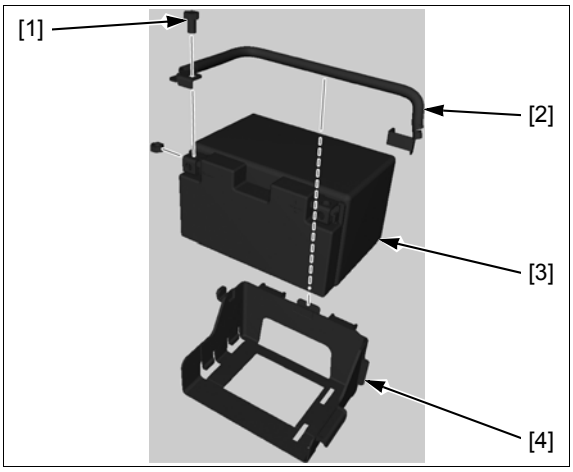
Remove the battery [3] from the battery case [4].

Connect the positive (+) terminal first and then the negative (-) terminal.

Install the battery in the reverse order of removal.

NOTE:

- For digital clock setting procedure (page 22-15).



BATTERY BOX REMOVAL/ INSTALLATION

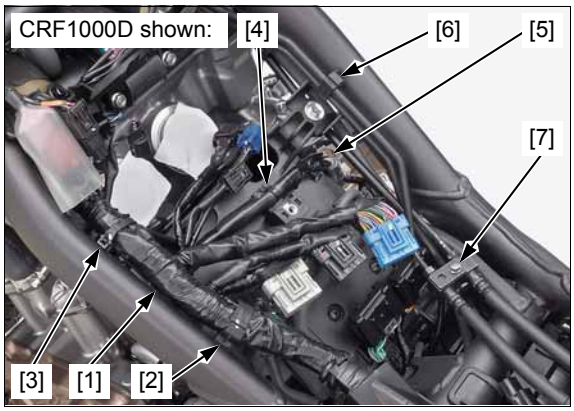
Remove the following:

– ECM/PCM (page 4-39)
– Starter relay switch (page 6-7)
– Insulators (page 10-19)

Release the main wire harness [1] from the clamp [2].
Release the main wire harness clip [3] from the frame.

Release the main wire harness clip [4] from the battery box.
CRF1000A/D: Disconnect the starter battery cable 2P connector [5].

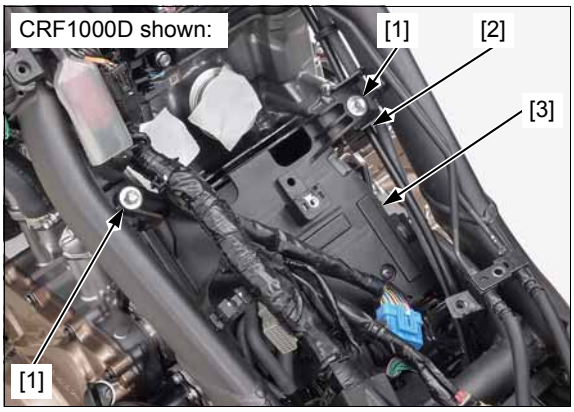
CRF1000A/D: Release the brake pipes from the clamp [6].
CRF1000A/D: Remove the bolt [7] and release the brake pipe/hose joint from the frame.



Remove the bolt/washers [1].

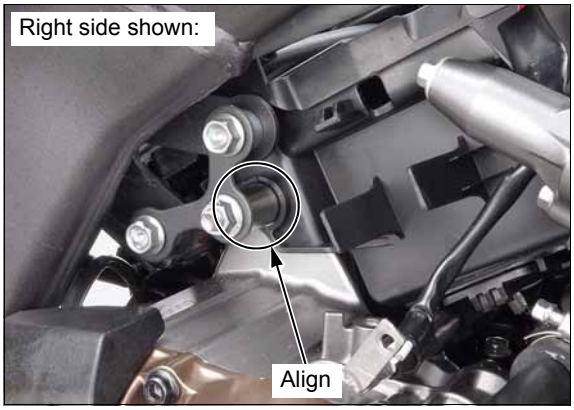
Release the following from the battery box:
– CRF1000/A: Siphon hose [2]
– CRF1000D: Parking brake cable [2]

Remove the battery box [3].



Installation is in the reverse order of removal.

NOTE:
- Align the left/right battery box grooves with the engine hanger collars.
- Route the wire harnesses, hoses, pipes, and cables properly (page 1-26).



VOLTAGE INSPECTION

Open the battery box lid (page 21-5).

Measure the battery voltage using a commercially available digital multimeter.

VOLTAGE (20°C/68°F):
Fully charged: 13.0 – 13.2 V
Needs charging: Below 12.3 V



BATTERY TESTING

Remove the battery (page 21-5).

Refer to the instructions that are appropriate to the battery testing equipment available to you.

TOOL:

Battery tester	**BM-210 or BATTERY MATE or equivalent**

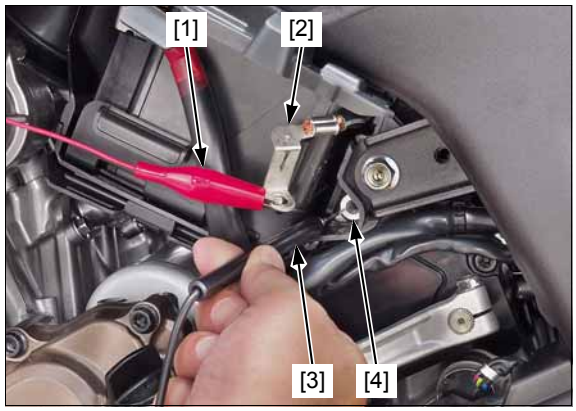
CHARGING SYSTEM INSPECTION

CURRENT LEAKAGE TEST

Open the battery box lid (page 21-5).

Turn the ignition switch OFF, disconnect the negative (–) ground terminal.

Connect the ammeter (+) probe [1] to the negative (–) cable [2] and the ammeter (–) probe [3] to the engine earth point [4].



With the ignition switch OFF, check for current leakage.

NOTE:

- When measuring current using a tester, set it to a high range, and then bring the range down to an appropriate level. Current flow higher than the range selected may blow the fuse in the tester.
- While measuring current, do not turn the ignition switch ON. A sudden surge of current may blow the fuse in the tester.

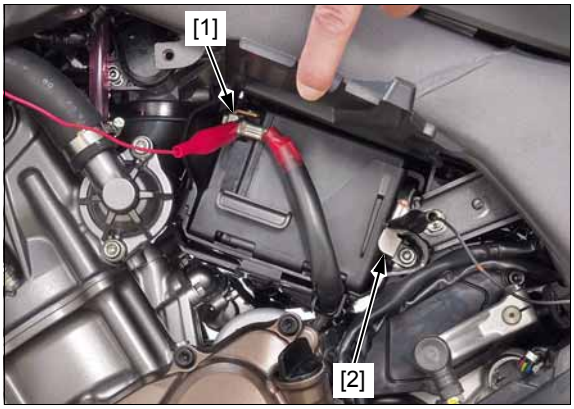
SPECIFIED CURRENT LEAKAGE: 0.66 mA maximum

If current leakage exceeds the specified value, a shorted circuit is the probable cause.
Locate the short by disconnecting connections one by one and measuring the current.

CHARGING VOLTAGE INSPECTION

NOTE:
Make sure the battery is in good condition before performing this test.

Start the engine and warm it up to the operating temperature; then stop the engine.
Open the battery box lid (page 21-5).



Connect the multimeter between the positive terminal [1] and negative terminal [2] of the battery.

NOTE:
- To prevent a short, make absolutely certain which are the positive and negative terminals or cable.
- Do not disconnect the battery or any cable in the charging system without first switching off the ignition switch. Failure to follow this precaution can damage the tester or electrical components.

With the headlight on high beam, restart the engine.
Measure the voltage on the multimeter when the engine runs at 5,000 min^{-1} (rpm).

STANDARD:
Measured BV < Measured CV < 15.5 V
- **BV = Battery Voltage (page 21-5)**
- **CV = Charging Voltage**

If the charging voltage reading is out of the specification, inspect the regulator/rectifier (page 21-8).

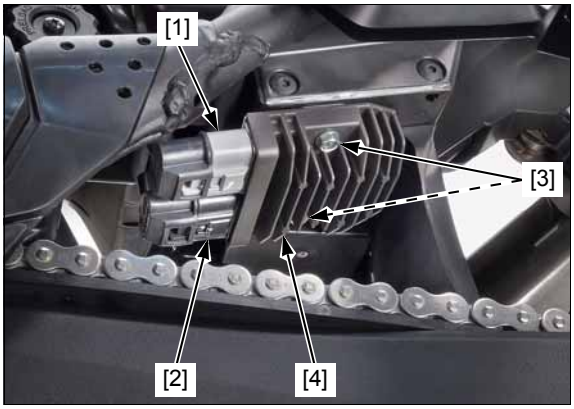
REGULATOR/RECTIFIER

REMOVAL/INSTALLATION

Disconnect the alternator 3P (Gray) connector [1] and regulator/rectifier 3P (Black) connector [2].

Remove the bolts [3] and regulator/rectifier [4].

Installation is in the reverse order of removal.



SYSTEM INSPECTION

Check connectors for loose contact or corroded terminals.

Inspect the following items:

– Battery charging line (page 21-9)
– Ground line (page 21-9)
– Charging coil (page 21-9)

If all components of the charging system are normal and there are no loose connections at the regulator/rectifier connectors, replace the regulator/rectifier.

BATTERY CHARGING LINE INSPECTION

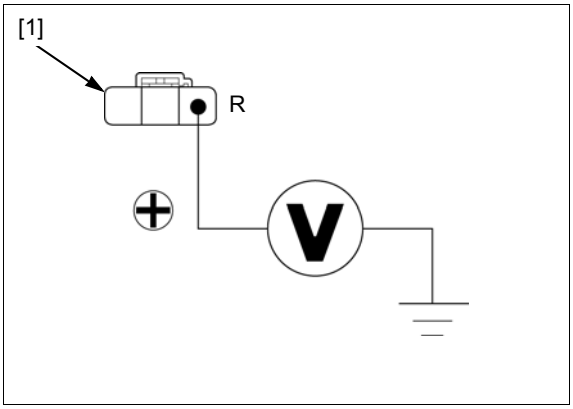
Turn the ignition switch OFF.

Disconnect the regulator/rectifier 3P (Black) connector (page 21-8).

Measure the voltage between the regulator/rectifier 3P (Black) connector [1] at the wire side and ground.

CONNECTION: Red (+) – Ground (–)
STANDARD: Battery voltage

There should be battery voltage at all times.



GROUND LINE INSPECTION

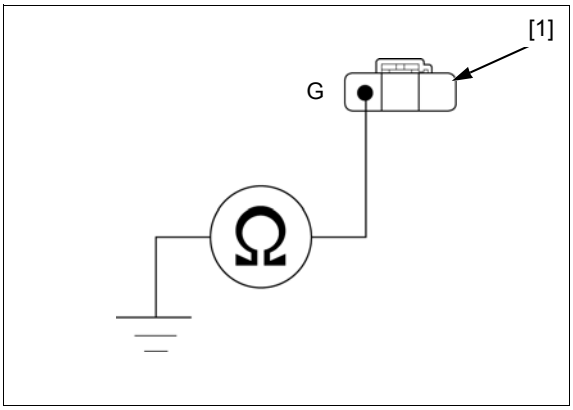
Turn the ignition switch OFF.

Disconnect the regulator/rectifier 3P (Black) connector (page 21-8).

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

CONNECTION: Green – Ground

There should be continuity at all times.



ALTERNATOR CHARGING COIL

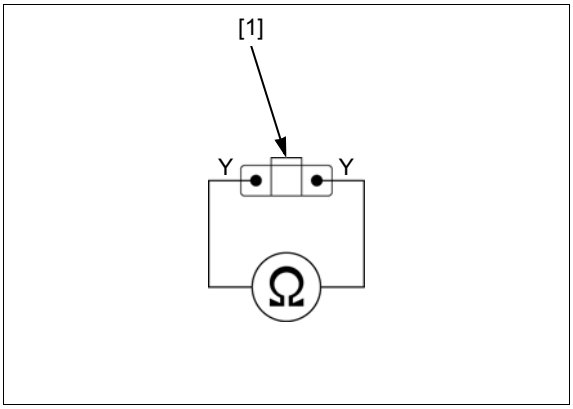
CHARGING COIL INSPECTION

It is not necessary to remove the stator coil to conduct this test.

Disconnect the alternator 3P (Gray) connector (page 21-8).

Measure the resistance at the wire side alternator 3P (Black) connector [1].

CONNECTION: Yellow – Yellow
STANDARD: 0.1 – 1.0 Ω (20°C/68°F)

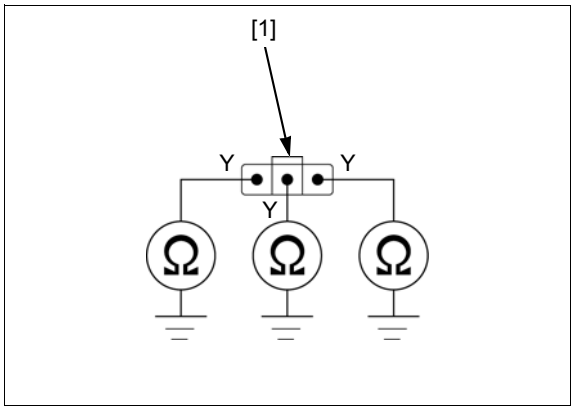


Check for continuity between the alternator 3P (Gray) connector [1] terminals at the wire side and ground.

CONNECTION: Yellow – Ground
STANDARD: No continuity

Replace the stator if the resistance is out of specification, or if any wire has continuity to ground.

For stator replacement (page 11-7).



22. LIGHTS/METERS/SWITCHES

SERVICE INFORMATION ····· 22-2

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HEADLIGHT ····· 22-4

HEADLIGHT RELAY ····· 22-5

TURN SIGNAL LIGHT/RELAY/DIODE (CRF1000) ····· 22-5

TURN SIGNAL LIGHT/RELAY (CRF1000A/D) ····· 22-8

LICENSE LIGHT ····· 22-11

BRAKE/TAILLIGHT ····· 22-11

COMBINATION METER ····· 22-12

SPEEDOMETER/VS SENSOR ····· 22-16

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OPEN AIR TEMPERATURE SENSOR ···· 22-17

HIGH COOLANT TEMPERATURE INDICATOR/ECT SENSOR ····· 22-18

ENGINE OIL PRESSURE INDICATOR/EOP SWITCH (CRF1000/A)/EOP SENSOR (CRF1000D) ····· 22-19

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IGNITION SWITCH ····· 22-23

HANDLEBAR SWITCHES ····· 22-23

BRAKE LIGHT SWITCH ····· 22-24

CLUTCH SWITCH (CRF1000/A) ····· 22-25

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HSTC (Honda Selectable Torque Control) SYSTEM ····· 22-29

REAR ABS SWITCH (CRF1000A/D) ····· 22-30

G SWITCH (CRF1000D) ····· 22-31

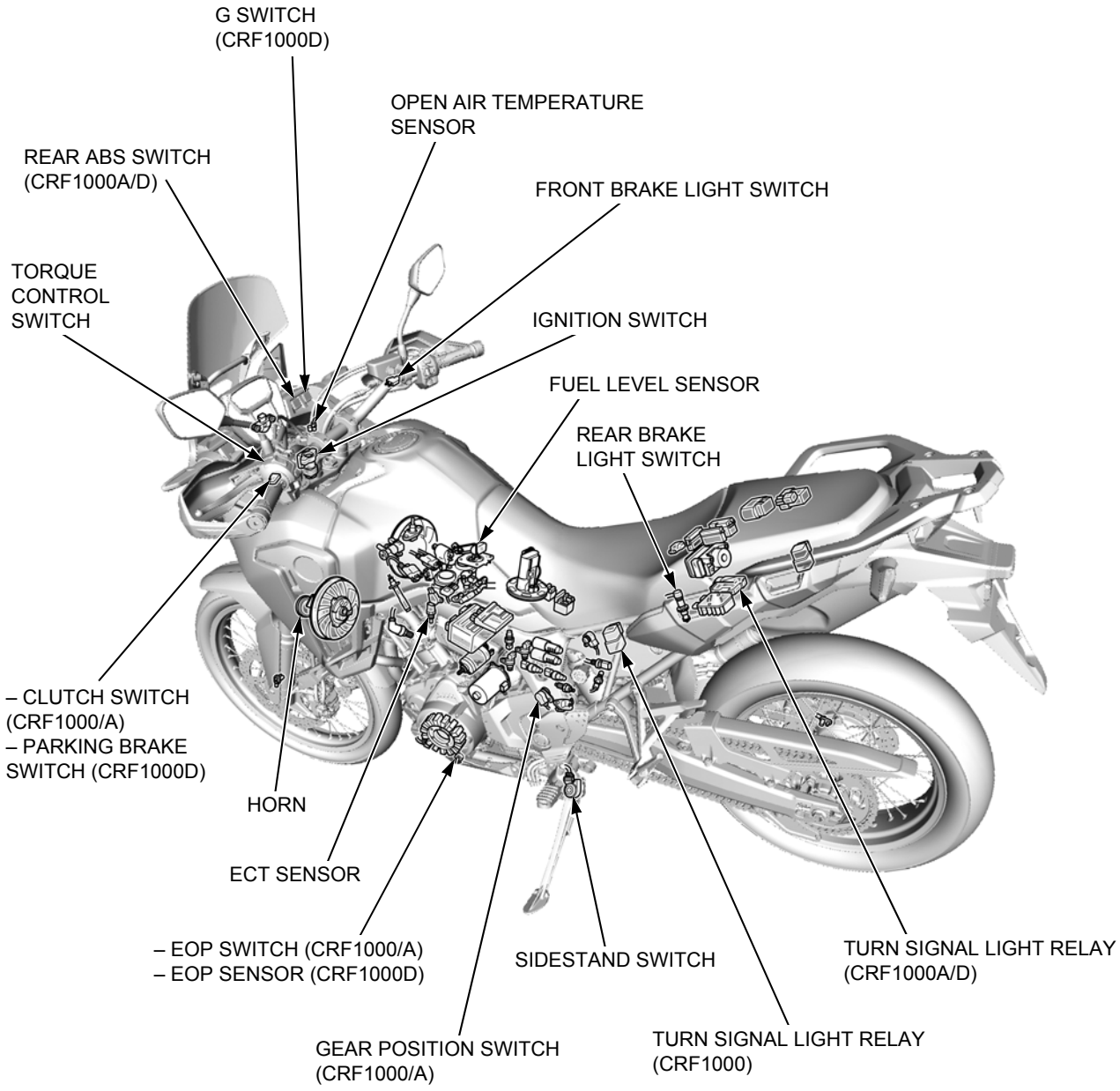
SERVICE INFORMATION

GENERAL

- 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.
- If the ECM/PCM is replaced, perform the following procedure.
  – Key Registration Procedure (page 23-3)
  – Clutch Initialize Learning Procedure (CRF1000D) (page 13-82)
- The following color codes are used throughout this section.

Bl = Black	Bu = Blue	Br = Brown	G = Green	Lg = Light green	O = Orange
R = Red	W = White	Y = Yellow			

SYSTEM LOCATION



HEADLIGHT

REMOVAL/INSTALLATION

Remove the front cover (page 2-7).

Disconnect the open air temperature sensor 2P (Black) connector (page 22-17).

Remove the bolt/washers [1] and collars [2].

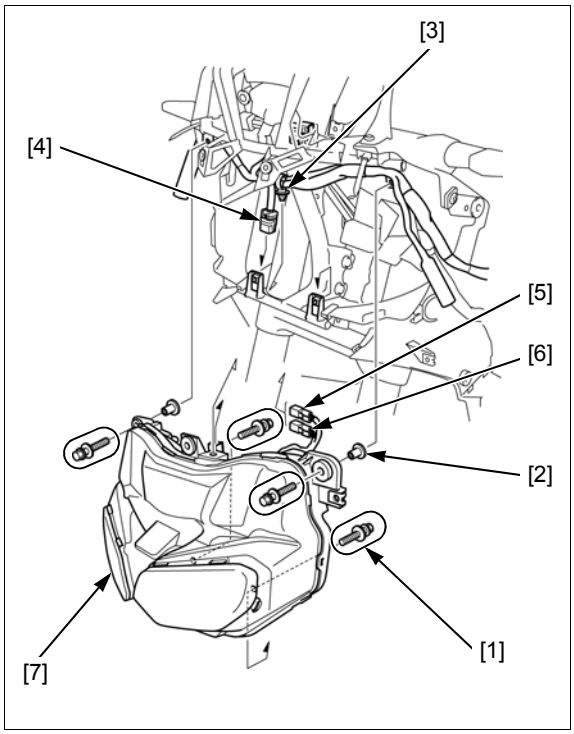
Release the front sub wire harness clip [3].

Disconnect the following:

– Bank angle sensor 2P (Black) connector [4]
– Headlight 2P connector [5]
– Headlight 2P (Black) connector [6]

Remove the headlight assembly [7].

Installation is in the reverse order of removal.

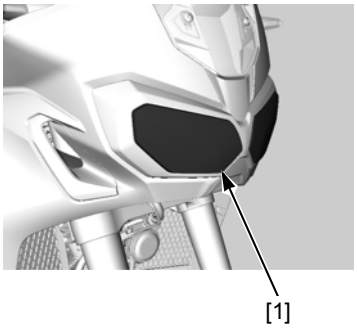


TROUBLESHOOTING

- Check the following before troubleshooting:
  – Blown main fuse 30 A
  – Blown sub fuse HEAD LIGHT LO 7.5 A
  – Blown sub fuse HEAD LIGHT HI 7.5 A
  – Blown sub fuse ILLUMI STOP 7.5 A
  – Loose or poor contact on the headlight 2P, headlight 2P (Black), and left handlebar switch 12P (Gray) (CRF1000)/10P (Gray) (CRF1000A/D) connectors

NOTE:

- If any LED in the headlight [1] does not turn on, replace the headlight unit (page 22-4).
- If the sub fuse is blown again, check for the short circuit in the related wires.
  – CRF1000 (page 24-2)
  – CRF1000A (page 24-3)
  – CRF1000D (page 24-4)



Headlight does not light at all with the ignition switch turned ON

- Open circuit in the headlight ground line (Green wire)
- Faulty headlight unit

Low beam headlight does not light with the ignition switch turned ON

- Open circuit in the White/black wire between the fuse box 1 and headlight unit
- Faulty headlight unit

High beam headlight does not light with the dimmer switch pushed to "≡D" or passing switch pushed

- Open circuit in the Yellow/red wire between the fuse box 1 and left handlebar switch
- Faulty dimmer switch (page 22-23)
- Faulty passing switch (page 22-23)
- Open circuit in the Blue/red wire between the left handlebar switch and headlight relay
- Open circuit in the headlight relay power line (Blue/red wire)
- Faulty headlight relay (page 22-5)
- Open circuit in the Blue wire between the headlight relay and headlight unit
- Faulty headlight unit

HEADLIGHT RELAY

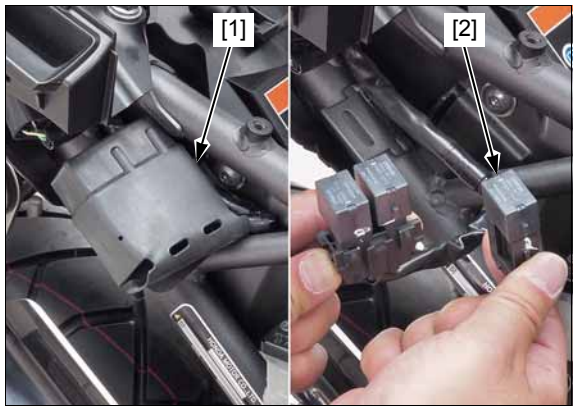
REMOVAL/INSTALLATION

Remove the right side cover (page 2-11).

Release the relay connectors from the frame and remove the relay cover [1].

Remove the headlight relay [2].

Installation is in the reverse order of removal.



RELAY INSPECTION

Remove the headlight relay (page 22-5).

Refer to FI relay inspection (page 4-44).

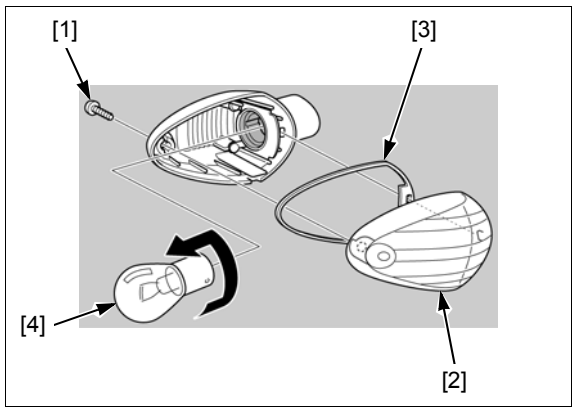
TURN SIGNAL LIGHT/RELAY/DIODE (CRF1000)

BULB REPLACEMENT

Remove the screw [1], turn signal lens [2], and seal rubber [3].

While pushing in, turn the bulb [4] counterclockwise to remove it and replace with a new one.

Install the seal rubber, lens and tighten the screw securely.



TURN SIGNAL LIGHT REMOVAL/ INSTALLATION

FRONT

Remove the inner panel cover (page 2-8).

Disconnect the front turn signal light 2P connector [1].

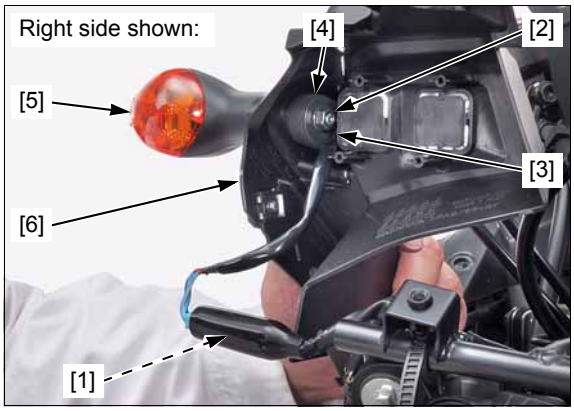
– Right side: light blue
– Left side: orange

Remove the following:

– Nut [2]
– Collar [3]
– Grommet [4]
– Front turn signal light [5]
– Front turn signal light cover [6]

Installation is in the reverse order of removal.

TORQUE: 8.8 N·m (0.9 kgf·m, 6.5 lbf·ft)



REAR

Remove the rear carrier (page 2-12).

Disconnect the rear turn signal light 2P connector.

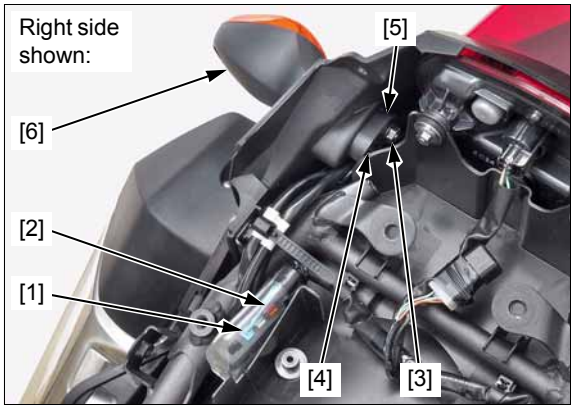
– Right side: light blue [1]
– Left side: orange [2]

Remove the following:

– Nut [3]
– Collar [4]
– Grommet [5]
– Front turn signal light [6]

Installation is in the reverse order of removal.

TORQUE: 8.8 N·m (0.9 kgf·m, 6.5 lbf·ft)



TURN SIGNAL LIGHT RELAY REMOVAL/INSTALLATION

Remove the ETC tray (page 2-11).

Release the turn signal relay [1] and cover [2].

Remove the relay cover and disconnect the relay from the relay connector.

Installation is in the reverse order of removal.



INSPECTION

TURN SIGNAL LIGHT INSPECTION

- Check the following before inspection:
  – Blown turn signal light bulb
  – Blown main fuse 30 A
  – Blown sub fuse ILLUMI STOP 7.5 A
  – Blown sub fuse CLOCK TURN 7.5 A
  – Loose or poor contact on the turn signal light relay 4P, right handlebar switch 8P (Gray), and left handlebar switch 12P (Gray) connector
  – Handlebar switch operation

NOTE:

- If the sub fuse is blown again, check for the short circuit in the related wires.
  – CRF1000 (page 24-2)

Turn the ignition switch ON and operate the turn signal light switch.
Check each turn signal light operation.

Turn signal light blinks faster than usual (One of the unit does not blink).

NOTE:

- When there is open circuit in turn signal light, other turn signal light blink faster than usual in order to notify the rider of the problem.

Check for loose or poor contact in the turn signal light 2P connector.
If the connection is OK, check the following:

- Open circuit in turn signal light wire
  – Right front: Light blue wire
  – Left front: Orange wire
  – Right rear: Light blue wire
  – Left rear: Orange wire
- Open circuit in Green wire between the turn signal light 2P connector and ground

If the wires are OK, replace the problematic turn signal light with a known good one and recheck.

– If the known good turn signal light blinks, original unit is faulty.
– If the known good turn signal light does not blink, replace the turn signal relay with a new one and recheck.

Turn signal light does not blinks at all with the turn signal light switch operating.

- Open circuit in the Black/red wire between the turn signal light relay and left handlebar switch
- Open circuit in the White/green wire between the turn signal light relay and left handlebar switch
- Open circuit in the turn signal light relay ground line (Green wire)

If the wires are OK, replace the turn signal light with a known good one and recheck.

Turn signal relay back-up voltage line

Measure the voltage between the Red/white wire terminal (+) and ground (–).
There should be battery voltage at all times.

If there is no voltage, check for the open circuit in Red/white wire.

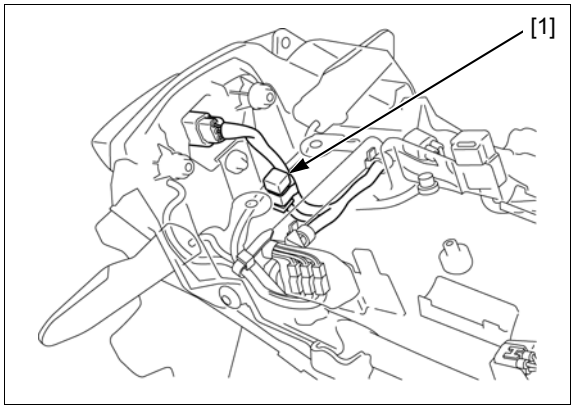
TURN SIGNAL LIGHT DIODE

REMOVAL/INSTALLATION

Remove the pillion seat (page 2-11).

Remove the turn signal light diode [1].

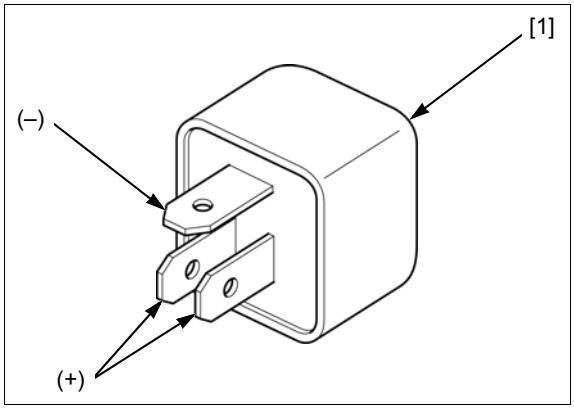
Installation is in the reverse order of removal.



INSPECTION

Check for continuity between the turn signal light diode [1] terminals.
When there is continuity, a small resistance value will register.

If there is continuity in one direction, the turn signal light diode is normal.



TURN SIGNAL LIGHT/RELAY (CRF1000A/D)

TURN SIGNAL LIGHT REMOVAL/ INSTALLATION

FRONT

Remove the inner panel cover (page 2-8).

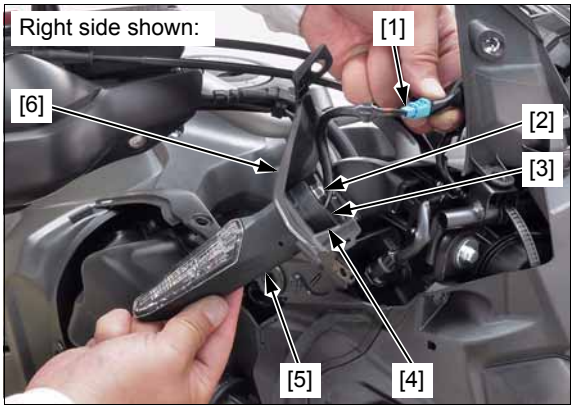
Disconnect the front turn signal light 2P connector [1].

– Right side: light blue
– Left side: orange

Remove the following:

– Nut [2]
– Collar [3]
– Grommet [4]
– Front turn signal light [5]
– Front turn signal light cover [6]

Installation is in the reverse order of removal.



REAR

Remove the rear carrier (page 2-12).

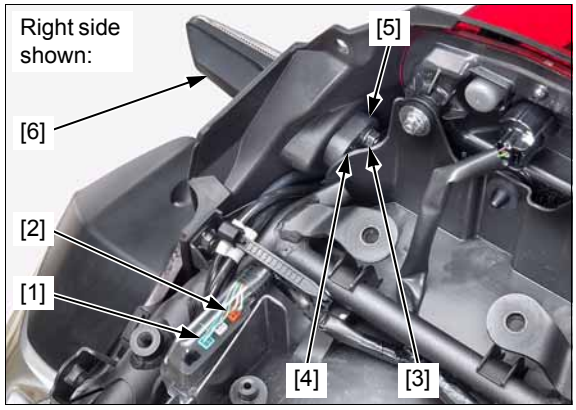
Disconnect the rear turn signal light 2P connector.

– Right side: light blue [1]
– Left side: orange [2]

Remove the following:

– Nut [3]
– Collar [4]
– Grommet [5]
– Front turn signal light [6]

Installation is in the reverse order of removal.

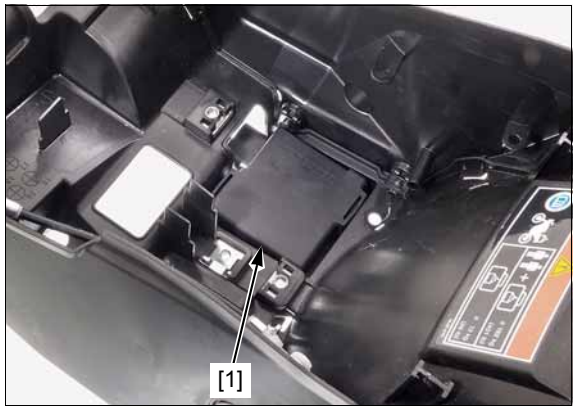


TURN SIGNAL RELAY REMOVAL/ INSTALLATION

Remove the ABS modulator (page 20-24).

Remove the turn signal relay [1].

Installation is in the reverse order of removal.



INSPECTION

TURN SIGNAL LIGHT INSPECTION

- Check the following before inspection:
  – Blown main fuse 30 A
  – Blown sub fuse ILLUMI STOP 7.5 A
  – Blown sub fuse CLOCK TURN 7.5 A
  – Loose or poor contact on the turn signal light relay 18P (Black), right handlebar switch 8P (Gray), and left handlebar switch 10P (Gray) connector
  – Handlebar switch operation

NOTE:

- If the sub fuse is blown again, check for the short circuit in the related wires.
  – CRF1000A (page 24-3)
  – CRF1000D (page 24-4)

Turn the ignition switch ON and operate the turn signal switch.
Check each turn signal light operation.

Any LED does not blink.

Replace the turn signal light as an assembly.

Turn signal blinks two times faster than usual (One of the unit does not blink).

NOTE:

- When there is open or short circuit in turn signal light wire(s), other turn signal light blink faster than usual in order to notify the rider of the problem.

Check for loose or poor contact in the turn signal light 2P connector.
If the connection is OK, check the following:

- Open or short circuit in turn signal light power line between the turn signal relay and turn signal light 2P connector
  – Right front: Light blue/white wire
  – Left front: Orange/white wire
  – Right rear: Light blue wire
  – Left rear: Orange wire
- Open circuit in Green wire between the turn signal light 2P connector and ground

If the wires are OK, replace the problematic turn signal light with a known good one and recheck.

– If the known good turn signal light blinks, original unit is faulty.
– If the known good turn signal light does not blink, replace the turn signal relay with a new one and recheck.

Turn signal light does not light at all with the turn signal light switch operating.

- Open circuit in the wire(s) between the turn signal light relay and handlebar switch
  – Left handlebar switch :Orange/white wire
  – Right handlebar switch :Light blue/white wire
- Open circuit in the Black/red wire between the turn signal light relay and fuse box 1
- Open circuit in the turn signal light relay ground line (Green wire)

If the wires are OK, replace the turn signal light relay with a known good one and recheck.

Turn signal relay back-up voltage line

Measure the voltage between the Red/white wire terminal (+) and ground (–).
There should be battery voltage at all times.

If there is no voltage, check for the open circuit in Red/white wire.

LICENSE LIGHT

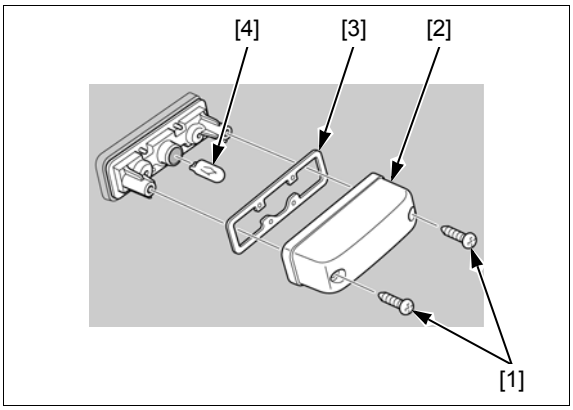
BULB REPLACEMENT

Remove the screws [1], license light cover [2], and seal rubber [3].

Pull out the license light bulb [4] without turning from the bulb socket and replace it with a new one.

Installation is in the reverse order of removal.

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



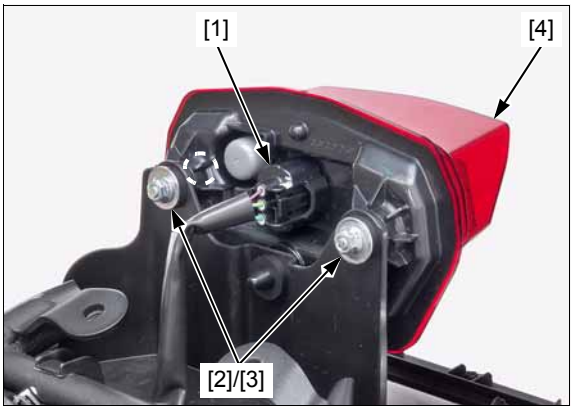
BRAKE/TAILLIGHT

REMOVAL/INSTALLATION

Remove the rear fender A (page 2-12).

Disconnect the brake/taillight 3P (Black) connector [1]. Remove the nuts [2], collars [3] and rear brake/taillight unit [4].

Installation is in the reverse order of removal.

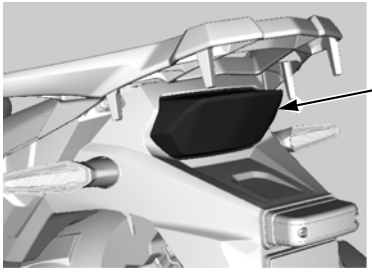


INSPECTION

Turn the ignition switch ON.
Check the brake/taillight [1] operation.

Check that all the brake/taillight LEDs illuminate with the front brake lever and/or rear brake pedal applied.

If any LED does not turn on, replace the brake/ taillight.



COMBINATION METER

REMOVAL/INSTALLATION

Remove the inner panel cover (page 2-8).
Remove the headlight (page 22-4).

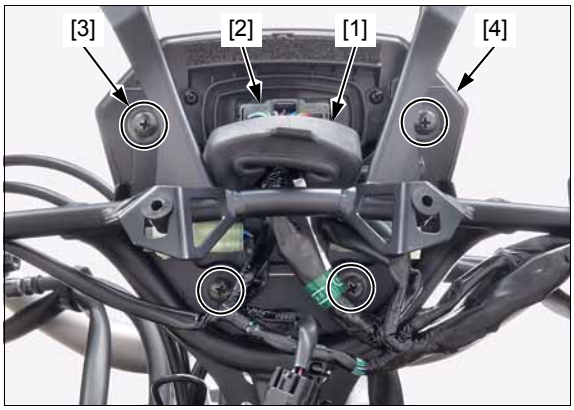
Release the connector cover [1].

Disconnect the combination meter 32P (Gray) connector [2].

Remove the screw/washers [3] and combination meter [4].

Installation is in the reverse order of removal.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)



COMBINATION METER SYSTEM INSPECTION

NOTE:

- Check for loose or poor contact on the combination meter 32P (Gray) connector and ECM/PCM 33P connectors.

Turn the ignition switch ON, check that all the mode and digital segments will shown.

If the meter does not show initial function, check the following:

– Power/ground line (page 22-12)
– TXD line (page 22-14)

CRF1000D shown:



POWER/GROUND LINE INSPECTION

Remove the front cover (page 2-7).

Remove the connector cover [1] and disconnect the combination meter 32P (Gray) connector [2].

Check the following at the wire harness side connector terminals of the combination meter.

NOTE:

- If the power and ground lines are OK, replace the combination meter (page 22-12).



POWER INPUT LINE

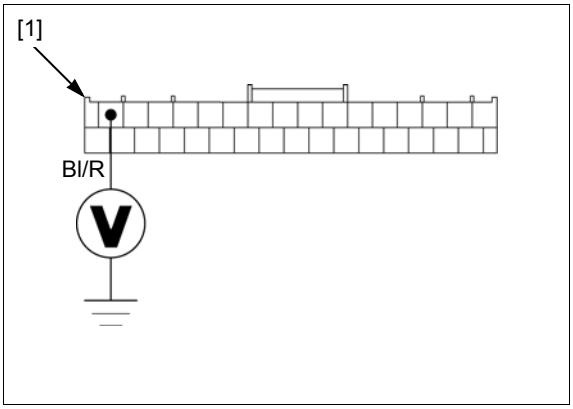
Measure the voltage at the wire harness side 32P (Gray) connector [1] and ground.

CONNECTION: Black/red (+) – Ground (–)
STANDARD: Battery voltage

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

If there is no voltage, check the following:

– Open circuit in the Black/red wire
– Blown sub fuse ILLUMI STOP 7.5 A



BACK-UP VOLTAGE LINE

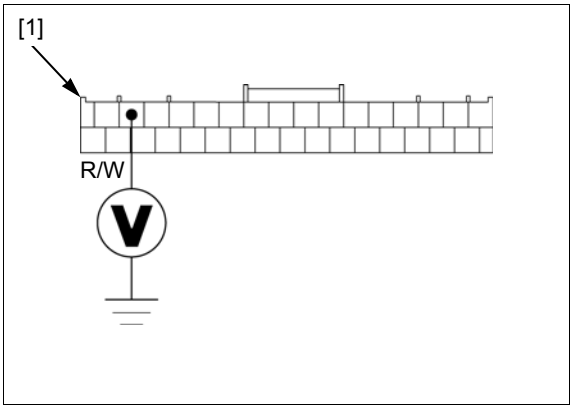
Measure the voltage at the wire harness side 32P (Gray) connector [1] and ground.

CONNECTION: Red/white (+) – Ground (–)
STANDARD: Battery voltage

There should be battery voltage at all times.

If there is no voltage, check the following:

– Open circuit in the Red/white wire
– Blown sub fuse CLOCK TURN 7.5 A



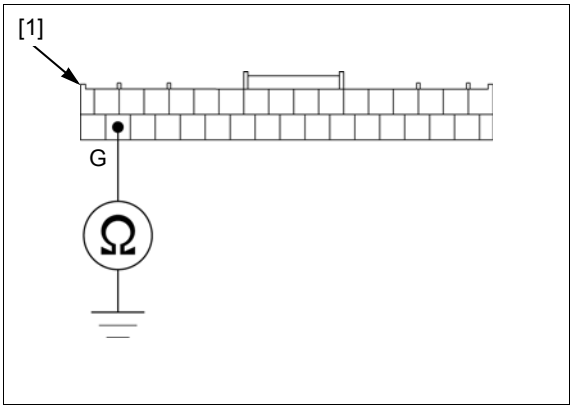
GROUND LINE

Check for continuity at the wire harness side 32P (Gray) connector [1] and ground.

CONNECTION: Green – Ground

There should be continuity.

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



TXD LINE INSPECTION

NOTE:

- Check the following items before starting the inspection:
  – Check for loose or poor contact on the combination meter 32P (Gray) connector and ECM/PCM 33P connectors, then recheck the DTC.

Turn the ignition switch ON with the engine stop switch "⟳" and check the combination meter.

If the engine stop switch is in "⊗", the MIL will stay on even when the system is normal.

The TXD line is abnormal if the combination meter shows the following:

– MIL, engine oil pressure, engine coolant temperature, and torque control indicator stay on
– HISS, torque control OFF, S/D/G indicator do not come on
– Current/average fuel mileage displays "– –.–" (when running the engine)
– Remaining fuel displays " –.–"
– Available driving distance displays " – –"
– Shift indicator "–" is blinking
– Torque control level and engine coolant temperature gauge displays blinking

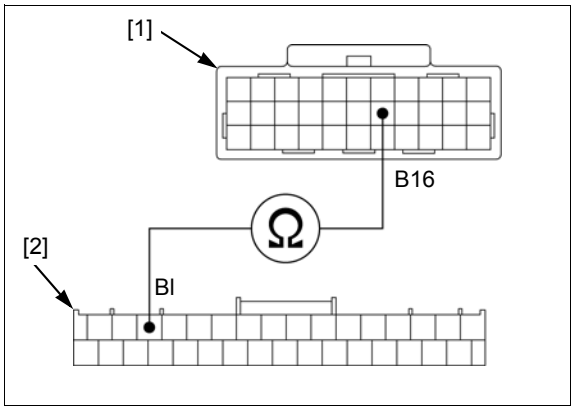
If the TXD line is abnormal, check the following:

1. TXD Line Open circuit inspection

Turn the ignition switch OFF.
Disconnect the ECM/PCM 33P (Black) connector [1] (page 4-39).
Disconnect the combination meter 32P (Gray) connector [2] (page 22-12).
Check for continuity between the wire harness side 33P (Black) and 32P (Gray) connectors.

Connection: B16 – Black

TOOL:
Test probe 07ZAJ-RDJA110



Is there continuity?

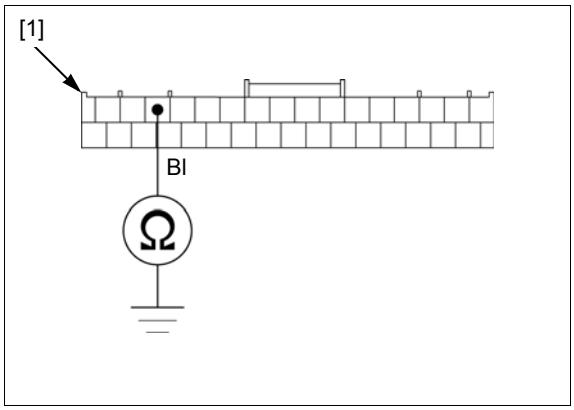
YES – GO TO STEP 2.

NO – Open circuit in the Black wire

2. TXD Line Short circuit inspection

Check for continuity between the wire harness side 32P (Gray) connector [1] and ground.

Connection: Black – Ground



Is there continuity?

YES – Short circuit in the Black wire

NO – GO TO STEP 3.

3. ECM/PCM inspection

Connect the 32P (Gray) connector.
Replace the ECM/PCM with a known good one (page 22-12), and recheck.

Is the combination meter display normal?

YES – Faulty original ECM/PCM

NO – Faulty combination meter

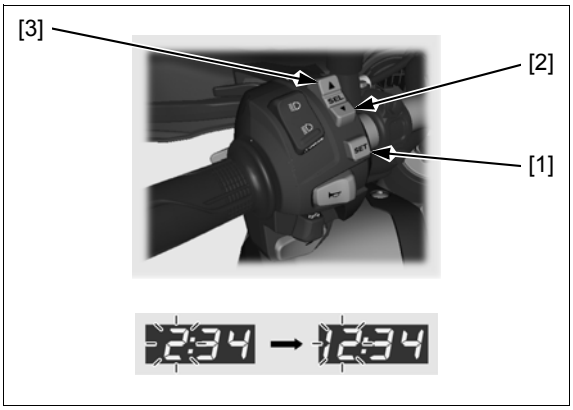
COMBINATION METER DIGITAL CLOCK SET PROCEDURE

1. Turn the ignition switch ON.
2. Press and hold the SET [1] and DOWN [2] buttons, then the hour digits start blinking.

NOTE:
- The combination meter enters the clock setting mode.

3. Press the UP [3] or DOWN button until the desired hour is displayed.

NOTE:
- Press and hold the UP or DOWN button to advance the hour fast.



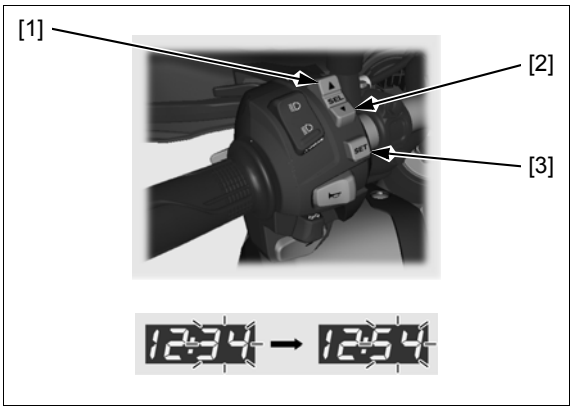
4. Push the SET button [1], then the minute digits start blinking.



5. Press the UP [1] or DOWN [2] button until the desired minute is displayed.

NOTE:
- Press and hold the UP or DOWN button to advance the minute fast.

6. Press the SET button [3], then the digital clock is set.
7. Turn the ignition switch OFF.



SPEEDOMETER/VS SENSOR

SYSTEM INSPECTION

If the speedometer does not operate, check the following:

– Combination meter initial operation (page 22-12)
– MIL blinking: If the MIL blinks 11 (DTC 11-1), check the VS sensor system (page 4-21)

If the above items are OK, open circuit in the Pink wire.

VS SENSOR REMOVAL/ INSTALLATION

Remove the battery box (page 21-6).

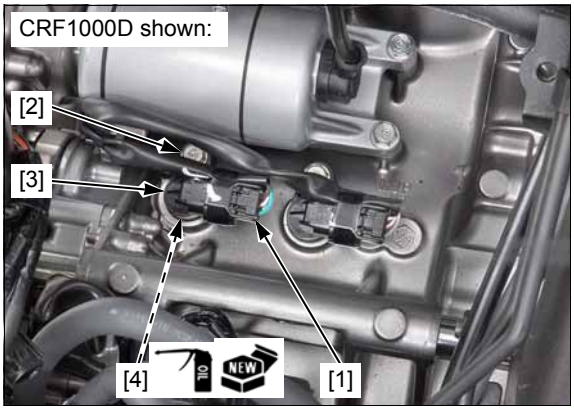
Disconnect the VS sensor 3P (Black) connector [1].

Remove the bolt [2] and VS sensor [3], and O-ring [4].

Installation is in the reverse order of removal.

NOTE:

- The VS sensor and outer mainshaft sensor are the same parts.
- Replace the O-ring with a new one.
- Apply engine oil to a new O-ring.



TACHOMETER

SYSTEM INSPECTION

If the tachometer does not operate, check the following:

– CKP sensor (page 5-7)
– Combination meter initial operation (page 22-12)

If the above items are OK, check the following:

TACHOMETER SIGNAL PEAK VOLTAGE INSPECTION

Connect the peak voltage tester or peak voltage adaptor to the combination meter 32P (Black) connector [1] with the connector is connected.

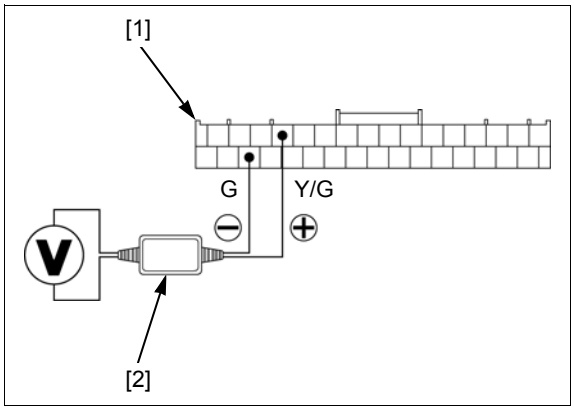
TOOLS:
Imrie diagnostic tester (model 625) or
Peak voltage adaptor [2] 07HGJ-0020100
with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)

CONNECTION: Yellow/green (+) – Green (–)

Start the engine and measure the tachometer input peak voltage.

PEAK VOLTAGE: 10 – 15.8 V

If the value is normal, replace the combination meter (page 22-12).
If the measured value is not within specification, replace the ECM/PCM (page 4-39).
If the value is 0 V, check for the tachometer signal line open circuit inspection (page 22-17)



TACHOMETER SIGNAL LINE OPEN CIRCUIT INSPECTION

Disconnect the following:

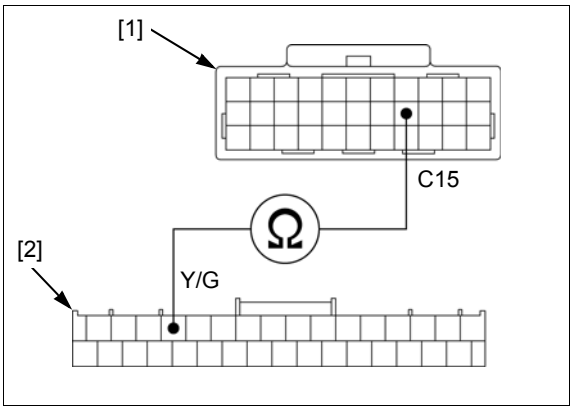
– ECM/PCM 33P (Gray) connector (page 4-39)
– Combination meter 32P (Gray) connector (page 22-12)

Check for continuity between the ECM/PCM 33P (Gray) [1] and 32P (Black) [2] connectors.

TOOL:
Test probe 07ZAJ-RDJA110

CONNECTION: C15 – Yellow/green

There should be continuity.



OPEN AIR TEMPERATURE SENSOR

REMOVAL/INSTALLATION

Remove the right middle cowl (page 2-6).

Remove the trim clip [1] and front inner cover [2].



Disconnect the open air temperature sensor 2P (Black) connector [1].



Remove the screw [1] and open air temperature sensor [2].

Installation is in the reverse order of removal.



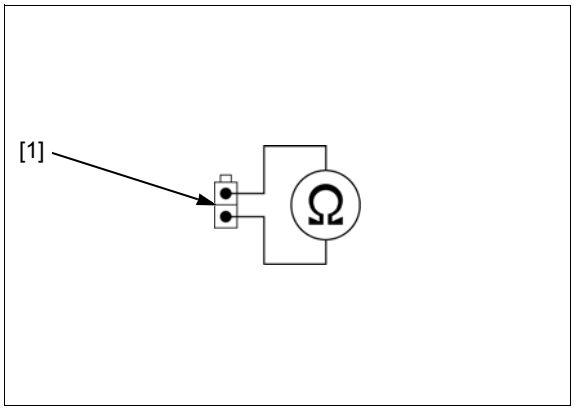
INSPECTION

Remove the open air temperature sensor 2P (Black) connector (page 22-17).

Measure the resistance at the 2P connector [1] of the sensor side.

Standard: 4.9 – 5.1 kΩ (25°C/77°F)

Replace the open air temperature sensor if it is out of specification.



HIGH COOLANT TEMPERATURE INDICATOR/ECT SENSOR

SYSTEM INSPECTION

If the high coolant temperature indicator does not operate properly, check the following:

– Combination meter initial operation (page 22-12)
– TXD line (page 22-14)
– MIL blinking: If the MIL blinks 7 (DTC 7-1, 7-2), check the ECT sensor system (page 4-14).
– ECT sensor (page 22-18)

If the above items are OK, replace the combination meter (page 22-12).

ECT SENSOR UNIT INSPECTION

Remove the ECT sensor (page 4-41).

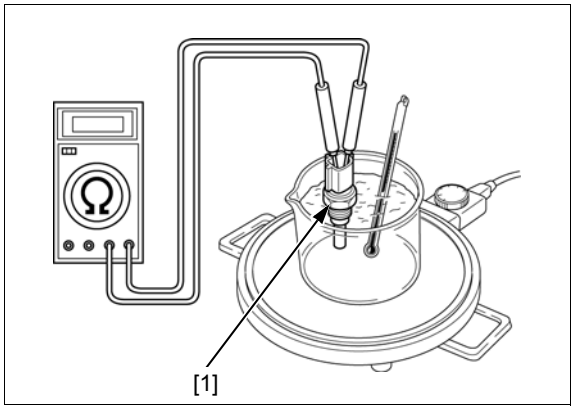
Suspend the ECT sensor [1] in a pan of coolant on an electric heating element and measure the resistance through the sensor as the coolant heats up.

- 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 sensor.
- Keep the temperature constant for 3 minutes before testing. A sudden change of temperature will result in incorrect readings. Do not let the thermometer or ECT sensor touch the pan.

Measure the resistance between the ECT sensor terminals.

Temperature	40°C (104°F)	100°C (212°F)
Resistance	1.0 – 1.3 kΩ	0.14 – 0.18 kΩ

Replace the ECT sensor if it is out of specification.



ENGINE OIL PRESSURE INDICATOR/ EOP SWITCH (CRF1000/A)/EOP SENSOR (CRF1000D)

SYSTEM INSPECTION

The engine oil pressure indicator comes on when the ignition switch is turned ON, then goes off when the engine starts.

If the engine oil pressure indicator does not come on with the ignition switch turned ON, check the combination meter initial operation (page 22-12).

The engine oil pressure indicator does not go off when the engine running, check the following:

– Engine oil level (page 3-11)
– TXD line (page 22-14)
– Engine oil pressure (page 9-5)
– EOP switch line (CRF1000/A) (page 22-19)
– MIL blinking: If the MIL blinks 83 (DTC 83-1, 83-2), check the EOP sensor system (CRF1000D) (page 4-36)

If the above items are OK, replace the combination meter (page 22-12).

EOP SWITCH LINE INSPECTION (CRF1000/A)

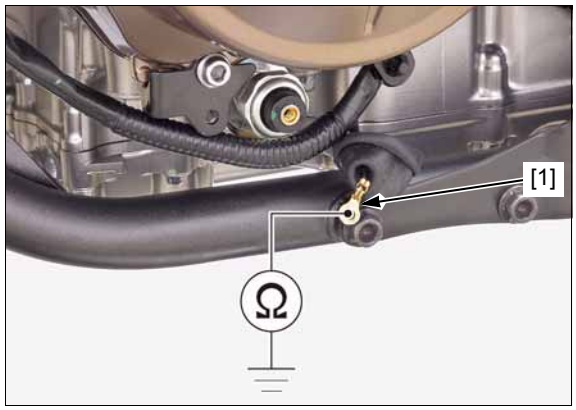
Turn the ignition switch OFF.

Disconnect the EOP switch terminal (page 22-19).

Check for continuity between the EOP switch terminal [1] and ground.

CONNECTION: Black/red – Ground

– If there is continuity, the Black/red wire has a short circuit.
– If there is no continuity, replace the EOP switch with a known good one and recheck.



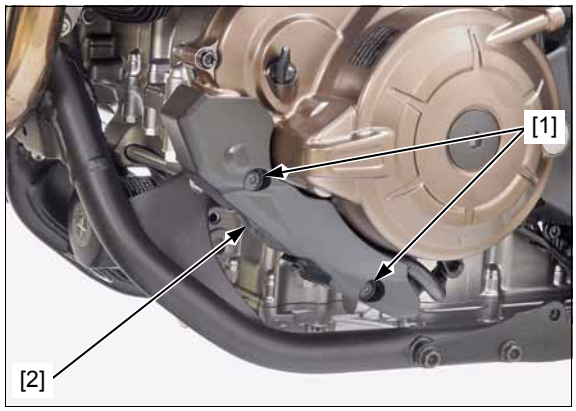
EOP SENSOR LINE INSPECTION (CRF1000D)

Refer to PGM-FI DTC 83-1, 83-2 (page 4-36).

EOP SWITCH REMOVAL/ INSTALLATION (CRF1000/A)

Drain the engine oil (page 3-12).

Remove the bolts [1] and alternator assembly wire cover [2].



Release the rubber cap [1].

Remove the bolt/washer [2] and disconnect the EOP switch terminal [3].

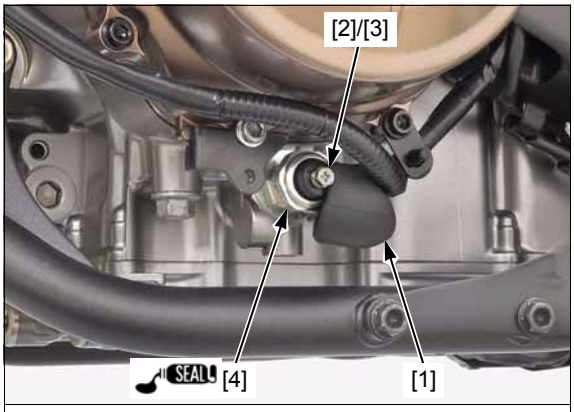
Remove the EOP switch [4].

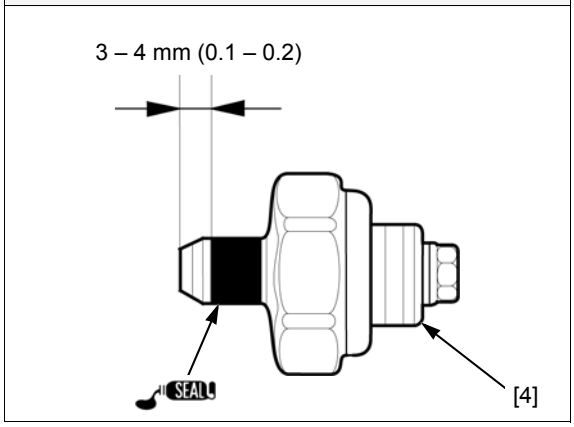
Installation is in the reverse order of removal.

NOTE:
- Apply sealant to the EOP switch threads as shown.
- Route the wire properly (page 1-26).

TORQUE:
EOP switch:
12 N·m (1.2 kgf·m, 9 lbf·ft)
EOP switch terminal bolt/washer:
2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)

Fill the engine oil with the recommended engine oil (page 3-12).

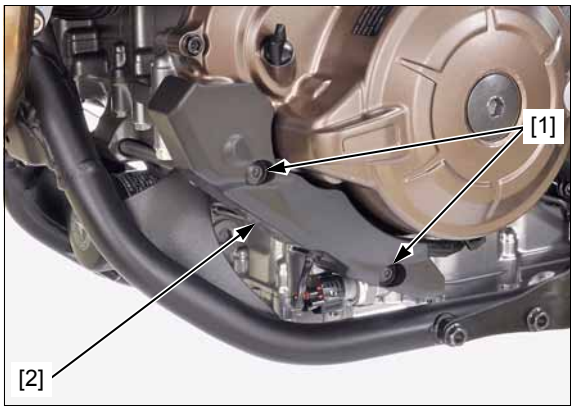




EOP SENSOR REMOVAL/ INSTALLATION (CRF1000D)

Drain the engine oil (page 3-12).

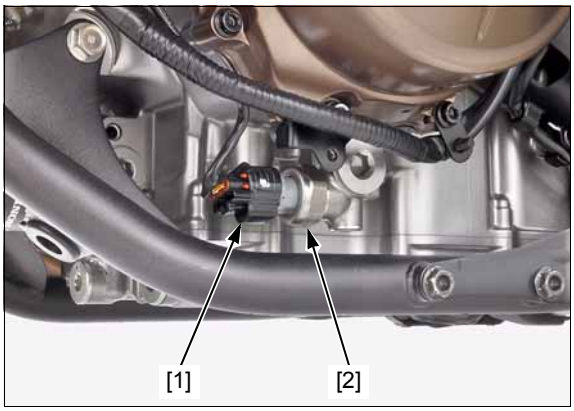
Remove the bolts [1] and alternator assembly wire cover [2].



Drain the engine oil (page 3-12).

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

Remove the EOP sensor [2].



Installation is in the reverse order of removal.

TORQUE:
EOP sensor:
22 N·m (2.2 kgf·m, 16 lbf·ft)

NOTE:
- Replace the O-ring with a new one.
- Apply engine oil to the O-ring [1].
- Route the wire properly (page 1-26).

Fill the engine oil with the recommended engine oil (page 3-12).



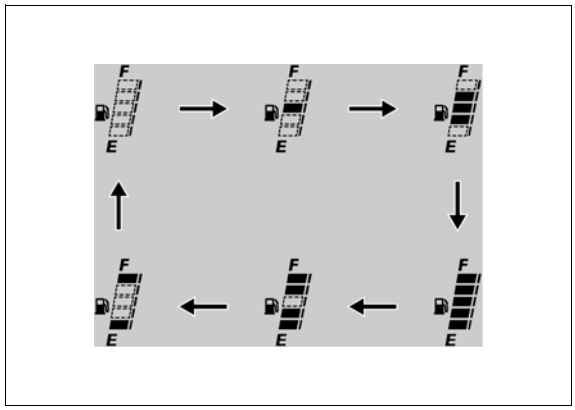
FUEL LEVEL SENSOR/FUEL RESERVE SENSOR

SYSTEM INSPECTION

The fuel meter indicates the warning display.

When an open or short circuit occur in the fuel meter system, the fuel gauge indicators will be displayed as shown with the ignition switch turned ON.
Check the following:

– Red/black wire between the fuel reserve sensor and combination meter for open or short circuit
– Green wire between the fuel reserve sensor and ground for open circuit
– Red/black wire between the fuel level sensor and combination meter for open or short circuit
– Green wire between the fuel level sensor and ground for open circuit



If they are normal, inspect the fuel level sensor (page 22-21)
If the fuel level sensor is normal, replace the fuel pump unit with a new one and recheck (page 7-7).

Fuel meter does not operate properly.

NOTE:
- Check the initial function of the combination meter. (page 22-12).

Inspect the fuel level sensor (page 22-21)
If the fuel level sensor is normal, replace the combination meter (page 22-12) and recheck.

FUEL LEVEL SENSOR INSPECTION

Remove the fuel level sensor (page 22-22).

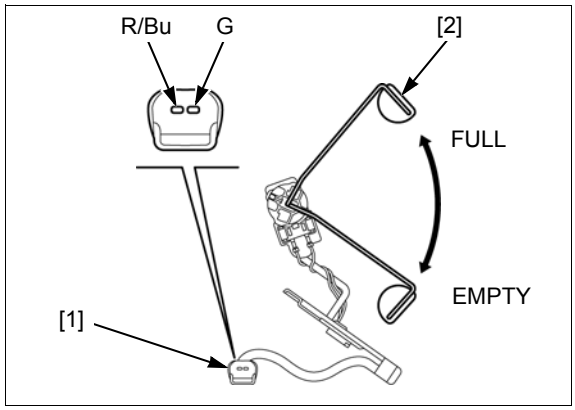
Connect the ohmmeter to the fuel level sensor 2P (Black) connector [1].

CONNECTION: Red/blue – Green

Inspect the resistance of the float [2] at the full and empty positions.

	FULL	EMPTY
Resistance	6.4 – 10.4 Ω	204.8 – 210.8 Ω

If it is out of specification, replace the fuel level sensor (page 22-22).



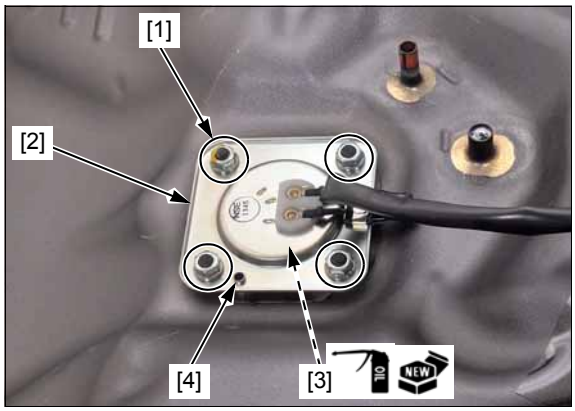
FUEL LEVEL SENSOR REMOVAL/ INSTALLATION

Remove the fuel tank (page 7-6).

Remove the nuts [1].
Remove the fuel reserve sensor [2] and O-ring [3].

Installation is in the reverse order of removal.

NOTE:
- Replace the O-ring with a new one.
- Apply engine oil to a new O-ring.
- Align the sensor plate hole [4] with the tank boss.



PARKING BRAKE INDICATOR/SWITCH (CRF1000D)

SYSTEM INSPECTION

If the parking brake indicator does not operate properly, check the combination meter initial operation (page 22-12).

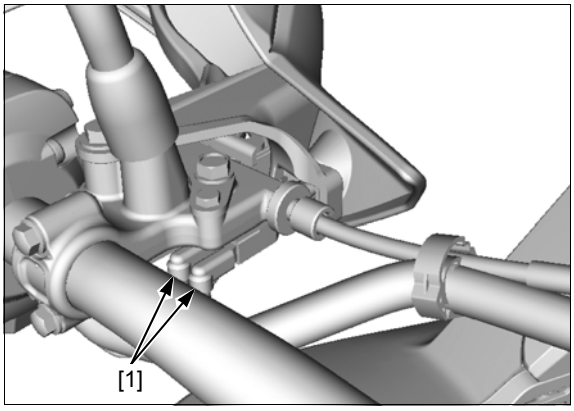
If the combination meter system inspection is OK, check the parking brake switch line as follows:

Turn the ignition switch OFF.

Disconnect the parking brake switch connectors [1].
Connect the connector terminals with a jumper wire.

The parking brake indicator should come on with the ignition switch turned ON.

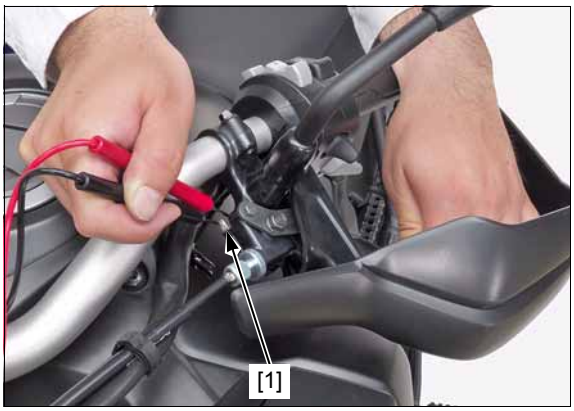
If the indicator does not come on, check for open circuit in the Green/yellow and Green wires.
If the indicator comes on, check the parking brake switch (page 22-22).



PARKING BRAKE SWITCH INSPECTION

Disconnect the parking brake switch connectors [1] and check for continuity between the terminals.

There should be continuity with the parking brake lever applied, and there should be no continuity with the parking brake lever released.



IGNITION SWITCH

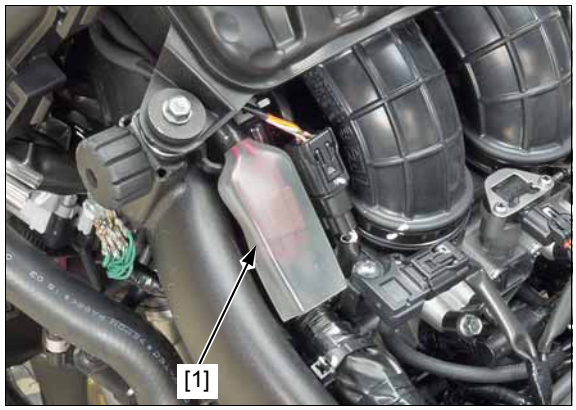
INSPECTION

Remove the fuel tank (page 7-6).

Disconnect the ignition switch 2P (Brown) connector [1].

Check for continuity between the wire terminals of the ignition switch connector in each switch position.

Refer to the wiring diagram for the terminals and switch status.
– CRF1000 (page 24-2)
– CRF1000A (page 24-3)
– CRF1000D (page 24-4)



REMOVAL/INSTALLATION

Remove the top bridge (page 17-22).

Remove the harness cover [1].

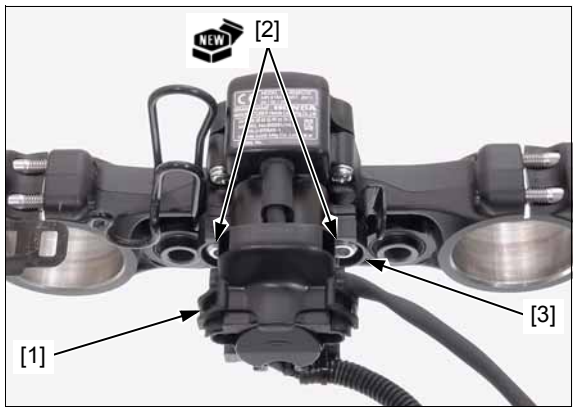
Remove the bolts [2] and ignition switch [3].

NOTE:
• Use a drill or an equivalent tool when removing the ignition switch mounting bolts.

Installation is in the reverse order of removal.

NOTE:
• Replace the switch mounting bolts with new ones.

TORQUE: 26 N·m (2.7 kgf·m, 19 lbf·ft)



HANDLEBAR SWITCHES

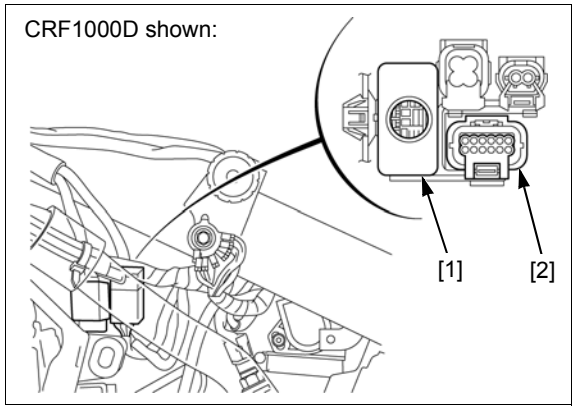
LEFT HANDLEBAR SWITCH INSPECTION

Remove the left middle cowl (page 2-6).

Disconnect the following:
– CRF1000: 12P (Gray) [1] and 4P (Black) [2] connectors
– CRF1000A: 10P (Gray) [1] and 6P (Black) [2] connectors
– CRF1000D: 10P (Gray) [1] and 12P (Black) [2] connectors

Check for continuity between the wire terminals of the handlebar switch connector in each switch position.

Refer to the wiring diagram for the terminals and switch status.
– CRF1000 (page 24-2)
– CRF1000A (page 24-3)
– CRF1000D (page 24-4)



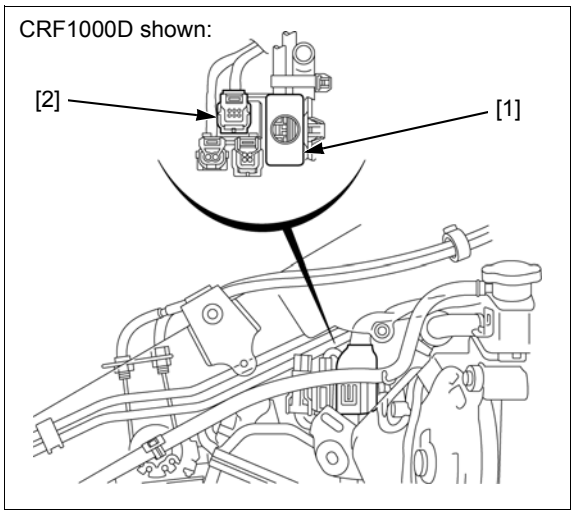
RIGHT HANDLEBAR SWITCH INSPECTION

Remove the right middle cowl (page 2-6).

Disconnect the following:
– CRF1000/A: 8P (Gray) connector [1]
– CRF1000D: 8P (Gray) [1] and 6P (Black) [2] connectors

Check for continuity between the wire terminals of the handlebar switch connector in each switch position.

Refer to the wiring diagram for the terminals and switch status.
– CRF1000 (page 24-2)
– CRF1000A (page 24-3)
– CRF1000D (page 24-4)



BRAKE LIGHT SWITCH

FRONT

Disconnect the front brake light switch connectors [1] and check for continuity between the terminals.

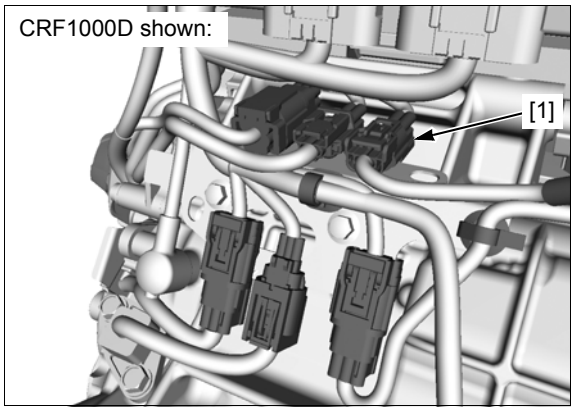
There should be continuity with the brake lever applied, and there should be no continuity with the brake lever released.



REAR

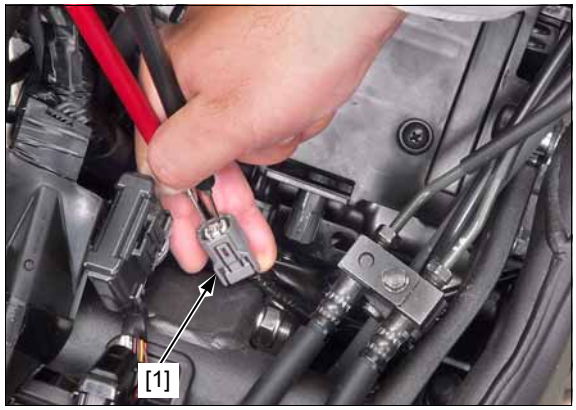
Remove the connector cover (page 5-8).

Disconnect the rear brake light switch 2P (Gray) connector [1].



Check for continuity between the rear brake light switch 2P (Gray) connector [1] terminals.

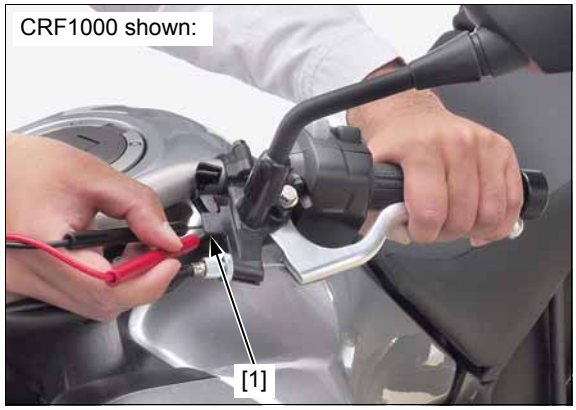
There should be continuity with the brake pedal applied, and there should be no continuity with the brake pedal released.



CLUTCH SWITCH (CRF1000/A)

Disconnect the clutch switch connectors and check for continuity between the terminals [1].

There should be continuity with the clutch lever applied, and there should be no continuity with the clutch lever released.

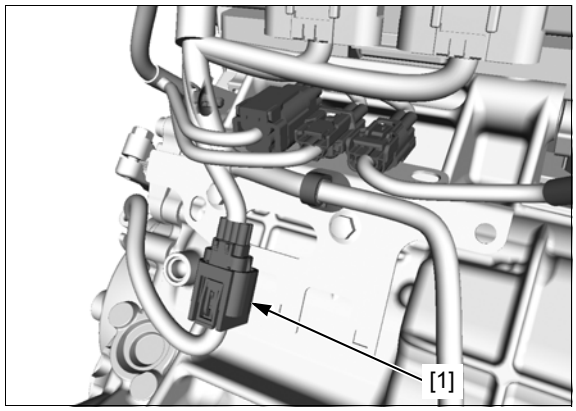


GEAR POSITION SWITCH (CRF1000/A)

REMOVAL/INSTALLATION

Remove the left rear cover (page 2-10).
Remove the rear shock absorber (page 18-8).

Disconnect the gear position switch 8P (Black) connector [1].



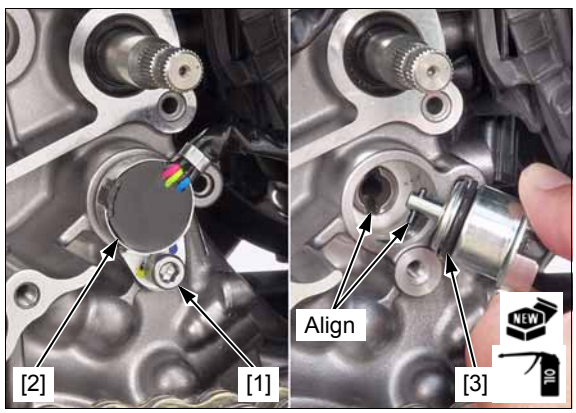
Shift the transmission into neutral.
Remove the bolt [1], the gear position switch [2], and O-ring [3].

Installation is in the reverse order of removal.

NOTE:

- Replace the O-ring with a new one.
- Apply engine oil to a new O-ring.
- When installing the gear position switch, shift the transmission into neutral.
- Align the switch pin with the shift drum slot, being careful not to damage the switch pin.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

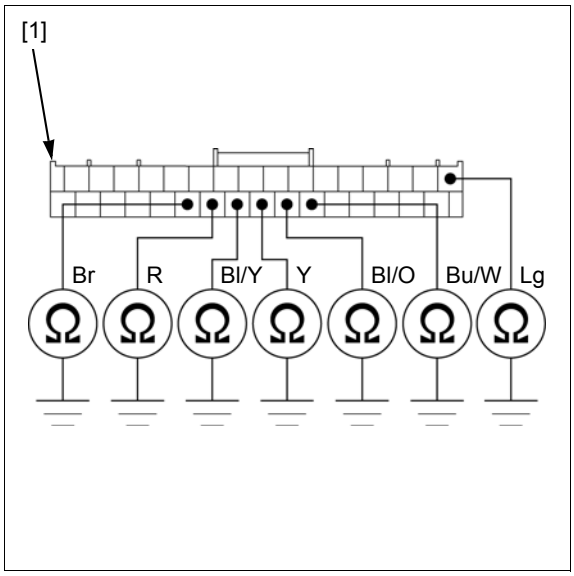


SYSTEM INSPECTION

If the gear position switch indicator does not operate properly, check the combination meter initial operation (page 22-12).

If the combination meter system inspection is OK, check the gear position switch line as follows:

Disconnect the combination meter 32P (Gray) connector (page 22-12)
Check for continuity between the wire harness side 32P (Gray) connector [1] and ground.



CONNECTION:

1st:	**Brown – ground**
Neutral:	**Light green – ground**
2nd:	**Red – ground**
3rd:	**Black/yellow – ground**
4th:	**Yellow – ground**
5th:	**Black/orange – ground**
6th:	**Blue/white – ground**

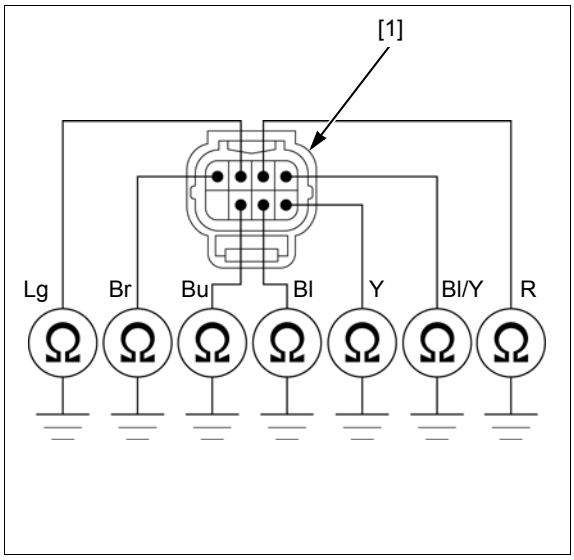
There should be continuity only at the terminals that correspond to the each gear position (open circuit inspection).
There should be no continuity at the other terminals (short circuit inspection).
You must test each of the seven wires in each change pedal position. Therefore, you need to make 49 tests, between the wire harness side 32P (Gray) connector and ground.

If the test result is abnormal, check the gear position switch (page 22-26).

SWITCH INSPECTION

If the gear position switch system inspection (page 22-26) is abnormal, check the gear position switch as following.

Disconnect the gear position switch 8P (Black) connector (page 22-25).
Check for continuity between the switch side 8P (Black) connector [1] and ground.



CONNECTION:

1st:	**Brown – ground**
Neutral:	**Light green – ground**
2nd:	**Red – ground**
3rd:	**Black/yellow – ground**
4th:	**Yellow – ground**
5th:	**Black – ground**
6th:	**Blue – ground**

There should be continuity only at the terminals that correspond to the each gear position, and there should be no continuity at the other terminals.
You must test each of the seven wires in each change pedal position. Therefore, you need to make 49 tests, between the switch side 8P (Black) connector and ground.

If the test results is normal, open and/or short circuit in the combination meter 32P (Gray) and 8P (Black) connectors.

If the test results are abnormal, replace the gear position switch (page 22-25).

SIDESTAND SWITCH

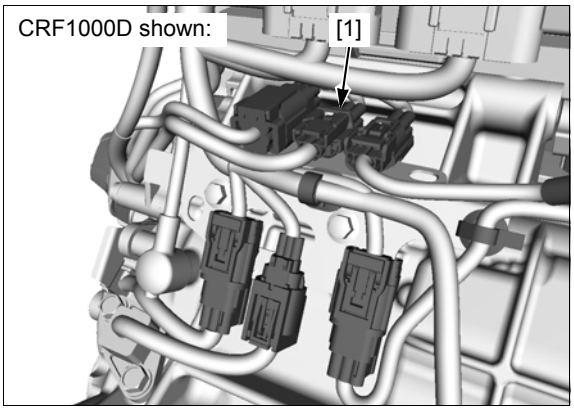
REMOVAL/INSTALLATION

Remove the left rear cover (page 2-10).

CRF1000D: Remove the shift control motor cover (page 13-71).

Remove the connector cover (page 5-8).

Disconnect the sidestand switch 2P (Black) connector [1].



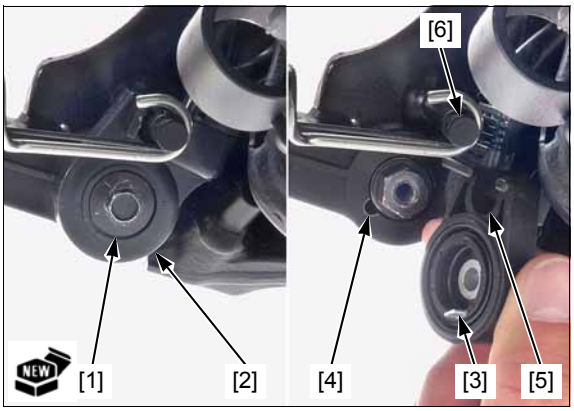
Remove the bolt [1] and sidestand switch [2].

Installation is in the reverse order of removal.

NOTE:

- Replace the bolt with a new one.
- Align the sidestand switch tab [3] with the sidestand hole [4].
- Align the sidestand switch groove [5] with the return spring holding pin [6].

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



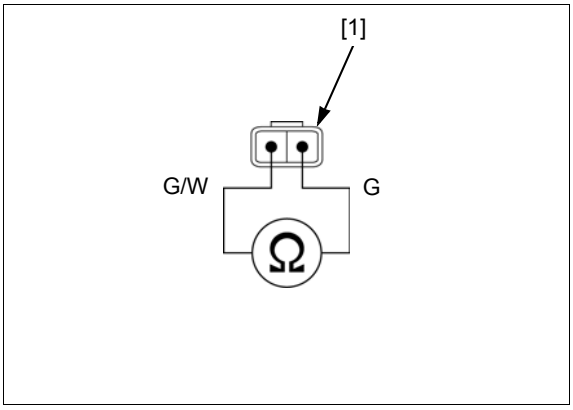
INSPECTION

Disconnect the sidestand switch 2P (Black) connector (page 22-27).

Check for continuity at the switch side 2P (Black) connector [1].

CONNECTION: Green/white – Green

There should be continuity with the sidestand retracted and no continuity with the sidestand lowered.



HORN

REMOVAL/INSTALLATION

Turn the ignition switch OFF.

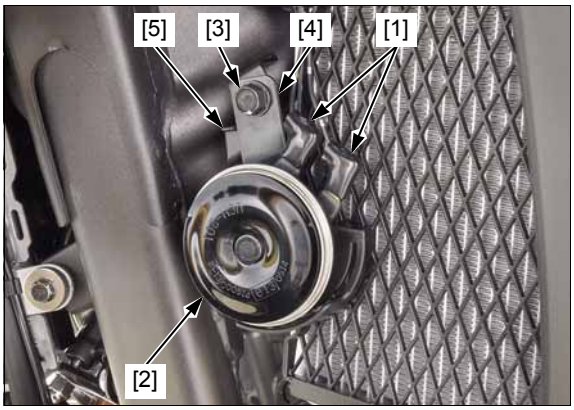
Disconnect the wire connectors [1] from the horn [2].

Remove the bolt [3] and horn.

Installation is in the reverse order of removal.

NOTE:

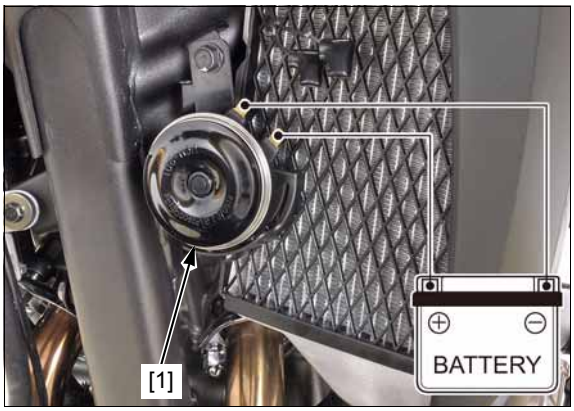
- Rest the horn stay [4] against the stopper [5].



INSPECTION

Disconnect the wire connectors from the horn (page 22-28).

Connect the 12 V battery to the horn [1] terminal directly.
The horn is normal if it sounds when the 12 V battery is connected across the horn terminals.



HSTC (Honda Selectable Torque Control) SYSTEM

NOTE:

- The HSTC system utilizes various PGM-FI/ABS components. If any of the related items and/or circuit has problem, the system will fail and the torque control indicator remains on in order to notify the rider of the problem.
- If any DTC or ABS problem code is indicated, repair the malfunction part(s) first.

SYSTEM INSPECTION

PRE-START SELF-DIAGNOSIS PROCEDURE

1. Turn the ignition switch ON and engine stop switch "".
2. The torque control indicator turns ON.
3. Start the engine.
4. Test ride the motorcycle and increase the motorcycle speed to approximately 10 km/h (6 mph).
5. The system is normal if the indicator goes off.

TORQUE CONTROL INDICATOR REMAINS ON AFTER THE PRE-START SELF DIAGNOSIS IS COMPLETED, OR IT TURNS AND REMAINS ON WHILE RIDING.

Check the following:

– No PGM-FI DTC indicated (page 4-9)
– No DCT DTC indicated (CRF1000D) (page 13-10)
– No ABS DTC (page 20-8)
– Combination meter TXD line (page 22-14)

If all of the above items are normal, replace the combination meter (page 22-12) and recheck the torque control indicator.

TORQUE CONTROL CAN NOT BE TURNED OFF OR CAN NOT CHANGE LEVEL BY PRESSING THE TORQUE CONTROL SWITCH

Check the following:

– Yellow and Yellow/white wire between the left handlebar switch and fuse box 1 (sub fuse ENG STOP 7.5 A) for open or short circuit.
– Blue/black wire between the left handlebar switch and ECM/PCM for open or short circuit.
– Left handlebar switch (page 22-23)

If all of the above items are normal, replace the ECM/PCM (page 4-39) with a new one and recheck.

TORQUE CONTROL SWITCH INSPECTION

Refer to the left handlebar switch inspection (page 22-23).

TORQUE CONTROL SWITCH REMOVAL/INSTALLATION

Refer to the left handlebar switch removal/installation.

– REMOVAL (page 17-4)
– INSTALLATION (page 17-7)

REAR ABS SWITCH (CRF1000A/D)

NOTE:

- For the rear ABS off mode system technical feature (page 1-50).
- If the rear ABS switch and related circuit has problem, the system will get back the normal ABS mode. In order to notify the rider of the problem, the rear ABS off indicator goes off and ABS indicator comes on.
- If the ABS DTC 8-2 is indicated, refer to the ABS TROUBLESHOOTING DCT 8-2 (page 20-12).

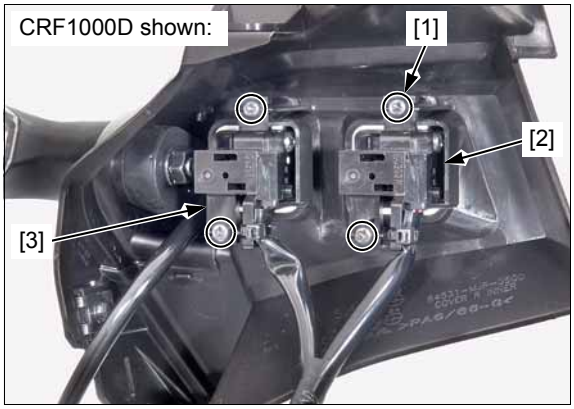
REAR ABS SWITCH REMOVAL/ INSTALLATION

Remove the right inner panel cover (page 2-8).

CRF1000A: Remove the two screws [1] and rear ABS switch [2].

CRF1000D: Remove the four screws [1] and rear ABS switch [2]/G switch [3] assembly.

Installation is in the reverse order of removal.



INSPECTION

PRE-START SELF-DIAGNOSIS PROCEDURE

1. Turn the ignition switch ON and engine stop switch "○".
2. If the system is normal, the rear ABS off indicator comes on and goes off after approximately 2 seconds.

REAR ABS CAN NOT BE TURNED OFF OR ON BY PRESSING THE REAR ABS SWITCH

Check the following:

– Red/black wire between the rear ABS switch 2P (CRF1000A) or 4P (CRF1000D) connector and ABS modulator for open or short circuit.
– Green wire between the rear ABS switch 2P (CRF1000A) or 4P (CRF1000D) connector and ground for open circuit.
– Rear ABS switch (page 22-31)

If all of the above items are normal, replace the ABS modulator with a new one (page 20-24) and recheck.

REAR ABS IS TURNED OFF OR ON WITHOUT PRESSING THE REAR ABS SWITCH

Check the following:

– Red/black wire between the rear ABS switch 2P (CRF1000A) or 4P (CRF1000D) connector and ABS modulator for short circuit.
– Rear ABS switch (page 22-31)

If all of the above items are normal, replace the ABS modulator with a new one (page 20-24) and recheck.

REAR ABS SWITCH INSPECTION

Remove the right middle cowl (page 2-6).

Disconnect the following:

– CRF1000A: Rear ABS switch 2P (Black) connector [1]
– CRF1000D: Rear ABS/G switch 4P (Black) connector [1]

Check for continuity between the switch side terminals.

Connection:
CRF1000A: Red – Black
CRF1000D: Red/black – Green

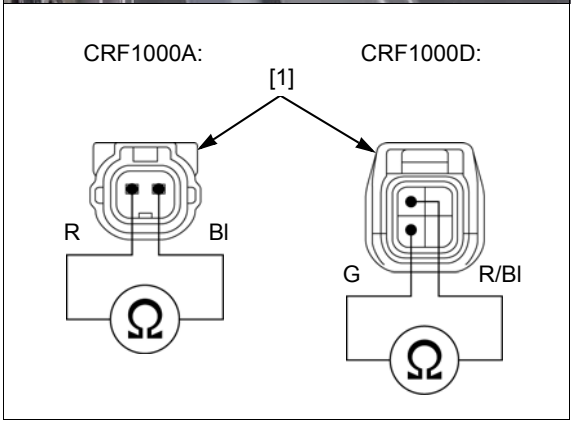
There should be continuity with the switch pushed, and there should be no continuity with the switch released.

If the switch operate properly, open circuit in the following wires:

– Red/black wire between the switch and ABS modulator
– Green wire between the switch and ground

If the switch does not operate properly, replace the switch (page 22-30).





G SWITCH (CRF1000D)

NOTE:
• For the G ride system technical feature (page 1-52).

G SWITCH REMOVAL/INSTALLATION

Refer to the REAR ABS SWITCH REMOVAL/ INSTALLATION (page 22-30).

INSPECTION

G SWITCH INSPECTION

Check the following:

– No DCT DTC indicated (page 13-10)
– Combination meter TXD line (page 22-14)

If all of the above items are normal, check the G switch as following.

Remove the right middle cowl (page 2-6).

Disconnect the rear ABS/G switch 4P (Black) connector [1].

Check for continuity between the switch side terminals.

Connection: Blue/black – Green/black

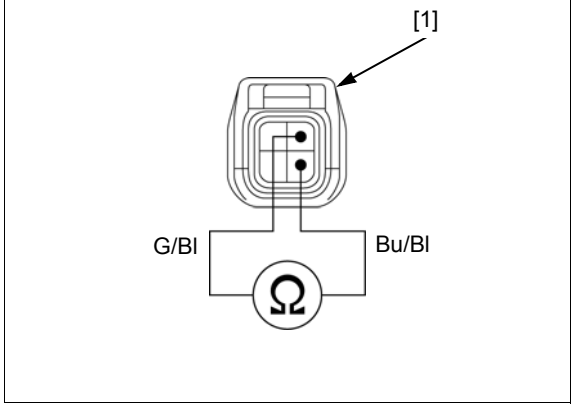
There should be continuity with the switch pushed, and there should be no continuity with the switch released.

If the switch operate properly, open circuit in the following wires:

– Blue/black wire between the switch and PCM
– Green/black wire between the switch and ground

If the switch does not operate properly, replace the switch (page 22-30).





23. IMMOBILIZER SYSTEM (HISS)

SERVICE INFORMATION ····· 23-2

SYSTEM LOCATION ····· 23-2

SYSTEM DIAGRAM ····· 23-3

KEY REGISTRATION PROCEDURES ····· 23-3

DIAGNOSTIC CODE INDICATION ····· 23-7

TROUBLESHOOTING ····· 23-8

HISS INDICATOR ····· 23-10

ECM (CRF1000/A)/PCM (CRF1000D) ····· 23-10

IMMOBILIZER RECEIVER ····· 23-10

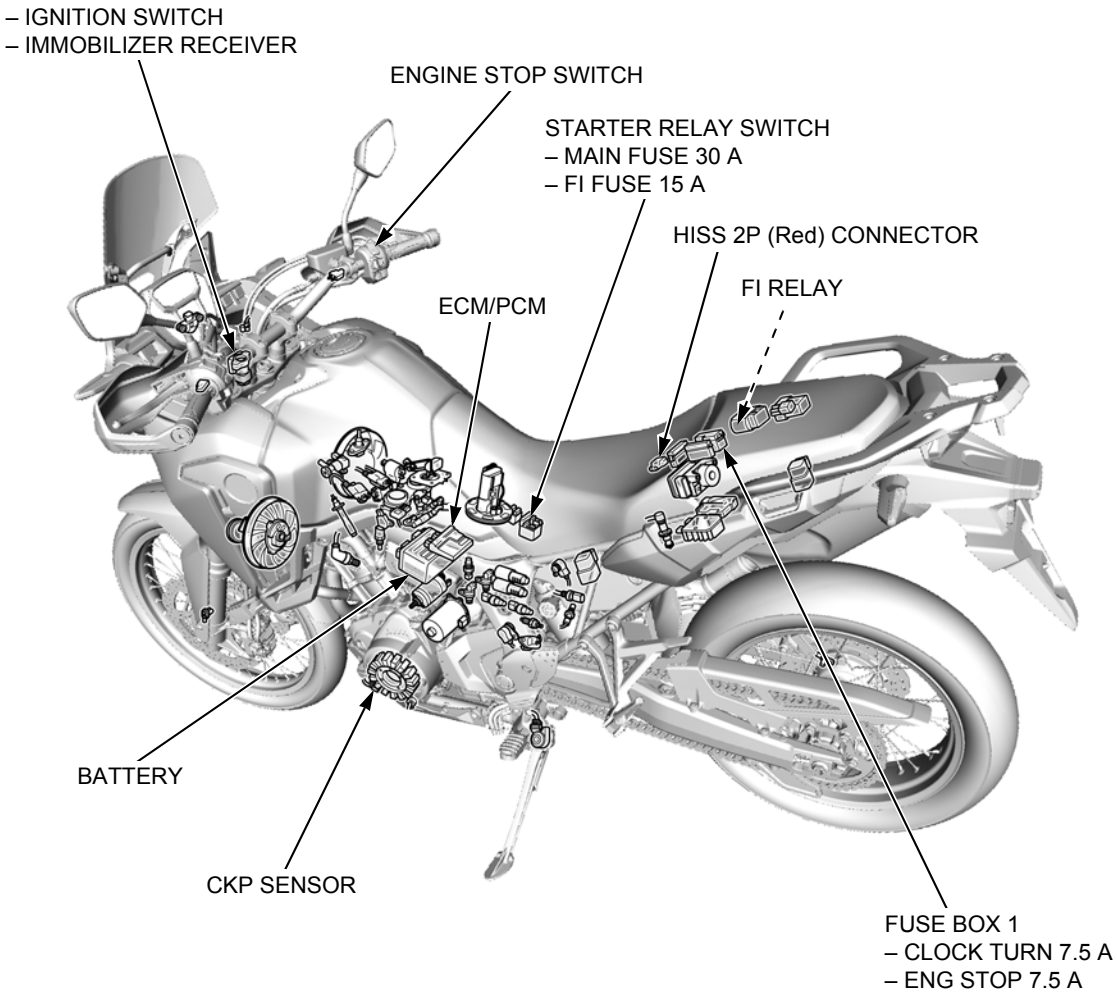
SERVICE INFORMATION

GENERAL

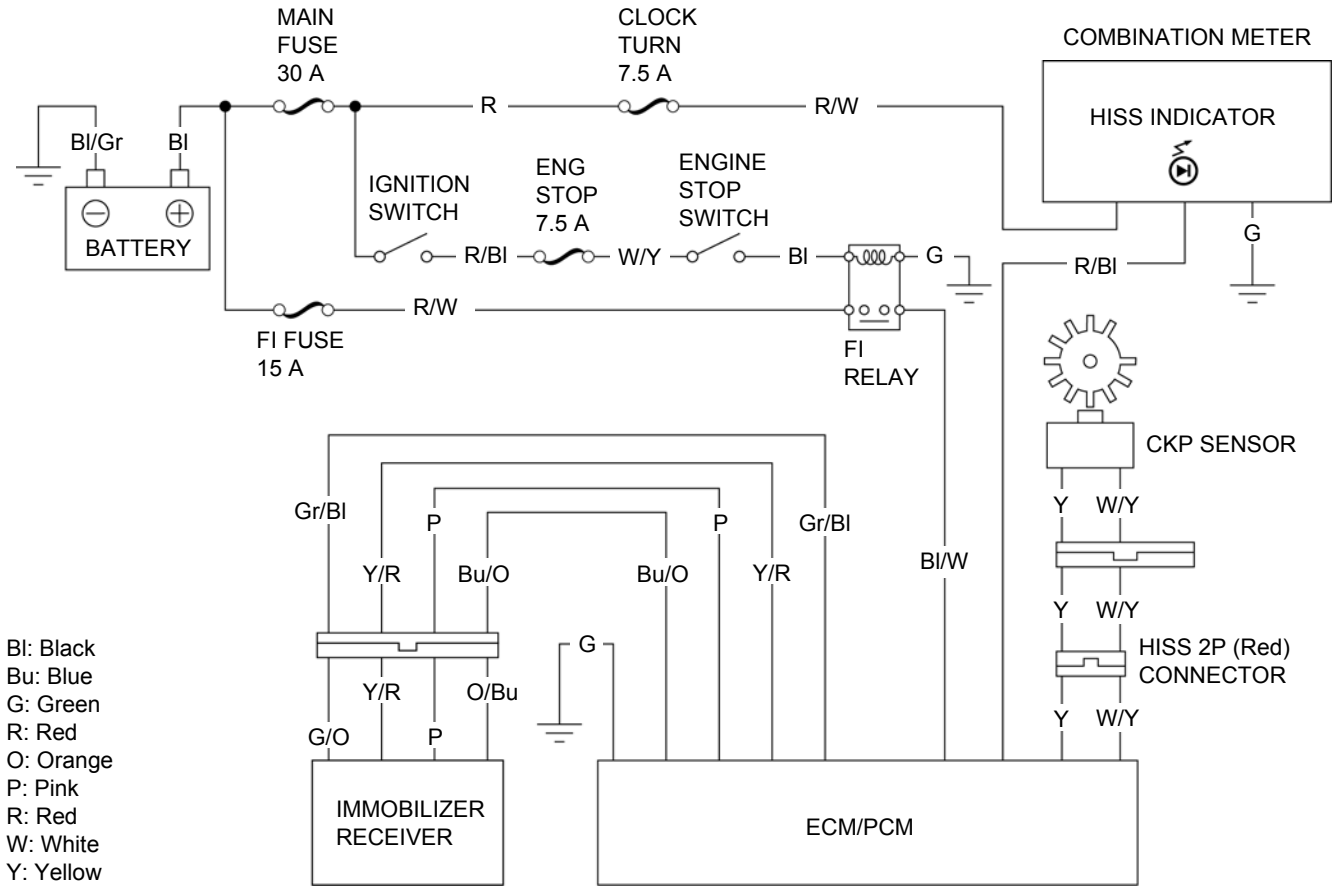
- When checking the HISS, follow the steps in the troubleshooting flow chart (page 23-8).
- Keep the immobilizer key away from the other motorcycle's immobilizer key when using it. The jamming of the key code signal may occur and the proper operation of the system will be obstructed.
- The key has built-in electronic part (transponder). Do not drop and strike the key against a hard material object, and do not leave the key on the dashboard in the car, etc. where the temperature will rise. Do not leave the key in the water for a prolonged time such as by washing the clothes.
- The ECM/PCM as well as the transponder keys must be replaced if all transponder keys have been lost.
- The system does not function with a duplicated key code is registered into the transponder with the HISS.
- The ECM/PCM can store up to four key codes. (The four keys can be registered.)
- If the PCM is replaced, perform the following procedure.
  – Key Registration Procedure (page 23-3)
  – Clutch Initialize Learning Procedure (CRF1000D) (page 13-82)
- Do not modify the HISS as it can cause the system failure. (The engine cannot be started.)
- Refer to the ignition system inspection (page 5-6).
- Refer to the ignition switch servicing (page 22-23).

SYSTEM LOCATION

CRF1000D shown:



SYSTEM DIAGRAM



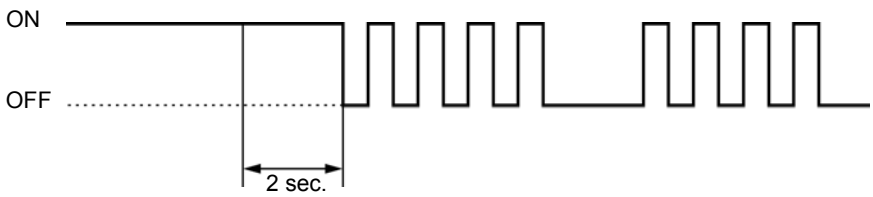
KEY REGISTRATION PROCEDURES

When the key has been lost, or additional spare key is required:

1. Obtain a new transponder key.
2. Grind the key in accordance with the shape of the original key.
3. Apply 12 V battery voltage to the CKP sensor lines of the ECM/PCM using the special tool (page 23-7).
4. Turn the ignition switch ON with the original key. The HISS indicator comes on and it remains on.

- The code of the original key recognized by the ECM/PCM.
- If there is any problem in the HISS, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 23-7).

5. Disconnect the red clip of the inspection adaptor from the battery positive (+) terminal for two seconds or more, then connect it again. The indicator remains on for approx. two seconds, then it blinks four times repeatedly.

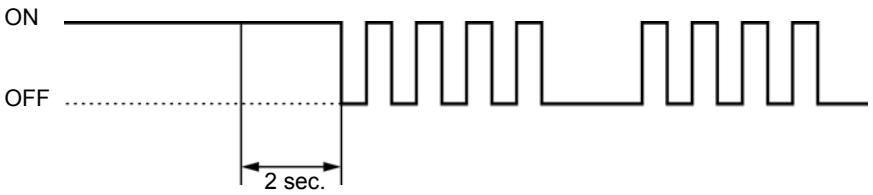


- The HISS enters the registration mode. Registrations of all key except the original key inserted in the ignition switch are cancelled. (Registration of the lost key or spare key is cancelled.)

  The spare key must be registered again.

6. Turn the ignition switch OFF and remove the key.

7. Turn the ignition switch ON with a new key or the spare key. (Never use the key registered in previous steps.) The indicator comes on for two seconds then it blinks four times repeatedly.



- The new key or spare key is registered in the ECM/PCM.
- If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain for approx. ten seconds, then it will indicate the diagnostic code (page 23-7).
- Keep the other transponder key away from the immobilizer receiver more than 50 mm (2.0 in).

8. Repeat the steps 6 and 7 when you continuously register the other new key.

   The ECM/PCM can store up to four key codes. (The four keys can be registered.)

9. Turn the ignition switch OFF, remove the inspection adaptor and connect the HISS 2P (Red) connector.
10. Turn the ignition switch ON with the registered key.

- The HISS returns to the normal mode.

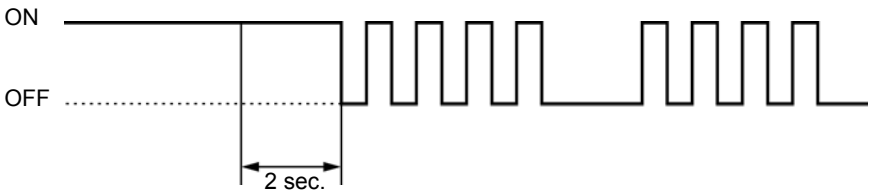
11. Check that the engine can be started using all registered keys.

When the ignition switch is faulty:

1. Obtain a new ignition switch and two new transponder key.
2. Remove the ignition switch (page 22-23).
3. Apply 12 V battery voltage to the CKP sensor lines of the ECM/PCM using the special tool (page 23-7).
4. Set the original (registered) key near the immobilizer receiver so that the transponder in the key can communicate with the receiver.
5. Connect a new ignition switch to the wire harness and turn it ON with a new transponder key. (keep the ignition switch away from the receiver.) The HISS indicator comes on and it remains on.

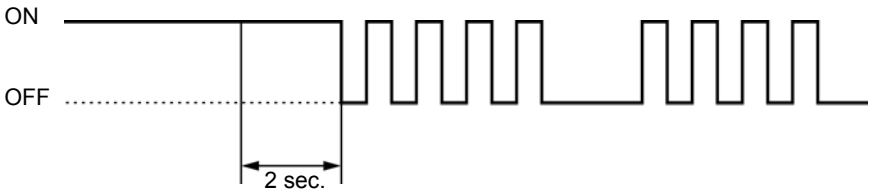
- The code of the original key recognized by the ECM/PCM.
- If there is any problem in the HISS, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 23-7).

6. Disconnect the red clip of the inspection adaptor from the battery positive (+) terminal for two seconds or more, then connect it again. The indicator remains on for approx. two seconds then it blinks four times repeatedly.



- The HISS enters the registration mode. Registrations of all key except the original key set near the receiver are cancelled.

7. Turn the ignition switch OFF and remove the key.
8. Install the ignition switch onto the top bridge (page 22-23).
9. Turn the ignition switch ON with a first new key. The indicator comes on for two seconds then it blinks four times repeatedly.



- The first key or spare key is registered in the ECM/PCM.
- If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain for approx. ten seconds, then it will indicate the diagnostic code (page 23-7).

10. Turn the ignition switch OFF and disconnect the red clip of the inspection adaptor from the battery positive (+) terminal.
11. Turn the ignition switch ON (with the first key registered in step 9). The HISS indicator comes on for two seconds then it goes off.

- The HISS returns to the normal mode.

12. Turn the ignition switch OFF and connect the red clip of the inspection adaptor to the battery positive (+) terminal.
13. Turn the ignition switch ON (with the first key registered in step 9). The HISS indicator comes on and it remains on.

- The code if the first key is recognized by the ECM/PCM.
- If there is any problem in the HISS, the system will enter the diagnostic mode and the indicator will remain for approx. ten seconds, then it will indicate the diagnostic code (page 23-7).

14. Disconnect the red clip of the inspection adaptor from the battery positive (+) terminal for two seconds or more, then connect it again. The indicator remains on for approx. two seconds then it blinks four times repeatedly.

- The immobilizer system (HISS) enters the registration mode. Registration of the original key used in step 4 is cancelled.

15. Turn the ignition switch OFF and remove the key.
16. Turn the ignition switch ON with a second new key. (Never use the key registered in previous step.) The indicator comes on for two seconds then it blinks four times repeatedly.

- The second key or spare key is registered in the ECM/PCM.
- If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain for approx. ten seconds, then it will indicate the diagnostic code (page 23-7).
- Keep the other transponder key away from the immobilizer receiver more than 50 mm (2.0 in).

17. Repeat the steps 15 and 16 when you continuously register the other new key.

    The ECM/PCM can store up to four key codes. (The four keys can be registered.)

18. Turn the ignition switch OFF, remove the inspection adaptor and connect the HISS 2P (Red) connector.
19. Turn the ignition switch ON with the registered key.

- The HISS returns to the normal mode.

20. Check that the engine can be started using all registered keys.

When all keys have been lost:

1. Obtain a new ECM/PCM and new key set.
2. Replace the ignition switch with a new one (page 22-23).
3. Replace the ECM/PCM with a new one (page 4-39).
4. Turn the ignition switch ON with a first new key and engine stop switch "". The HISS indicator comes on for two seconds, then it blinks four times repeatedly.

- The first key is registered in the ECM/PCM.
- If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain for approx. ten seconds, then it will indicate the diagnostic code (page 23-7).

5. Turn the ignition switch OFF and remove the first key.
6. Turn the ignition switch ON with a second new key. The HISS indicator comes on for two seconds, then it blinks four times repeatedly.

- The second key is registered in the ECM/PCM.
- If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain for approx. ten seconds, then it will indicate the diagnostic code (page 23-7).

7. Turn the ignition switch OFF and remove the second key.

- The system (ECM/PCM) will not enter the normal mode unless the two keys are registered in ECM/PCM.
- The third new key cannot be continuously registered. When it is necessary to register the third key, follow the procedures "When the key has been lost, or additional key is required" (page 23-3).

8. Check that the engine can be started using all registered keys.
9. Replace the remaining key set parts.

When the ECM/PCM is faulty:

1. Obtain a new ECM/PCM and two new transponder keys.
2. Grind the keys in accordance with the shape of the original key (or use the key number plate when all key have been lost).
3. Replace the ECM/PCM with a new one (page 4-39).
4. Turn the ignition switch ON with a first new key and engine stop switch "". The HISS indicator comes on for two seconds, then it blinks four times repeatedly.

- The first key is registered in the ECM/PCM.
- If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain for approx. ten seconds, then it will indicate the diagnostic code (page 23-7).

5. Turn the ignition switch OFF and remove the first key.
6. Turn the ignition switch ON with a second new key. The HISS indicator comes on for two seconds, then it blinks four times repeatedly.

- The second key is registered in the ECM/PCM.
- If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain for approx. ten seconds, then it will indicate the diagnostic code (page 23-7).

7. Turn the ignition switch OFF and remove the second key.

- The system (ECM/PCM) will not enter the normal mode unless the two keys are registered in ECM/PCM.
- The third new key cannot be continuously registered. When it is necessary to register the third key, follow the procedures "When the key has been lost, or additional key is required" (page 23-3).

8. Check that the engine can be started using all registered keys.

DIAGNOSTIC CODE INDICATION

Remove the main seat (page 2-4).

Release the main harness wire clip [1] from the hole [2] of the ETC tray.

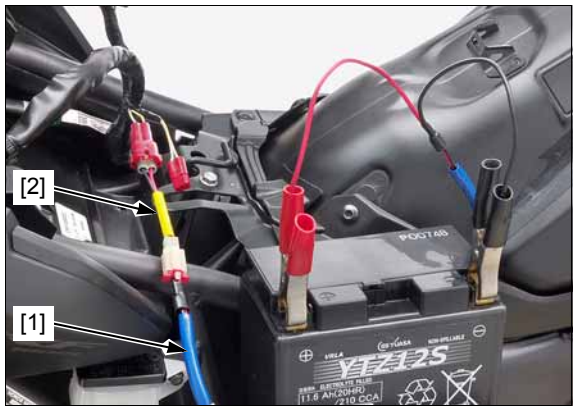
Release the HISS 2P (Red) connector [3] from the stay [4] of the ETC tray and disconnect it.



Connect the special tools to the wire harness side 2P (Red) connector.
Connect the Red clip of the adaptor to the 12 V battery positive (+) terminal and Black clip to the negative (–) terminal.

TOOLS:

Inspection adaptor [1]	**07XMZ-MBW0101**
Test harness adaptor [2]	**070MZ-MEC0101**



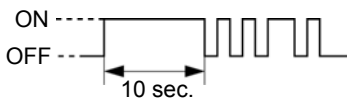
Turn the ignition switch ON with the properly registered key and engine stop switch "".
The HISS indicator will come on for approx. ten seconds then it will start blinking to indicate the diagnostic code if the system is abnormal.

The blinking frequency is repeated.

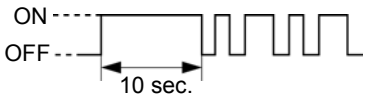
The HISS indicator remains on when the system is normal. (The system is in the normal mode and the diagnostic code does not appear.)

DIAGNOSTIC CODE

When the system (ECM/PCM) enters the diagnostic mode from the normal mode:

BLINKING PATTERN	SYMPTOM	PROBLEM	PROCEDURE
	ECM/PCM data is abnormal	Faulty ECM/PCM	Replace the ECM/ PCM
	Code signals cannot send or receive	Faulty receiver or wire harness	Follow the troubleshooting (page 23-8)
	Identification code does not match	Jamming by the other transponder	Keep the other motorcycle's transponder key away from the immobilizer receiver more than 50 mm (2.0 in)
	Secret code does not match		

When the system (ECM/PCM) enters the diagnostic mode from the registration mode:

BLINKING PATTERN	SYMPTOM	PROBLEM	PROCEDURE
	Registration is overlapped	The key is already registered properly	Use a new key or cancelled key
	Code signals cannot send or receive	Communication fails	Follow the troubleshooting (page 23-8)
	Registration is impossible	The key is already registered on the other system	Use a new key

TROUBLESHOOTING

The HISS indicator comes on for approx. two seconds then it goes off, when the ignition switch is turned ON with the properly registered key and the HISS functions normally. If there is any problem or the properly registered key is not used, the indicator will remains on.

HISS indicator does not come on when the ignition switch is turned ON

1. **Combination Meter Initial Operation Inspection**

   Check the combination meter initial operation (page 22-12).

   Is the initial operation displayed?

   YES – GO TO STEP 2.

   NO – Check the combination meter power and ground lines (page 22-12).

2. **TXD Line Inspection**

   Check the combination meter indication when the TXD line is abnormal (page 22-14).

   Does the combination meter shows the communication line faulty operation?

   YES – Check the TXD line (page 22-14).

   NO – Check the ECM/PCM power/ground lines (page 4-40).

HISS indicator remains on with the ignition switch turned ON

1. **Immobilizer Receiver Jamming Inspection**

   Check that there is any metal obstruction or the other vehicle‘s transponder key near the immobilizer receiver and key.

   Is there any metal obstruction or the other transponder key?

   YES – Remove it and recheck.

   NO – GO TO STEP 2.

2. **First Transponder Key Inspection**

   Turn the ignition switch ON with the spare transponder key and check the HISS indicator.
   The indicator should came on for 2 seconds then go off.

   Is the indicator go off?

   YES – Faulty first transponder key

   NO – GO TO STEP 3.

3. Diagnostic Code Inspection

Perform the diagnostic code indication procedure (page 23-7).
Check that the HISS indicator comes on then it starts blinking.

Is the indicator brinks or stay lit?

BRINKS–Read the diagnostic code (page 23-7).

STAY LIT–GO TO STEP 4.

4. TXD Line Inspection

Check the TXD line (Black wire) between the ECM/PCM and combination meter connectors (page 22-14).

Is the inspection normal?

NO – Open or short circuit in Black wire

YES – GO TO STEP 5.

5. CKP sensor Line Open Circuit Inspection

Check the CKP sensor lines (page 23-10).

Is there continuity?

YES – • Open circuit in the Yellow wire
• Open circuit in the White/yellow wire

NO – Faulty PCM

Diagnostic code ⌐¬⌐¬⌐¬⌐ is indicated (Code signals cannot send or receive)

1. Immobilizer Receiver Power Input Line Inspection

Check the immobilizer receiver power input line (page 23-11).

Is the input line normal?

YES – GO TO STEP 2.

NO – Open or short circuit in the Yellow/red wire

2. Immobilizer Receiver Ground Line Inspection

Check the immobilizer receiver ground line (page 23-11).

Is the ground line normal?

YES – GO TO STEP 3.

NO – • CRF1000/A: Open circuit in the Gray/black wire
• CRF1000D: Open circuit in the Gray wire

3. Immobilizer Receiver Signal Line Inspection

Check the immobilizer receiver signal lines (page 23-11).

Are the signal lines normal?

YES – GO TO STEP 4.

NO – Open or short circuit in the Pink or Blue/orange wire

4. Immobilizer Receiver Inspection

Replace the immobilizer receiver with a know good one (page 23-12).
Perform the diagnostic code indication procedure (page 23-7).

Is the Diagnostic code ⌐¬⌐¬⌐¬⌐ indicated?

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

NO – Faulty original immobilizer receiver

HISS INDICATOR

POWER INPUT LINE INSPECTION

Inspect the combination meter power/ground line (page 22-12).

HISS INDICATOR LINE INSPECTION

Inspect the combination meter TXD line (page 22-14).

ECM (CRF1000/A)/PCM (CRF1000D)

CKP SENSOR LINE INSPECTION

Disconnect the following:

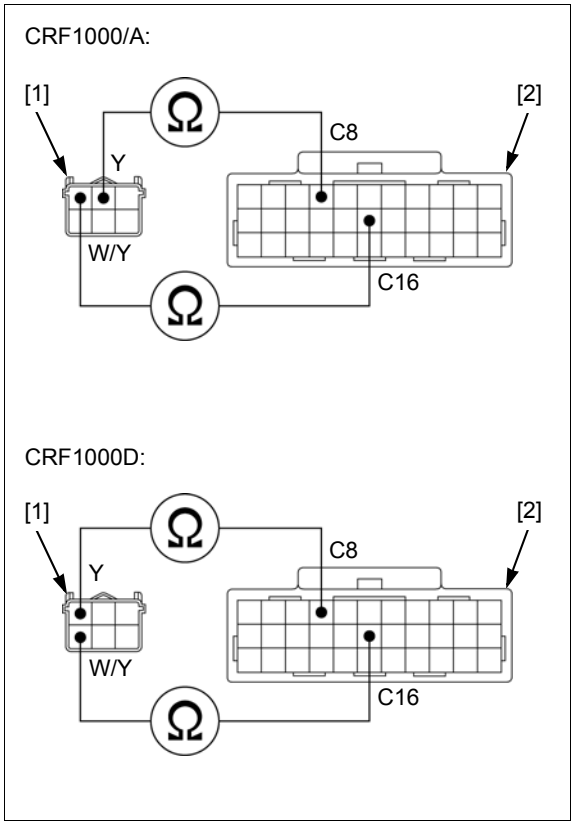
– CRF1000/A: Alternator assembly 6P (Black) connector (page 11-4)
– CRF1000D: Alternator assembly 6P (Black) connector (page 11-5)
– ECM/PCM 33P (Gray) connector (page 4-39)

Check for continuity between the 6P (Black) [1] and 33P (Gray) [2] connectors.

CONNECTION: Yellow – C8
White/yellow – C16

TOOL:
Test probe **07ZAJ-RDJA110**

There should be continuity.



IMMOBILIZER RECEIVER

Remove the fuel tank (page 7-6).

Turn the ignition switch OFF.

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



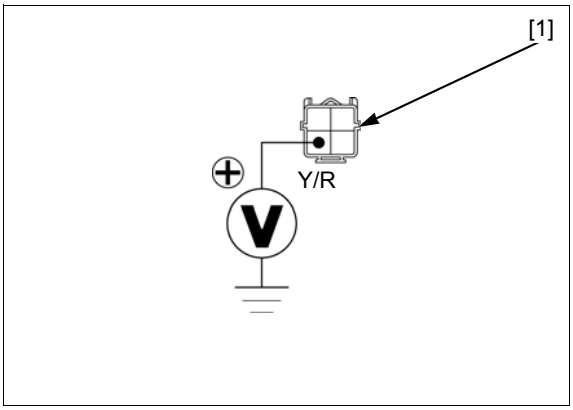
POWER INPUT LINE INSPECTION

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

Measure the voltage between the immobilizer receiver 4P (Black) connector [1] and ground at the wire side.

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

There should be approx. 5 V.

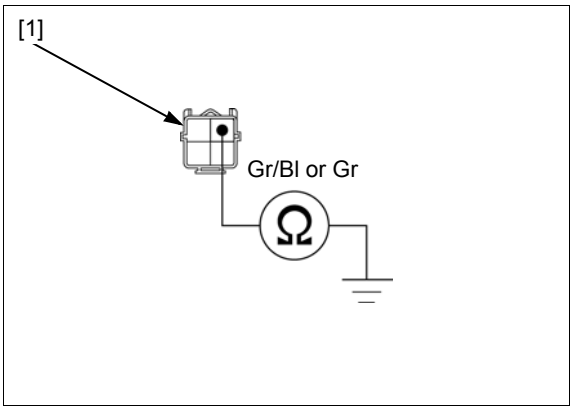


GROUND LINE INSPECTION

Check for continuity between the immobilizer receiver 4P (Black) connector [1] and ground at the wire side.

CONNECTION:
CRF1000/A: Gr/Bl (+) – Ground (–)
CRF1000D: Gr (+) – Ground (–)

There should be continuity at all times.



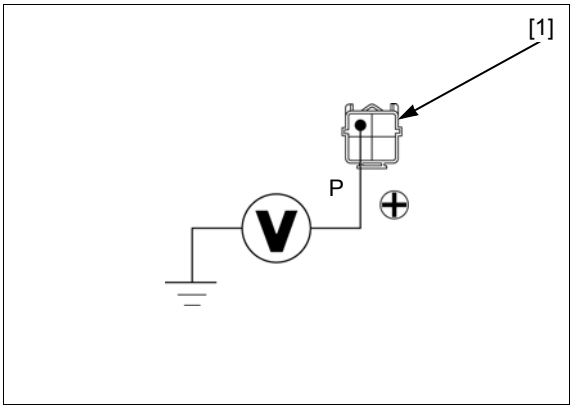
SIGNAL LINE INSPECTION

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

Measure the voltage between the immobilizer receiver 4P (Black) connector [1] and ground at the wire side.

CONNECTION: Pink (+) – Ground (–)

There should be approx. 5 V.



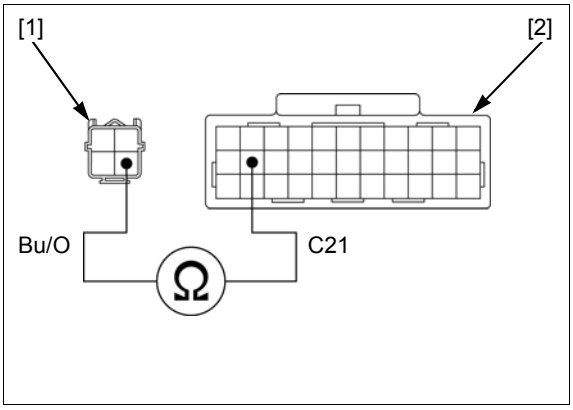
Disconnect the ECM/PCM 33P (Gray) connector (page 4-39).

Check for continuity between the immobilizer receiver 4P (Black) [1] and 33P (Gray) [2] connectors at the wire side.

CONNECTION: Blue/orange – C21

TOOL:
Test probe **07ZAJ-RDJA110**

There should be continuity.

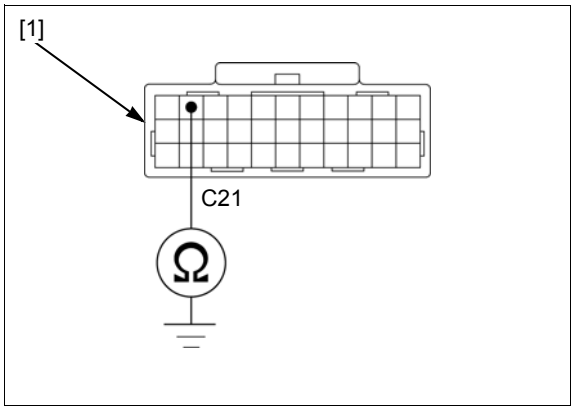


Check for continuity between the PCM 33P (Gray) connector [1] and ground at the wire side.

CONNECTION: C21 – Ground

TOOL:
Test probe **07ZAJ-RDJA110**

There should be no continuity.



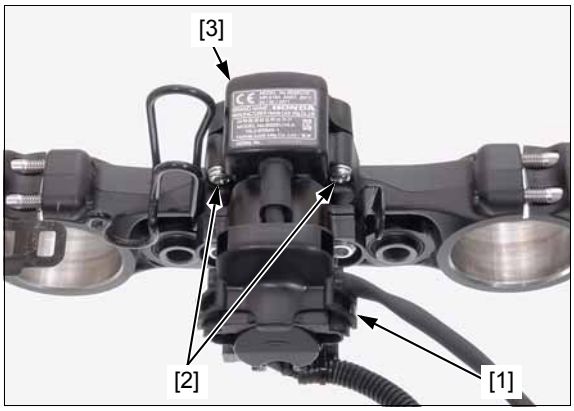
REMOVAL/INSTALLATION

Remove the top bridge (page 17-22).

Remove the harness cover [1].

Remove the screws [2] and the immobilizer receiver [3].

Installation is in the reverse order of removal.



REPLACEMENT PARTS FOR PROBLEM

Problem	Replacement parts					
	Transponder Key	Immobilizer receiver	ECM/PCM	Ignition switch assembly	Key set	Seat lock cylinder
One Key has been lost, or additional spare key is required	○					
All key has been lost			○		○	
ECM/PCM is faulty	○		○			
Immobilizer receiver is faulty		○				
Ignition switch is faulty				○		
Seat lock is faulty						○

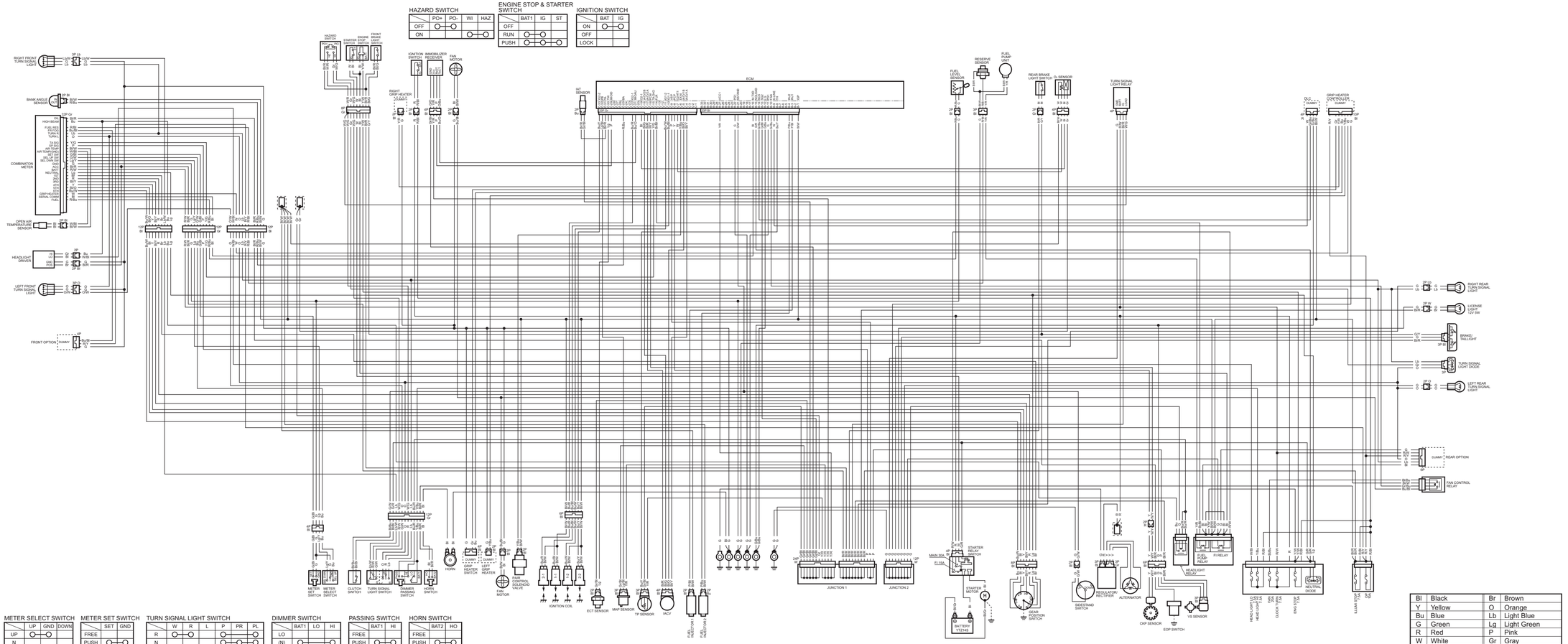
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WIRING DIAGRAM (CRF1000A)····· 24-3

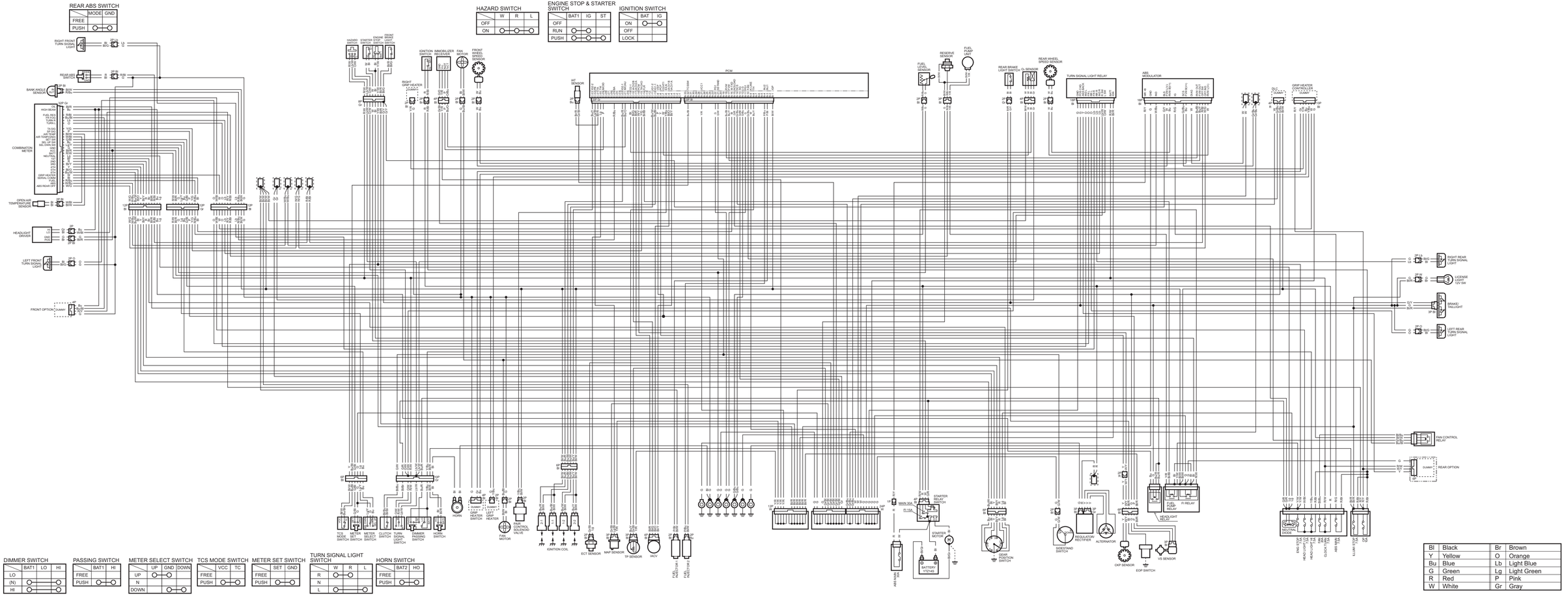
WIRING DIAGRAM (CRF1000D)····· 24-4

WIRING DIAGRAM (CRF1000)



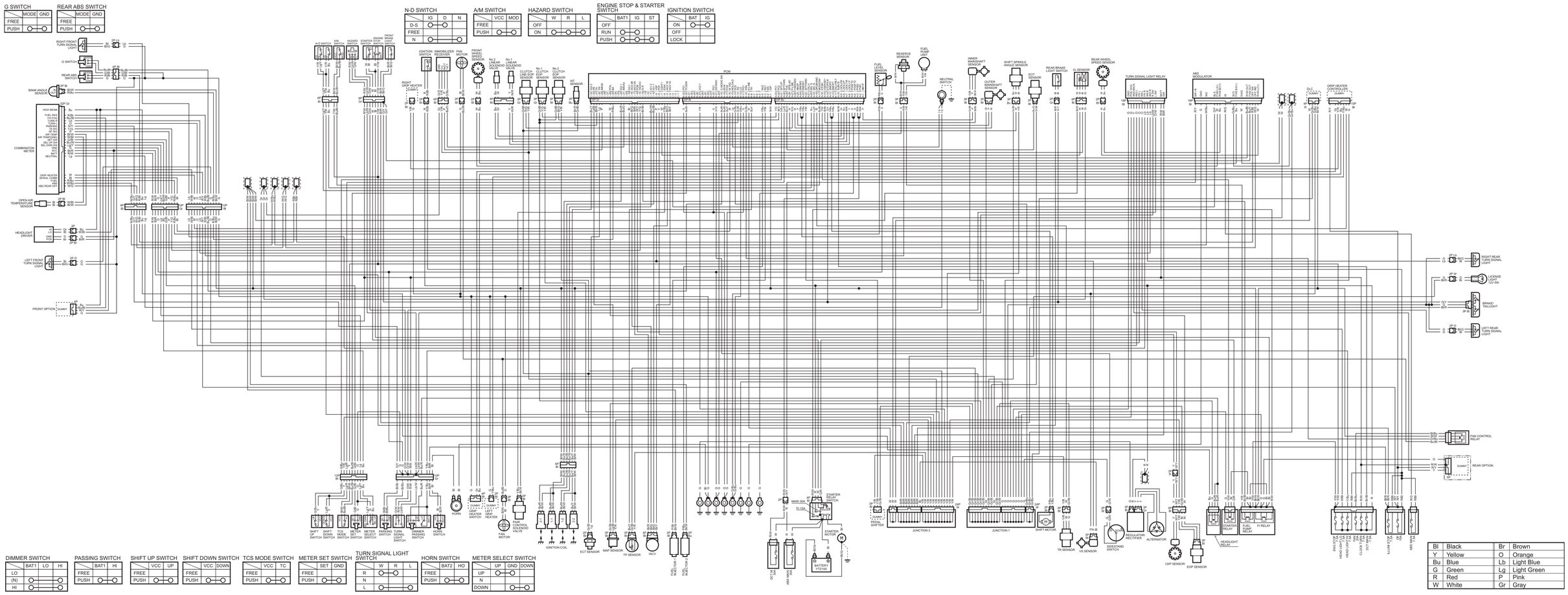
Bl	Black	Br	Brown
Y	Yellow	O	Orange
Bu	Blue	Lb	Light Blue
G	Green	Lg	Light Green
R	Red	P	Pink
W	White	Gr	Gray

WIRING DIAGRAM (CRF1000A)



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

WIRING DIAGRAM (CRF1000D)



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

MEMO

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HONDA

The Power of Dreams

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