

2017-2018



SERVICE MANUAL

CRF450R/RX

How To Use This Manual

This manual describes the service procedures for the CRF450R/RX.

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

Section 4 through 20 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 motorcycle.

You must use your own good judgment.

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

- Safety Labels – on the motorcycle
- 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 motorcycle 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 motorcycle, other property, or the environment.

Date of Issue: May, 2017

HOW TO USE THIS MANUAL

SYMBOLS

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

	Replace the part(s) with new one(s) before assembly.
	Use the recommend engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1).
	Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).
	Use molybdenum disulfide grease (containing more than 3% molybdenum disulfide, NLGI #2 or equivalent). Example: <ul style="list-style-type: none">• Molykote® BR-2 plus manufactured by Dow Corning U.S.A.
	Use molybdenum disulfide paste (containing more than 40% molybdenum disulfide, NLGI #2 or equivalent). Example: <ul style="list-style-type: none">• Molykote® G-n Paste manufactured by Dow Corning U.S.A.• Pro Honda M-77 Assembly Paste (Moly) (U.S.A. only)• Rocol ASP manufactured by Rocol Limited, U.K.• Moly Paste 500 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.

CONTENTS

	GENERAL INFORMATION	1
	FRAME/BODY PANELS/EXHAUST SYSTEM	2
	MAINTENANCE	3
ENGINE/DRIVE TRAIN ELECTRICAL	PGM-FI SYSTEM	4
	IGNITION SYSTEM	5
	ELECTRIC STARTER (Except '17 model CRF450R)	6
	FUEL SYSTEM	7
	LUBRICATION SYSTEM	8
	COOLING SYSTEM	9
	CYLINDER HEAD/VALVES	10
	CYLINDER/PISTON/CAM CHAIN TENSIONER	11
	CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE	12
	ALTERNATOR	13
	CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER	14
	ENGINE REMOVAL/INSTALLATION	15
CHASSIS	FRONT WHEEL/SUSPENSION/STEERING	16
	REAR WHEEL/SUSPENSION	17
	HYDRAULIC BRAKE	18
ELECTRICAL	BATTERY/CHARGING SYSTEM	19
	SWITCHES	20
	WIRING DIAGRAMS	21
	INDEX	

MEMO



SERVICE RULES.....	1-2	CABLE & HARNESS ROUTING	1-24
MODEL IDENTIFICATION	1-3	OPTIONAL PARTS ('17 model).....	1-53
SPECIFICATIONS.....	1-4	OPTIONAL PARTS (After '17 model).....	1-55
TORQUE VALUES	1-12	TECHNICAL FEATURES	1-57
LUBRICATION & SEAL POINTS	1-21		

SERVICE RULES

1. Use Honda genuine or Honda-recommended parts and lubricants or their equivalents. Parts that do not meet Honda's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the motorcycle. Metric bolts, nuts and screws are not interchangeable with English fastener.
4. Install new gaskets, O-rings, cotter pins and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as shown in the Cable and Harness Routing (page 1-24).
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
CDI	Capacitive Discharge Ignition
CKP sensor	Crankshaft Position sensor
DLC	Data Link Connector
DTC	Diagnostic Trouble Code
ECM	Engine Control Module
ECT sensor	Engine Coolant Temperature sensor
EEPROM	Electrically Erasable Programmable Read Only Memory
IAT sensor	Intake Air Temperature sensor
MAP sensor	Manifold Absolute Pressure sensor
MCS	Motorcycle Communication System
PGM-FI	Programmed Fuel Injection
SCS short connector	Service Check Signal short connector
TP sensor	Throttle Position sensor

MODEL IDENTIFICATION

'17 model shown:

CRF450R:

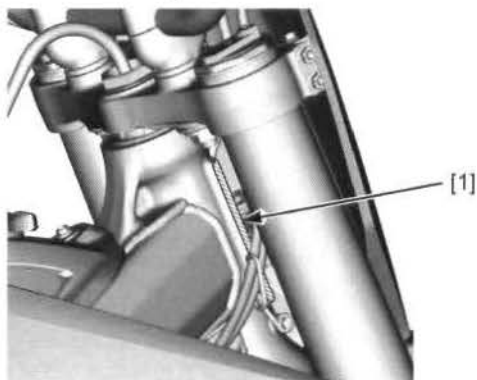


CRF450RX:



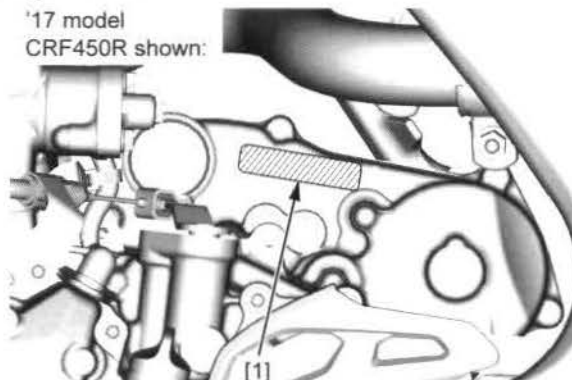
SERIAL NUMBERS/LABELS

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

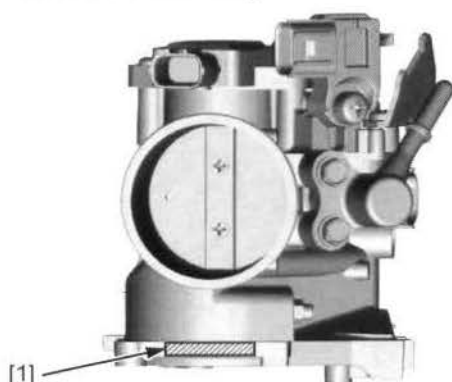


The engine serial number [1] is stamped on the upper side of the right crankcase.

'17 model
CRF450R shown:

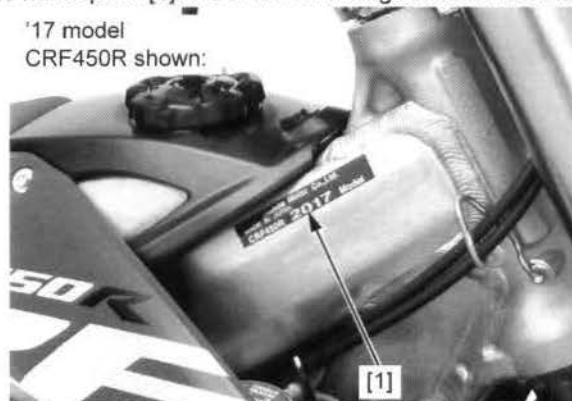


The throttle body identification number [1] is stamped on the right side of the throttle body.



The name plate [1] is located on the right side of the frame.

'17 model
CRF450R shown:



GENERAL INFORMATION

SPECIFICATIONS

GENERAL SPECIFICATIONS

ITEM				SPECIFICATION	
DIMENSIONS	Overall length		CRF450R	2,183 mm (85.9 in)	
			CRF450RX	2,175 mm (85.6 in)	
	Overall width			827 mm (32.6 in)	
	Overall height			1,274 mm (50.2 in)	
	Wheelbase		CRF450R	1,482 mm (58.3 in)	
			CRF450RX	1,477 mm (58.1 in)	
	Seat height		CRF450R	960 mm (37.8 in)	
			CRF450RX	959 mm (37.8 in)	
	Footpeg height		CRF450R	418 mm (16.5 in)	
			CRF450RX	417 mm (16.4 in)	
	Ground clearance				328 mm (12.9 in)
	Curb weight	CRF450R	'17 model	111 kg (245 lbs)	
After '17 model			113 kg (249 lbs)		
CRF450RX		'17 model	118 kg (260 lbs)		
		After '17 model	116 kg (256 lbs)		
FRAME	Frame type			Twin tube	
	Front suspension			Telescopic fork	
	Front axle travel			268 mm (10.55 in)	
	Front suspension cushion stroke			305 mm (12.01 in)	
	Rear suspension			Pro-Link	
	Rear axle travel		CRF450R	314 mm (12.36 in)	
			CRF450RX	312 mm (12.28 in)	
	Rear damper			Decarbon type with nitrogen gas filled damper	
	Front tire size		CRF450R	80/100-21 51M	
			CRF450RX	90/90-21 54M	
	Rear tire size		CRF450R	120/80-19 63M	
			CRF450RX	120/90-18 65M	
	Tire brand	CRF450R	Front	MX3SF (DUNLOP)	
			Rear	MX3S (DUNLOP)	
		CRF450RX	Front	AT81F (DUNLOP)	
			Rear	AT81 (DUNLOP)	
	Front brake			Hydraulic single disc	
	Front brake swept area			361.0 cm ² (56.0 in ²)	
	Rear brake			Hydraulic single disc	
	Rear brake swept area			390.3 cm ² (60.5 in ²)	
	Caster angle		CRF450R	27° 22'	
			CRF450RX	27° 26'	
	Trail length			116 mm (4.6 in)	
	Fuel tank capacity		CRF450R	6.3 liters (1.66 US gal, 1.39 Imp gal)	
			CRF450RX	8.5 liters (2.25 US gal, 1.87 Imp gal)	
	ENGINE	Cylinder arrangement			Single cylinder, inclined 10° from vertical
		Bore and stroke			96.000 x 62.138 mm (3.7795 x 2.4464 in)
		Displacement			449.77 cm ³ (27.436 cu-in)
		Compression ratio			13.5 : 1
		Valve train			Chain drive and OHC with rocker arm
		Intake valve	opens	at 1.0 mm (0.04 in) lift	15° BTDC
			closes	at 1.0 mm (0.04 in) lift	50° ABDC
Exhaust valve		opens	at 1.0 mm (0.04 in) lift	48° BBDC	
		closes	at 1.0 mm (0.04 in) lift	20° ATDC	
Lubrication system			Forced pressure and wet sump		
Oil pump type			Trochoid		
Cooling system			Liquid cooled		
Air filtration			Oiled polyurethane foam		
Crankshaft type			Assembled type		
Engine dry weight		'17 model	CRF450R	29.7 kg (65.5 lbs)	
			CRF450RX	31.6 kg (69.7 lbs)	
		After '17 model		30.9 kg (68.1 lbs)	

ITEM				SPECIFICATION
FUEL DELIVERY SYSTEM	Type			PGM-FI
	Throttle bore			46 mm (1.8 in)
DRIVE TRAIN	Clutch system			Multi-plate, wet
	Clutch operation system			Cable operated
	Transmission			Constant mesh, 5-speed
	Primary reduction			2.357 (66/28)
	Final reduction		CRF450R	3.769 (49/13)
			CRF450RX	3.846 (50/13)
	Gear ratio		1st	2.133 (32/15)
			2nd	1.706 (29/17)
			3rd	1.421 (27/19)
			4th	1.211 (23/19)
			5th	1.043 (24/23)
	Gearshift pattern			Left foot operated return system, 1 - N - 2 - 3 - 4 - 5
ELECTRICAL	Ignition system			DC-CDI
	Starting system	'17 model	CRF450R	Kickstarter
			CRF450RX	Electric starter motor/kickstarter
			After '17 model	
	Charging system			Triple phase output alternator
	Regulator/rectifier			FET shorted/triple phase full wave rectification

PGM-FI SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
MAP sensor output voltage (at 1 atm/1,013 hPa)	2.7 – 3.1 V
ECT sensor resistance (at 40°C/104°F)	1.0 – 1.3 kΩ
Fuel injector resistance (at 20°C/68°F)	11.6 – 12.4 Ω

IGNITION SYSTEM SPECIFICATIONS

ITEM		SPECIFICATIONS
Spark plug	Standard (NGK)	SILMAR9A-9S
	Optional (NGK)	SILMAR10A-9S
Spark plug gap		0.8 – 0.9 mm (0.031 – 0.035 in)
Ignition coil primary resistance (at 20°C/68°F)		0.7 – 0.9 Ω
Ignition coil primary peak voltage		100 V minimum
CKP sensor peak voltage		0.7 V minimum
Ignition timing ("F"mark)		12° BTDC at idle

FUEL SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
Throttle body identification number	GQ2DA
Idle speed	2,000 ± 100 rpm
Throttle grip freeplay	2 – 6 mm (1/16 – 1/4 in)
Fuel pressure	333 – 360 kPa (3.4 – 3.7 kgf/cm ² , 48 – 52 psi)
Fuel pump flow (at 12 V)	150 cm ³ (5.1 US oz, 5.3 Imp oz) minimum/10 seconds

GENERAL INFORMATION

LUBRICATION SYSTEM SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	After draining	1.00 liter (1.06 US qt, 0.88 Imp qt)	—
	After oil filter change	1.04 liter (1.10 US qt, 0.92 Imp qt)	—
	After disassembly	1.35 liter (1.43 US qt, 1.19 Imp qt)	—
Recommended engine oil		Pro Honda GN4 4-stroke oil (U.S.A. & Canada) or equivalent motorcycle oil API service classification: SG or higher JASO T903 standard: MA Viscosity: SAE 10W-30	—
Oil pump	Tip clearance	0.15 mm (0.006 in)	0.20 mm (0.008 in)

COOLING SYSTEM SPECIFICATIONS

ITEM		SPECIFICATIONS
Coolant capacity	After change	1.07 liter (1.13 US qt, 0.94 Imp qt)
	After disassembly	1.13 liters (1.19 US qt, 0.99 Imp qt)
Radiator cap relief pressure		108 – 137 kPa (1.1 – 1.4 kgf/cm ² , 16 – 20 psi)
Recommended antifreeze		Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing corrosion protection inhibitors
Standard coolant concentration		1:1 mixture with distilled water

CYLINDER HEAD/VALVES SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression			450 kPa (4.6 kgf/cm ² , 65 psi) at 600 rpm	—
Valve clearance		IN	0.13 ± 0.03 (0.005 ± 0.001)	—
		EX	0.28 ± 0.03 (0.011 ± 0.001)	—
Camshaft	Cam lobe height	IN	36.848 – 37.088 (1.4507 – 1.4602)	36.82 (1.450)
		EX	29.087 – 29.327 (1.1452 – 1.1546)	29.06 (1.144)
Rocker arm, rocker arm shaft	Rocker arm I.D.	IN	8.000 – 8.015 (0.3150 – 0.3156)	8.022 (0.3158)
		EX	12.000 – 12.018 (0.4724 – 0.4731)	12.025 (0.4734)
	Rocker arm shaft O.D.	IN	7.977 – 7.985 (0.3141 – 0.3144)	—
		EX	11.977 – 11.985 (0.4715 – 0.4718)	—
Valve, valve guide	Valve stem O.D.	IN	4.975 – 4.990 (0.1959 – 0.1965)	—
		EX	4.960 – 4.985 (0.1953 – 0.1963)	—
	Valve guide I.D.	IN/EX	5.000 – 5.012 (0.1969 – 0.1973)	5.052 (0.1989)
	Valve guide projection above cylinder head	IN	14.2 – 14.4 (0.56 – 0.57)	—
		EX	17.3 – 17.5 (0.68 – 0.69)	—
	Valve seat width	IN	1.1 – 1.3 (0.04 – 0.05)	2.0 (0.08)
Valve spring free length		EX	1.3 – 1.5 (0.05 – 0.06)	2.0 (0.08)
		IN	42.62 (1.678)	41.77 (1.644)
		EX	43.00 (1.693)	42.14 (1.659)
Cylinder head warpage			—	0.05 (0.002)

CYLINDER/PISTON SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		96.000 – 96.015 (3.7795 – 3.7801)	96.025 (3.7805)
	Warpage		–	0.05 (0.002)
Piston, piston pin, piston ring	Piston mark direction		"IN" mark facing toward the intake side	–
	Piston O.D. at 7.0 mm (0.28 in) from the bottom of skirt		95.971 – 95.986 (3.7784 – 3.7790)	95.915 (3.7762)
	Piston pin bore I.D.		19.002 – 19.008 (0.7481 – 0.7483)	19.03 (0.749)
	Piston pin O.D.		18.994 – 19.000 (0.7478 – 0.7480)	18.99 (0.748)
	Top ring mark		"1R" mark side facing up	–
	Piston ring end gap	Top ring	0.25 – 0.31 (0.010 – 0.012)	0.32 (0.013)
		Oil ring (side rail)	0.20 – 0.70 (0.008 – 0.028)	0.71 (0.028)
	Piston ring-to-ring groove clearance		Top	0.065 – 0.100 (0.0026 – 0.0039)
Connecting rod small end I.D.			19.016 – 19.038 (0.7487 – 0.7495)	19.05 (0.750)

CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Clutch lever freeplay		10 – 20 (3/8 – 13/16)	—
Clutch	Disc thickness	2.92 – 3.08 (0.115 – 0.121)	2.85 (0.112)
	Plate warpage	—	0.15 (0.006)
	Spring free length	49.70 (1.957)	—
Clutch outer guide	I.D.	23.000 – 23.021 (0.9055 – 0.9063)	—
	O.D.	27.987 – 28.000 (1.1018 – 1.1024)	—
Mainshaft O.D. at clutch outer guide		22.959 – 22.980 (0.9039 – 0.9047)	—
Kickstarter ('17 model)	Pinion gear I.D.	22.007 – 22.028 (0.8664 – 0.8672)	22.05 (0.868)
	Pinion gear bushing I.D.	20.000 – 20.021 (0.7874 – 0.7882)	20.04 (0.789)
	Pinion gear bushing O.D.	21.979 – 22.000 (0.8653 – 0.8661)	21.96 (0.865)
	Spindle O.D.	19.980 – 19.993 (0.7866 – 0.7871)	19.97 (0.786)
	Idle gear I.D.	21.020 – 21.041 (0.8276 – 0.8284)	21.07 (0.830)
	Idle gear bushing I.D.	17.000 – 17.018 (0.6693 – 0.6700)	17.04 (0.671)
	Idle gear bushing O.D.	20.979 – 21.000 (0.8259 – 0.8268)	20.96 (0.8252)
	Idle gear shaft O.D.	16.966 – 16.984 (0.6680 – 0.6687)	—
Starter driven gear boss (Except '17 model CRF450R)	I.D.	36.009 – 36.034 (1.4177 – 1.4187)	—
	O.D.	45.660 – 45.673 (1.7976 – 1.7981)	—

GENERAL INFORMATION

CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod big end side clearance		0.30 – 0.55 (0.012 – 0.022)	0.65 (0.026)
	Connecting rod big end radial clearance		0.006 – 0.018 (0.0002 – 0.0007)	0.05 (0.002)
	Runout		–	0.05 (0.002)
Transmission	Gear I.D.	M4	29.007 – 29.028 (1.1420 – 1.1428)	29.05 (1.144)
		M5	29.020 – 29.033 (1.1425 – 1.1430)	29.07 (1.144)
		C2	30.020 – 30.041 (1.1819 – 1.1827)	30.07 (1.184)
		C3	28.020 – 28.041 (1.1031 – 1.1040)	28.07 (1.105)
	Bushing O.D.	M4, M5	28.959 – 28.980 (1.1401 – 1.1409)	28.95 (1.140)
		C2	29.979 – 30.000 (1.1803 – 1.1811)	29.95 (1.179)
		C3	27.959 – 27.980 (1.1007 – 1.1016)	27.95 (1.100)
	Bushing I.D.	M5	26.000 – 26.021 (1.0236 – 1.0244)	26.04 (1.025)
		C2	27.000 – 27.021 (1.0630 – 1.0638)	27.04 (1.065)
		C3	24.985 – 25.006 (0.9837 – 0.9845)	25.02 (0.985)
	Mainshaft O.D.	at M5 bushing	25.959 – 25.980 (1.0220 – 1.0228)	25.94 (1.021)
	Countershaft O.D.	at C2 bushing	26.959 – 26.980 (1.0614 – 1.0622)	26.94 (1.061)
		at C3 bushing	24.959 – 24.980 (0.9826 – 0.9835)	24.94 (0.982)
Shift fork, shift fork shaft	Shift fork I.D.	Center	11.003 – 11.021 (0.4332 – 0.4339)	11.04 (0.435)
		Right and Left	12.035 – 12.053 (0.4738 – 0.4745)	12.07 (0.475)
	Fork shaft O.D.	Center	10.969 – 10.980 (0.4319 – 0.4323)	10.96 (0.431)
		Right and Left	11.966 – 11.984 (0.4711 – 0.4718)	11.95 (0.470)
	Fork claw thickness		4.93 – 5.00 (0.194 – 0.197)	4.8 (0.19)

FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS ('17 model)

Unit: mm (in)

ITEM				STANDARD	SERVICE LIMIT
Cold tire pressure				100 kPa (1.0 kgf/cm ² , 15 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				See page 16-7	—
Fork	Spring free length			472.0 (18.6)	468.0 (18.4)
	Fork slider runout			—	0.2 (0.01)
	Recommended fork oil			Pro Honda HP Fork Oil SS-19	—
	Oil capacity	Fork tube	CRF450R	352 cm ³ (11.9 US oz, 12.4 Imp oz)	—
			CRF450RX	350 cm ³ (11.8 US oz, 12.3 Imp oz)	—
		Fork damper		243 cm ³ (8.2 US oz, 8.6 Imp oz)	—
Compression damping adjuster standard position			CRF450R	11 clicks out from full in	—
			CRF450RX	13 clicks out from full in	—
Rebound damping adjuster standard position			CRF450R	13 clicks out from full in	—
			CRF450RX	13 clicks out from full in	—

FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS (After '17 model)

Unit: mm (in)

Unit: mm (in)

ITEM				STANDARD	SERVICE LIMIT
Cold tire pressure				100 kPa (1.0 kgf/cm ² , 15 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				See page 16-7	—
Fork	Spring free length			472.0 (18.6)	468.0 (18.4)
	Fork slider runout			—	0.2 (0.01)
	Recommended fork oil			Pro Honda HP Fork Oil SS-19	—
	Oil capacity	Fork tube	CRF450R	349 cm ³ (11.8 US oz, 12.3 Imp oz)	—
			CRF450RX	351 cm ³ (11.9 US oz, 12.4 Imp oz)	—
	Fork damper			243 cm ³ (8.2 US oz, 8.6 Imp oz)	—
Compression damping adjuster standard position			CRF450R	13 clicks out from full in	—
			CRF450RX	12 clicks out from full in	—
Rebound damping adjuster standard position			CRF450R	12 clicks out from full in	—
			CRF450RX	12 clicks out from full in	—

REAR WHEEL/SUSPENSION SPECIFICATIONS ('17 model)

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cold tire pressure			100 kPa (1.0 kgf/cm ² , 15 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			See page 17-7	—
Drive chain	Size/link	CRF450R	RK 520TXZ-114RJ	—
		CRF450RX	RK 520EXU-114LE	—
	Slack	35 – 45 (1 3/8 – 1 3/4)		—
	Drive chain length at 17 pins (16 pitches) (CRF450R)		—	259 (10.2)
	Drive chain plate (CRF450RX)		—	13.3 (0.52)
Drive chain slider thickness		Upper side	—	5 (0.2)
		Lower side	—	2.5 (0.10)
Drive chain roller O.D.		Upper	—	31 (1.2)
		lower	—	31 (1.2)
Shock absorber	Damper gas pressure		980 kPa (9.9 kg/cm ² , 142 psi)	—
	Damper compressed gas		Nitrogen gas	—
	Recommended shock oil		Pro Honda HP Shock Oil SS-25	—
	Damper rod compressed force at 12 mm (0.5 in) compressed		197 – 237 N (20.1 – 24.2 kgf, 44.3 – 53.4 lbf)	—
	Spring installed length (standard)	CRF450R	236.0 (9.29)	—
		CRF450RX	231.0 (9.09)	—
Oil capacity		370 cm ³ (12.5 US oz, 13.0 Imp oz)		—
High speed compression damping adjuster standard position		CRF450R	3 – 3-1/2 turns out from full in	—
		CRF450RX	2-11/12 – 3-5/12 turns out from full in	—
Low speed compression damping adjuster standard position		CRF450R	12 clicks out from full in	—
		CRF450RX	13 clicks out from full in	—
Rebound damping adjuster standard position		CRF450R	7 – 10 clicks out from full in	—
		CRF450RX	5 – 8 clicks out from full in	—

GENERAL INFORMATION

REAR WHEEL/SUSPENSION SPECIFICATIONS (After '17 model)

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cold tire pressure			100 kPa (1.0 kgf/cm ² , 15 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			See page 17-7	—
Drive chain	Size/link	CRF450R	RK 520TXZ-114RJ	—
		CRF450RX	RK 520EXU-114LE	—
	Slack		35 – 45 (1 3/8 – 1 3/4)	—
	Drive chain length at 17 pins (16 pitches) (CRF450R)		—	259 (10.2)
	Drive chain plate (CRF450RX)		—	13.3 (0.52)
Drive chain slider thickness		Upper side	—	5 (0.2)
		Lower side	—	2.5 (0.10)
Drive chain roller O.D.		Upper	—	31 (1.2)
		lower	—	31 (1.2)
Shock absorber	Damper gas pressure		980 kPa (9.9 kg/cm ² , 142 psi)	—
	Damper compressed gas		Nitrogen gas	—
	Recommended shock oil		Pro Honda HP Shock Oil SS-25	—
	Damper rod compressed force at 12 mm (0.5 in) compressed		197 – 237 N (20.1 – 24.2 kgf, 44.3 – 53.4 lbf)	—
	Spring installed length (standard)	CRF450R	234.0 (9.21)	—
		CRF450RX	231.0 (9.09)	—
Oil capacity		370 cm ³ (12.5 US oz, 13.0 Imp oz)	—	
High speed compression damping adjuster standard position		CRF450R	3-1/12 – 3-7/12 turns out from full in	—
		CRF450RX	3 – 3-1/2 turns out from full in	—
Low speed compression damping adjuster standard position		CRF450R	10 clicks out from full in	—
		CRF450RX	12 clicks out from full in	—
Rebound damping adjuster standard position		CRF450R	7 – 10 clicks out from full in	—
		CRF450RX	5 – 8 clicks out from full in	—

HYDRAULIC BRAKE SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Front	Specified brake fluid		Honda DOT 4 brake fluid	—
	Brake pad wear indicator		—	1.0 (0.04)
	Brake disc thickness		2.8 – 3.0 (0.11 – 0.12)	2.5 (0.10)
	Brake disc warpage		—	0.3 (0.01)
	Master cylinder I.D.		11.000 (0.4331)	11.050 (0.4350)
	Master piston O.D.		10.971 (0.4319)	10.840 (0.4268)
	Caliper cylinder I.D.		27.025 (1.0640)	27.060 (1.0654)
	Caliper piston O.D.		26.968 (1.0617)	26.853 (1.0572)
Rear	Specified brake fluid		Honda DOT 4 brake fluid	—
	Brake pad wear indicator		—	1.0 (0.04)
	Brake disc thickness		3.8 – 4.0 (0.15 – 0.16)	3.5 (0.14)
	Brake disc warpage		—	0.3 (0.01)
	Master cylinder I.D.		9.547 (0.3759)	9.575 (0.3770)
	Master piston O.D.		9.491 (0.3737)	9.465 (0.3726)
	Caliper cylinder I.D.		22.650 (0.8917)	22.712 (0.8942)
	Caliper piston O.D.		22.620 (0.8905)	22.573 (0.8887)
		Rear master cylinder push rod length	78.6 – 80.6 (3.09 – 3.17)	—

BATTERY/CHARGING SYSTEM SPECIFICATIONS ('17 model)

ITEM			SPECIFICATIONS
Battery (CRF450RX)	Type		YTX4L-BS
	Capacity		12 V – 3 Ah (10 HR)
	Current leakage		No current leakage
	Voltage (20°C/68°F)	Fully charged	13.0 V minimum
		Needs charging	Below 12.3 V
	Charging current	Normal	0.4 A/5 – 10 h
		Quick	4 A/0.5 h
Alternator	Capacity		0.091 kW/5,000 rpm
	Charging coil resistance (20°C/68°F)		0.1 – 1.0 Ω

BATTERY/CHARGING SYSTEM SPECIFICATIONS (After '17 model)

ITEM			SPECIFICATIONS
Battery	Type		HY85S
	Capacity		12 V – 2.0 Ah (20 HR)
	Current leakage		No current leakage
	Voltage (20°C/68°F)	Fully charged	13.5 – 14.0 V
		Needs charging	Below 10.8 V
Alternator	Capacity		0.091 kW/5,000 rpm
	Charging coil resistance (20°C/68°F)		0.1 – 1.0 Ω

SWITCHES SPECIFICATIONS

ITEM			SPECIFICATIONS
Bulbs	MIL		LED
	Mode indicator		LED
Fuse (Except '17 model CRF450R)		Main fuse	10 A x 1

GENERAL INFORMATION

TORQUE VALUES

STANDARD TORQUE VALUES

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

ENGINE & FRAME TORQUE VALUES

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

FRAME/BODY PANELS/EXHAUST SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Seat mounting bolt	2	8	26 (2.7, 19)	
Radiator shroud bolt A	2	6	10 (1.0, 7)	
Radiator shroud bolt B	2	6	10 (1.0, 7)	
Radiator shroud bolt C	2	5	5.2 (0.5, 3.8)	
Side cover bolt	4	6	10 (1.0, 7)	
Front number plate bolt	2	6	10 (1.0, 7)	
Front fender bolt/washer	4	6	10 (1.0, 7)	
Rear fender bolt	2	6	10 (1.0, 7)	
Engine guard bolt (long)/washer	1	6	10 (1.0, 7)	
Engine guard bolt (short)/washer	2	6	10 (1.0, 7)	
Mud guard screw	2	5	1.5 (0.2, 1.1)	Tapping screw
Seat support base mounting bolt	2	6	10 (1.0, 7)	
Rear frame upper mounting bolt	2	8	32 (3.3, 24)	
Rear frame lower mounting bolt	2	10	49 (5.0, 36)	
Air cleaner lower housing screw	4	5	1.2 (0.1, 0.9)	Tapping screw
Sidestand pivot bolt (CRF450RX)	1	10	10 (1.0, 7)	See page 2-8
Sidestand pivot nut (CRF450RX)	1	10	39 (4.0, 29)	Self-lock nut See page 2-8
Exhaust pipe band bolt	2	8	20 (2.0, 15)	
Muffler mounting bolt	4	8	26 (2.7, 19)	
Exhaust pipe joint nut	2	8	21 (2.1, 15)	
Exhaust pipe front protector band screw	1	—	3.0 (0.3, 2.2)	
Exhaust pipe rear protector band screw	1	—	3.5 (0.4, 2.6)	
Exhaust pipe protector mounting bolt	2	6	12 (1.2, 9)	
Exhaust pipe stud bolt	2	8	—	See page 2-11
Muffler end cover bolts	16	5	5.2 (0.5, 3.8)	

MAINTENANCE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Fuel tank mounting bolt A (CRF450R)	1	6	10 (1.0, 7)	
Fuel tank mounting bolt B (CRF450R)	2	6	10 (1.0, 7)	
Fuel tank mounting bolt A (CRF450RX)	1	6	10 (1.0, 7)	
Throttle cable adjuster lock nut	1	6	4.0 (0.4, 3.0)	
Air cleaner element set bolt	1	6	2.4 (0.2, 1.8)	
Spark plug	1	10	22 (2.2, 16)	
Crankshaft hole cap	1	30	15 (1.5, 11)	Apply grease to the threads.
Engine oil drain bolt	1	30	18 (1.8, 13)	Apply engine oil to the threads and seating surface.
Rear axle nut	1	22	128 (13.1, 94)	Self-lock nut
Drive chain adjuster lock nut	2	8	27 (2.8, 20)	UBS nut
Drive chain upper roller bolt	1	8	12 (1.2, 9)	ALOC bolt; replace with a new one.
Drive chain lower roller nut	1	6	12 (1.2, 9)	Self-lock nut
Drive sprocket bolt	1	8	31 (3.2, 23)	
Driven sprocket nut	6	8	32 (3.3, 24)	Self-lock nut
Front master cylinder reservoir cover screw	2	4	1.0 (0.1, 0.7)	
Rear master cylinder reservoir cover bolt	2	4	1.0 (0.1, 0.7)	
Brake lever adjuster lock nut	1	5	5.9 (0.6, 4.4)	
Rear brake master cylinder push rod lock nut	1	6	5.9 (0.6, 4.4)	
Exhaust pipe joint nut	2	8	21 (2.1, 15)	
Exhaust pipe band bolt	2	8	20 (2.0, 15)	
Front fork plug bolt	2	5	1.3 (0.1, 1.0)	
Front spoke	36	BC3.5	3.7 (0.4, 2.7)	
Rear spoke	32	4.5	3.7 (0.4, 2.7)	
Rim lock	2	8	12 (1.2, 9)	

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 screw	2	5	1.5 (0.2, 1.1)	Tapping screw
Seat support base mounting bolt	2	6	10 (1.0, 7)	

ELECTRIC STARTER (Except '17 model CRF450R)

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)	
Negative brush mounting screw/washer	1	5	3.7 (0.4, 2.7)	
Starter motor/battery positive (+) cable bolt	2	6	7.0 (0.7, 5.2)	
Starter relay switch stay mounting bolt	1	6	12 (1.2, 9)	

GENERAL INFORMATION

FUEL SYSTEM

ITEM		Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Top shelter mounting bolt (CRF450R)		1	5	5.2 (0.5, 3.8)	
Rear tank stay bolt (CRF450RX)		2	6	10 (1.0, 7)	
Fuel pump mounting nut (CRF450R)		5	6	11 (1.1, 8)	For tightening sequence; page 7-18.
Fuel pump mounting cap nut (CRF450R)		1	6	11 (1.1, 8)	For tightening sequence; page 7-18.
Fuel pump mounting bolt (CRF450RX)		6	6	11 (1.1, 8)	For tightening sequence; page 7-22
Air cleaner element set bolt		1	6	2.4 (0.2, 1.8)	
Air cleaner lower housing screw		4	5	1.2 (0.1, 0.9)	Tapping screw
Mud guard screw		2	5	1.5 (0.2, 1.1)	Tapping screw
IAT sensor screw		2	5	1.5 (0.2, 1.1)	Tapping screw
Air cleaner connecting hose band screw	(throttle body side)	1	4	—	See page 7-26
	(air cleaner side)	1	4	—	See page 7-24
Clamper base mounting screw		1	5	3.4 (0.3, 2.5)	
Fast idle knob lock nut		1	12	2.3 (0.2, 1.7)	
MAP sensor mounting screw		1	6	4.9 (0.5, 3.6)	
Insulator band screw (throttle body side)		1	—	—	See page 7-27
Throttle cable bolt		1	6	4.0 (0.4, 3.0)	
Throttle drum cover bolt		1	5	3.4 (0.3, 2.5)	
Fuel injector mounting bolt		2	5	5.1 (0.5, 3.8)	

LUBRICATION SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Oil pump driven gear guide plate bolt	2	6	12 (1.2, 9)	Apply locking agent to the threads. (*2) See page 1-19
Piston jet mounting bolt	1	6	10 (1.0, 7)	Apply locking agent to the threads. (*2) See page 1-19

COOLING SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Radiator hose band screw	7	6	—	See page 9-7

CYLINDER HEAD/VALVES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Breather plate bolt	2	6	12 (1.2, 9)	Apply locking agent to the threads.
Cylinder head cover bolt	2	6	10 (1.0, 7)	
Camshaft holder mounting bolt	4	7	15 (1.5, 11)	Apply engine oil to the threads and seating surface.
Insulator band screw (cylinder head side)	1	—	—	See page 10-22
Insulator band screw (throttle body side)	1	—	—	See page 10-23
Cylinder head bolt	4	10	50 (5.1, 37)	Apply engine oil to the threads and seating surface.
Cylinder head hanger bolt	2	10	54 (5.5, 40)	
Cylinder head hanger plate bolt	4	8	32 (3.3, 24)	

CYLINDER/PISTON/CAM CHAIN TENSIONER

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cam chain tensioner bolt	1	6	12 (1.2, 9)	Apply locking agent to the threads. (*1) See page 1-19

CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake pedal pivot bolt	1	10	36 (3.7, 27)	ALOC bolt; replace with a new one.
Balancer shaft lock nut	1	12	50 (5.1, 37)	Apply engine oil to the threads and seating surface.
Water pump impeller	1	7	12 (1.2, 9)	
Kickstarter pedal bolt ('17 model)	1	8	38 (3.9, 28)	ALOC bolt; replace with a new one.
Clutch spring bolt/washer	6	6	12 (1.2, 9)	
Clutch center lock nut	1	18	80 (8.2, 59)	Apply engine oil to the threads and seating surface.
Kickstarter idle gear shaft bolt ('17 model)	1	6	10 (1.0, 7)	Apply locking agent to the threads. (*2) See page 1-19
Primary drive gear bolt (Except '17 model CRF450R)	1	12	108 (11.0, 80)	Apply engine oil to the threads and seating surfaces.
Starter idle gear shaft bolt (Except '17 model CRF450R)	1	6	12 (1.2, 9)	Apply locking agent to the threads. (*2) See page 1-19
Gearshift drum stopper arm bolt	1	6	12 (1.2, 9)	Apply locking agent to the threads. (*2) See page 1-19
Gearshift drum center pin	1	8	22 (2.2, 16)	Apply locking agent to the threads. (*2) See page 1-19
Gearshift pedal pinch bolt	1	6	12 (1.2, 9)	

ALTERNATOR

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Flywheel nut	1	12	70 (7.1, 52)	Apply engine oil to the threads and seating surfaces.
Stator mounting bolt	3	6	10 (1.0, 7)	Apply locking agent to the threads. (*3) See page 1-20
CKP sensor mounting bolt	2	5	5.2 (0.5, 3.8)	Apply locking agent to the threads. (*3) See page 1-20

GENERAL INFORMATION

CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Piston jet mounting bolt	1	6	10 (1.0, 7)	Apply locking agent to the threads. (*2) See page 1-19
Reed valve mounting bolt/washer	1	6	12 (1.2, 9)	Apply locking agent to the threads. (*2) See page 1-19
Primary drive gear bolt ('17 model CRF450R)	1	12	108 (11.0, 80)	Apply engine oil to the threads and seating surfaces.
Balancer shaft lock nut	1	12	50 (5.1, 37)	Apply engine oil to the threads and seating surfaces.
Oil guide plate bolt	1	6	10 (1.0, 7)	Apply locking agent to the threads. Coating width: 6.5 ± 1.0 mm (0.26 ± 0.04 in) from tip
Countershaft bearing set plate screw	2	6	12 (1.2, 9)	Apply locking agent to the threads. Coating width: 3.5 ± 1.0 mm (0.14 ± 0.04 in) from tip
Mainshaft bearing set plate bolt	2	6	12 (1.2, 9)	ALOC bolt; replace with new ones.
Gearshift drum bearing set plate bolt	2	6	12 (1.2, 9)	ALOC bolt; replace with new ones.
Crankshaft bearing set plate torx screw	2	6	22 (2.2, 16)	Apply locking agent to the threads. (*1) See page 1-19

ENGINE REMOVAL/INSTALLATION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake pedal pivot bolt	1	10	36 (3.7, 27)	ALOC bolt; replace with a new one.
Swingarm pivot nut	1	14	88 (9.0, 65)	Self-lock nut
Lower engine hanger nut	1	10	54 (5.5, 40)	
Front engine hanger plate nut	2	8	26 (2.7, 19)	
Front engine hanger nut	1	10	54 (5.5, 40)	
Cylinder head hanger plate bolt	4	8	32 (3.3, 24)	
Cylinder head hanger bolt	2	10	54 (5.5, 40)	
Shock absorber mounting nut (upper side)	1	10	44 (4.5, 32)	Self-lock nut
Drive sprocket bolt	1	8	31 (3.2, 23)	

FRONT WHEEL/SUSPENSION/STEERING

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Front brake disc nut	6	6	16 (1.6, 12)	Self-lock nut
Front wheel rim lock	1	8	12 (1.2, 9)	
Front spoke	36	BC3.5	3.7 (0.4, 2.7)	
Front axle nut	1	16	88 (9.0, 65)	
Axle holder bolt	4	8	20 (2.0, 15)	
Front brake disc cover bolt	2	6	13 (1.3, 10)	
Fork plug bolt	2	5	1.3 (0.1, 1.0)	
Fork center bolt lock nut	2	14	28 (2.9, 21)	
Fork center bolt	2	24	69 (7.0, 51)	Apply locking agent to the threads.
Fork bottom bridge pinch bolt	4	8	20 (2.0, 15)	
Fork damper	2	51	76 (7.7, 56)	See page 16-28
Fork bolt	2	44	30 (3.1, 22)	
Fork top bridge pinch bolt	4	8	22 (2.2, 16)	
Fork protector mounting bolt	6	6	7.0 (0.7, 5.2)	ALOC bolt; replace with new ones.
Front brake caliper mounting bolt	2	8	30 (3.1, 22)	Apply locking agent to the threads.
Handlebar upper holder bolt	4	8	22 (2.2, 16)	
Handlebar lower holder nut	2	10	44 (4.5, 32)	Self-lock nut
Throttle housing mounting bolt	2	6	10 (1.0, 7)	
Front master cylinder holder bolt	2	6	9.9 (1.0, 7.3)	
Starter switch screw (Except '17 model CRF450R)	1	4	1.5 (0.2, 1.1)	
Clutch lever bracket holder mounting bolt	2	6	10 (1.0, 7)	
Engine stop/mode select switch screw	1	4	1.5 (0.2, 1.1)	
Steering stem adjusting nut	1	30	—	See page 16-39
Steering stem nut	1	26	108 (11.0, 80)	
Front brake hose guide bolt	1	6	5.2 (0.5, 3.8)	
Clutch lever pivot bolt	1	6	—	See page 16-41
Clutch lever pivot nut	1	6	10 (1.0, 7)	Self-lock nut

GENERAL INFORMATION

REAR WHEEL/SUSPENSION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Rear brake disc nut	4	6	16 (1.6, 12)	Self-lock nut
Driven sprocket nut	6	8	32 (3.3, 24)	Self-lock nut
Rear wheel rim lock	1	8	12 (1.2, 9)	
Rear wheel bearing retainer	1	50	44 (4.5, 32)	Stake.
Rear spoke	32	4.5	3.7 (0.4, 2.7)	
Rear axle nut	1	22	128 (13.1, 94)	Self-lock nut
Shock absorber damper rod end nut	1	12	37 (3.8, 27)	Replace with a new one. Stake.
Shock absorber compression adjuster	1	27	30 (3.1, 22)	
Shock absorber spring adjuster lock nut	1	60	44 (4.5, 32)	
Shock absorber mounting nut	2	10	44 (4.5, 32)	Self-lock nut
Cushion arm nut (swingarm side)	1	12	52 (5.3, 38)	Apply engine oil to the threads and seating surfaces. Self-lock nut
Cushion arm nut (cushion connecting rod side)	1	12	52 (5.3, 38)	Apply engine oil to the threads and seating surfaces. Self-lock nut
Cushion connecting rod bolt (frame side)	2	10	37 (3.8, 27)	Apply engine oil to the nut threads and seating surfaces. Self-lock nut Tighten the bolt while holding the nut.
Drive chain lower roller nut	1	6	12 (1.2, 9)	Self-lock nut
Drive chain slider screw	3	5	4.2 (0.4, 3.1)	ALOC screw; replace with new ones.
Swingarm washer mounting screw (left side)	2	5	4.3 (0.4, 3.2)	
Drive chain guide mounting bolt/nut	3	6	12 (1.2, 9)	Self-lock nut
Swingarm pivot nut	1	14	88 (9.0, 65)	Self-lock nut
Rear brake hose guide screw	6	5	1.2 (0.1, 0.9)	

HYDRAULIC BRAKE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Caliper bleed valve	2	8	5.4 (0.6, 4.0)	
Front master cylinder reservoir cover screw	2	4	1.0 (0.1, 0.7)	
Rear master cylinder reservoir cover bolt	2	4	1.0 (0.1, 0.7)	
Front brake caliper mounting bolt	2	8	30 (3.1, 22)	Apply locking agent to the threads.
Front brake caliper pad pin plug	1	10	2.5 (0.3, 1.8)	
Brake caliper pad pin	2	10	18 (1.8, 13)	
Front brake caliper pin bolt	1	8	22 (2.2, 16)	Apply locking agent to the threads.
Rear brake caliper pin bolt	1	12	27 (2.8, 20)	
Brake lever pivot bolt	1	6	1.0 (0.1, 0.7)	
Brake lever pivot nut	1	6	5.9 (0.6, 4.4)	
Front master cylinder holder bolt	2	6	9.9 (1.0, 7.3)	
Brake hose oil bolt	4	10	34 (3.5, 25)	
Rear master cylinder mounting bolt	2	6	13 (1.3, 10)	
Rear master cylinder push rod lock nut	1	6	5.9 (0.6, 4.4)	
Brake pedal pivot bolt	1	10	36 (3.7, 27)	ALOC bolt; replace with a new one.

BATTERY/CHARGING SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Battery box mounting bolt (Except '17 model CRF450R)	2	6	10 (1.0, 7)	
Battery terminal bolt (After '17 model)	2	5	2.0 (0.2, 1.5)	

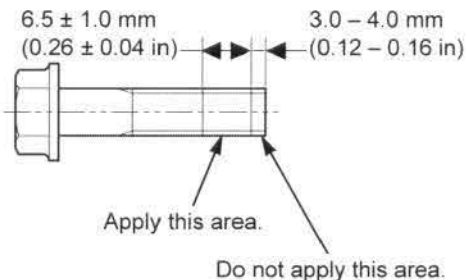
SWITCHES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Engine stop/mode select switch mounting screw	1	4	1.5 (0.2, 1.1)	
Starter switch screw (Except '17 model CRF450R)	1	4	1.5 (0.2, 1.1)	

OTHERS

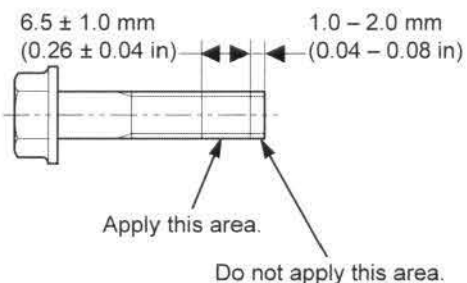
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Gearshift spindle return spring pin	1	8	22 (2.2, 16)	Apply locking agent to the threads. (*2) See page 1-19
Kickstarter arm bolt ('17 model)	1	6	9.0 (0.9, 6.6)	ALOC bolt; replace with a new one.
Step bracket (upper)	2	12	54 (5.5, 40)	
Step bracket (lower)	2	8	29 (3.0, 21)	
Head pipe connector stay mounting bolt	1	7	14 (1.4, 10)	
Sidestand spring hook (CRF450RX)	1	6	10 (1.0, 7)	
Seat hook bolt (CRF450RX)	2	5	5.2 (0.5, 3.8)	
Tank rear band screw (CRF450RX)	1	6	11 (1.1, 8)	

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



The bolt shown is typical.

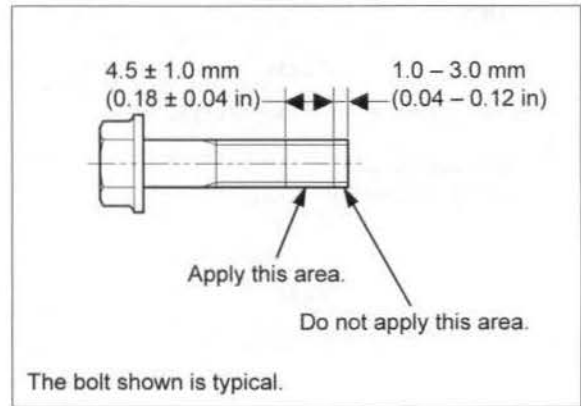
*2: Apply locking agent to the threads as shown.



The bolt shown is typical.

GENERAL INFORMATION

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



LUBRICATION & SEAL POINTS

ENGINE

MATERIAL	LOCATION	REMARKS
Molybdenum oil solution (mixture of the engine oil and molybdenum paste)	Piston pin outer surface	
	Connecting rod big end plates	
	Connecting rod small end inner surface	
	Decompressor weight sliding area	
	Decompressor plunger sliding area	
	Camshaft cam lobes	
	Intake rocker arm inner surface, cam slipper area, and shim slipper surfaces	
	Exhaust rocker arm inner surface and shim slipper surfaces	
	Valve stem (valve guide sliding surface)	
	Valve stem end sliding surface	
	Clutch outer guide sliding surface	
	Clutch lifter arm cam area (contact area of clutch lifter rod)	
	Mainshaft spline area and transmission gear sliding surfaces	
	Countershaft spline area and transmission gear sliding surfaces	
	Shift fork claws and guide pins	
	Shift fork shafts outer surface	
	Kickstarter spindle spline area and gear rolling area (^{'17} model)	
	Kickstarter pinion gear inner surface (^{'17} model)	
	Kickstarter idle gear collar whole surface (^{'17} model)	
	Starter clutch needle bearing whole surface (Except ^{'17} model CRF450R)	
	Starter motor idle gear shaft whole surface (Except ^{'17} model CRF450R)	
	Starter motor reduction gear shaft whole surface (Except ^{'17} model CRF450R)	
Engine oil	Cylinder bore	
	Plug hole seal ring outer surface	
	Piston outer surface and piston pin hole	
	Piston rings	
	Crankshaft bearing oil seal contact surface	
	Oil pump rotor sliding area	
	Oil pump shaft sliding area	
	Clutch outer sliding area	
	Clutch disc lining surfaces	
	Clutch lifter piece bearing contact area	
	Gearshift drum guide grooves	
	Gearshift spindle serration area	
	Kickstarter spindle journal (^{'17} model)	
	Starter one-way clutch whole surface (Except ^{'17} model CRF450R)	
	Cam chain tensioner lifter spring area	See page 11-4
	Each bearing rolling contact area	
	Each O-ring	
	Each gear teeth	
	Cam chain whole surface	
Lithium based multi- purpose grease NLGI #2 or equivalent	Each oil seal lips	
	Countershaft seal ring	
	Oil filter spring (oil filter contact area)	
Sealant (TB1207B manufactured by ThreeBond or an equivalent)	Cylinder head cover groove (packing contact area)	
	Cylinder head cover breather plate contact area	See page 10-7
	Alternator/CKP sensor wire grommet seating surface	
Sealant (TB1141G manufactured by ThreeBond or an equivalent)	Cylinder mating surface of the crankcase	See page 11-9

GENERAL INFORMATION

FRAME

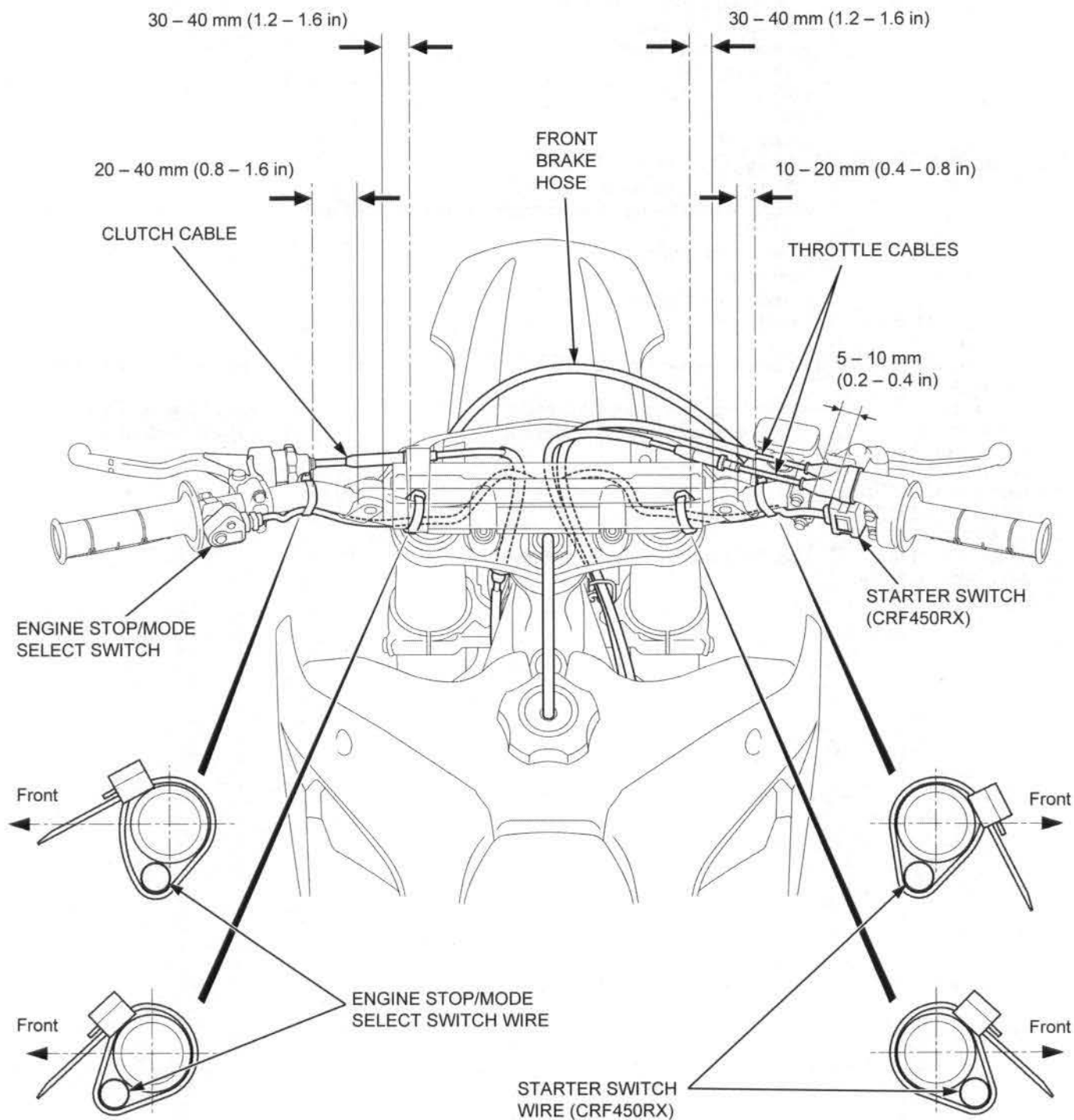
MATERIAL	LOCATION	REMARKS
Lithium based multi-purpose grease NLGI #2 or equivalent	Wheel bearing dust seal lips	
	Kickstarter pedal joint sliding surface ('17 model)	
	Gearshift pedal pin sliding area	
	Clutch cable end	
	Clutch cable end adjuster inside surface	
	Clutch in-line cable adjuster threads	
	Clutch lever pivot bolt sliding surface	
	Air cleaner housing-to-air cleaner element contacting area	Apply 1.5 – 5.5 g (0.1 – 0.2 oz).
	Each wheel bearing cavity	
	Axle outer surface	
	Swingarm pivot bolt outer surface	
	Rear shock absorber spherical bearing rolling area	
	Swingarm pivot needle bearing rolling area	Filling up.
	Swingarm pivot thrust bearing rolling area	Filling up.
Molybdenum disulfide grease (containing more than 3% molybdenum disulfide, NLGI #2 or equivalent)	Swingarm pivot dust seal lips	
	Swingarm left end piece (left swingarm washer contact areas)	
	Cushion linkage needle bearing rolling area	Filling up.
	Cushion linkage side collar inside surfaces	
	Cushion linkage dust seal lips	
	Rear shock absorber dust seal lips	
	Brake pedal pivot bolt sliding surface	
	Sidestand sliding area (CRF450RX)	Apply 1.0 g (0.04 oz).
	Throttle cable end (grip side)	
	Throttle pipe flange groove	
Lithium based multi-purpose extreme pressure grease NLGI #2 (ALVANIA EP2 manufactured by Shell or equivalent)		
Urea based multi-purpose extreme pressure grease NLGI #2 (EXCELITE EP2 manufactured by KYODO YUSHI CO., LTD. or equivalent)	Steering head bearing rolling area	Apply 3 – 5 g (0.1 – 0.2 oz).
	Steering head dust seal lips	
	Brake pedal dust seal lips	
Silicone grease	Brake caliper pin bolt sliding area	
	Brake caliper bracket pin sliding area	
	Brake caliper dust seal lips	
	Brake caliper pad pin stopper ring	
	Brake lever pivot bolt sliding surface	
	Brake lever bushing	
	Front master cylinder push rod contact area	
	Brake lever spring both ends	
	Rear master cylinder push rod round surface	
	Rear master cylinder boot fitting area	
Engine oil	Fuel pump unit O-ring	
	Fuel pump assembly O-ring (at joint)	
	Fuel pump base O-ring (at joint)	
Honda DOT 4 brake fluid	Brake caliper piston seal lips	
	Brake caliper piston sliding surface	
	Master cylinder inner surface	
	Master piston outer surface	

MATERIAL	LOCATION	REMARKS
Pro Honda HP Fork Oil SS-19	Fork bolt O-rings	
	Fork plug bolt O-ring	
	Fork bolt assembly bushings	
	Fork bolt assembly piston rings	
	Fork bolt assembly O-rings	
	Fork spring seat collar bushing	
	Fork damper O-rings	
	Fork center bolt O-rings	
	Fork oil seal lips	
	Fork dust seal lips	
	Slider bushing	
	Guide bushing	
Pro Honda HP Shock Oil SS-25	Damper piston ring and O-rings	
	Damper rod sliding surface	
	Rod guide case O-ring, rebound rubber, oil seal lips, dust seal lips	
	Damper case inner surface	
	Bladder lips	
Honda HP Chain Lube or an equivalent	Compression adjuster O-rings	
	Drive chain	
Pro Honda Foam Air Filter Oil or equivalent	Air cleaner element inside	Apply 40 cm ³ (1.4 US oz).
Muffler sealant (high-temperature silicone, for example HSSK-316CVT manufactured by JAPAN BEST PARTNERS CO., LTD. or equivalent)	Muffler body contact area (front pipe)	Apply 5.0 g (0.18 oz).
	Muffler body contact area (end cover)	Apply 5.0 g (0.18 oz).
Honda Bond A or Pro Honda Handgrip Cement (U.S.A. only)	Handlebar grip rubber inner surface	

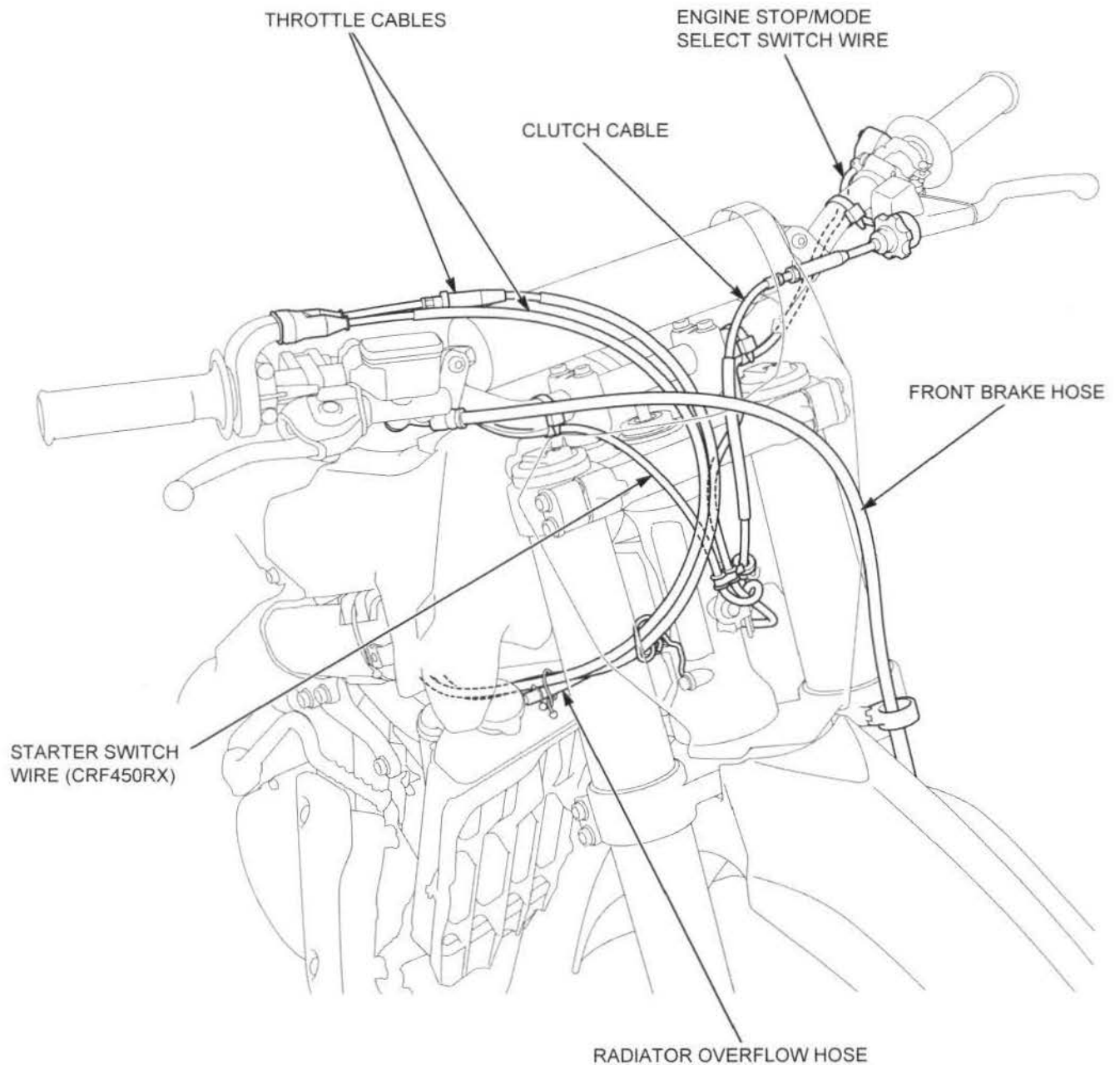
CABLE & HARNESS ROUTING

'17 model:

CRF450RX shown:

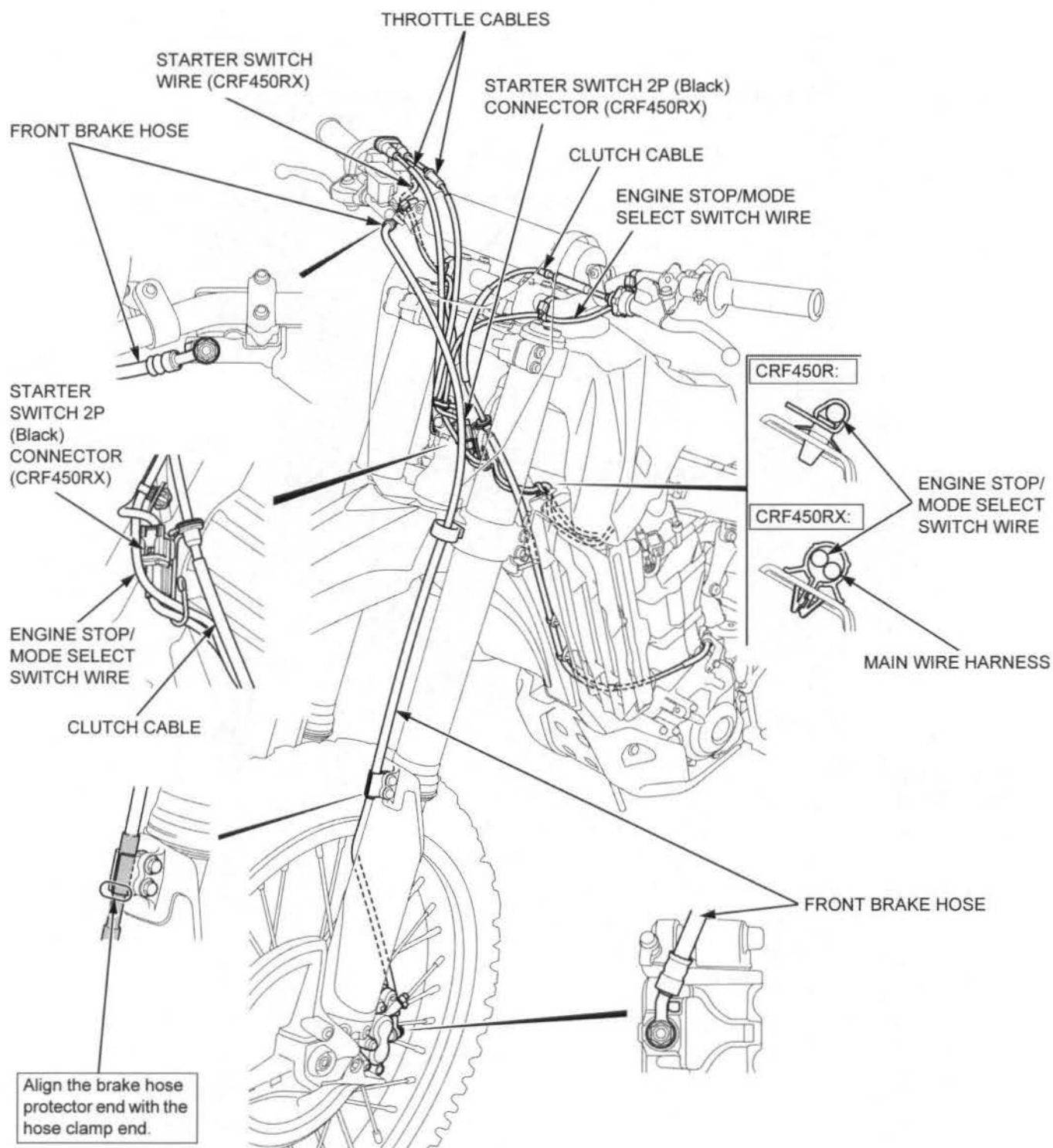


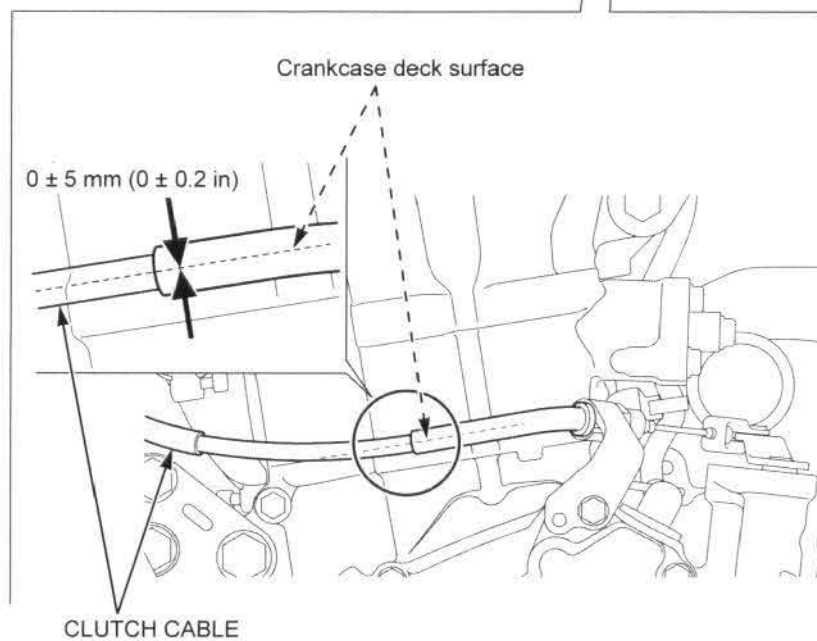
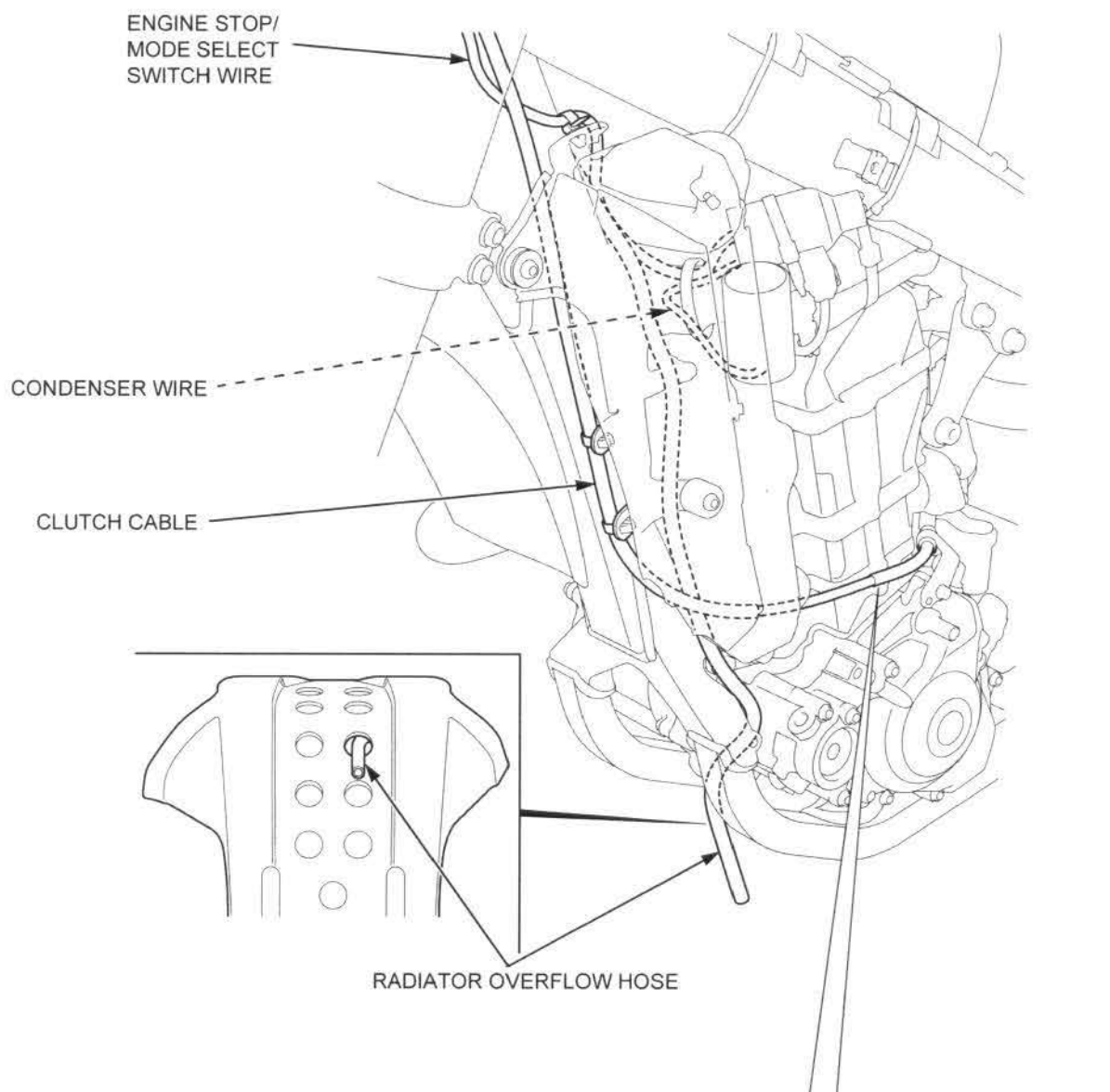
CRF450RX shown:

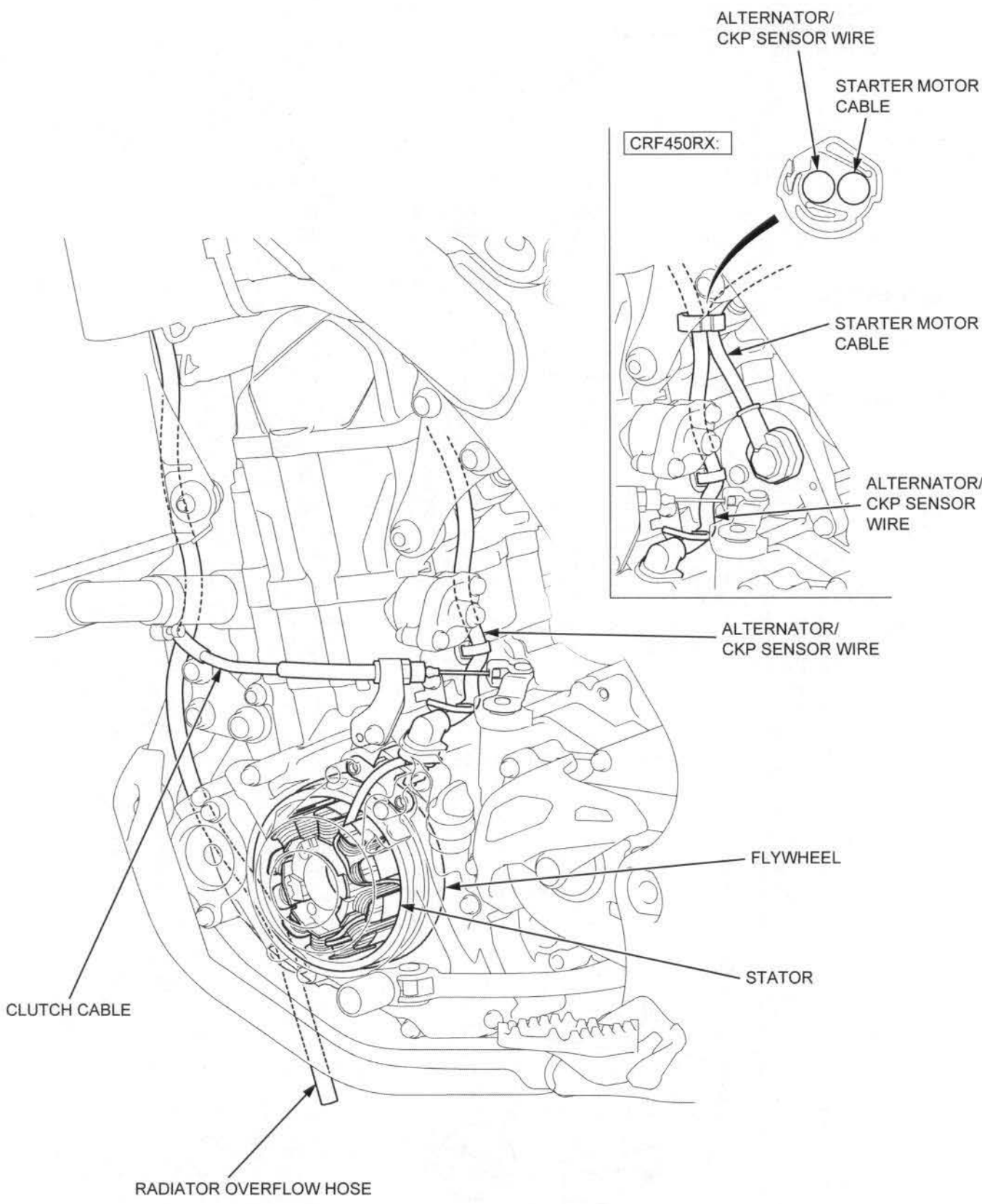


GENERAL INFORMATION

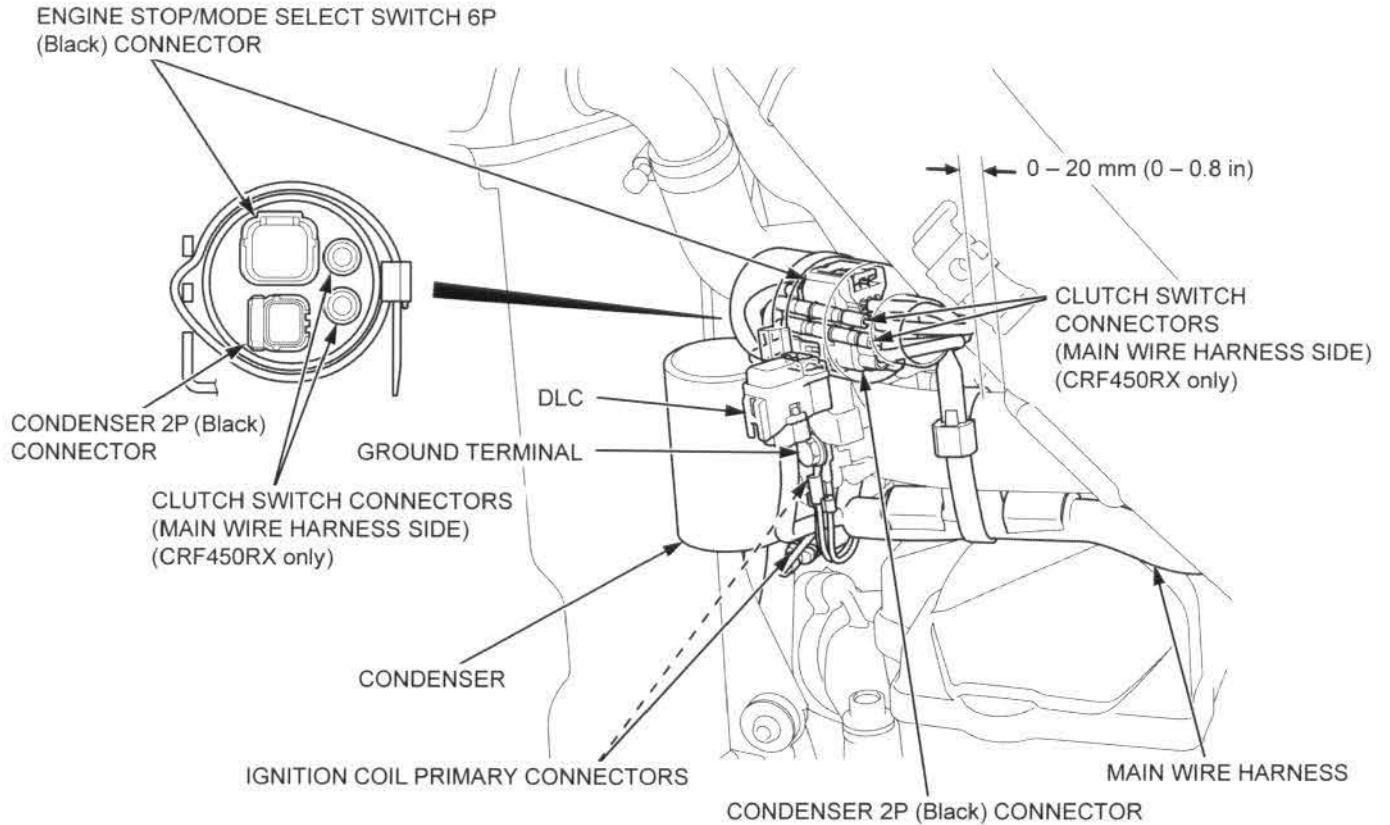
CRF450RX shown:



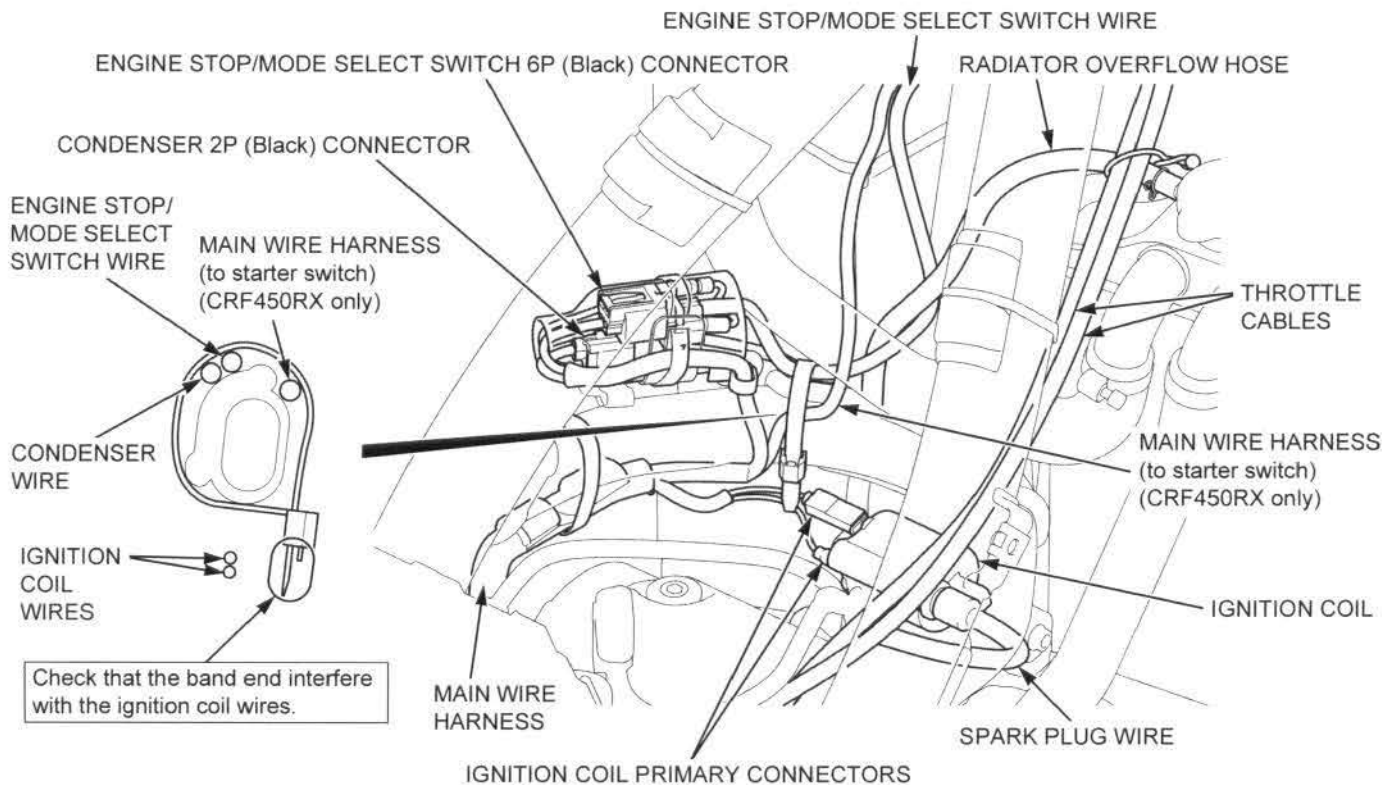




CRF450RX shown:

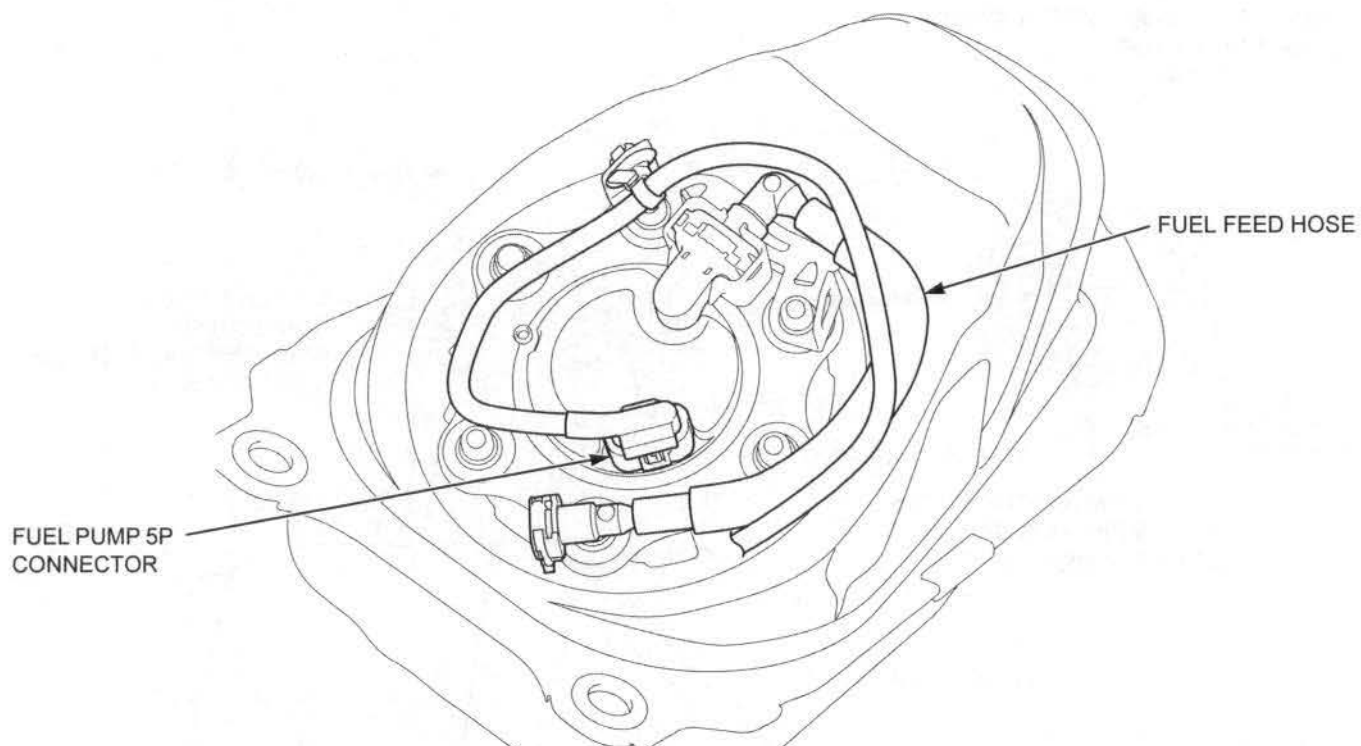


CRF450RX shown:

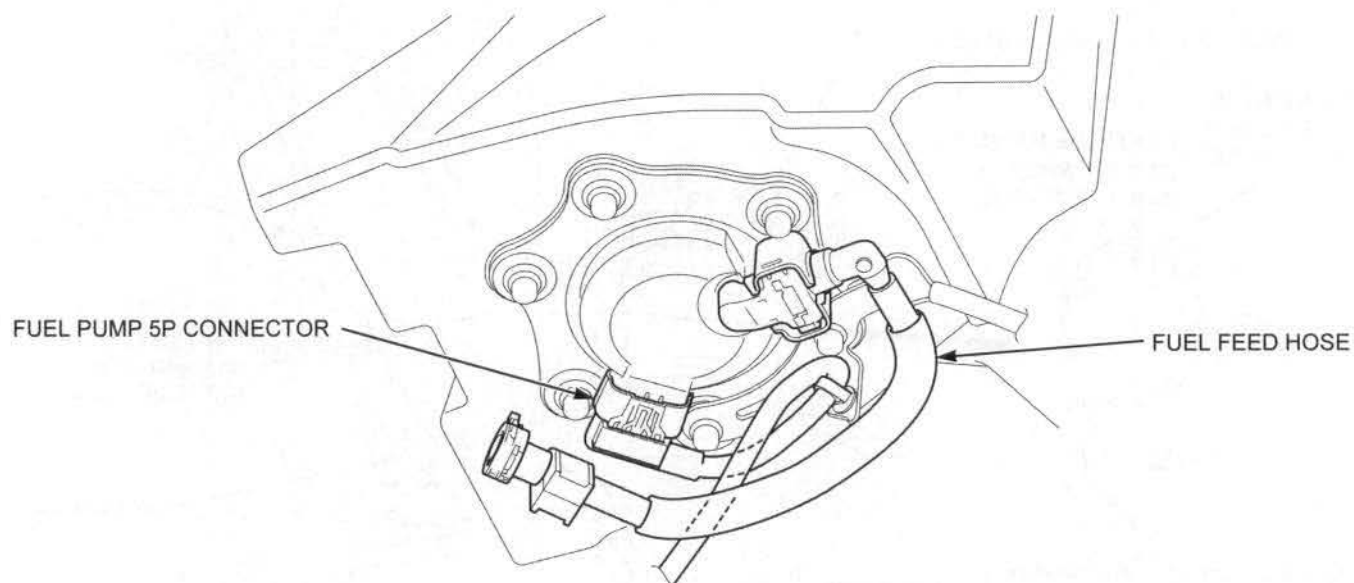


GENERAL INFORMATION

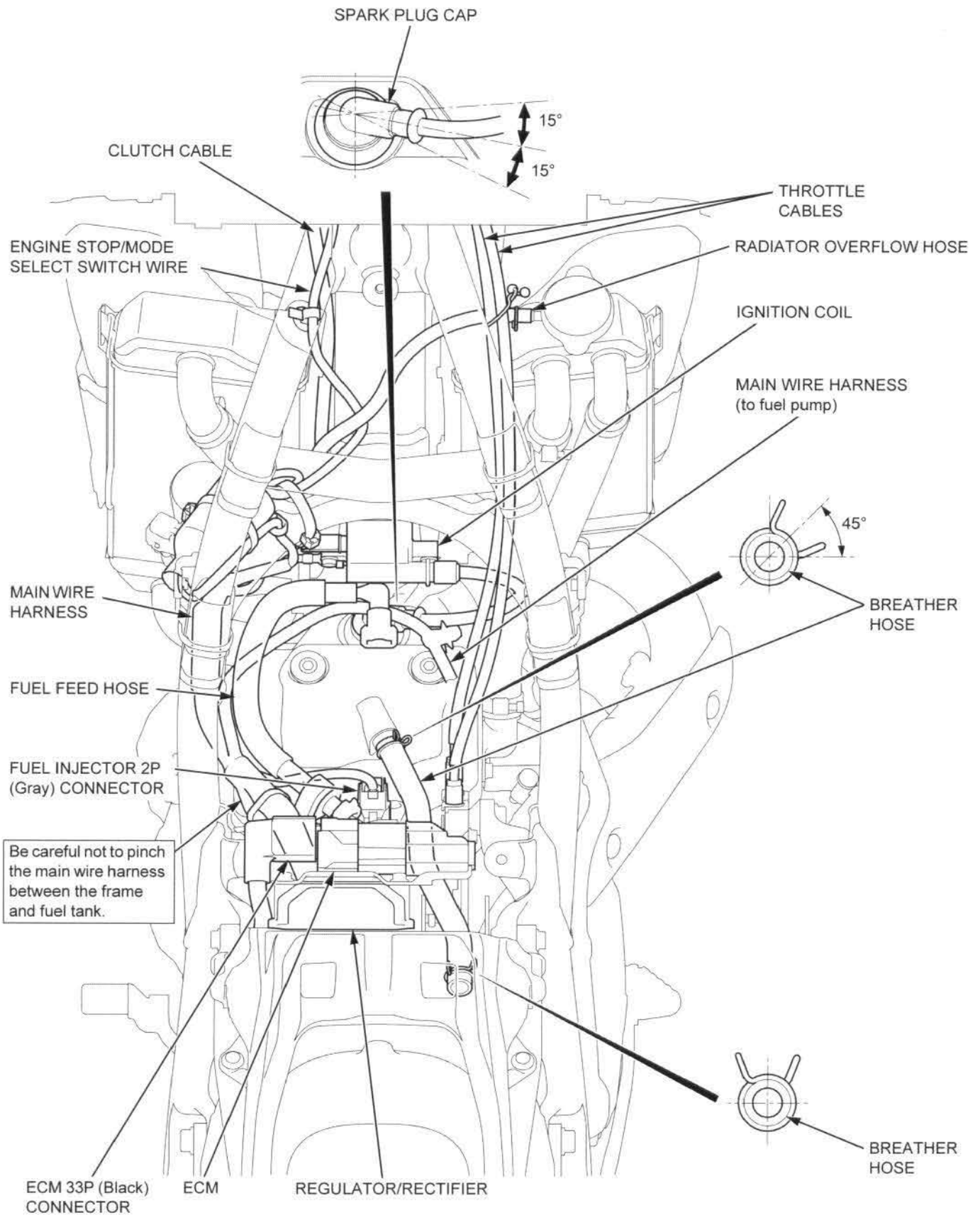
CRF450R:



CRF450RX:

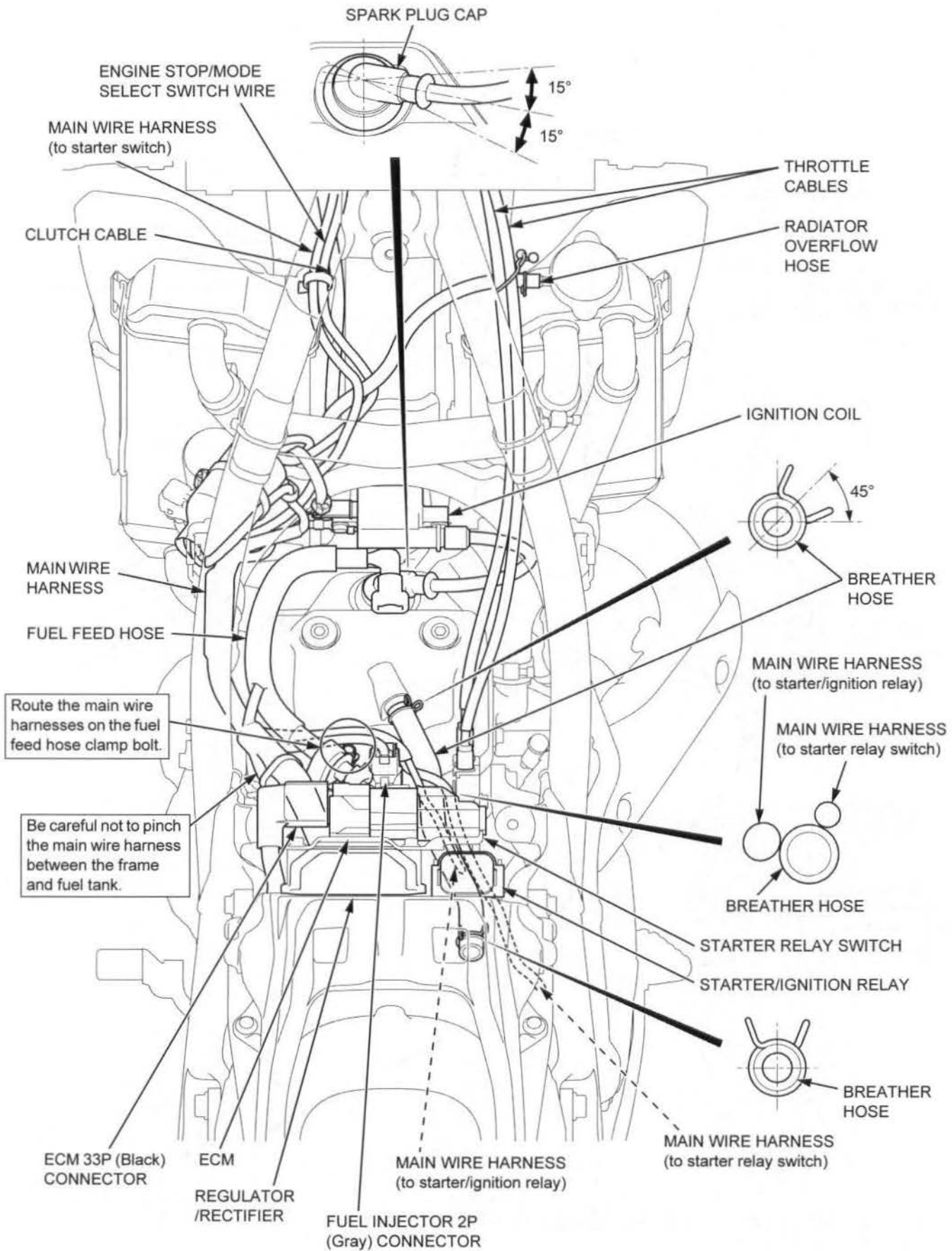


CRF450R:

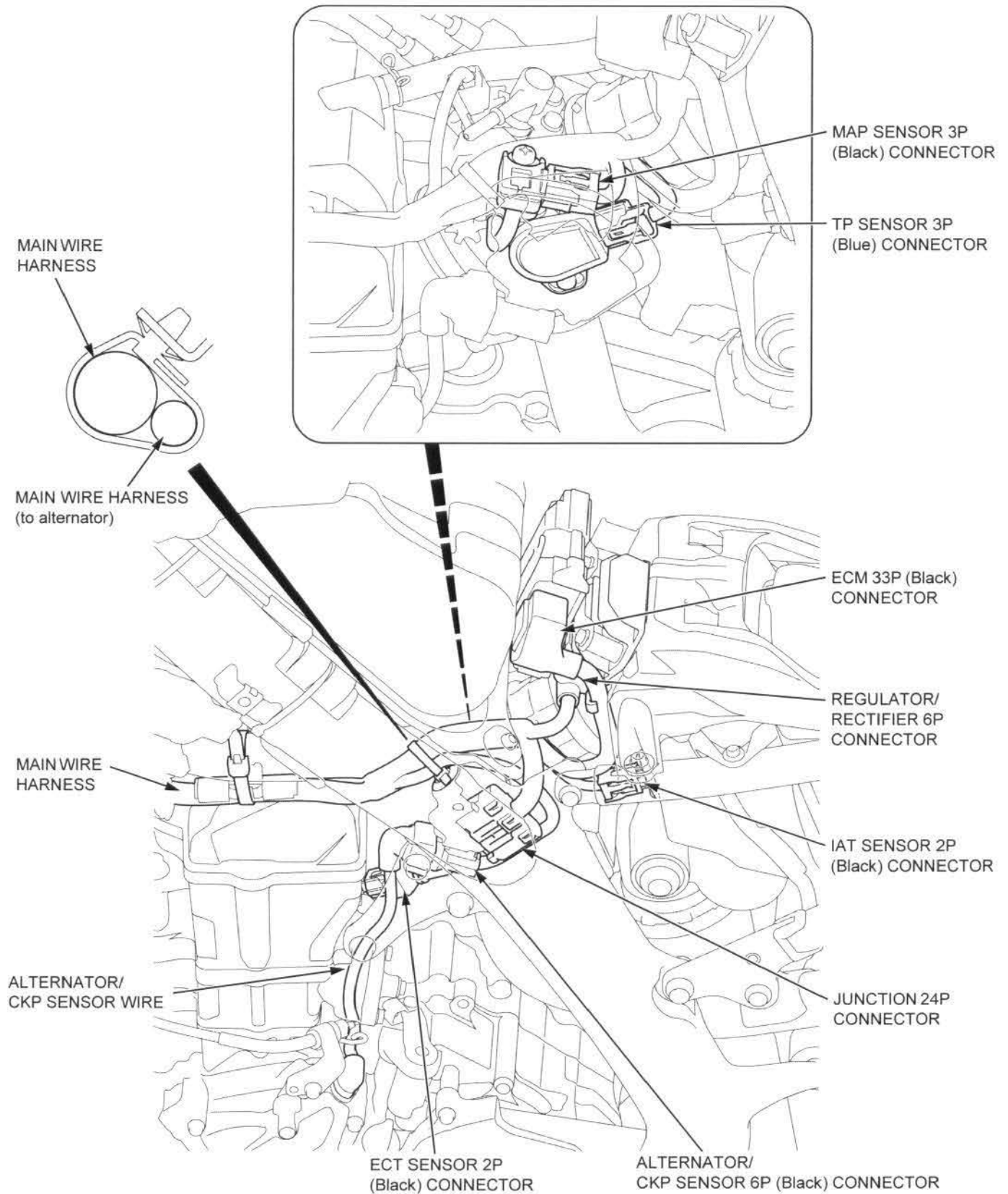


GENERAL INFORMATION

CRF450RX:

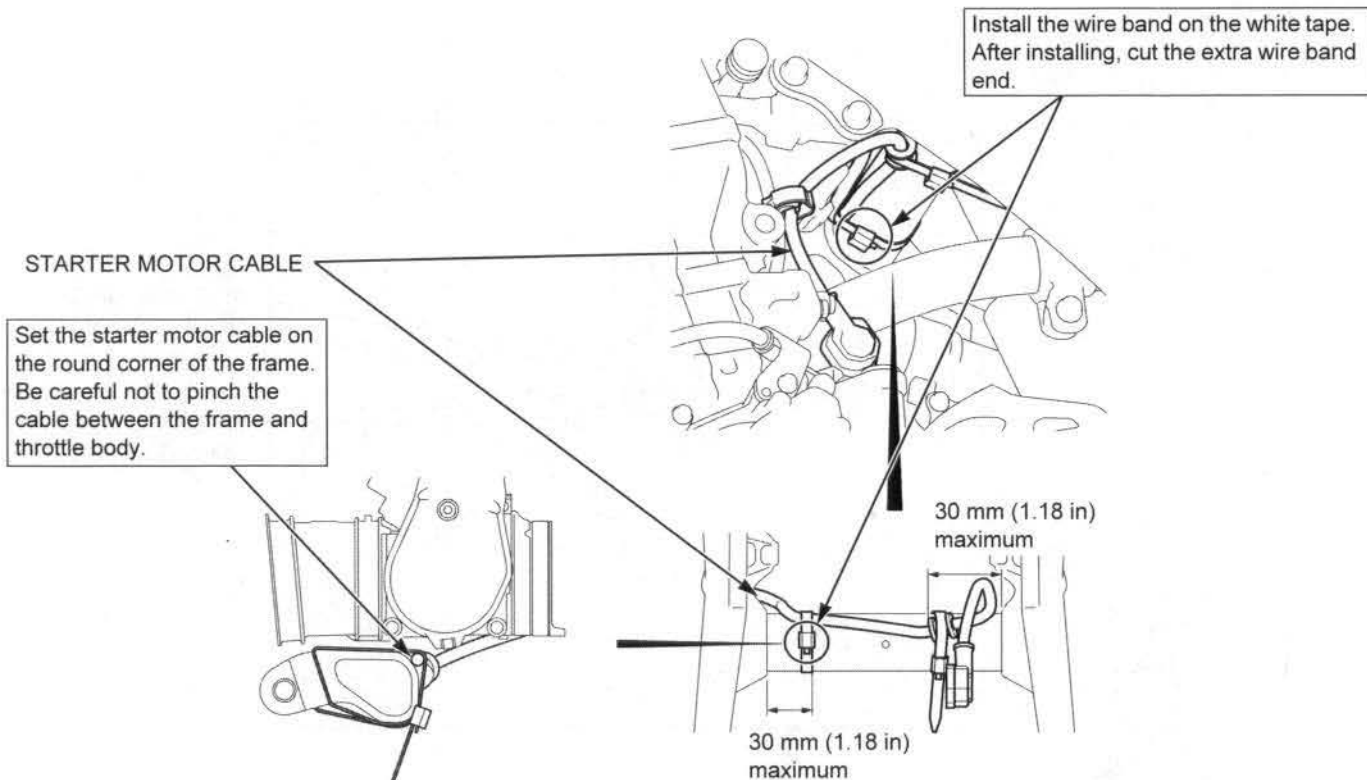


CRF450R shown:

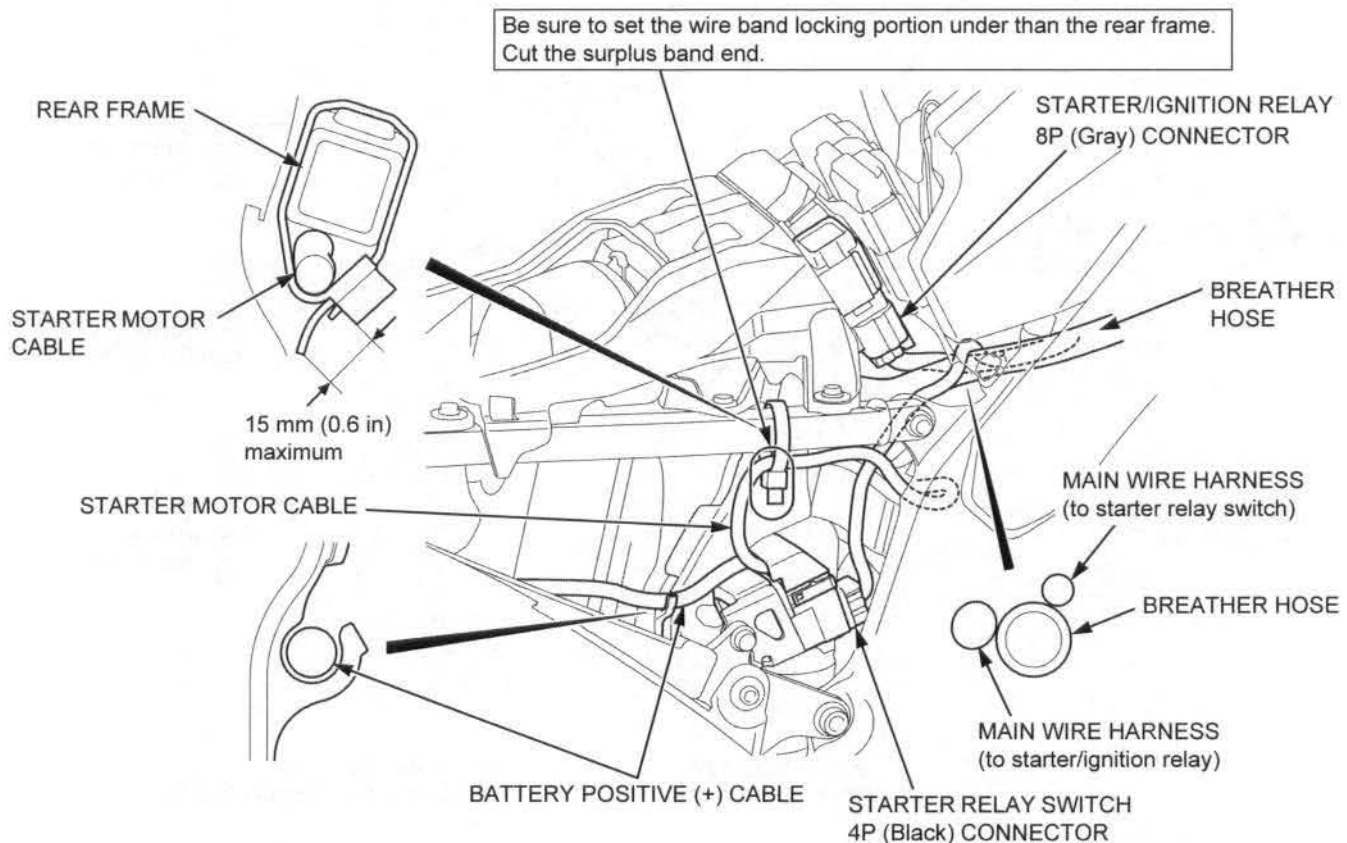


GENERAL INFORMATION

CRF450RX:

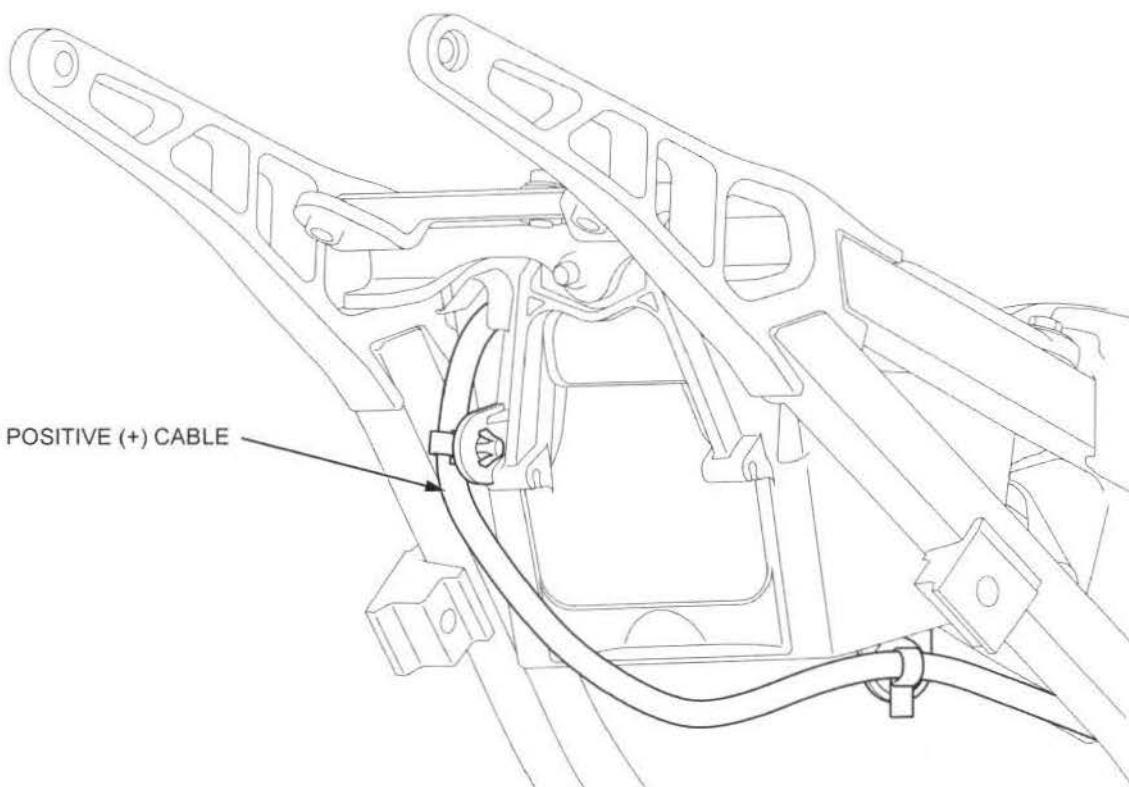


CRF450RX:



CRF450RX:

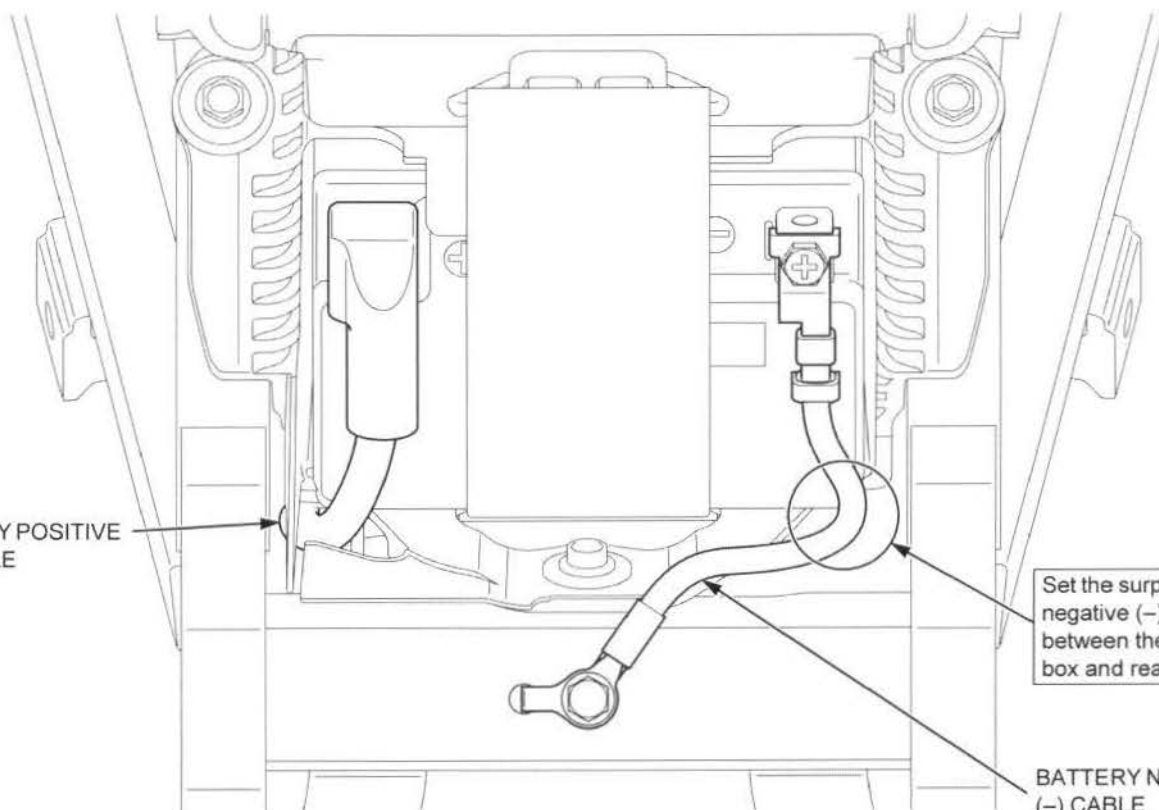
BATTERY POSITIVE (+) CABLE

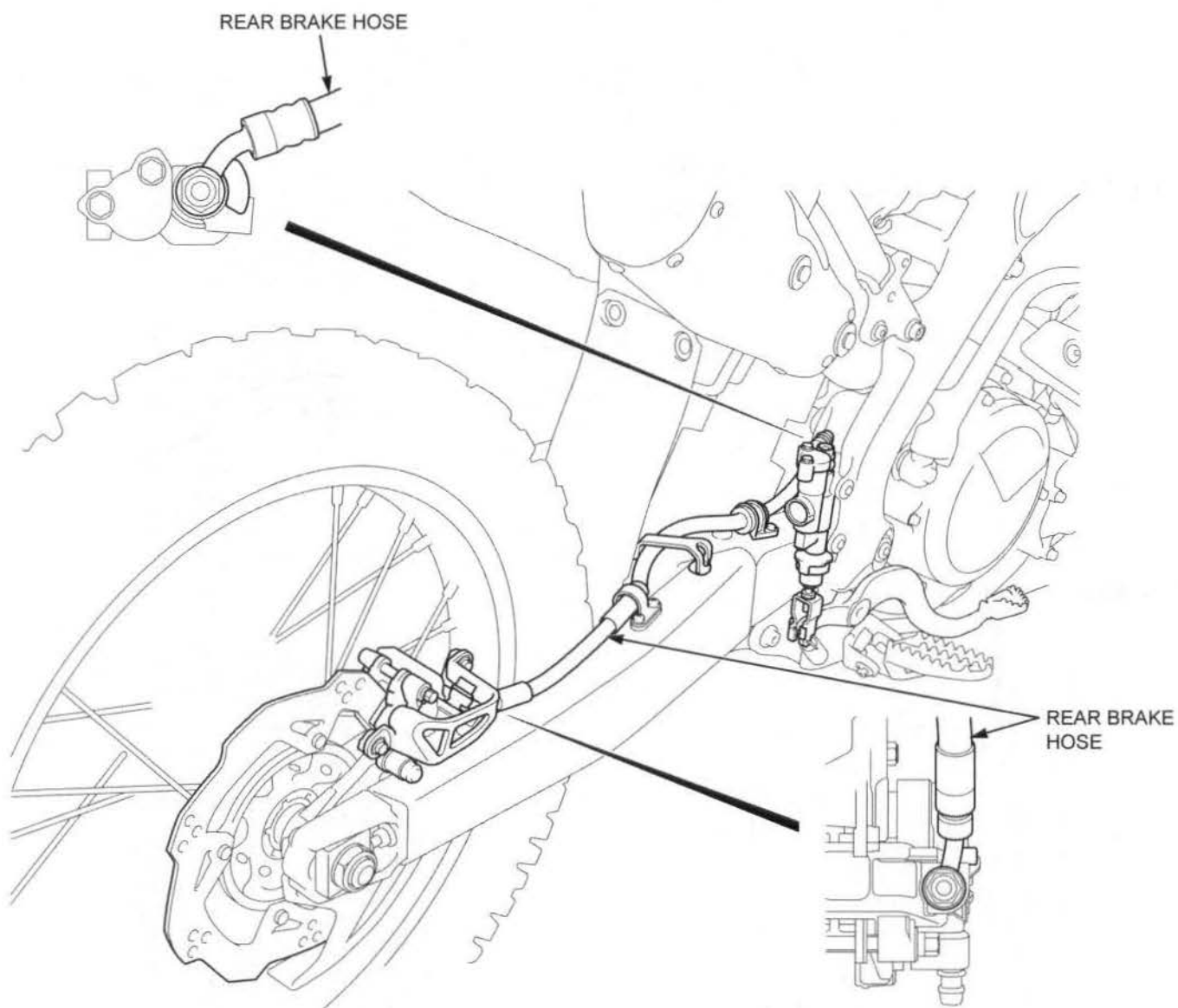


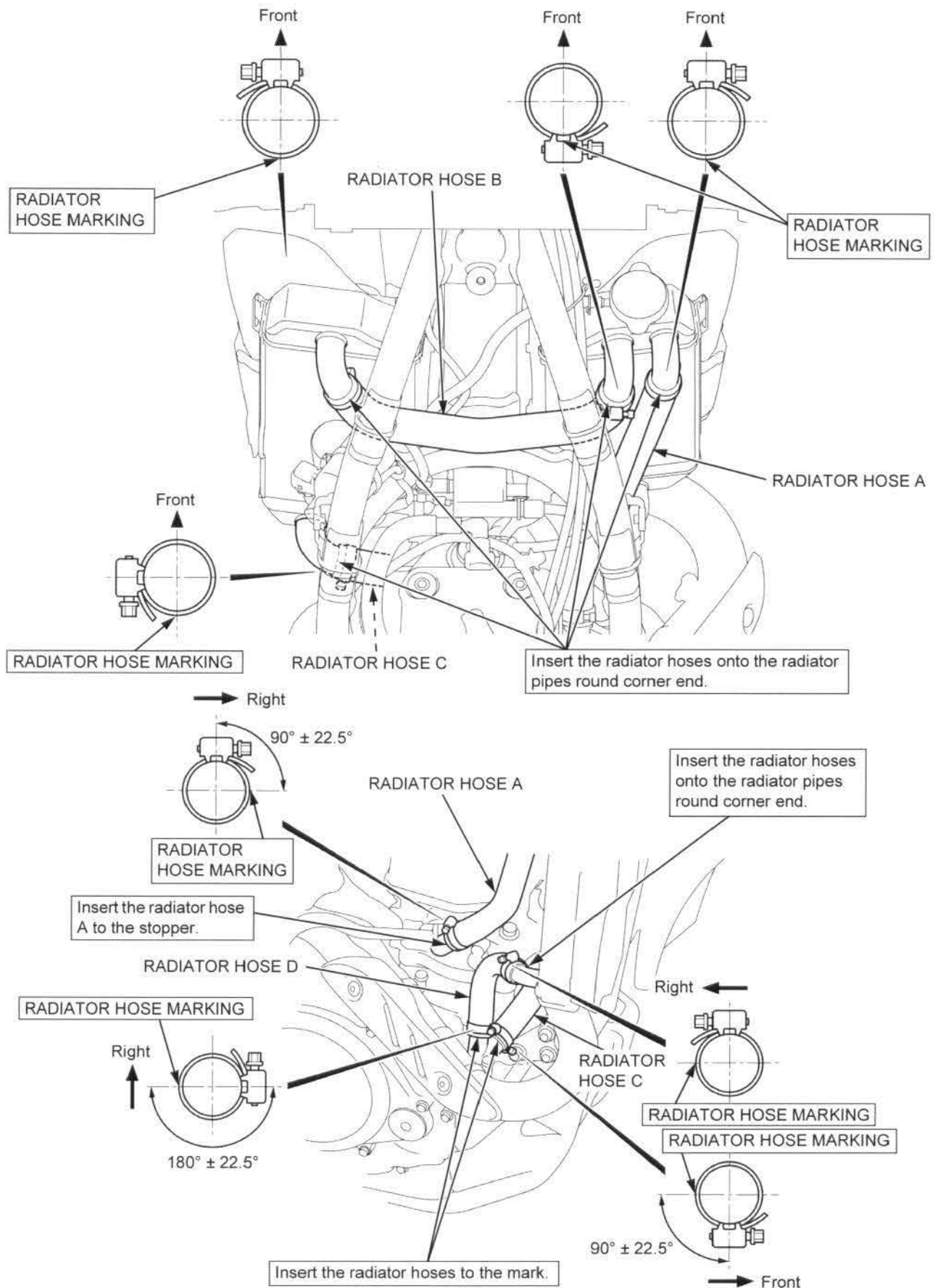
CRF450RX:

BATTERY POSITIVE
(+) CABLE

Set the surplus battery
negative (-) cable
between the battery
box and rear frame.

BATTERY NEGATIVE
(-) CABLE

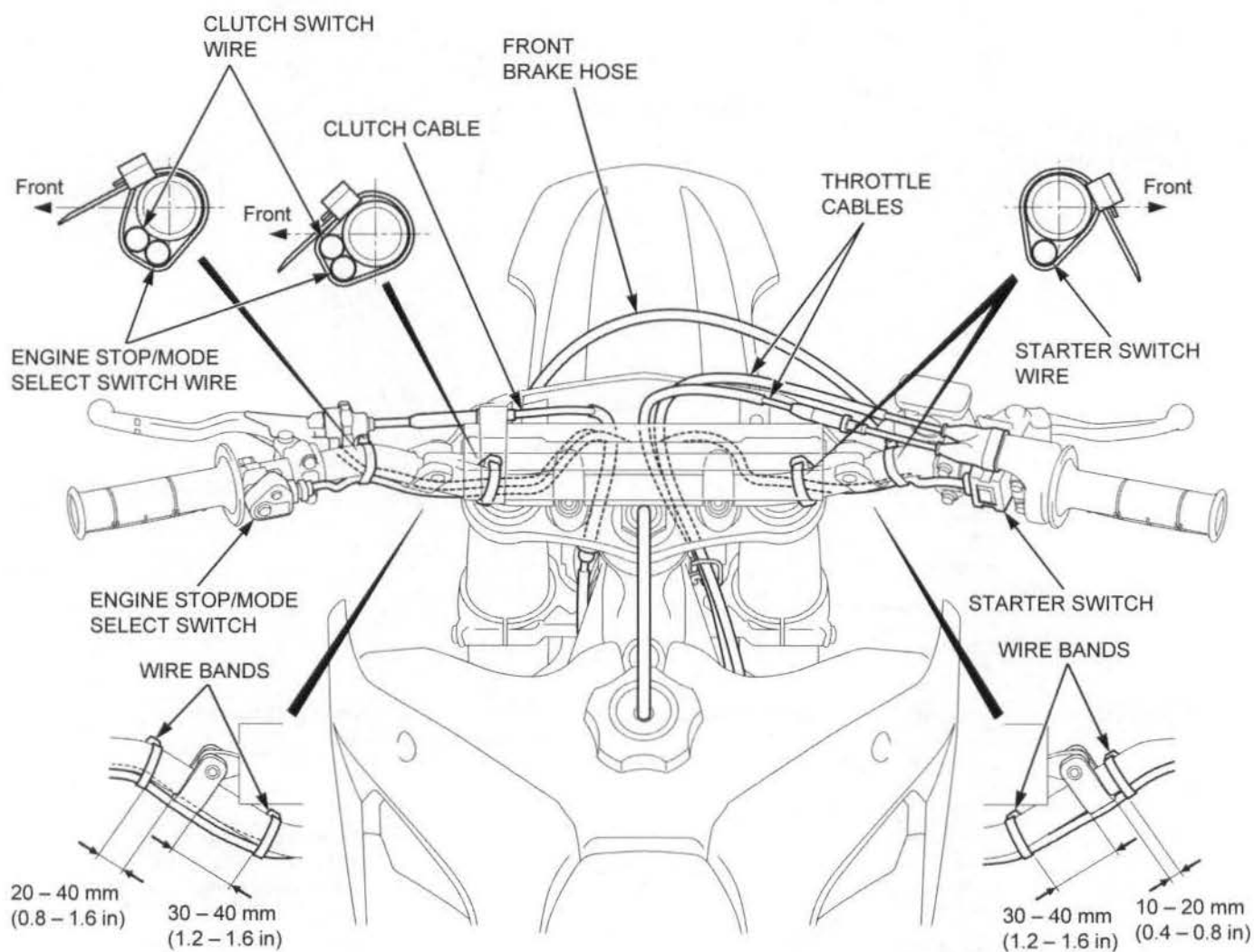


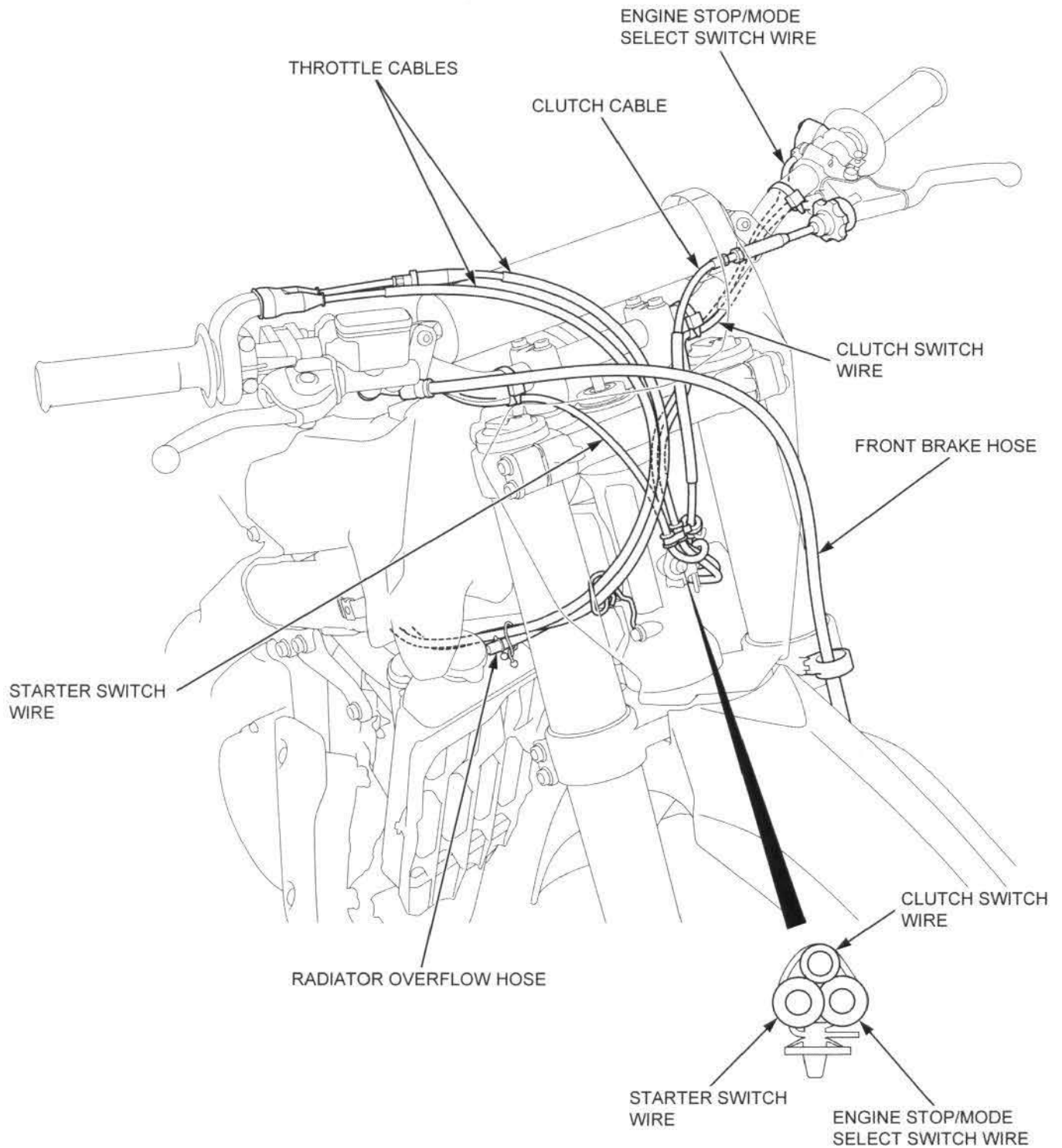


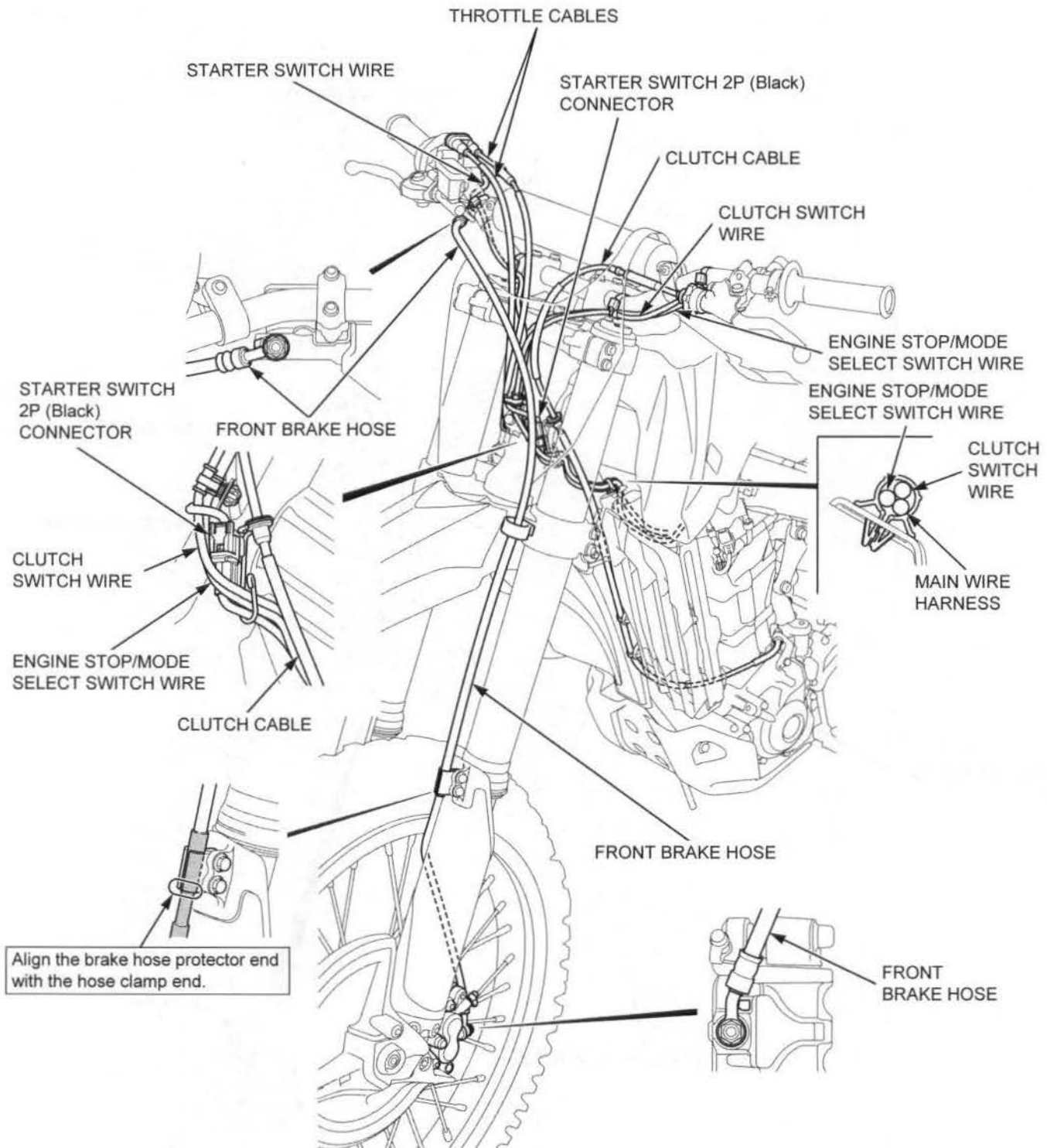
GENERAL INFORMATION

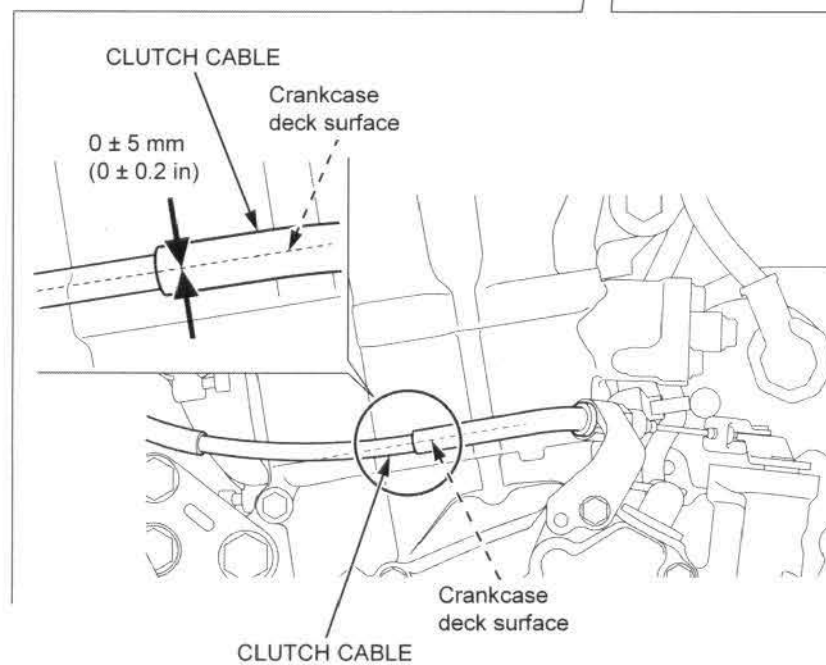
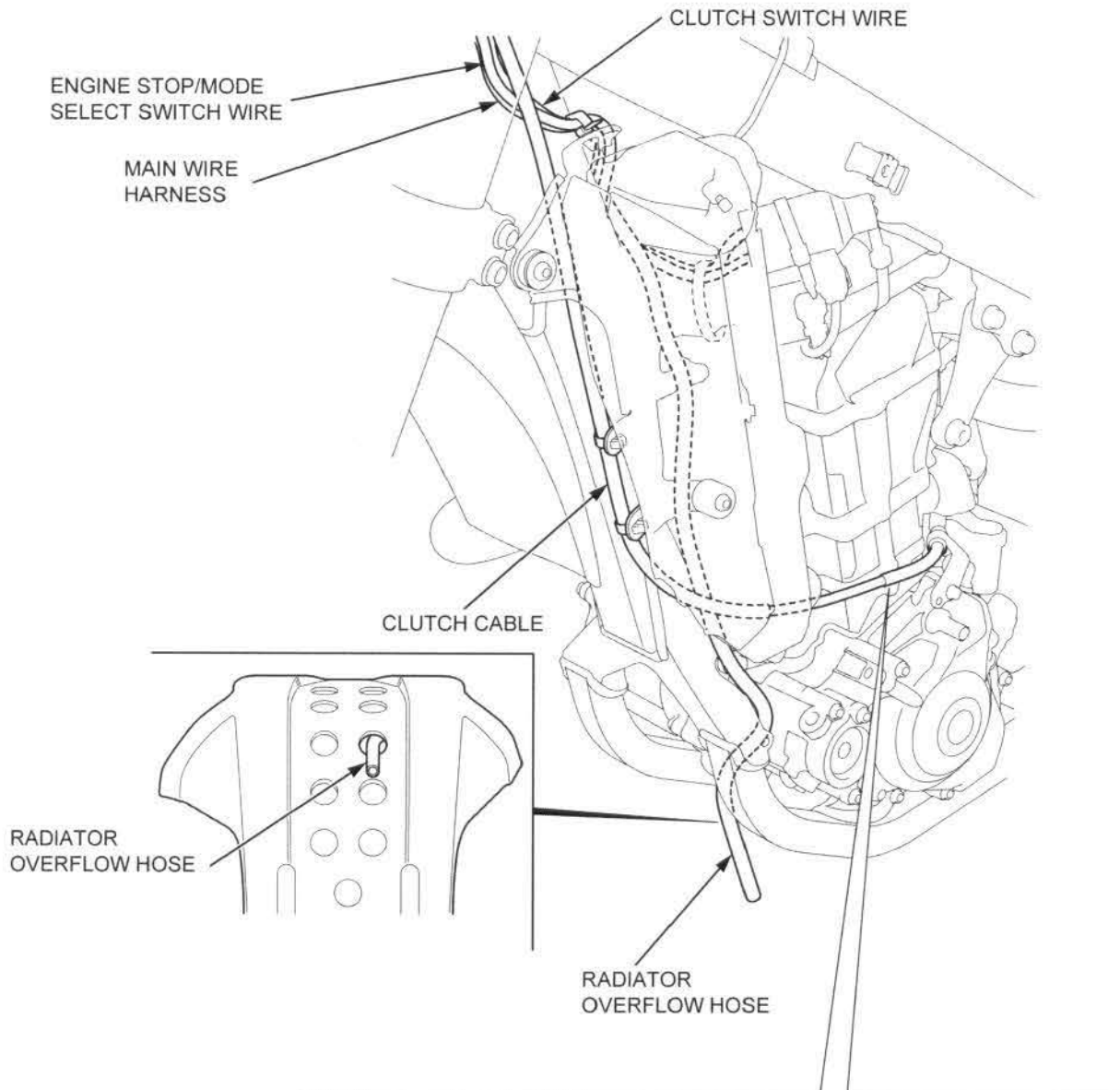
After '17 model:

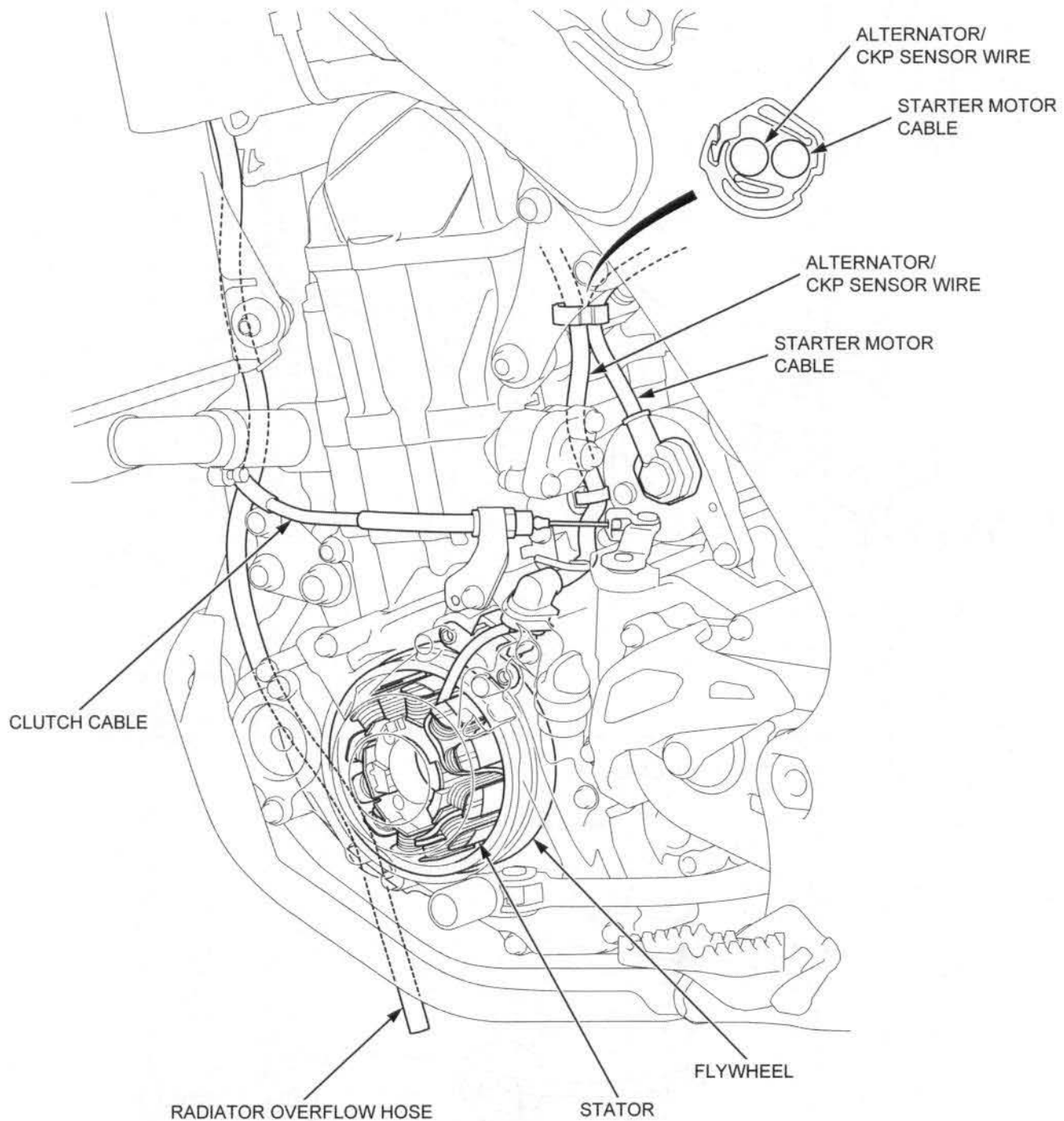
CRF450RX shown:

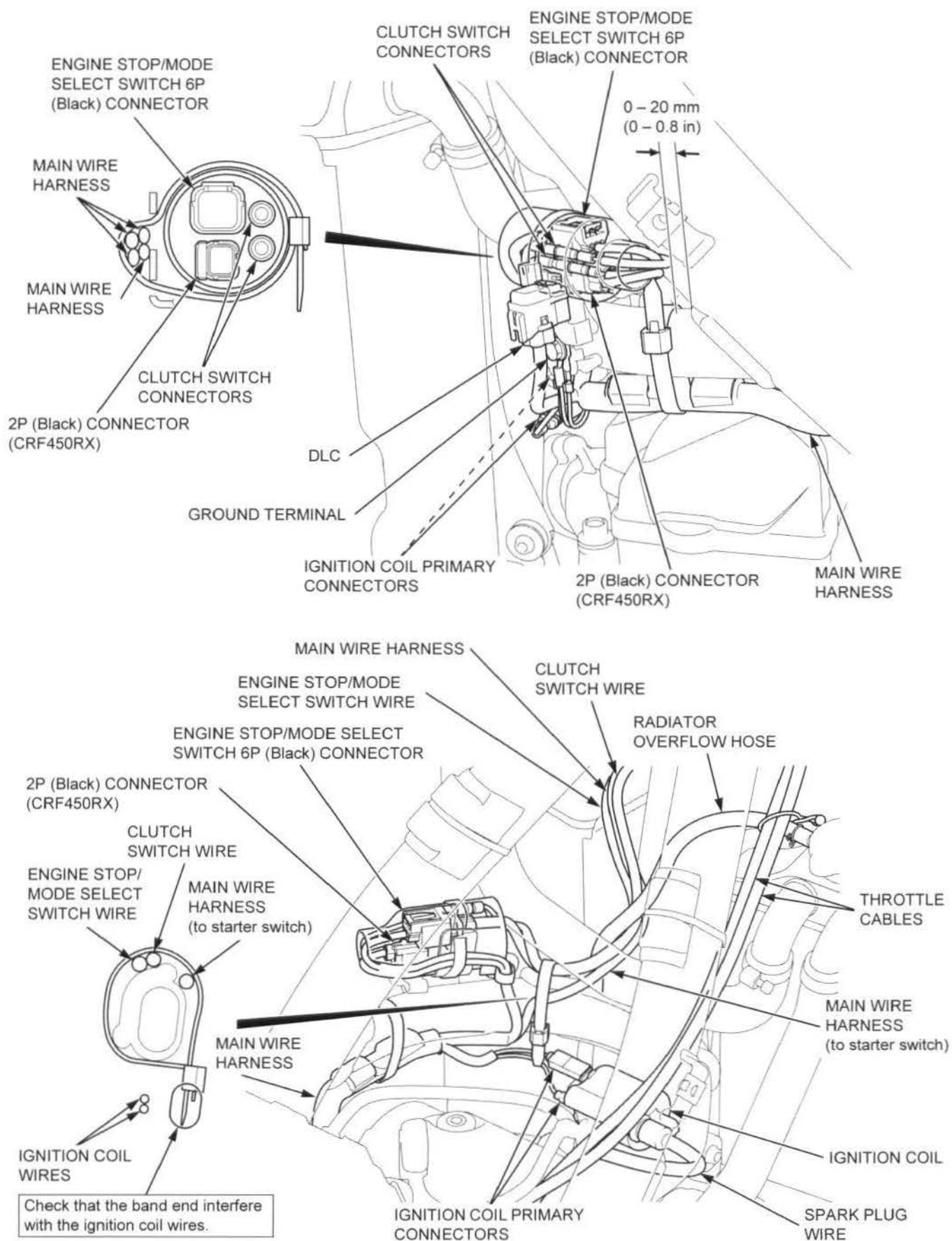






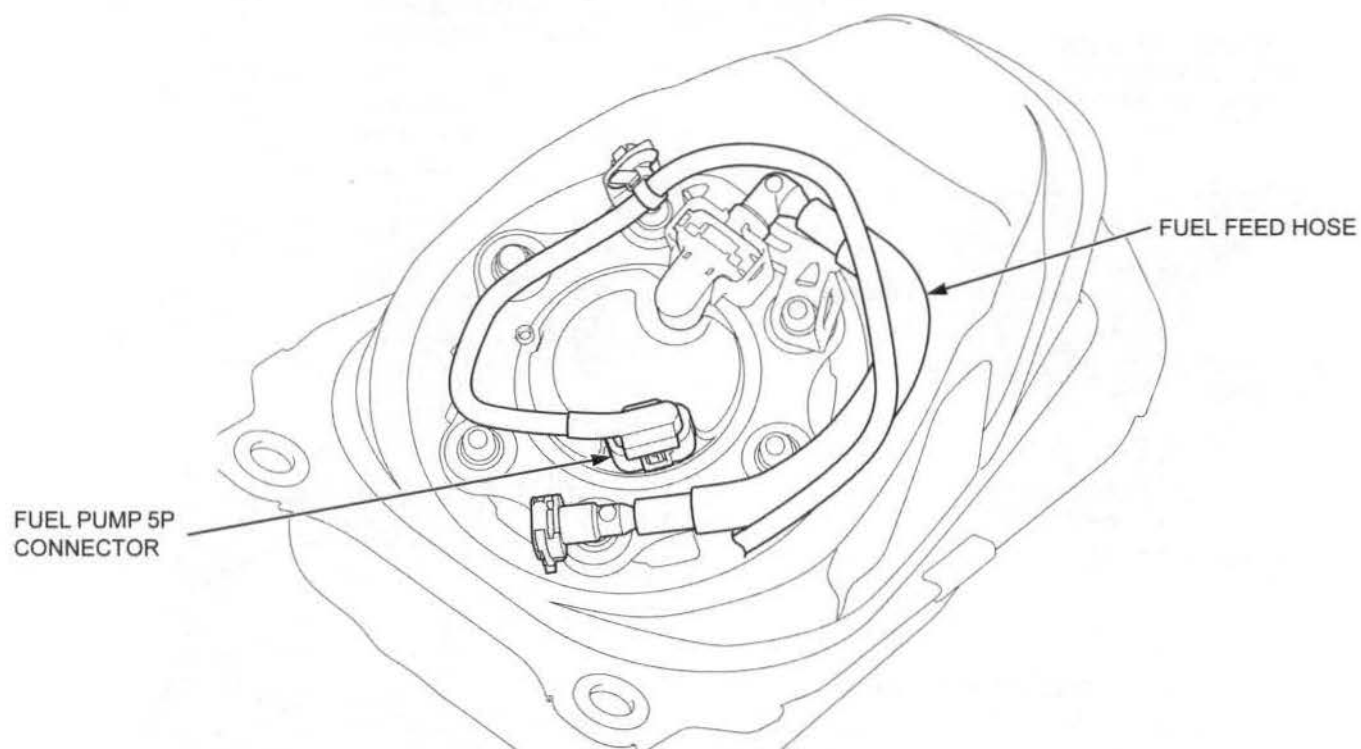




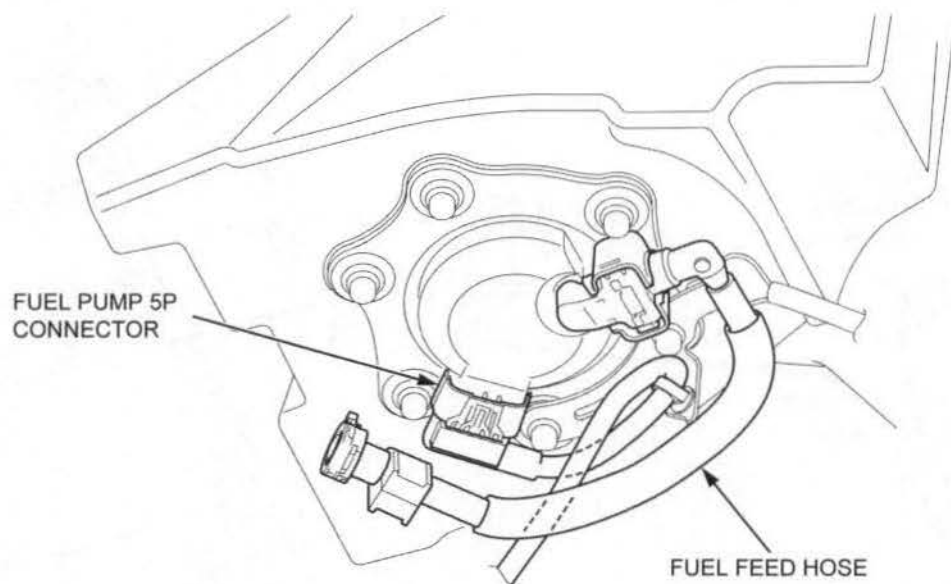


GENERAL INFORMATION

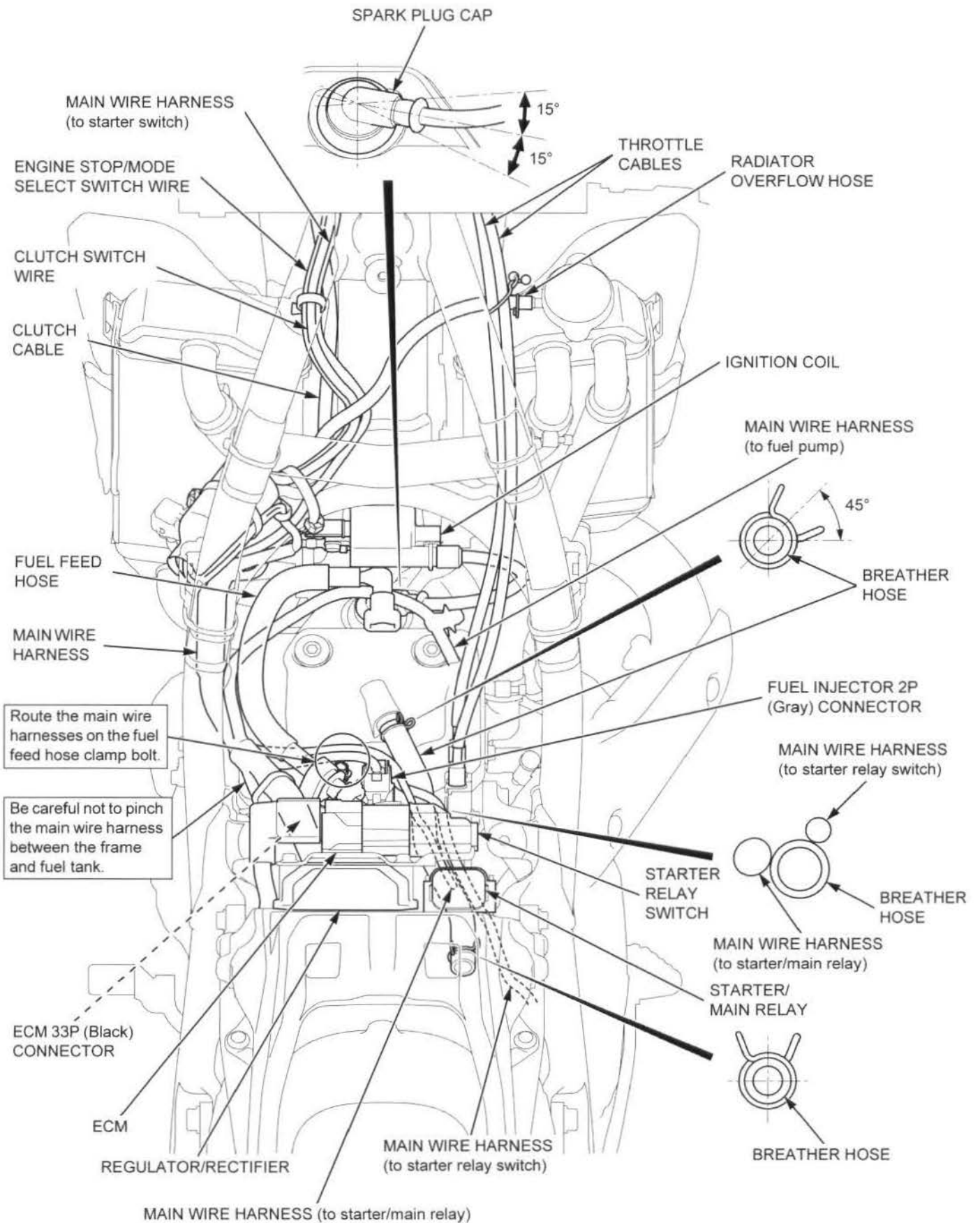
CRF450R:



CRF450RX:

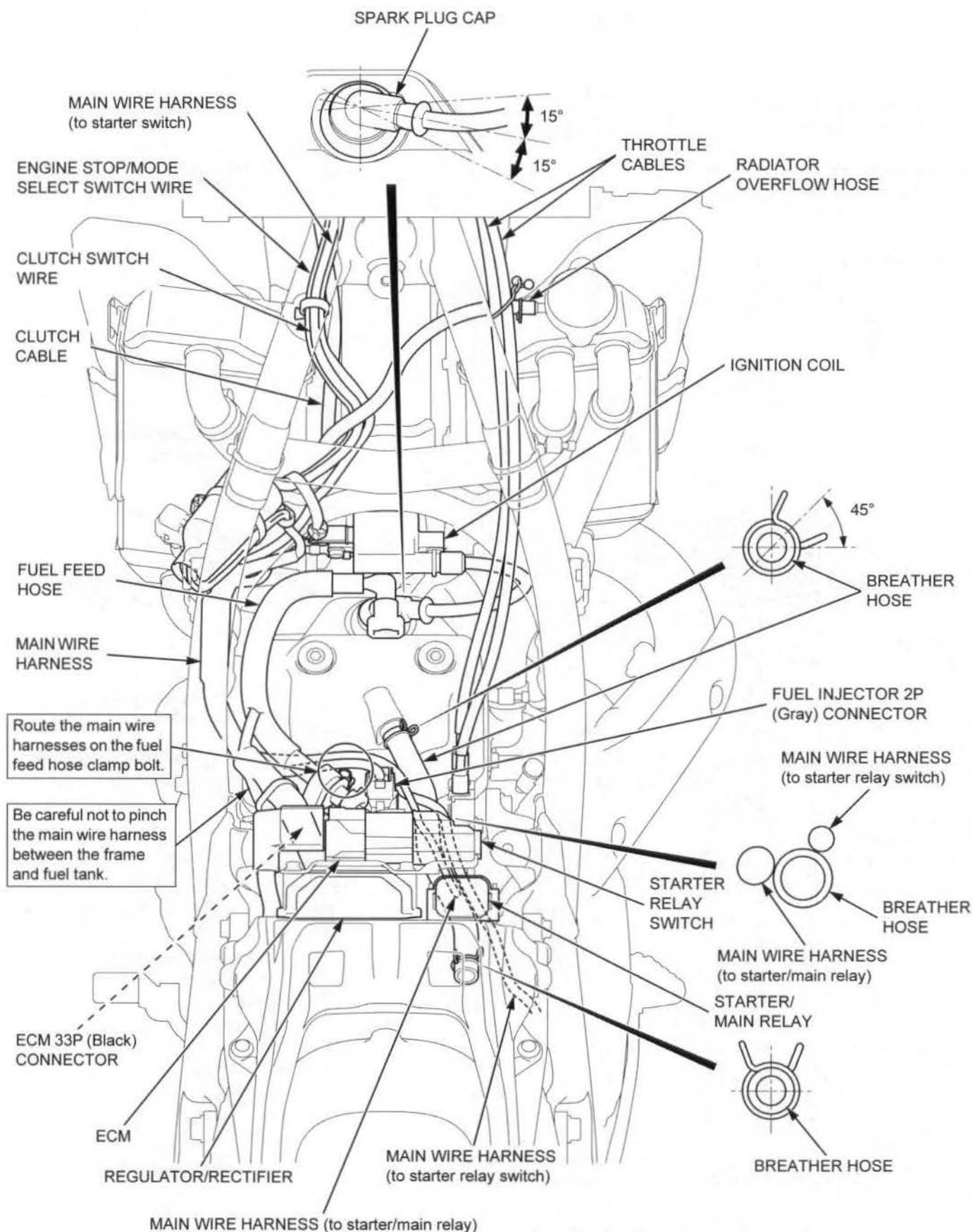


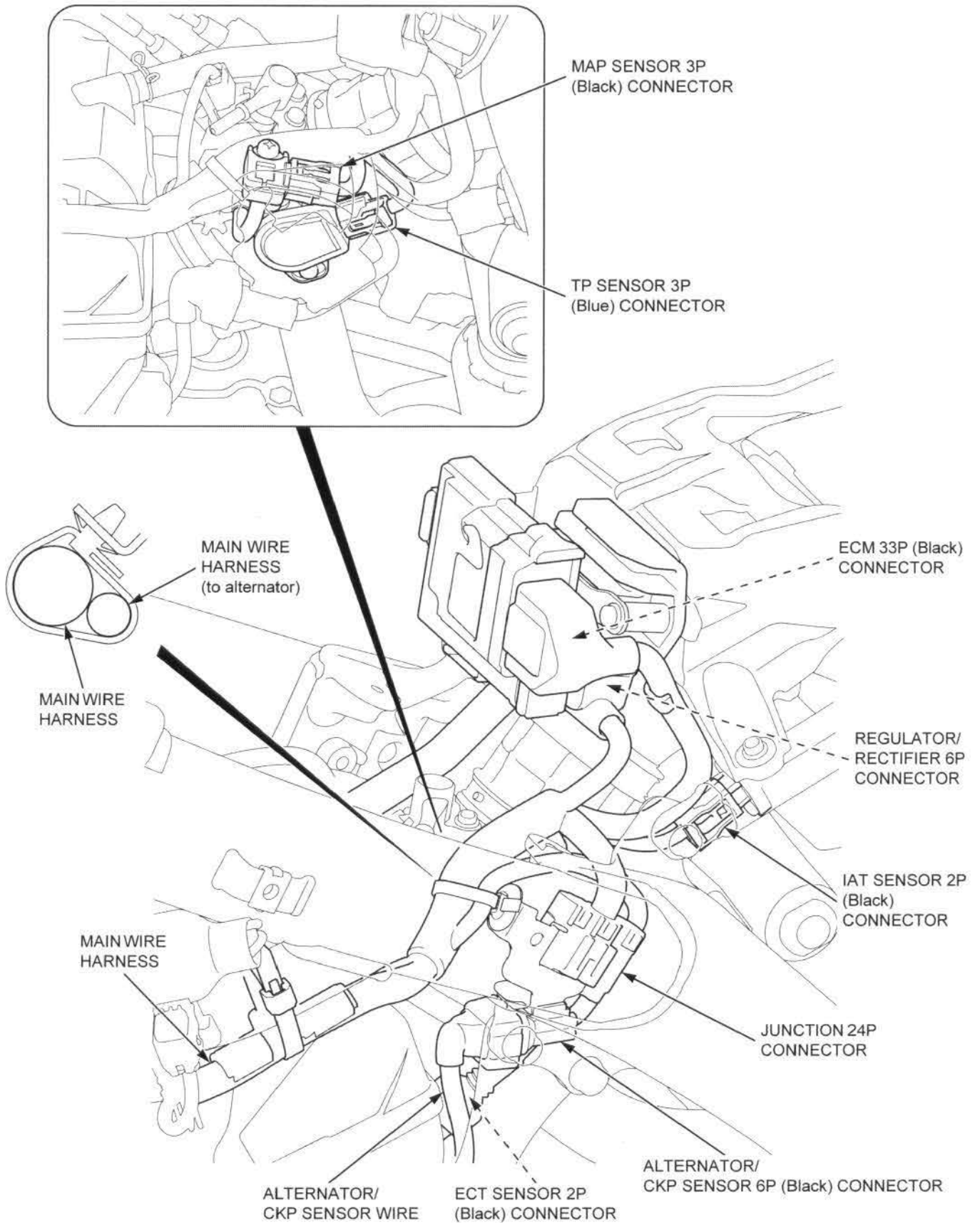
CRF450R:

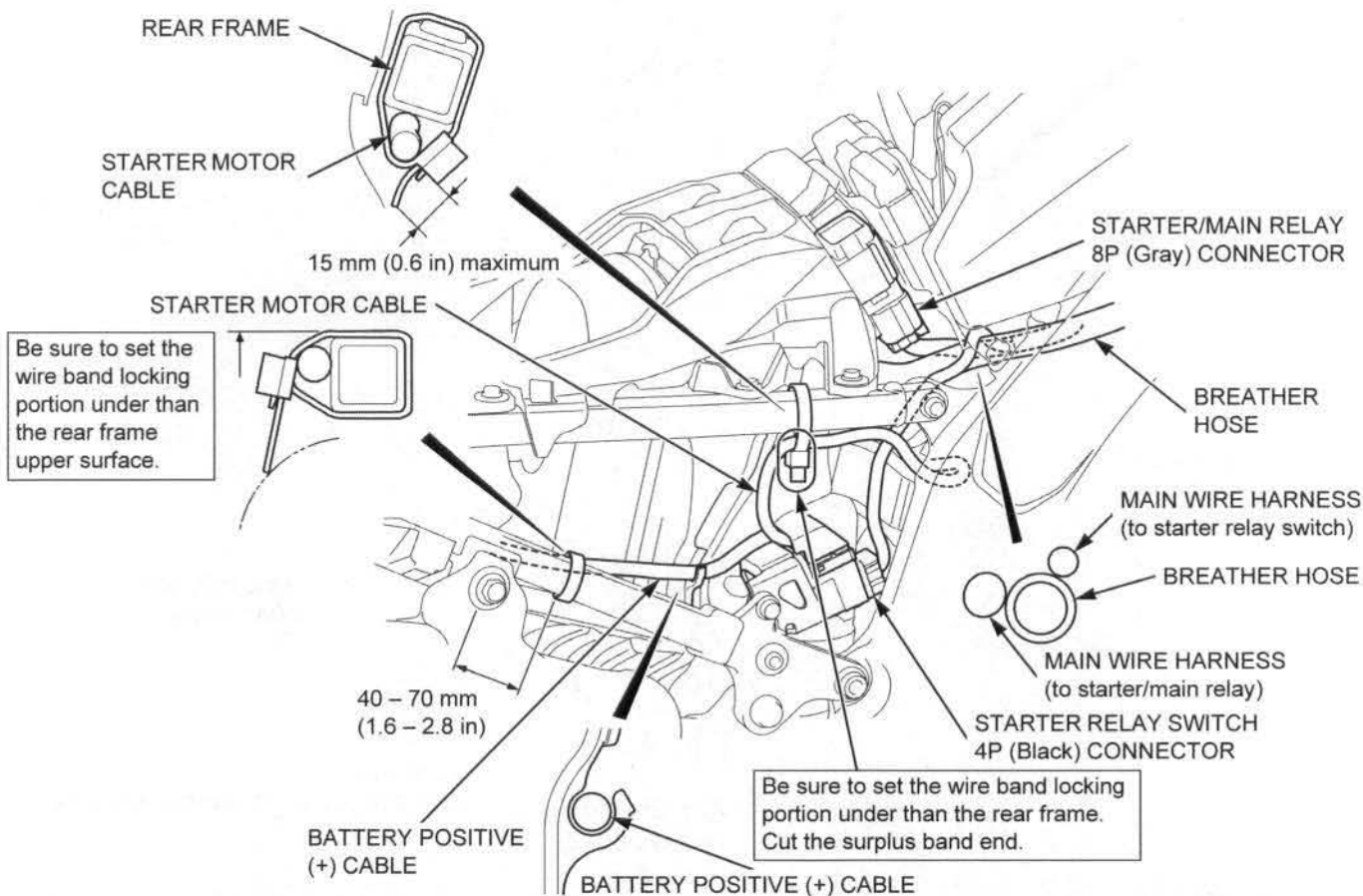
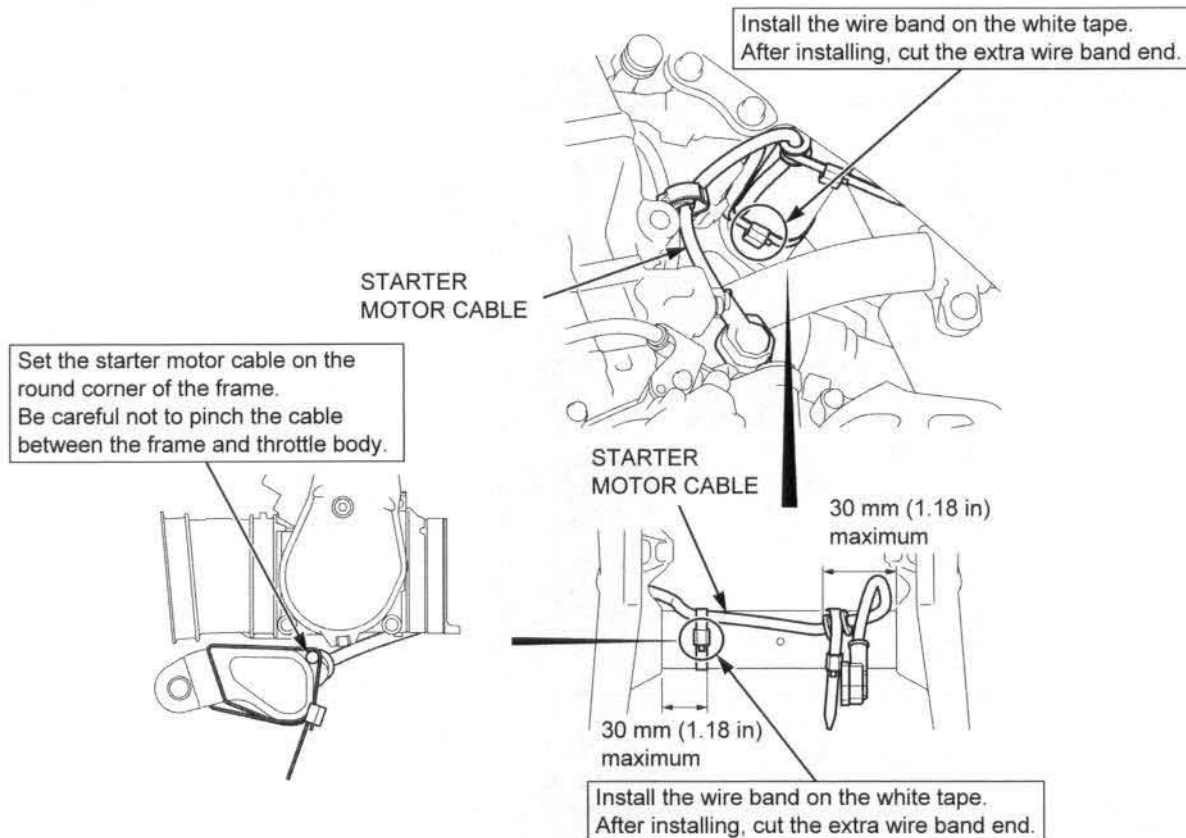


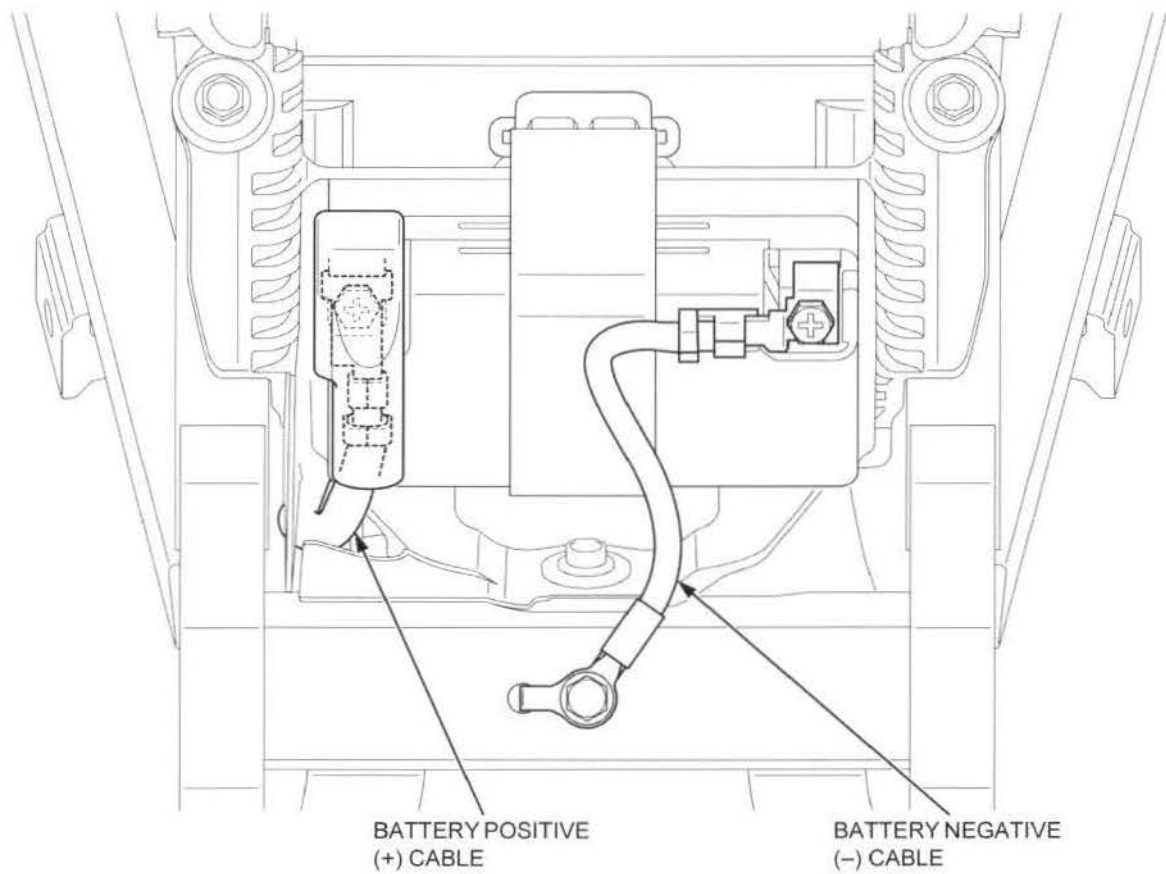
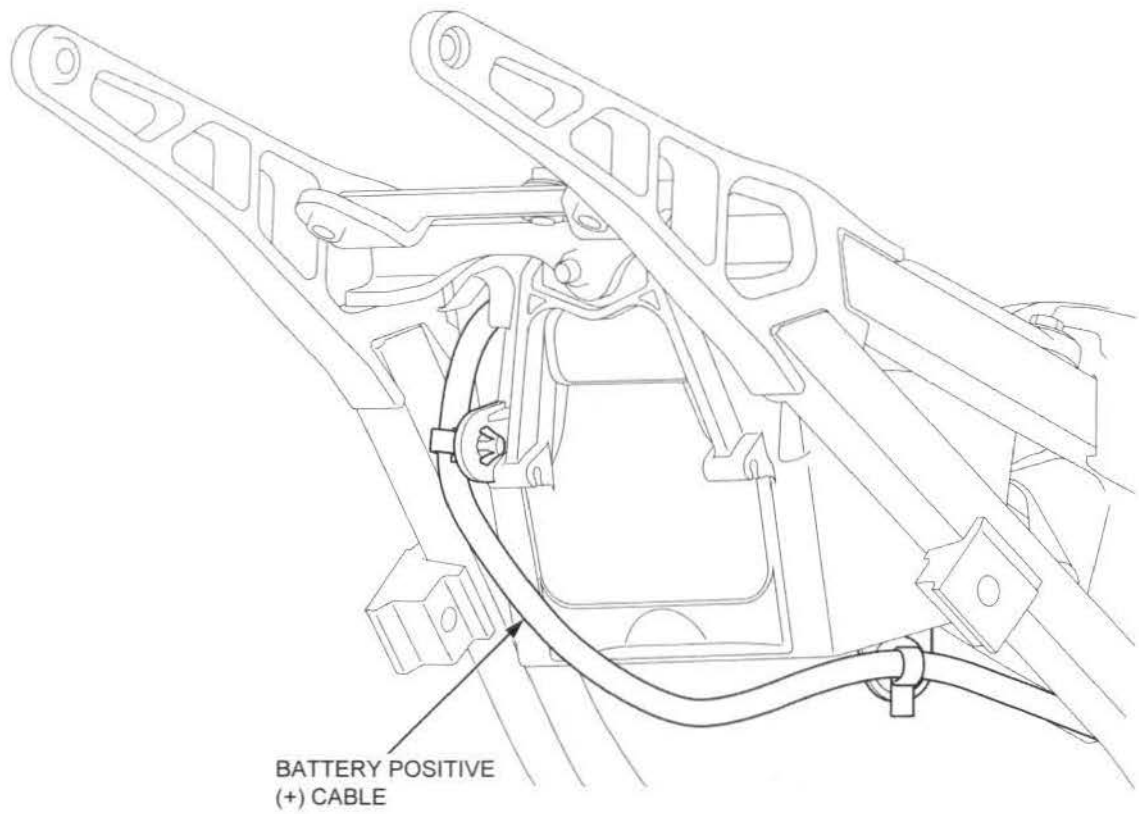
GENERAL INFORMATION

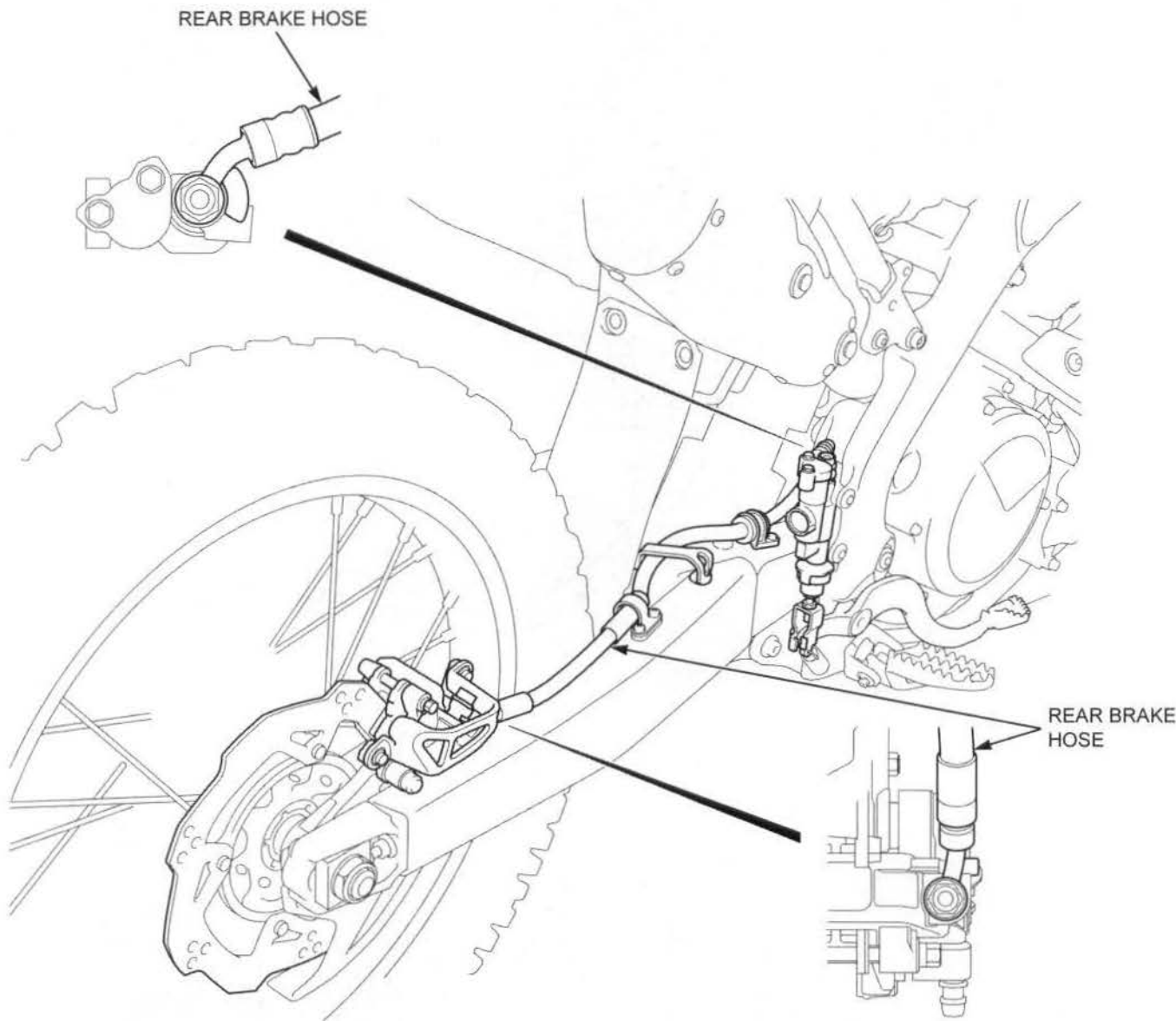
CRF450RX:

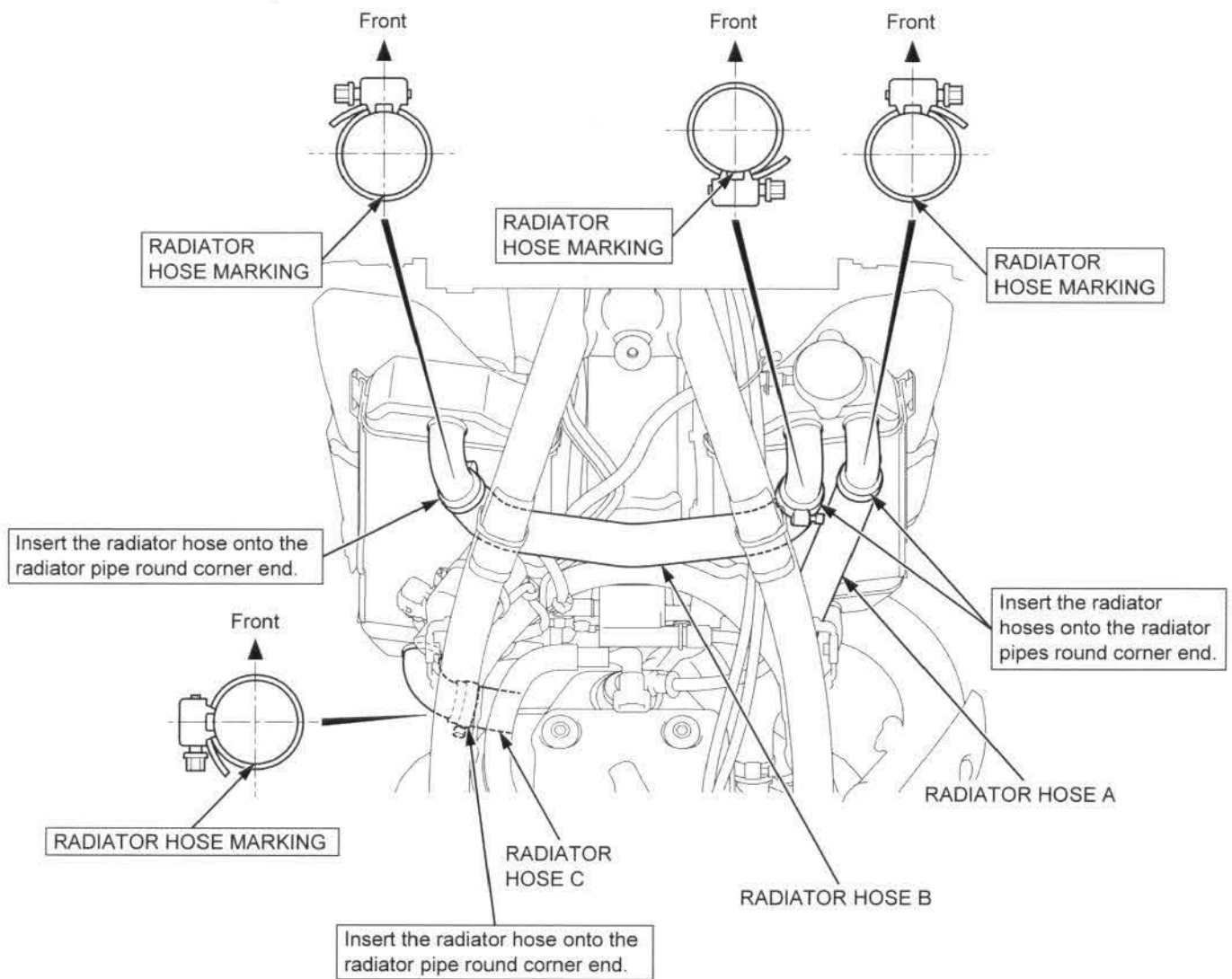


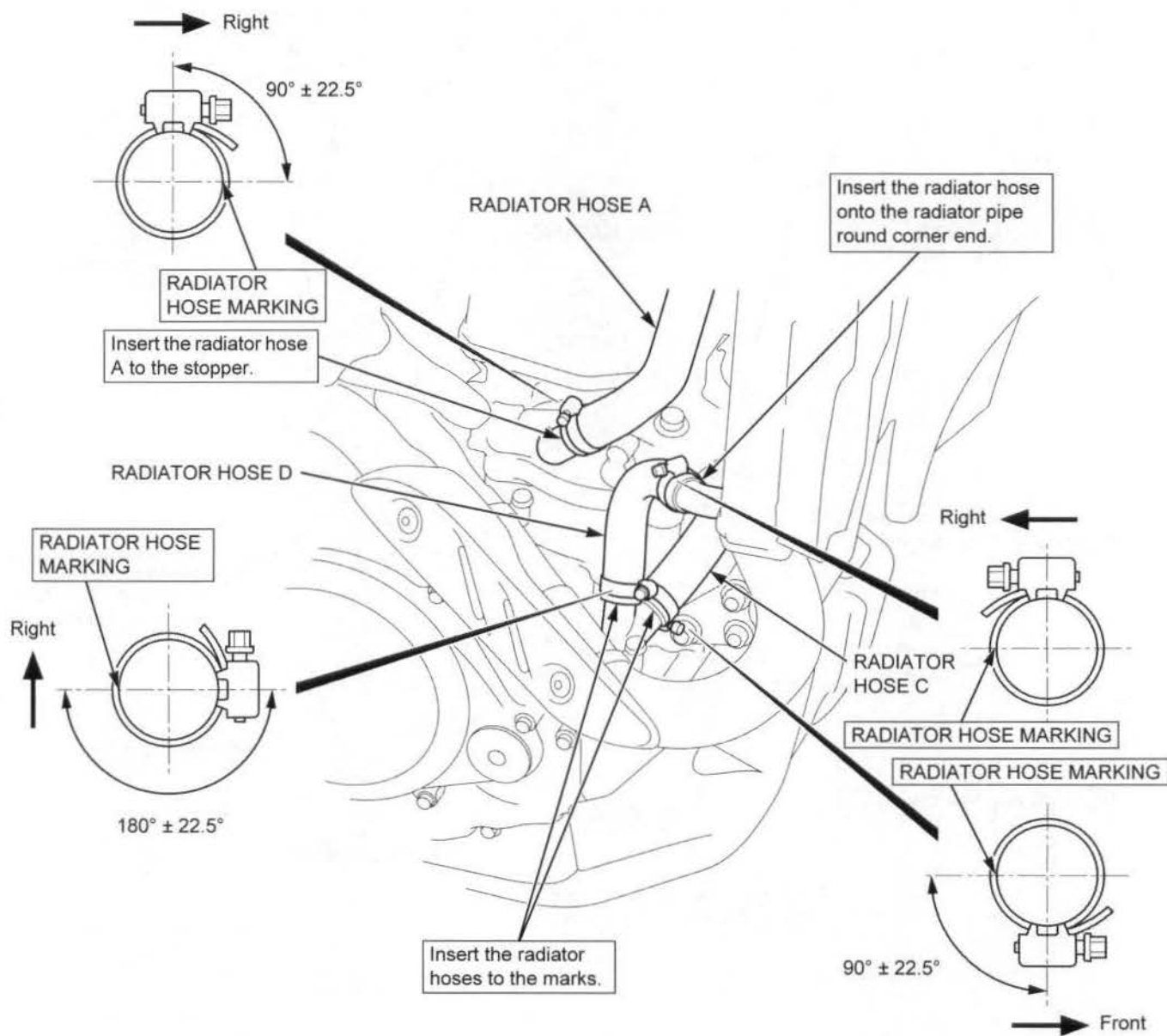













OPTIONAL PARTS ('17 model)

CRF450R

ITEM		REMARKS
MAINTENANCE: Workstand  Pin spanner Air gauge		For maintenance Pin spanner A x 2 For shock absorber spring installed length (preload) adjustment (two required) For checking tire air pressure
SPROCKET: Driven sprocket /chain link	Standard Optional	49T (Aluminum)/114 48T (Aluminum)/114 50T (Aluminum)/114 RK 520TXZ-120RJ
DRIVE CHAIN: HANDLEBAR LOWER HOLDER:	Standard Optional	3 mm forward offset no offset

ITEM		REMARKS	
FRONT FORK:			
Spring	TYPE	SPRING RATE	IDENTIFICATION MARK
	Soft	4.6 N/mm (26.3 lbf/in)	1 scribe mark
	Medium (standard spring)	4.8 N/mm (27.4 lbf/in)	No mark (factory products)
	Stiff	5.0 N/mm (28.6 lbf/in)	2 scribe marks


The factory-installed front fork springs have no marks. Before replacing the springs, be sure to mark them so they can be distinguished from other optional springs.

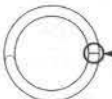
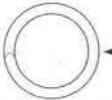
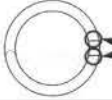
ITEM		REMARKS	
SHOCK ABSORBER:			
Spring	TYPE	SPRING RATE	IDENTIFICATION MARK
	Soft	52 N/mm (296.9 lbf/in)	Red paint
	Medium (standard spring)	54 N/mm (308.3 lbf/in)	No mark (factory products) or White paint (after market parts)
	Stiff	56 N/mm (319.8 lbf/in)	Blue paint

The factory-installed shock spring has no mark. Before replacing the spring, be sure to mark it so it can be distinguished from other optional springs.





GENERAL INFORMATION

CRF450RX

ITEM		REMARKS
MAINTENANCE: Workstand  Pin spanner Air gauge		For maintenance Pin spanner A x 2 For shock absorber spring installed length (preload) adjustment (two required) For checking tire air pressure
SPROCKET: Driven sprocket /chain link	Standard Optional	50T (Aluminum)/114 49T (Aluminum)/114 51T (Aluminum)/114 RK 520EXU-120LJFZ
DRIVE CHAIN: HANDLEBAR LOWER HOLDER:	Standard Optional	3 mm forward offset no offset

ITEM		REMARKS	
FRONT FORK: Spring		TYPE Soft  Scribe mark	SPRING RATE 4.6 N/mm (26.3 lbf/in)
Medium (standard spring)		 No mark	IDENTIFICATION MARK 1 scribe mark
Stiff		 2 scribe marks	4.8 N/mm (27.4 lbf/in)
			5.0 N/mm (28.6 lbf/in)


The factory-installed front fork springs have no marks. Before replacing the springs, be sure to mark them so they can be distinguished from other optional springs.

ITEM		REMARKS	
SHOCK ABSORBER: Spring		TYPE Soft 	SPRING RATE 50 N/mm (285.5 lbf/in)
Medium (Standard spring)		 or 	IDENTIFICATION MARK Pink paint
Stiff			52 N/mm (296.9 lbf/in)
			54 N/mm (308.3 lbf/in)

The factory-installed shock spring has no mark. Before replacing the spring, be sure to mark it so it can be distinguished from other optional springs.

OPTIONAL PARTS (After '17 model)

CRF450R

ITEM		REMARKS
MAINTENANCE: Workstand  Pin spanner Air gauge		For maintenance
		Pin spanner A x 2 For shock absorber spring installed length (preload) adjustment (two required) For checking tire air pressure
SPROCKET: Driven sprocket /chain link	Standard Optional	49T (Aluminum)/114 48T (Aluminum)/114 50T (Aluminum)/114 RK 520TXZ-120RJ
DRIVE CHAIN: HANDLEBAR LOWER HOLDER:	Standard Optional	3 mm forward offset no offset

ITEM		REMARKS	
FRONT FORK: Spring	TYPE	SPRING RATE	IDENTIFICATION MARK
	Soft	4.8 N/mm (27.4 lbf/in)	No mark
	Medium (standard spring)	5.0 N/mm (28.6 lbf/in)	No mark (factory products) or 2 scribe marks
	Stiff	5.2 N/mm (29.7 lbf/in)	3 scribe marks


The factory-installed front fork springs have no marks. Before replacing the springs, be sure to mark them so they can be distinguished from other optional springs.

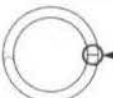
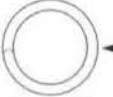
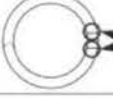
ITEM		REMARKS	
SHOCK ABSORBER: Spring	TYPE	SPRING RATE	IDENTIFICATION MARK
	Soft	54 N/mm (308.3 lbf/in)	White paint
	Medium (standard spring)	56 N/mm (319.8 lbf/in)	No mark (factory products) or Blue paint (after market parts)
	Stiff	58 N/mm (331.2 lbf/in)	Yellow paint

The factory-installed shock spring has no mark. Before replacing the spring, be sure to mark it so it can be distinguished from other optional springs.



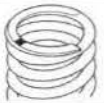

GENERAL INFORMATION

CRF450RX

ITEM		REMARKS
MAINTENANCE: Workstand 		For maintenance
Pin spanner		Pin spanner A x 2 For shock absorber spring installed length (preload) adjustment (two required)
Air gauge		For checking tire air pressure
SPROCKET: Driven sprocket /chain link Standard Optional		50T (Aluminum)/114 49T (Aluminum)/114 51T (Aluminum)/114 RK 520EXU-120LJFZ
DRIVE CHAIN: HANDLEBAR LOWER HOLDER: Standard Optional		3 mm forward offset no offset

ITEM		REMARKS	
FRONT FORK:			
Spring	TYPE	SPRING RATE	IDENTIFICATION MARK
	Soft  Scribe mark	4.6 N/mm (26.3 lbf/in)	1 scribe mark
	Medium (standard spring)  No mark	4.8 N/mm (27.4 lbf/in)	No mark (factory products)
	Stiff  2 scribe marks	5.0 N/mm (28.6 lbf/in)	2 scribe marks

The factory-installed front fork springs have no marks. Before replacing the springs, be sure to mark them so they can be distinguished from other optional springs.

ITEM		REMARKS	
SHOCK ABSORBER:			
Spring	TYPE	SPRING RATE	IDENTIFICATION MARK
	Soft 	50 N/mm (285.5 lbf/in)	Pink paint
	Medium (Standard spring)  or 	52 N/mm (296.9 lbf/in)	No mark (factory products) or Red paint (after market parts)
	Stiff 	54 N/mm (308.3 lbf/in)	White paint

The factory-installed shock spring has no mark. Before replacing the spring, be sure to mark it so it can be distinguished from other optional springs.

TECHNICAL FEATURES

RADIATOR HOSE

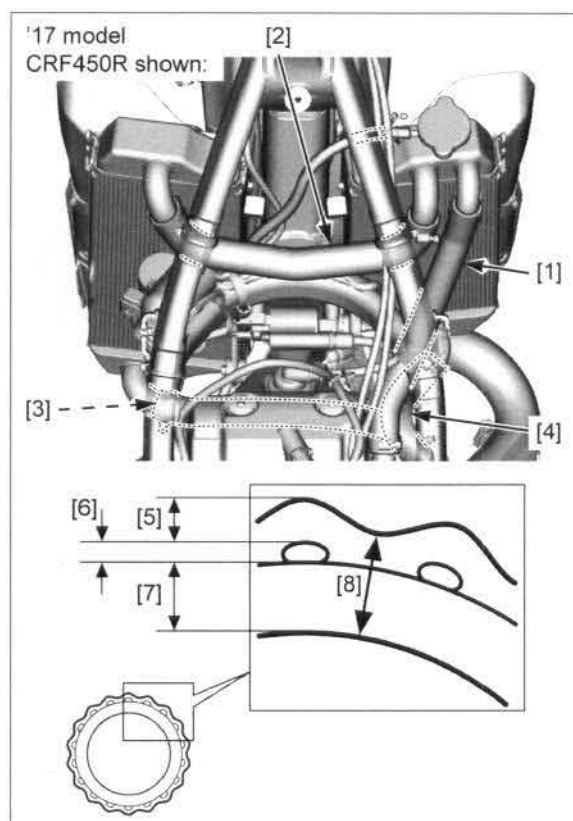
The radiator hoses used on this model have the spiral construction.

With the spiral construction, as the textile reinforcement that has increased thread density is directly woven into the inner rubber layer, the pressure resistance of the hose is improved.

Also, there are no overlapped portions in the textile reinforcement; therefore, the hose diameter is smaller.

Using those thinner hoses contributes to reducing the vehicle weight.

- Radiator hose A [1]: 19 mm I.D. x 25 mm O.D.
- Radiator hose B [2]: 21 mm I.D. x 27 mm O.D.
- Radiator hose C [3]: 21 mm I.D. x 27 mm O.D.
- Radiator hose D [4]: 17 mm I.D. x 25 mm O.D.
- Outer rubber layer thickness [5]
- Textile reinforcement thickness [6]
- Inner rubber layer thickness [7]
- Total thickness [8]

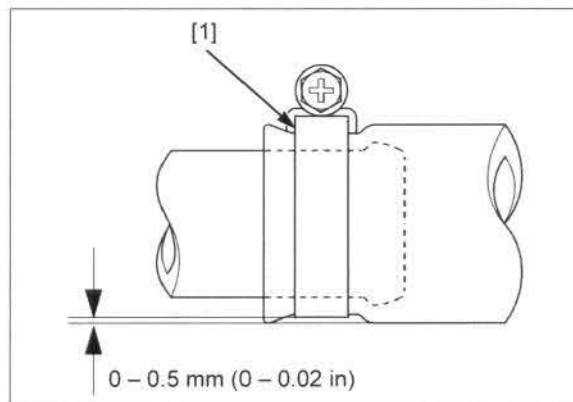


Since the hoses are now thinner, the specified tightening margin of the hose bands [1] is smaller.

NOTE:

- Inadequately tightening the bands may cause coolant to leak if too loose, or collapse of the radiator hose if too tight, which may result in overheating and engine damage.

The hose needs to be replaced if damaged.



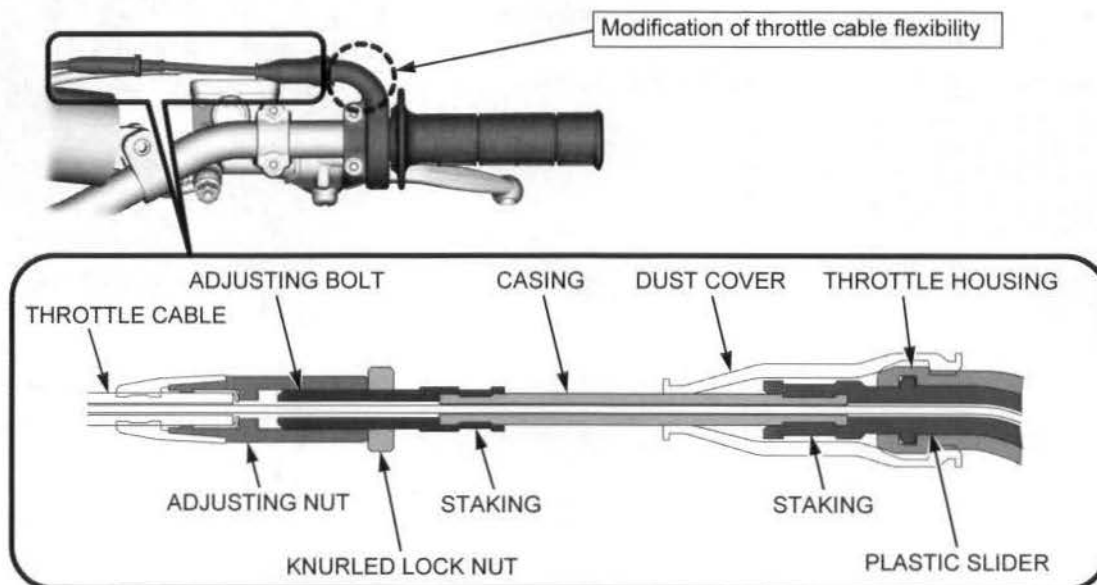
GENERAL INFORMATION

THROTTLE CABLES

A plastic throttle cable slider is employed for this motorcycle to increase the flexibility of the throttle cable for easier throttle operation. As the result, the feeling of the throttle operation is now improved.

The inner cable which is made of stainless steel is integrated with the throttle cable slider. This prevents the inner cable from being pinched.

Also, using a knurled lock nut enables quicker fine adjustments of the throttle cable without using any tools.



FUEL TANK (CRF450R)

The CRF450R employs a titanium fuel tank to reduce the motorcycle weight while maintaining the tank capacity and also to prevent the gasoline from permeating.

Since the fuel tank is made of titanium and the fuel tank mounting frame is made of aluminum, electrolytic corrosion can be caused. To prevent such corrosion and stably hold the fuel tank, the fuel tank mount is set on the rubber parts on the aluminum frame and fixed with galvanized bolts.

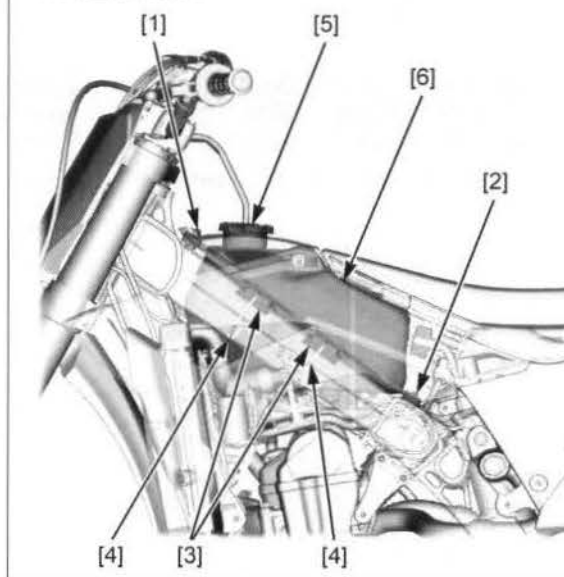
- Fuel tank mounting bolt A [1]
- Fuel tank mounting bolts B [2]
- Cushion rubbers (with double sided tape) [3]
- Wire bands [4]
- Plastic fuel cap [5]
- Titanium fuel tank [6]

NOTE:

- The fuel tank is unfinished.

If oil or grease gets on the tank surface, remove it with a soft piece of cloth or sponge moistened with aluminum cleaner, rinse the area with plenty of water, and then blot up any remaining moisture with a dry piece of cloth.

'17 model shown:



ROCKER ARM/PISTON PIN

This motorcycle's rocker arm (intake side only) and piston pin in the engine are coated with diamond-like carbon.

Diamond-like carbon coating provides the sliding surfaces of the parts with hard carbon film coating that has unique properties similar to natural diamond's.

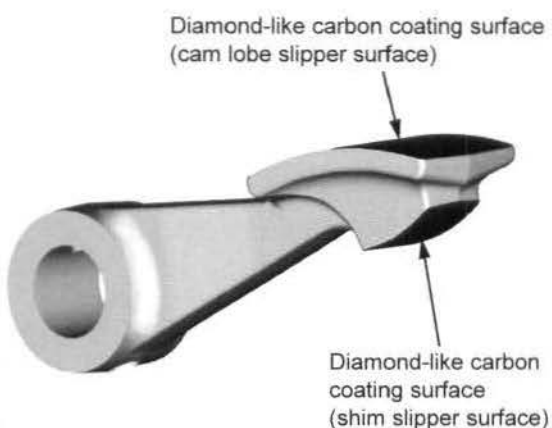
Compared to the hard chrome plated parts, diamond-like carbon coated ones show higher scuffing resistance.

The cam lobe and shim slipper surfaces of the intake rocker arm and piston pin slipper surface are treated with this diamond-like carbon coating.

NOTE:

- It should be noted, however, you need to take great care not to dent or scratch the diamond-like carbon coated surfaces while performing maintenance/service.
- Polishing with abrasive is forbidden.

Rocker arm shown:

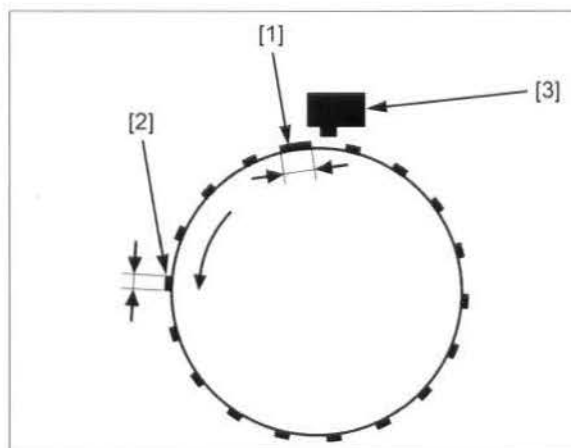


RELUCTOR WITH A WIDE TOOTH

To detect the crank pulse, this motorcycle employs a reluctor [1] with a wide tooth. This allows to downsize the engine and ensures good startability.

The reluctor has one wide tooth distinct from other uniform teeth [2] on the flywheel. The standard crankshaft position is detected by identifying this wider tooth.

After the engine is started, as the CKP sensor [3] takes a longer detection time than usual at the point where the wider tooth comes to the position before the top-dead-center, the ECM can determine the standard crankshaft position, and thus ensures accurate ignition timing.



MEMO



2. FRAME/BODY PANELS/EXHAUST SYSTEM

SERVICE INFORMATION	2-2	FRONT FENDER	2-5
TROUBLESHOOTING	2-2	REAR FENDER	2-5
BODY PANEL LOCATIONS	2-2	DRIVE SPROCKET COVER	2-5
SEAT	2-3	ENGINE GUARD	2-6
RADIATOR SHROUD	2-3	MUD GUARD	2-6
SIDE COVER/AIR CLEANER HOUSING COVER	2-4	REAR FRAME	2-6
FRONT NUMBER PLATE	2-4	SIDESTAND (CRF450RX)	2-8
		EXHAUST SYSTEM	2-9

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the body panels, rear frame and exhaust system.
- Always replace the exhaust pipe gaskets after removing the exhaust pipe from the engine.
- When installing the exhaust system, loosely install all of the exhaust system fasteners. Always tighten the exhaust pipe joint nuts first, then tighten the muffler 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

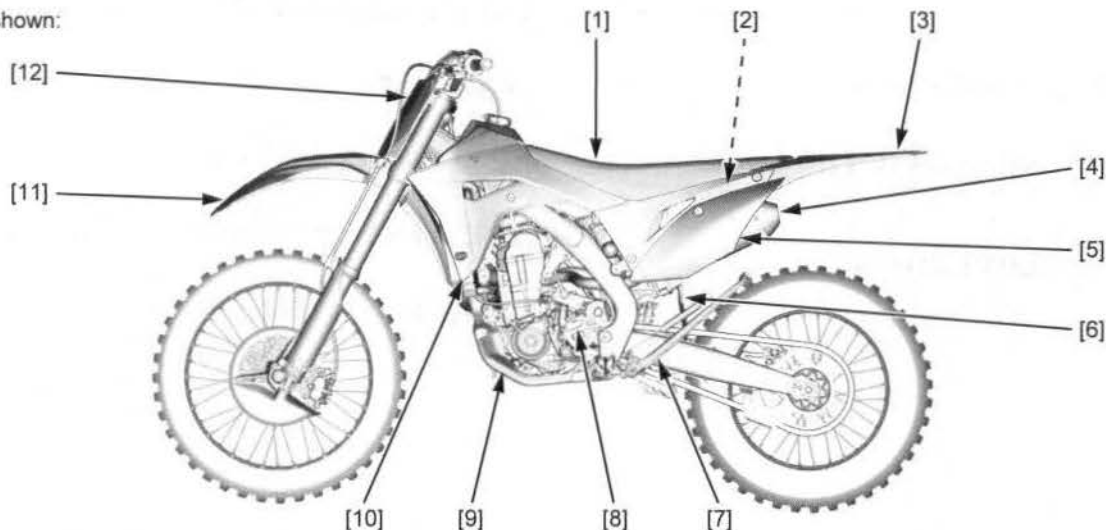
- Broken exhaust system
- Exhaust gas leak

Poor performance

- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

BODY PANEL LOCATIONS

CRF450RX shown:



- | | |
|---|--|
| [1] Seat (page 2-3) | [7] Sidestand (CRF450RX only) (page 2-8) |
| [2] Rear frame (page 2-6) | [8] Drive sprocket cover (page 2-5) |
| [3] Rear fender (page 2-5) | [9] Engine guard (page 2-6) |
| [4] Exhaust system (page 2-9) | [10] Radiator shroud (page 2-3) |
| [5] Side cover/air cleaner housing cover (page 2-4) | [11] Front fender (page 2-5) |
| [6] Mud guard (page 2-6) | [12] Front number plate (page 2-4) |

SEAT

REMOVAL/INSTALLATION

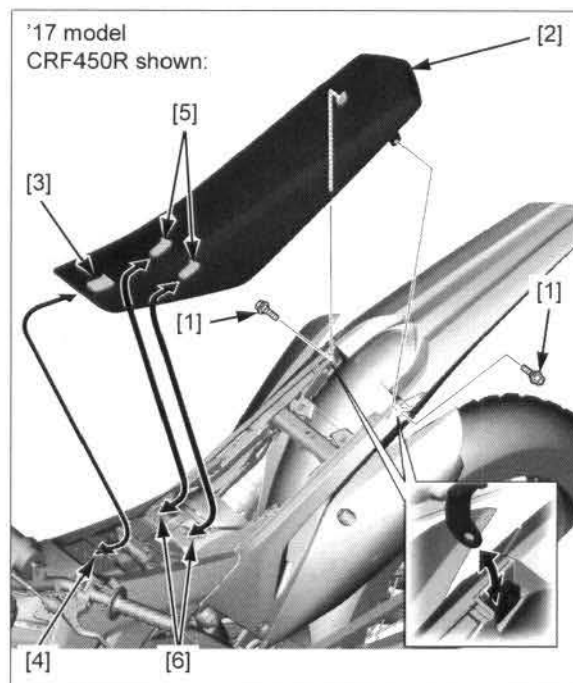
Remove the seat mounting bolts [1].
Remove the seat [2] by pulling it backward.
Installation is in the reverse order of removal.

NOTE:

- Align the seat hook [3] with the slot [4] on the fuel tank and seat center prongs [5] with the seat support base slots [6].

TORQUE:

Seat mounting bolt:
26 N·m (2.7 kgf·m, 19 lbf·ft)



RADIATOR SHROUD

REMOVAL/INSTALLATION

Remove the following:

- Radiator shroud bolt A [1]
- Radiator shroud bolt B [2]
- Radiator shroud bolt C [3]

Release the tab [4] from the slot [5] of the side cover/air cleaner housing cover by sliding the radiator shroud [6] upward.

Remove the radiator shroud.

Installation is in the reverse order of removal.

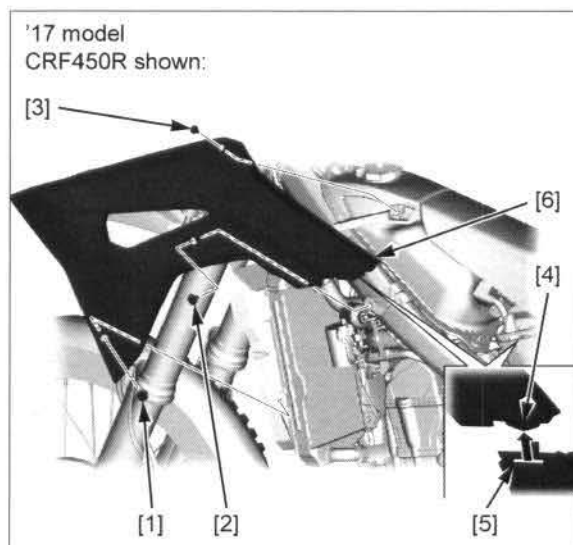
NOTE:

- Align the tab of the radiator shroud with the slot of the side cover/air cleaner housing cover.

TORQUE:

Radiator shroud bolt A/B:
10 N·m (1.0 kgf·m, 7 lbf·ft)

Radiator shroud bolt C:
5.2 N·m (0.5 kgf·m, 3.8 lbf·ft)



SIDE COVER/AIR CLEANER HOUSING COVER

REMOVAL/INSTALLATION

Remove the seat (page 2-3).

Remove the radiator shroud (page 2-3).

Remove the side cover bolts [1].

Remove the side cover/air cleaner housing cover assembly [2] by releasing the tab [3] from the slot of the seat support base [4].

Installation is in the reverse order of removal.

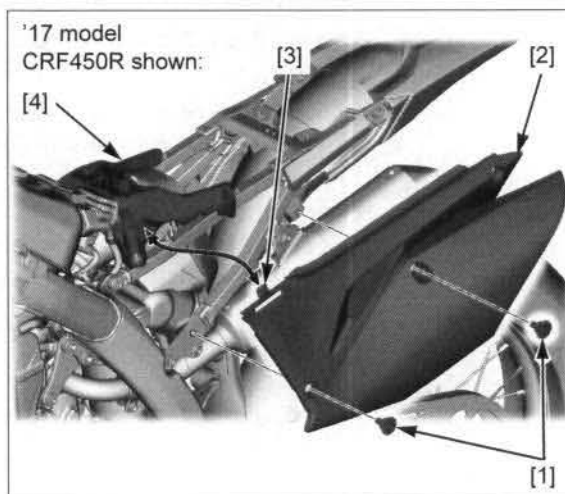
NOTE:

- The tab of the side cover/air cleaner housing cover assembly [2] fits into the slot of the seat support base [4].

TORQUE:

Side cover bolt:

10 N·m (1.0 kgf·m, 7 lbf·ft)



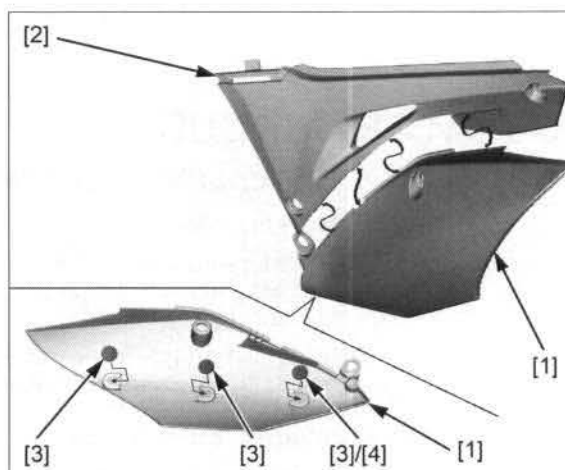
DISASSEMBLY/ASSEMBLY

Remove the side cover/air cleaner housing cover (page 2-4).

Separate the side cover [1] and air cleaner housing cover [2] as shown.

Remove the cushions [3] and washer [4] from the side cover.

Installation is in the reverse order of removal.



FRONT NUMBER PLATE

REMOVAL/INSTALLATION

Release the band [1] from the handlebar pad.

Remove the front number plate bolts [2] and front number plate [3].

Installation is in the reverse order of removal.

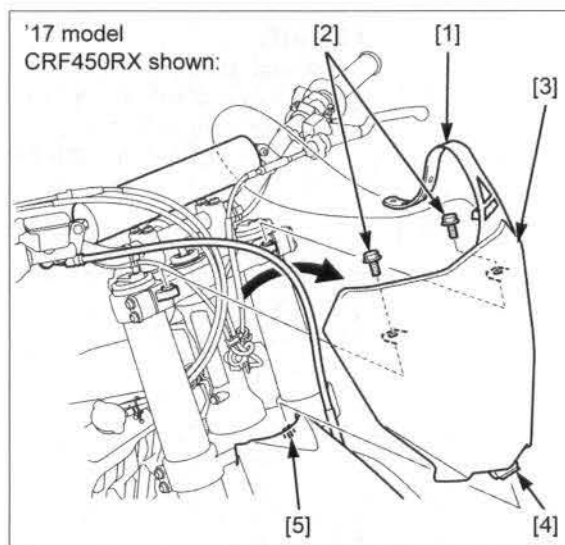
NOTE:

- Install the front number plate by aligning its tab [4] with the tabs [5] on the front fender.
- Route the front brake hose and clutch cable properly (page 1-24).

TORQUE:

Front number plate bolt:

10 N·m (1.0 kgf·m, 7 lbf·ft)



FRONT FENDER

REMOVAL/INSTALLATION

Remove the front fender bolt/washers [1], collars [2], and front fender [3].

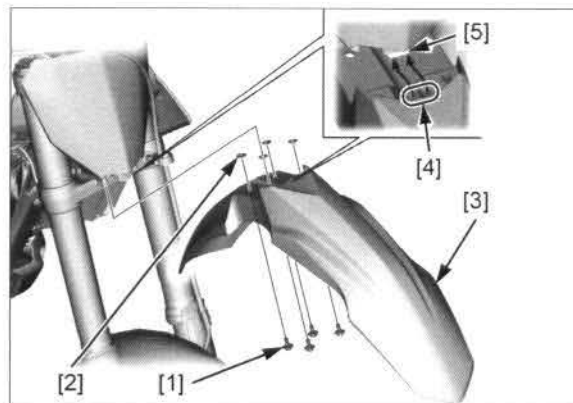
Installation is in the reverse order of removal.

NOTE:

- Install the fender by aligning its tabs [4] with the tab [5] of the front number plate.

TORQUE:

Front fender bolt/washer:
10 N·m (1.0 kgf·m, 7 lbf·ft)



REAR FENDER

REMOVAL/INSTALLATION

Remove the side cover/air cleaner housing covers (page 2-4).

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

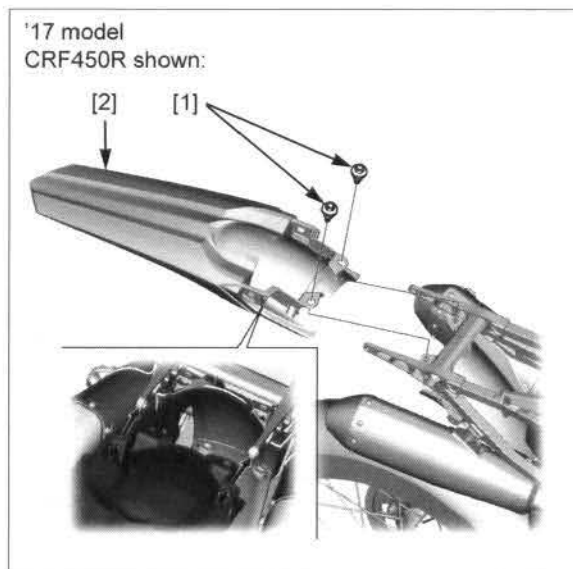
Installation is in the reverse order of removal.

NOTE:

- When installing the rear fender, put the rear frame through the fender holes.

TORQUE:

Rear fender bolt:
10 N·m (1.0 kgf·m, 7 lbf·ft)

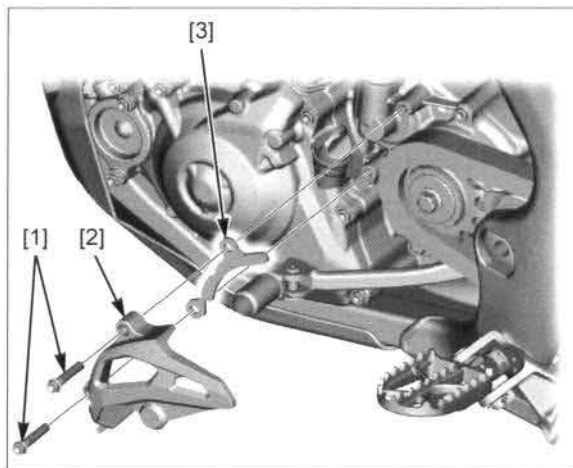


DRIVE SPROCKET COVER

REMOVAL/INSTALLATION

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

Installation is in the reverse order of removal.



ENGINE GUARD

REMOVAL/INSTALLATION

Remove the engine guard bolt (long)/washer [1], engine guard bolt (short)/washers [2], collars [3], and engine guard [4].

Installation is in the reverse order of removal.

NOTE:

- Install the radiator overflow hose [5] through the engine guard hole as shown.

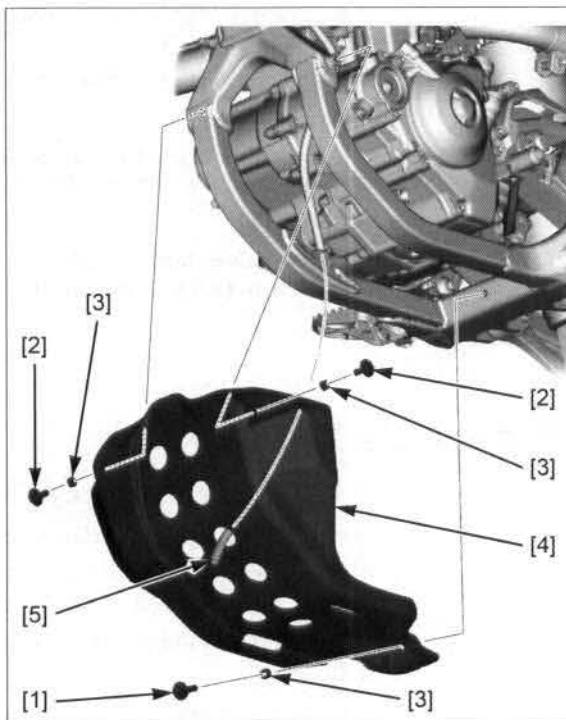
TORQUE:

Engine guard bolt (long)/washer:

10 N·m (1.0 kgf·m, 7 lbf·ft)

Engine guard bolt (short)/washer:

10 N·m (1.0 kgf·m, 7 lbf·ft)



MUD GUARD

REMOVAL/INSTALLATION

Remove the mud guard screws [1], washers [2], and mud guard [3].

Installation is in the reverse order of removal.

TORQUE:

Mud guard screw:

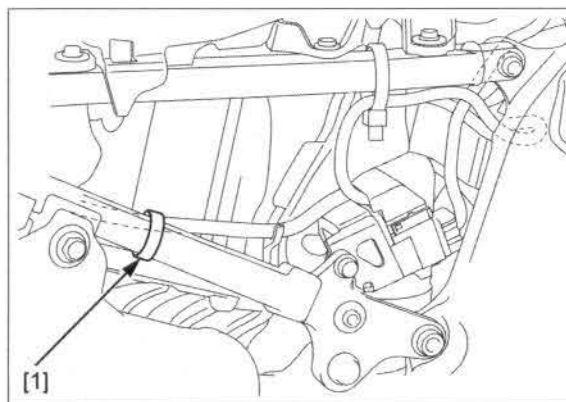
1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)



REAR FRAME

REMOVAL/INSTALLATION

After '17 model: Remove the wire band [1].



Remove the following:

- Mufflers (page 2-9)
- Rear fender (page 2-5)

Remove the seat support base mounting bolts [1], collars [2].

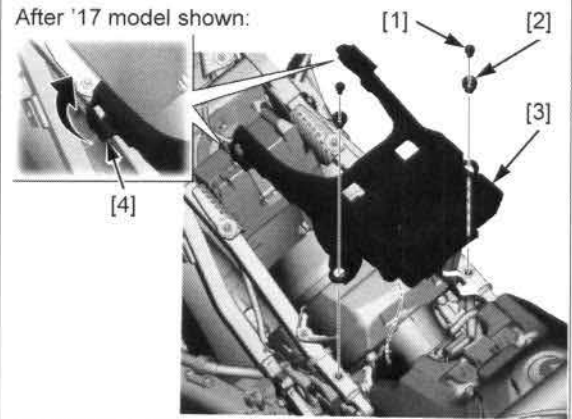
Pull up the seat support base [3] by releasing its tabs [4] from the rear frame.

'17 model CRF450RX: Disconnect the starter/ignition relay 8P (Gray) connector (page 6-12).

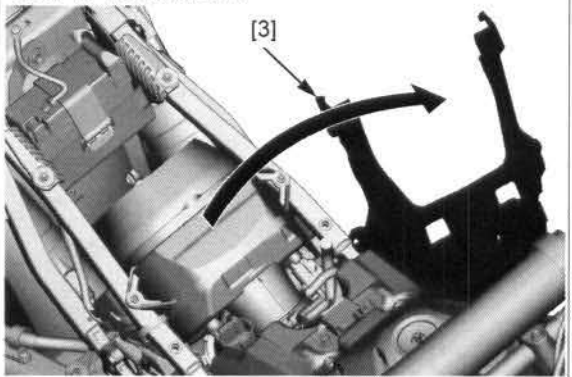
After '17 model: Disconnect the starter/main relay 8P (Gray) connector (page 6-15).

Hang the seat support base to the left side.

After '17 model shown:



After '17 model shown:



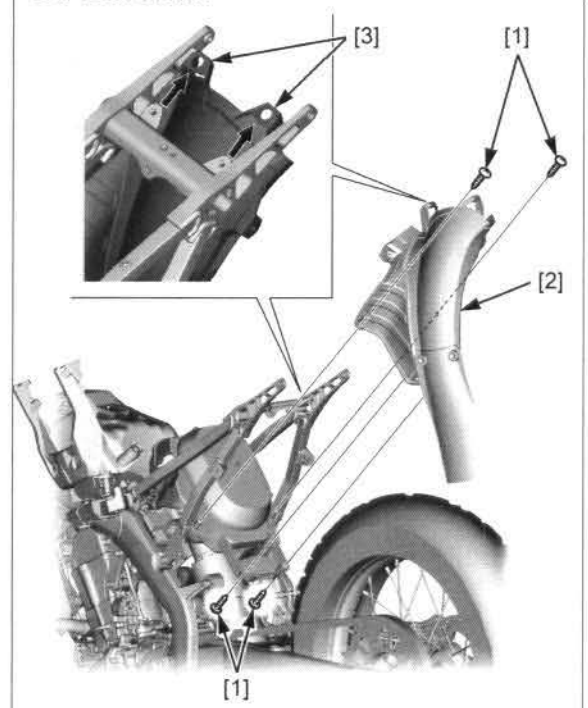
Remove the following:

- Battery box (Except '17 model CRF450R) (page 19-9)
- Starter relay switch (Except '17 model CRF450R) (page 6-10)

Remove the air cleaner lower housing screws [1].

Remove the air cleaner lower housing [2] (with the mud guard) by releasing its slots [3] from the rear frame.

'17 model CRF450R shown:



Remove the bolts [1].

Remove the rear frame upper bolts [2] and lower bolts [3].

Remove the rear frame [4].

Installation is in the reverse order of removal.

NOTE:

After '17 model:

- Position the wire band properly (page 1-24).
- Tighten the upper bolts first, then the lower bolts.

TORQUE:

Rear frame upper bolt:

32 N·m (3.3 kgf·m, 24 lbf·ft)

Rear frame lower bolt:

49 N·m (5.0 kgf·m, 36 lbf·ft)

Air cleaner lower housing screw:

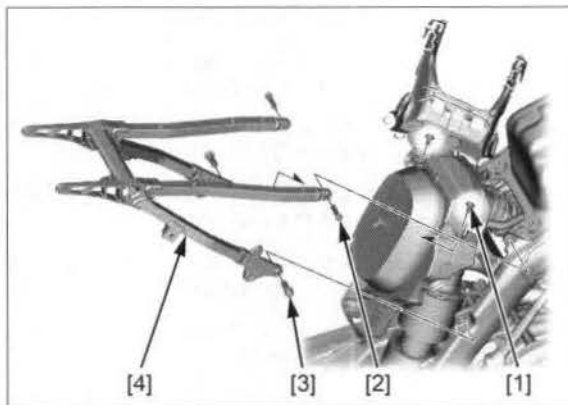
1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)

Seat support base mounting bolt:

10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the following:

- Starter relay switch (Except '17 model CRF450R) (page 6-10)
- Battery (Except '17 model CRF450R) (page 19-9)
- Rear fender (page 2-5)
- Mufflers (page 2-10)



SIDESTAND (CRF450RX)

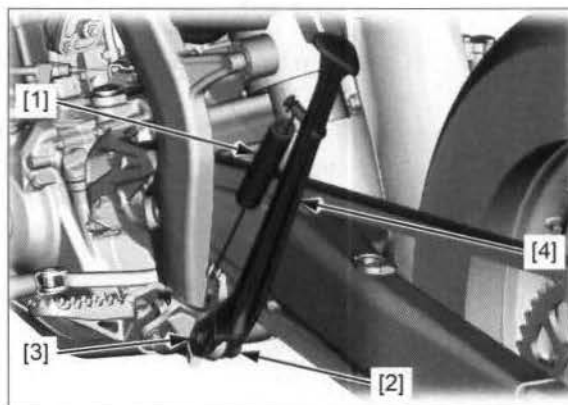
REMOVAL

Remove the engine guard (page 2-6).

Raise the motorcycle off the ground by placing a workstand or equivalent under the engine.

Remove the sidestand spring [1].

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



INSTALLATION

Apply molybdenum disulfide grease to the sidestand sliding surface (page 1-22).

Install the sidestand [1].

Install and tighten the pivot bolt [2] to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

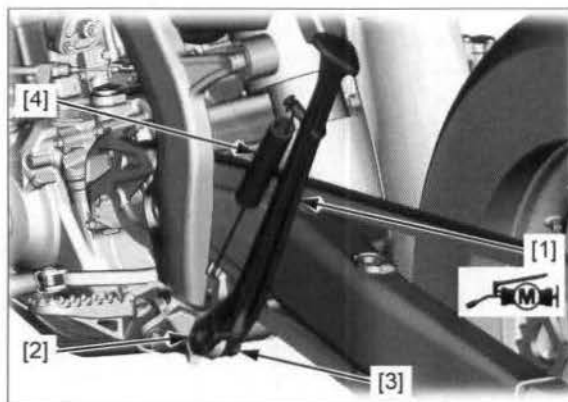
After tightening the pivot bolt, return the pivot bolt 45° – 90°.

Install and tighten the sidestand pivot nut [3] to the specified torque while holding the sidestand pivot bolt.

TORQUE: 39 N·m (4.0 kgf·m, 29 lbf·ft)

Install the sidestand spring [4].

Install the engine guard (page 2-6).



EXHAUST SYSTEM

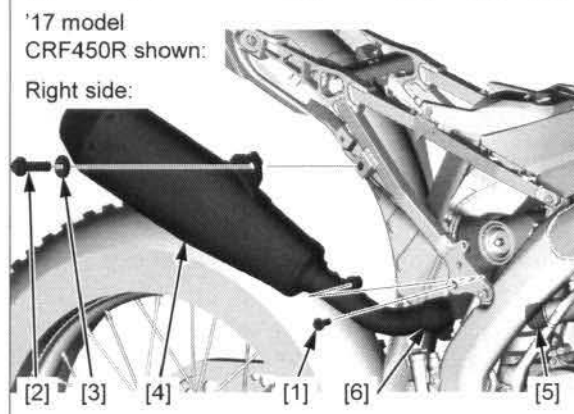
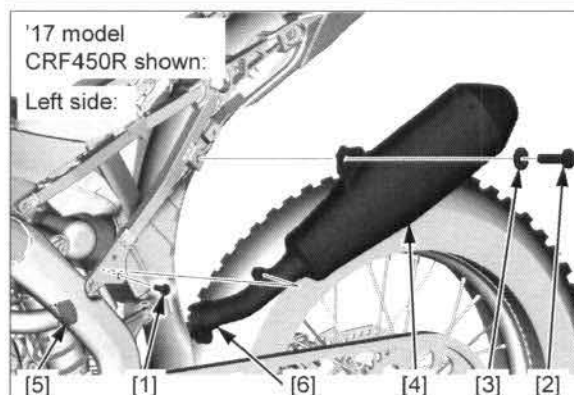
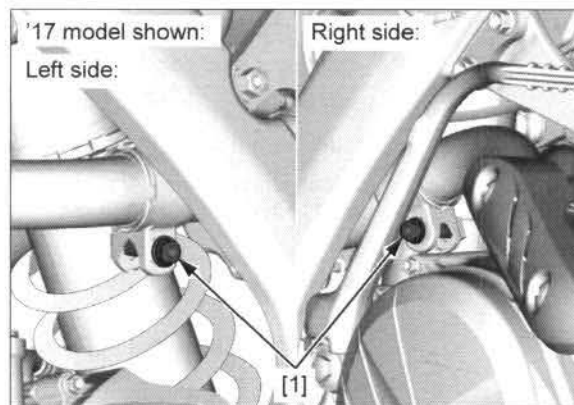
MUFFLER REMOVAL

Remove the side cover/air cleaner housing covers (page 2-4).

Loosen the left and right exhaust pipe band bolts [1].

Remove the following:

- Muffler mounting bolts A [1]
- Muffler mounting bolts B [2]/washers [3]
- Mufflers [4]
- Gaskets [5]
- Exhaust pipe bands [6]



MUFFLER INSTALLATION

Install the exhaust pipe bands [1] onto the mufflers [2].

NOTE:

- Align the cut-out of the muffler with the tab of the exhaust pipe band.

Install a new gaskets [3] onto the exhaust pipes [4].

Install the left and right mufflers.

Loosely install the muffler mounting bolts A [5].

Loosely install the muffler mounting bolts B [6]/washers [7].

Tighten the left and right exhaust pipe band bolts [8] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

Tighten the left and right muffler mounting bolts to the specified torque.

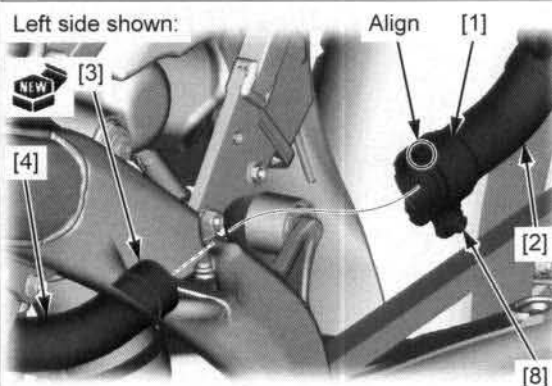
TORQUE: 26 N·m (2.7 kgf·m, 19 lbf·ft)

Install the side cover/air cleaner housing covers (page 2-4).

NOTE:

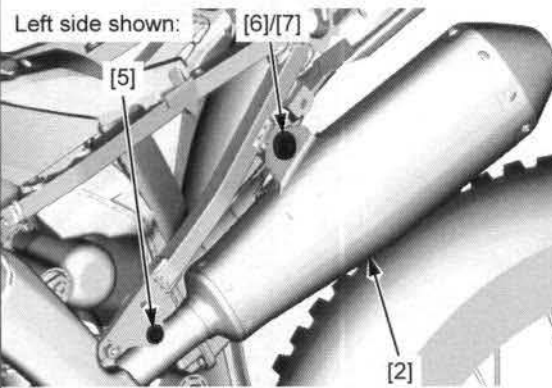
- Always inspect the exhaust system for leaks after installation.

Left side shown:



'17 model
CRF450R shown:

Left side shown:



EXHAUST PIPE REMOVAL

Remove the mufflers (page 2-9).

Remove the exhaust pipe joint nuts [1], exhaust pipe [2] and gasket [3].

EXHAUST PIPE INSTALLATION

Install a new gasket to the exhaust port of the cylinder head.

Install the exhaust pipe.

Install the joint nuts but do not tighten them yet.

Install the mufflers (page 2-10) but do not tighten the exhaust pipe band bolts and muffler mounting bolts yet.

Tighten the exhaust pipe joint nuts to the specified torque.

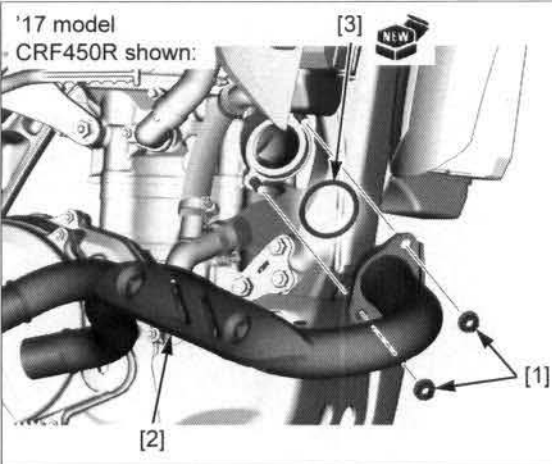
TORQUE: 21 N·m (2.1 kgf·m, 15 lbf·ft)

Tighten the exhaust pipe band bolts first. Tighten the exhaust pipe band bolts and muffler mounting bolts to the specified torque (page 2-10).

NOTE:

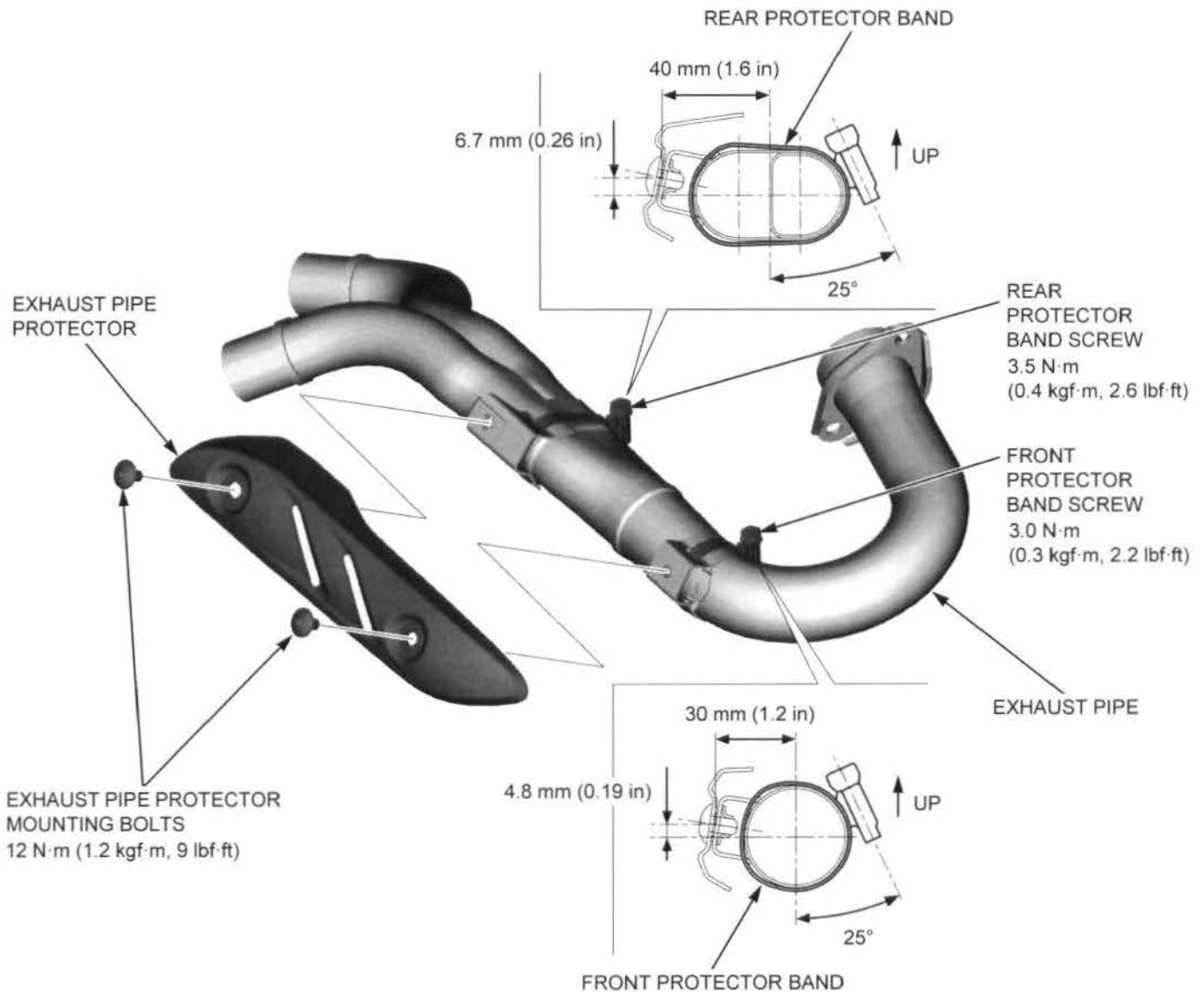
- Always inspect the exhaust system for leaks after installation.

'17 model
CRF450R shown:



EXHAUST PIPE DISASSEMBLY/ASSEMBLY

Remove the exhaust pipe (page 2-10).



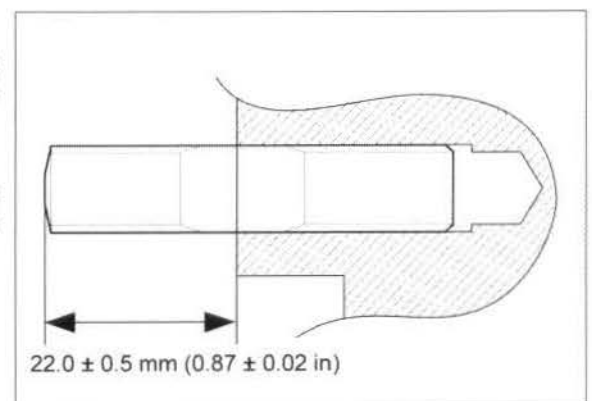
CYLINDER HEAD EXHAUST PIPE STUD BOLT REPLACEMENT

Remove the exhaust pipe (page 2-10).

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

Install new stud bolts into the cylinder head as shown.

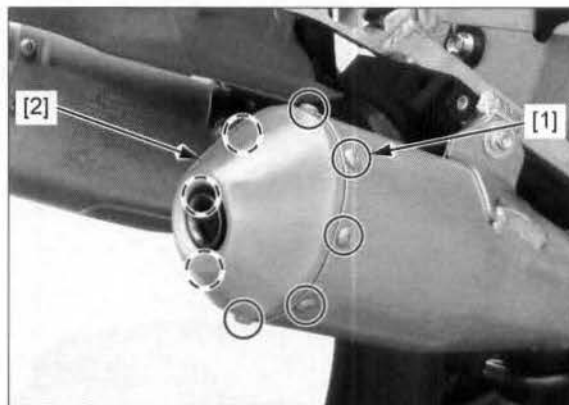
After installing the stud bolts, check that the length from the bolt head to the cylinder head surface is within specification.



MUFFLER DISASSEMBLY/GLASS WOOL REPLACEMENT/MUFFLER ASSEMBLY

Remove the side cover/air cleaner housing cover (page 2-4).

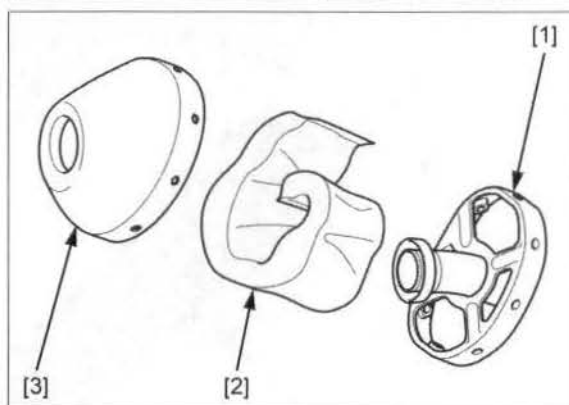
Remove the eight bolts [1] and end cover assembly [2].



Remove the separator [1]/glass wool pack B [2] from the end cover [3].

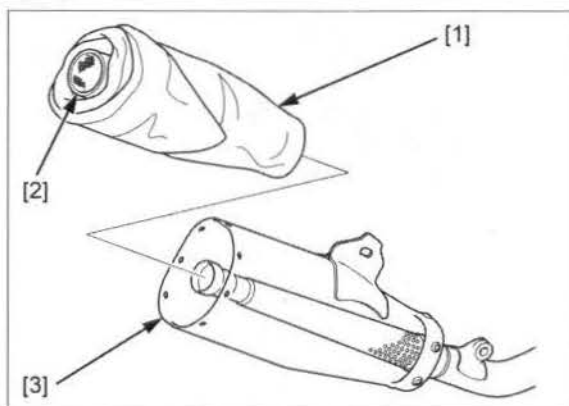
Remove the glass wool pack B from the separator.

Clean off the sealant from the separator and end cover.



Pull out the glass wool center pack [1]/sus wool [2] assembly from the muffler body [3].

Remove the glass wool center pack from the sus wool.



Remove the muffler (page 2-9).

Do not overtighten the vise and distort the muffler mount stay.

Set the muffler body [1] in a vise with pieces of wood or soft jaws to avoid damage.

Remove the six rivets [2] with 4.0 mm drill bit [3] and 10 mm drill bit [4] using the following procedures:

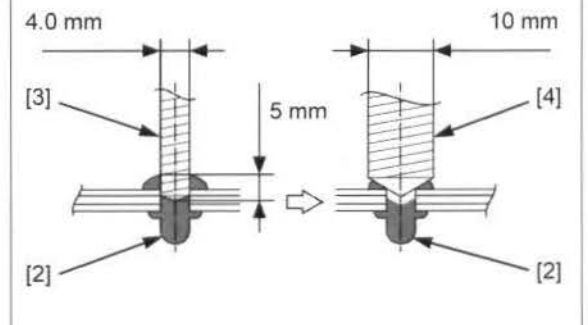
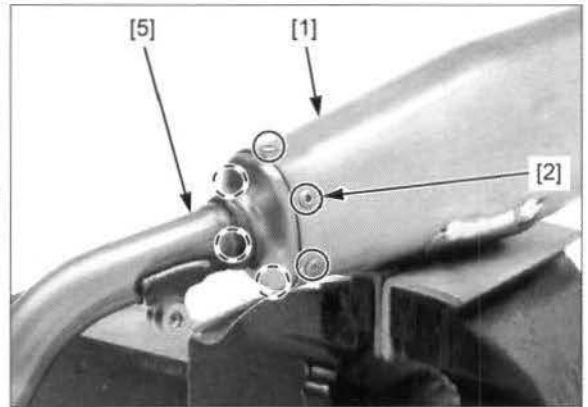
1. Drill the rivet head with a 4.0 mm drill bit to the specified depth as shown.
2. Drill the rivet head with a 10 mm drill bit so that the rivet can be removed into the muffler body, then remove the rivet.

NOTE:

- Be careful not to damage the muffler body.

Remove the front pipe [5] from the muffler body.

Clean off the sealant from the muffler body and front pipe.

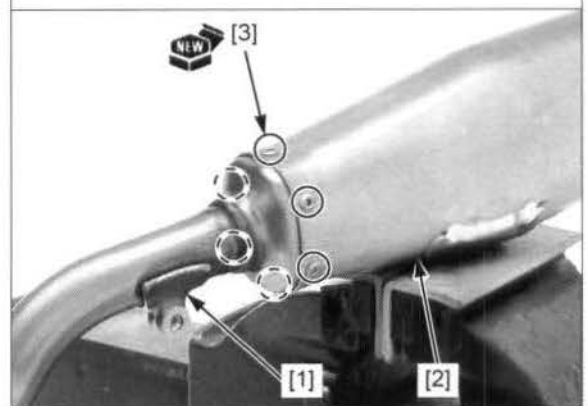
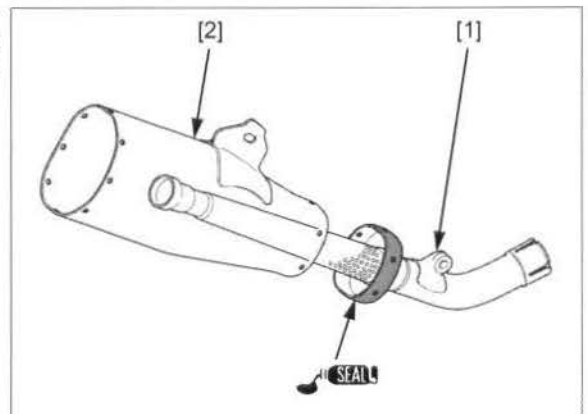


Apply muffler sealant (high-temperature silicone, for example HSSK-316CVT manufactured by JAPAN BEST PARTNERS CO., LTD. or equivalent) to the cup of the front pipe as shown.

Install the front pipe [1] into the muffler body [2].

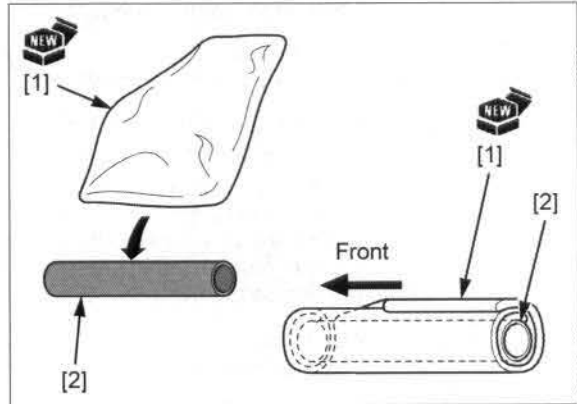
Align each rivet hole and install new rivets [3].

Install the mufflers (page 2-10).



FRAME/BODY PANELS/EXHAUST SYSTEM

Roll a new glass wool center pack [1] onto the sus wool [2] as shown.

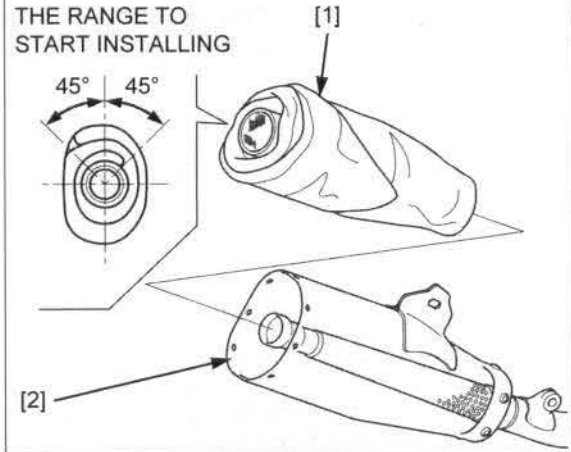


Install the glass wool center pack/sus wool assembly [1] into the muffler body [2] as shown.

NOTE:

- Fill up the muffler body with the glass wool evenly.

THE RANGE TO START INSTALLING

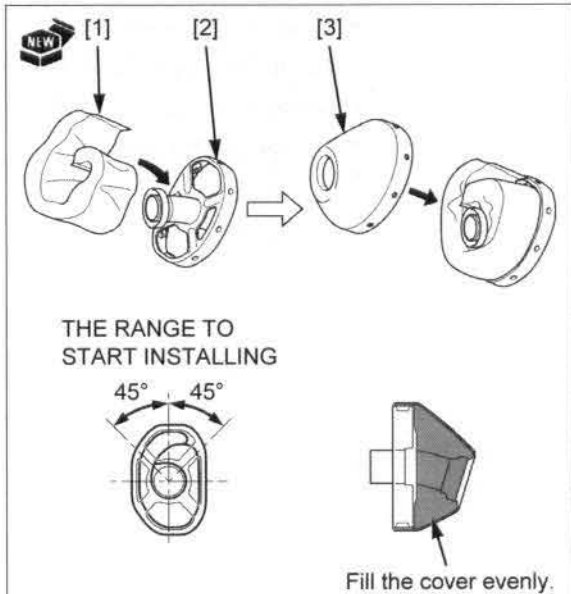


Roll new glass wool pack B [1] onto the separator [2] as shown.

Install the glass wool/separator into the end cover [3] by setting the glass wool position as shown.

NOTE:

- Fill up the end cover with the glass wool evenly.



Apply muffler sealant (high-temperature silicone, for example HSSK-316CVT manufactured by JAPAN BEST PARTNERS CO., LTD. or equivalent) to the end cover assembly as shown.

Install the end cover assembly [1] into the muffler body assembly [2].

NOTE:

- Insert the end pipe [3] into the inner pipe end [4].

Align each screw hole and install the bolts [5].

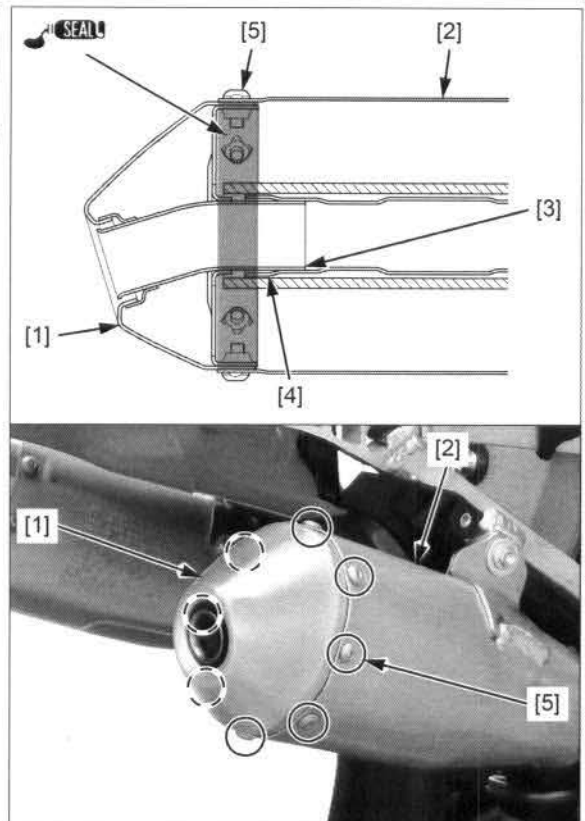
Tighten the bolts to the specified torque.

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

NOTE:

- When assembling, be careful not to get the glass wool pack stuck on the bolts.

Install the side cover/air cleaner housing cover (page 2-4).



MEMO



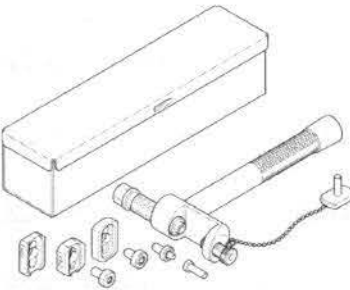
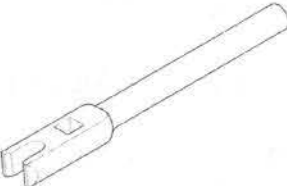
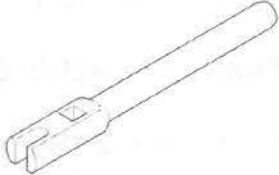
SERVICE INFORMATION	3-2	DRIVE CHAIN SLIDER	3-22
MAINTENANCE SCHEDULE	3-3	DRIVE CHAIN ROLLER	3-22
ADDITIONAL ITEMS REQUIRING FREQUENT REPLACEMENT	3-5	DRIVE/DRIVEN SPROCKET	3-23
FUEL LINE	3-6	BRAKE FLUID	3-23
THROTTLE OPERATION	3-8	BRAKE PADS WEAR	3-24
AIR FILTER	3-9	BRAKE SYSTEM	3-25
CRANKCASE BREATHER	3-10	CLUTCH SYSTEM	3-26
SPARK PLUG	3-11	CONTROL CABLES	3-27
VALVE CLEARANCE	3-12	EXHAUST PIPE/MUFFLER	3-28
ENGINE OIL/OIL FILTER	3-15	SUSPENSION	3-28
ENGINE IDLE SPEED	3-17	SWINGARM/CUSHION LINKAGE	3-30
RADIATOR COOLANT	3-17	NUTS, BOLTS, FASTENERS	3-30
COOLING SYSTEM	3-17	WHEELS/TIRES	3-30
DRIVE CHAIN	3-18	STEERING HEAD BEARINGS	3-31
		SIDESTAND (CRF450RX)	3-31

SERVICE INFORMATION

GENERAL

- Place the motorcycle on a level surface before starting any work.
- The CRF450R is equipped with a titanium fuel tank. Since the fuel tank has not been painted, it might become discolored with mud and dust.
To remove mud or dust, use a sponge or soft cloth and a stainless steel kitchen detergent, then rinse well clean water. After washing, rinse with plenty of water and dry with a clean cloth.

TOOLS

<p>Drive chain tool set 07HMH-MR10103</p>  <p>or 07HMH-MR1010C (U.S.A. only)</p>	<p>Spoke wrench, 6.1 mm 07JMA-MR60100</p> 	<p>Spoke wrench, 6.6 mm 070MA-KZ30100</p> 
---	---	---

MAINTENANCE SCHEDULE

CRF450R

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.

ITEMS	FREQUENCY	NOTE	Each race or about 2.5 hours	Every 3 races or about 7.5 hours	Every 6 races or about 15.0 hours	Every 9 races or about 22.5 hours	Every 12 races or about 30.0 hours	Refer to page
FUEL LINE	(NOTE 6)	I					R	3-6
FUEL PUMP FILTER	(NOTE 6)						R	7-13
THROTTLE OPERATION		I						3-8
AIR FILTER	(NOTE 1)	C						3-9
CRANKCASE BREATHER		I						3-10
SPARK PLUG		I						3-11
VALVE CLEARANCE/ DECOMPRESSOR SYSTEM	(NOTE 4)				I			3-12 10-11
ENGINE OIL	(NOTE 3) (NOTE 5)	I			R			3-15
ENGINE OIL FILTER	(NOTE 3)				R			3-15
ENGINE IDLE SPEED		I						3-17
PISTON AND PISTON RINGS					R			11-6
PISTON PIN					R			11-6
RADIATOR COOLANT	(NOTE 2)	I						3-17
COOLING SYSTEM		I						3-17
DRIVE CHAIN		I, L		R				3-18
DRIVE CHAIN SLIDER		I						3-22
DRIVE CHAIN ROLLER		I						3-22
DRIVE SPROCKET		I						3-23
DRIVEN SPROCKET		I						3-23
BRAKE FLUID	(NOTE 2)	I						3-23
BRAKE PADS WEAR		I						3-24
BRAKE SYSTEM		I						3-25
CLUTCH SYSTEM		I						3-26
CONTROL CABLES		I, L						3-27
EXHAUST PIPE/MUFFLER		I						3-28
SUSPENSION		I						3-28
SWINGARM/SHOCK LINKAGE				L				3-30
FORK OIL EXCEPT DAMPER	(NOTE 3)			R				16-9
FORK OIL DAMPER						R		16-9
NUTS, BOLTS, FASTENERS		I						3-30
WHEELS/TIRES		I						3-30
STEERING HEAD BEARINGS						I		3-31
CAM CHAIN TENSIONER LIFTER					R			11-4

This maintenance schedule is based upon average riding conditions. Machine subjected to severe use require more frequent servicing.

NOTES:

1. Clean after every moto for dusty riding condition.
2. Replace every 2 years. Replacement requires mechanical skill.
3. Replace after the first break-in ride.
4. Inspect after the first break-in ride.
5. Replace the engine oil, if the clutch discs and plates are replaced.
6. Replace every year.

MAINTENANCE

CRF450RX

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.

FREQUENCY	NOTE	Each race or about 3.5 hours	Every 2 races or about 7.5 hours	Every 4 races or about 15.0 hours	Every 6 races or about 22.5 hours	Every 8 races or about 30.0 hours	Refer to page
ITEMS							
FUEL LINE	(NOTE 6)	I				R	3-6
FUEL PUMP FILTER	(NOTE 6)					R	7-18
THROTTLE OPERATION		I					3-8
AIR FILTER	(NOTE 1)	C					3-9
CRANKCASE BREATHER		I					3-10
SPARK PLUG		I					3-11
VALVE CLEARANCE/ DECOMPRESSOR SYSTEM	(NOTE 4)			I			3-12 10-11
ENGINE OIL	(NOTE 3) (NOTE 5) (NOTE 3)	I		R			3-15
ENGINE OIL FILTER				R			3-15
ENGINE IDLE SPEED		I					3-17
PISTON AND PISTON RINGS				R			11-6
PISTON PIN				R			11-6
RADIATOR COOLANT	(NOTE 2)	I					3-17
COOLING SYSTEM		I					3-17
DRIVE CHAIN		I, L	R				3-18
DRIVE CHAIN SLIDER		I					3-22
DRIVE CHAIN ROLLER		I					3-22
DRIVE SPROCKET		I					3-23
DRIVEN SPROCKET		I					3-23
BRAKE FLUID	(NOTE 2)	I					3-23
BRAKE PADS WEAR		I					3-24
BRAKE SYSTEM		I					3-25
CLUTCH SYSTEM		I					3-26
CONTROL CABLES		I, L					3-27
EXHAUST PIPE/MUFFLER		I					3-28
SUSPENSION		I					3-28
SWINGARM/SHOCK LINKAGE			L				3-30
FORK OIL EXCEPT DAMPER	(NOTE 3)		R				16-9
FORK OIL DAMPER					R		16-9
NUTS, BOLTS, FASTENERS		I					3-30
WHEELS/TIRES		I					3-30
STEERING HEAD BEARINGS					I		3-31
CAM CHAIN TENSIONER LIFTER				R			11-4
SIDESTAND		I					3-31

This maintenance schedule is based upon average riding conditions. Machine subjected to severe use require more frequent servicing.

NOTES:

1. Clean after every moto for dusty riding condition.
2. Replace every 2 years. Replacement requires mechanical skill.
3. Replace after the first break-in ride.
4. Inspect after the first break-in ride.
5. Replace the engine oil, if the clutch discs and plates are replaced.
6. Replace every year.

ADDITIONAL ITEMS REQUIRING FREQUENT REPLACEMENT

ENGINE

Item	Cause	Remark
Cylinder head gasket	Compression leak	Replace whenever disassembled.
Clutch disc/plate	Wear or discoloration	
Judder spring/spring seat	Warping or damage	
Cylinder base gasket	Leakage	Replace whenever disassembled.
Right crankcase cover gasket	Damage	Replace whenever disassembled.

FRAME

Item	Cause	Remark
Front/rear brake pads	Wear	Minimum thickness: 1.0 mm (0.04 in)
Rear frame mounting bolts	Fatigue or damage	
Chain guide	Wear or damage	
Side cover	Damage	
Number plate	Damage	
Front/rear fender	Damage	
Clutch lever/holder	Freeplay or damage	
Brake lever	Freeplay or damage	
Handlebar	Bends or cracks	
Throttle housing	Damage	
Handlebar/throttle grip	Damage	
Gearshift pedal	Damage	
Brake pedal	Damage	
Drive chain adjusting bolt/adjuster lock nut	Damage	
Air cleaner	Damage	

NOTE:

- These parts and their possible replacement schedule are based upon average riding conditions.
- A machine subjected to severe use requires more frequent servicing.

FUEL LINE

FUEL TANK HANGING

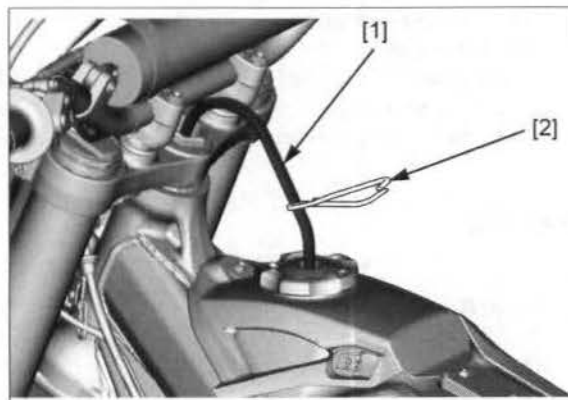
CRF450R

Remove the following:

- Seat (page 2-3)
- Radiator shrouds (page 2-3)

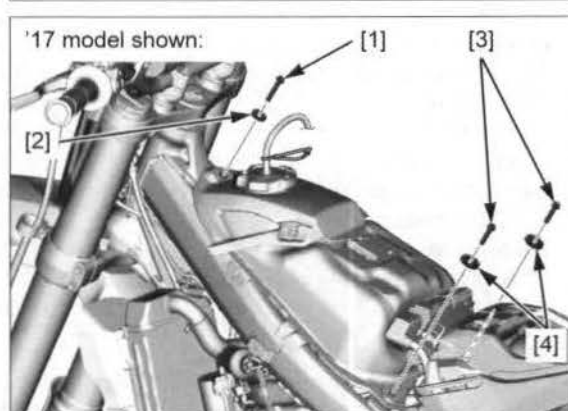
Pinch the fuel tank breather hose [1] with the hose clamp [2].

Release the breather hose from the steering stem.



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

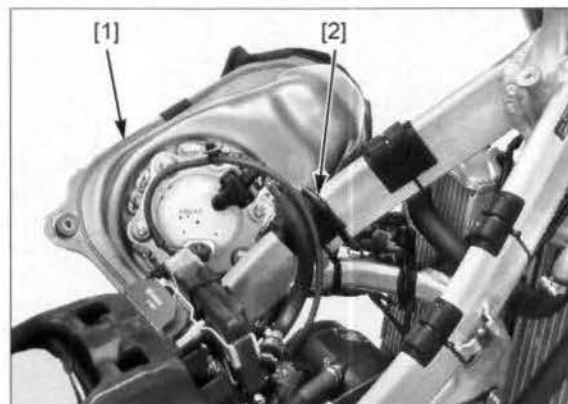
Remove the bolts B [3] and washers B [4].



Lift the fuel tank [1] out of the frame and hang it to the left side of the frame with the stopper cable [2].

NOTE:

- Cover the frame with a shop towel to prevent damage to the frame.
- Make sure that the stopper cable is installed to the stays of the fuel tank and frame.
- Check the stopper cable for abnormal wear or damage.



Installation is in the reverse order of removal.

NOTE:

- Do not twist or bend the hoses.
- Before riding, check the cushion rubbers [1] for proper installation as shown.
- Do not ride the motorcycle in state which the cushion rubbers have been removed. It may cause the fuel leaking.

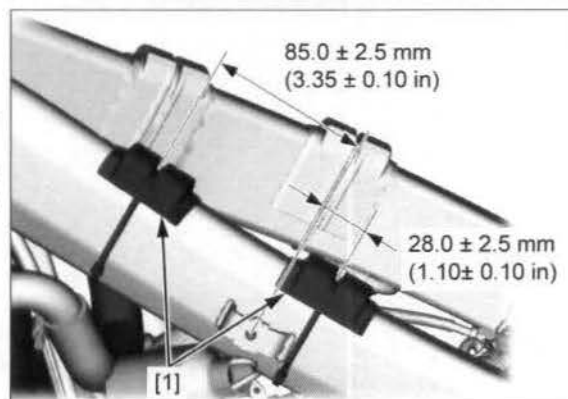
TORQUE:

Fuel tank mounting bolt A:

10 N·m (1.0 kgf·m, 7 lbf·ft)

Fuel tank mounting bolt B:

10 N·m (1.0 kgf·m, 7 lbf·ft)



CRF450RX

Remove the following:

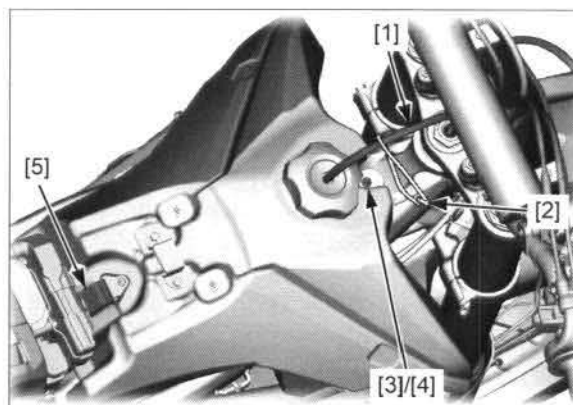
- Seat (page 2-3)
- Radiator shrouds (page 2-3)

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

Release the breather hose from the steering stem.

Remove the bolt A [3] and washer A [4].

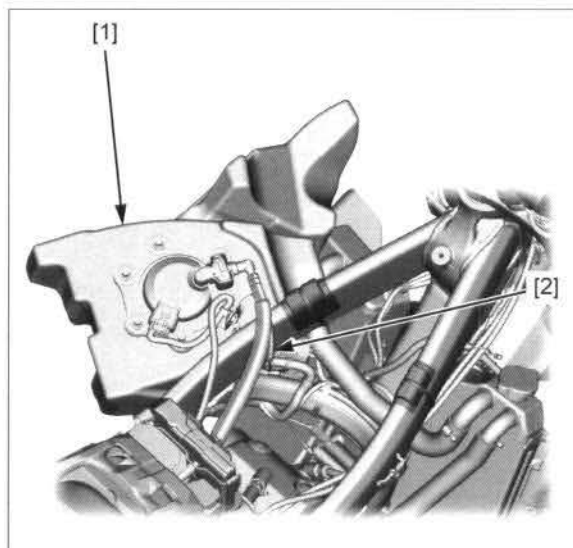
Release the fuel tank band [5].



Lift the fuel tank [1] out of the frame and hang it to the left side of the frame with the stopper cable [2].

NOTE:

- Make sure that the stopper cable is installed to the stays of the fuel tank and frame. Check the stopper cable for abnormal wear or damage.



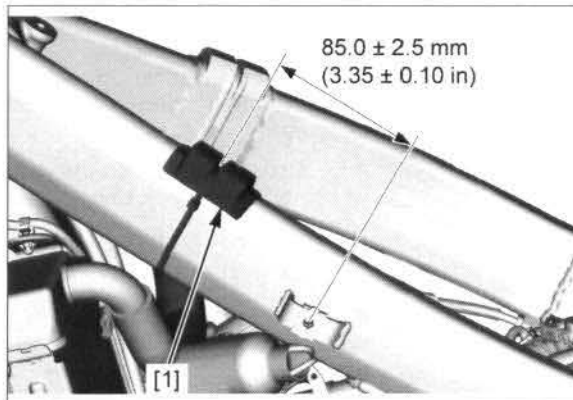
Installation is in the reverse order of removal.

NOTE:

- Do not twist or bend the hoses.
- Before riding, check the cushion rubbers [1] for proper installation as shown.
- Do not ride the motorcycle in state which the cushion rubbers have been removed. It may cause the fuel leaking.

TORQUE:

Fuel tank mounting bolt A:
10 N·m (1.0 kgf·m, 7 lbf·ft)



INSPECTION

Hang the fuel tank [1] to the left side of the frame (page 3-6).

Check the fuel pump side quick connect fitting cover [2] for proper installation.

Remove the fuel pump side quick connect fitting cover.

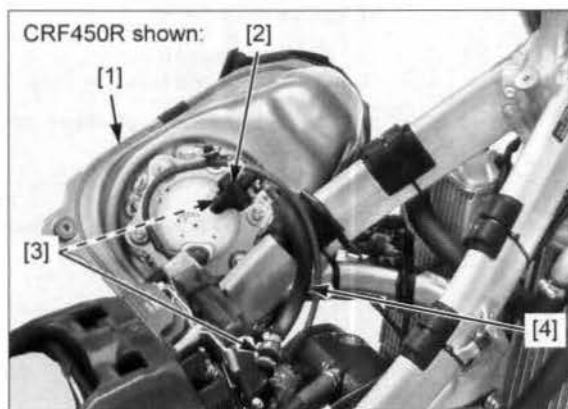
Check the quick connect fittings [3] for looseness.

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

Check the fuel feed hose [4] for deterioration, damage, or leakage and replace if necessary.

NOTE:

- For fuel line replacement (page 7-5).



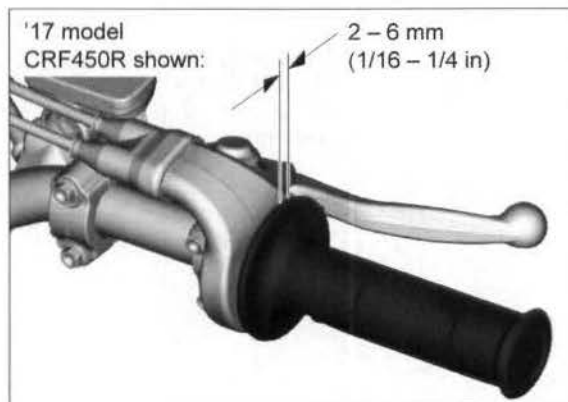
THROTTLE OPERATION

Check for smooth operation of the throttle and that it returns automatically to the fully closed position from any open position and from any steering position. Check the throttle cables and replace them if they are deteriorated, kinked or damaged.

Replace the throttle cables if throttle operation is not smooth.

Measure the freeplay at the throttle grip flange.

FREEPLAY: 2 – 6 mm (1/16 – 1/4 in)



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

Minor adjustment is made with the upper adjuster [1].

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

Turning the adjuster in direction (–) will decrease freeplay and turning it in direction (+) will increase freeplay.

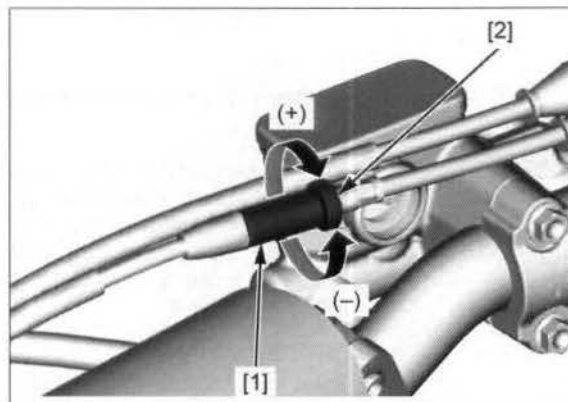
After adjustment, tighten the adjuster lock nut securely while holding the adjuster.

Reinstall the dust cover to the throttle housing.

Recheck the throttle operation.

If you cannot obtain the correct freeplay with grip side adjuster, turn it all the way in and then turn it out one turn.

Make the major adjustment with the throttle body side adjuster.



Major adjustment is made with the lower adjuster [1].

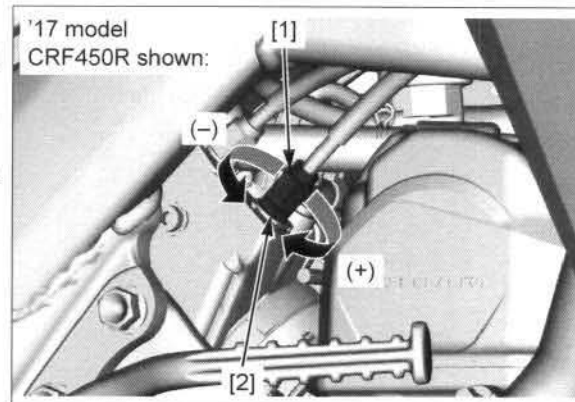
Adjust the freeplay by loosening the adjuster lock nut [2] and turning the adjuster.

Turn the adjuster in direction (–) to decrease freeplay, and in direction (+) to increase freeplay.

After adjustment, tighten the adjuster lock nut to the specified torque while holding the adjuster.

TORQUE: 4.0 N·m (0.4 kgf·m, 3.0 lbf·ft)

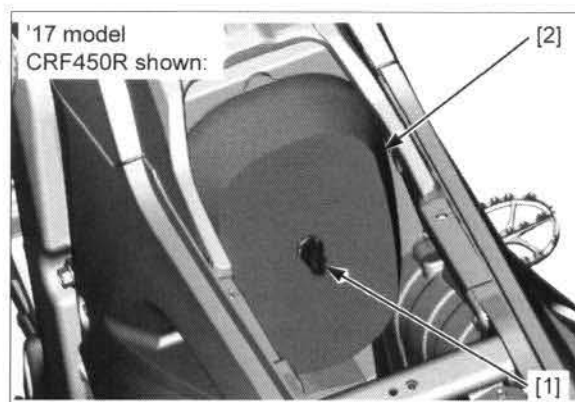
Recheck the throttle operation.



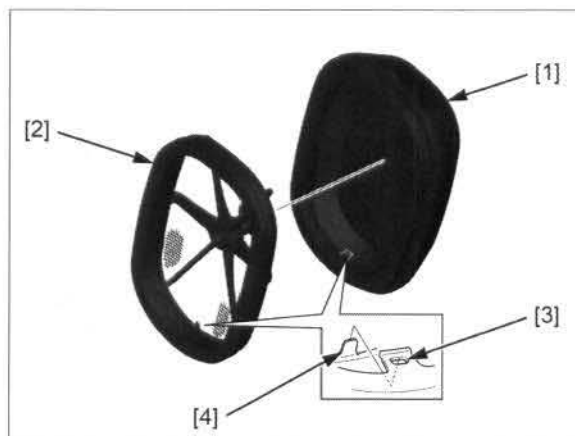
AIR FILTER

Remove the seat (page 2-3).

Remove the air cleaner element set bolt [1] and air cleaner assembly [2].



Remove the air cleaner element [1] from the element holder [2] by releasing the element holes [3] from the holder tabs [4].

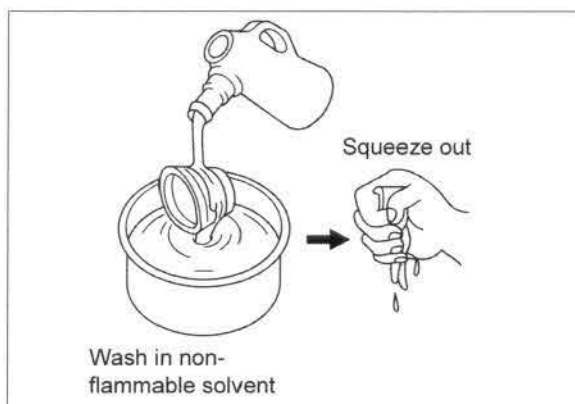


Thoroughly wash the air cleaner element in clean nonflammable or high flash-point cleaning solvent. Then wash the air cleaner element again in a solution of hot water and dishwashing liquid soap.

After cleaning, be sure there is no dirt or dust trapped between the inner and outer layer of the air cleaner element.

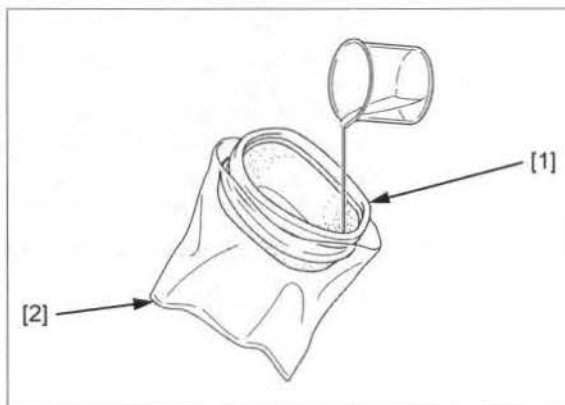
Wash again if necessary.

Allow the air cleaner element to dry thoroughly.



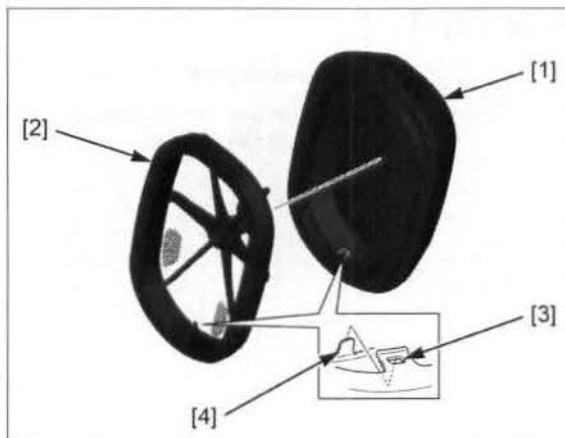
MAINTENANCE

Apply 40 cm³ (1.4 US oz) of Pro Honda Foam Air Filter Oil or equivalent oil to the inside of the element. Place the air cleaner element [1] into a plastic bag [2] and spread the oil evenly by hand.



Assemble the air cleaner element [1] and element holder [2].

Hook the element holes [3] onto the holder tabs [4].



Apply 1.5 – 5.5 g (0.1 – 0.2 oz) of grease to the air cleaner element [1] contacting area of the air cleaner housing [2].

Install the air cleaner assembly with its "UP" mark [3] facing upward onto the air cleaner housing.

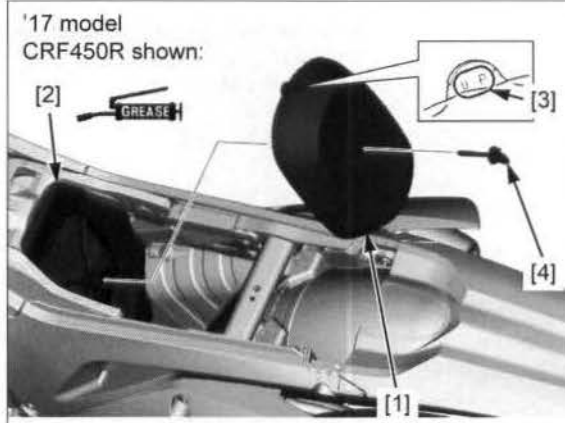
Install and tighten the air cleaner element set bolt [4] to the specified torque.

TORQUE: 2.4 N·m (0.2 kgf·m, 1.8 lbf·ft)

NOTE:

- If the air cleaner assembly is not installed correctly, dirt and dust may enter the engine, resulting in wear of the piston ring and cylinder.

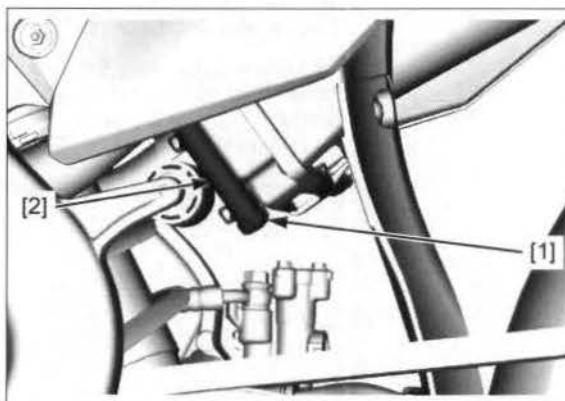
Install the seat (page 2-3).



CRANKCASE BREATHER

Remove the drain plug [1], then drain any fluid or dirt into a proper container from the crankcase breather hose [2].

Reinstall the drain plug.



SPARK PLUG

REMOVAL/INSTALLATION

Hang the fuel tank to the left side of the frame (page 3-6).

Disconnect the spark plug cap [1].

Remove the spark plug [2] and inspect it for damage.

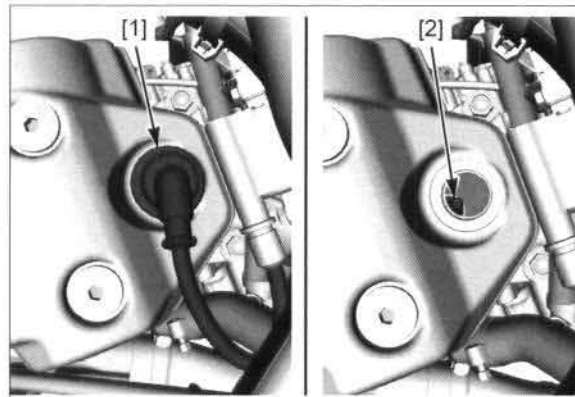
Inspect or replace as described in the maintenance schedule (page 3-3).

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

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Connect the spark plug cap securely.

Install the fuel tank (page 3-6).

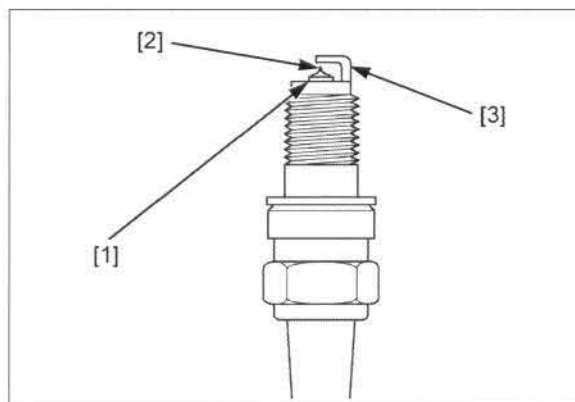


INSPECTION

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

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

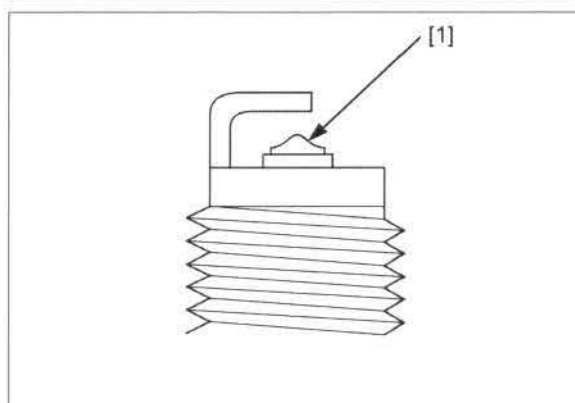


Replace the plug if the center electrode is rounded as shown in the illustration.

SPECIFIED SPARK PLUG:

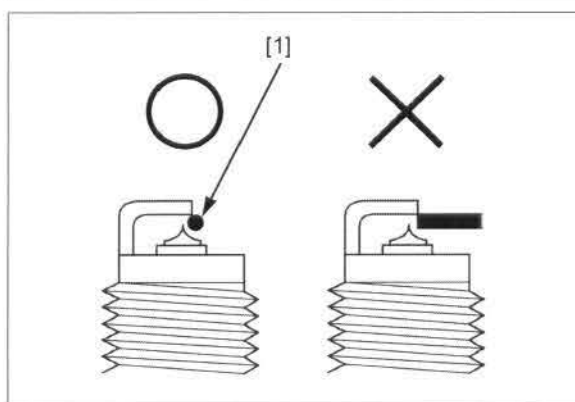
STANDARD: SILMAR9A-9S (NGK)

OPTIONAL: SILMAR10A-9S (NGK)



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.



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

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

This motorcycle's spark plugs are equipped with an iridium center electrode. Do not clean the electrodes.

Always use specified spark plugs on this motorcycle.

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

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

VALVE CLEARANCE

INSPECTION

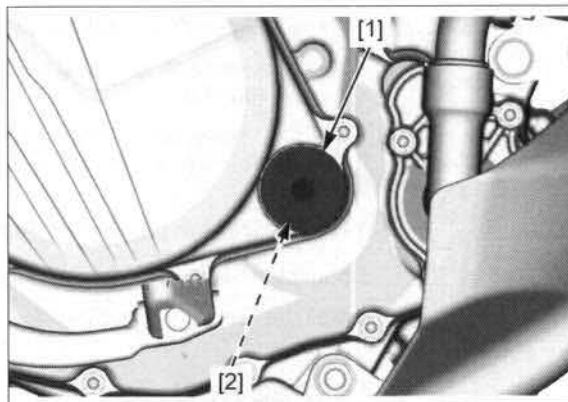
NOTE:

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

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

Remove the cylinder head cover (page 10-6).

Remove the timing hole cap [1] and O-ring [2].

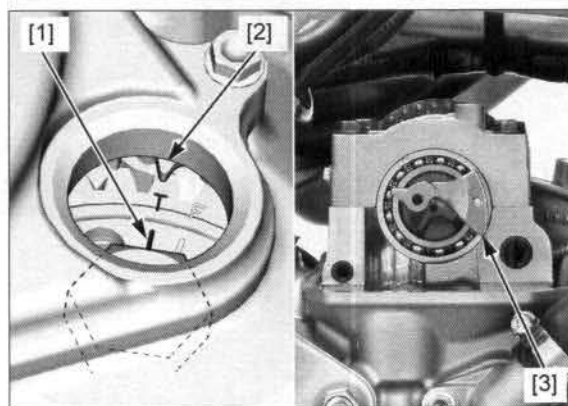


Turn the crankshaft clockwise to align the "T" mark [1] on the primary drive gear with the index mark [2] on the right crankcase cover.

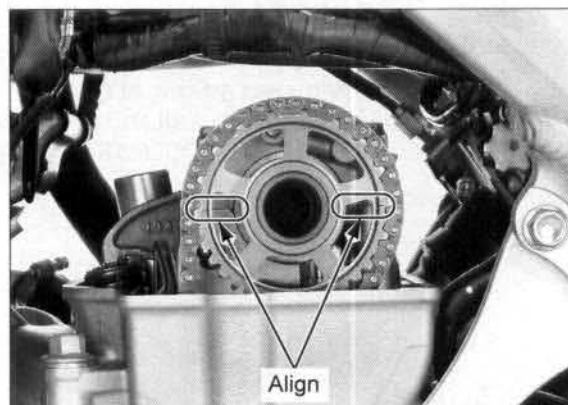
Check the decompressor weight [3] position.

If the weight is in position as shown, the piston is TDC (Top Dead Center) on the compression stroke.

If the weight is opposite, the piston is TDC on the exhaust stroke. Rotate the crankshaft clockwise one full turn and match up the "T" mark on the primary drive gear with the index mark on the right crankcase cover again.



Align the index line on the cam sprocket with the camshaft holder mating surface.



Check the valve clearance for the intake valves using a feeler gauge [1].

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

Insert a feeler gauge between the intake rocker arms [2] and camshaft cam lobes [3].

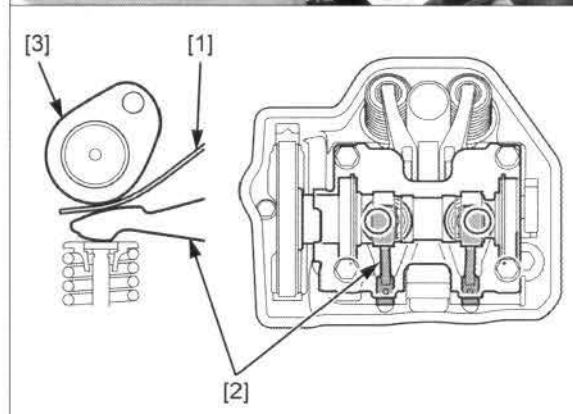
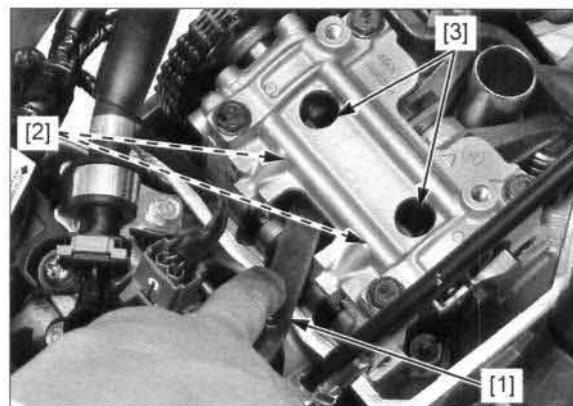
INTAKE VALVE CLEARANCE:

0.13 ± 0.03 mm (0.005 ± 0.001 in)

NOTE:

- Be careful not to damage the intake rocker arms.

If the clearance is out of specification, adjust the valve clearance (page 3-14).



Check the valve clearance for the exhaust valves using a feeler gauge [1].

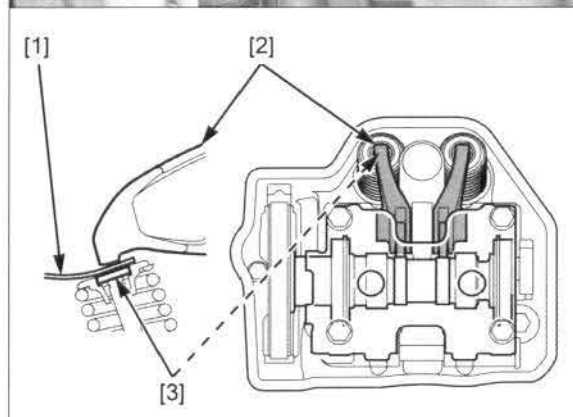
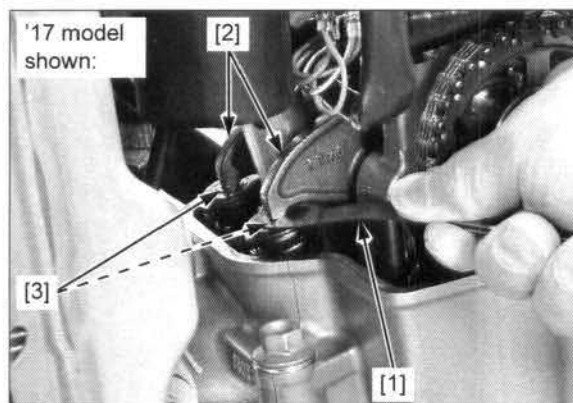
Record the clearance for each valve for reference in shim selection if adjustment is required.

Insert a feeler gauge between the exhaust rocker arms [2] and shims [3].

EXHAUST VALVE CLEARANCE:

0.28 ± 0.03 mm (0.011 ± 0.001 in)

If the clearance is out of specification, adjust the valve clearance (page 3-14).



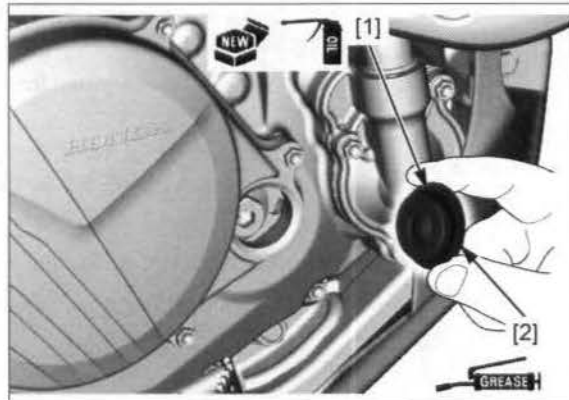
Apply engine oil to a new O-ring [1] and install it to the crankshaft hole cap [2].

Apply grease to the timing hole cap threads.

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

TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)

Install the cylinder head cover (page 10-7).



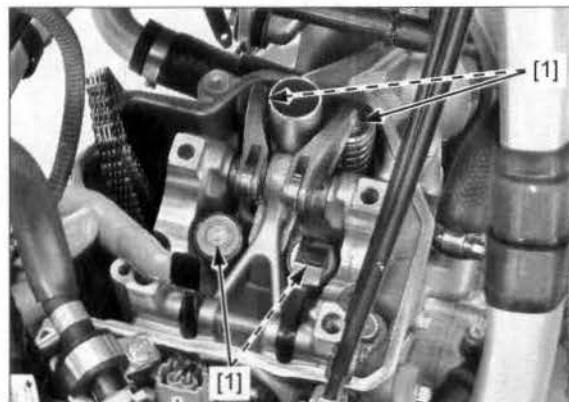
VALVE CLEARANCE ADJUSTMENT

Remove the camshaft (page 10-8).

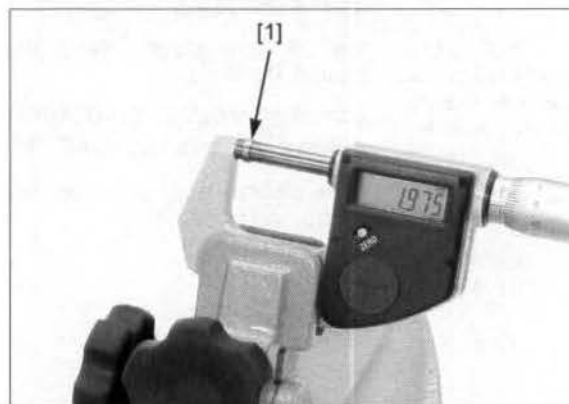
Remove the shims [1].

NOTE:

- Mark all valve shims to ensure correct reassembly in their original locations.
- The shims can be easily removed with tweezers or a magnet.



Measure the shim [1] thickness and record it.



Seventy-three different thickness shims are available from 1.200 mm to 3.000 mm in increments of 0.025 mm.

Calculate the new shim [1] thickness using the equation below.

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

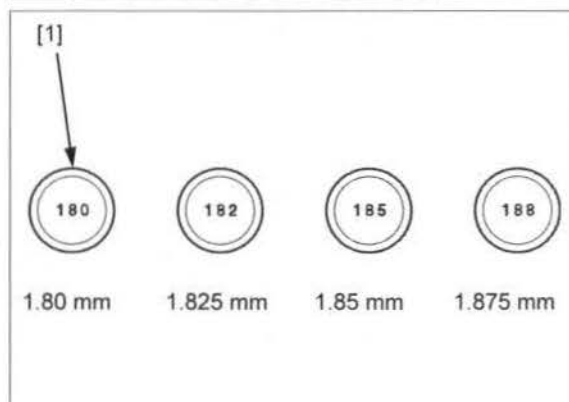
A: New shim thickness

B: Recorded valve clearance

C: Specified valve clearance

D: Old shim thickness

- Make sure of the correct shim thickness by measuring the shim using a micrometer.
- Reface the valve seat if carbon deposits result in a calculated dimension of over 3.000 mm.

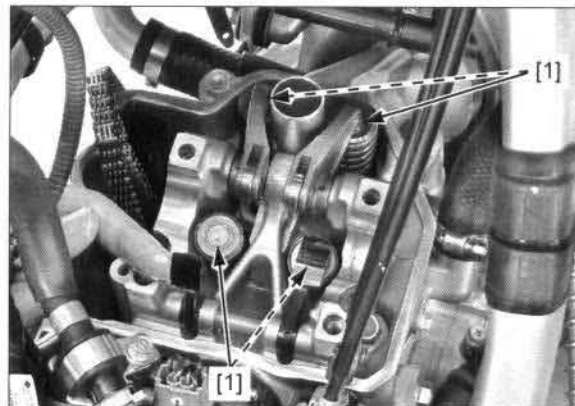


Install the newly selected shims [1] on the valve spring retainers.

Install the camshaft (page 10-9).

Rotate the camshaft by rotating the crankshaft clockwise several times.

Recheck the valve clearance (page 3-12).



ENGINE OIL/OIL FILTER

OIL LEVEL INSPECTION

Start the engine and let it idle for 3 minutes.

Stop the engine and wait 3 minutes.

Support the motorcycle upright on a level surface.

Remove the oil filler cap/dipstick [1] and wipe the oil with a clean cloth.

Insert the oil filler cap/dipstick without it is screw in, remove it and check the oil level.

If the oil level is below or near the lower level line [2] on the oil filler cap/dipstick, add the recommended engine oil to the upper level line [3] through the oil filler hole.

RECOMMENDED ENGINE OIL:

Pro Honda GN4 4-stroke oil (U.S.A. & Canada) or equivalent motorcycle oil

API service classification: SG or higher

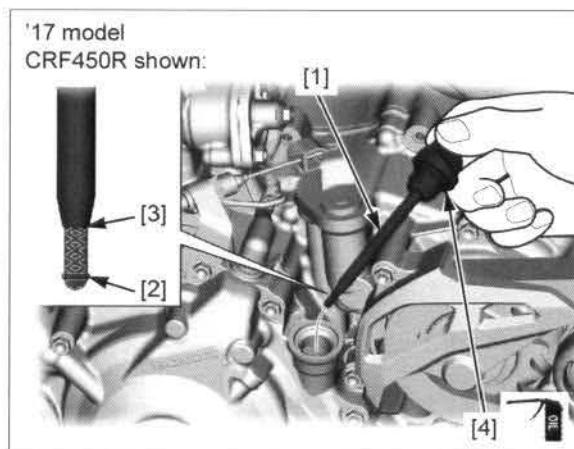
JASO T903 standard: MA

Viscosity: SAE 10W-30

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

Apply engine oil to the O-ring.

Reinstall the oil filler cap/dipstick.



ENGINE OIL & FILTER CHANGE

Remove the engine guard (page 2-6).

Start the engine and let it idle for 3 minutes.

Support the motorcycle upright on a level surface.

Place an oil pan under the engine to catch the engine oil, then remove the engine oil drain bolt [1] and O-ring [2].

Remove the oil filler cap/dipstick [3] from the left crankcase cover.

Drain the engine oil.

NOTE:

- '17 model:
Slowly operate the kickstarter pedal five times or more while pressing the engine stop switch, so the engine oil completely drains.
- After '17 model:
Pull the clutch lever all the way in, and depress the starter switch while pressing the engine stop switch, so the engine oil completely drains.

Remove the following:

- Bolts [1]
- Oil filter cover [2]
- O-ring [3]
- Oil filter [4]
- Oil filter spring [5]

Apply grease to the oil filter contact area of the spring.

Install the spring into a new oil filter.

Install the oil filter with the "OUT-SIDE" mark [6] facing out.

NOTE:

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

Apply engine oil to a new O-ring and install it on the oil filter cover.

Install the oil filter cover and bolts.

Tighten the bolts securely.

Apply engine oil to the engine oil drain bolt [1] threads and seating surface.

Apply engine oil to a new O-ring [2] and install it on the engine oil drain bolt.

Install and tighten the engine oil drain bolt to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

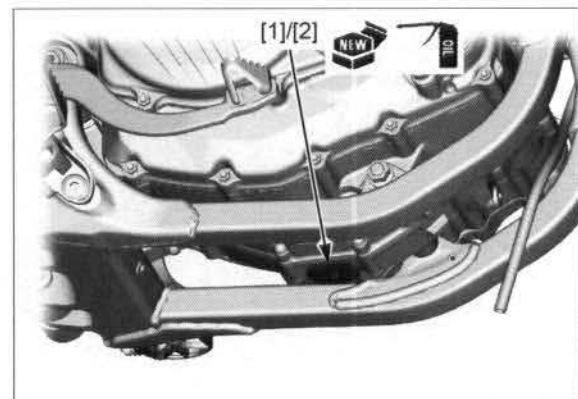
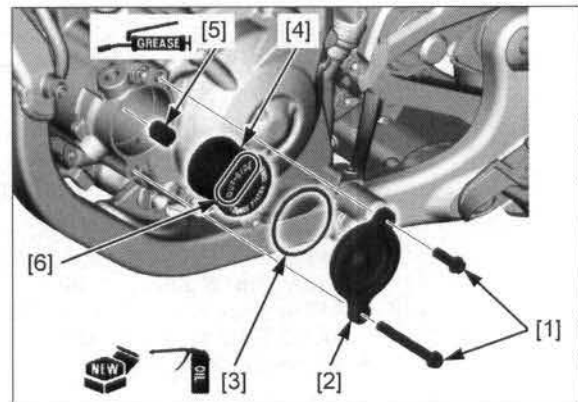
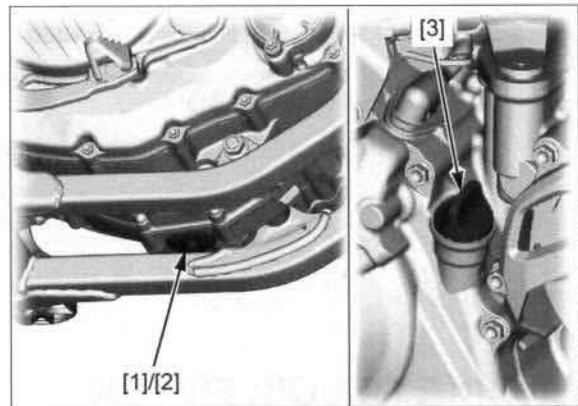
Fill the engine with the recommended engine oil (page 3-15).

ENGINE OIL CAPACITY:

1.00 liter (1.06 US qt, 0.88 Imp qt) at draining
1.04 liter (1.10 US qt, 0.92 Imp qt) at oil filter change
1.35 liter (1.43 US qt, 1.19 Imp qt) at disassembly

Recheck the oil level (page 3-15).

Make sure there are no oil leaks.



ENGINE IDLE SPEED

NOTE:

- The engine must be warm for accurate idle speed inspection.
- When inspecting the engine idle speed, make sure that the fast idle knob is pushed fully in.
- Use a tachometer with graduations of 50 rpm or smaller that will accurately indicate a 50 rpm change.

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

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

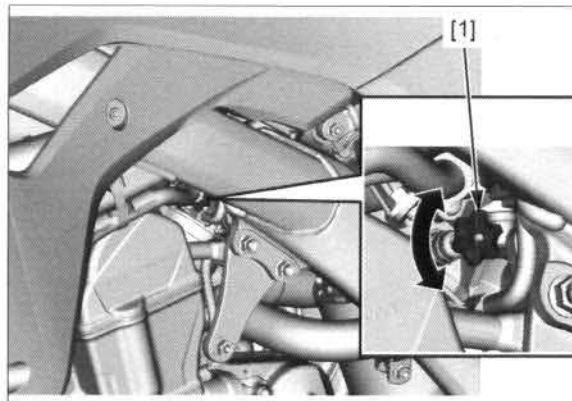
Start the engine and let it idle. Turn the fast idle knob [1] to obtain the specified idle speed.

Turning the fast idle knob counterclockwise results in a faster/higher idle speed.

Turning the fast idle knob clockwise results in a slower/lower idle speed.

IDLE SPEED: 2,000 ± 100 rpm

If engine idle speed can not adjust, check the fast idle knob (page 7-29).



RADIATOR COOLANT

Remove the radiator cap [1] (page 9-5).

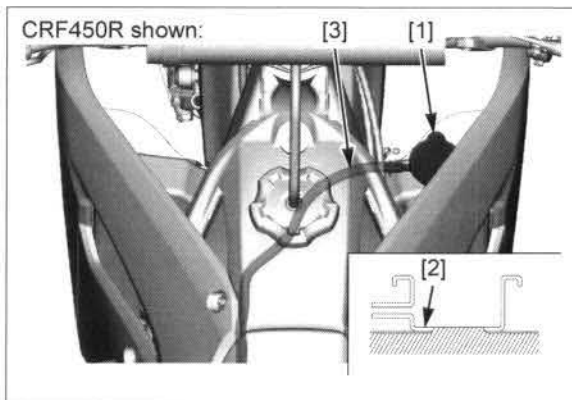
Check the coolant level with the engine cold, it should be up to the filler neck [2].

If the coolant level is low, add the coolant as required (page 9-5).

NOTE:

- A coolant loss of 20 – 60 cm³ (0.7 – 2.0 US oz) through the overflow hose [3] is normal. If coolant loss is more than this, inspect the cooling system.

Install the radiator cap.



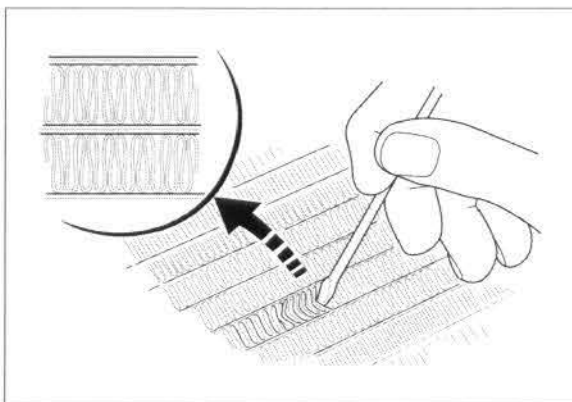
COOLING SYSTEM

Remove the radiator grills (page 9-6).

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.

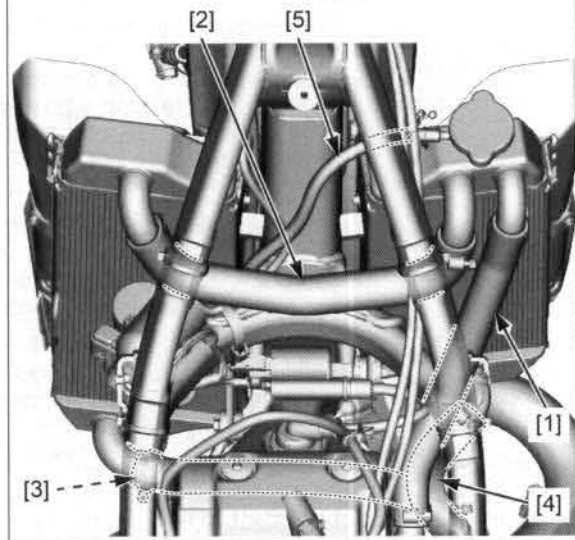


Inspect the radiator hoses for cracks and deterioration.

- Radiator hose A [1]
- Radiator hose B [2]
- Radiator hose C [3]
- Radiator hose D [4]
- Overflow hose [5]

Check the tightness of all the hose band screws (page 9-7).

'17 model
CRF450R shown:



DRIVE CHAIN

⚠ WARNING

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

DRIVE CHAIN SLACK INSPECTION

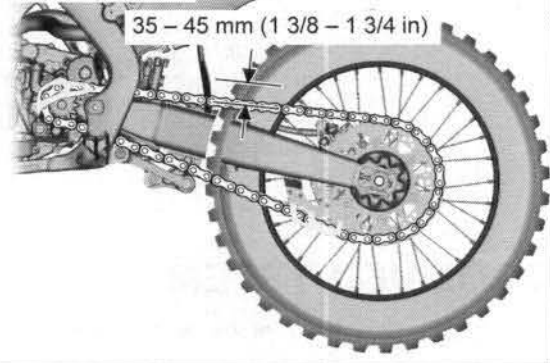
Remove the engine guard (page 2-6).

Raise the rear wheel off the ground by placing a workstand under the engine.

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

CHAIN SLACK: 35 – 45 mm (1 3/8 – 1 3/4 in)

'17 model
CRF450R shown:



ADJUSTMENT

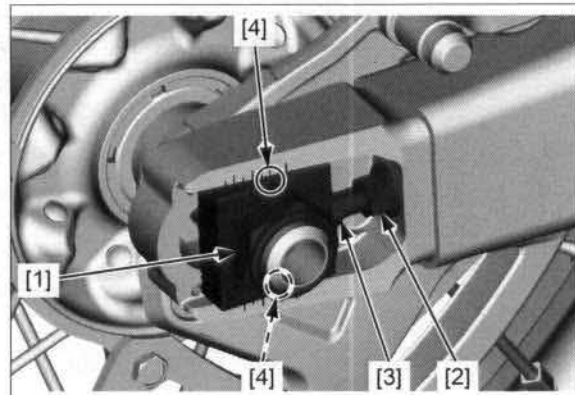
If the chain needs adjustment, loosen the rear axle nut [1] and drive chain adjuster lock nuts [2], then turn the adjusting bolts [3].

Check that the adjusting block index marks [4] are in the same position on each side, then tighten the rear axle nut to the specified torque.

TORQUE: 128 N·m (13.1 kgf·m, 94 lbf·ft)

After torquing the axle nut, seat the adjusting bolts snugly against the adjusting block and tighten the drive chain adjuster lock nut to the specified torque while holding the adjusting bolt.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)



INSPECTION, CLEANING, AND LUBRICATION (CRF450R)

NOTE:

- For maximum service life, the drive chain should be cleaned and lubricated after every ride.

Measure the distance between a span of 17 pins (16 pitches) from pin center to pin center with the chain held taut and any kinked joint straightened.

SERVICE LIMIT: 259 mm (10.2 in)

If the measurement exceeds the service limit, replace the chain (page 3-20).

Cut the drive chain using the special tool.

TOOL:

Drive chain tool set

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

STANDARD LINKS: 114 LINKS

REPLACEMENT CHAIN

RK: 520TXZ-120RJ

NOTE:

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

Remove the drive chain (page 3-20).

Clean the chain with non-flammable or high flash point solvent [1] and wipe it dry.

Be sure the chain has dried completely before lubricating.

Inspect the drive chain for possible damage or wear.

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

Installing a new chain on badly worn sprockets will cause a new chain to wear quickly.

Inspect and replace sprocket as necessary.

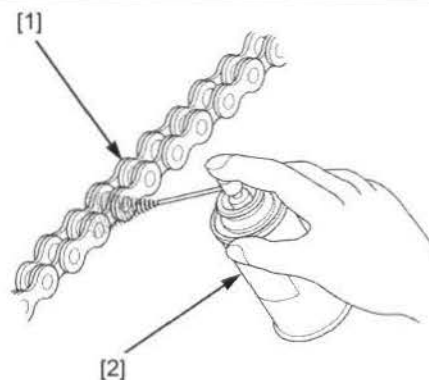
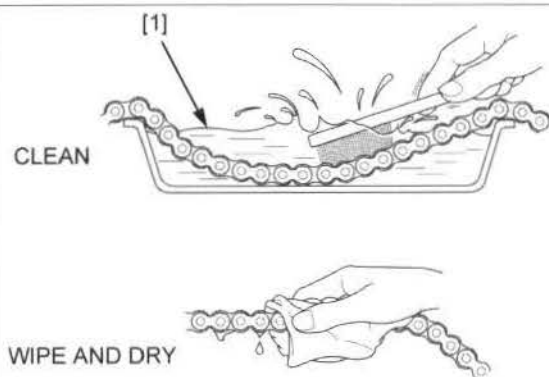
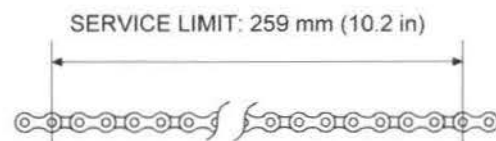
Lubricate the drive chain [1] with drive chain lubricant [2].

RECOMMENDED LUBRICANT:

Honda HP Chain Lube or an equivalent

Wipe off any excess oil or chain lubricant.

Install the drive chain (page 3-20).

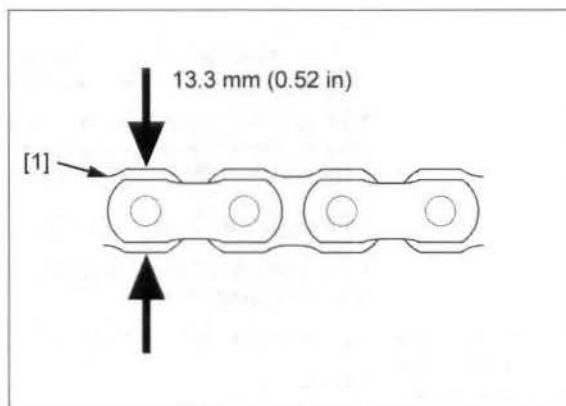


INSPECTION, CLEANING, AND LUBRICATION (CRF450RX)

Measure the drive chain plate [1].

SERVICE LIMIT: 13.3 mm (0.52 in)

If the measurement exceeds the service limit, replace the chain (page 3-21).



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

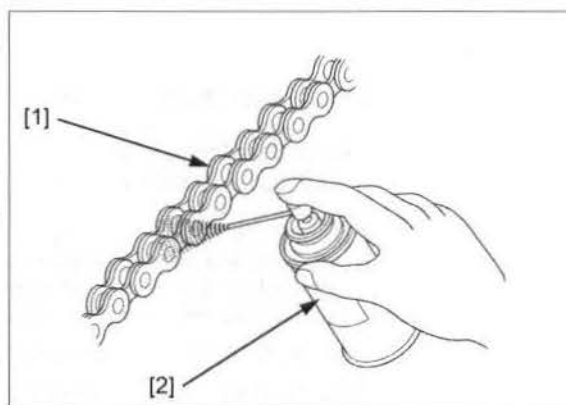
Do not use a steam cleaner, high pressure cleaner, wire brush, volatile solvent such as gasoline and benzene, abrasive cleaner or a chain cleaner NOT designed specifically for O-ring chains to clean the drive chain.

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:

Honda HP Chain Lube or an equivalent

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.

DRIVE CHAIN REMOVAL/ INSTALLATION (CRF450R)

Remove the drive sprocket cover (page 2-5).

Carefully remove the master link clip [1] with pliers.

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

Remove the drive chain.

Check the master link clip is in good condition and replace it if necessary.

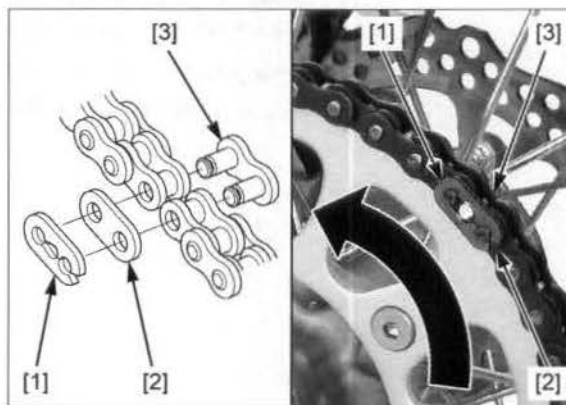
Install the drive chain onto the sprockets.

Install the master link and link plate.

Install the open end of the master link clip opposite the direction of chain travel.

Install the drive sprocket cover (page 2-5).

Adjust the drive chain slack (page 3-18).



DRIVE CHAIN REPLACEMENT (CRF450RX)

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

Fully slacken the drive chain (page 3-18).

Remove the drive chain using the special tool.

TOOL:

Drive chain tool set

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

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

STANDARD LINKS: 114 LINKS

REPLACEMENT CHAIN

RK: 520EXU-120LJFZ

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

Make sure that the master link pins [1] are installed properly.

Measure the length between the inner plates [2].

STANDARD LENGTH: 11.3 – 11.5 mm (0.44 – 0.45 in)

Stake the master link pins.

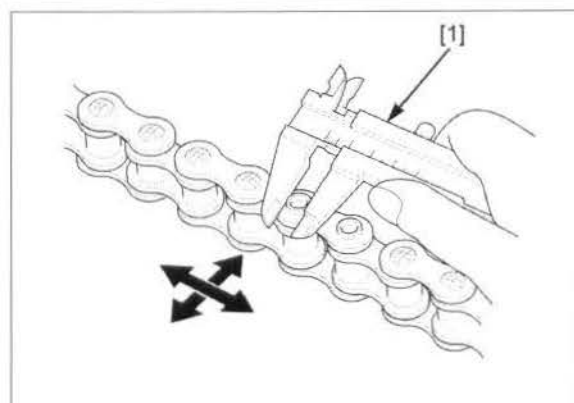
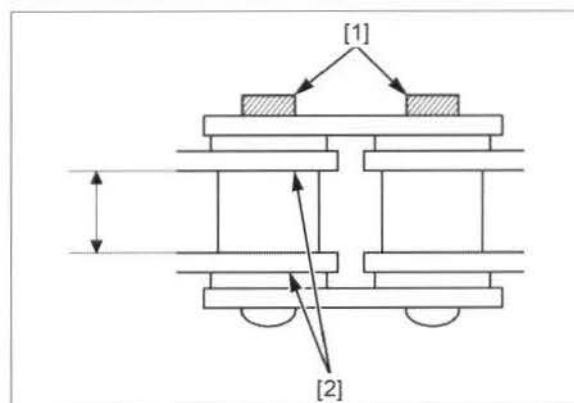
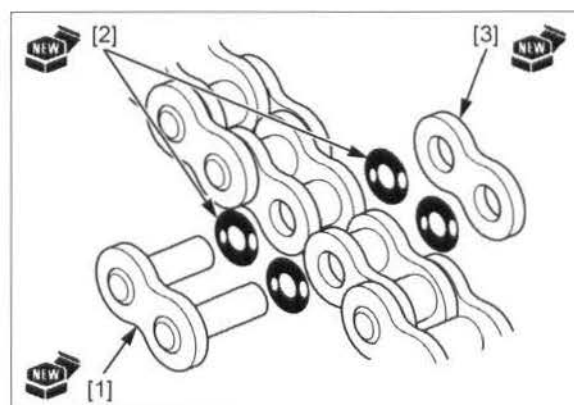
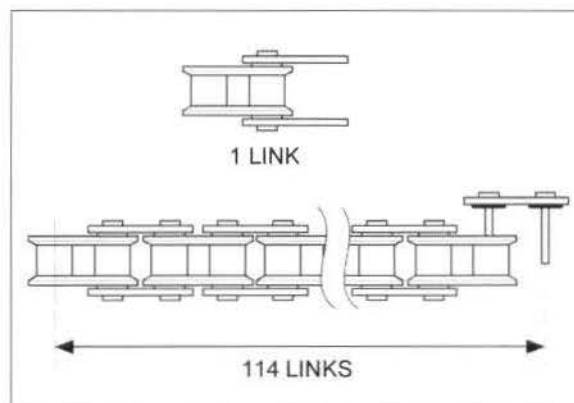
Make sure that the pins are staked properly by measuring the diameter of the staked area using a slide caliper [1].

DIAMETER OF THE STAKED AREA:

5.30 – 5.70 mm (0.209 – 0.224 in)

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

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



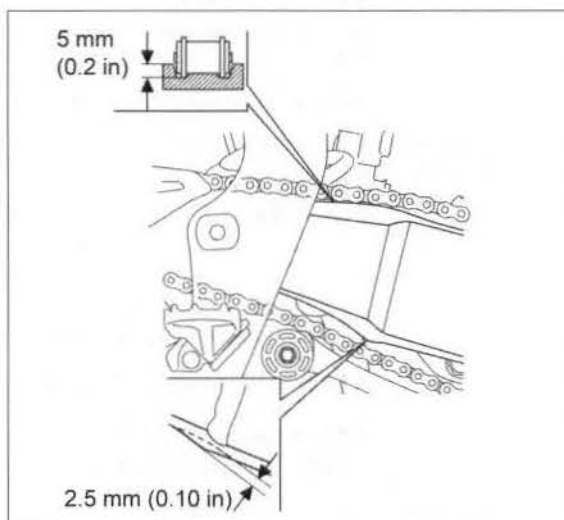
DRIVE CHAIN SLIDER

Inspect the drive chain slider for excessive wear.

SERVICE LIMITS: Upper side: 5 mm (0.2 in)
Lower side: 2.5 mm (0.10 in)

NOTICE

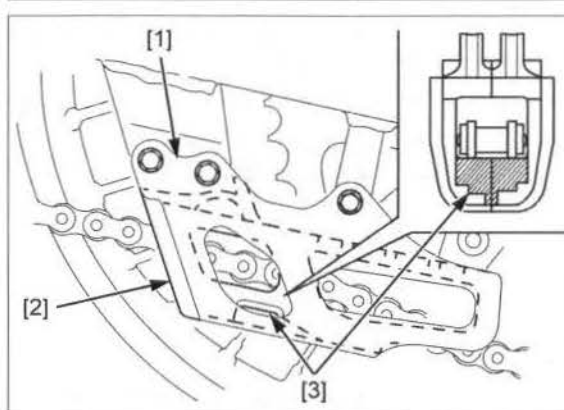
If the chain slider becomes worn through to the swingarm, the chain will wear against the swingarm, damaging the chain and swingarm.



Check the chain guide [1] and chain guide slider [2] for alignment, wear or damage.

Replace the chain guide if it is damaged or worn.

Replace the chain guide slider if the slider is worn to the bottom of the wear limit indicator [3].



DRIVE CHAIN ROLLER

Inspect the drive chain rollers for excessive wear or binding.

Measure the upper drive chain roller (Green) [1] and lower drive chain roller (Black) [2] O.D.

SERVICE LIMIT:

Upper: 31 mm (1.2 in)

Lower: 31 mm (1.2 in)

Replace the drive chain roller if necessary.

Install the upper roller with the "→" mark [3] facing out.

Install and tighten a new bolt [4] to the specified torque.

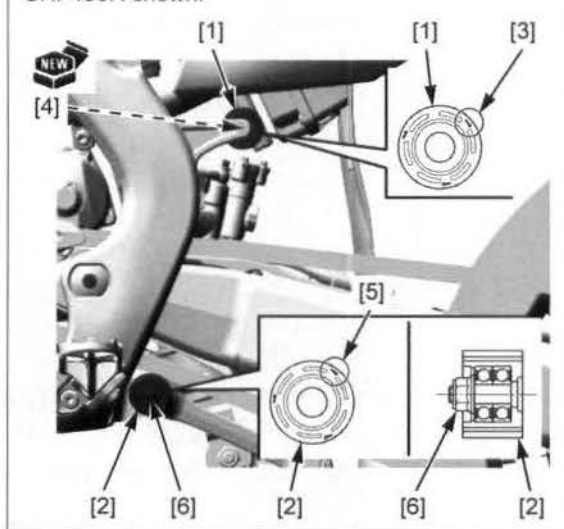
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the lower roller with the "→" mark [5] facing out as shown.

Install and tighten the nut [6] to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

CRF450R shown:



DRIVE/DRIVEN SPROCKET

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

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

Remove the drive sprocket cover (page 2-5). Check the bolts and nuts on the drive and driven sprockets.

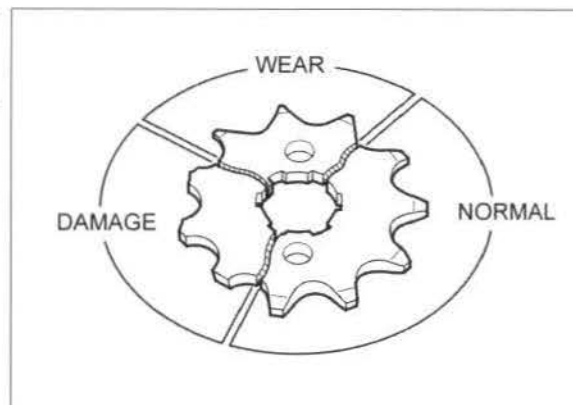
If any are loose, torque them.

TORQUE:

Drive sprocket bolt: 31 N·m (3.2 kgf·m, 23 lbf·ft)

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

Install the drive sprocket cover (page 2-5).



BRAKE FLUID

NOTICE

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

- 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.

FLUID LEVEL INSPECTION

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

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

If the brake pads are not worn and the fluid level is low, check the entire system for leaks, then fill the reservoir with the brake fluid (page 3-23).



FLUID FILLING

FRONT:

Remove the screws [1], reservoir cover [2], and diaphragm [3], then fill the reservoir with recommended brake fluid to the upper level line [4].

RECOMMENDED BRAKE FLUID:

Honda DOT 4 brake fluid

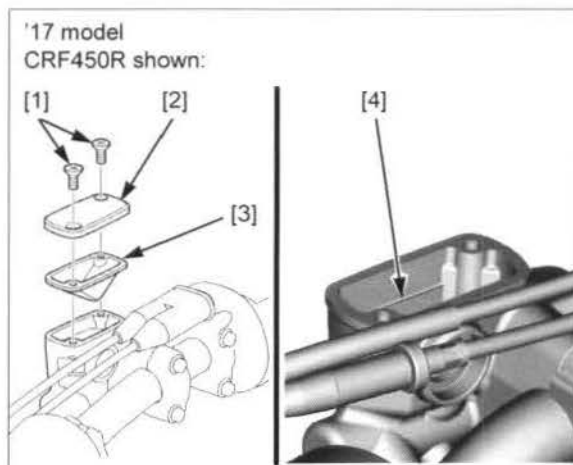
Install the diaphragm and reservoir cover. Install and tighten the screws to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Check the entire system for leaks.

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

Replace the hose and fittings as required.



REAR:

Remove the bolts [1], reservoir cover [2], set plate [3], and diaphragm [4], then fill the reservoir with recommended brake fluid to the upper level line [5].

RECOMMENDED BRAKE FLUID:

Honda DOT 4 brake fluid

Do not bend the diaphragm during installation.

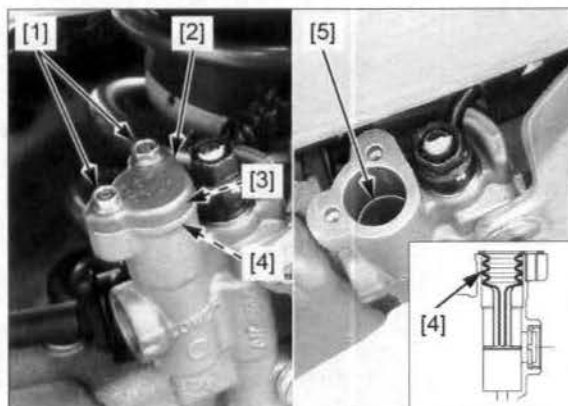
Install the diaphragm, set plate, and cover. Install and tighten the bolts to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Check the entire system for leaks.

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

Replace the hose and fittings as required.



BRAKE PADS WEAR

Inspect the pads.

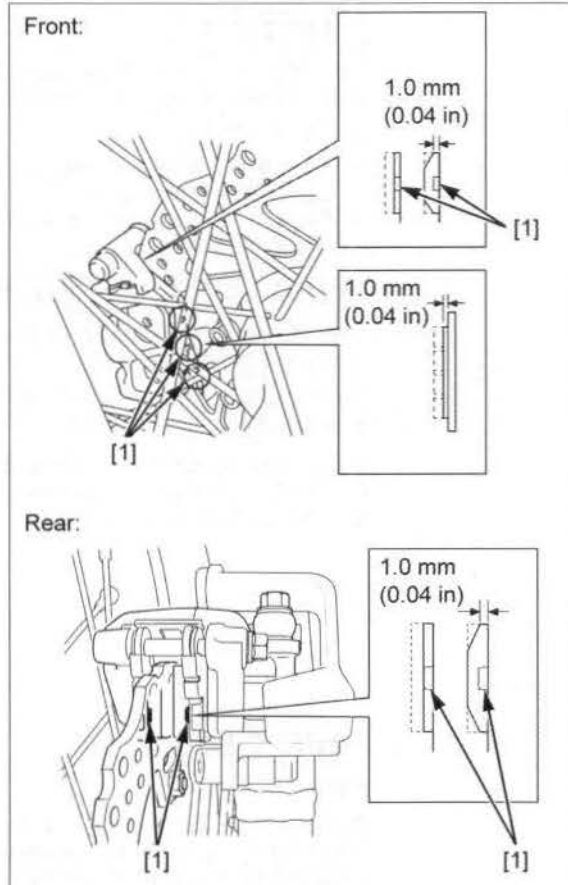
If either pad is worn anywhere to a thickness of 1.0 mm (0.04 in), both pads must be replaced.

NOTE:

- The width of wear indicator [1] is 1 mm (0.04 in).

For brake pad replacement:

- Front (page 18-9)
- Rear (page 18-10)



BRAKE SYSTEM

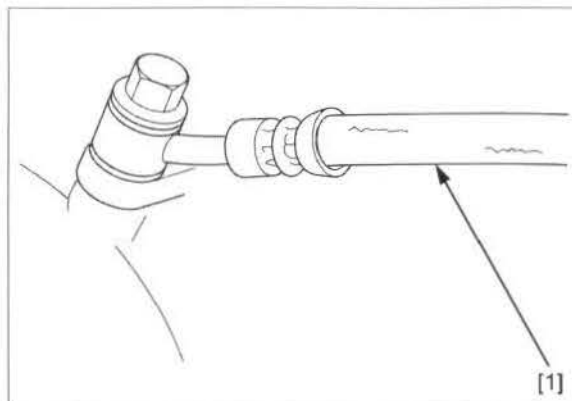
HYDRAULIC SYSTEM INSPECTION

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 18-6).

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 POSITION

The brake lever position can be adjusted by turning the adjusting bolt.

Remove the brake lever cover [1].

Loosen the adjuster lock nut [2].

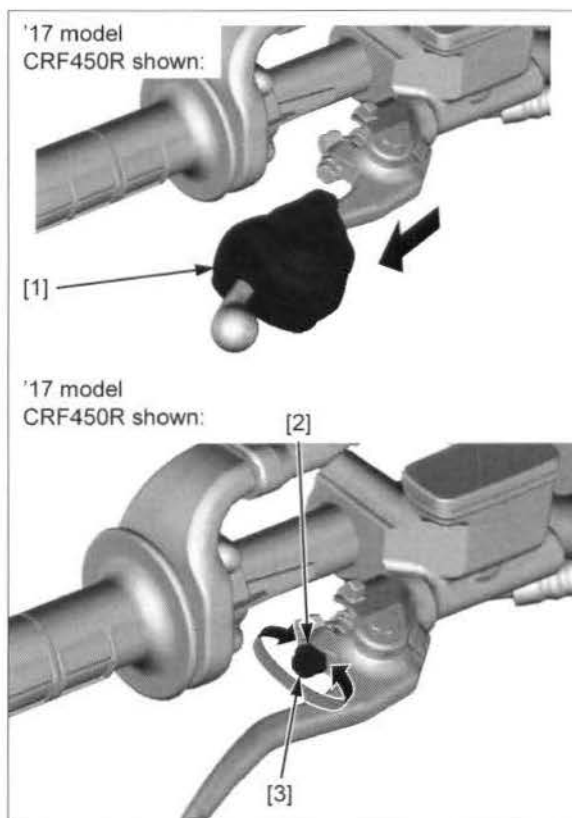
To position the front brake lever farther away from the handgrip, turn the adjuster clockwise.

To position the front brake lever closer to the handgrip, turn the adjuster counterclockwise.

After adjustment, tighten the adjuster lock nut to the specified torque while holding the adjusting bolt.

TORQUE: 5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)

Install the brake lever cover.



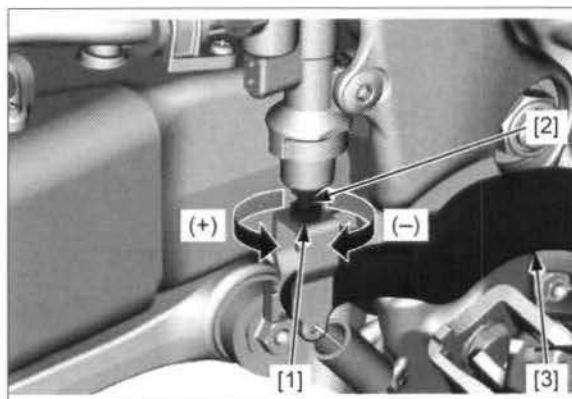
BRAKE PEDAL HEIGHT

The rear brake pedal height should be approximately level with the right footpeg.

Loosen the lock nut [1] and turn the push rod [2] in direction (+) to raise the rear brake pedal [3] or in direction (–) to lower it.

Tighten the push rod lock nut to the specified torque.

TORQUE: 5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)



CLUTCH SYSTEM

CLUTCH LEVER POSITION (^{'17} model CRF450R)

The clutch lever position can be adjusted by loosening the adjuster lock nut [1] and turning the adjusting bolt [2].

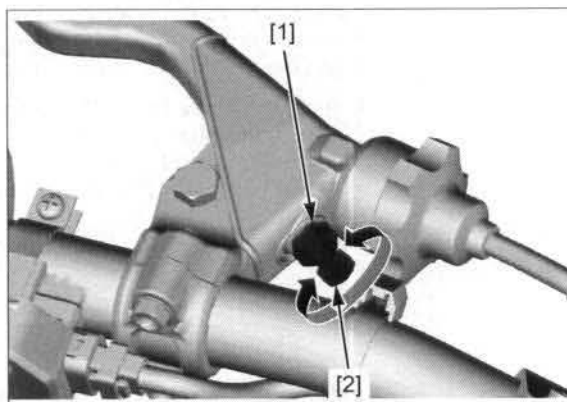
To position the clutch lever farther away from the handgrip, turn the adjuster counterclockwise. To position the clutch lever closer to the handgrip, turn the adjuster clockwise.

After adjustment, tighten the adjuster lock nut securely while holding the adjusting bolt.

Check the clutch lever freeplay (page 3-26).

NOTICE

Failure to check the clutch lever freeplay may result in damaged clutch plates.



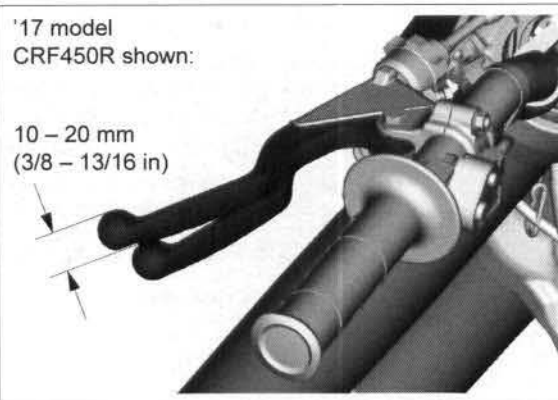
CLUTCH LEVER FREEPLAY

Measure the clutch lever freeplay at the lever end.

FREEPLAY: 10 – 20 mm (3/8 – 13/16 in)

^{'17} model
CRF450R shown:

10 – 20 mm
(3/8 – 13/16 in)



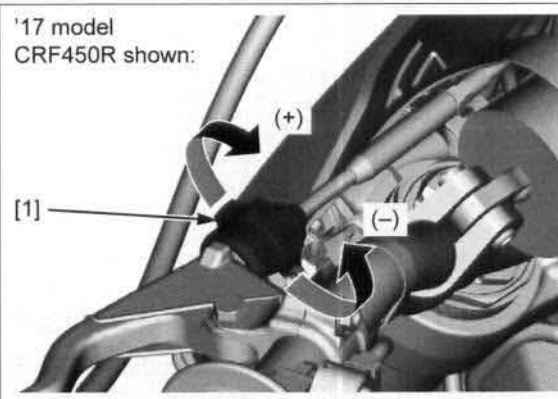
Minor adjustments can be made at the cable end adjuster [1].

Turning the cable end adjuster in direction (+) will increase freeplay and turning it in direction (–) will decrease freeplay.

If the adjuster is threaded out near its limit and the correct freeplay cannot be reached, turn the adjuster in direction (+) until it seats lightly and then turn it out 5 turn in direction (–).

Make the adjustment with the in-line cable adjuster.

^{'17} model
CRF450R shown:



Major adjustments can be made with the in-line cable adjuster located behind the number plate.

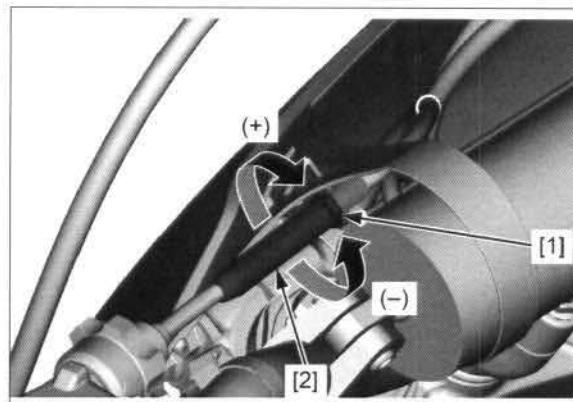
Loosen the adjuster lock nut [1] and turn the adjuster [2].

Turning the adjuster in direction (+) will increase freeplay and turning it in direction (-) will decrease freeplay.

After adjustment, tighten the adjuster lock nut securely while holding the adjuster.

Test ride to be sure the clutch operates properly without slipping or dragging.

If proper freeplay cannot be obtained using both procedures or the clutch slips during the test ride, disassemble and inspect the clutch (page 12-11).



CONTROL CABLES

THROTTLE CABLE

Except '17 model CRF450R: Remove the starter switch (page 20-11).
Release the dust cover [1].

Remove the bolts [2] and throttle housing [3].

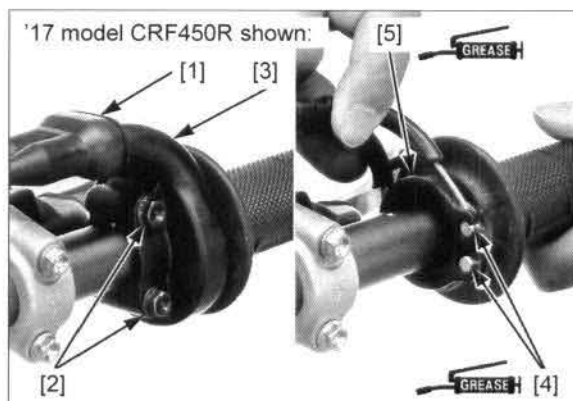
Disconnect the throttle cable ends [4] from the throttle pipe [5].

It is not necessary to lubricate the entire cable. Thoroughly lubricate the cable ends with specified grease (page 1-22).

Install the throttle housing (page 16-34).

If the throttle operation is not smooth, replace the cable.

Be sure the throttle returns freely from fully open to fully closed automatically, in all steering positions.



CLUTCH CABLE

Release the clutch lever cover [1].

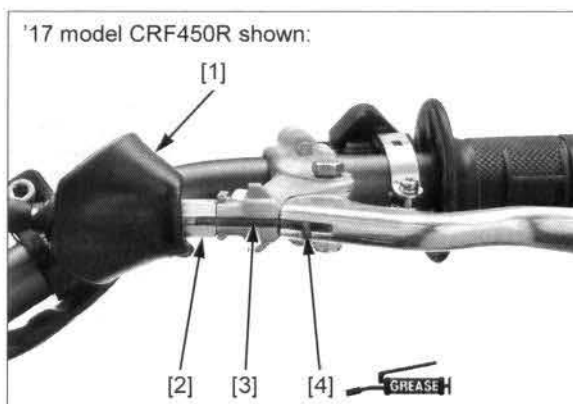
Turn the adjuster [2] and remove the clutch cable [3].

Disconnect the clutch cable from the lever.

It is not necessary to lubricate the entire cable. Thoroughly lubricate the cable end [4] with grease.

Connect the clutch cable end to the lever.

Install the clutch cable and turn the adjuster.



MAINTENANCE

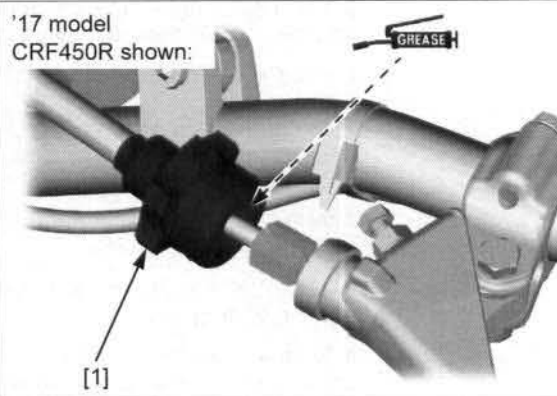
Remove the clutch cable end adjuster [1].

Apply grease to the clutch cable end adjuster inside surface.

Adjust the clutch lever freeplay (page 3-26).

If the clutch lever operation is not smooth, replace the cable.

'17 model
CRF450R shown:



EXHAUST PIPE/MUFFLER

EXHAUST SYSTEM INSPECTION

Check the joint band bolt [1] and joint nuts [2] for looseness and exhaust gas leaks.

Tighten each bolt and nut of the exhaust system to the specified torque.

TORQUE:

Exhaust pipe joint nut:

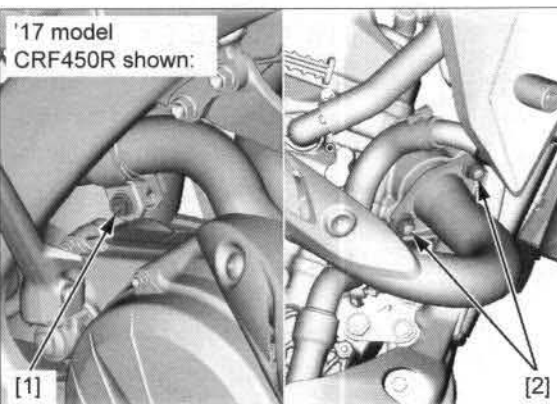
21 N·m (2.1 kgf·m, 15 lbf·ft)

Exhaust pipe band bolt:

20 N·m (2.0 kgf·m, 15 lbf·ft)

Check the exhaust pipe and mufflers for cracks or deformation, replace if necessary.

'17 model
CRF450R shown:



SUSPENSION

FRONT SUSPENSION INSPECTION

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

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

Make sure the fork protectors and dust seals are clean and not packed with mud or dirt.

Remove any dirt that has accumulated on the bottom of the fork seals.

Replace damaged components which cannot be repaired.

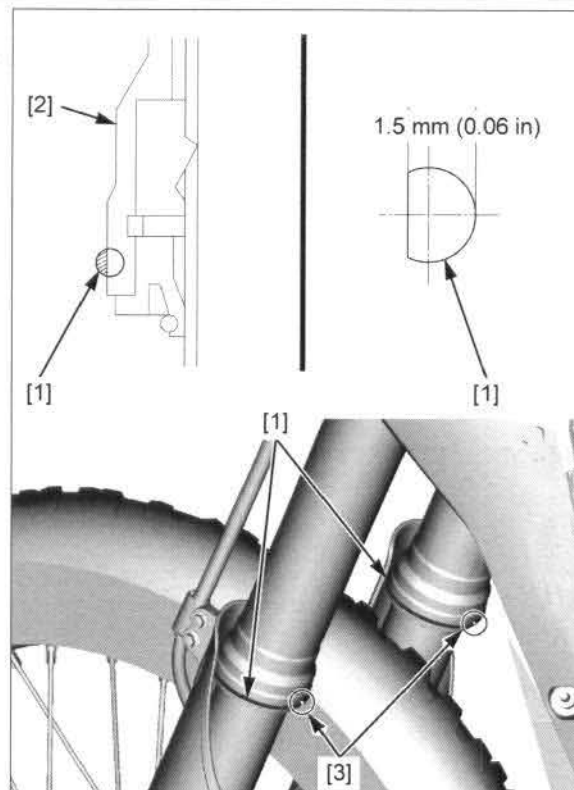
Tighten all nuts and bolts.

For fork service (page 16-9).

Inspect the wear rings [1] for wear or damage.

Replace the wear ring, if it is less than 1.5 mm (0.06 in) or flat with the outer tube [2].

Make sure that the wear ring end gaps [3] facing rearward.



FRONT FORK ADJUST TO ATMOSPHERIC PRESSURE

Air pressure acts as a progressive spring and affects the entire range of fork travel.

Air is an unstable gas; it increases in pressure as it is worked (such as in a fork), so the fork action on this motorcycle will get stiffer as the race progresses.

Release built-up air pressure from the fork legs after practice and between motos.

Be sure the fork is fully extended with the front tire off the ground.

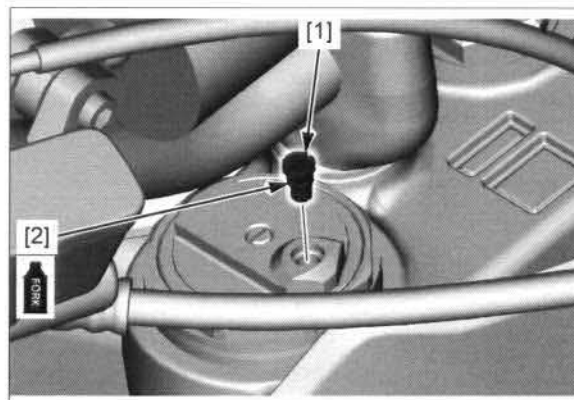
Loosen the plug bolt [1] fully.

Check that the O-ring [2] is in good condition, replace it if necessary.

Apply recommended fork oil to the O-ring.

Install and tighten the plug bolt to the specified torque.

TORQUE: 1.3 N·m (0.1 kgf·m, 1.0 lbf·ft)



REAR SUSPENSION INSPECTION

Check the action of the shock absorber by compressing it several times.

Remove the air cleaner housing (page 7-23).

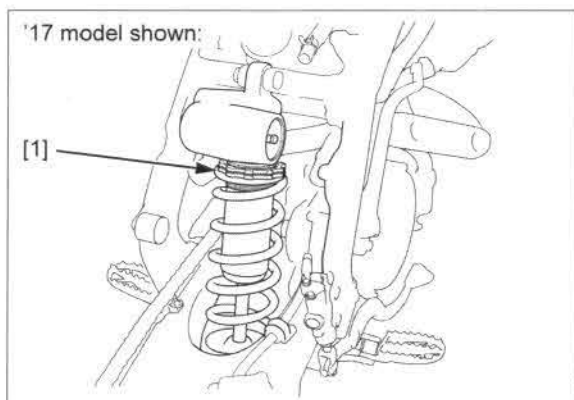
Check the entire shock absorber assembly [1] for signs of leaks, damage or loose fasteners.

Replace damaged components which cannot be repaired.

Tighten all nuts and bolts.

For shock absorber service (page 17-9).

Install the air cleaner housing (page 7-24).



SWINGARM/CUSHION LINKAGE

Remove the engine guard (page 2-6).

Raise the rear wheel off the ground by placing a workstand or equivalent under the engine.

Check for worn swingarm bearings by grabbing the rear end of the swingarm and attempting to move the swingarm side-to-side.

Replace the bearings if excessively worn (page 17-36).

Check the cushion linkage and replace any damaged needle bearings.

Install the engine guard (page 2-6).

NUTS, BOLTS, FASTENERS

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

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

WHEELS/TIRES

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

Check the front wheel and rear wheel for trueness.

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

- Front tire pressure
 - '17 model: (page 1-8)
 - After '17 model: (page 1-9)
- Rear tire pressure
 - '17 model: (page 1-9)
 - After '17 model: (page 1-10)

Remove the engine guard (page 2-6).

Raise the front wheel off the ground by placing a workstand or equivalent under the engine.

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

- For front wheel service (page 16-6).

Raise the rear wheel off the ground by placing a workstand or equivalent under the engine.

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

- For rear wheel service (page 17-6).

Inspect the wheel rims and spokes for damage.

Tighten any loose spokes [1] to the specified torque using the spoke wrench [2].

Tighten the rim locks [3] to the specified torque.

TOOLS:

FRONT:

Spoke wrench, 6.1 mm 07JMA-MR60100

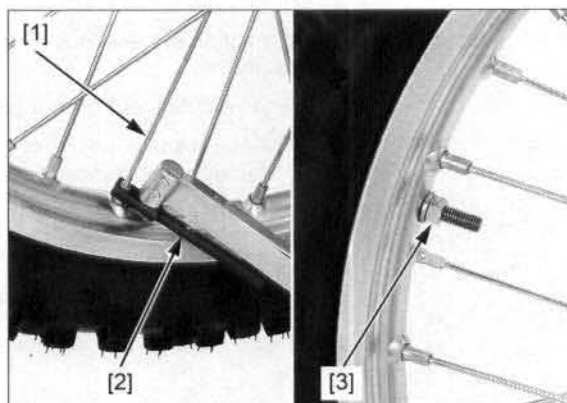
REAR:

Spoke wrench, 6.6 mm 070MA-KZ30100

TORQUE:

Spoke: 3.7 N·m (0.4 kgf·m, 2.7 lbf·ft)

Rim lock: 12 N·m (1.2 kgf·m, 9 lbf·ft)



STEERING HEAD BEARINGS

Remove the engine guard (page 2-6).

Raise the front wheel off the ground by placing a workstand or equivalent under the engine.

Be sure the control cables do not interfere with handlebar rotation.

Check that the handlebar moves freely from side-to-side.

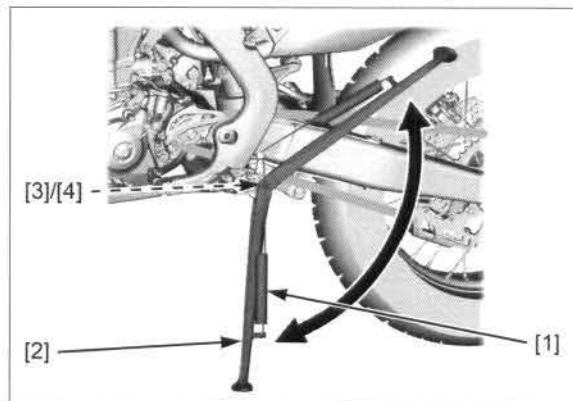
If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering head bearings (page 16-36).

SIDESTAND (CRF450RX)

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

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

Tighten the sidestand pivot bolt [3] and nut [4] to the specified torque (page 2-8).



MEMO



SERVICE INFORMATION.....	4-2	DTC TROUBLESHOOTING	4-12
PGM-FI SYSTEM LOCATION.....	4-3	MIL CIRCUIT INSPECTION	4-22
PGM-FI SYSTEM DIAGRAM	4-4	MAP SENSOR.....	4-24
PGM-FI TROUBLESHOOTING INFORMATION.....	4-6	ECT SENSOR	4-24
PGM-FI SYMPTOM TROUBLESHOOTING	4-10	IAT SENSOR	4-25
DTC INDEX.....	4-11	ECM	4-25

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 4-6). 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.
- 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 fuel injector, the fail-safe function stops the engine to protect it from damage.
- Use a digital tester for PGM-FI system inspection.
- The following color codes are used throughout this section.

Bl = Black
O = Orange

Br = Brown
P = Pink

Bu = Blue
R = Red

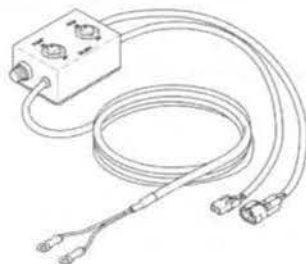
G = Green
W = White

Gr = Gray
Y = Yellow

Lg = Light green

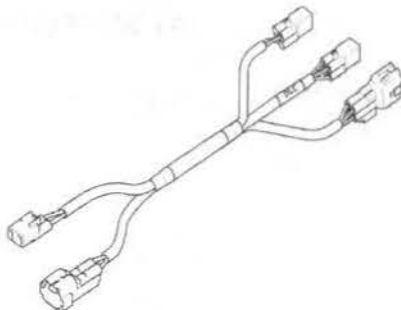
TOOLS

Battery harness
070MZ-MEN0100



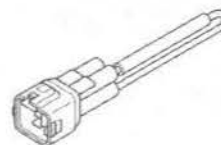
or 070MZ-MENA100 (U.S.A. only)

Battery harness adaptor
070MZ-KRN0100

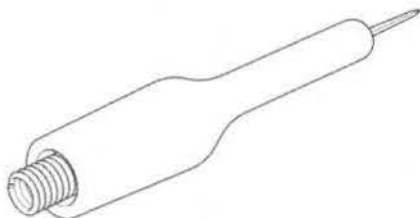


or 070MZ-KRNA100 (U.S.A. only)

SCS short connector
070PZ-ZY30100

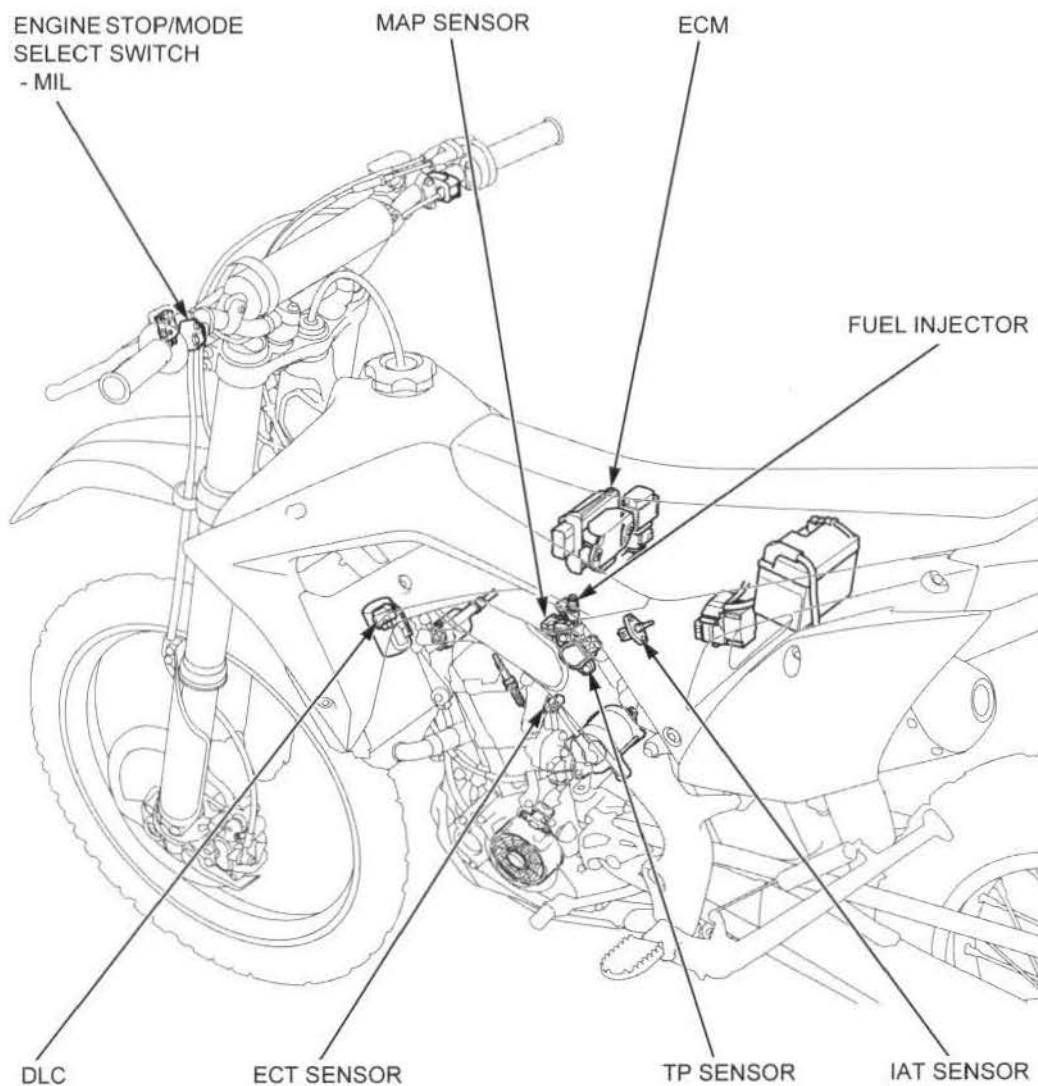


Test probe, 2 packs
07ZAJ-RDJA110

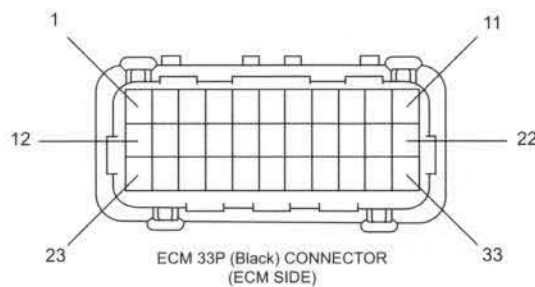


PGM-FI SYSTEM LOCATION

'17 model
CRF450RX shown:

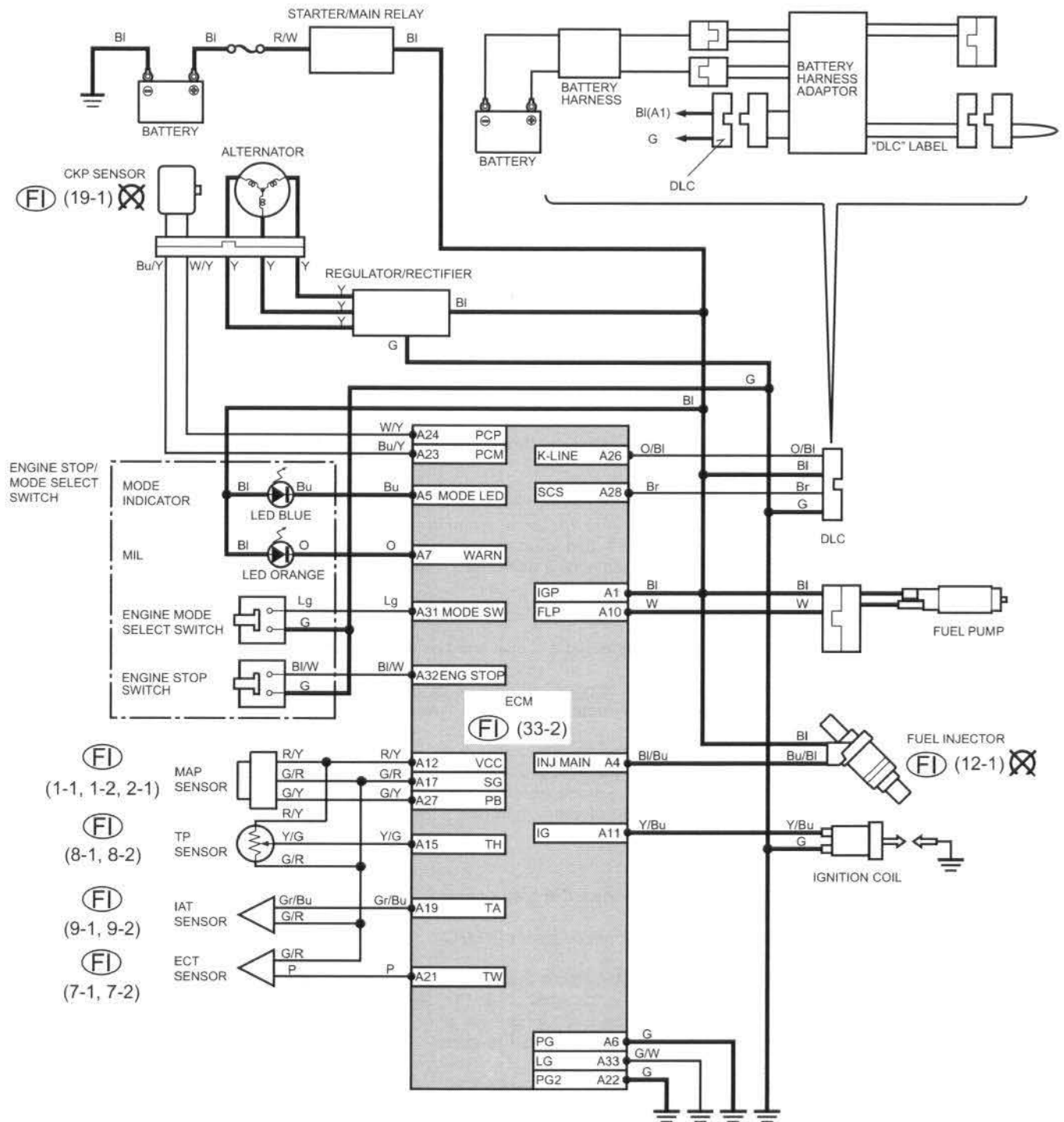


 : Short terminals for reading DTC



4-4

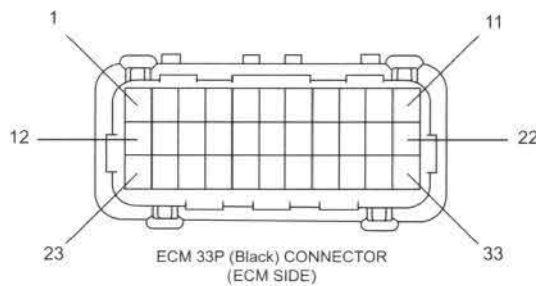
After '17 model:



(FI) ():DTC

⊗ :Engine does not start
when detecting DTC

⏏ :Short terminals for
reading DTC



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

PGM-FI TROUBLESHOOTING INFORMATION

GENERAL TROUBLESHOOTING

Intermittent Failure

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

Opens and Shorts

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

If the MIL has come on

Refer to DTC READOUT (page 4-8).

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 4-10).

SYSTEM DESCRIPTION

SELF-DIAGNOSIS SYSTEM

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

FAIL-SAFE FUNCTION

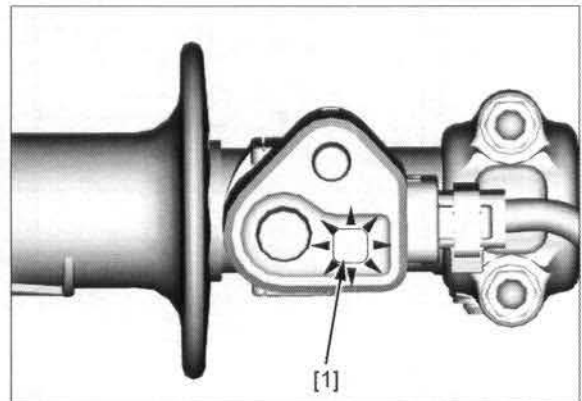
The PGM-FI system is provided with a fail-safe function to secure a minimum running capability even when there is trouble in the system. When any abnormality is detected by the self-diagnosis function, running capability is maintained by pre-programmed values in the simulated program map. When any abnormality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

DTC (Diagnostic Trouble Code)

- The DTC is composed of a main code and a sub code and it is displayed as a hyphenated number when retrieved from the ECM with the MCS.
The digits in front of the hyphen are the main code, they indicate the component of function failure.
The digits behind the hyphen are the sub code, they detail the specific symptom of the component or function failure.
For example, in the case of the TP sensor:
 - DTC 08 - 1 = (TP sensor voltage) - (lower than the specified value).
 - DTC 08 - 2 = (TP sensor voltage) - (higher than the specified value).
- The MAP, ECT, TP and IAT sensor diagnosis will be made according to the voltage output of the affected sensor.
If a failure occurs, the ECM determines the Function Failure, compares the sensor voltage output to the standard value, then outputs the corresponding DTC to the MCS.

MIL Blink Pattern

- If the MCS is not available, DTC can be read from the ECM memory by the MIL (Orange indicator) [1] blink pattern.
- The number of MIL blinks is the equivalent to the main code of the DTC (the sub code cannot be displayed by the MIL).
- The MIL will blink the current DTC, in case the ECM detects the current problem, when running the engine or connecting the 12 V battery to the DLC with special tools ("ECM" selector switch of the battery harness is ON) (page 4-7). The MIL will stay ON when the engine speed is over 4,000 rpm.
- The MIL 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, when one long blink are followed by two short blinks, the DTC is 12 (one long blink = 10 blinks, plus two short blinks).
- When the ECM stores more than one DTC, the MIL will indicate them by blinking in the order from the lowest number to highest number.
- The MIL share the indicator lamp with the mode indicator (Blue indicator). While the mode indicator is blinking (while the engine mode selecting), the MIL does not blink or light temporarily.



MIL And Mode Indicator Check

When starting the engine, the MIL will stay on for 2 seconds, then go off. And then the mode indicator indicate the current engine mode for 0.8 seconds, then go off. If the MIL/mode indicator does not come on or go off, inspect the following circuit:

- MIL (page 4-22)
- Mode indicator (page 20-3)

CURRENT DTC/FREEZE DTC

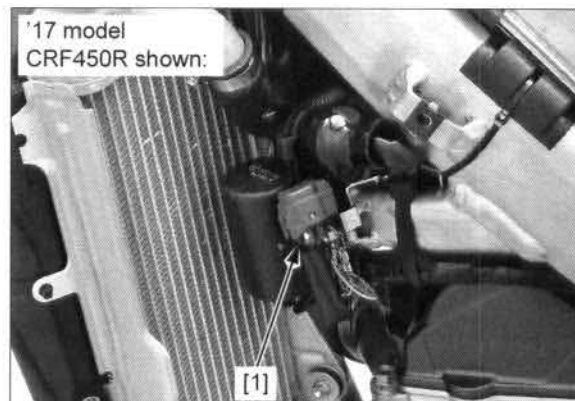
The DTC is indicated in two ways according to the failure status.

- In the case that the ECM detects a current problem, the MIL will come on and will start to blink the DTC when running the engine or connecting the 12 V battery with the special tools to the DLC ("ECM" selector switch of the battery harness is ON) (page 4-7).
- In the case that the ECM does not detect any problem at present but has a problem stored in its memory, the MIL will not light and blink. To retrieve the past problem, readout the DTC by the DTC readout procedure (page 4-8).

BATTERY HARNESS CONNECTING/OPERATION

Remove the left radiator shroud (page 2-3).

Disconnect the DLC [1].



Connect the battery harness adaptor [1] to the DLC [2].

TOOL:

Battery harness adaptor **070MZ-KRN0100 or
070MZ-KRNA100
(U.S.A. only)**

Connect the battery harness [3] to the battery harness adaptor as shown.

TOOL:

Battery harness **070MZ-MEN0100 or
070MZ-MENA100
(U.S.A. only)**

Connect the battery harness positive (+) cable and battery harness negative (-) cable to the 12 V battery [4].

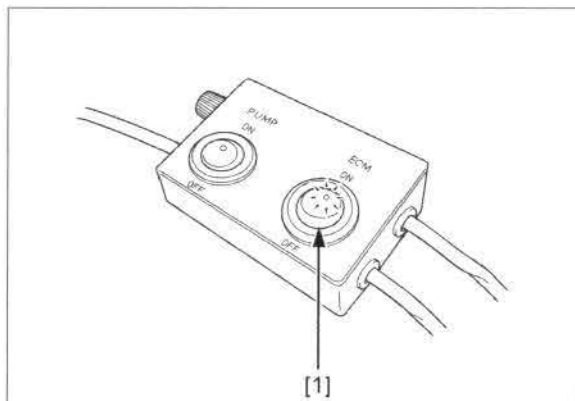
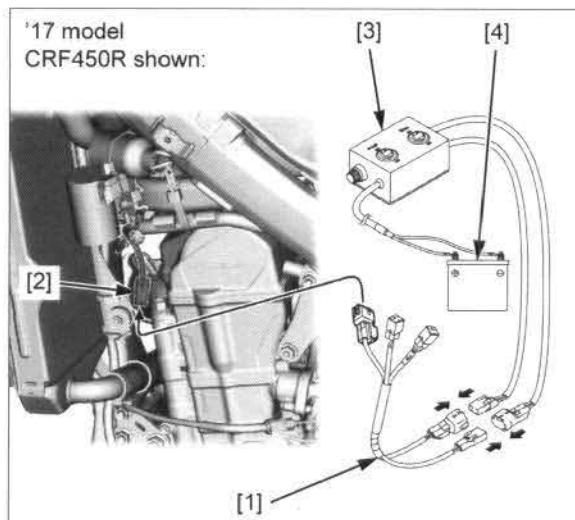
NOTE:

- Before connecting the battery harness cables to the 12 V battery, make sure the "ECM" selector switch is OFF.

Power is supplied to ECM by turning "ECM" selector switch [1] ON.

NOTE:

- "PUMP" selector switch is not used.
- Before disconnecting the battery harness from the 12 V battery, make sure the "ECM" selector switch is OFF.



MCS INFORMATION

NOTE:

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

How to connect the MCS

Stop the engine.

Connect the 12 V battery (Do not turn the "ECM" selector switch ON) (page 4-7).

Connect the MCS to the DLC labeled connector of the battery harness adaptor.

Turn the "ECM" selector switch ON, check the DTC and freeze data.

NOTE:

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

ECM RESET

The MCS can reset the ECM data including the DTC, freeze data, and some learning memory.

DTC READOUT

Start the engine and check the MIL [1].

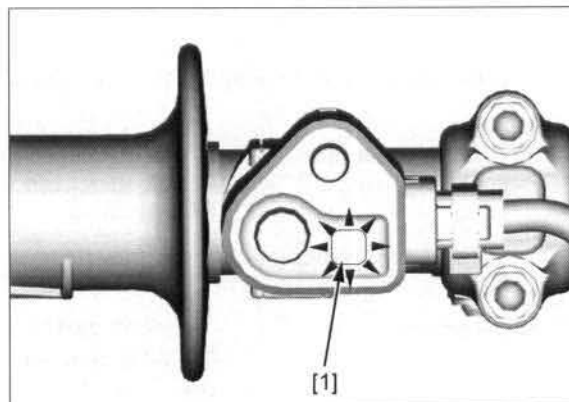
NOTE:

- When starting the engine, the MIL (Orange) will stay on for 2 seconds, then go off. And then the mode indicator (Blue) indicate the current engine mode for 0.8 seconds, then go off.

If the MIL stays on or blinks, connect the MCS to the DLC (page 4-8).

Read the DTC and/or freeze data and follow the troubleshooting index (page 4-11).

To read the DTC with the MIL blinking, refer to "Reading DTC with the MIL" (page 4-8).



Reading DTC with the MIL

Stop the engine.

Connect the 12 V battery ("ECM" selector switch is OFF) (page 4-7).

Short the DLC terminals of the battery harness adaptor ("DLC" labeled connector [1]) using the special tool.

Connection: Blue – Black

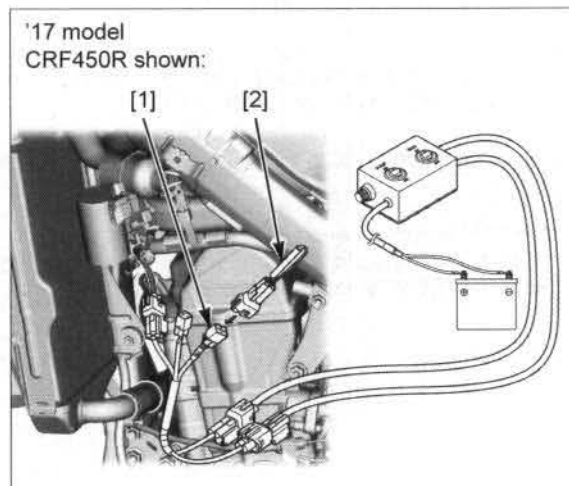
TOOL:

SCS short connector [2] 070PZ-ZY30100

Turn the "ECM" selector switch ON, note the MIL blinks and refer to the DTC index (page 4-11).

NOTE:

- If the ECM has any DTC in its memory, the MIL will start blinking.
- If the ECM does not have any DTC in its memory, the MIL will stay ON.
- When reading out the DTC, you can not change the engine mode.



ERASING DTC

Connect the battery harness (page 4-7).

Connect the MCS (page 4-8).

Erase the DTC with the MCS.

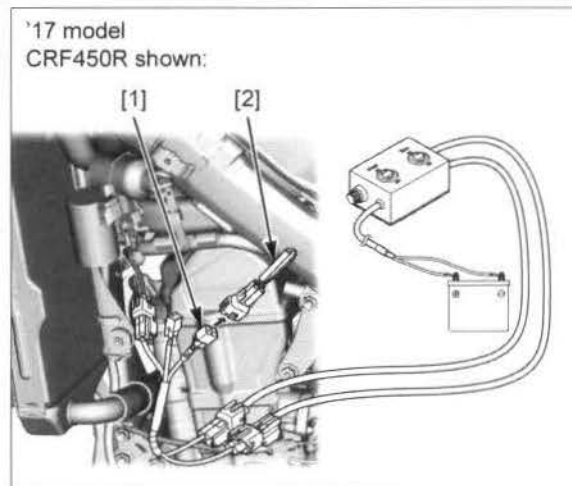
To erase the DTC without MCS, refer to the "How to clear the DTC with SCS short connector" (page 4-9).

How to clear the DTC with SCS short connector

1. Connect the battery harness (page 4-7).
2. Connect the SCS short connector to the DLC labeled connector [1] of the battery harness adaptor. (page 4-8).
3. Turn the "ECM" selector switch ON.
4. Remove the SCS short connector [2].
5. The MIL will light for approximately 5 seconds. While the MIL lights, reconnect the SCS short connector to the DLC labeled connector. The self-diagnostic memory is erased if the MIL goes off and starts blinking.

NOTE:

- The DLC labeled connector must be jumped while the MIL is illuminated. If not, the MIL will not start blinking.
- Note that the self-diagnostic memory cannot be erased if there are following cases before the MIL starts blinking.
 - Pushing the engine stop switch
 - Turning the "ECM" selector switch OFF
 - Disconnecting the 12 V battery



CIRCUIT INSPECTION

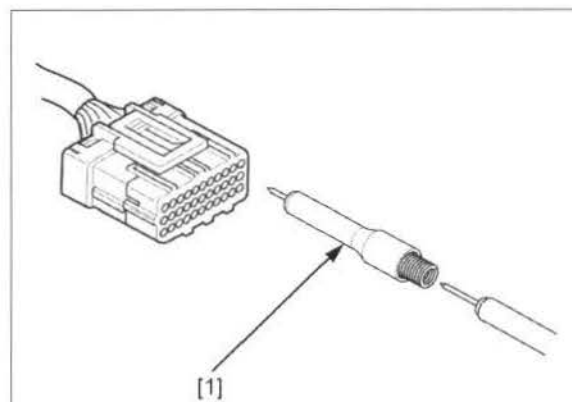
INSPECTION AT ECM CONNECTOR

- Always clean around and keep any foreign material away from the ECM 33P (Black) connector before disconnecting it.
- A faulty PGM-FI system is often related to poorly connected or corroded connections. Check all related connections before proceeding.
- In testing at ECM 33P (Black) connector (wire harness side) terminal, always use the test probe [1]. Insert the test probe into the connector terminal, then attach the digital multimeter probe to the test probe.

TOOL:

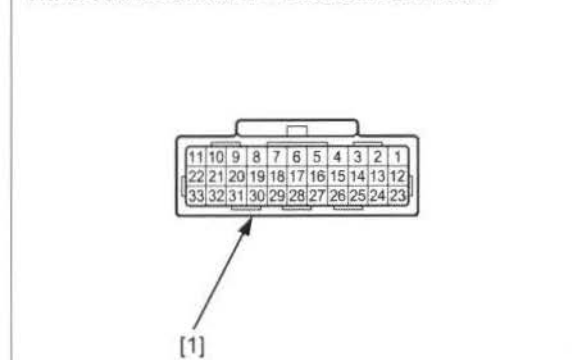
Test probe, 2 packs

07ZAJ-RDJA110



The ECM 33P (Black) connector [1] terminals (wire harness side) are numbered as shown.

WIRE HARNESS SIDE TERMINAL LAYOUT:



PGM-FI SYMPTOM TROUBLESHOOTING

When the motorcycle has one of these symptoms, check the DTC or MIL is blinking, then refer to the DTC index (page 4-11) and begin the appropriate troubleshooting procedure. If there is no DTC stored in the ECM memory, do the diagnostic procedure for the symptom, in sequence listed below, until you find the cause.

Symptom	Diagnosis procedure	Also check for
Engine cranks but won't start (No DTC and MIL blinking)	<ol style="list-style-type: none"> 1. Check the spark plug condition (page 3-11). 2. Inspect the ignition system (page 5-6). 3. Check the cylinder compression (page 10-6). 4. Inspect the fuel pump <ul style="list-style-type: none"> – CRF450R: (page 7-13) – CRF450RX: (page 7-18) 5. Low battery voltage (After '17 model) (page 19-9) 6. Faulty starter/main relay or its related circuit (After '17 model) (page 6-15) 	<ul style="list-style-type: none"> • Throttle grip is not fully closed position • Contaminated/deteriorated fuel • No fuel to fuel injector <ul style="list-style-type: none"> – Clogged fuel filter – Restricted fuel feed hose – Restricted fuel tank breather hose • Faulty fuel injector • Intake air leak • Blown main fuse 10 A (After '17 model)
Engine stalls, hard to start, rough idling	<ol style="list-style-type: none"> 1. Inspect the idle speed (page 3-17). 2. Inspect the fast idle knob (page 7-29). 3. Inspect the fuel line (page 3-6). 4. Inspect the regulator/rectifier (page 19-12). 5. Inspect the condenser ('17 model) (page 19-14). 6. Inspect the ignition system (page 5-6). 	<ul style="list-style-type: none"> • Contaminated/deteriorated fuel • Intake air leak • Restricted fuel tank breather hose • Restricted fuel feed hose • Clogged fuel filter
Afterburn when engine braking is used/	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	<ol style="list-style-type: none"> 1. Inspect the fuel line (page 3-6). 2. Inspect the air cleaner element (page 3-9). 3. Inspect the ignition system (page 5-6). 	<ul style="list-style-type: none"> • Restricted fuel tank breather hose • Clogged fuel filter • Faulty pressure regulator in the fuel pump • Faulty fuel injector • Faulty MAP sensor • Restricted MAP sensor hose
Idle speed is below specifications or fast idle too low (No DTC and MIL blinking)	<ol style="list-style-type: none"> 1. Inspect the fuel line (page 3-6). 2. Inspect the idle speed (page 3-17). 3. Inspect the ignition system (page 5-6). 	<ul style="list-style-type: none"> • Restricted fuel tank breather hose • Restricted fast idle knob circuit • Clogged fuel filter
Idle speed is above specifications or fast idle too high (No DTC and MIL blinking)	<ol style="list-style-type: none"> 1. Inspect the idle speed (page 3-17). 2. Inspect the throttle operation and freeplay (page 3-8) 3. Inspect the air cleaner element (page 3-9). 4. Inspect the fast idle knob (page 7-29). 	<ul style="list-style-type: none"> • Faulty ignition system • Intake air leak • Engine top-end problem • Air cleaner condition
MIL never comes ON at all	Inspect the MIL circuit (page 4-22).	
MIL stays ON (No DTC set)	<ol style="list-style-type: none"> 1. Inspect the DLC circuit (page 4-23). 2. Inspect the MIL circuit (page 4-23). 	

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 page
1-1	MAP sensor circuit low voltage (less than 0.215 V) • MAP sensor or its circuit malfunction	• Engine operates normally	4-12
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	4-13
2-1	MAP sensor performance problem • Loose or poor connection of the MAP sensor vacuum hose • MAP sensor malfunction	• Rough idling	4-14
7-1	ECT sensor circuit low voltage (less than 0.078 V) • ECT sensor or its circuit malfunction	• Hard to start at a low temperature	4-15
7-2	ECT sensor circuit high voltage (more than 4.922 V) • Loose or poor contact of the ECT sensor connector • ECT sensor or its circuit malfunction	• Hard to start at a low temperature	4-15
8-1	TP sensor circuit low voltage (less than 0.200 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 4.902 V) • TP sensor or its circuit malfunction	• Poor engine acceleration	4-18
9-1	IAT sensor circuit low voltage (less than 0.078 V) • IAT sensor or its circuit malfunction	• Engine operates normally	4-19
9-2	IAT sensor circuit high voltage (more than 4.922 V) • Loose or poor contact of the IAT sensor connector • IAT sensor or its circuit malfunction	• Engine operates normally	4-19
12-1	Fuel injector circuit malfunction • Loose or poor contact of the fuel injector connector • Fuel injector or its circuit malfunction	• Engine does not start • Fuel injectors, fuel pump and ignition coil shut down	4-20
33-2*	ECM EEPROM malfunction	• Rough idling • Does not hold the self-diagnosis data	4-21

* The MIL does not blink (DTC can be readout/erased only by MCS).

DTC TROUBLESHOOTING

DTC 1-1 (MAP SENSOR LOW VOLTAGE)

1. MAP Sensor System Inspection

Connect the MCS (page 4-8).
Turn the "ECM" selector switch ON.
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 "ECM" selector switch OFF.
Disconnect the MAP sensor 3P (Black) connector (page 7-24).

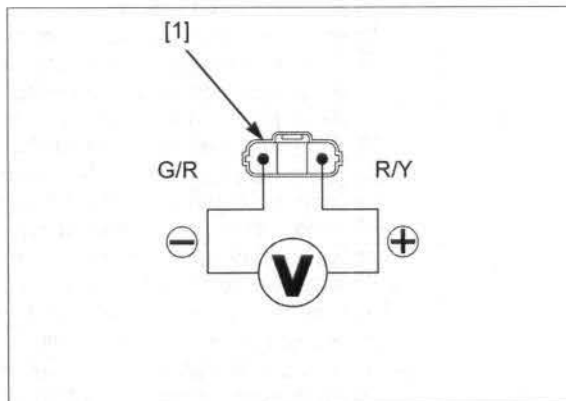
Turn the "ECM" selector switch ON.
Measure the voltage at the wire harness side 3P (Black) connector [1].

Connection: Red/yellow (+) – Green/red (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – GO TO STEP 3.



3. MAP Sensor Input Line Inspection

Turn the "ECM" selector switch OFF.
Disconnect the ECM 33P (Black) connector (page 4-25).

Check for continuity between the 33P (Black) connector [1] and 3P (Black) connector [2].

Connection: Red/yellow – Red/yellow

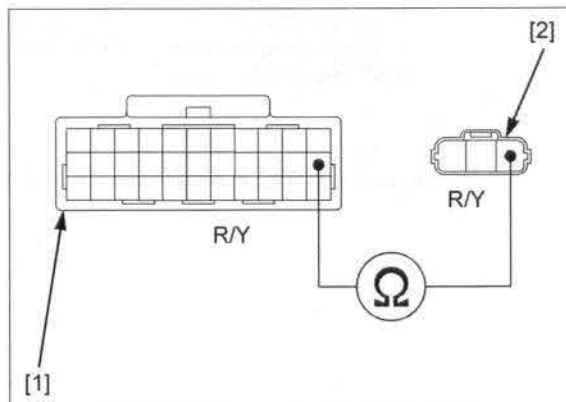
TOOL:

Test probe, 2 packs 07ZAJ-RDJA110

Is there continuity?

YES – Replace the ECM with a known good one (page 4-25) and recheck.

NO – Open circuit in the Red/yellow wire



4. MAP Sensor Output Line Short Circuit Inspection

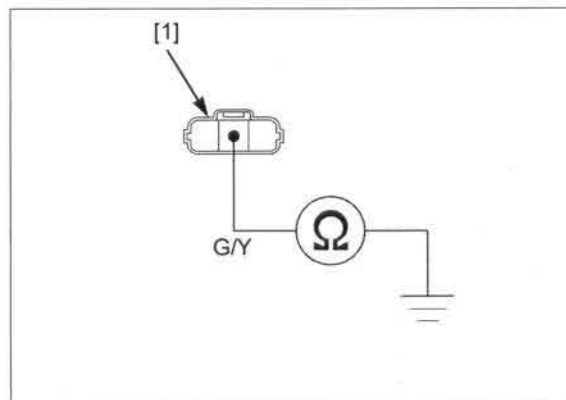
Turn the "ECM" selector switch OFF.
Check for continuity between the wire harness side 3P (Black) connector [1] and ground.

Connection: Green/yellow – Ground

Is there continuity?

YES – Short circuit in the Green/yellow wire

NO – GO TO STEP 5.



5. MAP Sensor Inspection

Connect the 33P (Black) connector.
 Replace the MAP sensor with a known good one (page 4-24).
 Erase the DTC (page 4-9).
 Turn the "ECM" selector switch ON.
 Check the MAP sensor with the MCS.

Is DTC 1-1 indicated?

- YES** – Replace the ECM with a known good one (page 4-25) and recheck.
NO – Faulty original MAP sensor

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

Connect the MCS (page 4-8).
 Turn the "ECM" selector switch ON.
 Check the MAP sensor with the MCS.

Is about 5 V indicated?

- YES** – GO TO STEP 2.
NO – Intermittent failure

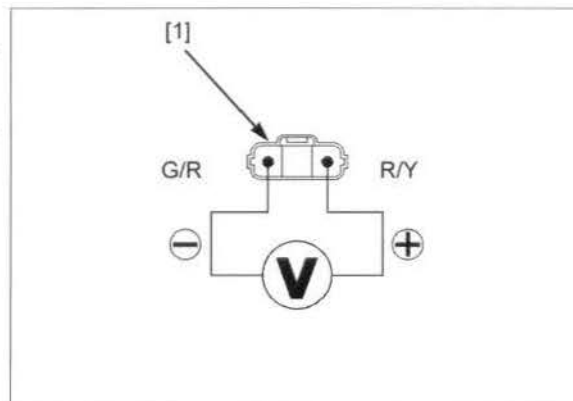
2. MAP Sensor Input Voltage Inspection

Turn the "ECM" selector switch OFF.
 Disconnect the MAP sensor 3P (Black) connector (page 7-24).
 Turn the "ECM" selector switch ON.
 Measure the voltage at the wire harness side 3P (Black) connector [1].

Connection: Red/yellow (+) – Green/red (–)

Is the voltage within 4.75 – 5.25 V?

- YES** – GO TO STEP 3.
NO – • Open circuit in the Red/yellow wire
 • Open circuit in the Green/red wire

**3. MAP Sensor System Inspection with Jumper Wire**

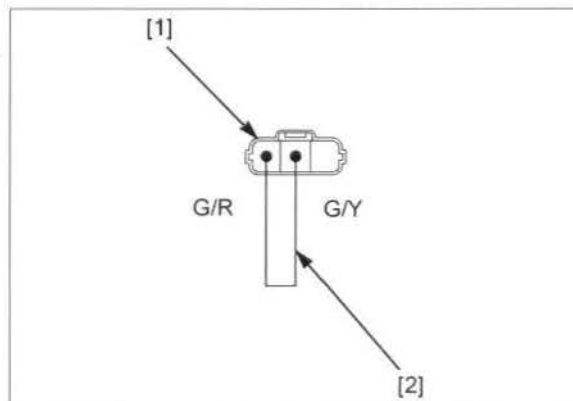
Turn the "ECM" selector switch OFF.
 Connect the wire harness side 3P (Black) connector [1] terminals with a jumper wire [2].

Connection: Green/yellow – Green/red

Turn the "ECM" selector switch ON.
 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 "ECM" selector switch OFF.
Remove the jumper wire.
Disconnect the ECM 33P (Black) connector (page 4-25).

Check for continuity between the 33P (Black) connector [1] and 3P (Black) connector [2].

Connection:

Green/yellow – Green/yellow

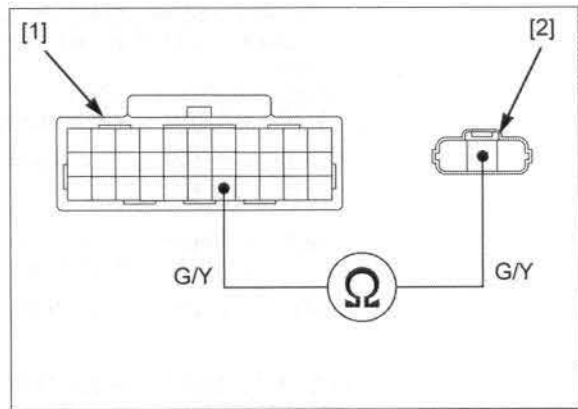
TOOL:

Test probe, 2 packs 07ZAJ-RDJA110

Is there continuity?

YES – Replace the ECM with a known good one (page 4-25) and recheck.

NO – Open circuit in the Green/yellow wire



DTC 2-1 (MAP SENSOR PERFORMANCE PROBLEM)

1. MAP Sensor System Inspection

Connect the MCS (page 4-8).
Start the engine.
Check the MAP sensor with the MCS at idle speed.

Is the reading changed?

YES – Intermittent failure

NO – GO TO STEP 2.

2. MAP Sensor Vacuum Hose Inspection

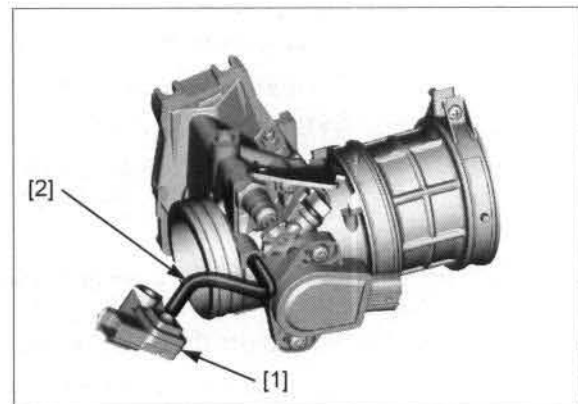
Stop the engine.
Remove the throttle body (page 7-24).
Remove the MAP sensor [1] from the throttle body without hose disconnected.

Check for connection and installation of the MAP sensor vacuum hose [2].

Is the hose connected properly?

YES – GO TO STEP 3.

NO – Correct the hose connection.



3. MAP Sensor System Inspection

Replace the MAP sensor with a known good one (page 4-24).

Install the fuel tank.

- CRF450R (page 7-11)
- CRF450RX (page 7-12)

Start the engine.
Check the MAP sensor with the MCS at idle speed.

Is the reading changed?

YES – Faulty original MAP sensor

NO – Replace the ECM with a known good one (page 4-25) and recheck.

DTC 7-1 (ECT SENSOR LOW VOLTAGE)**1. ECT Sensor System Inspection**

Connect the MCS (page 4-8).
Turn the "ECM" selector switch ON.
Check the ECT sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. ECT Sensor Inspection

Turn the "ECM" selector switch OFF.
Disconnect the ECT sensor 2P (Black) connector (page 4-24).

Turn the "ECM" selector switch ON.
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

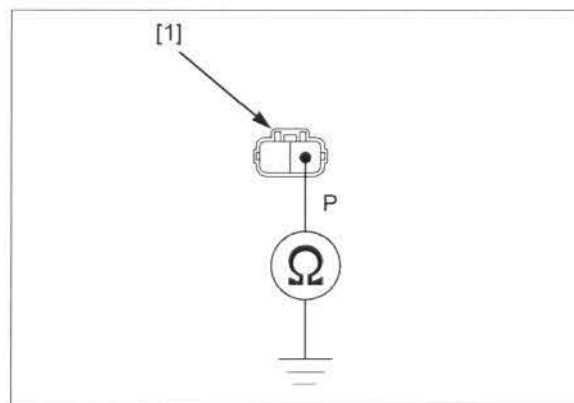
Turn the "ECM" selector switch OFF.
Disconnect the ECM 33P (Black) connector (page 4-25).
Check for continuity between the wire harness side 2P (Black) connector [1] and ground.

Connection: Pink – Ground

Is there continuity?

YES – Short circuit in the Pink wire

NO – Replace the ECM with a known good one (page 4-25) and recheck.

**DTC 7-2 (ECT SENSOR HIGH VOLTAGE)****1. ECT Sensor System Inspection**

Connect the MCS (page 4-8).
Turn the "ECM" selector switch ON.
Check the ECT sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. ECT Sensor Inspection

Turn the "ECM" selector switch OFF.
Disconnect the ECT sensor 2P (Black) connector (page 4-24).

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

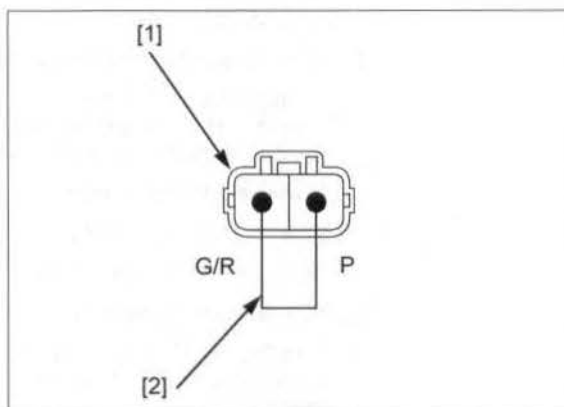
Connection: Pink – Green/red

Turn the "ECM" selector switch ON.
Check the ECT sensor with the MCS.

Is about 0 V indicated?

YES – Faulty ECT sensor.

NO – GO TO STEP 3.



3. ECT Sensor Open Circuit Inspection

Turn the "ECM" selector switch OFF.
Remove the jumper wire.

Disconnect the ECM 33P (Black) connector (page 4-25).

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

**Connection: Pink – Pink
Green/red – Green/red**

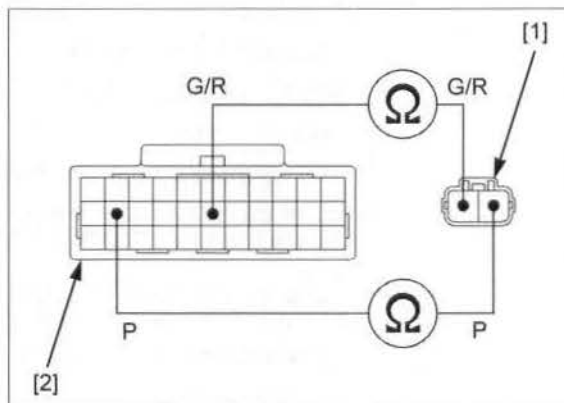
TOOL:

Test probe, 2 packs 07ZAJ-RDJA110

Is there continuity?

YES – Replace the ECM with a known good one (page 4-25) and recheck.

NO – • Open circuit in the Pink wire
• Open circuit in the Green/red wire



DTC 8-1 (TP SENSOR LOW VOLTAGE)

1. TP Sensor System Inspection

Connect the MCS (page 4-8).
Turn the "ECM" selector switch ON.
Check the TP sensor with the MCS.

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 moving the throttle 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 "ECM" selector switch OFF.
Disconnect the TP sensor 3P (Blue) connector (page 7-24).

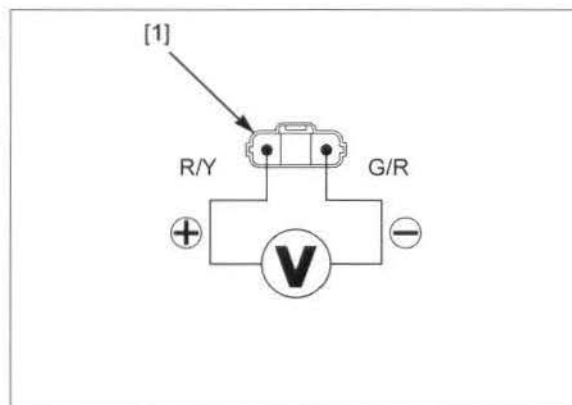
Turn the "ECM" selector switch ON.
Measure the voltage at the wire harness side 3P (Blue) connector [1].

Connection: Red/yellow (+) – Green/red (–)

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 "ECM" selector switch OFF.
Disconnect the ECM 33P (Black) connector (page 4-25).

Check for continuity between the 33P (Black) connector [1] and 3P (Blue) connector [2].

Connection: Red/yellow – Red/yellow

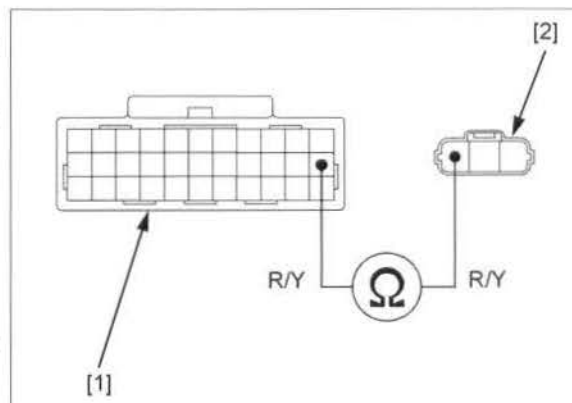
TOOL:

Test probe, 2 packs **07ZAJ-RDJA110**

Is there continuity?

YES – Replace the ECM with a known good one (page 4-25) and recheck.

NO – Open circuit in the Red/yellow wire

**5. TP Sensor Signal Line Open Circuit Inspection**

Turn the "ECM" selector switch OFF.
Disconnect the ECM 33P (Black) connector (page 4-25).

Check for continuity between the 33P (Black) connector [1] and 3P (Blue) connector [2].

Connection: Yellow/green – Yellow/green

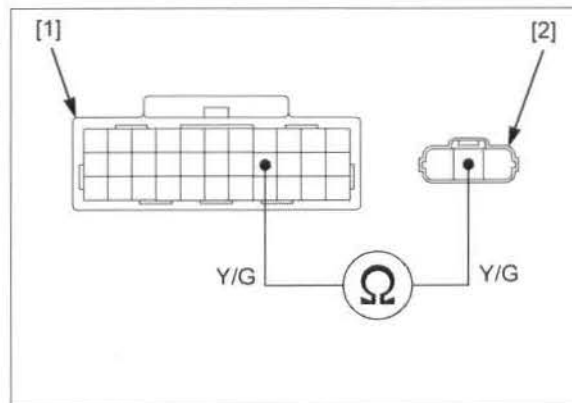
TOOL:

Test probe, 2 packs **07ZAJ-RDJA110**

Is there continuity?

YES – GO TO STEP 6.

NO – Open circuit in the Yellow/green wire

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

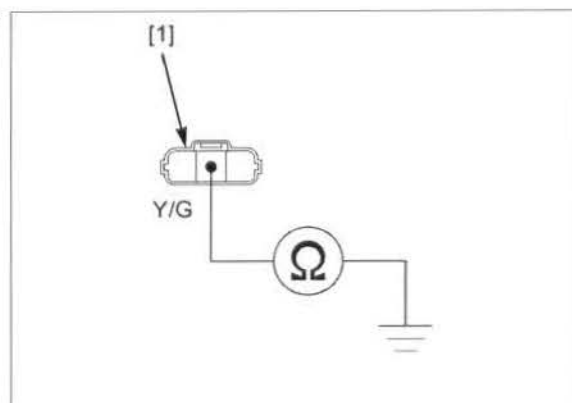
Check for continuity between the wire harness side 3P (Blue) connector [1] and ground.

Connection: Yellow/green – Ground

Is there continuity?

YES – Short circuit in the Yellow/green wire

NO – GO TO STEP 7.



7. TP Sensor Inspection

Replace the throttle body with a known good one (page 7-24).

Erase the DTC (page 4-9).

Turn the "ECM" selector switch ON.

Check the TP sensor with the MCS.

Is DTC 8-1 indicated?

YES – Replace the ECM with a known good one (page 4-25) 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

Connect the MCS (page 4-8).

Turn the "ECM" selector switch ON.

Check the TP sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 3.

NO – GO TO STEP 2.

2. TP Sensor System Inspection With Throttle Operated

Check that the TP sensor voltage increases continuously when moving the throttle from fully close 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 "ECM" selector switch OFF.

Disconnect the TP sensor 3P (Blue) connector (page 7-24).

Turn the "ECM" selector switch ON.

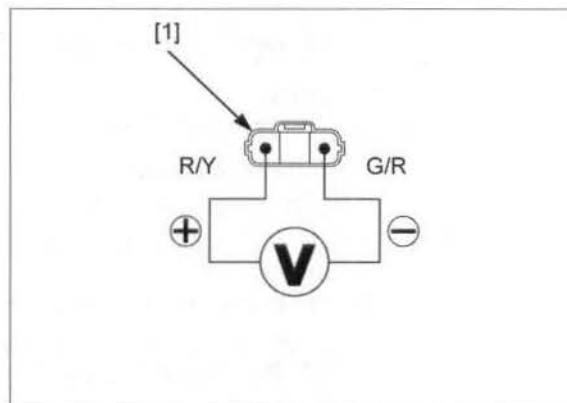
Measure the voltage at the wire harness side 3P (Blue) connector [1].

Connection: Red/yellow (+) – Green/red (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – • Open circuit in the Green/red wire
• Open circuit in the Red/yellow wire



4. TP Sensor Inspection

Replace the throttle body with a known good one (page 7-24).

Erase the DTC (page 4-9).

Turn the "ECM" selector switch ON.

Check the TP sensor with the MCS.

Is DTC 8-2 indicated?

YES – Replace the ECM with a known good one (page 4-25) and recheck.

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

DTC 9-1 (IAT SENSOR LOW VOLTAGE)**1. IAT Sensor System Inspection**

Connect the MCS (page 4-8).

Turn the "ECM" selector switch ON.

Check the IAT sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. IAT Sensor Inspection

Turn the "ECM" selector switch OFF.

Disconnect the IAT sensor 2P (Black) connector (page 7-23).

Turn the "ECM" selector switch ON.

Check the IAT sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty IAT sensor

3. IAT Sensor Output Line Short Circuit Inspection

Turn the "ECM" selector switch OFF.

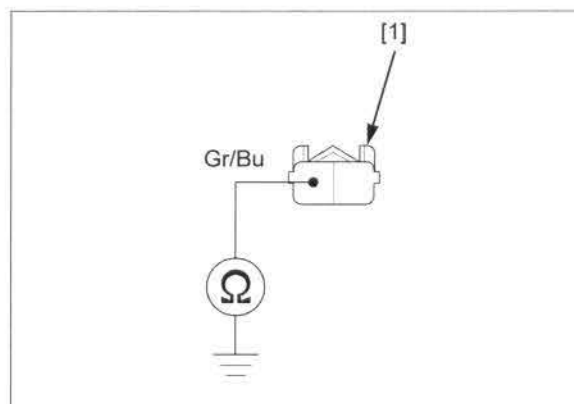
Check for continuity between the wire harness side 2P (Black) connector [1] and ground.

Connection: Gray/blue – Ground

Is there continuity?

YES – Short circuit in Gray/blue wire

NO – Replace the ECM with a known good one (page 4-25) and recheck.

**DTC 9-2 (IAT SENSOR HIGH VOLTAGE)****1. IAT Sensor System Inspection**

Connect the MCS (page 4-8).

Turn the "ECM" selector switch ON.

Check the IAT sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. IAT Sensor Inspection

Turn the "ECM" selector switch OFF.
Disconnect the IAT sensor 2P (Black) connector (page 7-23).

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

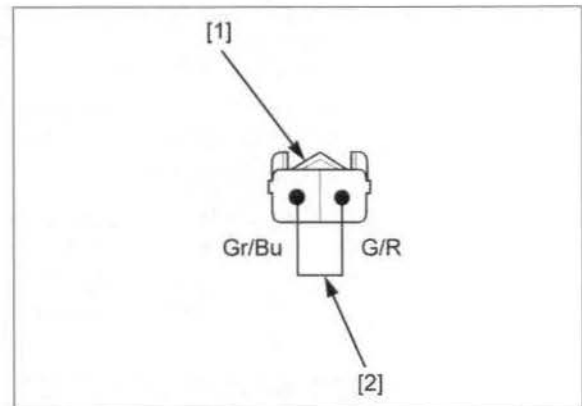
Connection: Gray/blue – Green/red

Turn the "ECM" selector switch ON.
Check the IAT sensor with the MCS.

Is about 0 V indicated?

YES – Faulty IAT sensor

NO – GO TO STEP 3.



3. IAT Sensor Line Open Circuit Inspection

Turn the "ECM" selector switch OFF.
Disconnect the ECM 33P (Black) connector (page 4-25).

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

**Connection: Gray/blue – Gray/blue
Green/red – Green/red**

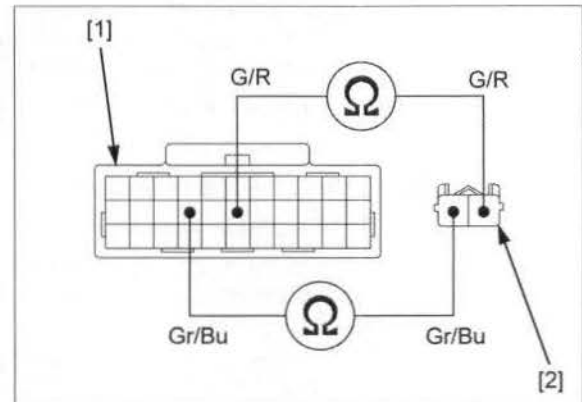
TOOL:

Test probe, 2 packs 07ZAJ-RDJA110

Is there continuity?

YES – Replace the ECM with a known good one (page 4-25) and recheck.

NO – • Open circuit in the Gray/blue wire
• Open circuit in the Green/red wire



DTC 12-1 (FUEL INJECTOR)

1. Fuel injector System Inspection

Erase the DTC (page 4-9).
Turn the "ECM" selector switch ON.
Check the fuel injector with the MCS.

Is DTC 12-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. Fuel injector Input Voltage Inspection

Turn the "ECM" selector switch OFF.
Disconnect the fuel injector 2P (Gray) connector (page 7-24).

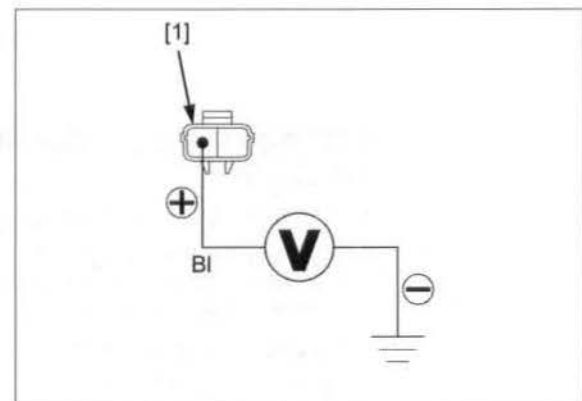
Turn the "ECM" selector switch ON.
Measure the voltage between the wire harness side 2P (Gray) connector [1] and ground.

Connection: Black (+) – Ground (–)

Is there battery voltage?

YES – GO TO STEP 3.

NO – Open circuit in the Black wire



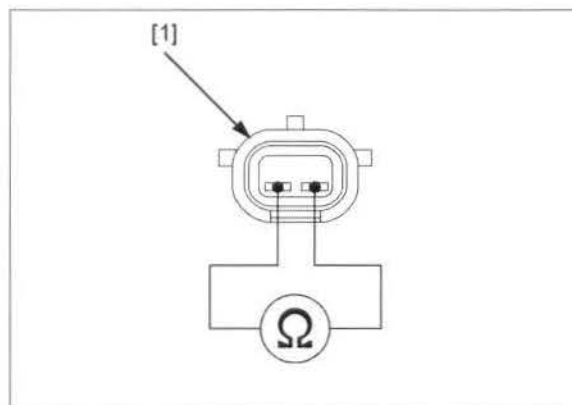
3. Fuel injector Resistance Inspection

Turn the "ECM" selector switch OFF.
Measure the resistance at the fuel injector side 2P connector [1] terminals.

Is the resistance within 11.6 – 12.4 Ω (20°C/68°F)?

YES – GO TO STEP 4.

NO – Faulty fuel injector

**4. Fuel injector Signal Line Open Circuit Inspection**

Disconnect the ECM 33P (Black) connector (page 4-25).

Check for continuity between the 33P (Black) connector [1] and 2P (Gray) connector [2].

Connection: Black/blue – Black/blue

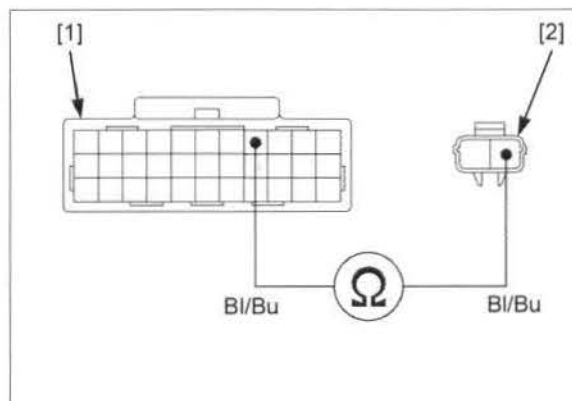
TOOL:

Test probe, 2 packs **07ZAJ-RDJA110**

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in the Black/blue wire

**5. Fuel injector Signal Line Short Circuit Inspection**

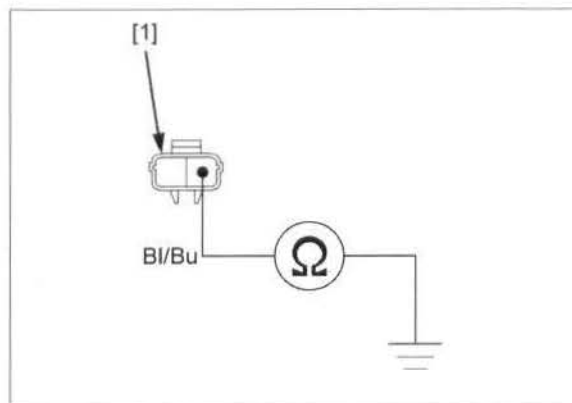
Check for continuity between the wire harness side 2P (Gray) connector [1] and ground.

Connection: Black/blue – Ground

Is there continuity?

YES – Short circuit in the Black/blue wire

NO – Replace the ECM with a known good one (page 4-25) and recheck.

**DTC 33-2 (ECM EEPROM)****1. Recheck DTC**

Erase the DTC (page 4-9).
Recheck the ECM EEPROM with the MCS.

Is DTC 33-2 indicated?

YES – Replace the ECM with a known good one (page 4-25) and recheck.

NO – Intermittent failure

MIL CIRCUIT INSPECTION

When The Engine Starts But The MIL Does Not Come On

NOTE:

- The MIL (Orange) share the indicator lamp with the mode indicator (Blue).
- For the mode indicator inspection (page 20-3).

If the engine can be started but the MIL does not come on, check for loose or poor contact on the engine stop/mode select switch 6P (Black) connector.

If the connector is connected properly, check as follows:

Stop the engine.

Disconnect the engine stop/mode select switch 6P (Black) connector (page 20-4).

Connect the 12 V battery (page 4-7).

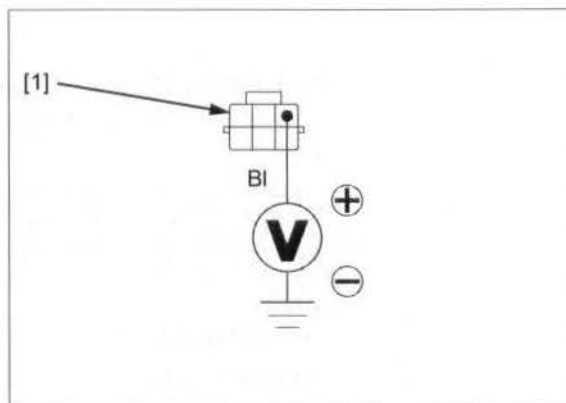
Turn the "ECM" selector switch ON.

Measure the voltage between the wire harness side 6P (Black) connector [1] and ground.

CONNECTION: Black (+) – Ground (–)

There should be battery voltage.

If no voltage, check the open circuit in the Black wire.



Turn the "ECM" selector switch OFF.

Disconnect the ECM 33P (Black) connector (page 4-25).

Connect the engine stop/mode select switch 6P (Black) connector.

Ground the wire harness side 33P (Black) connector [1] with a jumper wire [2].

CONNECTION: Orange – Ground

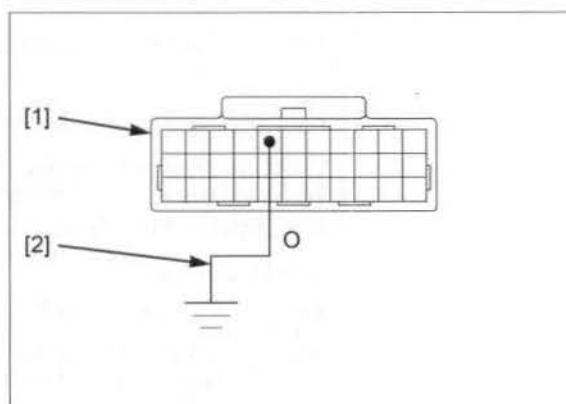
TOOL:

Test probe, 2 packs

07ZAJ-RDJA110

Turn the "ECM" selector switch ON.

- If the MIL comes on, replace the ECM with a known good one (page 4-25), and recheck.
- If the MIL does not come on, check for open circuit in the Orange wire between the engine stop/mode select switch and ECM.
If the wire is OK, replace the engine stop/mode select switch (page 20-4).



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

If the MIL does not go off within a few seconds after the engine has been started, check as follows:

Stop the engine.

Disconnect the engine stop/mode select switch 6P (Black) connector (page 20-4).

Disconnect the ECM 33P (Black) connector (page 4-25).

Check for continuity between the wire harness side 6P (Black) connector [1] and ground.

CONNECTION: Orange – Ground

- If there is continuity, check for short circuit in the orange and/or blue wire between the ECM and engine stop/mode select switch 6P (Black) connector.
- If there is no continuity, check the DLC circuit as follow:

Connect the engine stop/mode select switch 6P (Black) connector.

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

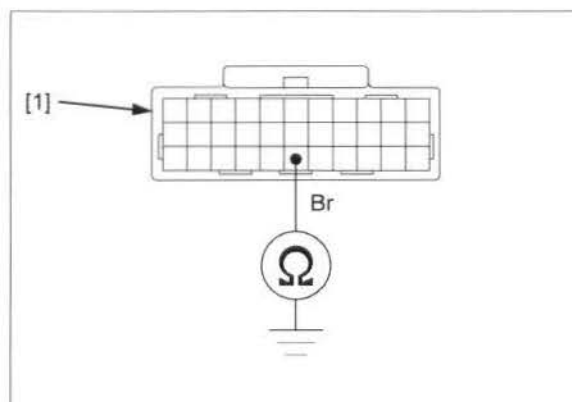
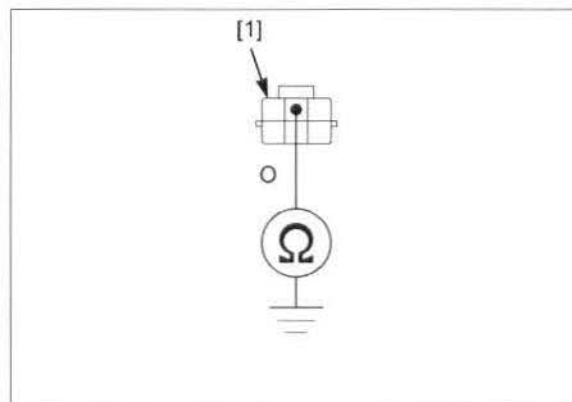
Connection: Brown – Ground

TOOL:

Test probe, 2 packs

07ZAJ-RDJA110

- If there is continuity, check for short circuit in the Brown wire between the DLC and ECM.
- If there is no continuity, replace the ECM with a known good one (page 4-25), and recheck.



MAP SENSOR

REMOVAL/INSTALLATION

Refer to the throttle body disassembly/assembly (page 7-24).

OUTPUT VOLTAGE INSPECTION

Connect the MCS (page 4-8).

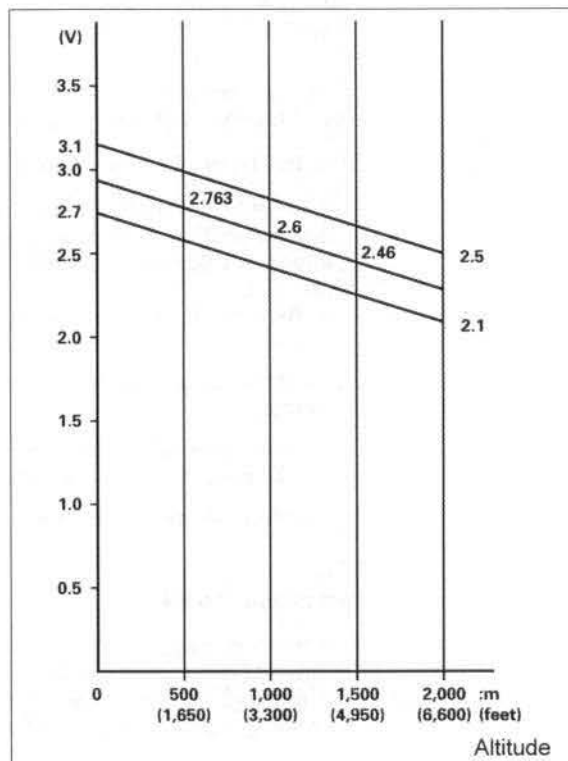
Turn the "ECM" selector switch ON.

Check the MAP sensor output voltage with the MCS.

STANDARD: 2.7 – 3.1 V (1 atm/1,013 hPa)

The MAP sensor output voltage is affected by the distance above sea level, because the output voltage is changed by atmospheric pressure.

Check the altitude and be sure that the measured voltage falls within the specified value.



ECT SENSOR

REMOVAL/INSTALLATION

Drain the coolant (page 9-5).

Release the boot [1] and disconnect the ECT sensor 2P (Black) connector [2].

Remove the ECT sensor [3] and O-ring [4].

Installation is in the reverse order of removal.

NOTE:

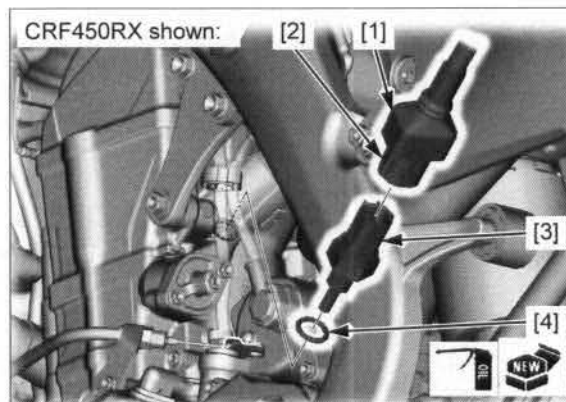
- Replace the O-ring with a new one.
- Apply engine oil to the O-ring.

TORQUE:

ECT sensor:

12 N·m (1.2 kgf·m, 9 lbf·ft)

After installation, fill and bleed the cooling system (page 9-5).



INSPECTION

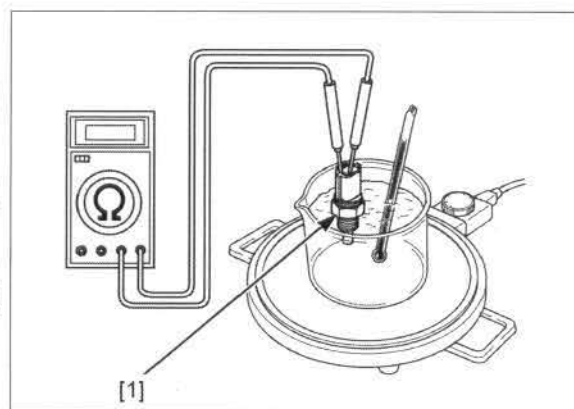
Remove the ECT sensor (page 4-24).

Suspend the ECT sensor [1] in a pan of coolant (1:1 mixture with distilled water) 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 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.

Temperature	40°C (104°F)	100°C (212°F)
Resistance	1.0 – 1.3 kΩ	0.1 – 0.2 kΩ

Replace the ECT sensor if it is out of specifications.
Install the ECT sensor (page 4-24).



IAT SENSOR

REMOVAL/INSTALLATION

Remove the air cleaner housing (page 7-23).

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

Installation is in the reverse order of removal.

NOTE:

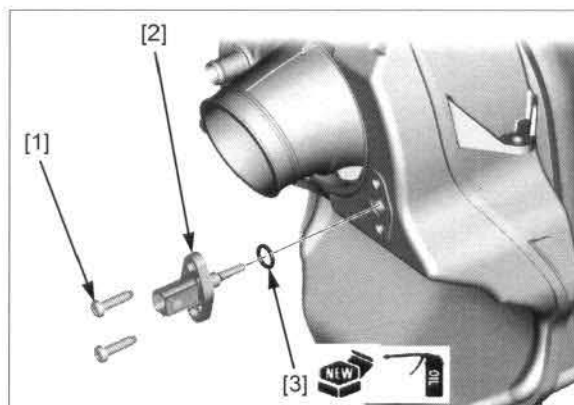
- Replace the O-ring with a new one and coat it with the engine oil.

TORQUE:

IAT sensor screw:

1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)

Install the air cleaner housing (page 7-24).



ECM

REMOVAL/INSTALLATION

NOTE:

- Before replacing the ECM, check and record the selection mode.
After the ECM reset, select the previous mode.

Remove the side cover/air cleaner housing covers (page 2-4).

Remove the seat support base mounting bolts [1], collars [2].

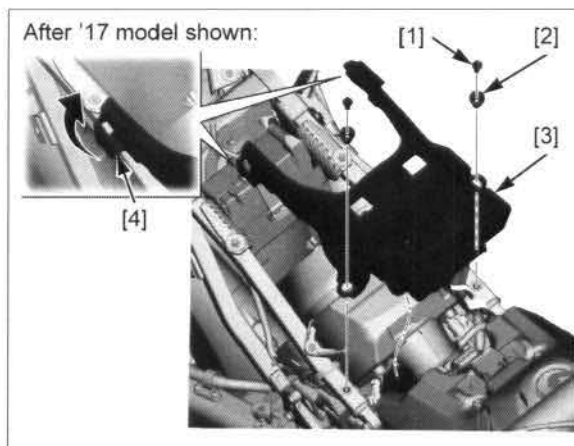
Pull up the seat support base [3] by releasing its tabs [4] from the rear frame.

'17 model
CRF450RX:

Disconnect the starter/ignition relay 8P (Gray) connector (page 6-12).

After '17 model:

Disconnect the starter/main relay 8P (Gray) connector (page 6-15).



Release the boot [1] and disconnect the ECM 33P (Black) connector [2].

Remove the ECM [3] from the ECM stay [4].

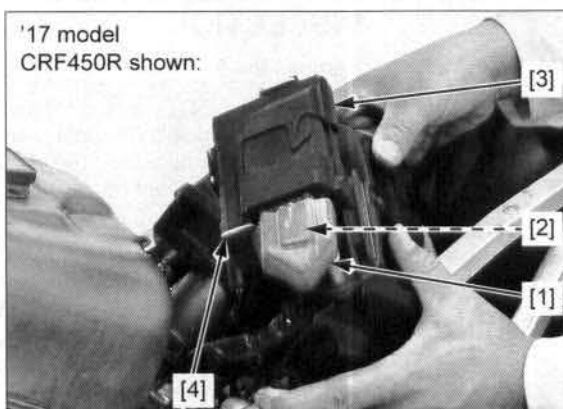
Installation is in the reverse order of removal.

NOTE:

- Tighten the seat support base mounting bolts to the specified torque.

TORQUE:

Seat support base mounting bolt:
10 N·m (1.0 kgf·m, 7 lbf·ft)



POWER/GROUND LINE INSPECTION

NOTE:

- Before starting the inspection, check the regulator/rectifier (page 19-12).

ENGINE DOES NOT START (MIL DOES NOT BLINK)

1. Engine Stop Switch Inspection

Inspect the engine stop/mode select switch (page 20-8).

Does the engine stop switch operate normally?

YES – GO TO STEP 2.

NO – Faulty engine stop switch (replace the engine stop/mode select switch as assembly)

2. ECM Power Input Line Inspection

Disconnect the ECM 33P (Black) connector (page 4-25).

Disconnect the regulator/rectifier 6P connector (page 19-11).

Check for continuity between the 33P (Black) connector [1] and 6P connector [2].

Connection: Black – Black

TOOL:

Test probe, 2 packs 07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 3.

NO – Open circuit in the Black wire

3. ECM Ground Line Inspection

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

Connection: Green – Ground (A6 and A22)
Green/white – Ground (A33)

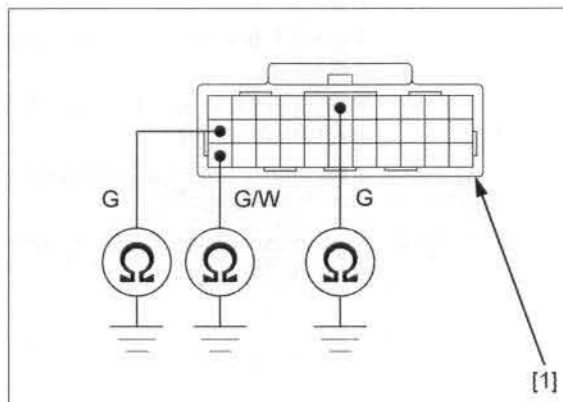
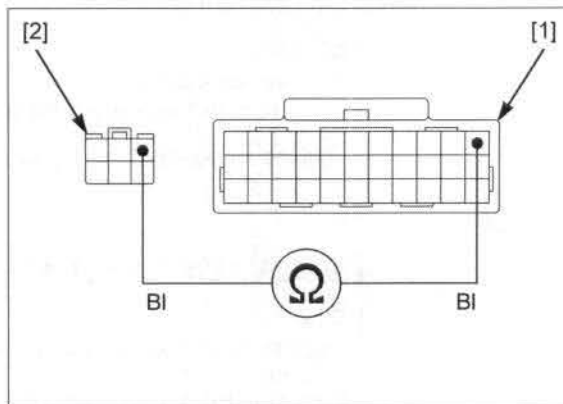
TOOL:

Test probe, 2 packs 07ZAJ-RDJA110

Is there continuity?

YES – Replace the ECM with a known good one (page 4-25), and recheck.

NO – Open circuit in the Green or Green/white wire(s)



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

SERVICE INFORMATION

GENERAL

NOTICE

- The ECM may be damaged if dropped. Also, if the connector is disconnected when current is flowing, the excessive voltage may damage the module.
- Use a 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 sequence on page 5-3.
- The ignition timing cannot be adjusted since the ECM is factory preset.
- A faulty ignition system is often related to poor connections. Check connections before proceeding.
- For engine stop/mode select switch service (page 20-3).
- The following color codes are used throughout this section.

Bl = Black

Bu = Blue

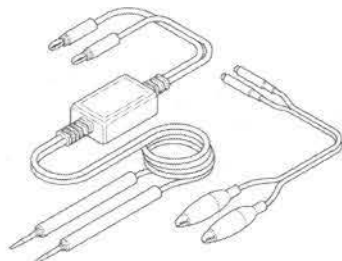
G = Green

W = White

Y = Yellow

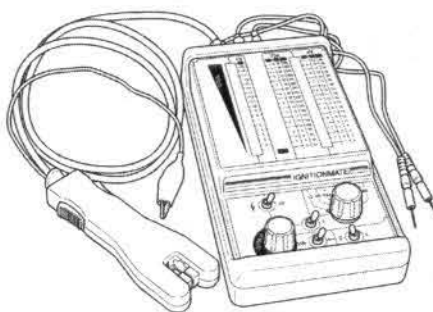
TOOLS

Peak voltage adaptor
07HGJ-0020100

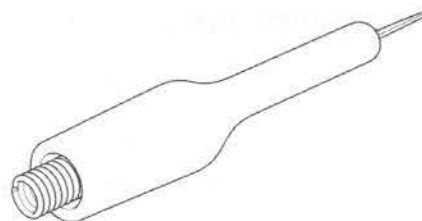


with commercially available digital
multimeter (impedance 10 M Ω /DCV
minimum)

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



Test probe, 2 packs
07ZAJ-RDJA110



TROUBLESHOOTING

- Inspect the following before diagnosing the system:
 - Loose spark plug cap, spark plug wire connection, or spark plug
 - Loose ignition coil connectors
 - Water got into the spark plug cap (leaking the ignition coil secondary voltage)
 - Starter motor or its related circuit malfunction (Except '17 model CRF450R) (page 6-3).
 - Battery or its related circuit malfunction (Except '17 model CRF450R) (page 19-4).
 - Blown main fuse 10 A (After '17 model)
 - Faulty starter/main relay or its related circuit malfunction (After '17 model) (page 6-15).

No spark at plug

Unusual condition		Probable cause (Check in numerical order)
Ignition coil primary voltage	Low peak voltage.	1. Incorrect peak voltage adaptor connections (System is normal if measured voltage is over the specifications with reverse connection). 2. The multimeter impedance is too low; below 10 M Ω /DCV. 3. Cranking speed is too slow. – Operating force of the kickstarter is weak ('17 model) – Battery under charged (Except '17 model CRF450R) 4. 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). 5. Poorly connected connectors or an open circuit in the ignition system. 6. Faulty alternator coil (measure the alternator coil resistance). 7. Faulty ignition coil. 8. Faulty regulator/rectifier 9. Faulty condenser ('17 model) 10. Faulty ECM (in case when above No. 1 – 9 are normal).
	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. Short circuit in the engine stop switch wire. 3. Loose or poorly connected ECM 33P (Black) connector. 4. An open circuit or loose connection in the ignition coil ground circuit (Green wire). 5. Faulty alternator coil (measure the alternator coil resistance). 6. Faulty CKP sensor (measure the peak voltage). 7. Faulty peak voltage adaptor. 8. Faulty regulator/rectifier 9. Faulty condenser ('17 model) 10. Faulty ECM (in case when above No. 1 through 9 are normal).
	Peak voltage is normal, but no spark jumps at plug.	1. Faulty spark plug or leaking ignition coil secondary current amperage. 2. Faulty ignition coil.
CKP sensor	Low peak voltage.	1. The multimeter impedance is too low; below 10 M Ω /DCV. 2. Cranking speed is too low. – Operating force of the kickstarter is weak ('17 model) – Battery under charged (Except '17 model CRF450R) 3. The sampling timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the standard voltage at least once). 4. Faulty CKP sensor (in case when above No. 1 – 3 are normal).
	No peak voltage.	1. Faulty peak voltage adaptor. 2. Faulty CKP sensor.

COMPONENT LOCATION

'17 model
CRF450RX shown:

ENGINE STOP/MODE
SELECT SWITCH

IGNITION COIL

ECM

MAIN FUSE
10 A

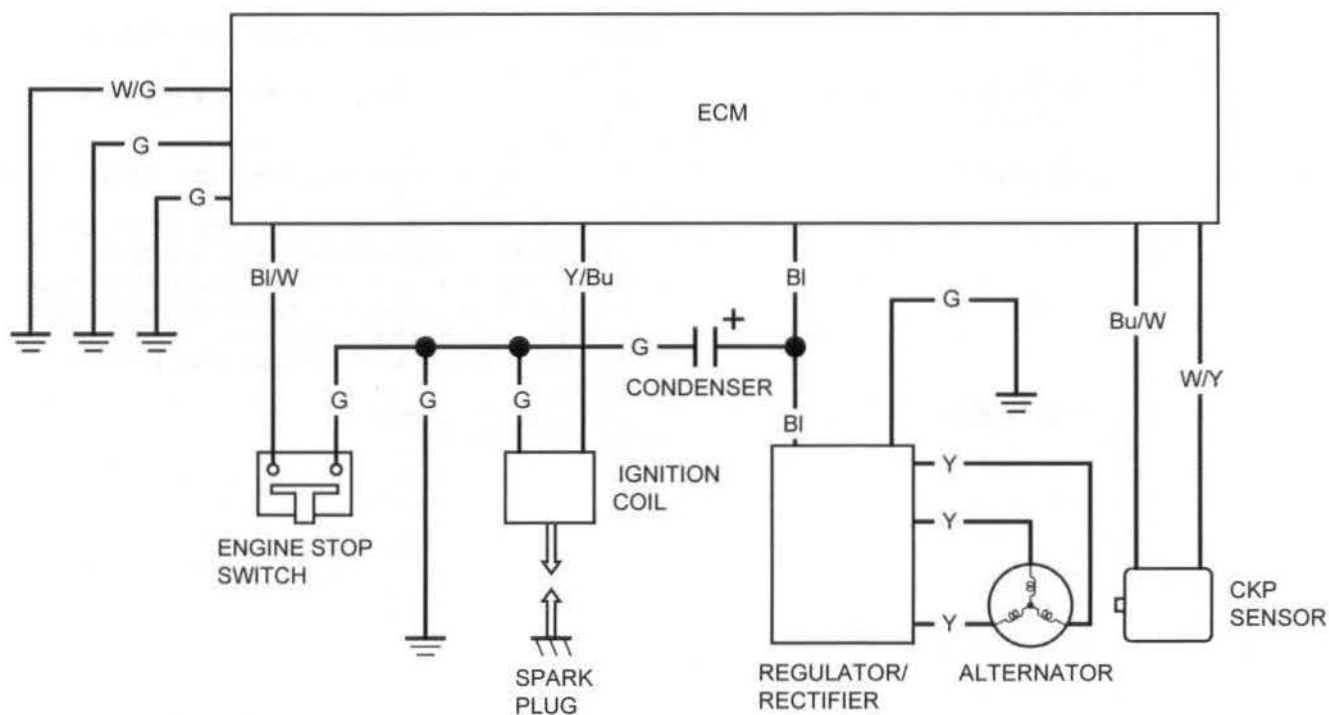
SPARK PLUG

ALTERNATOR

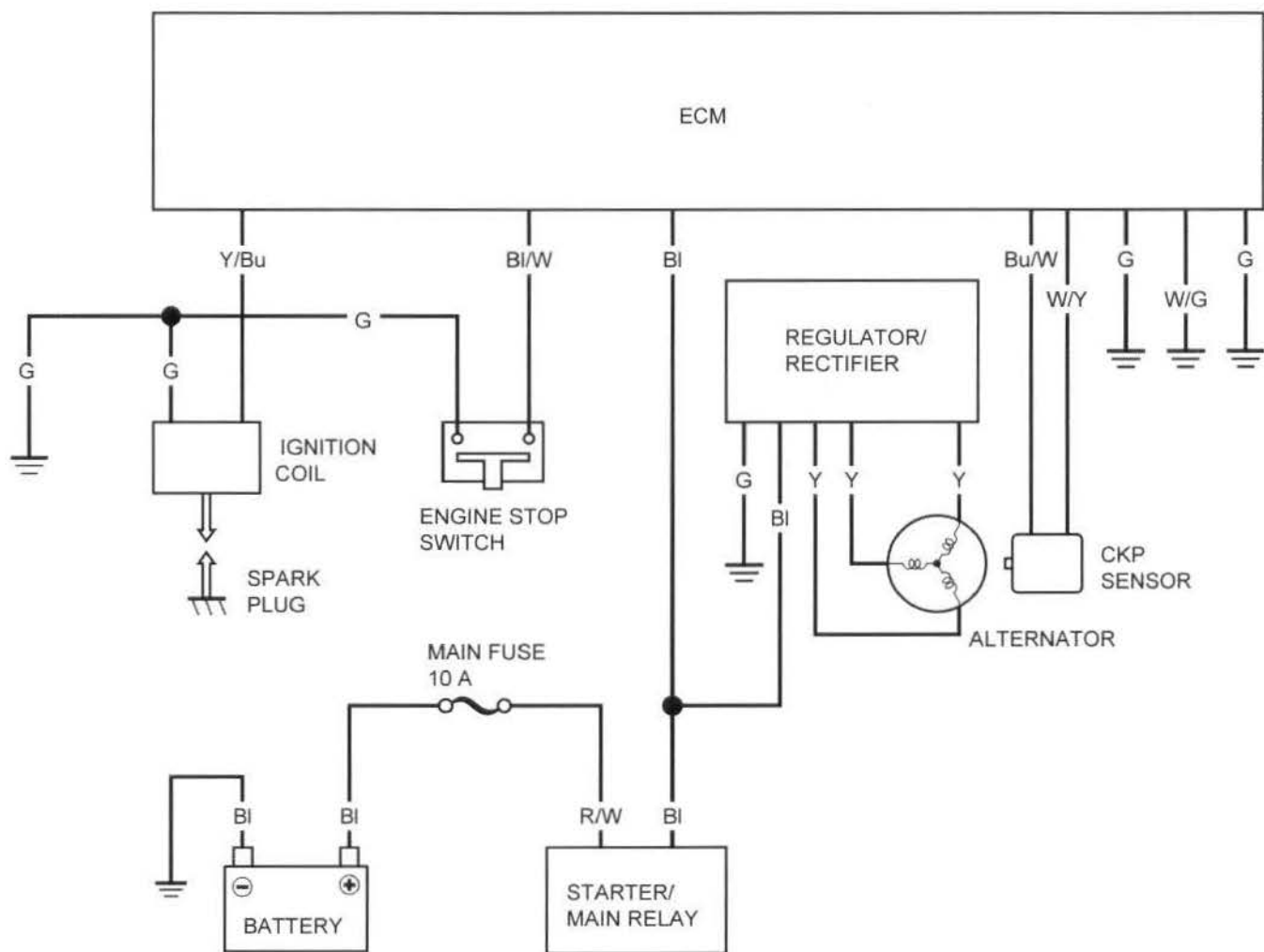
CKP SENSOR

SYSTEM DIAGRAM

'17 model:



After '17 model:



IGNITION SYSTEM INSPECTION

NOTE:

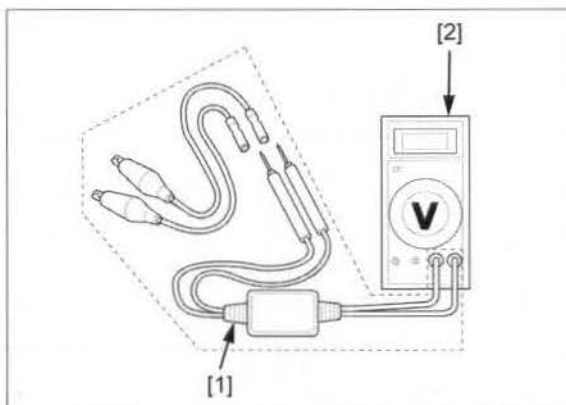
- If there is no spark at the plug, check all connections for loose or poor contact before measuring each peak voltage.
- Use a commercially available digital multimeter with an impedance of 10 M Ω /DCV minimum.
- The display value differs depending upon the internal impedance of the multimeter.
- If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

Connect the peak voltage tester (IgnitionMate, U.S.A. only) or peak voltage adaptor [1] to the digital multimeter [2].

TOOLS:

IgnitionMate peak voltage tester MTP07-0286
(U.S.A. only) or
Peak voltage adaptor 07HGJ-0020100
(not available in
U.S.A.)

with commercially available digital multimeter
(impedance 10 M Ω /DCV minimum)



IGNITION COIL PRIMARY PEAK VOLTAGE

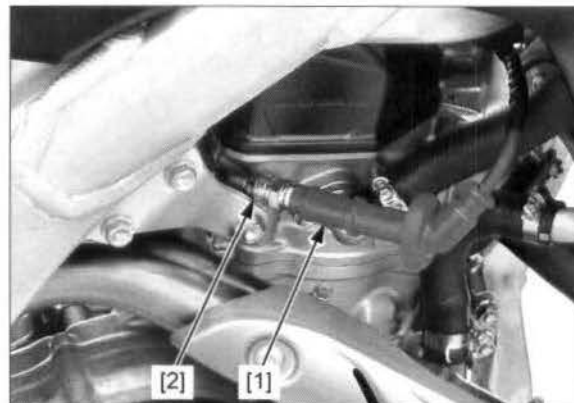
NOTE:

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

Disconnect the fuel pump 5P connector (page 7-5).

Disconnect the spark plug cap [1].

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



Do not disconnect the ignition coil primary wire connectors.

Connect the peak voltage tester (IgnitionMate, U.S.A. only) or peak voltage adaptor to the ignition coil primary terminal [1] and ground [2].

TOOLS:

IgnitionMate peak voltage tester MTP07-0286
(U.S.A. only) or
Peak voltage adaptor 07HGJ-0020100
(not available in U.S.A.)

with commercially available digital multimeter
(impedance 10 MΩ/DCV minimum)

CONNECTION: Green (+) – Ground (–)

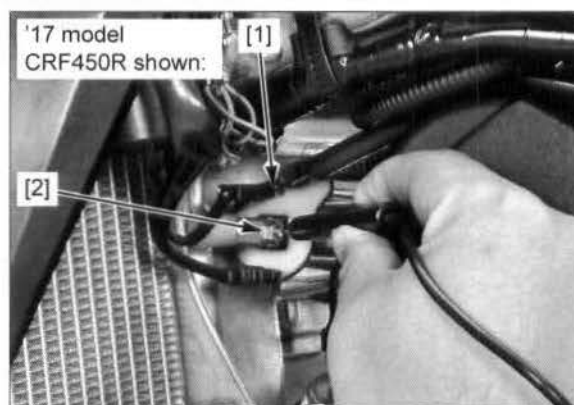
Shift the transmission into neutral.

Crank the engine and measure the ignition coil primary peak voltage.

STANDARD: 400 V minimum

If there is no voltage, check the continuity in the Yellow/blue (between the ignition coil and ECM) and Green (ground line) wires.

If the wires are good, follow the checks described in the troubleshooting chart (page 5-3).



CKP SENSOR PEAK VOLTAGE

NOTE:

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

Disconnect the ECM 33P (Black) connector (page 4-25).

Connect the peak voltage tester [1] (IgnitionMate, U.S.A. only) or peak voltage adaptor probes to the wire harness side 33P (Black) connector [2] terminals.

TOOLS:

IgnitionMate peak voltage tester MTP07-0286
(U.S.A. only) or
Peak voltage adaptor 07HGJ-0020100
(not available in U.S.A.)

with commercially available digital multimeter
(impedance 10 MΩ/DCV minimum)

Test probe, 2 packs 07ZAJ-RDJA110

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

Crank the engine and measure the peak voltage.

PEAK VOLTAGE: 0.7 V minimum

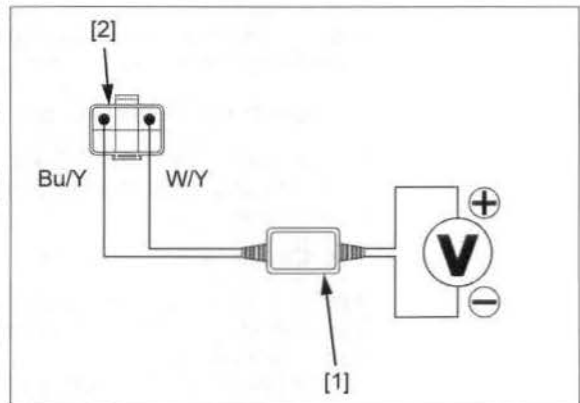
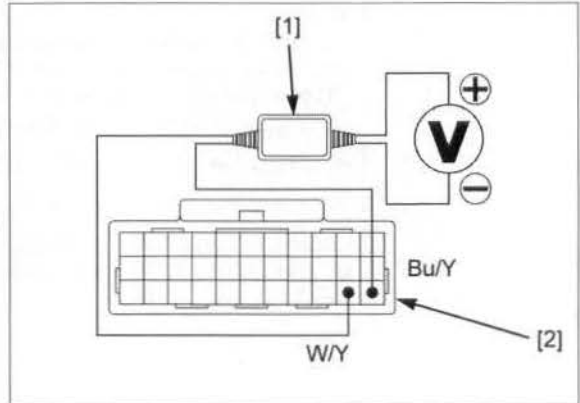
If the peak voltage at the 33P (Black) connector measured is abnormal, recheck the alternator/CKP sensor 6P (Black) connector side.

Disconnect the alternator/CKP sensor 6P (Black) connector (page 13-4).

Connect the peak voltage tester [1] to the sensor side 6P (Black) connector [2] terminals and recheck the peak voltage.

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

- If the peak voltage at the 33P (Black) connector is abnormal and peak voltage at the 6P (Black) connector is normal, the wire harness has an open or short circuit or loose connection.
- If the peak voltage is abnormal at both connectors, follow the checks described in the troubleshooting chart (page 5-3).



IGNITION TIMING

NOTE:

- The ignition timing is factory preset and only needs to be checked when an electrical system component is replaced.

Warm up the engine to normal operating temperature. Stop the engine and remove the crankshaft hole cap (page 3-12).

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

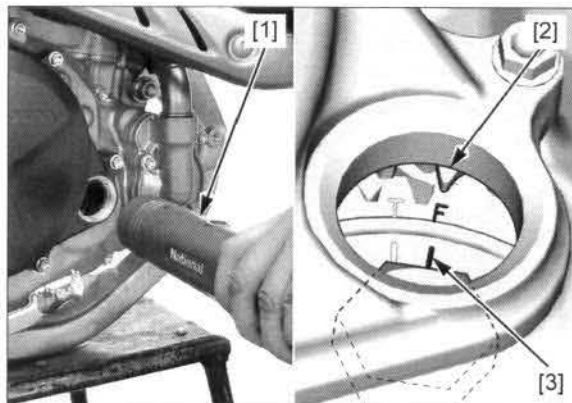
Attach a tachometer according to its manufacture's instructions.

Read the instruction for timing light operation.

Start the engine and hold it at $2,000 \pm 100$ rpm while pointing the timing light towards the index mark [2].

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

Install the crankshaft hole cap (page 3-14).



IGNITION COIL

REMOVAL/INSTALLATION

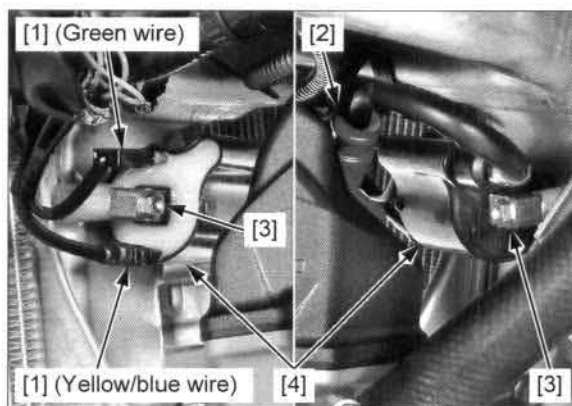
Hang the fuel tank to the left side (page 3-6).

Disconnect the ignition coil primary wire connectors [1].

Disconnect the spark plug cap [2].

Remove the bolts [3] and ignition coil [4].

Installation is in the reverse order of removal.



INSPECTION

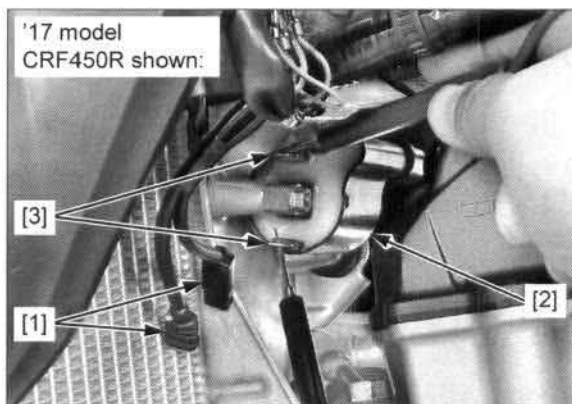
Remove the spark plug cap (page 3-11).

Disconnect the ignition coil primary wire connectors [1].

Measure the ignition coil [2] resistance between the primary terminals [3].

STANDARD: $0.7 - 0.9 \Omega$ ($20^{\circ}\text{C}/68^{\circ}\text{F}$)

If the resistance is out of specification, replace the ignition coil.



MEMO

6. ELECTRIC STARTER (Except '17 model CRF450R)

SERVICE INFORMATION.....	6-2	STARTER MOTOR.....	6-7
TROUBLESHOOTING	6-3	STARTER RELAY SWITCH	6-10
COMPONENT LOCATION.....	6-4	STARTER/IGNITION RELAY ('17 model CRF450RX).....	6-12
SYSTEM DIAGRAM	6-5	STARTER/MAIN RELAY (After '17 model)	6-15

SERVICE INFORMATION

GENERAL

NOTICE

If 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 in the frame.
- Always disconnect the battery negative (–) cable at the battery 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 checking the electric starter system, always follow the steps in the troubleshooting (page 6-3).
- Refer to the following components information.
 - Engine stop switch (engine stop/mode select switch) (page 20-3)
 - Starter switch (page 20-11)
 - Clutch switch (page 20-9)
 - Starter clutch (page 12-23)
- The '17 model CRF450RX is equipped with the starter/ignition relay that is composed of the starter relay and ignition relay (page 6-5).
- The After '17 model CRF450R and CRF450RX is equipped with the starter/main relay that is composed of the starter relay, main relay and diode (page 6-6).
- The following color codes are used throughout this section.

Bl = Black

G = Green

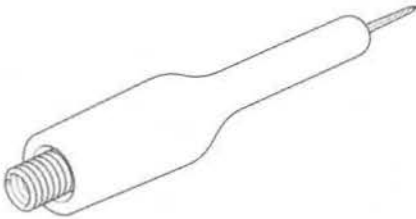
R = Red

W = White

Y = Yellow

TOOL

Test probe, 2 packs
07ZAJ-RDJA110



TROUBLESHOOTING

'17 model CRF450RX:

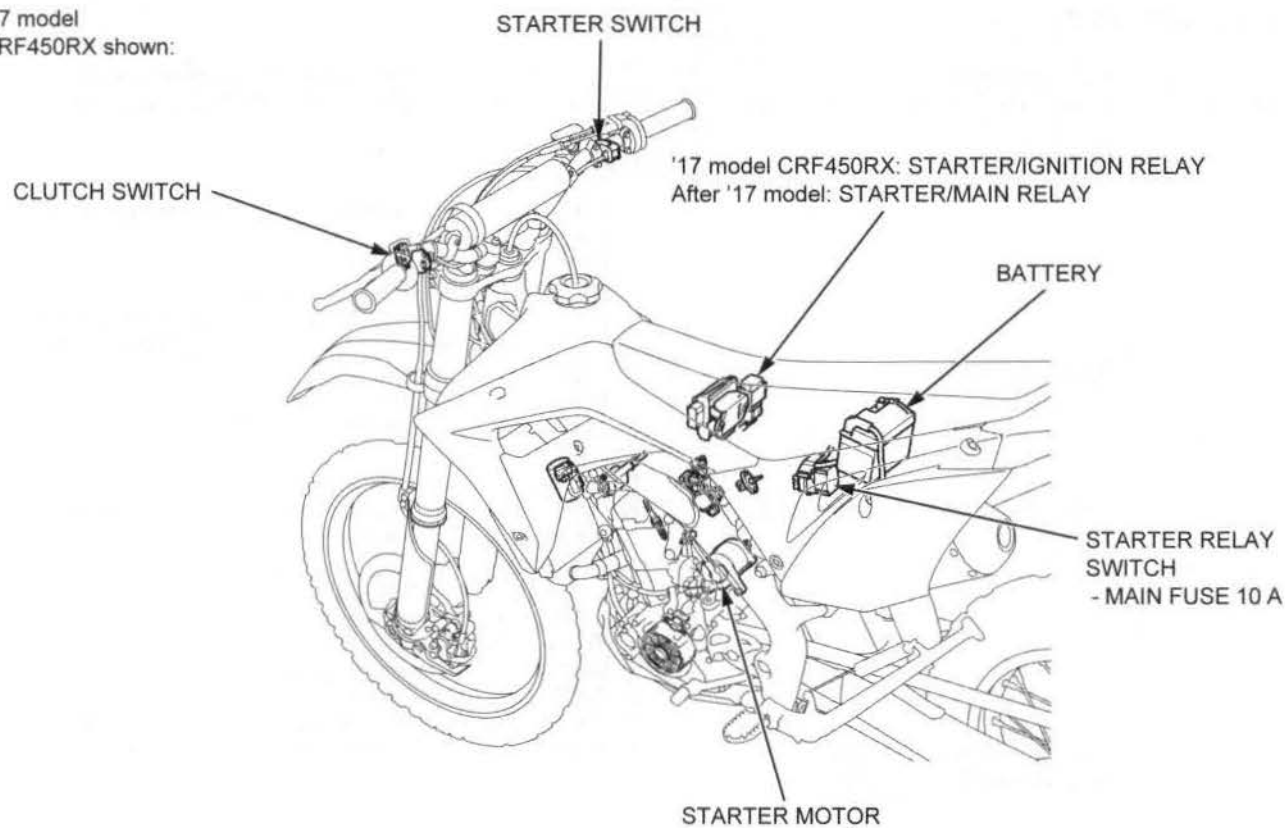
	Unusual condition	Probable cause (Check in numerical order)
Starter motor	Starter motor does not turn	<ol style="list-style-type: none"> 1. Loose or poor contact on the related connectors and terminals 2. Blown MAIN fuse 10 A 3. Weak battery 4. Faulty starter relay switch or open circuit in the related wires 5. Faulty starter motor 6. Open circuit in the starter motor cable 7. Faulty starter switch or open circuit in the related wires 8. Faulty clutch switch or open circuit in the related wires
	Starter motor turns slowly	<ol style="list-style-type: none"> 1. Low battery voltage 2. Poorly connected battery 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	<ol style="list-style-type: none"> 1. Open circuit in the starter/ignition relay related wires. 2. Faulty starter/ignition relay 3. Starter motor is running backwards <ul style="list-style-type: none"> – Case assembled improperly – Terminals connected improperly 4. Faulty starter clutch 5. Damaged or faulty starter gear train 6. Faulty CKP sensor or open circuit in the related wires 7. Faulty ECM (in case when above No. 1 – 6 are normal).
	Starter relay switch "Clicks", but engine does not turn over	<ol style="list-style-type: none"> 1. Crankshaft does not turn due to engine problems

After '17 model:

	Unusual condition	Probable cause (Check in numerical order)
Starter motor	Starter motor does not turn	<ol style="list-style-type: none"> 1. Loose or poor contact on the related connectors and terminals 2. Blown MAIN fuse 10 A 3. Weak battery 4. Faulty starter relay switch or open circuit in the related wires 5. Faulty starter motor 6. Open circuit in the starter motor cable 7. Faulty starter switch or open circuit in the related wires 8. Faulty clutch switch or open circuit in the related wires 9. Faulty starter/main relay or open circuit in the related wires 10. Faulty ECM (in case when above No. 1 – 9 are normal).
	Starter motor turns slowly	<ol style="list-style-type: none"> 1. Low battery voltage 2. Poorly connected battery 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	<ol style="list-style-type: none"> 1. Throttle grip is not fully closed position 2. Starter motor is running backwards <ul style="list-style-type: none"> – Case assembled improperly – Terminals connected improperly 3. Faulty starter clutch 4. Damaged or faulty starter gear train 5. Faulty CKP sensor or open circuit in the related wires 6. Faulty ECM (in case when above No. 1 – 5 are normal).
	Starter relay switch "Clicks", but engine does not turn over	<ol style="list-style-type: none"> 1. Crankshaft does not turn due to engine problems

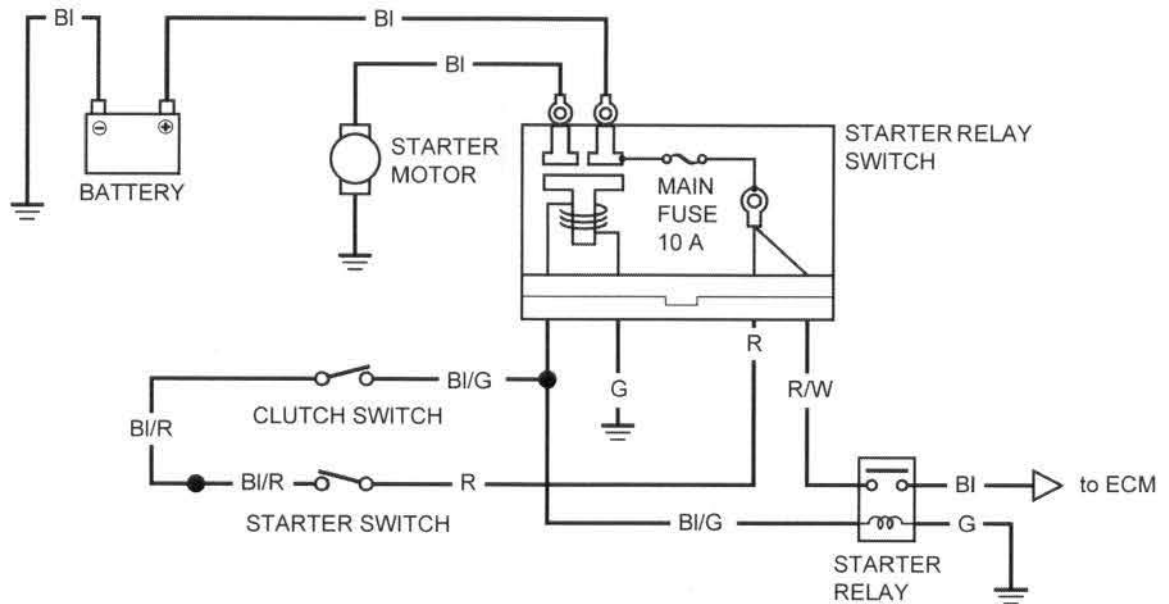
COMPONENT LOCATION

'17 model
CRF450RX shown:



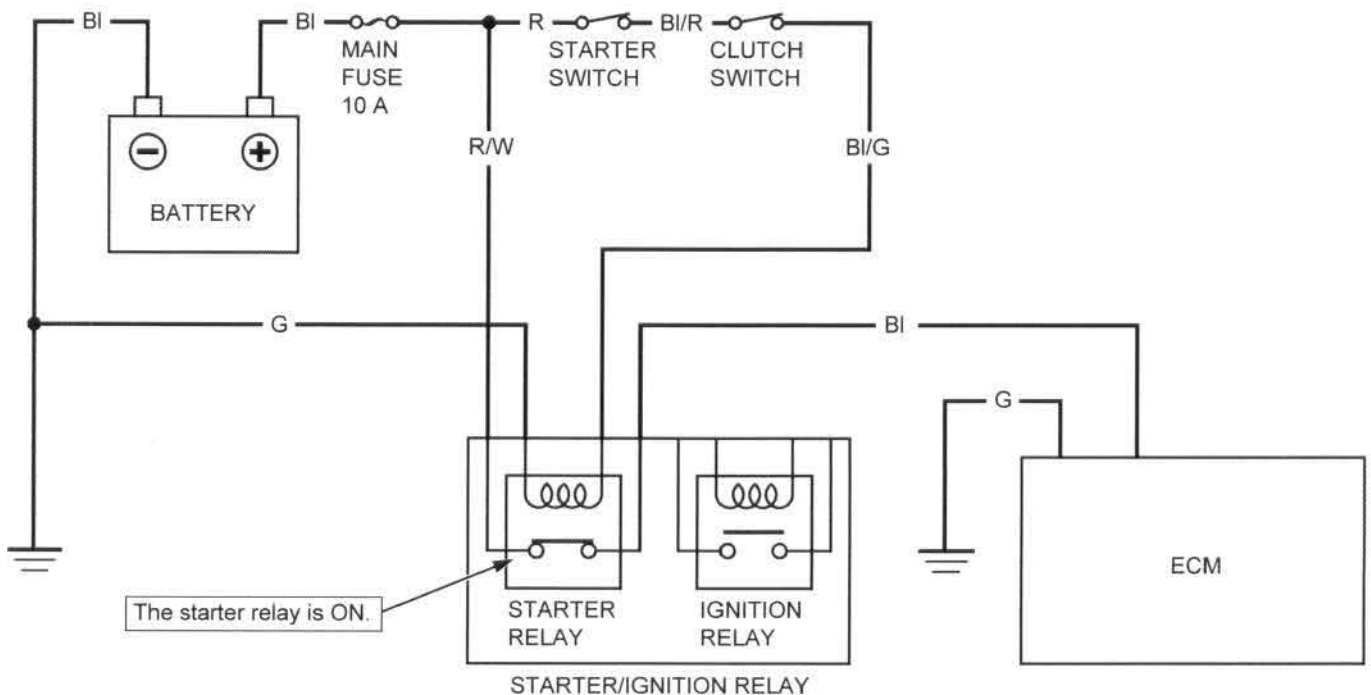
SYSTEM DIAGRAM

'17 model CRF450RX:

**STARTER/IGNITION RELAY**

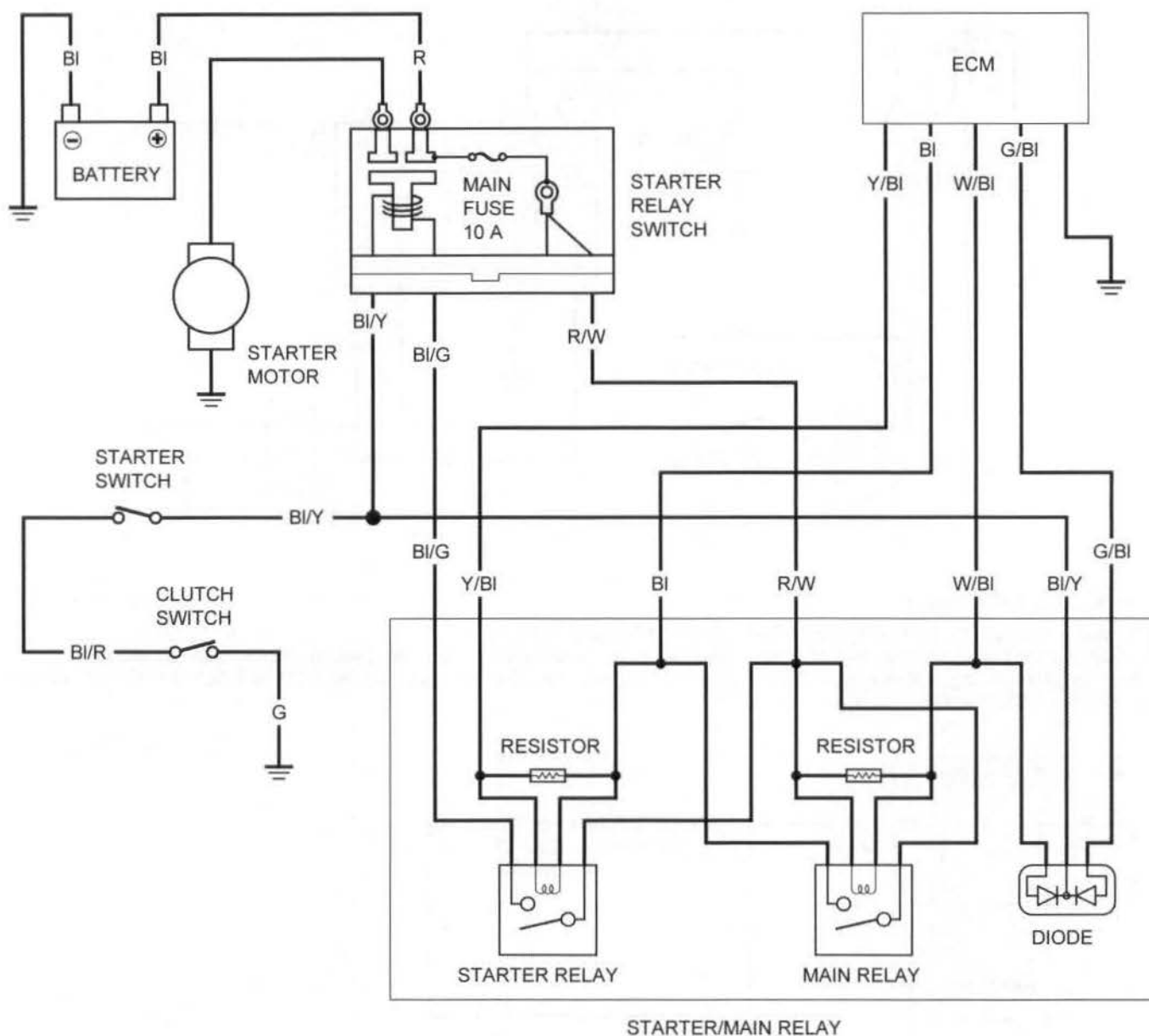
- Ignition relay: refer to "BATTERY/CHARGING SYSTEM" (page 19-6).
- When starting the engine, the electric power from the battery is supplied to the ECM when the starter relay is turned ON. After starting the engine (the engine rotation is increased), the electric power supply to the ECM switches to the alternator from the battery when the relay is turned OFF.

When starting the engine:



ELECTRIC STARTER (Except '17 model CRF450R)

After '17 model:



STARTER MOTOR

REMOVAL/INSTALLATION

NOTE:

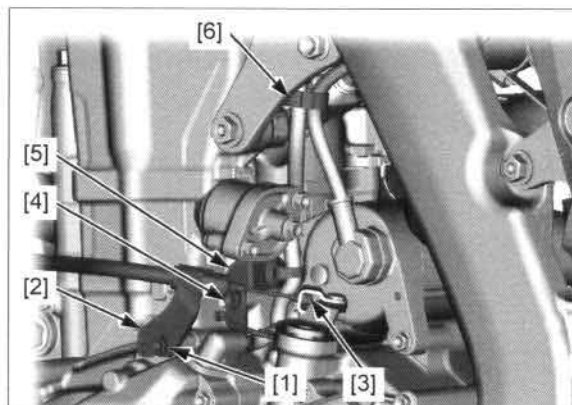
- Remove the negative (–) cable at the battery before servicing the starter motor.

Remove the clutch pressure plate (page 12-11).
Remove the left crankcase cover bolt (6 x 35 mm) [1] and clutch cable holder [2].

Release the clutch cable [3] from the clutch lifter arm.

Remove the crankcase bolt (6 x 75 mm) [4] and alternator/CKP sensor wire stay [5].

Remove the wire clamp [6].

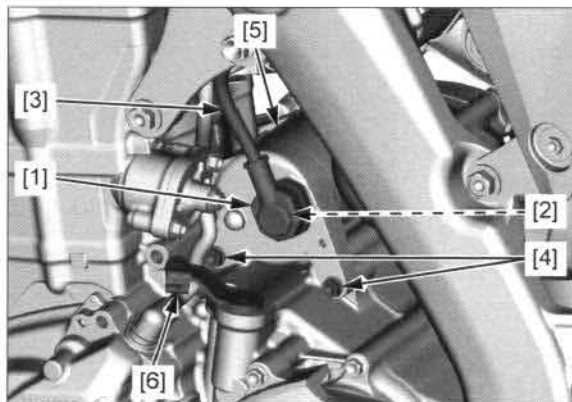


Release the rubber cap [1] and remove the terminal nut/washer [2].

Release the starter cable [3].

Remove the bolts [4].

Remove the starter motor [5] while turning the clutch lifter arm [6] to keep away from the starter motor.



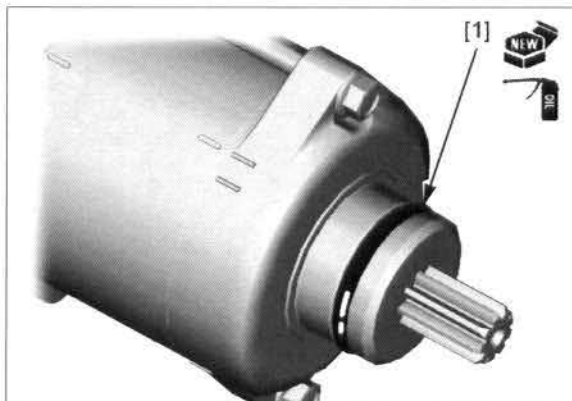
Remove the O-ring [1].

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.

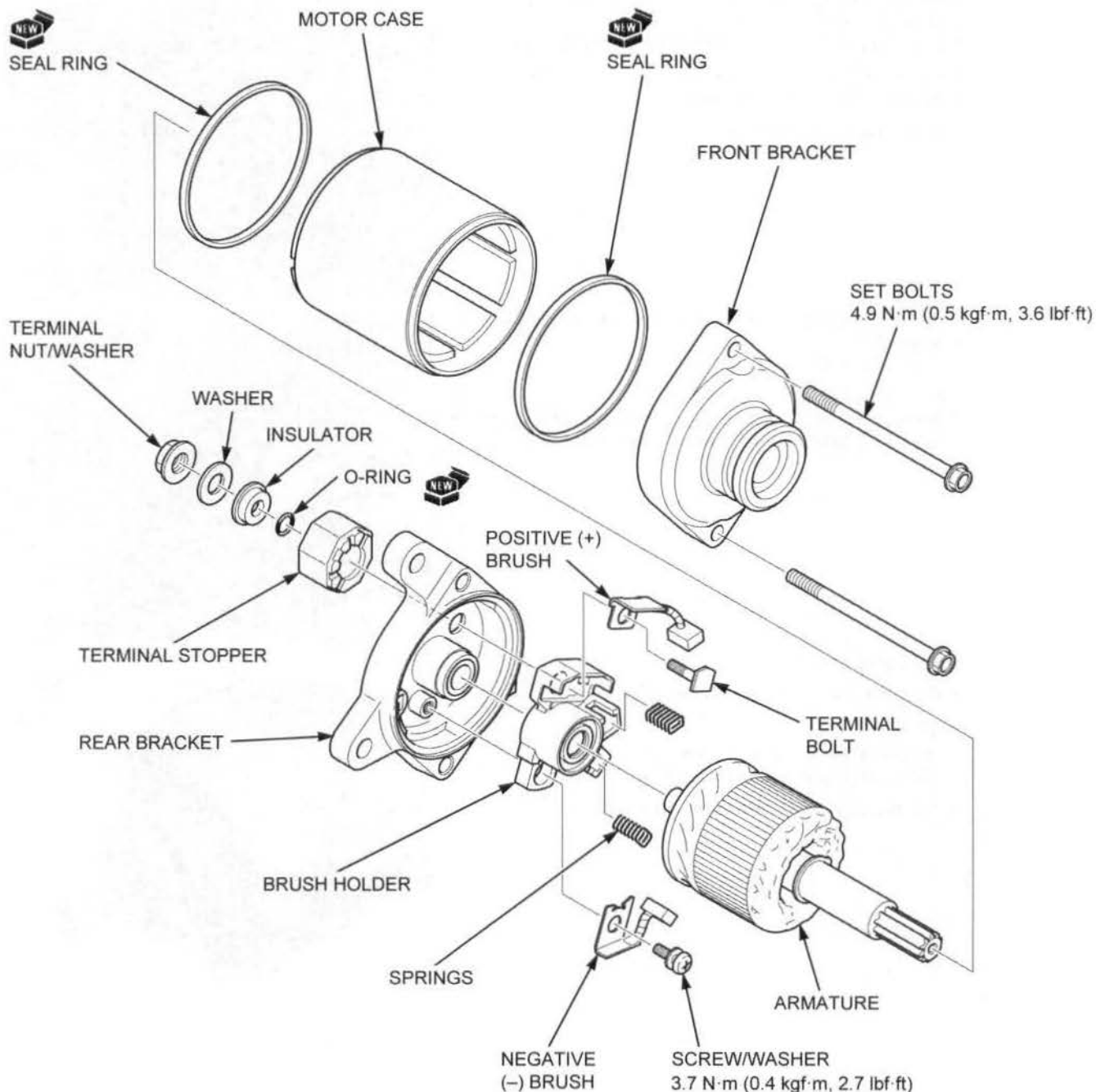
Install the clutch pressure plate (page 12-16).



DISASSEMBLY/ASSEMBLY

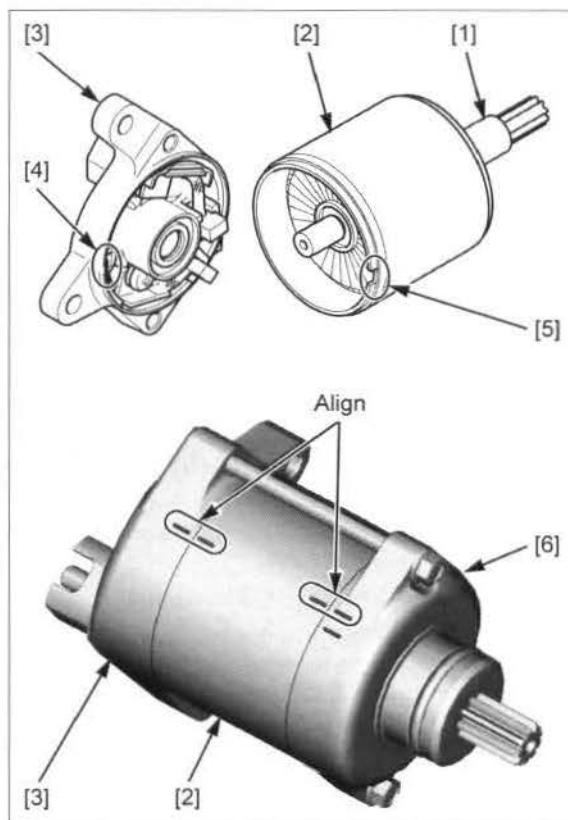
NOTICE

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



NOTE:

- Set the armature [1] into the motor case [2] as shown.
- Install the rear bracket [3] by aligning its boss [4] with the groove [5] of the motor case.
- Make sure that the index marks align with the motor case and front bracket [6] / rear bracket.



INSPECTION

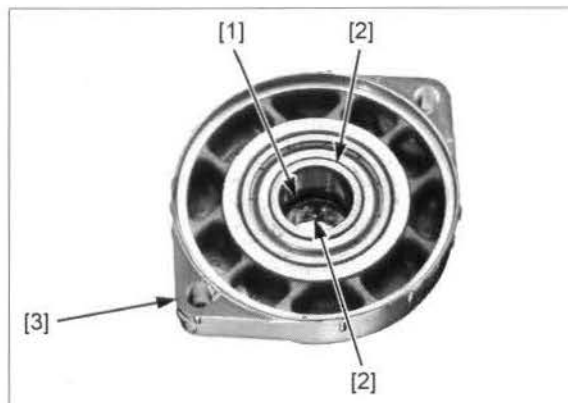
Check the oil seal [1] in the front bracket for deterioration, wear, or damage.

Turn the inner race of the bearings [2] in the front bracket [3] with your finger.

The bearing should turn smoothly and quietly.

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

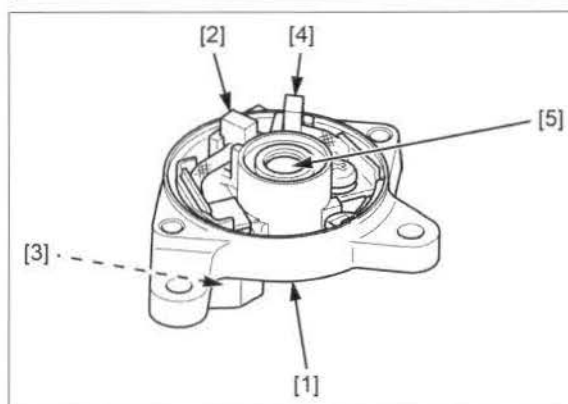
Replace the starter motor as an assembly if necessary.



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

- Between the positive (+) brush [2] and cable terminal [3]: should be continuity.
- Between the cable terminal and the rear bracket: should be no continuity.
- Between the negative (-) brush [4] and rear bracket: should be continuity.

Check the brush and bushing [5], replace if necessary.



ELECTRIC STARTER (Except '17 model CRF450R)

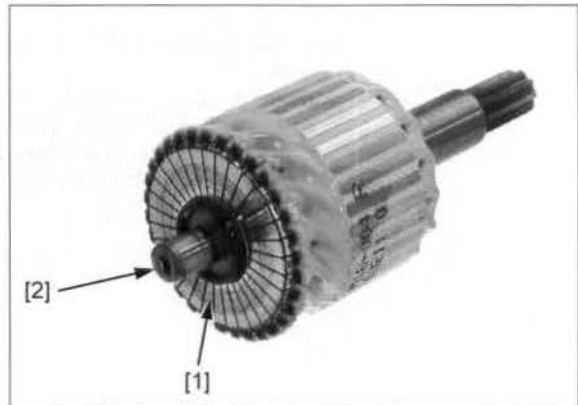
Clean the metallic debris off the commutator bars [1].

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.



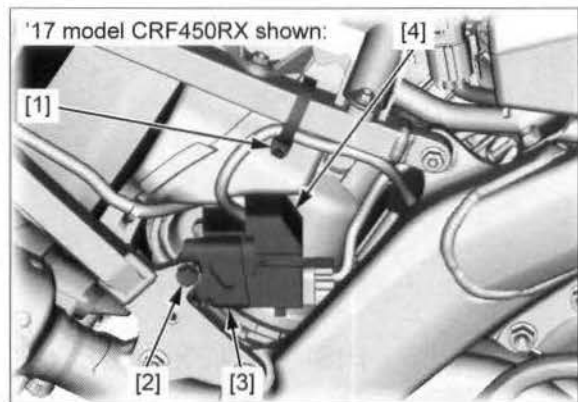
STARTER RELAY SWITCH

REMOVAL/INSTALLATION

Disconnect the battery negative (-) cable (page 19-9).
Remove the right side cover/air cleaner housing cover (page 2-4).

Remove the wire band [1].

Remove the stay mounting bolt [2] and stay [3] with the starter relay switch [4].



Remove the starter relay switch [1] from the stay [2].

Remove the cover [3] and disconnect the starter relay switch 4P (Black) connector [4].

Remove the bolts [5] and disconnect the starter motor cable [6] and battery positive (+) cable [7].

Installation is in the reverse order of removal.

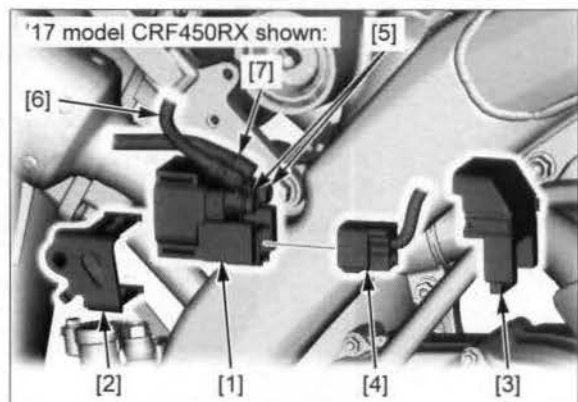
TORQUE:

Starter motor/battery positive (+) cable bolt:

7.0 N·m (0.7 kgf·m, 5.2 lbf·ft)

Starter relay switch stay mounting bolt:

12 N·m (1.2 kgf·m, 9 lbf·ft)



INSPECTION

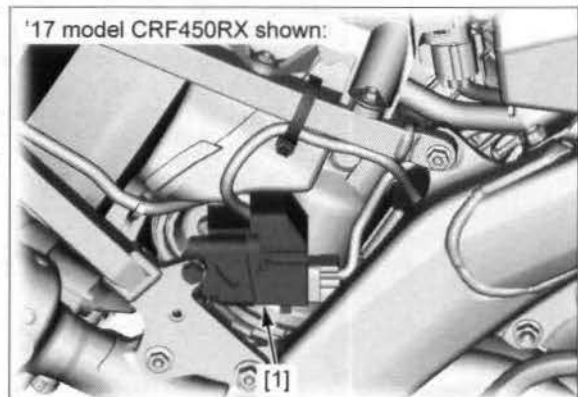
Remove the right side cover/air cleaner housing cover (page 2-4).

Shift the transmission into neutral.

Pull the clutch lever fully, and push the starter switch.

If the starter relay switch [1] "CLICK", the coil is normal.

If you don't hear the switch "CLICK", inspect the starter relay switch as follows:

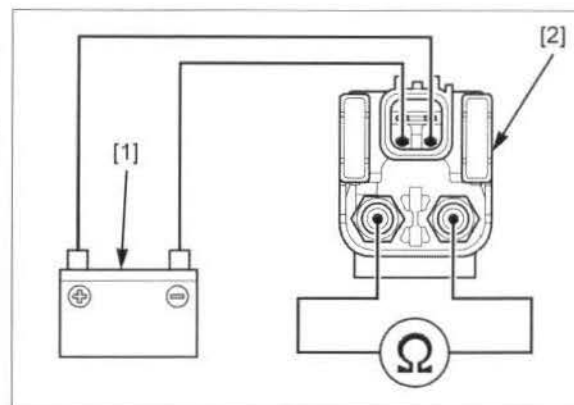


OPERATION CHECK

Remove the starter relay switch (page 6-10).

Connect a 12 V battery [1] to the starter relay switch [2] terminals as shown.

There should be continuity between the cable terminals when the battery is connected, and not continuity when the battery is disconnected.

**CIRCUIT INSPECTION ('17 model CRF450RX)****POWER INPUT LINE**

Disconnect the starter relay switch 4P (Black) connector (page 6-10).

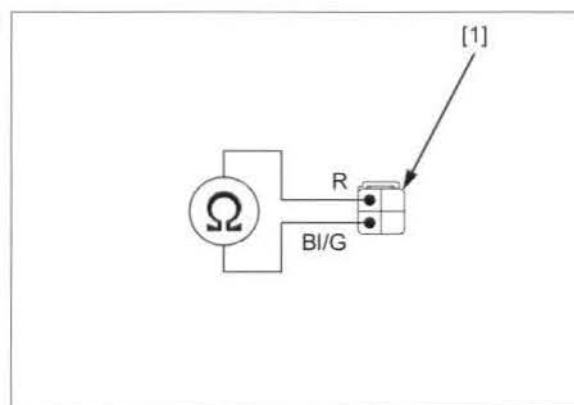
Shift the transmission into neutral.

Pull the clutch lever fully, and push the starter switch.

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

CONNECTION: Red – Black/green

There should be continuity when the clutch lever is pulled fully and starter switch is pushed.

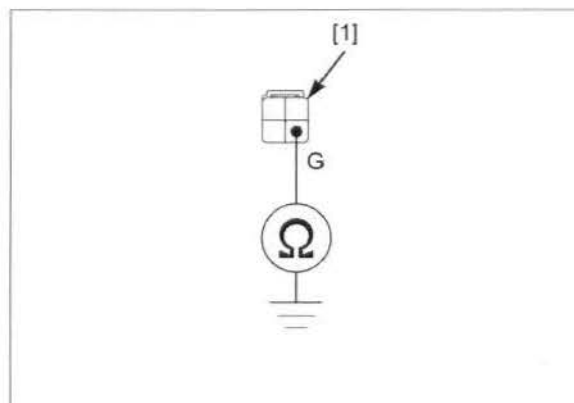
**GROUND LINE**

Disconnect the starter relay switch 4P (Black) connector (page 6-10).

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

CONNECTION: Green – Ground

There should be continuity.



CIRCUIT INSPECTION (After '17 model)

POWER INPUT LINE

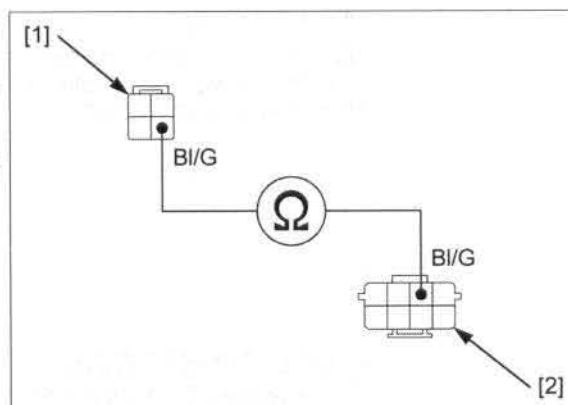
Disconnect the starter relay switch 4P (Black) connector (page 6-10).

Disconnect the starter/main relay 8P (Gray) connector (page 6-15).

Check for continuity between the wire harness side starter relay switch 4P (Black) connector [1] and starter/main relay 8P (Gray) connector [2] terminals.

CONNECTION: Black/green – Black/green

There should be continuity.



GROUND LINE

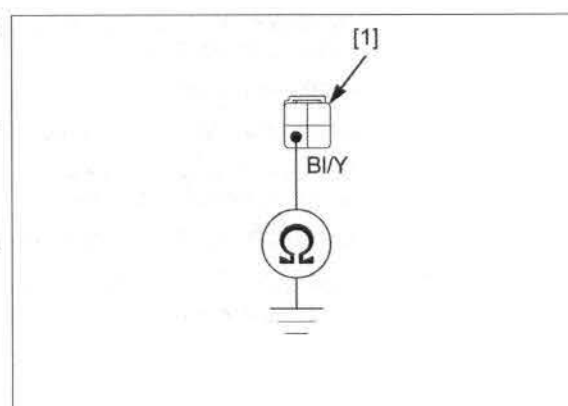
Disconnect the starter relay switch 4P (Black) connector (page 6-10).

Pull the clutch lever fully, and push the starter switch.

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

CONNECTION: Black/yellow – Ground

There should be continuity when the clutch lever is pulled fully and starter switch is pushed.



STARTER/IGNITION RELAY ('17 model CRF450RX)

REMOVAL/INSTALLATION

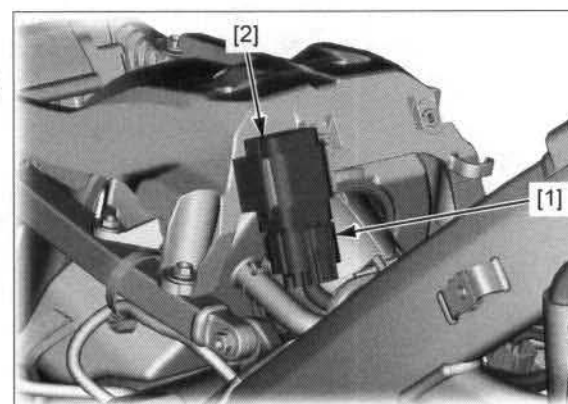
Hang the fuel tank to the left side (page 3-6).

Remove the regulator/rectifier (page 19-11).

Disconnect the starter/ignition relay 8P (Gray) connector [1].

Remove the starter/ignition relay [2].

Installation is in the reverse order of removal.



STARTER/IGNITION RELAY TROUBLESHOOTING

NOTE:

- Before starting the inspection, check for loose or poor contact on the related connector(s).
- When inspecting, use the a fully charged battery.

STARTER MOTOR TURNS, BUT ENGINE DOES NOT TURN

1. Starter Relay Input Voltage (coil side) Inspection

Disconnect the starter/ignition relay 8P (Gray) connector (page 6-12).
Shift the transmission into the neutral.

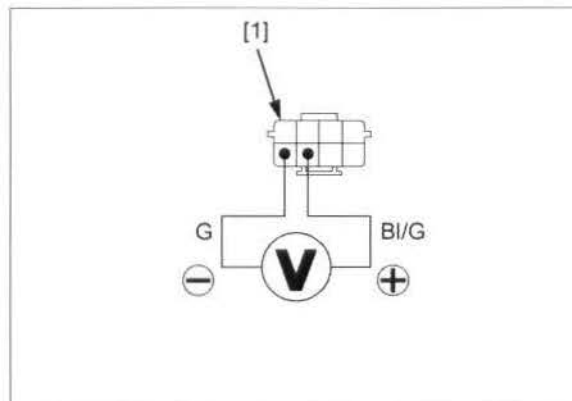
Measure the voltage at the wire harness side 8P (Gray) connector [1] terminals when the clutch and starter switch are turned ON.

Connection: Black/green (+) – Green (–)

Is there battery voltage?

YES – GO TO STEP 2.

NO – Open circuit in the Black/green and/or Green wires



2. Battery Voltage Input line Open Circuit Inspection

Disconnect the starter relay switch 4P (Black) connector (page 6-10).

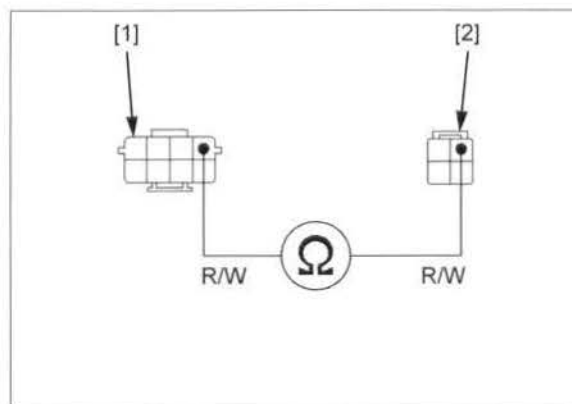
Check for continuity between the wire harness side 8P (Gray) connector [1] and 4P (Black) connector [2].

Connection: Red/white – Red/white (–)

Is there continuity?

YES – GO TO STEP 3.

NO – Open circuit in the Red/white wire



3. ECM Power Input Line Open Circuit Inspection

Disconnect the ECM 33P (Black) connector (page 4-25).

Check for continuity between the wire harness side 8P (Gray) connector [1] and 33P (Black) connector [2].

Connection: Black – Black

TOOL:

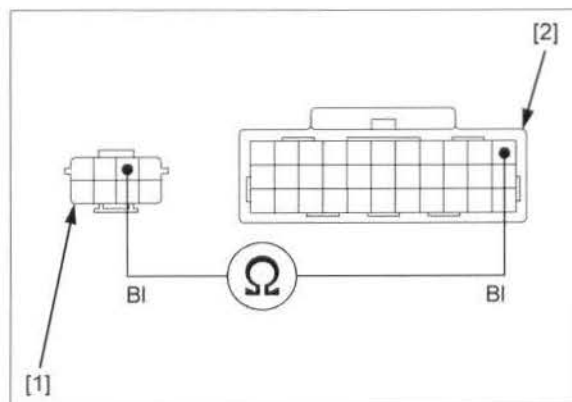
Test probe, 2 packs

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Black wire



4. Starter/ignition Relay Inspection

Replace the starter/ignition relay with a known good one (page 6-12).

Connect the ECM 33P (Black) connector.

Connect the starter relay switch 4P (Black) connector.

Start the engine.

Does the engine start normally?

YES – Faulty original starter/ignition switch

NO – Replace the ECM with a known good one (page 4-25) and recheck.

BATTERY DOES NOT CHARGE

1. Ignition Relay Input Voltage (coil side) Inspection

Disconnect the starter/ignition relay 8P (Gray) connector (page 6-12).

Disconnect the regulator/rectifier 6P (Black) connector (page 19-11).

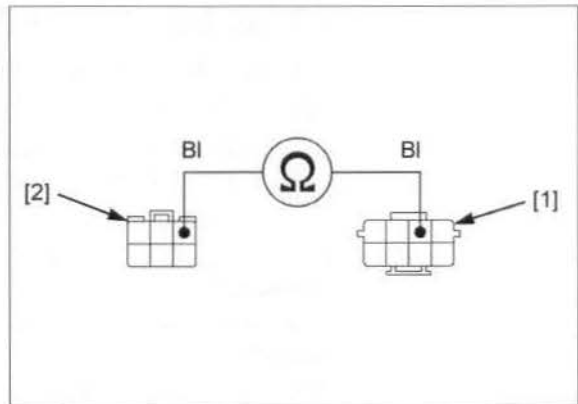
Check for continuity between the wire harness side 8P (Gray) connector [1] and 6P (Black) connector [2].

Connection: Black – Black

Is there continuity?

YES – GO TO STEP 2.

NO – Open circuit in the Black wire



2. Ignition Relay Signal line Open Circuit Inspection

Disconnect the ECM 33P (Black) connector (page 4-25).

Check for continuity between the wire harness side 8P (Gray) connector [1] and 33P (Black) connector [2].

Connection: White/black – White/black

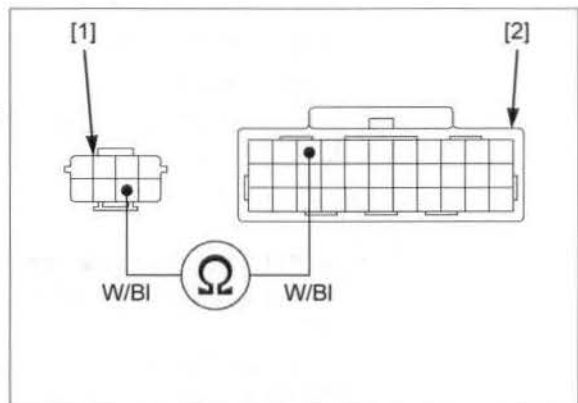
TOOL:

Test probe, 2 packs 07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 3.

NO – Open circuit in the White/black wire



3. Battery Charging Circuit Inspection

Disconnect the starter relay switch 4P (Black) connector (page 6-10).

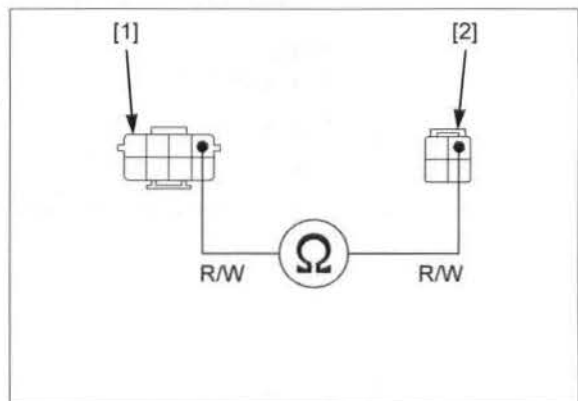
Check for continuity between the wire harness side 8P (Gray) connector [1] and 4P (Black) connector [2].

Connection: Red/white – Red/white

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Red/white wire



4. Starter/ignition Relay Inspection

Replace the starter/ignition relay with a known good one (page 6-12).

Connect the ECM 33P (Black) connector.

Connect the regulator/rectifier 6P connector.

Connect the starter relay switch 4P (Black) connector.

Start the engine.

Measure the charging voltage (page 19-10).

Is the measured charging voltage within the standard voltage?

YES – Faulty original starter/ignition switch

NO – Replace the ECM with a known good one (page 4-25) and recheck.

STARTER/MAIN RELAY (After '17 model)

REMOVAL/INSTALLATION

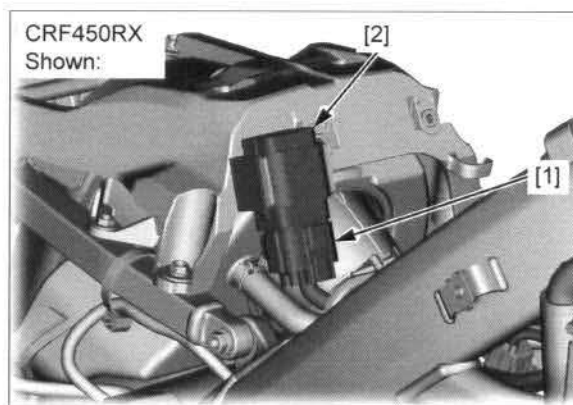
Hang the fuel tank to the left side (page 3-6).

Remove the regulator/rectifier (page 19-11).

Disconnect the starter/main relay 8P (Gray) connector [1].

Remove the starter/main relay [2].

Installation is in the reverse order of removal.

**STARTER/MAIN RELAY
TROUBLESHOOTING****NOTE:**

- Before starting the inspection, check for loose or poor contact on the related connector(s).
- When inspecting, use the a fully charged battery.

STARTER MOTOR DOES NOT TURN**1. Starter Relay Coil line Input Voltage Inspection**

Disconnect the starter/main relay 8P (Gray) connector (page 6-15).

Shift the transmission into the neutral.

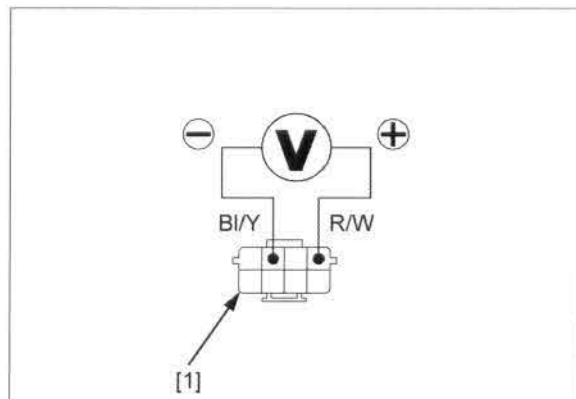
Measure the voltage at the wire harness side starter/main relay 8P (Gray) connector [1] terminals when the clutch lever is pulled fully and starter switch is pushed.

Connection: Red/white (+) – Black/yellow (–)

Is there battery voltage?

YES – GO TO STEP 2.

NO – Open circuit in the Red/white and/or Black/yellow wires



ELECTRIC STARTER (Except '17 model CRF450R)

2. Starter Relay Switch Coil line Open Circuit Inspection

Disconnect the starter relay switch 4P (Black) connector (page 6-10).

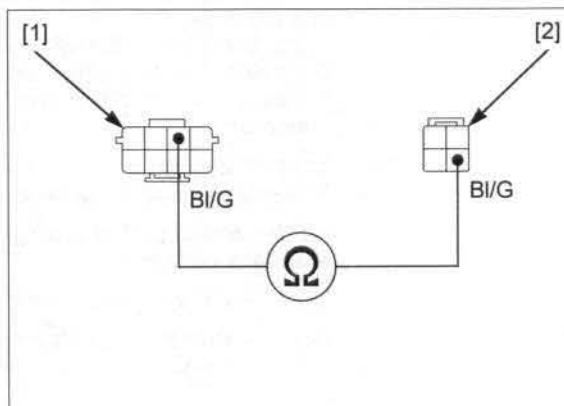
Check for continuity between the wire harness side starter/main relay 8P (Gray) connector [1] and starter relay switch 4P (Black) connector [2] terminals.

Connection: Black/green – Black/green

Is there continuity?

YES – GO TO STEP 3.

NO – Open circuit in the Black/green wire



3. ECM Power Input Line Open Circuit Inspection

Disconnect the ECM 33P (Black) connector (page 4-25).

Check for continuity between the wire harness side starter/main relay 8P (Gray) connector [1] and ECM 33P (Black) connector [2] terminals.

Connection: Black – Black

TOOL:

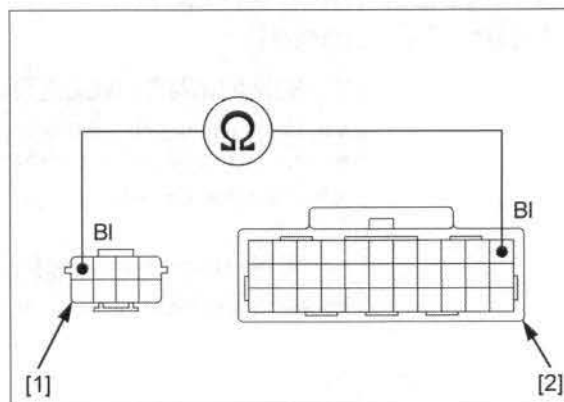
Test probe, 2 packs

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Black wire



4. ECM Signal Line Open Circuit Inspection

Check for continuity between the wire harness side starter/main relay 8P (Gray) connector [1] and ECM 33P (Black) connector [2] terminals.

Connection: Yellow/black – Yellow/black

White/black – White/black

Green/black – Green/black

TOOL:

Test probe, 2 packs

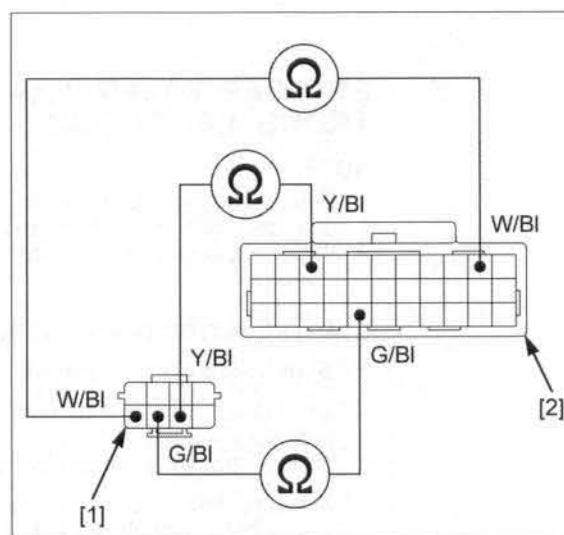
07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 5.

NO –

- Open circuit in the Yellow/black wire
- Open circuit in the White/black wire
- Open circuit in the Green/black wire



5. Starter/main Relay Inspection

Replace the starter/main relay with a known good one (page 6-15).

Connect the following:

- ECM 33P (Black) connector (page 4-25)
- Starter relay switch 4P (Black) connector (page 6-10)

Start the engine.

Does the engine start normally?

YES - Faulty original starter/main switch

NO - Replace the ECM with a known good one and recheck (page 4-25).

BATTERY DOES NOT CHARGE**1. Regulator/rectifier Voltage Input Line Open Circuit Inspection**

Disconnect the following:

- Starter/main relay 8P (Gray) connector (page 6-15)
- Regulator/rectifier 6P (Black) connector (page 19-11)

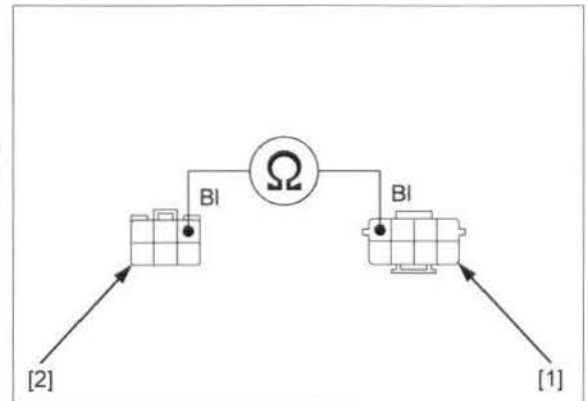
Check for continuity between the wire harness side starter/main relay 8P (Gray) connector [1] and regulator/rectifier 6P (Black) connector [2] terminals.

Connection: Black - Black

Is there continuity?

YES - GO TO STEP 2.

NO - Open circuit in the Black wire

**2. ECM Signal Line Open Circuit Inspection**

Disconnect the ECM 33P (Black) connector (page 4-25).

Check for continuity between the wire harness side starter/main relay 8P (Gray) connector [1] and ECM 33P (Black) connector [2] terminals.

Connection: White/black - White/black

TOOL:

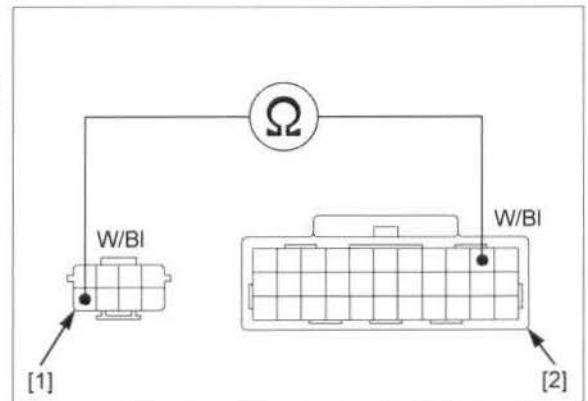
Test probe, 2 packs

07ZAJ-RDJA110

Is there continuity?

YES - GO TO STEP 3.

NO - Open circuit in the White/black wire



3. Battery Charging Circuit Inspection

Disconnect the starter relay switch 4P (Black) connector (page 6-10).

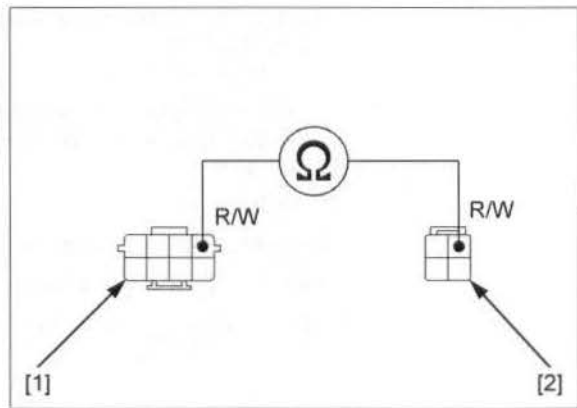
Check for continuity between the wire harness side starter/main relay 8P (Gray) connector [1] and starter relay switch 4P (Black) connector [2] terminals.

Connection: Red/white – Red/white

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in the Red/white wire



4. Starter/main Relay Inspection

Replace the starter/main relay with a known good one (page 6-15).

Connect the following:

- ECM 33P (Black) connector (page 4-25)
- Regulator/rectifier 6P connector (page 19-11)
- Starter relay switch 4P (Black) connector (page 6-10)

Start the engine.

Measure the charging voltage (page 19-10).

Is the measured charging voltage within the standard voltage?

YES – Faulty original starter/ignition switch

NO – Replace the ECM with a known good one and recheck (page 4-25).


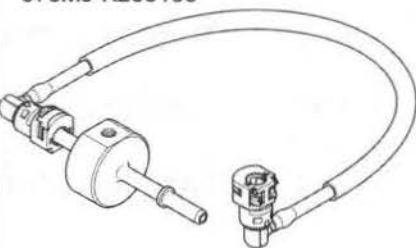
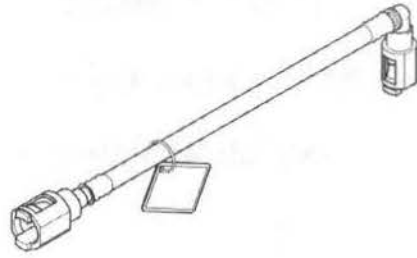
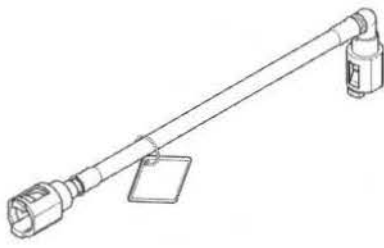


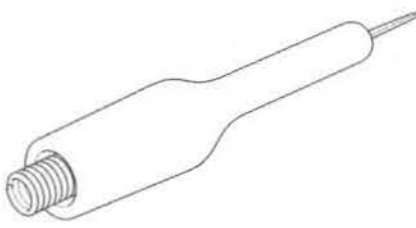
SERVICE INFORMATION.....	7-2	FUEL PUMP UNIT (CRF450R)	7-13
TROUBLESHOOTING	7-3	FUEL PUMP UNIT (CRF450RX)	7-18
COMPONENT LOCATION.....	7-4	AIR CLEANER HOUSING	7-23
FUEL LINE REPLACEMENT.....	7-5	THROTTLE BODY	7-24
FUEL TANK (CRF450R).....	7-11	FUEL INJECTOR	7-28
FUEL TANK (CRF450RX).....	7-12	FAST IDLE KNOB.....	7-29

SERVICE INFORMATION

GENERAL

- Before disconnecting the fuel feed hose, relieve fuel pressure from the system (page 7-5).
- The CRF450R is equipped the titanium fuel tank. Since the fuel tank has not been painted, it might be discolored with mud and dust.
To remove mud or dust, use a sponge or soft cloth and a stainless steel kitchen detergent, then rinse well clean water. After washing, rinse with plenty of water and dry with a clean cloth.
- Be sure to relieve the fuel pressure till the engine is stopped.
- 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 fully opened to fully closed after the throttle cable has been removed. It may cause incorrect idle operation.
- Seal the cylinder head intake port with tape or a clean cloth to keep dirt and debris from entering the engine after the throttle body has been removed.
- Do not damage the throttle body. It may cause incorrect throttle valve operation.
- Prevent dirt and debris from entering the engine, clean the throttle bore and fuel feed hose with compressed air.
- The throttle body is factory pre-set. Do not disassemble in a way other than shown in this manual.

TOOLS

<p>Fuel pressure gauge set 07406-0040004</p>  <p>or 07406-004000B (U.S.A. only) or 07406-004000C (U.S.A. only)</p>	<p>Pressure gauge attachment set 070MJ-K260100</p>  <p>(Not available in U.S.A.)</p>	<p>Hose attachment, 6 mm/9 mm 07ZAJ-S5A0130</p> 
<p>Hose attachment, 8 mm/9 mm 07ZAJ-S7C0100</p>  <p>(Not available in U.S.A.)</p>	<p>Attachment joint, 8 mm/9 mm 07ZAJ-S7C0200</p>  <p>(Not available in U.S.A.)</p>	<p>Attachment joint, 6 mm/9 mm 07ZAJ-S5A0150</p> 
<p>Test probe, 2 packs 07ZAJ-RDJA110</p> 		

TROUBLESHOOTING

Engine won't start

- Deteriorated fuel
- Bent or kinked fuel feed hose/fuel tank breather hose
- Clogged fuel filter
- Faulty fuel pump or its drive circuit
- Intake air leak
- Faulty fuel injector
- Faulty ECM (page 4-25)
- Faulty ignition system (page 5-6)
- Faulty starter system (Except '17 model CRF450R) (page 6-3)
- Faulty engine stop switch or its related circuit (page 20-3)

Engine stall, hard to start, rough idling

- Deteriorated fuel
- Bent or kinked fuel feed hose/fuel tank breather hose
- Faulty fuel pump or its drive circuit
- Intake air leak
- Faulty fast idle knob
- Faulty MAP sensor (page 4-24)
- Faulty ignition system (page 5-6)
- Faulty charging system (Except '17 model CRF450R) (page 19-10)

Backfiring or misfiring during acceleration

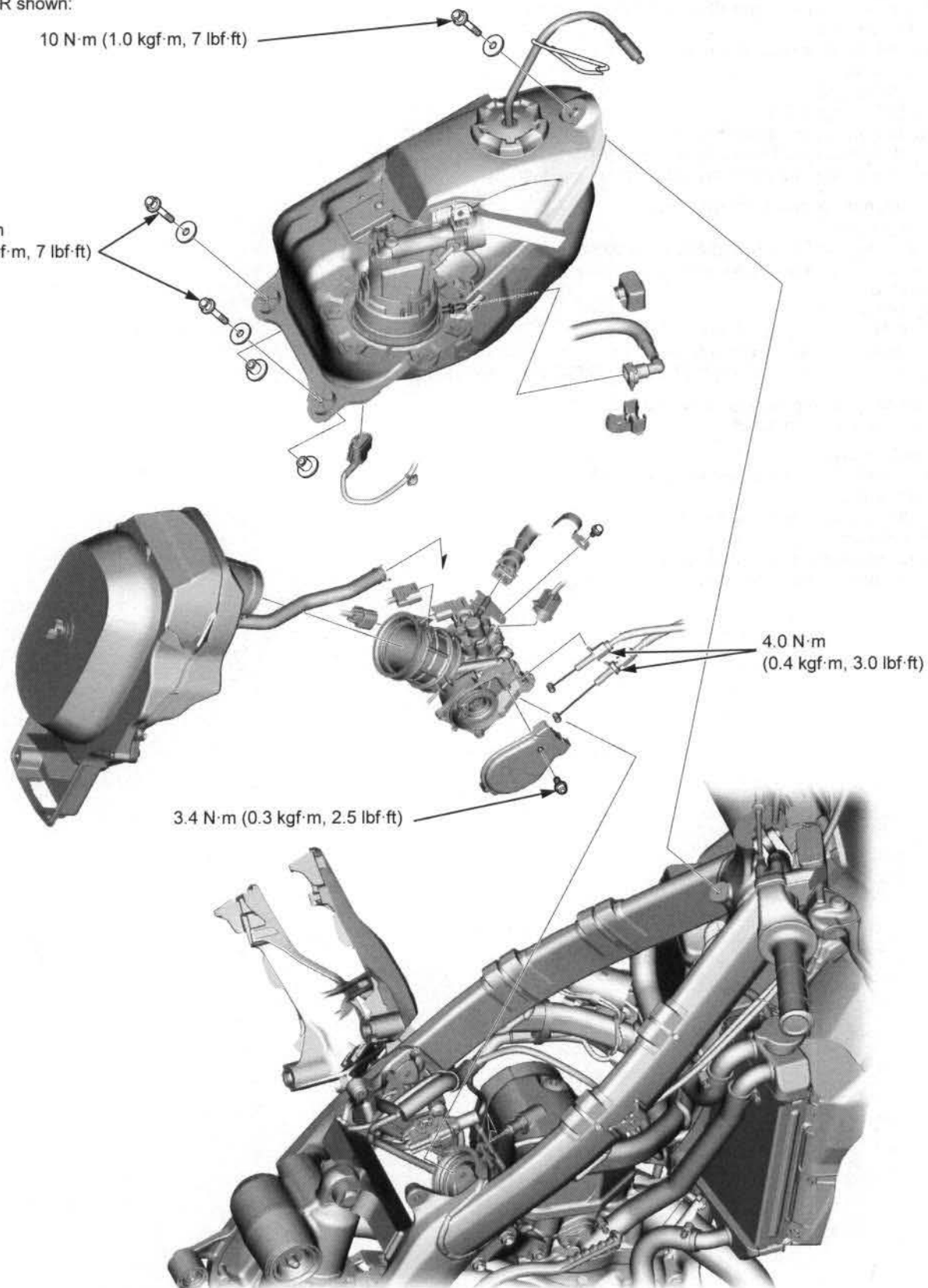
- Faulty ignition system (page 5-6)

Engine lacks power

- Bent or kinked fuel feed hose/fuel tank breather hose
- Clogged fuel filter
- Faulty fuel pump or its drive circuit
- Faulty fuel injector
- Clogged air cleaner element (page 3-9)
- Faulty ignition system (page 5-6)

COMPONENT LOCATION

'17 model
CRF450R shown:



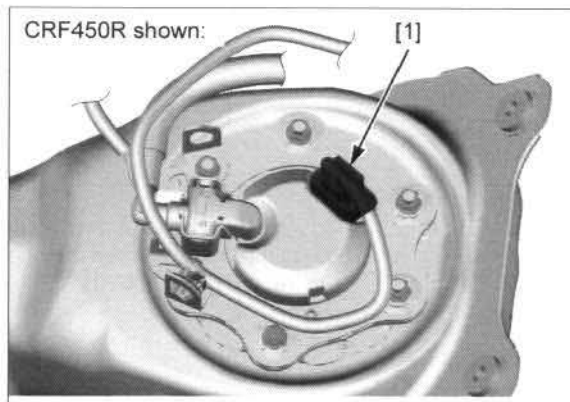
FUEL LINE REPLACEMENT

FUEL PRESSURE RELIEVING

NOTE:

- Before disconnecting the fuel feed hose, relieve pressure from the system as follows.
1. Hang the fuel tank to the left side of the frame (page 3-6).
 2. Disconnect the fuel pump unit 5P connector [1].
 3. Support the fuel tank in an upright position onto the frame.
 4. Start the engine and let it idle until the engine stalls.

CRF450R shown:



QUICK CONNECT FITTING REMOVAL

Except '17 model
CRF450R:

1. Relieve the fuel pressure (page 7-5).
Disconnect the battery negative (–) cable (page 19-9).
2. Fuel pump unit side:
Remove the quick connect fitting cover [1].

Fuel injector side:
Remove the bolt [2], clamp [3], and setting rubber [4].
3. Check the fuel quick connect fittings for dirt and clean if necessary.
4. Place a shop towel over the quick connect fitting.
5. Unlock the slide retainer [1] of the quick connect fitting [2] by completely pulling it up.
6. Release the quick connect fittings from the fuel joints while holding the connector housing.

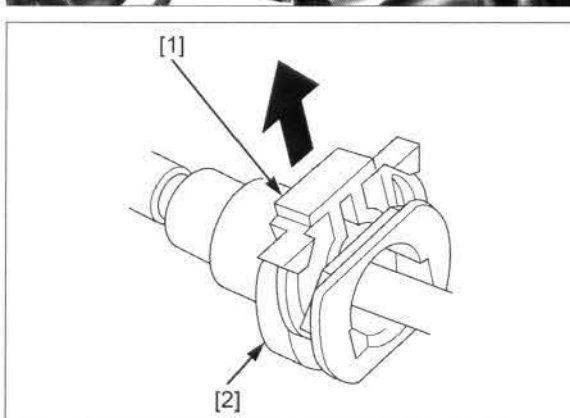
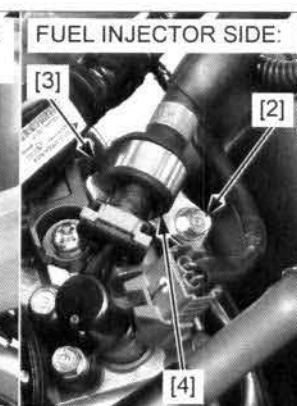
NOTE:

- Prevent the remaining fuel in the fuel feed hose from flowing out, using a shop towel.
- Be careful not to damage the slide retainer and hose.
- Do not use tools.

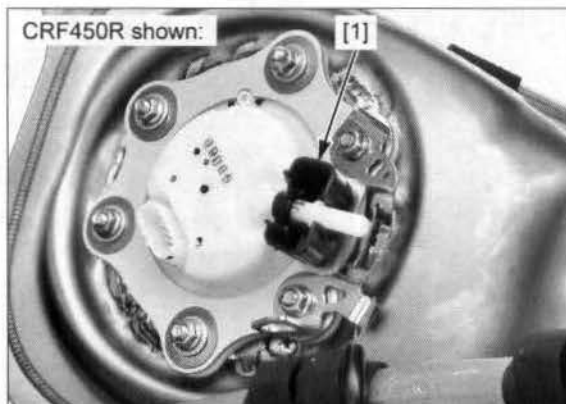
FUEL PUMP UNIT SIDE
(CRF450R shown):



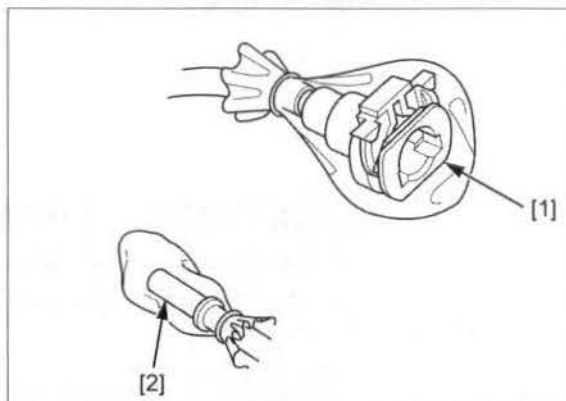
FUEL INJECTOR SIDE:



7. Fuel pump unit side:
Remove the rubber cover [1].

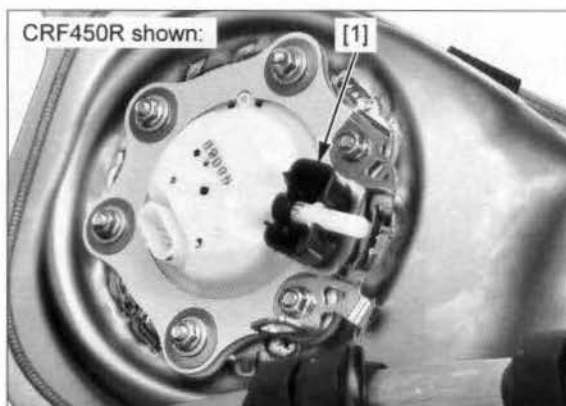


8. To prevent damage and keep foreign matter out, cover the disconnected connectors [1] and fuel joints end [2] with plastic bags.



QUICK CONNECT FITTING INSTALLATION

1. Fuel pump unit side:
Install the rubber cover [1].



2. Be sure that the slide retainer [1] is completely pulled up before connecting the quick connect fitting.

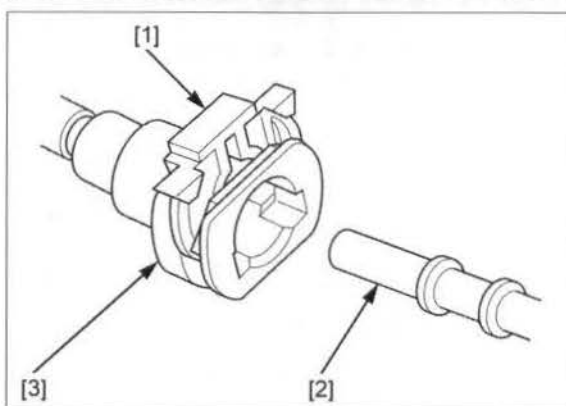
NOTE:

- Do not bend or twist fuel feed hose.
- Do not reuse the kinked or damaged fuel feed hose.
- Do not use gloves or a shop towel while installing the quick connect fitting.

3. Connect the quick connect fitting to the fuel joints [2] until you hear the "CLICK" while holding the connector housing [3].

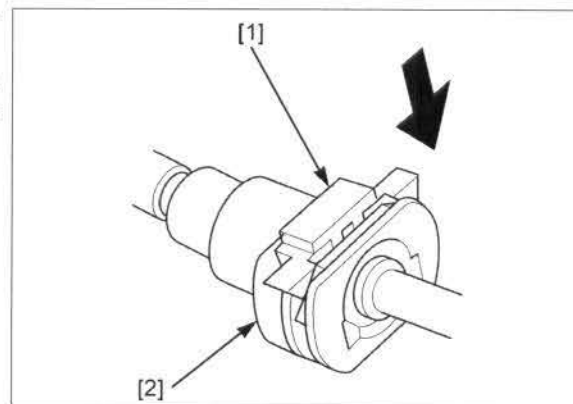
NOTE:

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



4. Lock the slide retainer [1] by pushing it until you hear the "CLICK".

Make sure the connection is secure and that the slide retainer is firmly locked into place; check visually and by pulling the connector housing [2].



5. Fuel pump unit side:
Install the quick connect fitting cover [1] securely.

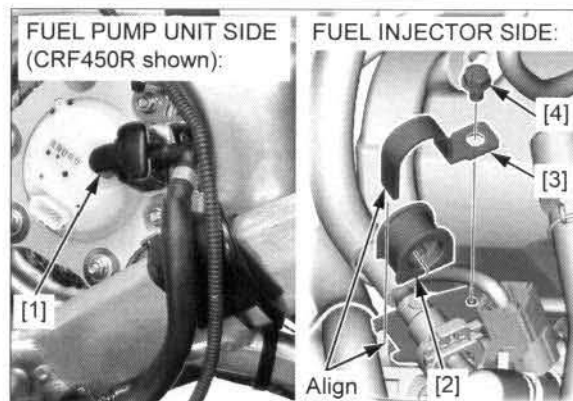
Fuel injector side:
Install the setting rubber [2] and clamp [3].
Install and tighten the bolt [4] securely.

NOTE:

- Align the clamp end with the clamber base groove.

Except '17 model
CRF450R:

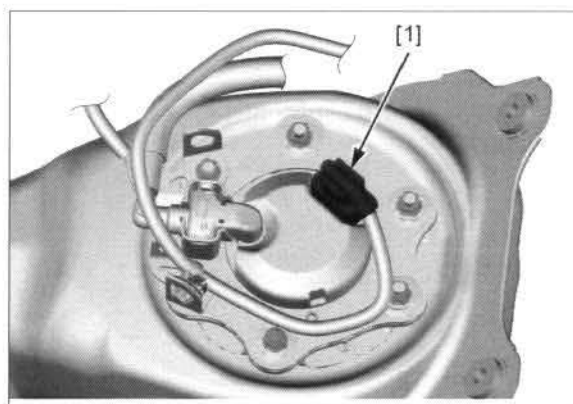
6. Increase the fuel pressure (page 7-7).



INCREASING FUEL PRESSURE

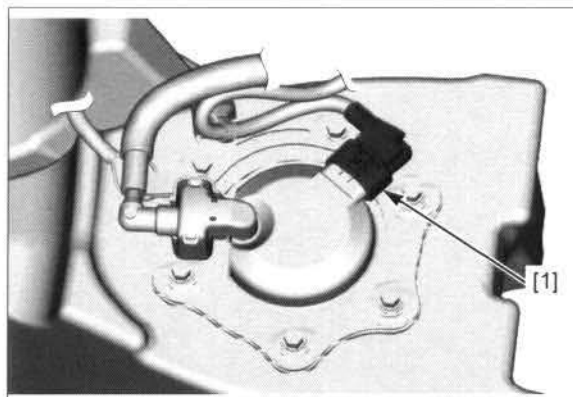
'17 model CRF450R:

1. Connect the fuel pump 5P connector [1].
2. Temporarily install the fuel tank.
3. With the throttle closed, operate the kickstarter starting from the top of the kickstarter stroke, kick through to the bottom with a rapid, continuous motion.
The engine will start up by increasing the fuel pressure.
4. Stop the engine.
Check that there is no leakage in the fuel supply system (page 3-8).



'17 model CRF450RX:

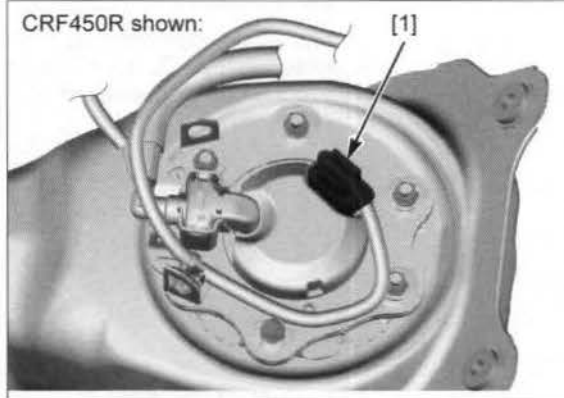
1. Connect the fuel pump 5P connector [1].
2. Temporarily install the fuel tank.
3. With the throttle closed, pull the clutch lever all the way in, and depress the starter switch. Or operate the kickstarter starting from the top of the kickstarter stroke, kick through to the bottom with a rapid, continuous motion.
The engine will start up by increasing the fuel pressure.
4. Stop the engine.
Check that there is no leakage in the fuel supply system (page 3-8).



After '17 model:

1. Connect the fuel pump 5P connector [1].
2. Temporarily install the fuel tank.
3. With the throttle closed, pull the clutch lever all the way in, and depress the starter switch. The engine will start up by increasing the fuel pressure.
4. Stop the engine.
Check that there is no leakage in the fuel supply system (page 3-8).

CRF450R shown:



FUEL PRESSURE TEST

NOTE:

- Make sure there is one liter or more of fuel remaining in the fuel tank before starting fuel pressure test.

Disconnect the quick connect fitting from the fuel pump unit side (page 7-5).

Attach the special tools between the fuel joint and fuel feed hose.

TOOLS:

Fuel pressure gauge [1]

07406-0040004 or
07406-004000B
(U.S.A. only) or
07406-004000C
(U.S.A. only)

Pressure gauge attachment
set [2]

070MJ-K260100

Hose attachment,
6 mm/9 mm [3]

07ZAJ-S5A0130

Hose attachment,
8 mm/9 mm [4]

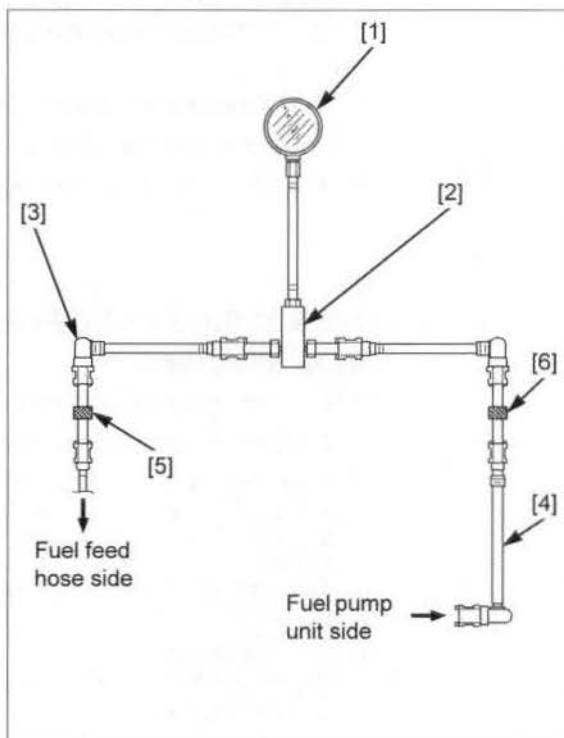
07ZAJ-S7C0100

Attachment joint,
8 mm/9 mm [5]

07ZAJ-S7C0200

Attachment joint,
6 mm/9 mm [6]

07ZAJ-S5A0150



Except '17 model
CRF450R: Temporarily connect the battery negative (–) cable and fuel pump unit 5P connector.

Support the fuel tank in an upright position then remove the hose clamp [1] from the breather hose [2].

Start the engine and let it idle.

Read the fuel pressure.

Standard:

333 – 360 kPa (3.4 – 37 kgf/cm², 48 – 52 psi)

If the fuel pressure is higher than specified, replace the fuel pump unit (faulty fuel pump or fuel pressure regulator).

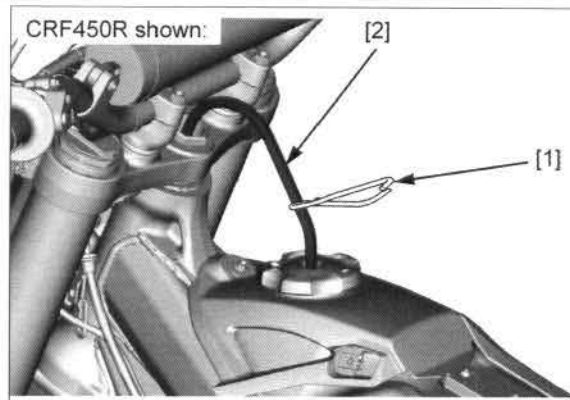
If the fuel pressure is lower than specified, inspect the following:

- Fuel line leaking
- Restricted fuel feed hose or fuel tank breather hose
- Fuel pump unit/clogged fuel filter
 - CRF450R (page 7-13)
 - CRF450RX (page 7-18)

After inspection, relieve the fuel pressure (page 7-5).

Remove the special tools.

Connect the quick connect fitting (page 7-6).



FUEL FLOW INSPECTION

NOTE:

- Make sure there is one liter or more of fuel remaining in the fuel tank before starting fuel flow inspection.

Disconnect the quick connect fitting from the fuel pump side (page 7-5).

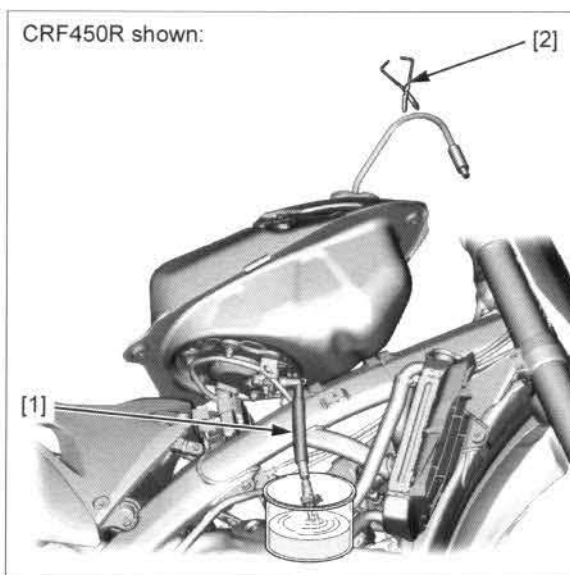
Connect the hose attachment to the fuel joint of the fuel tank.

TOOL:

Hose attachment, 8 mm/9 mm [1] 07ZAJ-S7C0100

Support the fuel tank in an upright position then remove the hose clamp [2] from the breather hose.

Wipe up any spilled fuel. Place the end of the hose into an approved gasoline container.



FUEL SYSTEM

Disconnect the ECM 33P (Black) connector (page 4-25).

Connect the 12 V battery (page 4-7).

Ground the wire harness side 33P (Black) connector [1] terminal with a jumper wire [2].

Connection: White (+) – Ground (–)

TOOL:

Test probe, 2 packs

07ZAJ-RDJA110

Turn the "ECM" selector switch ON for 10 seconds.

Measure the amount of fuel flow.

Perform this inspection three times and take the average value.

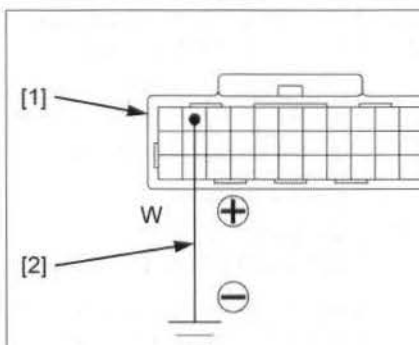
Amount of fuel flow:

**150 cm³ (5.1 US oz, 5.3 Imp oz) minimum/
10 seconds at 12 V**

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

- Fuel line leaking
- Pinched or clogged fuel feed hose or fuel tank breather hose
- Fuel pump unit/clogged fuel filter
 - CRF450R (page 7-13)
 - CRF450RX (page 7-18)

Connect the quick connect fitting (page 7-6).



Wipe up any spilled fuel.

FUEL TANK (CRF450R)

REMOVAL/INSTALLATION

Relieve the fuel pressure and disconnect the quick connect fitting from the fuel pump side (page 7-5).

Remove the fuel pump wire band clip [1] from the stopper cable guide.

Hold the fuel tank [2] and disconnect the stopper cable [3] from the frame stay [4].

Remove the fuel tank.

Remove the fuel cap [5].

Remove the bolt [6] and top shelter [7].

Installation is in the reverse order of removal.

NOTE:

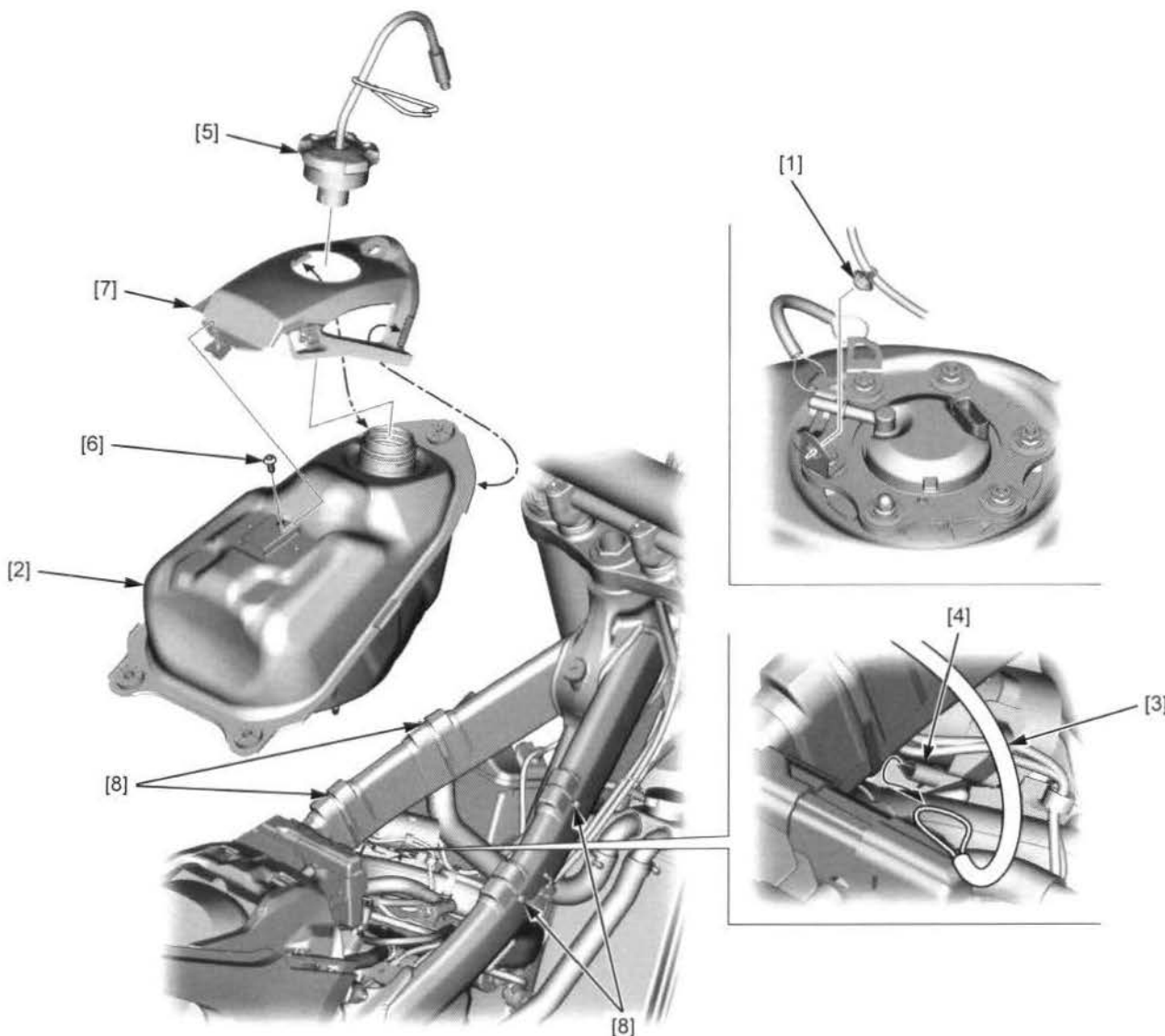
- Check the cushion rubbers [8] for proper installation (page 3-6).

TORQUE:

Top shelter mounting bolt:

5.2 N·m (0.5 kgf·m, 3.8 lbf·ft)

Connect the quick connect fitting (page 7-6).



FUEL TANK (CRF450RX)

REMOVAL/INSTALLATION

Relieve the fuel pressure and disconnect the quick connect fitting from the fuel pump side (page 7-5).

Remove the fuel pump wire band clip [1] from the stopper cable guide.

Hold the fuel tank [2] and disconnect the stopper cable [3] from the frame stay [4].

Remove the fuel tank.

Remove the bolts [5] and rear tank stay [6].

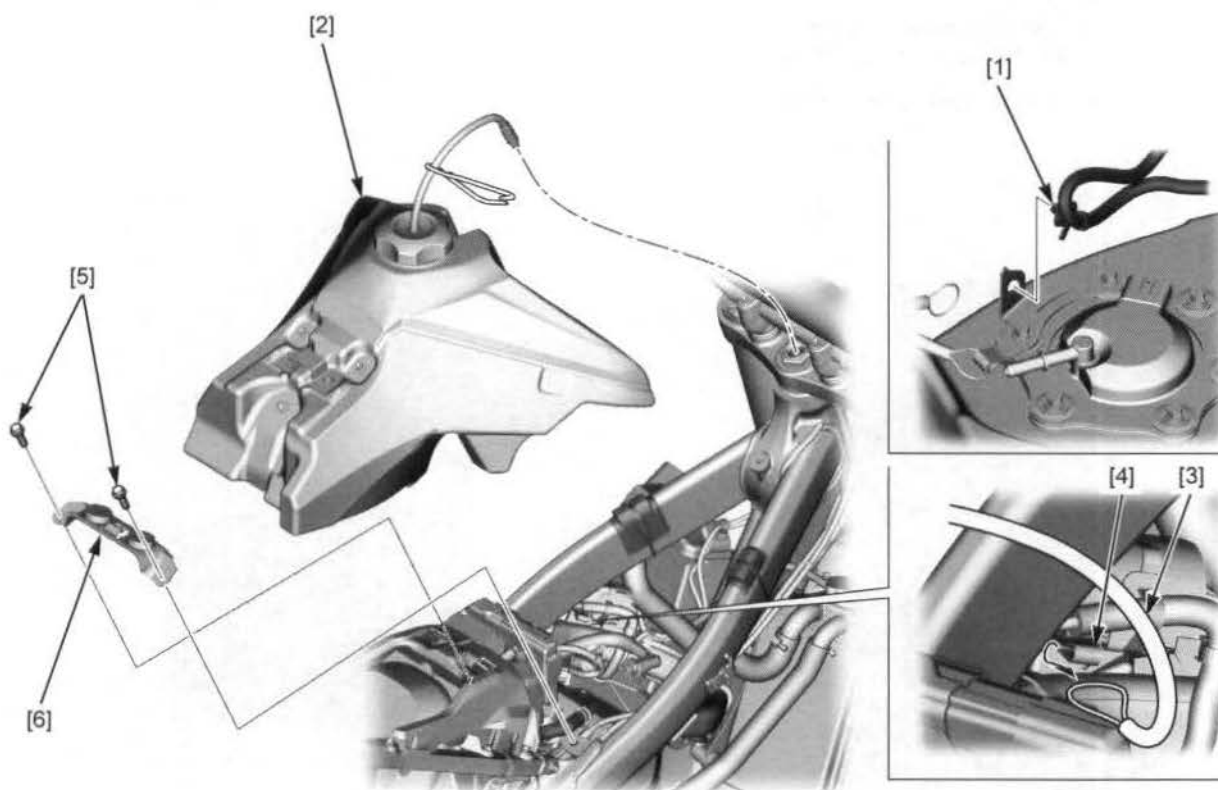
Installation is in the reverse order of removal.

TORQUE:

Rear tank stay bolt:

10 N·m (1.0 kgf·m, 7 lbf·ft)

Connect the quick connect fitting (page 7-6).



FUEL PUMP UNIT (CRF450R)

INSPECTION

Disconnect the following:

- Fuel pump 5P connector (page 7-5).
- Regulator/rectifier 6P connector (page 19-11).
- ECM 33P (Black) connector (page 4-25).

Check for continuity in the following wires:

- Black wire between the wire harness side 5P connector [1] and 6P connector [2]
- White wire between the wire harness side 5P connector and 33P (Black) connector [3]

TOOL:

Test probe, 2 packs

07ZAJ-RDJA110

There should be continuity.

If wires is OK, check the following.

Connect the 12 V battery (page 4-7).

Connect the fuel pump 5P connector.

Temporarily install the fuel tank.

Ground the wire harness side 33P (Black) connector [1] terminal with a jumper wire [2].

Connection: White (+) – Ground (–)

TOOL:

Test probe, 2 packs

07ZAJ-RDJA110

Turn the "ECM" selector switch ON and confirm that the fuel pump operates.

If the fuel pump does not operate, replace the fuel pump unit.

REMOVAL

Remove the fuel tank (page 7-11).

Remove the following:

- Five fuel pump unit mounting nuts [1]
- Fuel pump unit mounting cap nut [2]
- Stopper cable guide [3]
- Stopper cable [4]
- Washer [5]
- Six collars [6]
- Six conical spring washers [7]
- Fuel pump plate [8]

NOTE:

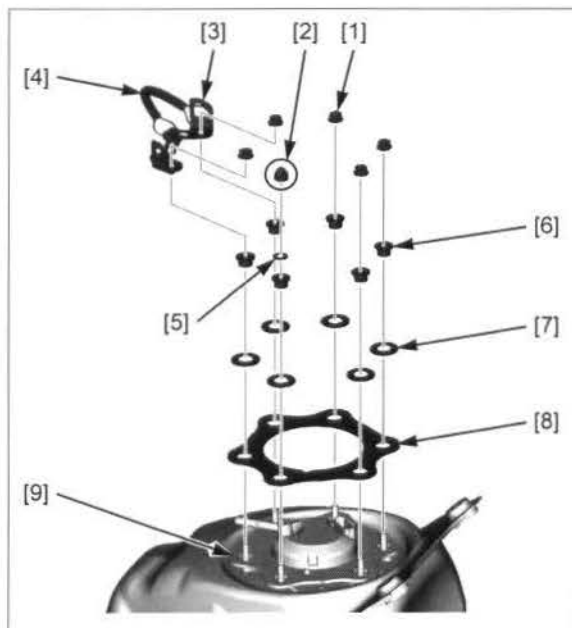
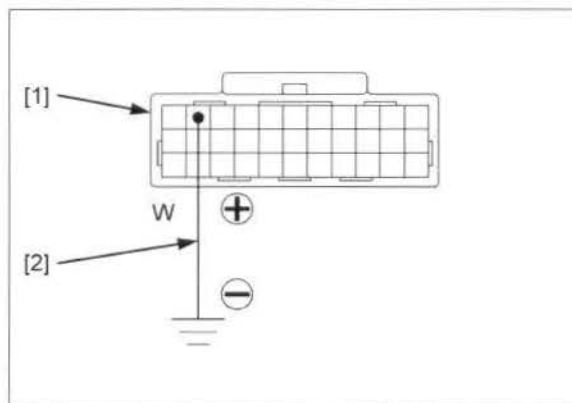
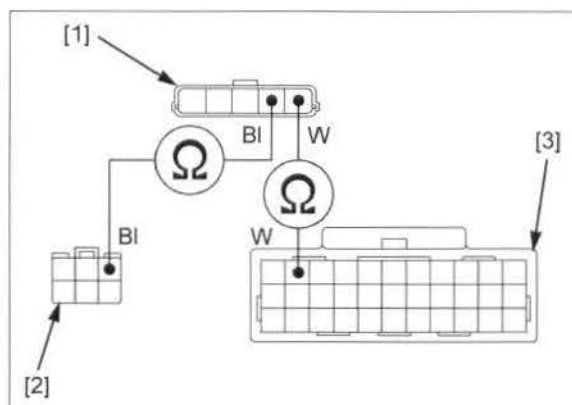
- Loosen the mounting nuts in a crisscross pattern in 2 or 3 step.

Remove the fuel pump unit [9].

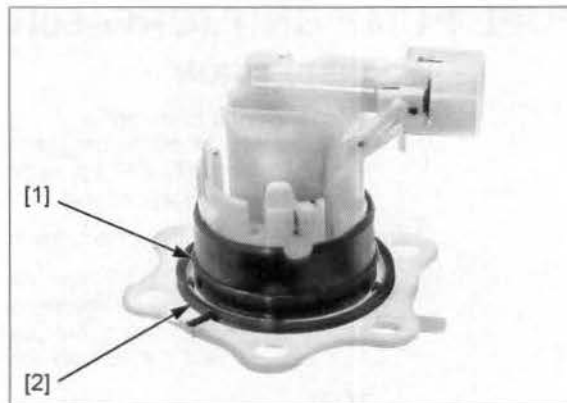
NOTE:

- Wipe up any spilled fuel immediately.

Be careful not to damage the fuel pump unit.



Remove the O-ring [1] and dust seal [2].



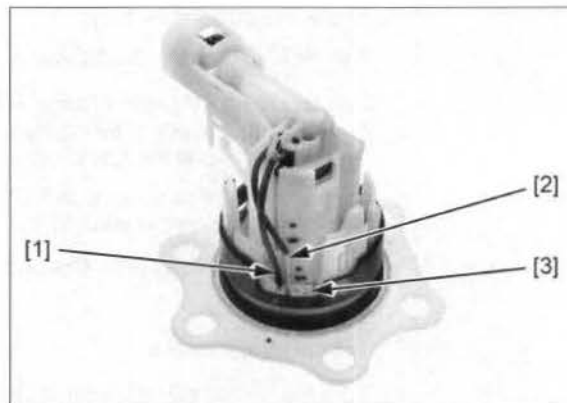
DISASSEMBLY AND INSPECTION

Remove the fuel pump unit (page 7-13).

Check the terminal for loose connection or damage.

Be careful not to damage the wires.

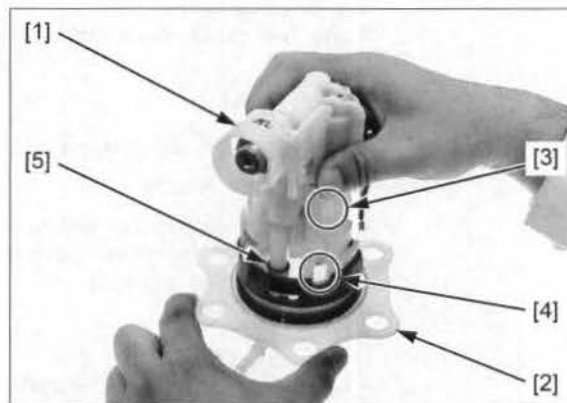
Disconnect the green wire [1] and yellow wire [2] from the fuel pump base terminals [3].



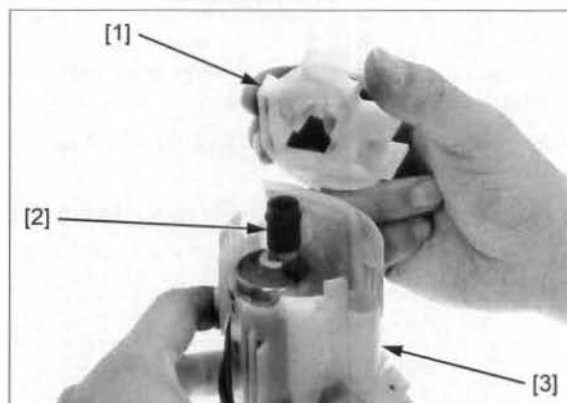
Wipe up any spilled fuel immediately.

Remove the fuel pump unit holder assembly [1] from the fuel pump base [2] by releasing the three hooks [3] from the grooves [4].

Remove the O-ring [5].



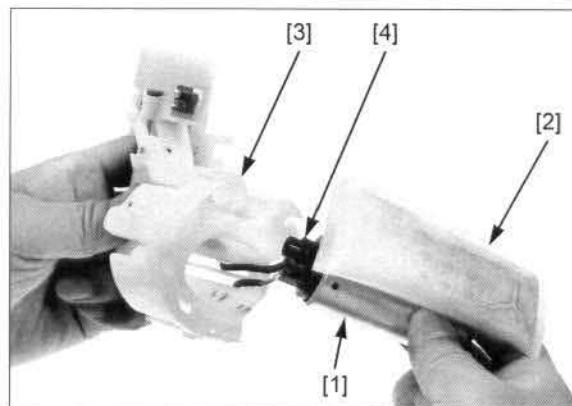
Remove the fuel pump stopper [1] and damper rubber [2] from the fuel unit holder assembly [3].



Be careful not to damage the wires.

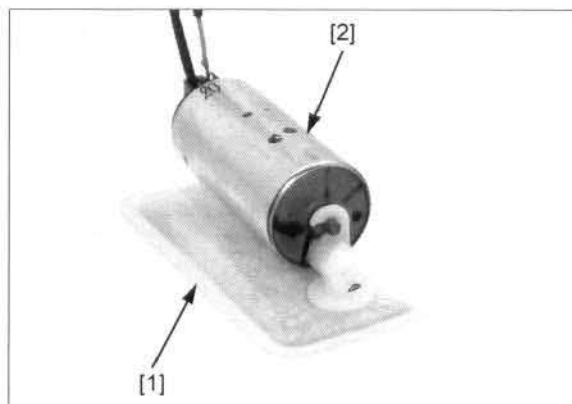
Remove the fuel pump assembly [1] with the fuel filter [2] from the fuel pump unit holder [3].

Remove the O-ring [4] from the fuel pump unit assembly.



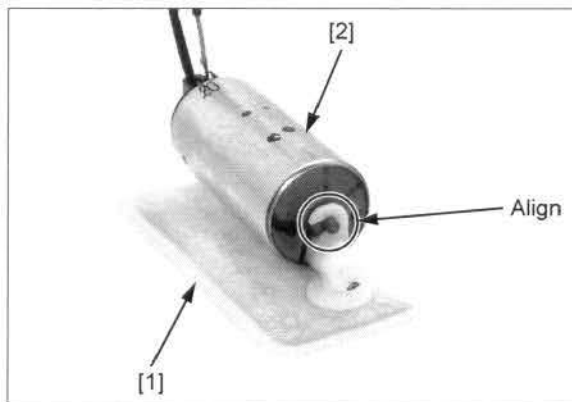
Remove the fuel filter [1] from the fuel pump assembly [2].

Check the fuel filter for clog, damage or deterioration and replace if necessary.



ASSEMBLY

Install the fuel filter [1] onto the fuel pump assembly [2] by aligning its hook with the joint boss securely.

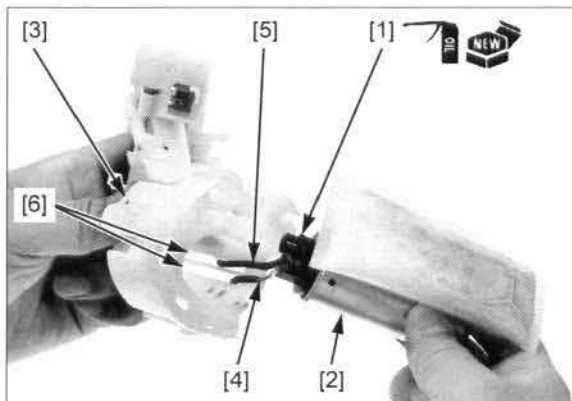


Apply engine oil to a new O-ring.

Install the O-ring [1] to the fuel pump assembly [2].

Be careful not to damage the wires.

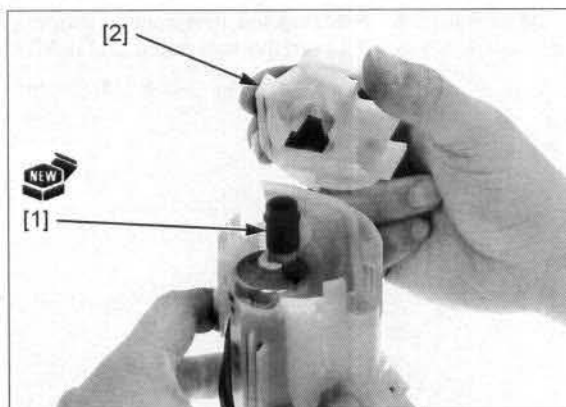
Install the fuel pump assembly into the fuel pump unit holder [3] while routing the green wire [4] and yellow wire [5] through the holder slots [6] as shown.



FUEL SYSTEM

Install a new damper rubber [1].

Install the fuel pump stopper [2].



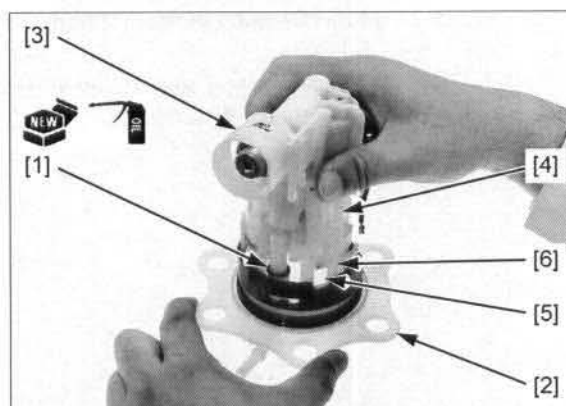
Apply engine oil to a new O-ring.

Install the O-ring [1] to the fuel pump base [2].

Install the fuel pump unit holder assembly [3] into the fuel pump base while holding its hooks [4].

NOTE:

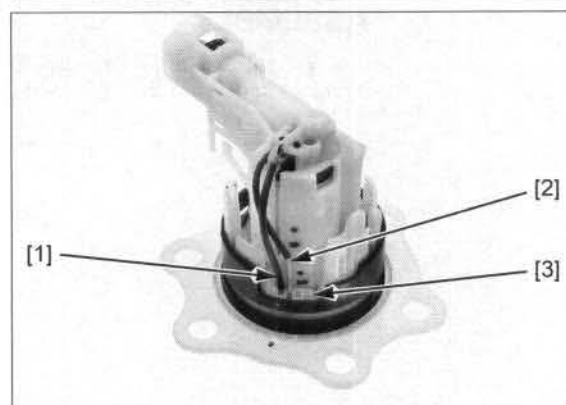
- Be sure that the hooks are completely seated at the pump base grooves [5].
- If the gap between the hooks and tabs [6] is more than 1.0 mm (0.04 in), replace the fuel pump unit.



Be careful not to damage the wires.

Connect the green wire [1] and yellow wire [2] to the fuel pump base terminals [3] securely as shown.

Install the fuel pump unit (page 7-16).

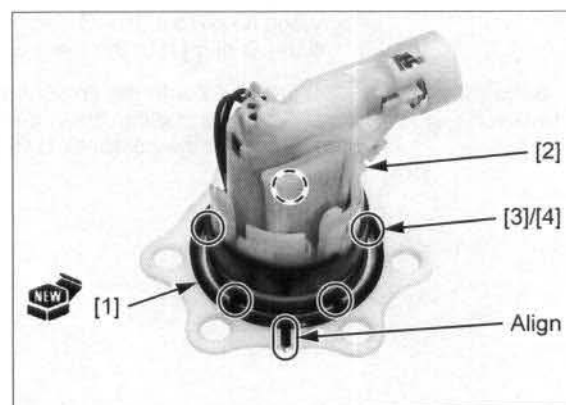


INSTALLATION

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

NOTE:

- Align the dust seal tabs [3] with the fuel pump unit grooves [4].
- Align the dust seal lip with the index line of the pump base.

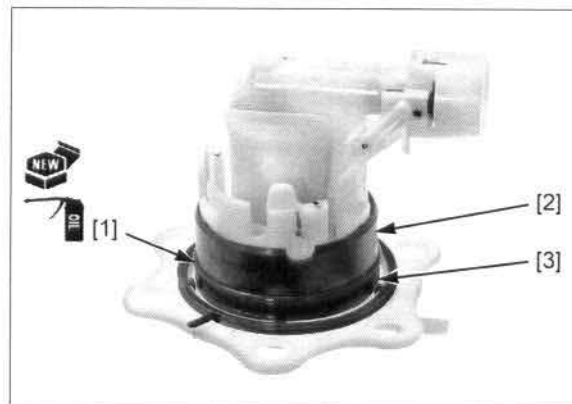


Apply engine oil to a new O-ring.

Install the O-ring [1] onto the fuel pump unit.

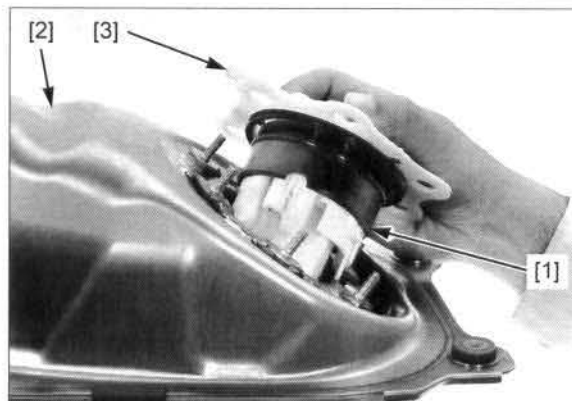
NOTE:

- Make sure that the O-ring is between the upper [2] and lower [3] collars.



Be careful not to damage the fuel pump unit.

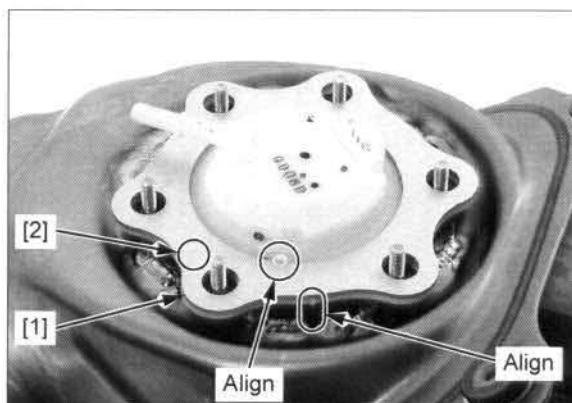
Install the fuel pump unit [1] into the fuel tank [2] with the fuel joint [3] facing forward.



Install the fuel pump plate [1] with the "△" mark [2] facing outside.

NOTE:

- Align the fuel pump plate groove with the fuel pump unit lug.
- Make sure that the dust seal lip aligned with the index mark of the plate.



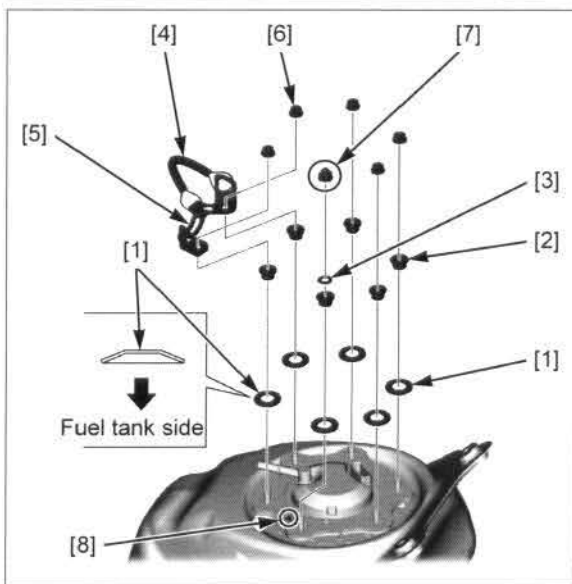
Install the following:

Install the conical spring washers in the shown direction.

- Six conical spring washers [1]
- Six collars [2]
- Washer [3]
- Stopper cable [4] (to the stopper cable guide)
- Stopper cable guide [5]
- Five fuel pump mounting nuts [6]
- Fuel pump mounting cap nut [7]

NOTE:

- Install the conical spring washers in the shown direction.
- Install the cap nut so that it is neighbored the "△" mark [8] on the fuel pump plate.

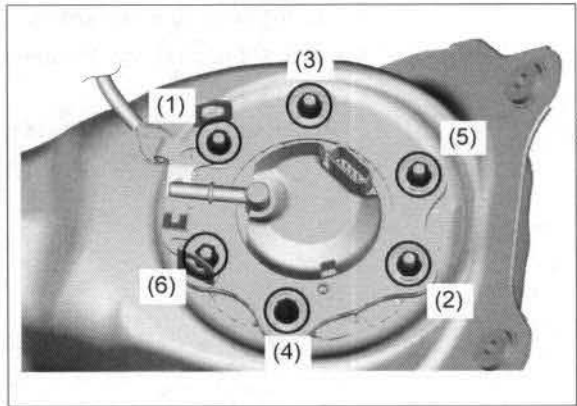


FUEL SYSTEM

Tighten the fuel pump mounting nuts to the specified torque in the specified sequence as shown.

TORQUE: 11 N·m (1.1 kgf·m, 8 lbf·ft)

Install the fuel tank (page 7-11).



FUEL PUMP UNIT (CRF450RX)

INSPECTION

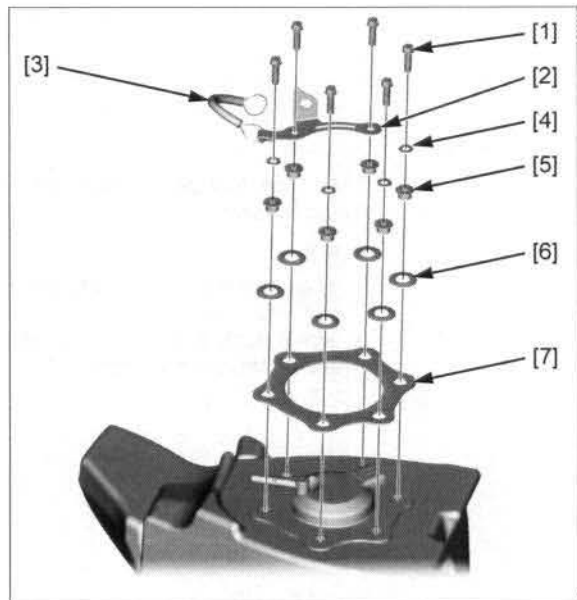
Refer to the "FUEL PUMP UNIT INSPECTION (CRF450R)" (page 7-13).

REMOVAL

Remove the fuel tank (page 7-12).

Remove the following:

- Six fuel pump mounting bolts [1]
- Stopper cable guide [2]
- Stopper cable [3]
- Four washers [4]
- Six collars [5]
- Six conical spring washers [6]
- Fuel pump plate [7]

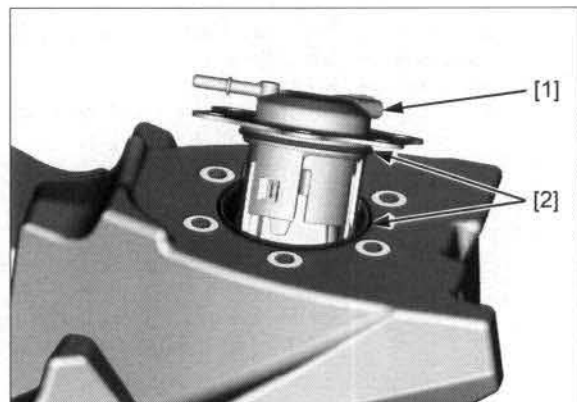


Be careful not to damage the fuel pump unit.

Remove the fuel pump unit [1] and O-rings [2].

NOTE:

- Wipe up any spilled fuel immediately.

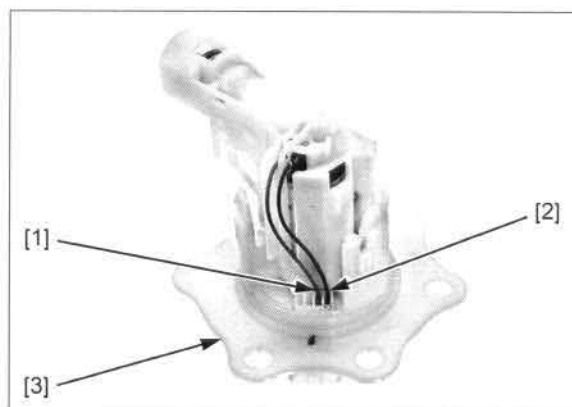


DISASSEMBLY AND INSPECTION

Remove the fuel pump unit (page 7-18).

Check the terminal for loose connection or damage.

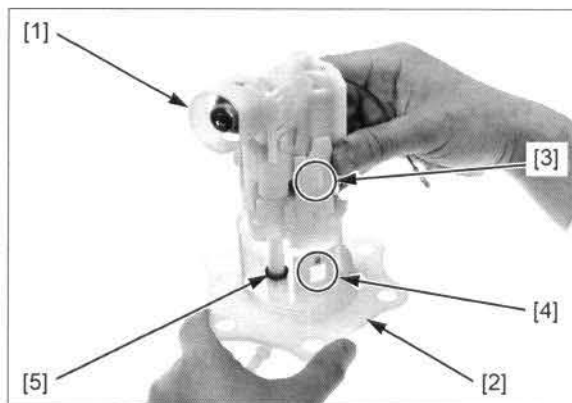
Disconnect the Red wire [1] and Black wire [2] from the fuel pump base [3].



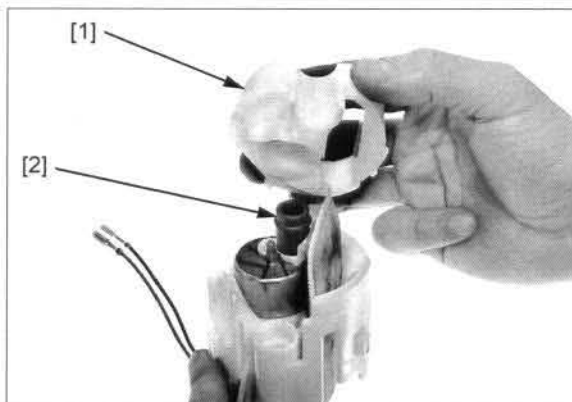
Wipe up any spilled fuel immediately.

Remove the fuel pump unit holder assembly [1] from the fuel pump base [2] by releasing the three hooks [3] from the grooves [4].

Remove the O-ring [5].



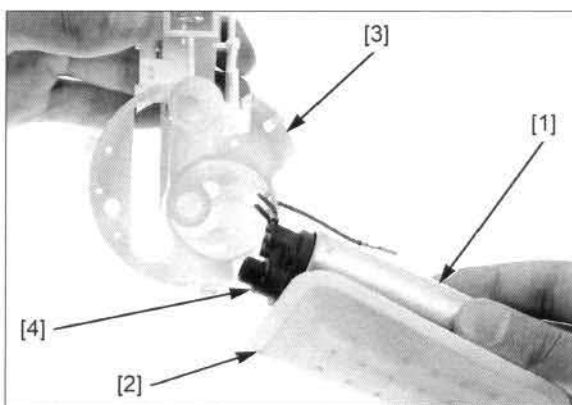
Remove the fuel pump stopper [1] and damper rubber [2] from the fuel unit holder assembly.



Be careful not to damage the wires.

Remove the fuel pump assembly [1] with the fuel filter [2] from the fuel pump unit holder [3].

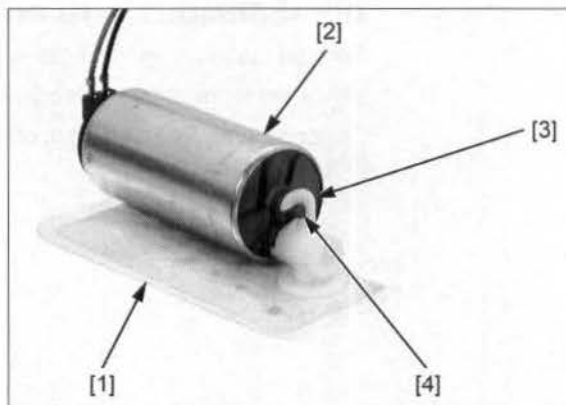
Remove the O-ring [4] from the fuel pump unit assembly.



FUEL SYSTEM

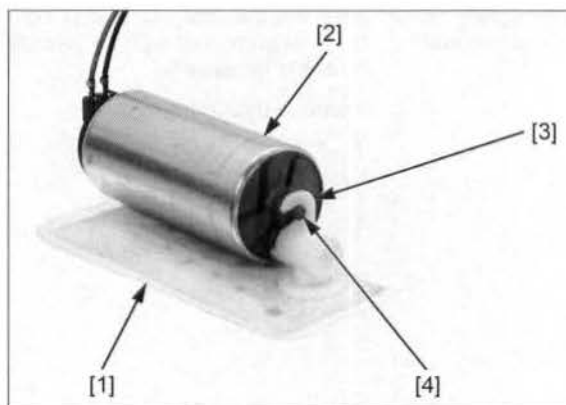
Check the fuel filter [1] for clog, damage or deterioration and replace if necessary.

Remove the fuel filter from the fuel pump assembly [2].



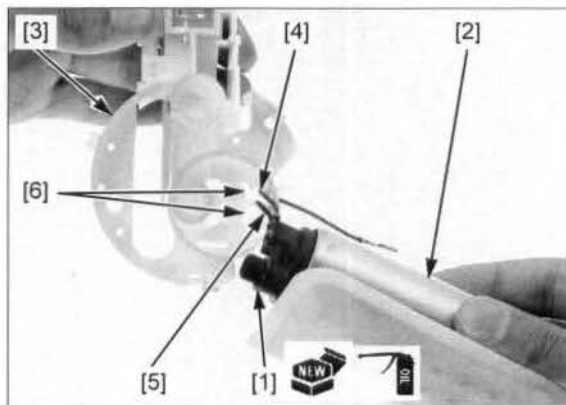
ASSEMBLY

Install the fuel filter [1] onto the fuel pump assembly joint aligning its hook [3] with the joint boss [4] completely.



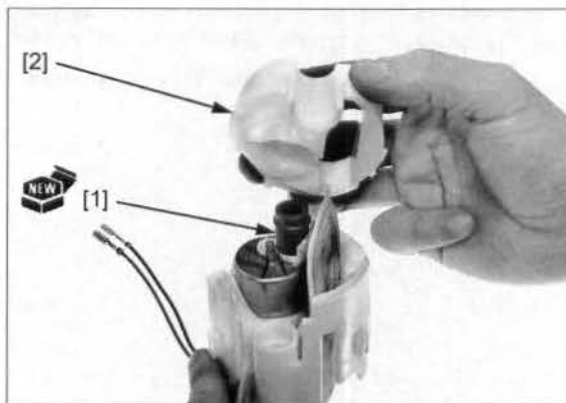
Apply small amount of engine oil to a new O-ring [1].
Install the O-ring to the fuel pump assembly.

Install the fuel pump assembly [2] into the fuel pump unit holder [3] while routing the Red wire [4] and Black wire [5] through the holder grooves [6] as shown.



Install a new damper rubber [1] to the fuel pump as shown.

Install the fuel pump stopper [2].



Apply small amount of engine oil to a new O-ring [1].
Install the O-ring to the fuel pump base [2].

Install the fuel pump unit holder assembly [3] into the fuel pump base while aligning its hooks with the grooves in the pump base tabs.

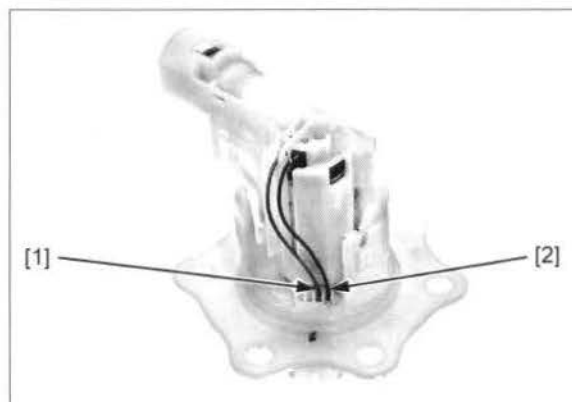
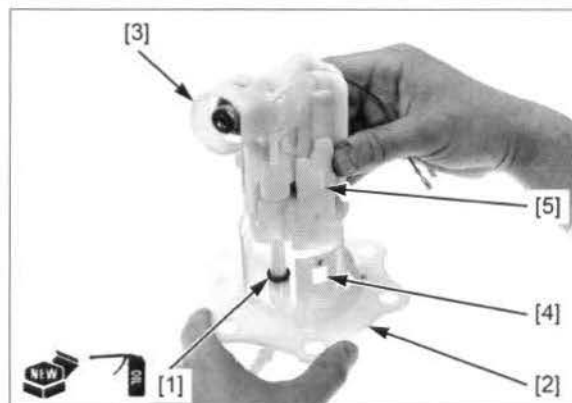
NOTE:

- Be sure that the hooks are completely seated at the pump base grooves [4].
- If the gap between the hooks and tabs [5] is more than 1.0 mm (0.04 in), replace the fuel pump unit.

Be careful not to damage the fuel pump wires.

Connect the Red wire [1] and Black wire [2] to the fuel pump base terminals completely as shown.

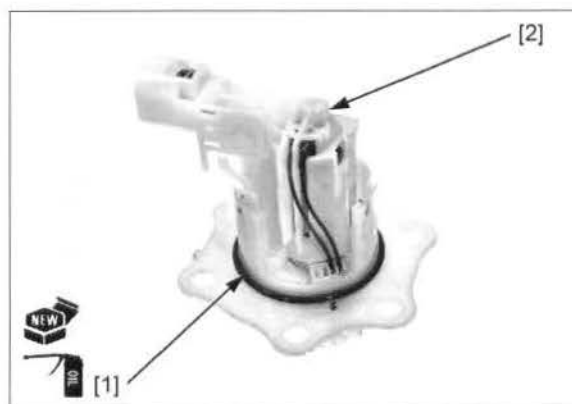
Install the fuel pump unit (page 7-21).



INSTALLATION

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

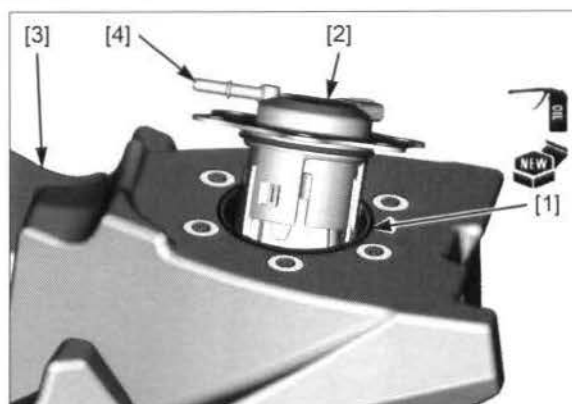
Install the O-ring onto the fuel pump unit [2].



Apply engine oil to a new O-ring.

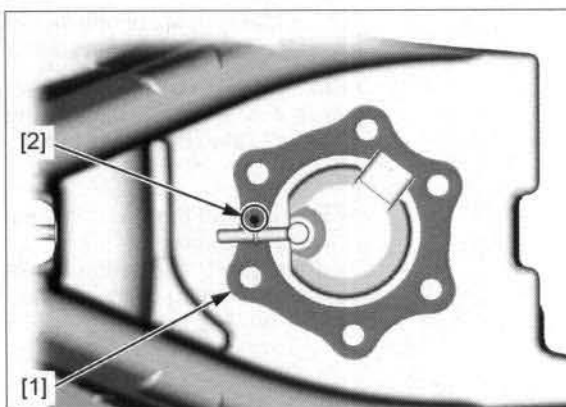
Install the O-ring [1] onto the fuel tank groove.

Install the fuel pump unit [2] into the fuel tank [3] with the fuel joint [4] facing forward.



FUEL SYSTEM

Install the fuel pump plate [1] with its identification mark [2] facing forward and up.

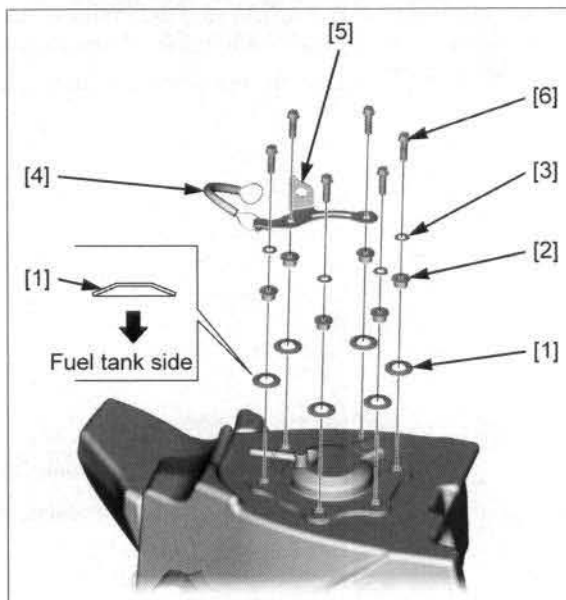


Install the following:

- Six conical spring washers [1]
- Six collars [2]
- Four washers [3]
- Stopper cable [4] (to the stopper cable guide)
- Stopper cable guide [5]
- Six fuel pump mounting bolts [6]

NOTE:

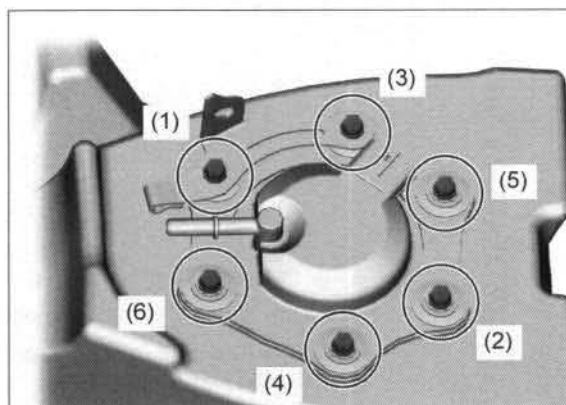
- Install the conical spring washers in the shown direction.



Tighten the fuel pump mounting bolts to the specified torque in the specified sequence as shown.

TORQUE: 11 N·m (1.1 kgf·m, 8 lbf·ft)

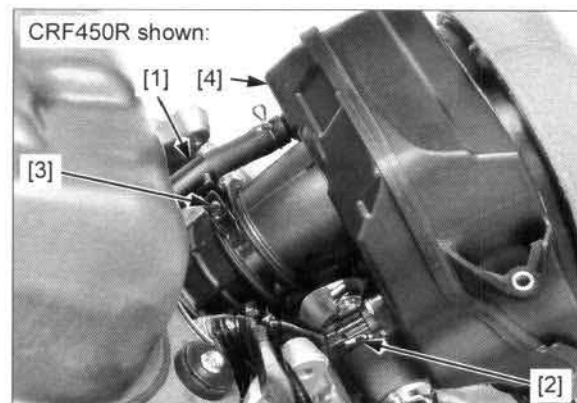
Install the fuel tank (page 7-12).



AIR CLEANER HOUSING

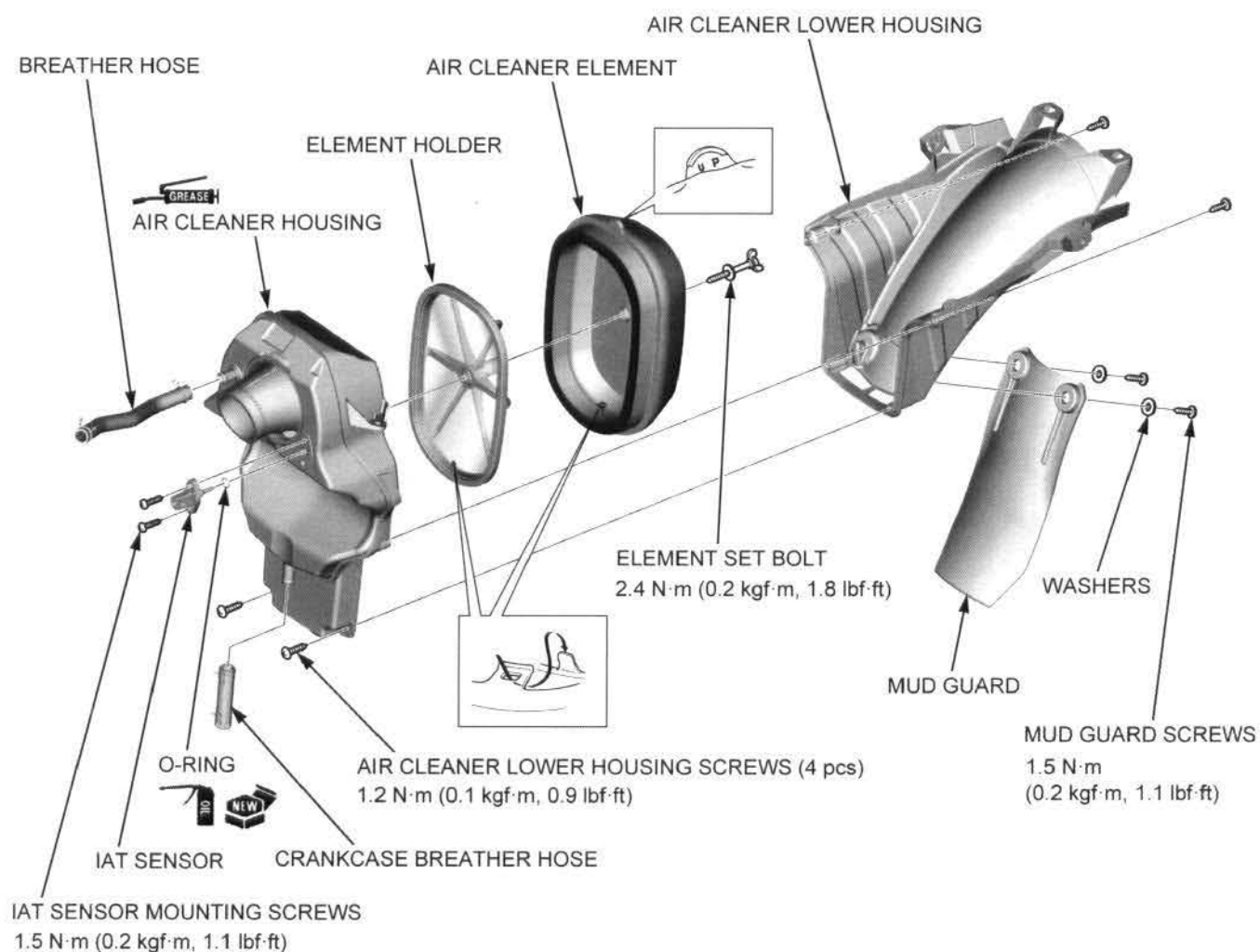
REMOVAL

- Remove the rear frame (page 2-6).
- Disconnect the breather hose [1].
- Disconnect the IAT sensor 2P (Black) connector [2].
- Loosen the connecting hose band screw [3].
- Remove the air cleaner housing [4].



DISASSEMBLY/ASSEMBLY

- Remove the air cleaner housing (page 7-23).



NOTE:

- Apply 1.5 – 5.5 g (0.1 – 0.2 oz) of grease to the air cleaner element contacting area of the air cleaner housing.

INSTALLATION

Install the air cleaner housing [1] but do not tighten the hose band screw [2] yet.

NOTE:

- Align the tab of the air funnel with the index mark of the connecting hose.

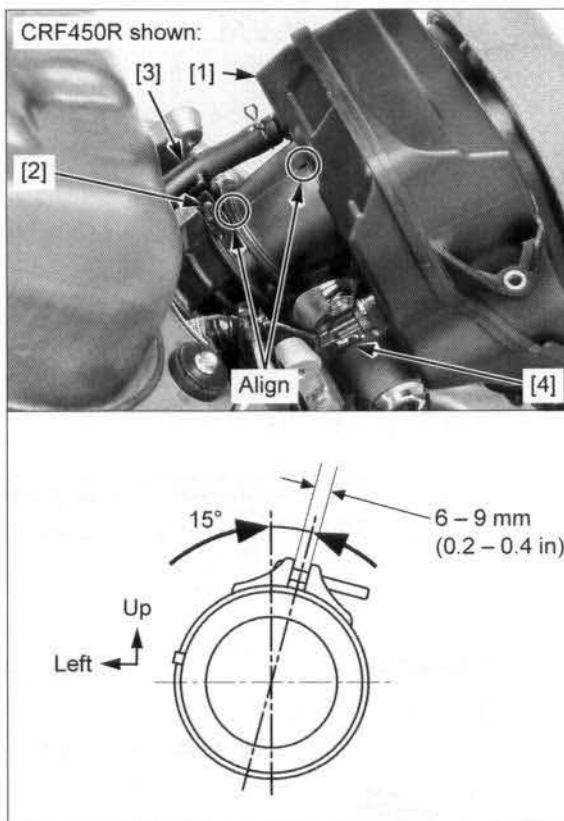
Connect the breather hose [3].

Connect the IAT sensor 2P (Black) connector [4].

Temporarily install the rear frame.

Tighten the connecting hose band screw to the specified range as shown.

Install the rear frame (page 2-6).



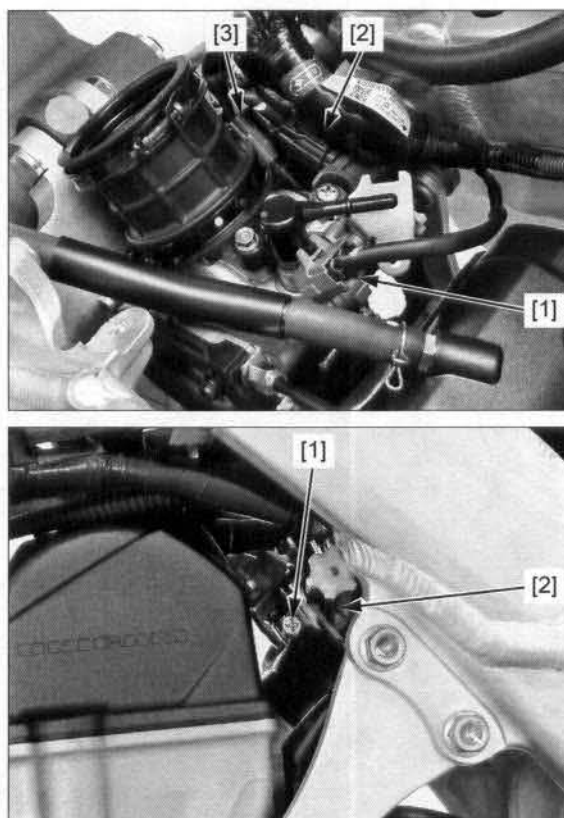
THROTTLE BODY

REMOVAL

Remove the air cleaner housing (page 7-23).

Disconnect the quick connect fitting from the fuel injector side (page 7-5).

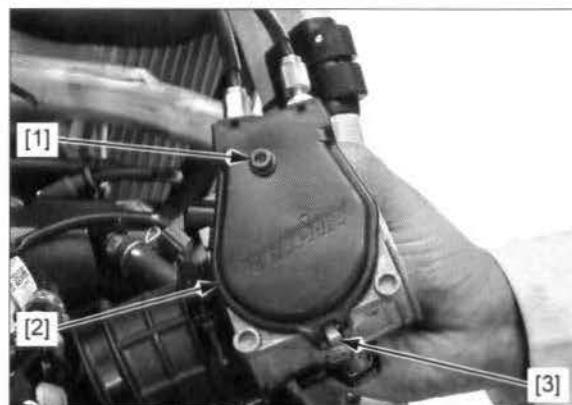
Disconnect the fuel injector 2P (Gray) [1], MAP sensor 3P (Black) [2], and TP sensor 3P (Blue) [3] connectors.



Loosen the insulator band screw [1].

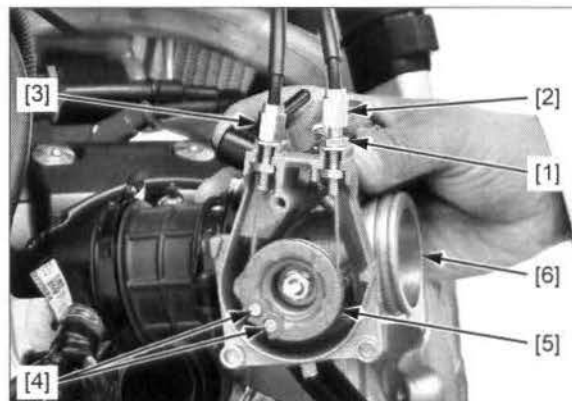
Disconnect the throttle body [2].

Remove the drum cover bolt [1].
Remove the throttle drum cover [2] while releasing its slot from the throttle body tab [3].



Loosen the throttle cable adjuster lock nut [1], adjuster [2] and cable bolts [3], then disconnect the throttle cables [4] from the throttle drum [5].

Remove the throttle body [6].



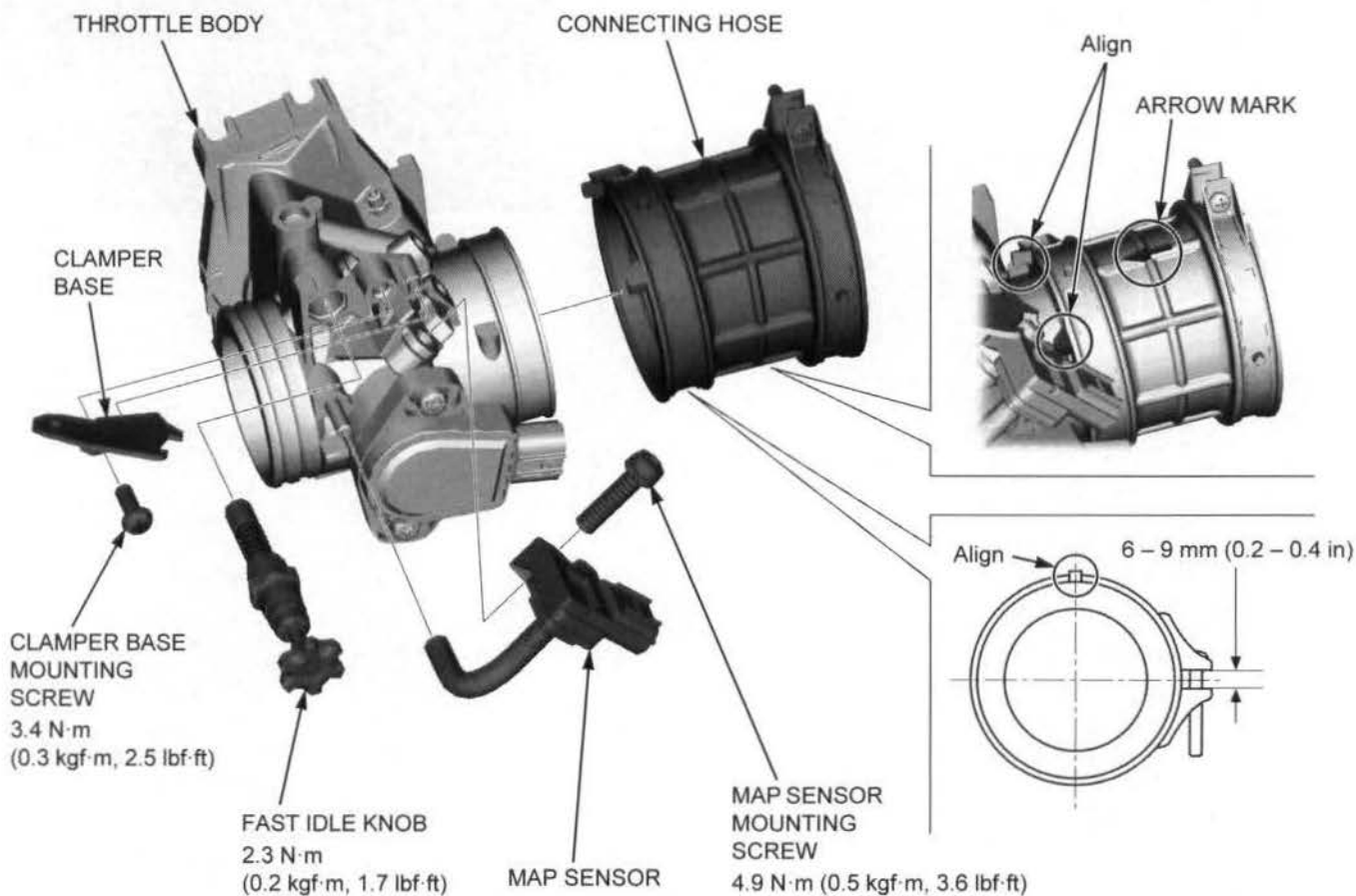
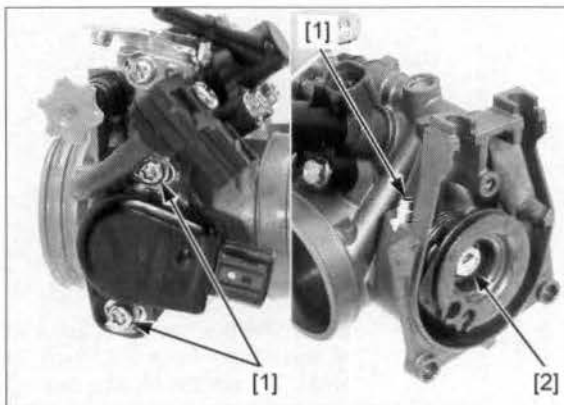
DISASSEMBLY/ASSEMBLY

NOTICE

- Do not loosen or tighten the white painted screws [1], and nut [2] of the throttle body. Loosening or tightening them can cause throttle valve and idle control failure.
- Always clean the throttle body before disassembly to prevent dirt and debris from entering the passages.

NOTE:

- Cleaning the air passages with a piece of wire will damage the throttle body.
- Install the connecting hose with its arrow mark facing up as shown.
- Align the connecting hose bosses with the throttle body lugs as shown.
- Align the band hole with the connecting hose tab.
- Tighten the connecting hose band screw to the specified range as shown.

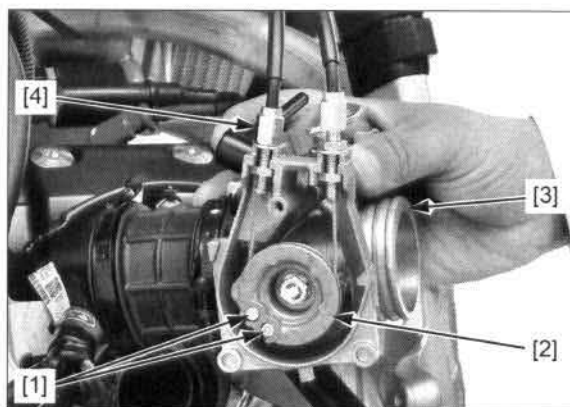


INSTALLATION

Connect the throttle cables [1] to the throttle drum [2] and throttle body [3].

Tighten the throttle cable bolt [4] to the specified torque.

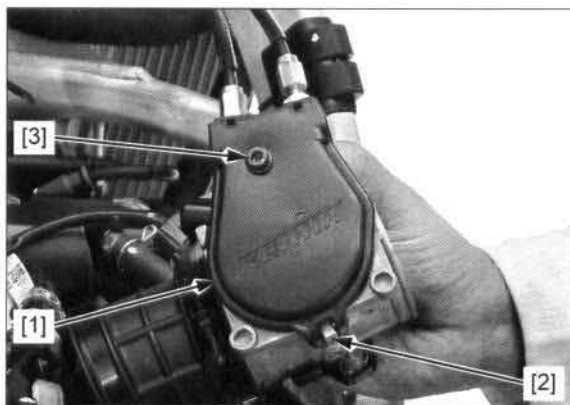
TORQUE: 4.0 N·m (0.4 kgf·m, 3.0 lbf·ft)



Install the throttle drum cover [1] while aligning its slot with the tab [2] of the throttle body.

Install and tighten the bolt [3] to the specified torque.

TORQUE: 3.4 N·m (0.3 kgf·m, 2.5 lbf·ft)

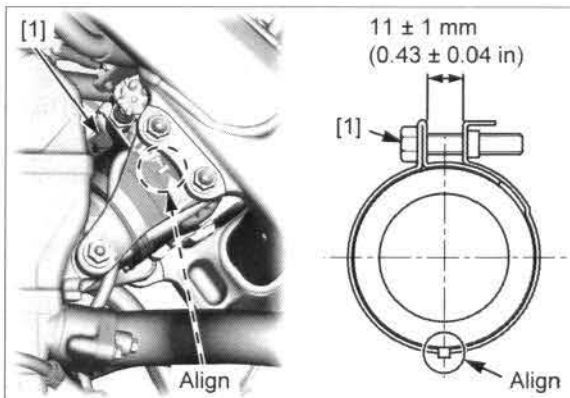


Install the throttle body by aligning its tab with the insulator groove.

Tighten the insulator band screw [1] to the specified range as shown.

NOTE:

- Align the insulator band hole with the insulator tab.

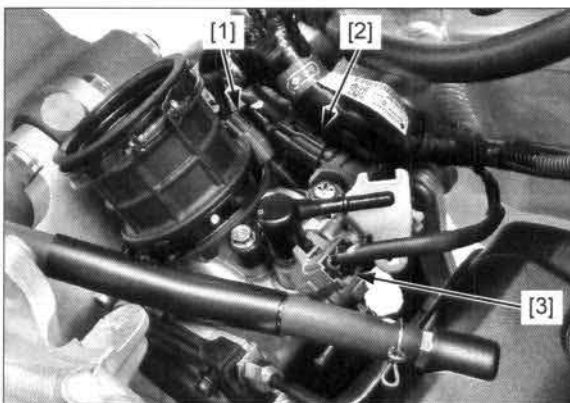


Connect the TP sensor 3P (Blue) [1], MAP sensor 3P (Black) [2], and fuel injector 2P (Gray) [3] connectors.

Connect the quick connect fitting to the fuel injector side (page 7-6).

Adjust the throttle grip freeplay (page 3-8).

Install the air cleaner housing (page 7-24).



FUEL INJECTOR

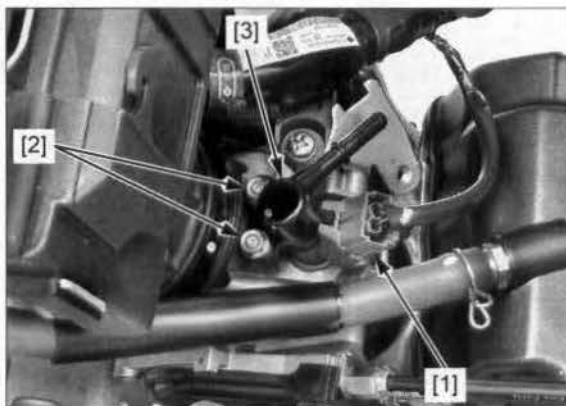
REMOVAL

Disconnect the quick connect fitting from the fuel injector joint (page 7-5).

Clean around the fuel injector with compressed air before removing the fuel injector.

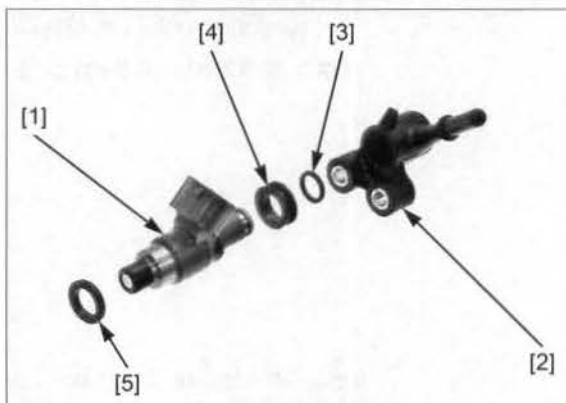
Disconnect the fuel injector 2P (Gray) connector [1].

Remove the fuel injector mounting bolts [2] and fuel injector assembly [3].



Remove the following from the fuel injector [1].

- Fuel injector joint [2]
- O-ring [3]
- Cushion ring [4]
- Seal ring [5]



INSTALLATION

Install a new cushion ring [1] to the injector [2].

Apply engine oil to a new O-ring and seal ring. Install the O-ring [3] and seal ring [4] to the injector.

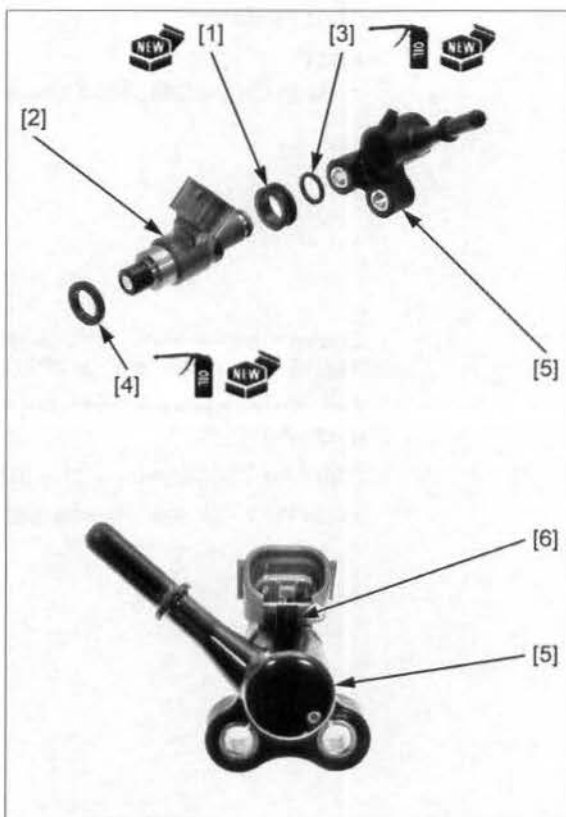
NOTE:

- Always replace the O-ring, cushion ring, and seal ring with new ones.

Install the fuel injector into the fuel injector joint [5].

NOTE:

- Align the boss [6] of the injector joint against the fuel injector as shown.



Install the fuel injector assembly [1].

Install and tighten the fuel injector mounting bolts [2] to the specified torque.

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

Connect the fuel injector 2P (Gray) connector [3].

Connect the quick connect fitting (page 7-6).



FAST IDLE KNOB

INSPECTION

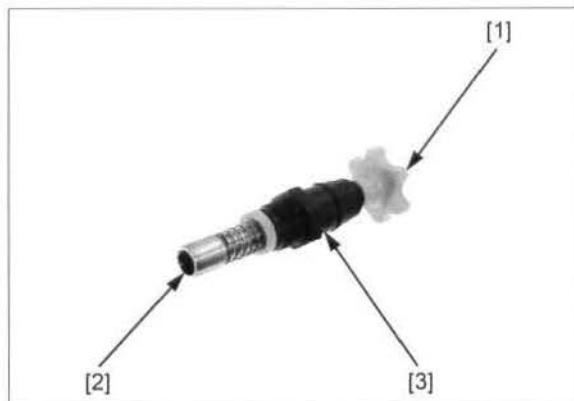
Remove the fast idle knob (page 7-26).

Check the fast idle knob operation:

- Turn the fast idle knob [1] counterclockwise, then the valve [2] should be pulled into the valve body [3].
- Turn the fast idle knob clockwise, then the valve should be come out from the valve body.

Check the fast idle knob for wear or damage.

Replace the fast idle knob if necessary.



MEMO



SERVICE INFORMATION.....	8-2	PRESSURE RELIEF VALVE.....	8-6
TROUBLESHOOTING	8-2	OIL FILTER SCREEN	8-8
LUBRICATION SYSTEM DIAGRAM.....	8-3	PISTON JET	8-8
OIL PUMP	8-4		

SERVICE INFORMATION

GENERAL

⚠ CAUTION

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

- The scavenge pump and pressure relief valve (scavenge pump side) service requires crankcase separation.
- The oil feed pump, pressure relief valve (oil feed pump side), and oil filter screen 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 servicing 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.

TROUBLESHOOTING

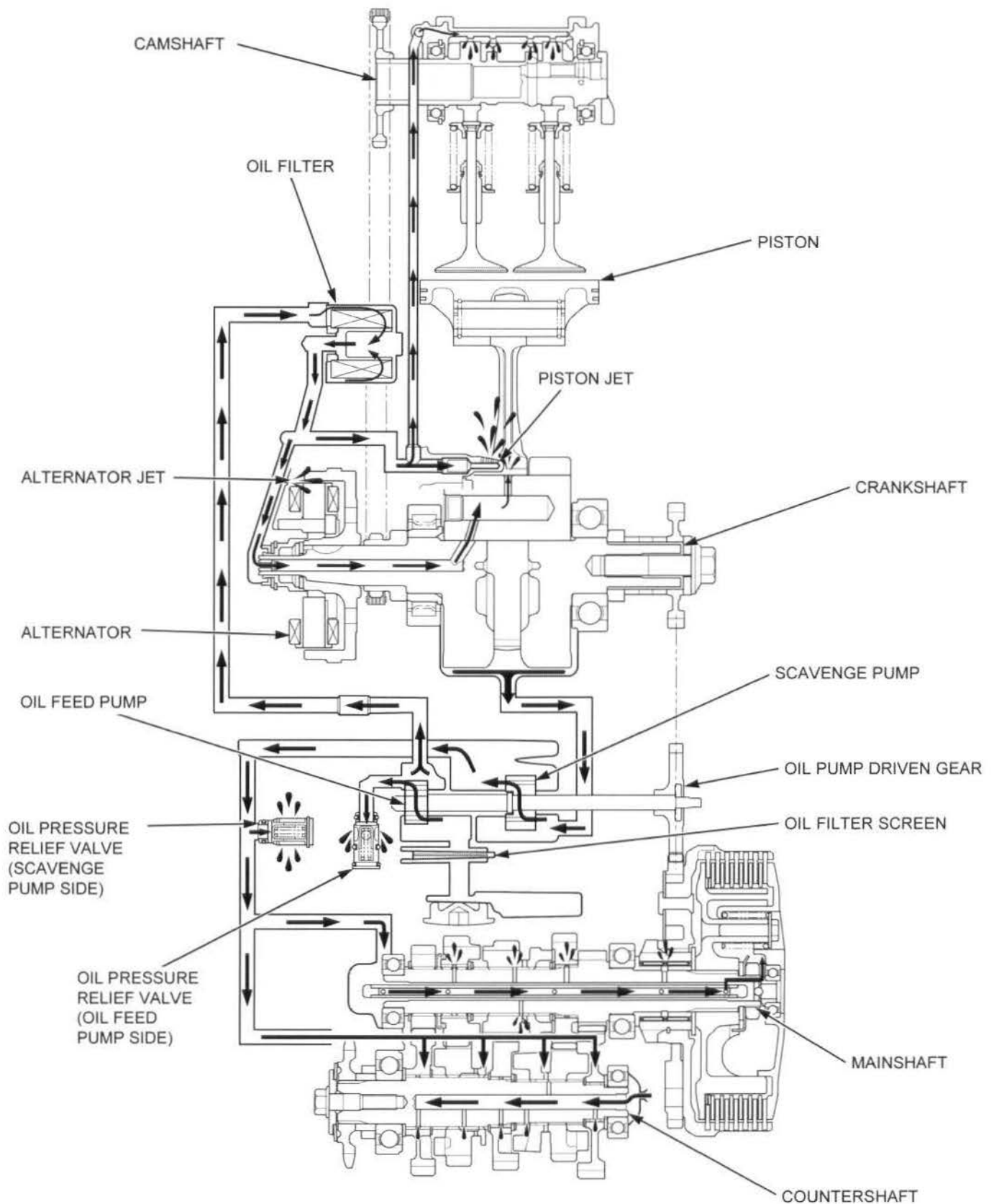
Engine oil level too low, high oil consumption

- Engine oil not changed often enough
- External oil leaks
- Worn piston rings or incorrect piston ring installation
- Worn cylinder
- Worn valve guide or stem seal

Engine oil contamination

- Engine oil or filter not changed often enough
- Worn piston rings or incorrect piston ring installation
- Worn valve guide or stem seal
- Coolant mixing with oil
 - Faulty cylinder head gasket
 - Water leak in crankcase

LUBRICATION SYSTEM DIAGRAM

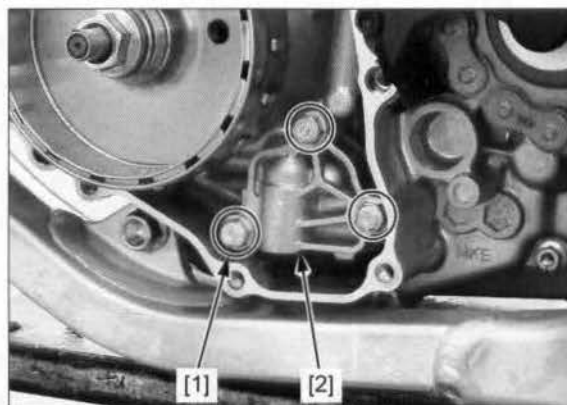


OIL PUMP

OIL FEED PUMP REMOVAL/ INSTALLATION

Remove the left crankcase cover (page 13-4).

Remove the bolts [1] and oil pump cover [2].



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

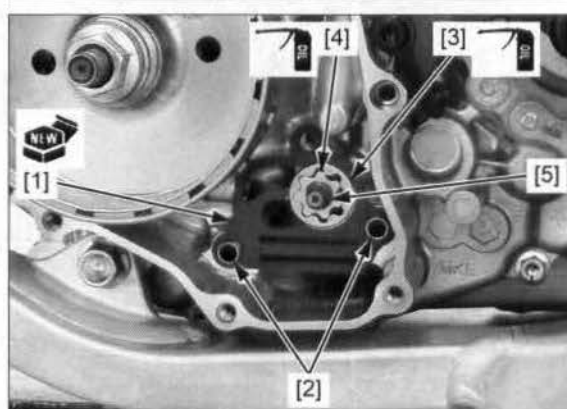
Remove the oil feed pump outer rotor [3] and inner rotor [4] from the left crankcase.

Installation is in the reverse order of removal.

NOTE:

- Always replace the gasket with a new one.
- Apply engine oil to the pump rotors sliding area.
- Align the inner rotor cut-out with the flat surface of the oil pump shaft [5].

Install the left crankcase cover (page 13-5).



SCAVENGE PUMP REMOVAL/ INSTALLATION

Separate the crankcase halves (page 14-9).

Remove the oil pump shaft [1].

Remove the drive pin [2] from the shaft.

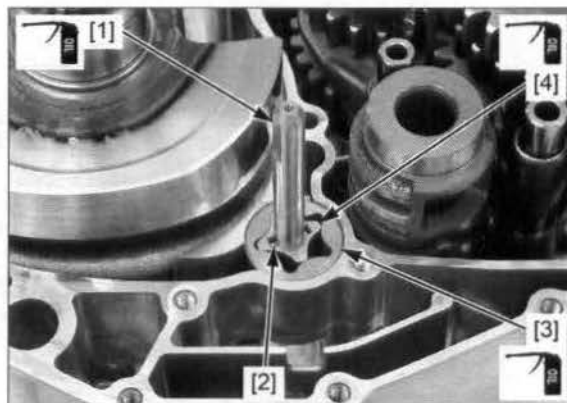
Remove the scavenge pump outer rotor [3] and inner rotor [4] from the right crankcase.

Installation is in the reverse order of removal.

NOTE:

- Apply engine oil to the pump rotors sliding area.
- Apply engine oil to the oil pump shaft sliding area.
- Install the inner rotor with the groove side facing up.
- Install the oil pump shaft with the single flat surface side facing up.
- Align the drive pin with the groove of the inner rotor.

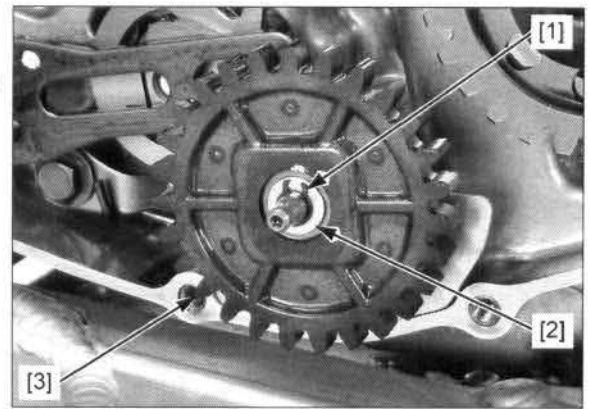
Assemble the crankcase halves (page 14-11).



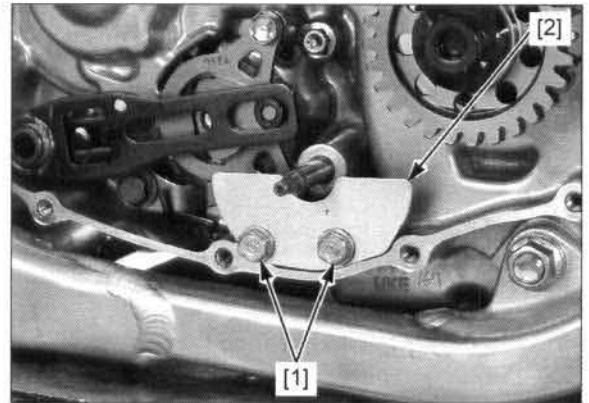
OIL PUMP DRIVEN GEAR REMOVAL

Remove the right crankcase cover (page 12-8).
Remove the clutch (page 12-11).

Remove the snap ring [1], washer [2], and oil pump driven gear [3].



Remove the oil pump driven gear guide plate bolts [1] and oil guide plate [2].

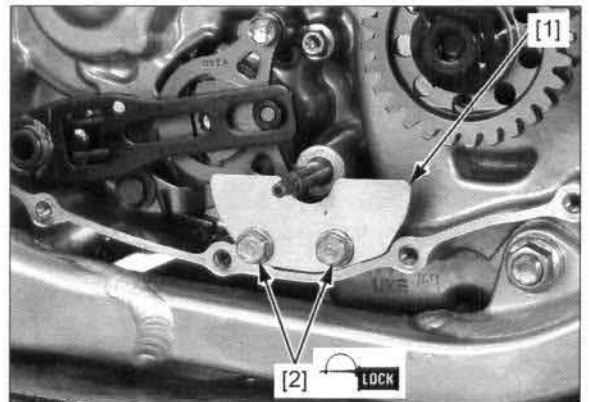
**OIL PUMP DRIVEN GEAR INSTALLATION**

Apply locking agent to the oil pump driven gear guide plate bolts threads.

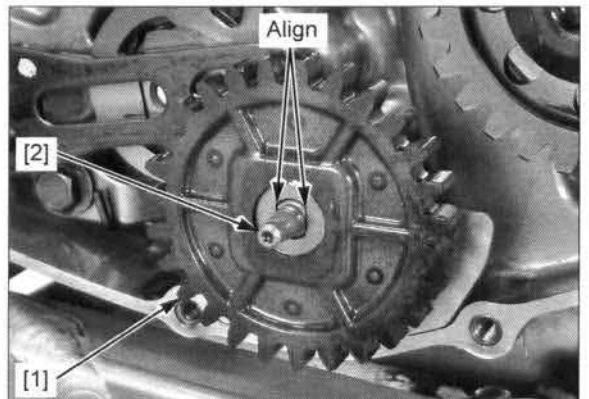
Install the oil guide plate [1] and bolts [2].

Tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



install the oil pump driven gear [1] by aligning its cut-out with the flat surface of the oil pump shaft [2].



LUBRICATION SYSTEM

Install the washer [1] and snap ring [2].

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.

Install the clutch (page 12-16).

Install the right crankcase cover (page 12-10).



INSPECTION

Inspect the following parts for damage, abnormal wear, deformation or burning:

- Oil pump shaft
- Inner rotor (oil feed pump side)
- Outer rotor (oil feed pump side)
- Inner rotor (scavenge pump side)
- Outer rotor (scavenge pump side)
- Oil pump driven gear

Measure the oil pump clearances according to LUBRICATION SYSTEM SPECIFICATIONS (page 1-6).

If any of the measurement is out of the service limit, replace the oil pump as an assembly.

PRESSURE RELIEF VALVE

PRESSURE RELIEF VALVE (OIL FEED PUMP SIDE) REMOVAL/INSPECTION

Remove the oil pump cover (page 8-4).

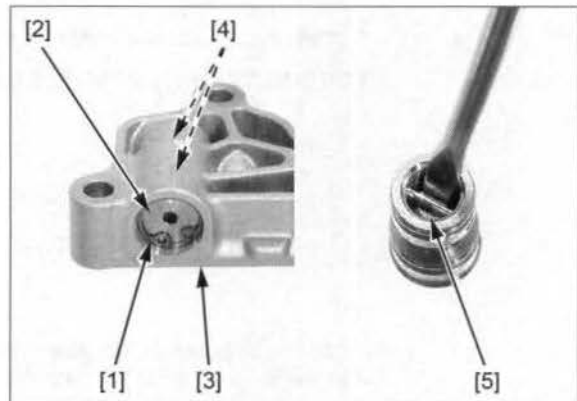
Remove the snap ring [1] and pressure relief valve [2] from the oil pump cover [3].

Remove the O-rings [4].

Check the operation of the valve by pushing on the piston [5].

Check the pressure relief valve for damage or clogs.

Replace the pressure relief valve if necessary.



PRESSURE RELIEF VALVE (OIL FEED PUMP SIDE) INSTALLATION

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

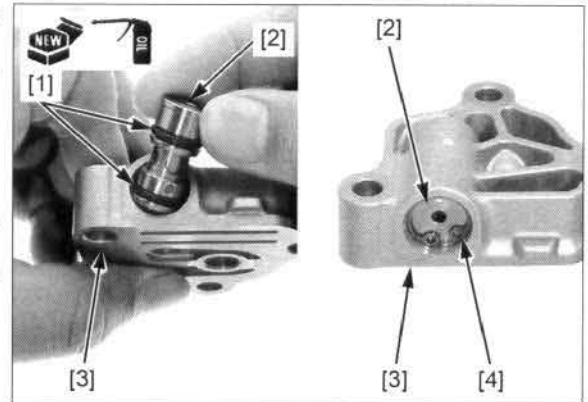
Install the pressure relief valve into the oil pump cover [3].

Install the snap ring [4] 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.

Install the oil pump cover (page 8-4).



PRESSURE RELIEF VALVE (SCAVENGE PUMP SIDE) REMOVAL/INSPECTION

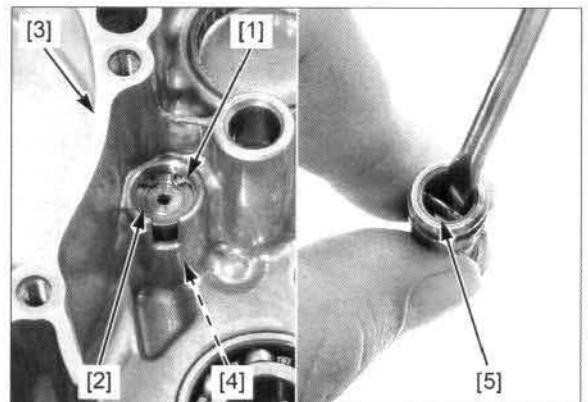
Separate the crankcase halves (page 14-9).

Remove the snap ring [1] and pressure relief valve [2] from the left crankcase [3].

Remove the O-ring [4].

Check the operation of the valve by pushing on the piston [5].

Check the pressure relief valve for damage or clogs. Replace the pressure relief valve if necessary.



PRESSURE RELIEF VALVE (SCAVENGE PUMP SIDE) INSTALLATION

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

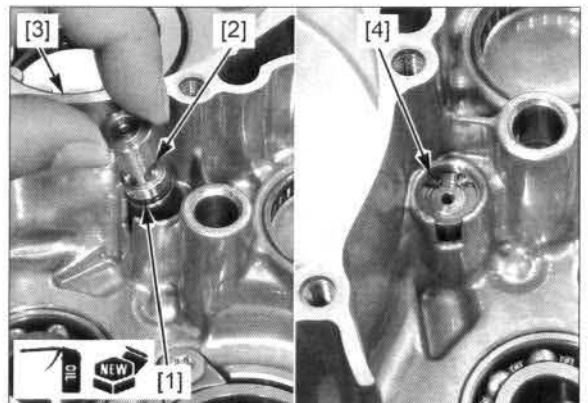
Install the pressure relief valve into the left crankcase [3].

Install the snap ring [4] 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.

Assemble the crankcase halves (page 14-11).



OIL FILTER SCREEN

REMOVAL/INSTALLATION

Remove the oil pump cover, gasket and dowel pins (page 8-4).

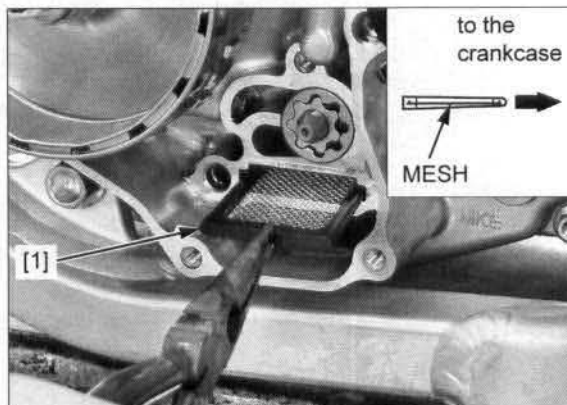
Remove the oil filter screen [1].

Clean the oil filter screen with non-flammable or high flash point solvent and wipe it dry.

Check the oil filter screen for damage or clogs.

Install the oil filter screen to the crankcase as shown.

Install the dowel pins, new gasket and oil pump cover (page 8-4).



PISTON JET

Separate the crankcase halves (page 14-9).

Remove the piston jet bolt [1] and piston jet [2].

Blow the oil passage in the piston jet with compressed air.

Check the piston jet for clogs, wear or damage and replace it if necessary.

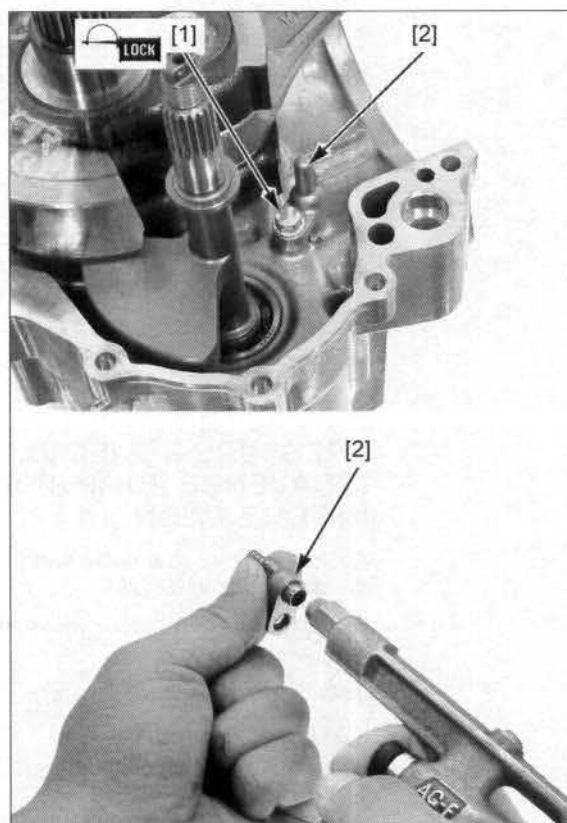
Installation is in the reverse order of removal.

NOTE:

- Apply locking agent to the piston jet mounting bolt threads.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Assemble the crankcase halves (page 14-11).



SERVICE INFORMATION.....	9-2	COOLANT REPLACEMENT	9-5
TROUBLESHOOTING	9-3	RADIATOR.....	9-6
SYSTEM FLOW PATTERN.....	9-4	WATER PUMP	9-7
SYSTEM TESTING.....	9-5		

SERVICE INFORMATION

GENERAL

⚠ WARNING


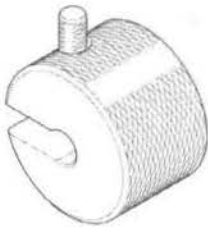
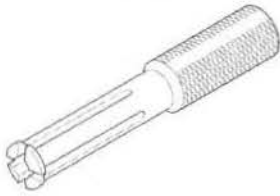


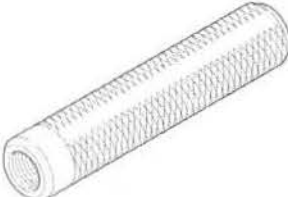
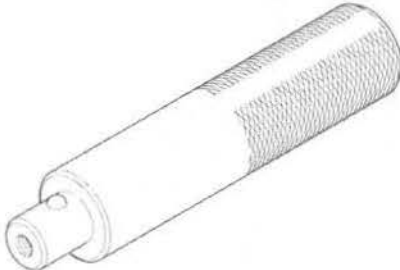


Removing the radiator cap while the engine is hot can allow the coolant to spray out, seriously scalding you. Always let the engine and radiator cool down before removing the radiator cap.

NOTICE

Using coolant with silicate inhibitors may cause premature wear of mechanical seal or blockage of radiator passages. Using tap water may cause engine damage.

- 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.
- After servicing the system, check for leaks with a cooling system tester.
- Refer to the ECT sensor inspection (page 4-25).

TOOLS

<p>Bearing remover set, 12 mm 07936-1660101</p>  <p>not available in U.S.A.</p>	<p>Remover weight 07741-0010201</p>  <p>or 07936-371020A (U.S.A. only)</p>	<p>Remover head, 12 mm 07936-1660110</p>  <p>not available in U.S.A.</p>
<p>Remover shaft 07936-1660120</p>  <p>not available in U.S.A.</p>	<p>Bearing remover, 12 mm 07936-166010A (U.S.A. only)</p> 	<p>Remover handle 07936-3710100 (U.S.A. only)</p> 
<p>Driver 07749-0010000</p> 	<p>Attachment, 22 x 24 mm 07746-0010800</p> 	<p>Pilot, 12 mm 07746-0040200</p> 

<p>Installer collar 070MF-MEN0210</p>  <p>or 070MF-MENA210 (U.S.A. only)</p>	<p>Attachment, 28 x 30 mm 07946-1870100</p> 	<p>Attachment, 32 x 35 mm 07746-0010100</p> 
---	---	---

TROUBLESHOOTING

Engine temperature too high

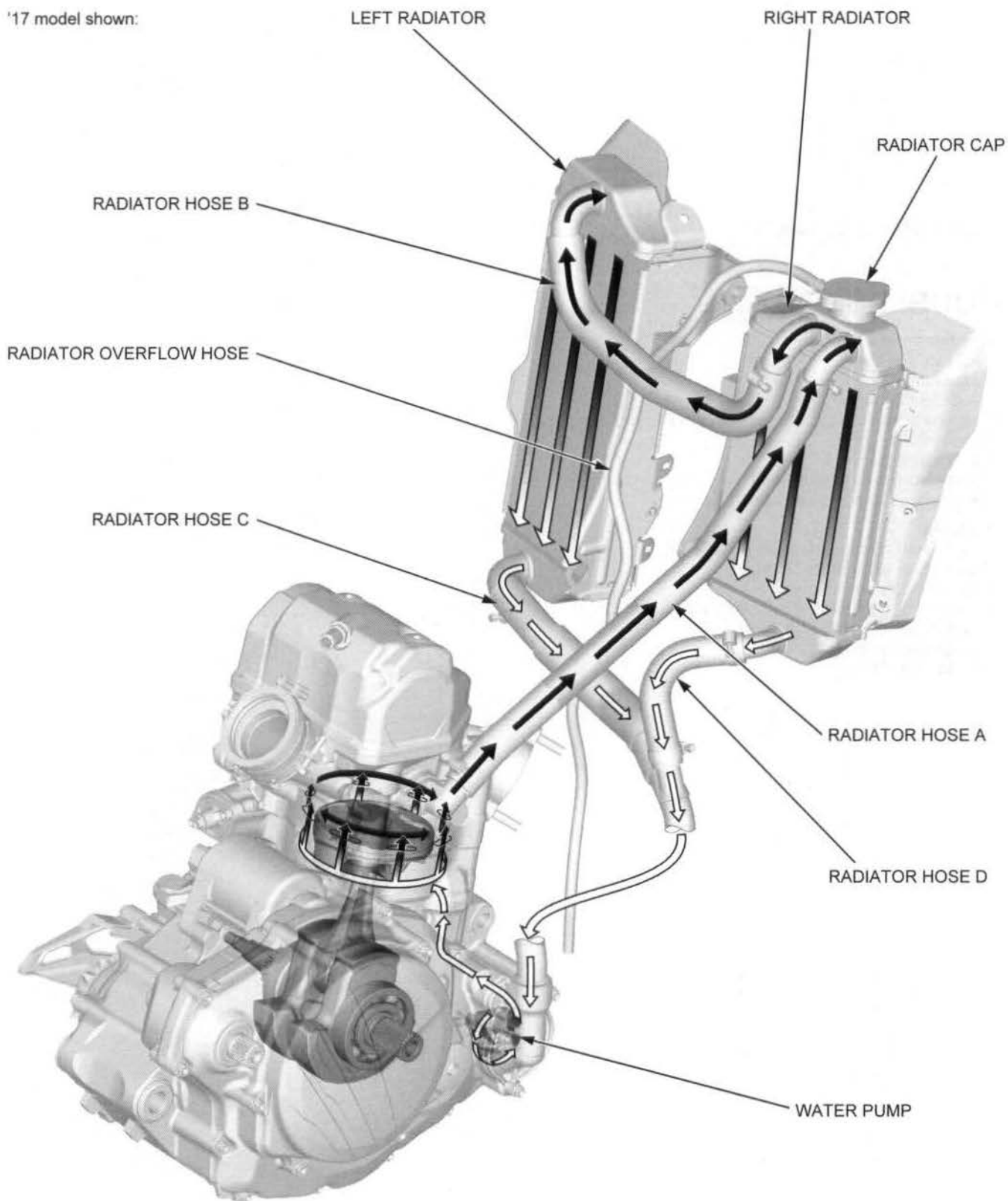
- Faulty ECT sensor
- Faulty radiator cap
- Insufficient coolant
- Passage blocked in radiator, hoses or water jacket
- Air in system
- Faulty water pump
- Bent or worn water pump shaft
- Damaged water pump shaft bearings

Coolant leak

- Deteriorated oil seal and mechanical seal
- Damaged or deteriorated O-ring
- Faulty radiator cap
- Damaged or deteriorated cylinder head gasket
- Loose hose connection or clamp
- Damaged or deteriorated hose
- Damaged radiator

SYSTEM FLOW PATTERN

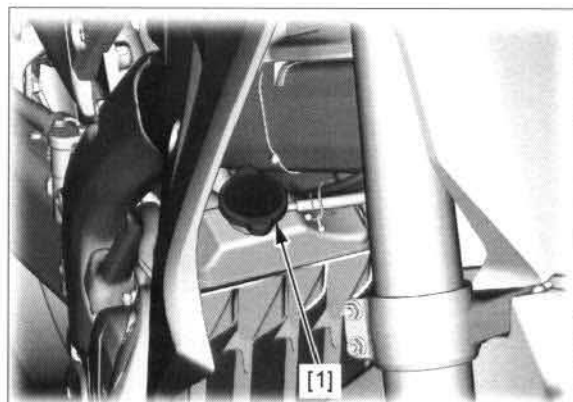
'17 model shown:



SYSTEM TESTING

RADIATOR CAP/SYSTEM PRESSURE INSPECTION

Make sure the engine is cool, remove the radiator cap [1].



Wet the sealing surfaces of the cap [1], then install the cap onto the tester [2].

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.

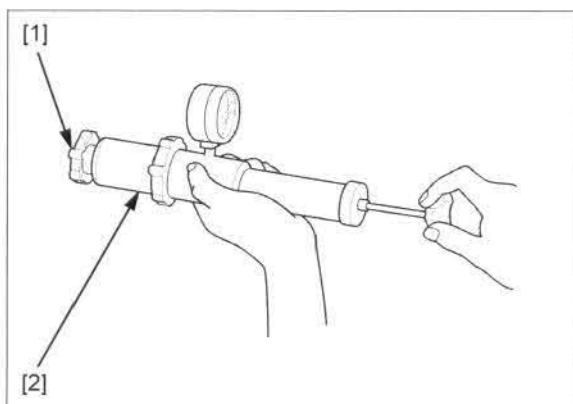
RADIATOR CAP RELIEF PRESSURE:

108 – 137 kPa (1.1 – 1.4 kgf/cm², 16 – 20 psi)

Remove the radiator cap from the tester.

Install the tester to the radiator.

Pressure 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/cm², 20 psi).

Repair or replace components if the system will not hold specified pressure for at least 6 seconds.

Remove the radiator cap from the tester and install it to the radiator.

COOLANT REPLACEMENT

REPLACEMENT/AIR BLEEDING

Remove the engine guard (page 2-6).

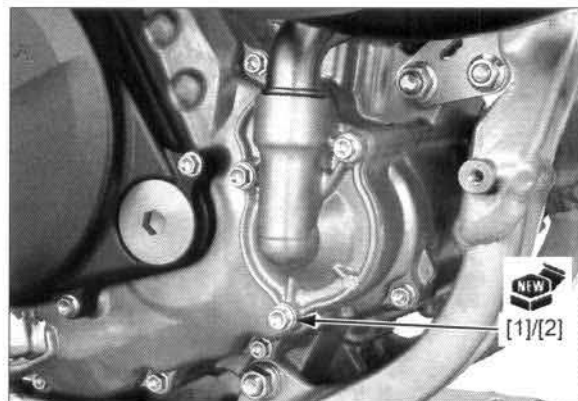
Support the motorcycle in an upright position on a level surface.

Remove the drain bolt [1] and sealing washer [2] on the water pump cover.

Remove the radiator cap slowly (page 9-5).

Drain the coolant from the system by leaning the machine to the right and left several times.

Install the drain bolt with a new sealing washer. Tighten the drain bolt securely.



COOLING SYSTEM

Fill the system with the recommended coolant through the filler opening up to the filler neck [1].

CAPACITY:

at change:

1.07 liter (1.13 US qt, 0.94 Imp qt)

at disassembly:

1.13 liters (1.19 US qt, 0.99 Imp qt)

Lean the machine approximately 20° to the right and left several times to bleed any air trapped in the cooling system.

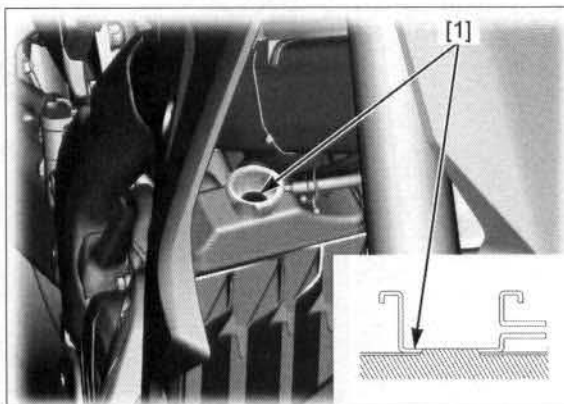
If the coolant level drops, add more coolant and repeat the air bleeding procedure.

Install the radiator cap securely.

NOTE:

- If the radiator cap is not installed properly, it will cause excessive coolant loss and may result in overheating and engine damage.

Install the engine guard (page 2-6).



RADIATOR

REMOVAL/INSTALLATION

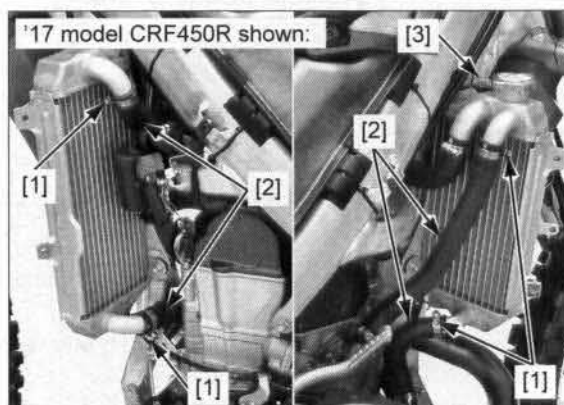
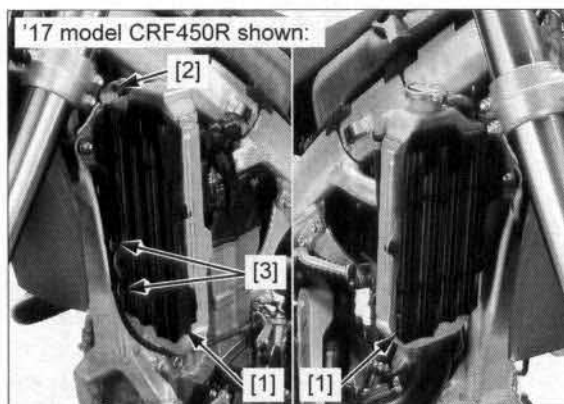
Drain the coolant (page 9-5).

Remove the radiator shrouds (page 2-3).

Be careful not to damage the radiator core.

Remove the radiator grills [1].

Release the wire clip [2] and cable clips [3].



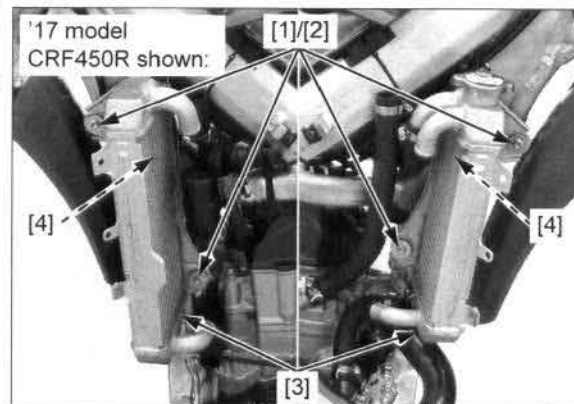
Be careful not to damage the radiator core.

Loosen the hose band screw [1] and disconnect the radiator hoses [2].

Disconnect the radiator overflow hose [3].

Remove the radiator mounting bolts [1], washers [2] and then remove the radiators [3].

Check the radiator rubbers [4] for damage and deterioration, and replace if necessary.



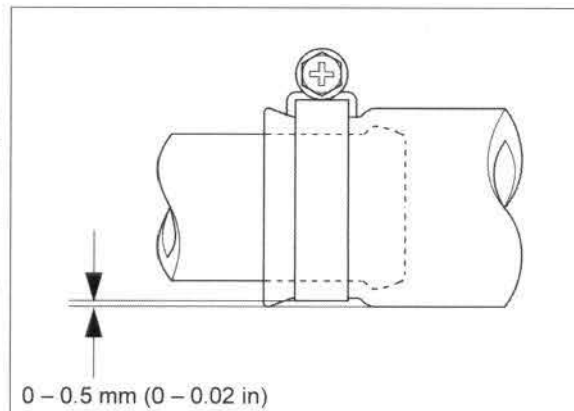
Installation is in the reverse order of removal.

NOTE:

- Tighten the radiator hose band screw as shown. Inadequately tightening the bands may cause coolant to leak if too loose, or collapse of the radiator hose if too tight, which may result in overheating and engine damage.
- Route the hoses, cable and wire properly (page 1-24)

Fill the radiator with the recommended coolant mixture to the filler neck and bleed the air (page 9-5).

After installation, check the radiator and radiator hoses for leaks.



WATER PUMP

MECHANICAL SEAL INSPECTION

Check the bleed hole [1] of the water pump for signs of coolant leakage.

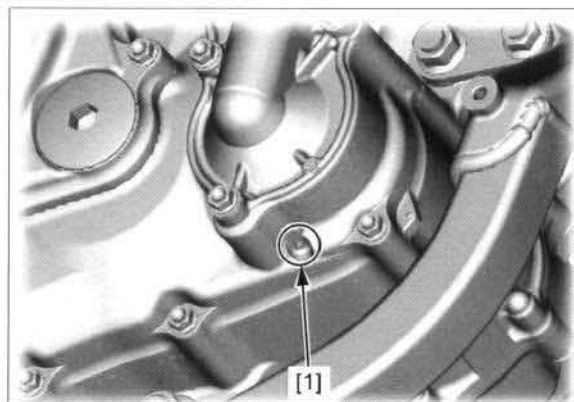
If water leaks through the bleed hole, replace the mechanical seal (page 9-8).

If oil leaks through the bleed hole, replace the oil seal (page 9-8).

Make sure that there is no continuous coolant leakage from the bleed hole while operating the engine.

NOTE:

- A small amount of coolant weeping from the bleed hole is normal.



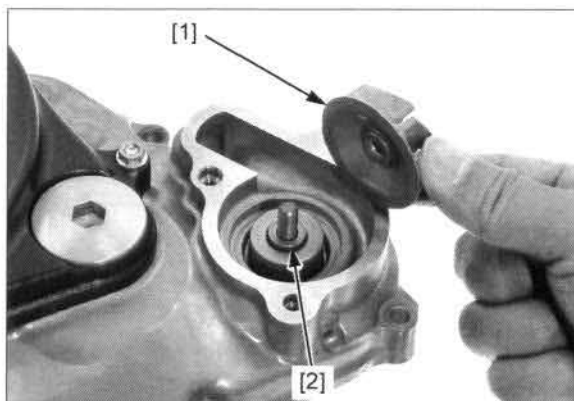
REMOVAL/INSTALLATION

Remove the right crankcase cover (page 12-8).

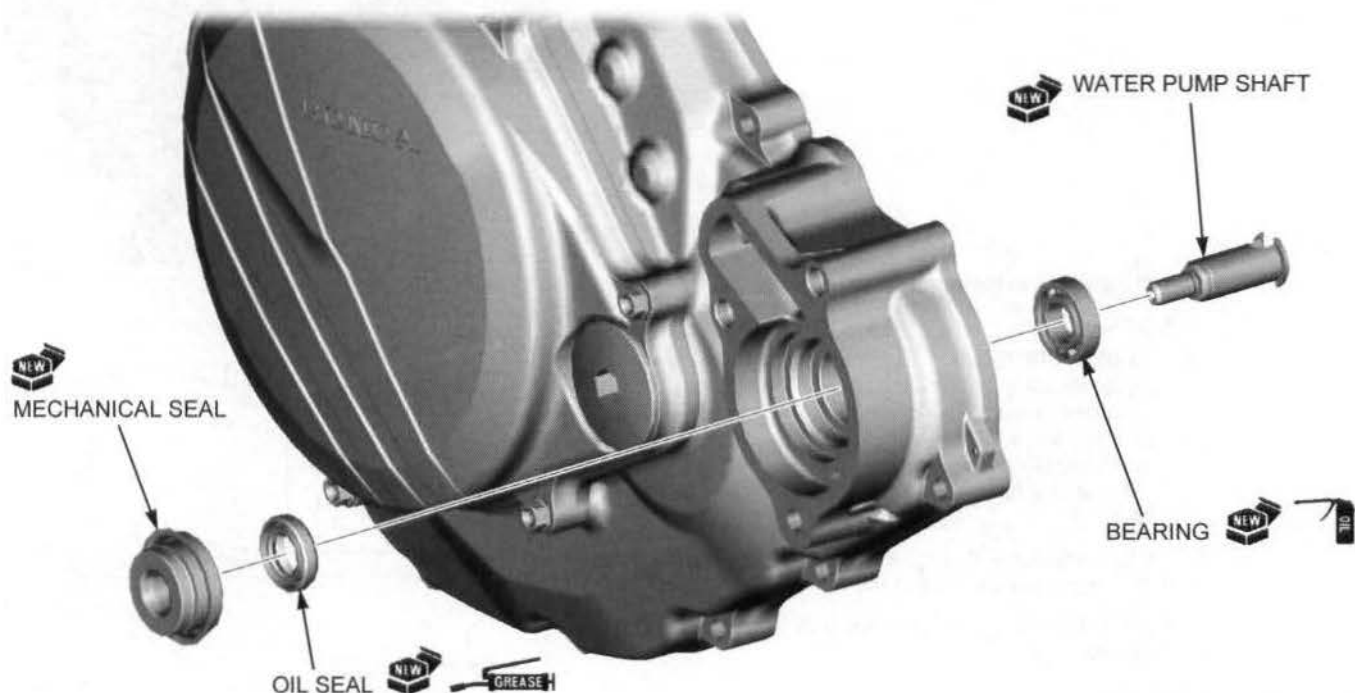
Remove the impeller [1] and plain washer [2].

Installation is in the reverse order of removal.

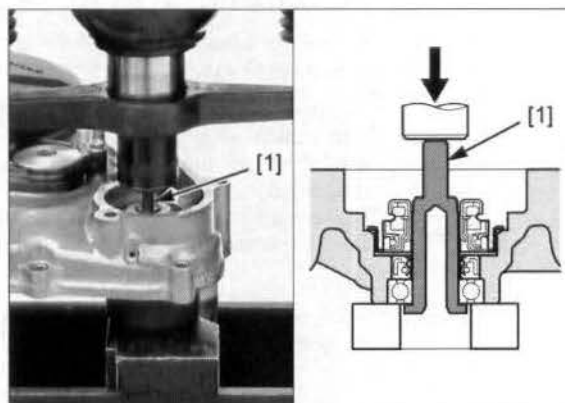
Install the right crankcase cover (page 12-10).



BEARING/MECHANICAL SEAL/OIL SEAL REPLACEMENT



Press the water pump shaft [1] out of the right crankcase cover.



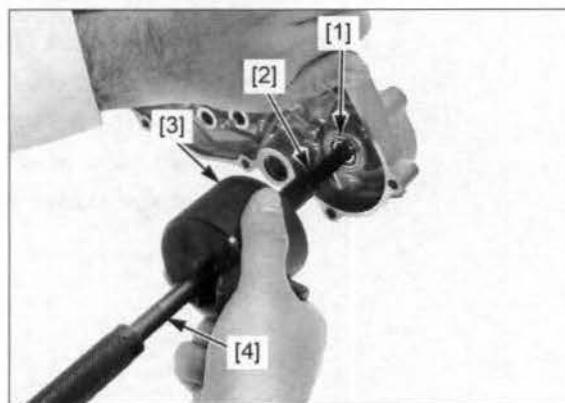
Remove the water pump shaft bearing [1] using the special tools.

TOOLS:

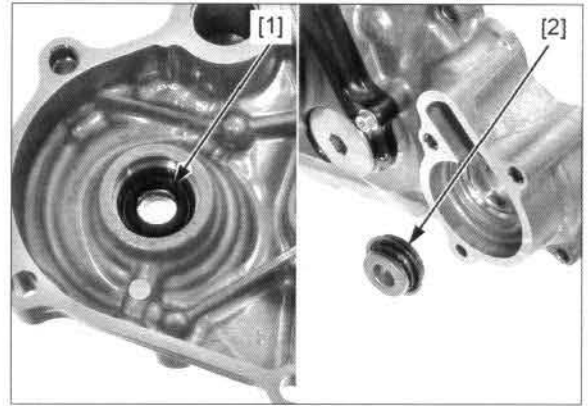
Bearing remover set, 12 mm	07936-1660101
Remover head, 12 mm [2]	07936-1660110
Remover weight [3]	07741-0010201
Remover shaft [4]	07936-1660120

U.S.A. TOOLS:

Bearing remover, 12 mm	07936-166010A
Remover handle	07936-3710100
Remover weight	07936-371020A



Remove the oil seal [1] and mechanical seal [2] from the right crankcase cover.

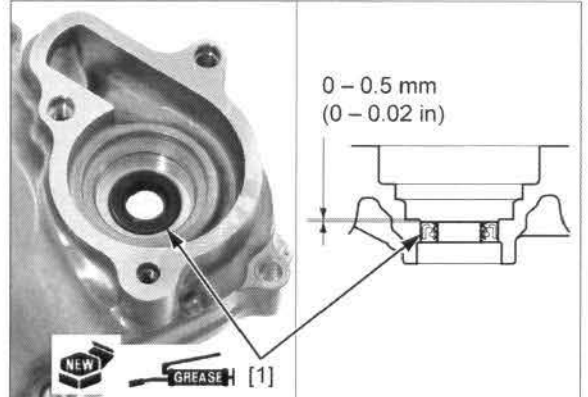


Install the oil seal [1] to the specified depth using special tools.

TOOLS:

Driver 07749-0010000
Attachment, 22 x 24 mm 07746-0010800

Apply grease to a new oil seal lips.



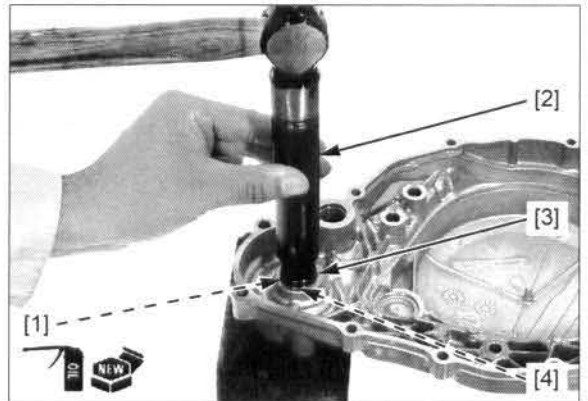
Drive in a new bearing squarely with the marking side facing up.

Drive in a new bearing [1] until it is fully seated using special tools.

TOOLS:

Driver [2] 07749-0010000
Attachment, 22 x 24 mm [3] 07746-0010800
Pilot, 12 mm [4] 07746-0040200

After installing the bearing, lubricate it with engine oil.



COOLING SYSTEM

Set new water pump shaft [1] and mechanical seal [2].

Set the special tools onto the mechanical seal and water pump shaft as shown.

TOOLS:

Installer collar [3] 070MF-MEN0210
Attachment, 28 x 30 mm [4] 07946-1870100

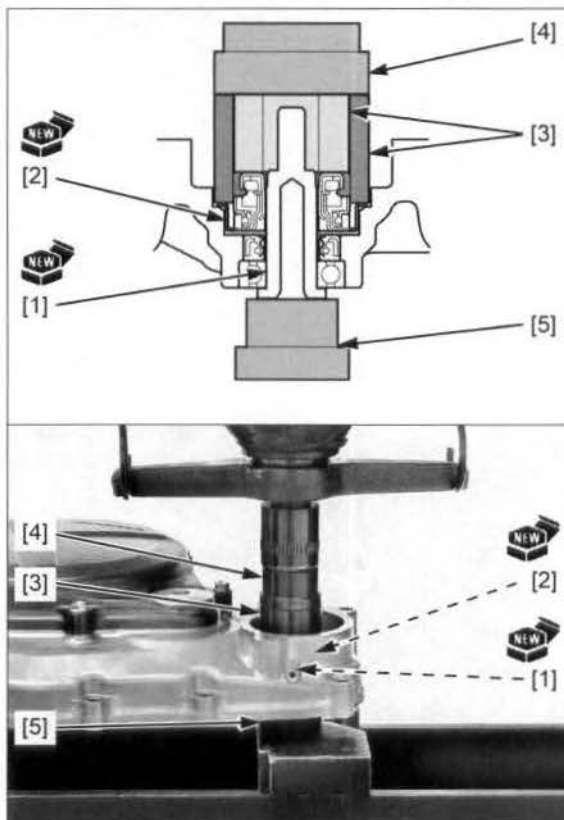
U.S.A. TOOLS:

Installer collar 070MF-MENA210

Press the mechanical seal until it is fully seated to the right crankcase cover using the hydraulic press and special tool.

TOOL:

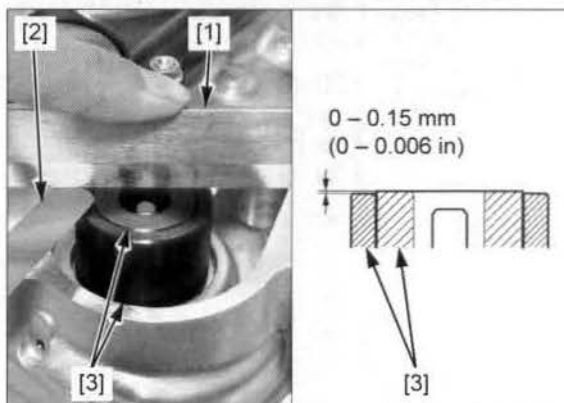
Attachment, 32 x 35 mm [5] 07746-0010100



Check the mechanical seal for proper installation using a straight edge [1] and feeler gauge [2].

Measure the difference between the installer collars [3].

STANDARD: 0 – 0.15 mm (0 – 0.006 in)



10. CYLINDER HEAD/VALVES

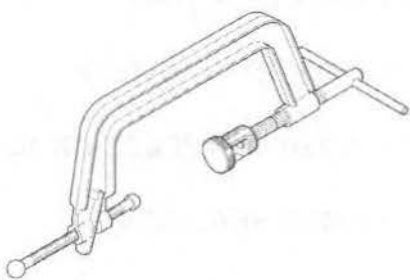

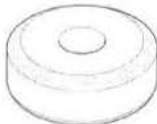
SERVICE INFORMATION.....	10-2	CAMSHAFT.....	10-8
TROUBLESHOOTING	10-4	DECOMPRESSOR SYSTEM.....	10-11
COMPONENT LOCATION.....	10-5	ROCKER ARM	10-13
CYLINDER COMPRESSION TEST.....	10-6	CYLINDER HEAD	10-15
CYLINDER HEAD COVER.....	10-6		


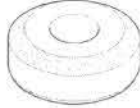
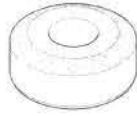
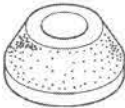
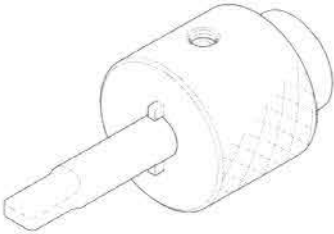
SERVICE INFORMATION

GENERAL

- This section covers service of the camshaft, rocker arm, cylinder head, valves and cam chain tensioner. 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.
- Camshaft, rocker arm lubrication oil is fed through oil passages in the cylinder head and camshaft holders. Clean the oil passages before assembling them.
- When disassembling/assembling the rocker arm, be careful not to damage its surface.
This motorcycle is equipped with intake rocker arms with a Diamond-Like Carbon coating. Be careful not to damage the intake rocker arms and do not polish them.
- Be careful not to damage the mating surfaces when removing the cylinder head cover and cylinder head.

TOOLS

<p>Compression gauge attachment 07RMJ-MY50100</p>  <p>Not available in U.S.A.</p>	<p>Compression gauge attachment 07AMJ-MENA200 (U.S.A. only)</p> 	<p>Valve spring compressor 07757-0010000</p> 
<p>Valve spring compressor attachment 07959-KM30101</p> 	<p>Valve guide driver, 5.0 mm 07942-MA60000</p> 	<p>Valve guide reamer, 5.010 mm 07984-MA60001</p>  <p>or 07984-MA6000D (U.S.A. only)</p>
<p>Cutter holder, 5.0 mm 07781-0010400</p>  <p>or equivalent commercially available in U.S.A.</p>	<p>Seat cutter, 42 mm (45°, IN) 07780-0010900</p>  <p>or equivalent commercially available in U.S.A.</p>	<p>Flat cutter, 50 mm (32°, IN) 07780-0013600</p>  <p>or equivalent commercially available in U.S.A.</p>

<p>Interior cutter, 45 mm (60°, IN) 07780-0014800</p>  <p>or equivalent commercially available in U.S.A.</p>	<p>Seat cutter, 35 mm (45°, EX) 07780-0010400</p>  <p>or equivalent commercially available in U.S.A.</p>	<p>Flat cutter, 36 mm (32°, EX) 07780-0013500</p>  <p>or equivalent commercially available in U.S.A.</p>
<p>Interior cutter, 34 mm (60°, EX) 07780-0014700</p>  <p>or equivalent commercially available in U.S.A.</p>	<p>Cam chain tensioner holder 070MG-0010100</p>  <p>or 07AMG-001A100 (U.S.A. only)</p>	

TROUBLESHOOTING

- Engine top-end problems usually affect engine performance. These problems can be diagnosed by a compression test or by tracing top-end noise with a sounding rod stethoscope.
- If the performance is poor at low speeds, check for white smoke in the crankcase breather hose. If the hose is smoky, check for seized piston rings.

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

- Valves:
 - Incorrect valve adjustment
 - Burned or bent valves
 - Incorrect valve timing
 - Broken valve spring
 - Uneven valve seating
- Cylinder head:
 - Leaking or damaged cylinder head gasket
 - Warped or cracked cylinder head
- Loose spark plug
- Faulty cylinder, piston or piston rings (page 11-6)
- Faulty decompressor system

Compression too high, over-heating or knocking

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

Excessive smoke

- Worn valve stem or valve guide
- Damaged stem seal
- Faulty cylinder, piston or piston rings (page 11-6)

Excessive noise

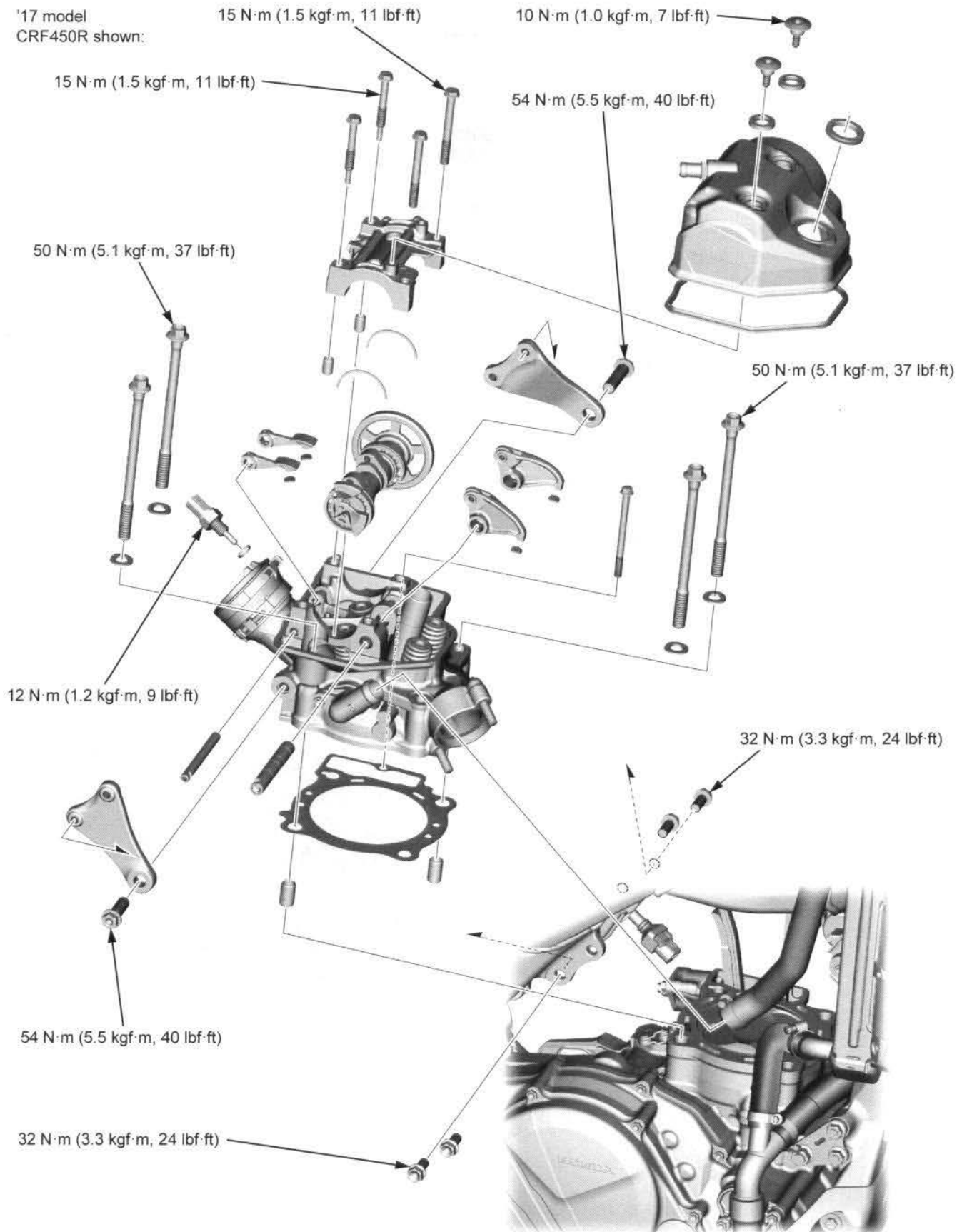
- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Excessively worn valve seat
- Worn or damaged camshaft
- Worn rocker arm and/or shaft
- Worn rocker arm slipper surface or valve stem end
- Worn valve stem end
- Worn cam sprocket teeth
- Worn or loose cam chain
- Worn or damaged cam chain tensioner
- Faulty cylinder, piston or piston rings (page 11-6)
- Worn or damaged crankcase bearings (page 14-18)
- Worn or damaged connecting rod big end bearing (page 14-17)
- Worn connecting rod small end (page 11-6)
- Improper balancer installation (page 14-6)
- Worn, seized or chipped transmission gear (page 14-12)

Rough idle

- Low cylinder compression

COMPONENT LOCATION

'17 model
CRF450R shown:



CYLINDER COMPRESSION TEST

Warm up the engine.

Stop the engine and remove the spark plug (page 3-11).

Install a special tool into the spark plug hole.

TOOL:

Compression gauge attachment [1]

**07RMJ-MY50100 or
07AMJ-MENA200
(U.S.A. only)**

Connect a compression gauge [2] onto the compression gauge attachment.

Temporarily install the fuel tank and seat.

Open the throttle fully.

Crank the engine until the gauge reading stops rising.

COMPRESSION PRESSURE:

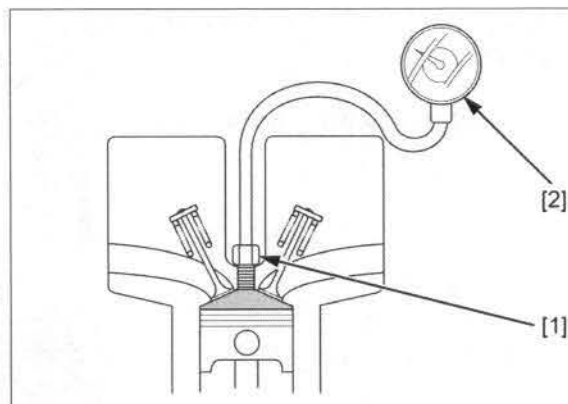
450 kPa (4.6 kgf/cm², 65 psi) at 600 rpm

Low compression can be caused by:

- Improper valve adjustment
- Valve leakage
- Blown cylinder head gasket
- Worn piston rings or cylinder (page 11-6)

High compression can be caused by:

- Carbon deposits on piston head or combustion chamber
- Faulty decompressor system



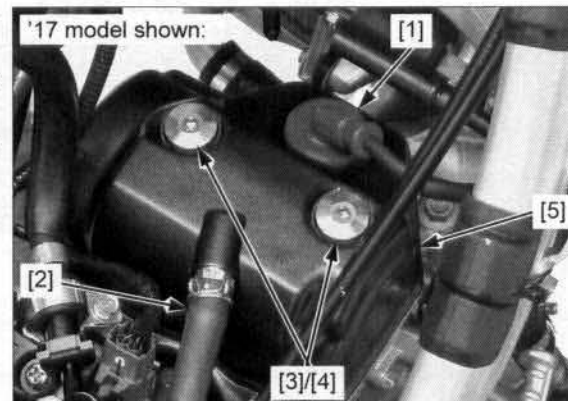
CYLINDER HEAD COVER

REMOVAL

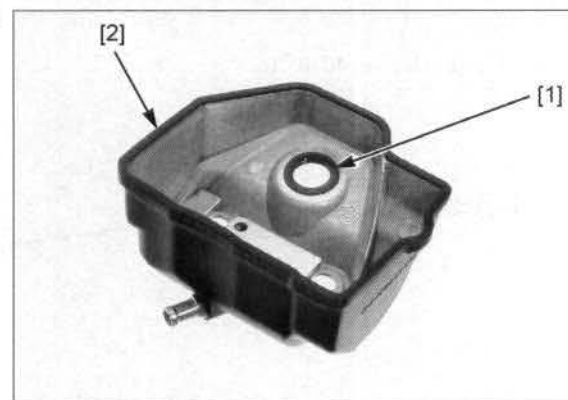
Hang the fuel tank to the left side of the frame (page 3-6).

Disconnect the spark plug cap [1] and breather hose [2].

Remove the bolts [3], rubber seals [4], and cylinder head cover [5].



Remove the plug hole seal ring [1] and cylinder head cover packing [2].



DISASSEMBLY/ASSEMBLY

Remove the bolts [1] and breather plate [2].

Clean the cylinder head cover [3] and breather plate.

Apply liquid sealant (TB1207B manufactured by ThreeBond or an equivalent) to the cylinder head cover as shown.

NOTE:

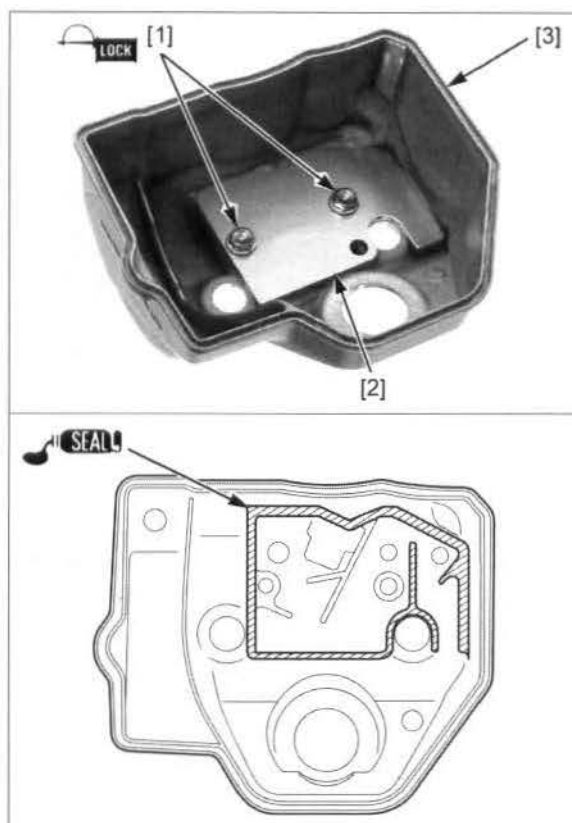
- Do not apply sealant to the breather plate bolts threads.

Apply locking agent to the breather plate bolts.

Install the bolts and breather plate to the cylinder head cover.

Tighten the breather plate bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

**INSTALLATION**

Check the plug hole seal ring [1] and cylinder head cover packing [2] for damage or deterioration and replace them if necessary.

Apply engine oil to the plug hole seal ring outer surface. Install the plug hole seal ring.

Apply liquid sealant (TB1207B manufactured by ThreeBond or an equivalent) to the cylinder head cover groove.

Install the cylinder head cover packing to the cylinder head cover [3].



Install the cylinder head cover [1].

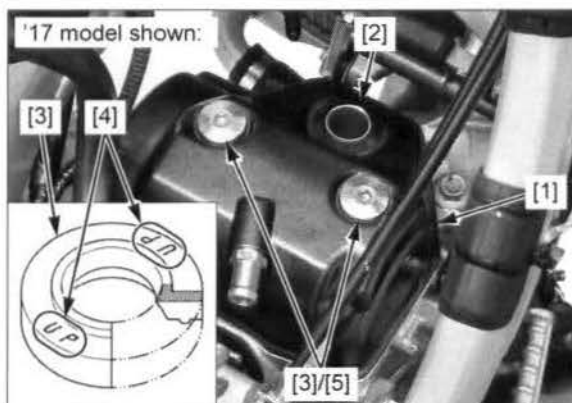
Make sure that the plug hole seal ring [2] is installed to the cylinder head cover properly as shown.

Check that the rubber seals [3] are in good condition, replace them if necessary.

Install the rubber seals onto the cylinder head cover with their "UP" marks [4] facing up.

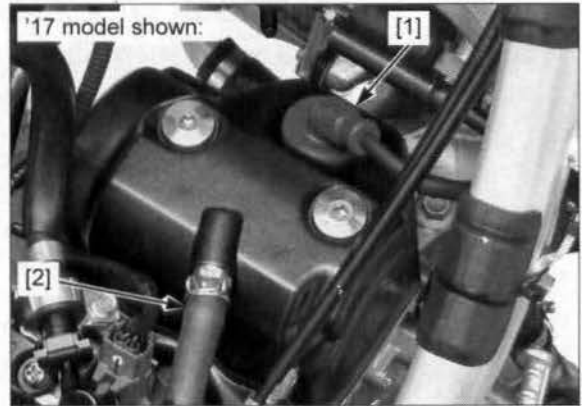
Install and tighten the bolts [5] to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



CYLINDER HEAD/VALVES

Connect the spark plug cap [1] and breather hose [2].
Install the fuel tank (page 3-6).



CAMSHAFT

REMOVAL

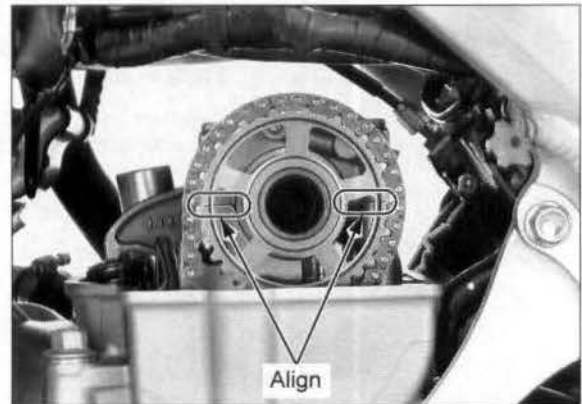
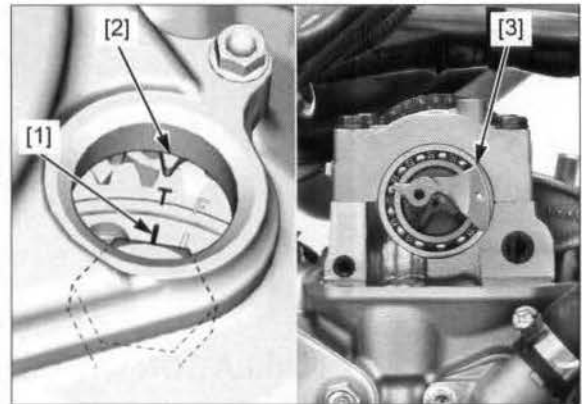
Remove the following:

- Timing hole cap (page 3-12)
- Cylinder head cover (page 10-6)
- Spark plug (page 3-11)

Turn the crankshaft clockwise to align the "T" mark [1] on the primary drive gear with the index mark [2] on the right crankcase cover.

Check the decompressor weight [3] position.
If the weight is in position as shown, the piston is TDC (Top Dead Center) on the compression stroke.
If the weight is opposite, the piston is TDC on the exhaust stroke. Rotate the crankshaft clockwise one full turn and match up the "T" mark on the primary drive gear with the index mark on the right crankcase cover again.

Align the index line on the cam sprocket with the camshaft holder mating surface.



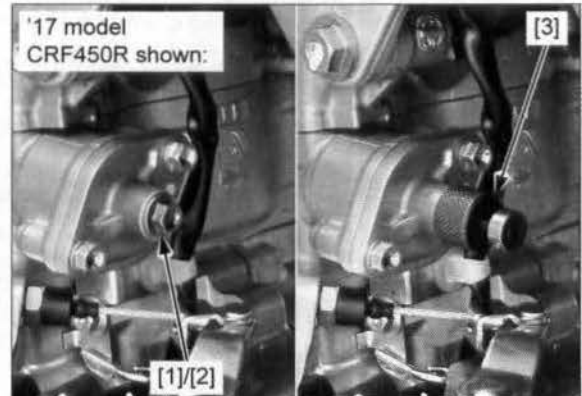
Remove the cam chain tensioner lifter bolt [1] and sealing washer [2].

Insert the special tool into the cam chain tensioner lifter hole.

TOOL:

Cam chain tensioner holder [3] 070MG-0010100 or 07AMG-001A100 (U.S.A. only)

Turn the cam chain tensioner holder clockwise fully and lock the cam chain tensioner lifter by pushing the handle.



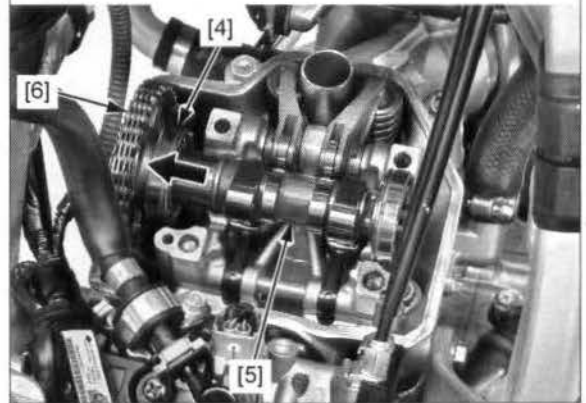
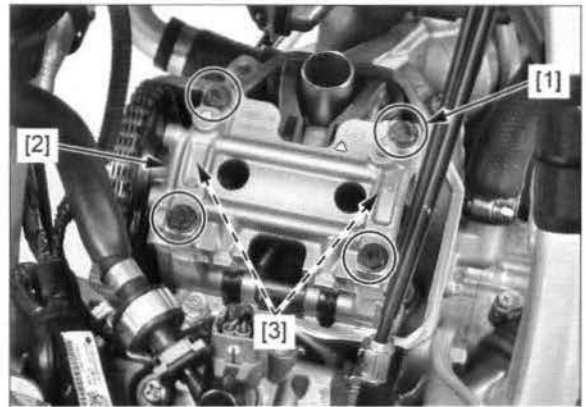
Be careful not to drop the set rings into the crankcase.

Remove the bolts [1], camshaft holders [2] and set rings [3].

Slide the bearing [4] to the cam sprocket side.

Be careful not to drop the cam chain into the crankcase.

Remove the camshaft [5] by removing the cam chain [6] from the cam sprocket.



INSPECTION

Inspect the following parts for damage, abnormal wear, deformation, burning, or clogs in oil passages.

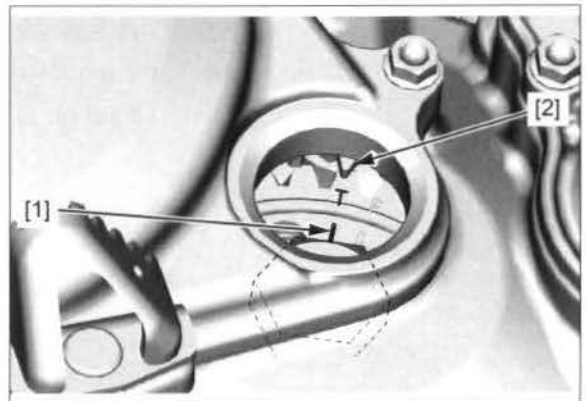
- Cam sprocket
- Camshaft
- Camshaft holder/dowel pin

Measure each part and clearance according to CYLINDER HEAD/VALVES SPECIFICATIONS (page 1-6).

Replace any part if it is out of service limit.

INSTALLATION

Turn the crankshaft clockwise to align the "T" mark [1] on the primary drive gear with the index mark [2] on the right crankcase cover.



CYLINDER HEAD/VALVES

Apply molybdenum oil solution to the camshaft cam lobes.

Install the camshaft with the intake cam lobes facing up.

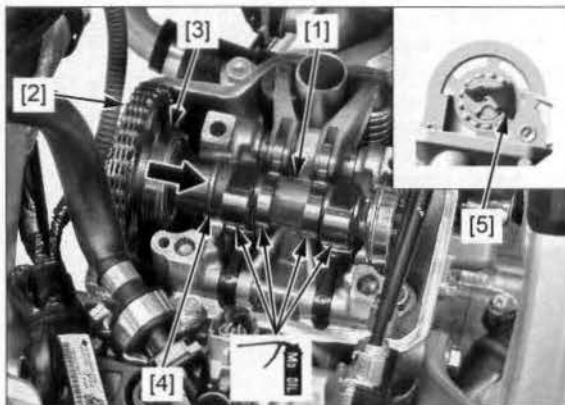
Install the camshaft [1] while installing the cam chain [2] onto the cam sprocket.

NOTE:

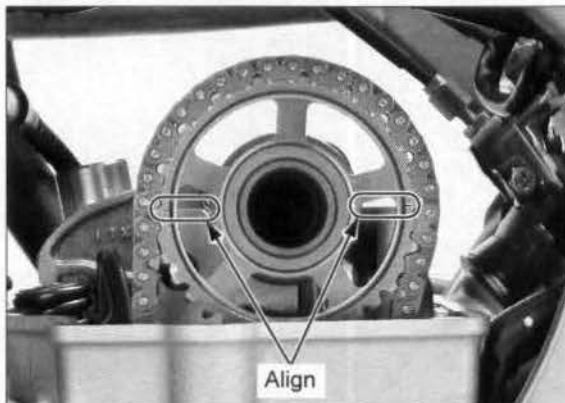
- CRF450RX camshaft has identification mark of yellow paint on the cam sprocket.

Slide the bearing [3] until it is fully seated to the camshaft rib [4].

Check the decompressor weight [5] is in position as shown.



Make sure that the index line on the cam sprocket aligns with the camshaft holder mating surface.



Be careful not to drop the set rings into the crankcase.

Install the set rings [1] into the camshaft bearing grooves.

Install the camshaft holder [2] by aligning their grooves with the set rings and dowel pins with the camshaft holder base holes [3].

NOTE:

- Install the camshaft holder with its "△" mark [4] facing exhaust side.

Apply engine oil to the camshaft holder mounting bolt threads and seating surface.

Align the rocker arm shaft cut-outs with the camshaft holder mounting bolts.

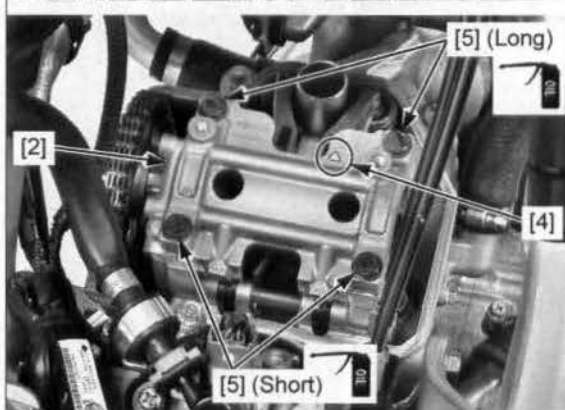
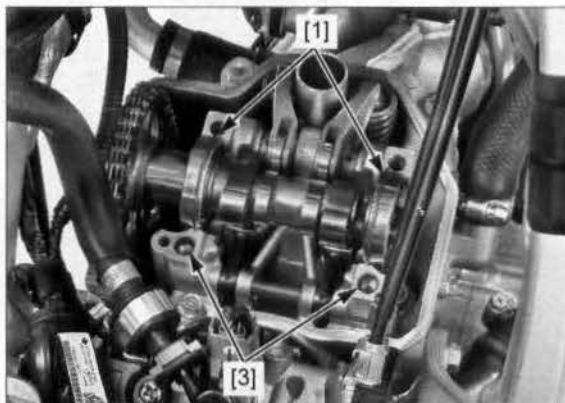
Install the camshaft holder mounting bolts [5].

NOTE:

- The exhaust side camshaft holder mounting bolts are longer than the intake side bolts.

Tighten the bolts to the specified torque.

TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)



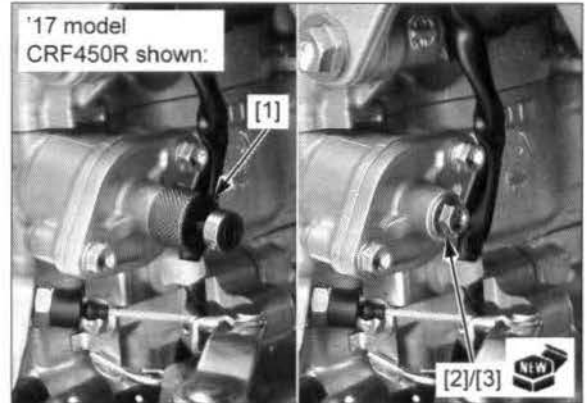
Remove the tensioner holder [1].

Install the cam chain tensioner lifter bolt [2] with a new sealing washer [3].

Tighten the cam chain tensioner lifter bolt securely.

Install the following:

- Spark plug (page 3-11)
- Cylinder head cover (page 10-7)
- Timing hole cap (page 3-14)



DECOMPRESSOR SYSTEM

INSPECTION

Remove the camshaft (page 10-8).

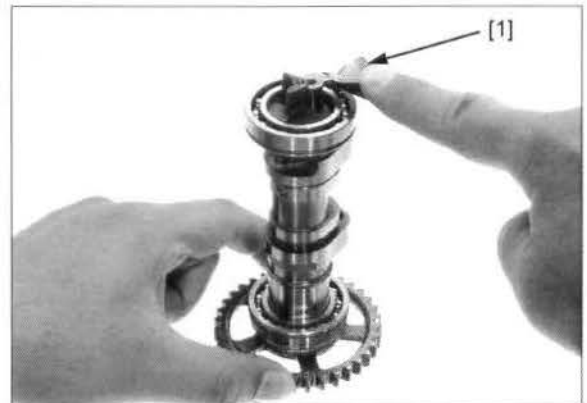
Inspect the decompressor operation.

1. Move the decompressor weight [1] outward with your finger.
2. Release the decompressor weight.
The decompressor weight should move inward automatically.

If the decompressor weight operation is abnormal, disassemble and clean the decompressor system.

- DISASSEMBLY (page 10-11)
- INSPECTION/CLEANING (page 10-12)

Replace the damaged parts if necessary.

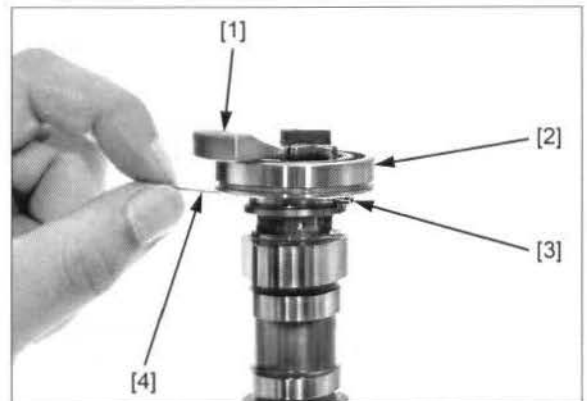


DISASSEMBLY

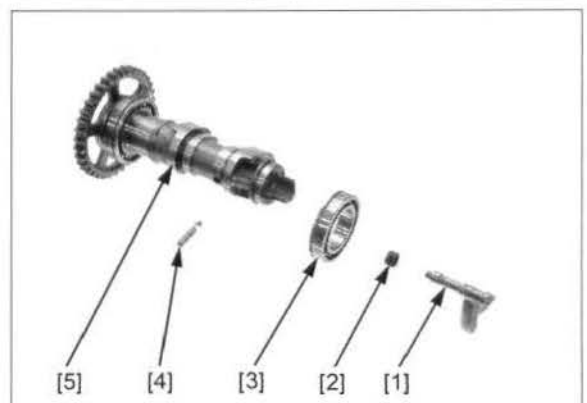
Remove the camshaft (page 10-8).

Turn the decompressor weight [1] outward and slide the camshaft bearing [2] upward.

Push out the decompressor weight stopper pin [3] using a suitable pin [4].



Remove the decompressor weight [1], spring [2], bearing [3], and plunger [4] from the camshaft [5].



INSPECTION/CLEANING

Check the decompressor weight [1] and plunger [2] cam surface [3] for wear or damage.

Check the decompressor weight for bends or damage.

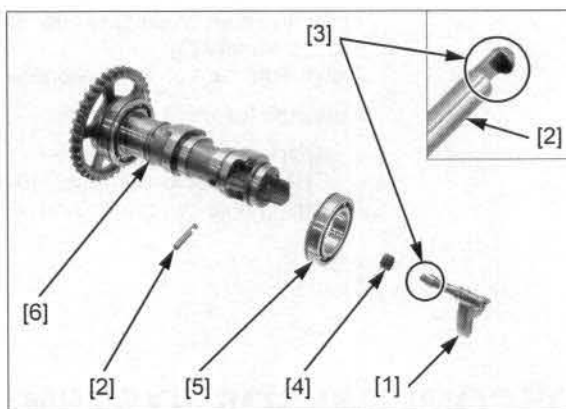
Check the decompressor spring [4] for fatigue.

Check the camshaft bearing [5] for wear or damage.

Replace the damaged parts if necessary.

Clean the decompressor weight, plunger, bearing, and spring.

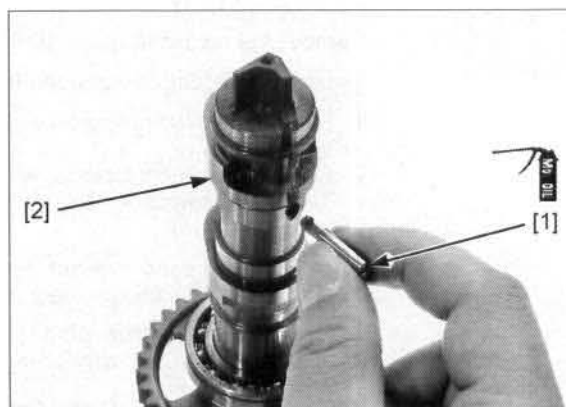
Blow the oil passage in the camshaft [6] with compressed air.



ASSEMBLY

Apply molybdenum oil solution to the plunger [1] sliding area.

Install the plunger into the camshaft [2] hole.

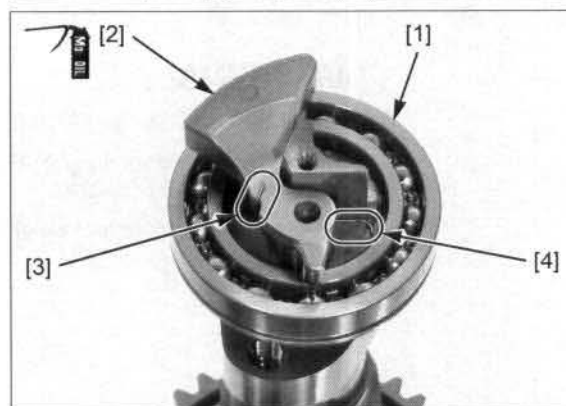


Install the camshaft bearing [1] with its groove side facing down.

Apply molybdenum oil solution to the decompressor weight [2] sliding area.

Hook the upper side spring end [3] to the decompressor weight as shown.

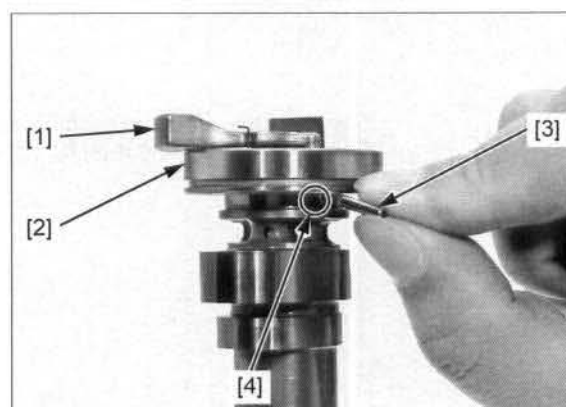
Install the decompressor weight by aligning the lower side spring end [4] with the camshaft flange.



Turn the decompressor weight [1] outward and slide the camshaft bearing [2] upward.

Install the decompressor weight stopper pin [3] into the camshaft hole [4].

Install the camshaft (page 10-9).



ROCKER ARM

REMOVAL

Remove the camshaft (page 10-8).

Pull out the intake rocker arm shaft [1] from the cylinder head.

Remove the left intake rocker arm [2] and right intake rocker arm [3].

NOTE:

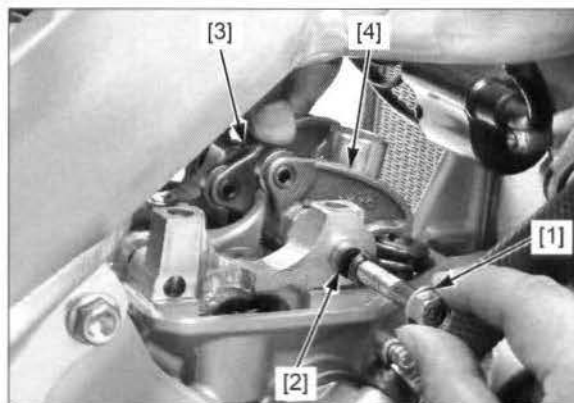
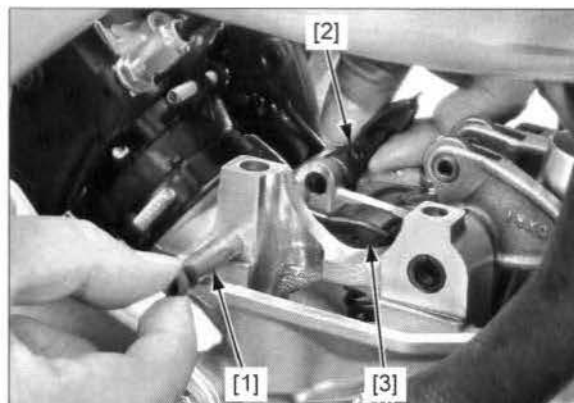
- Be careful not to damage the intake rocker arms.

Temporarily install a 8 mm bolt [1] to the shaft.

Pull out the exhaust rocker arm shaft [2] from the cylinder head.

Remove the left exhaust rocker arm [3] and right exhaust rocker arm [4].

Remove the 8 mm bolt from the shaft.



INSPECTION

Inspect the following parts for damage, abnormal wear, deformation, burning, or clogs in oil passages.

- Intake/exhaust rocker arms
- Intake/exhaust rocker arm shafts

Measure each part and clearance according to CYLINDER HEAD/VALVES SPECIFICATIONS (page 1-6).

Replace any part if it is out of service limit.

NOTE:

- Do not polish the intake rocker arms, it may cause engine damage.

INSTALLATION

Apply molybdenum oil solution to the exhaust rocker arms inner surface and cam robe/valve slipper surface.

Install the left exhaust rocker arm [1] and right exhaust rocker arm [2] onto the cylinder head with their identification marks facing outside.

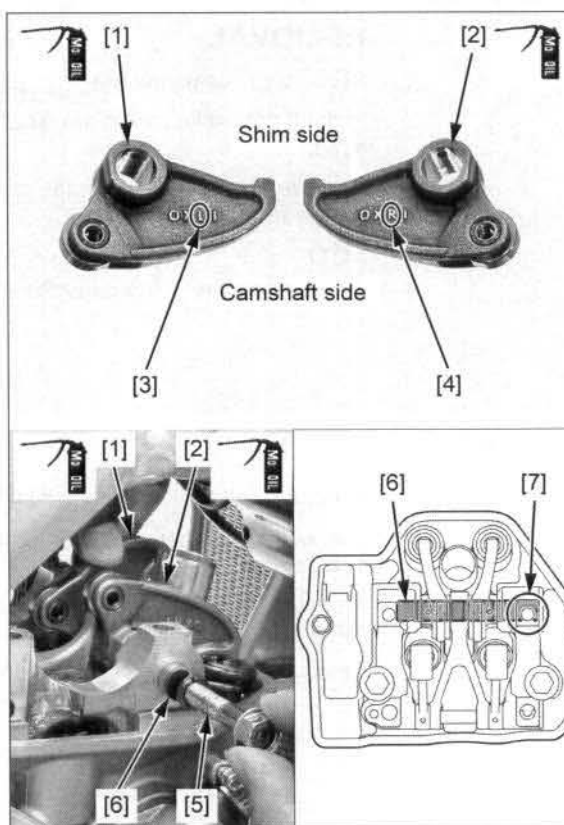
NOTE:

- The exhaust rocker arms have the following identification marks:
 - "L" mark [3]: left intake rocker arm
 - "R" mark [4]: right intake rocker arm

Temporarily install a 8 mm bolt [5] to the shaft.

Install the exhaust rocker arm shaft [6] with its cut-out [7] facing rearward by aligning the cut-out with the camshaft holder bolt hole.

Remove the 8 mm bolt from the shaft.



Apply molybdenum oil solution to the intake rocker arms inner surface and slipper surface.

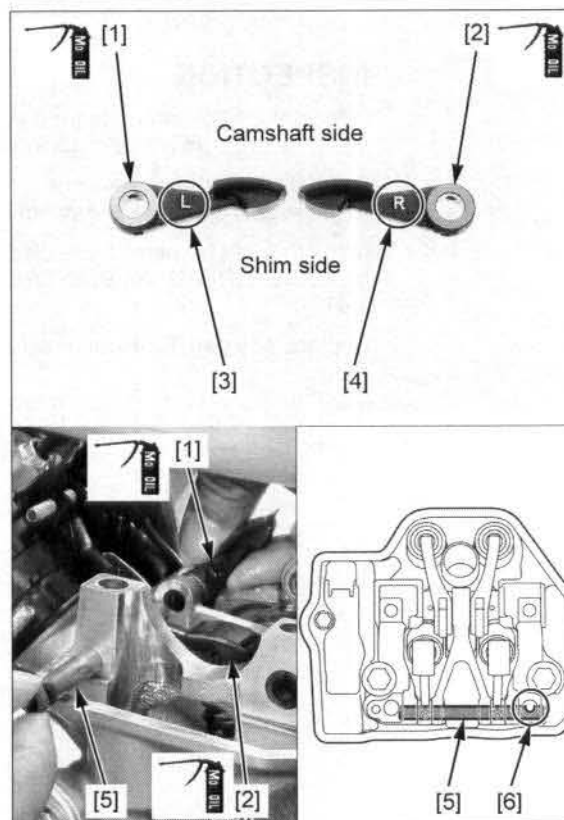
Install the left intake rocker arm [1] and right intake rocker arm [2] onto the cylinder head with their identification marks facing inside.

NOTE:

- Be careful not to damage the intake rocker arms.
- The intake rocker arms have the following identification marks:
 - "L" mark [3]: left intake rocker arm
 - "R" mark [4]: right intake rocker arm
- Be careful not to install the rocker arms upside down.

Install the intake rocker arm shaft [5] with its cut-out [6] facing forward by aligning the cut-out with the camshaft holder bolt hole.

Install the camshaft (page 10-9).



CYLINDER HEAD

REMOVAL

Drain the coolant (page 9-5).

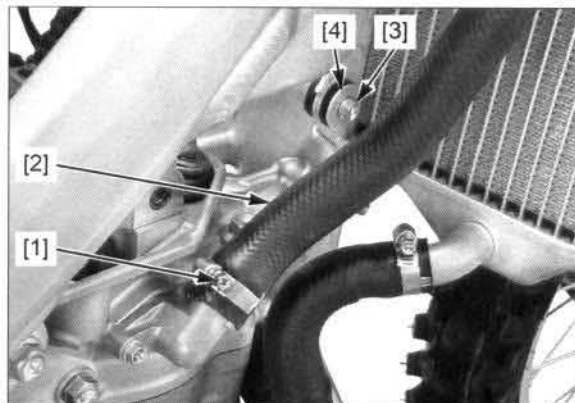
Disconnect the ECT sensor 2P (Black) connector (page 4-24).

Remove the following:

- Air cleaner housing (page 7-23)
- Ignition coil (page 5-9)
- Rocker arms (page 10-13)
- Shims (page 3-14)

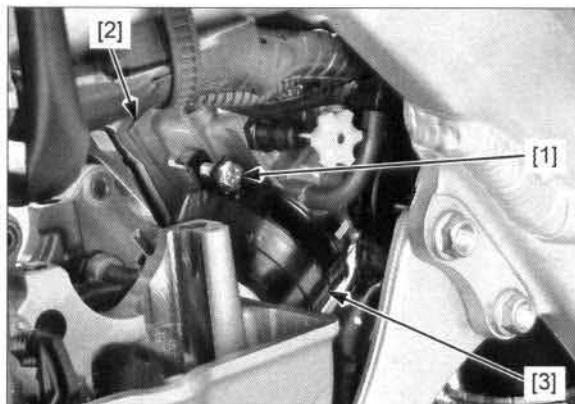
Loosen the hose band screw [1] and disconnect the radiator hose A [2].

Remove the right radiator lower mounting bolt [3] and washer [4].



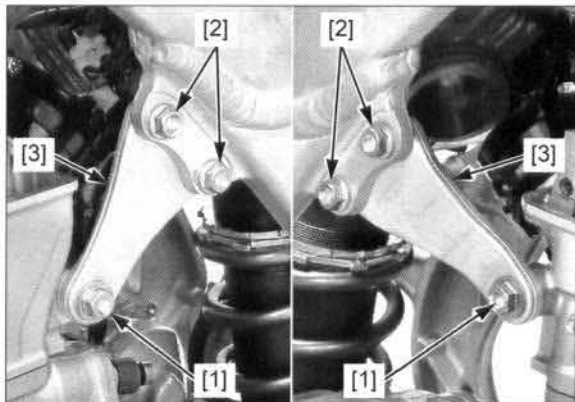
Do not let the throttle body hang from the throttle cable.

Loosen the insulator band screw [1] and pull the throttle body [2] out from the insulator [3].



Remove the cylinder head hanger bolts [1].

Remove the cylinder head hanger plate bolts [2] and cylinder head hanger plates [3].



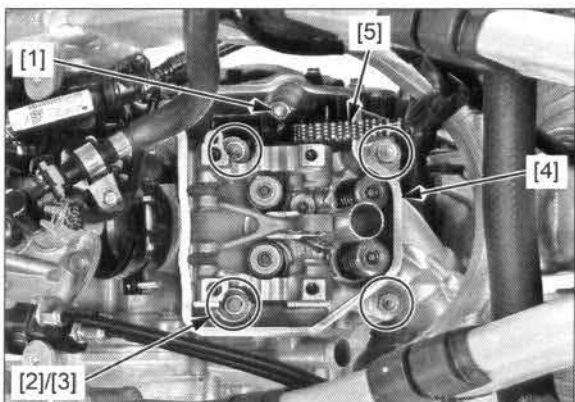
Remove the cylinder head 6 mm bolt [1].

Loosen the cylinder head bolts [2] in a crisscross pattern in two or three steps.

Be careful not to drop the washers into the crankcase.

Remove the cylinder head bolts, washers [3].

Remove the cylinder head [4].



NOTE:

- Be careful not to drop the cam chain [5] into the crankcase.

CYLINDER HEAD/VALVES

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

NOTE:

- Be careful not to drop the cam chain [3] and dowel pins into the crankcase.



DISASSEMBLY

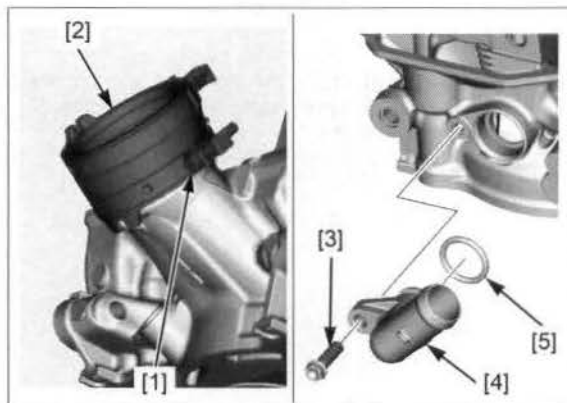
Remove the cylinder head (page 10-15).

Remove the spark plug (page 3-11).

Remove the ECT sensor (page 4-24).

Loosen the insulator band screw [1] and remove the insulator [2] from the cylinder head.

Remove the bolt [3], water hose joint [4] and O-ring [5].



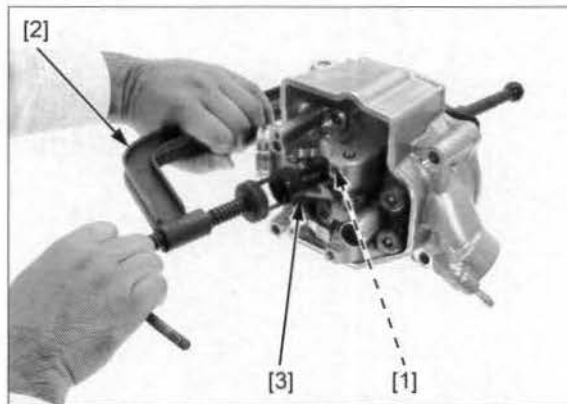
To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.

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

TOOLS:

Valve spring compressor [2] 07757-0010000

Valve spring compressor attachment [3] 07959-KM30101

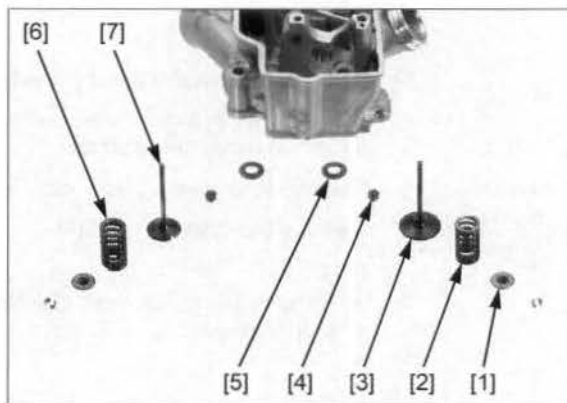


Remove the following:

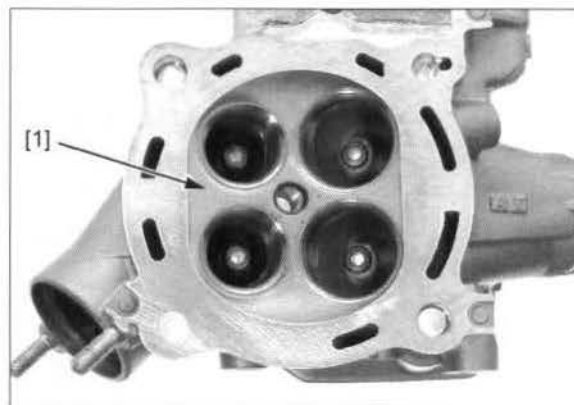
- Spring retainers [1]
- Intake valve spring [2]
- Intake valve [3]
- Stem seals [4]
- Spring seats [5]
- Exhaust valve spring [6]
- Exhaust valve [7]

NOTE:

- Mark and store the disassembled parts to ensure that they are reinstalled in their original locations.



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 guides
- Valve springs
- Valves

Measure each part and clearance according to CYLINDER HEAD/VALVES SPECIFICATIONS (page 1-6).

Replace any part if it is out of the service limit.

NOTE:

- Ream the valve guide using the valve guide reamer to remove any carbon build up before measuring the guide (page 10-18).
- Refer to valve seat inspection (page 10-18).
- The intake valves are titanium and have a thin oxide coating. Replace them if they are out of the standard value.

VALVE GUIDE REPLACEMENT

Disassemble the cylinder head (page 10-15).

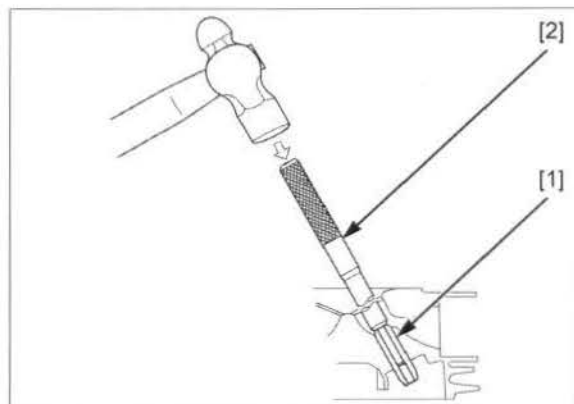
Chill new valve guides in the freezer section of a refrigerator for about an hour.

Heat the cylinder head to 100 – 150°C (212 – 302°F) with a hot plate or oven.

NOTE:

- To avoid burns, wear heavy gloves when handling the heated cylinder head.
- Do not use a torch to heat the cylinder head; it may cause warping.

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



TOOL:

Valve guide driver, 5.0 mm [2] 07942-MA60000

CYLINDER HEAD/VALVES

Drive in the valve guides [1] to the specified depth from the top of the cylinder head.

SPECIFIED DEPTH:

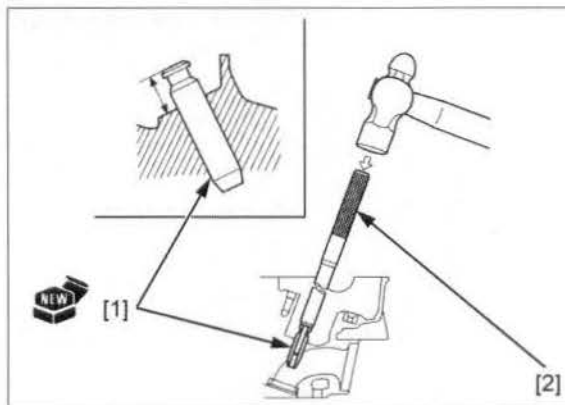
IN: 14.2 – 14.4 mm (0.56 – 0.57 in)

EX: 17.3 – 17.5 mm (0.68 – 0.69 in)

TOOL:

Valve guide driver, 5.0 mm [2] 07942-MA60000

Let the cylinder head cool to room temperature.



Insert the reamer [1] from the combustion chamber side.

TOOL:

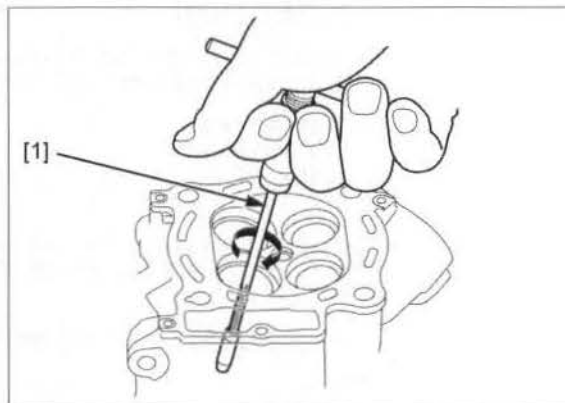
Valve guide reamer, 5.010 mm 07984-MA60001 or 07984-MA6000D (U.S.A. only)

NOTE:

- Always rotate the reamer clockwise.
- Use cutting oil on the reamer during this operation.
- Do not tilt the reamer during this operation.

Clean the cylinder head thoroughly to remove any metal particles after reaming.

Inspect the valve seats (page 10-18).



VALVE SEAT INSPECTION

Disassemble the cylinder head (page 10-16).

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].

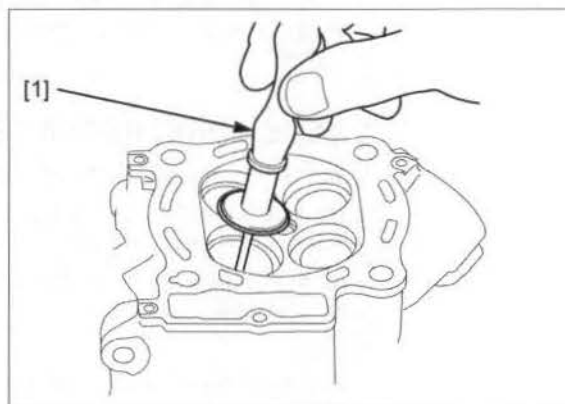
Measure the valve seat width according to CYLINDER HEAD/VALVES SPECIFICATIONS (page 1-6).

Reface the valve seat (page 10-19) in the following cases:

- Valve seat contact area is too wide or too narrow
- Valve seat contact surface is not center
- Valve seat contact surface is uneven
- Damaged valve seat contact face

If the contact surface of the valve seat is abnormal, the valve is tilted, inspect the valve stem-to-valve guide clearance (page 1-6).

If the valve stem-to-valve guide clearance are normal, replace the valve guide (page 10-17).



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

VALVE SEAT REFACING**INTAKE VALVE SIDE****NOTICE**

- Do not lap the intake valves. They are titanium and have a thin oxide coating. Lapping will damage this coating.
- When refacing the intake side valve seats, replace the intake valves with new ones.

Inspect the valve seat (page 10-18).

Reface the valve seat using the following tools.

TOOLS:

Cutter holder, 5.0 mm	07781-0010400
Seat cutter, 42 mm (45°)	07780-0010900
Flat cutter, 50 mm (32°)	07780-0013600
Interior cutter, 45 mm (60°)	07780-0014800

VALVE SEAT WIDTH:**STANDARD:**

1.1 – 1.3 mm (0.04 – 0.05 in)

SERVICE LIMITS:

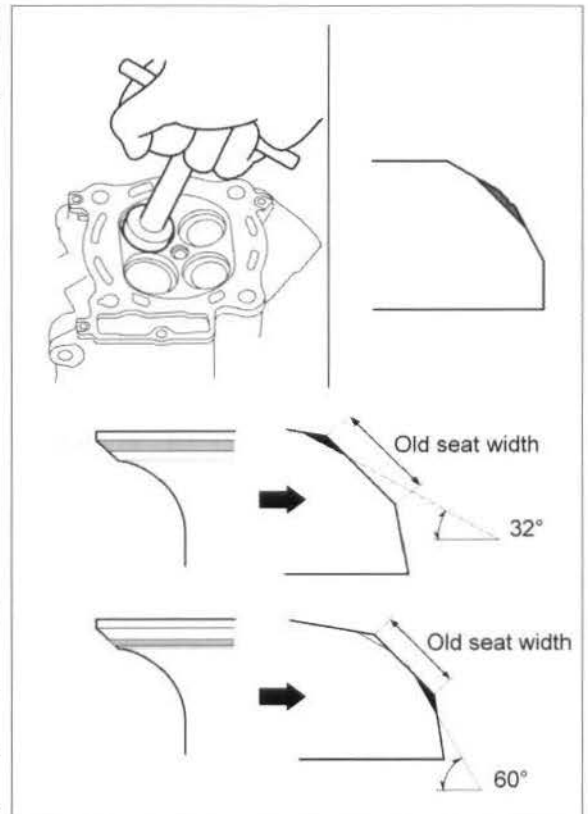
2.0 mm (0.08 in)

NOTE:

- Follow the refacer manufacturer's operating instructions.
 - Use cutting oil on the cutter during this operation.
 - 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.

After refacing, wash the cylinder head and valves.

Assemble the cylinder head (page 10-21).



EXHAUST VALVE SIDE

Inspect the valve seat (page 10-18).

Reface the valve seat using the following tools.

TOOLS:

Cutter holder, 5.0 mm	07781-0010400
Seat cutter, 35 mm (45°)	07780-0010400
Flat cutter, 36 mm (32°)	07780-0013500
Interior cutter, 34 mm (60°)	07780-0014700

VALVE SEAT WIDTH:

STANDARD:

1.3 – 1.5 mm (0.05 – 0.06 in)

SERVICE LIMITS:

2.0 mm (0.08 in)

NOTE:

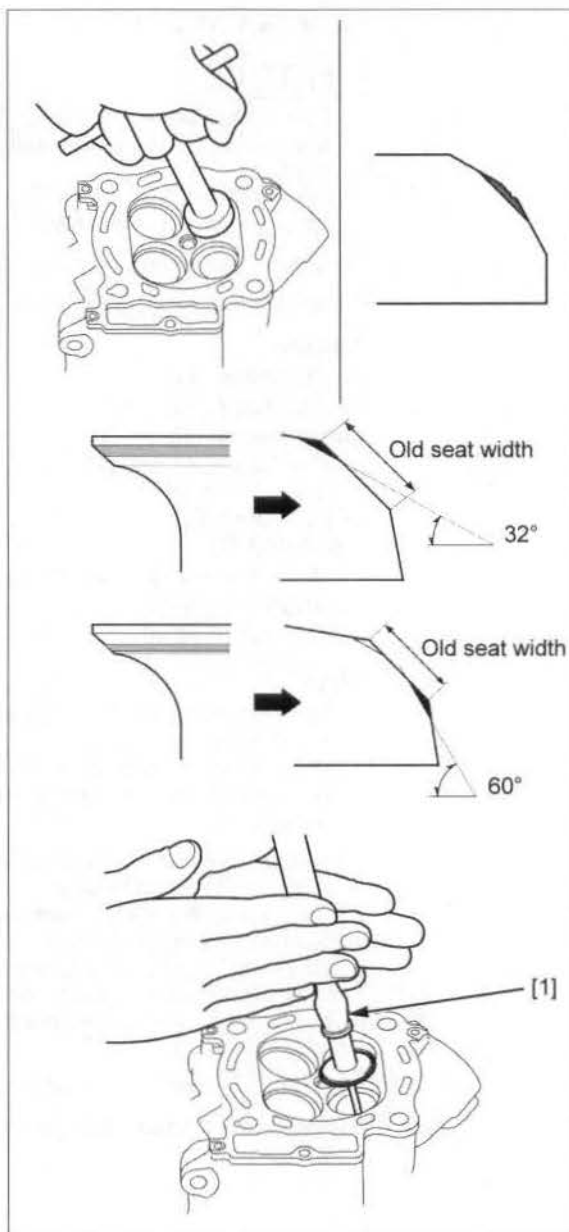
- Follow the refacer manufacturer's operating instructions.
 - Use cutting oil on the cutter during this operation.
 - Be careful not to grind the seat more than necessary.
1. Use a 45° seat cutter, remove any roughness or irregularities from the seat.
 2. Use a 32° flat cutter, remove the top 1/4 of the existing valve seat material.
 3. Use a 60° interior cutter, remove the bottom 1/4 of the existing valve seat material.
 4. Using a 45° seat cutter, cut the seat to the proper width.
 5. After cutting the seat, apply lapping compound to the valve face, and lap the valve using light pressure.

NOTE:

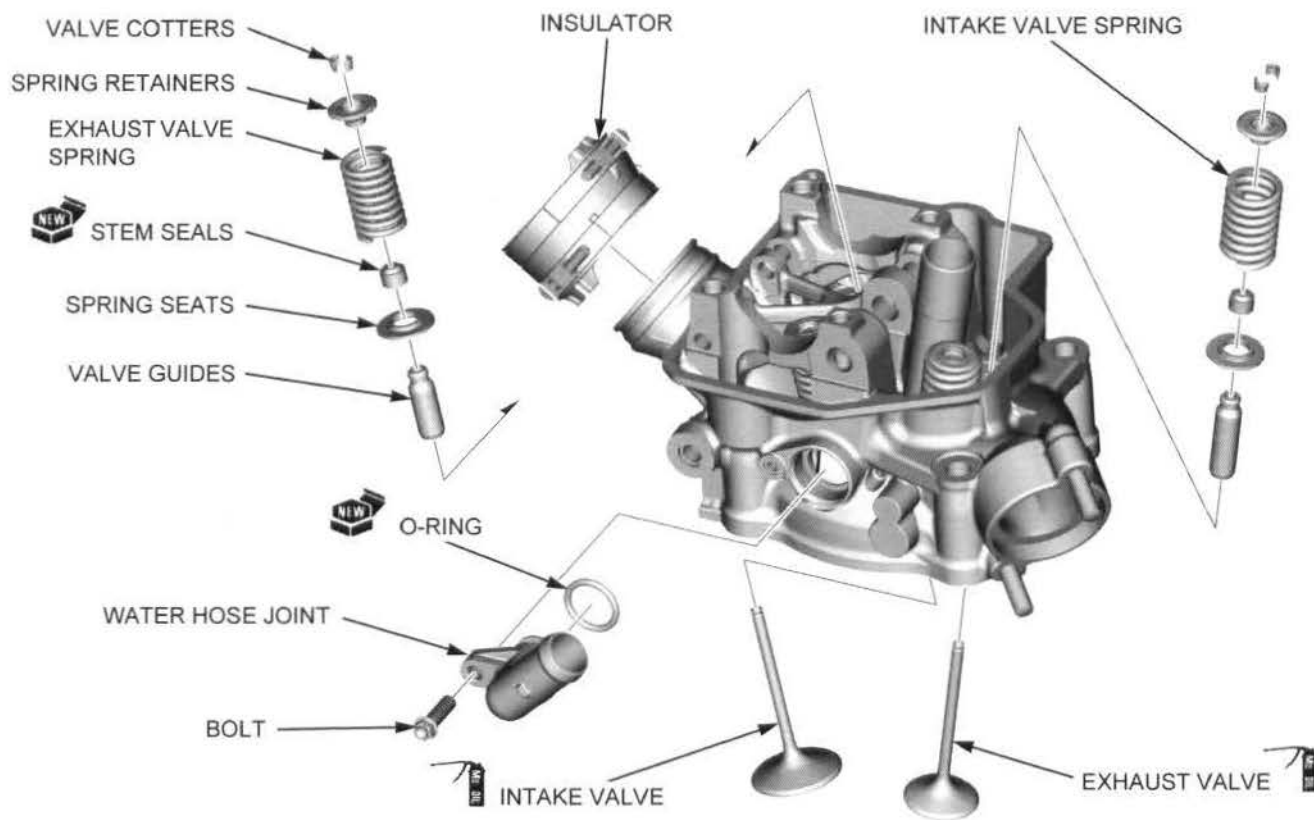
- Excessive lapping pressure may deform or damage the seat.
- Change the angle of hand lapping tool [1] frequently to prevent uneven seat wear.
- Do not allow lapping compound to enter the guides.

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

Assemble the cylinder head (page 10-21).



ASSEMBLY



Blow out all oil passages in the cylinder head with compressed air.

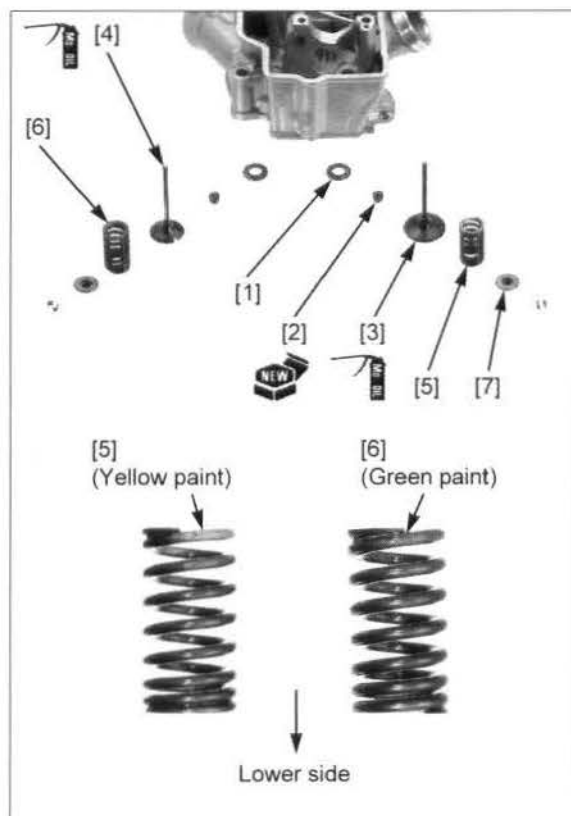
Install the spring seats [1] and new stem seals [2].

Lubricate the intake [3]/exhaust [4] valves stem and stem end sliding surface with molybdenum oil solution.

Insert the valves into the guide while turning it slowly to avoid damage to the stem seal.

Install the intake valve springs (Yellow paint) [5] and exhaust valve springs (Green paint) [6] with the tightly wound coils facing the combustion chamber side.

Install the spring retainers [7].



CYLINDER HEAD/VALVES

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

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

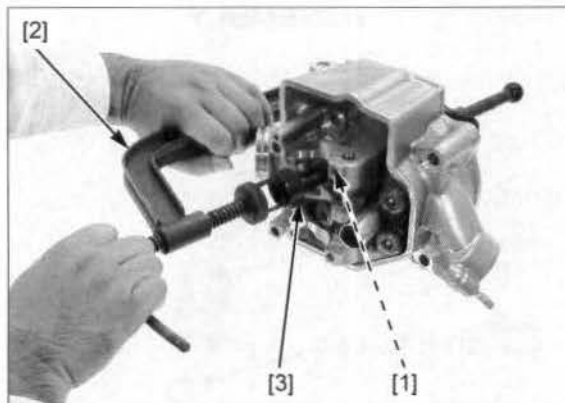
NOTE:

- Grease the cotters to ease installation.

TOOLS:

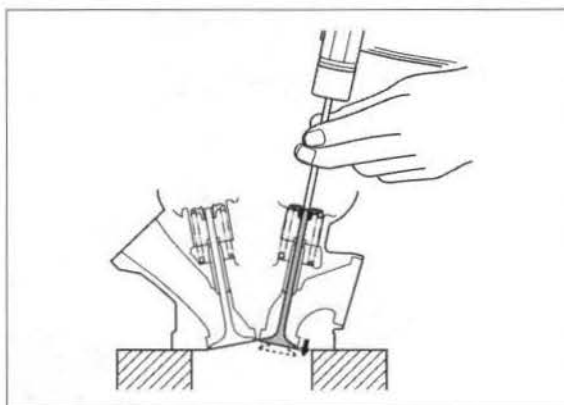
Valve spring compressor [2] 07757-0010000

Valve spring compressor attachment [3] 07959-KM30101



Support the cylinder head so the valve heads do not contact anything that could damage them.

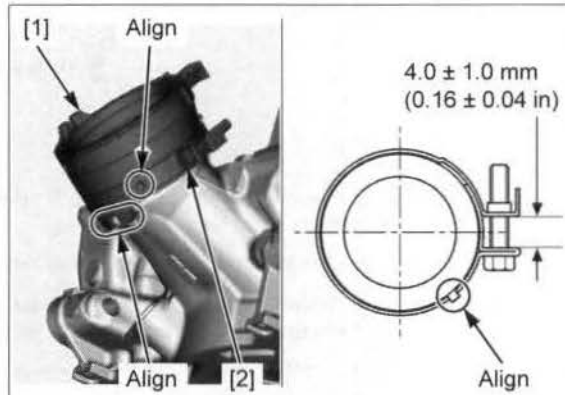
Tap the valve stems with a hammer and shaft as shown to seat the cotters firmly.



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

Align the insulator band hole with the insulator tab.

Tighten the insulator band screw [2] to the specified width as shown.



Apply engine oil to a new O-ring.

Install the O-ring [1] to the water hose joint [2].

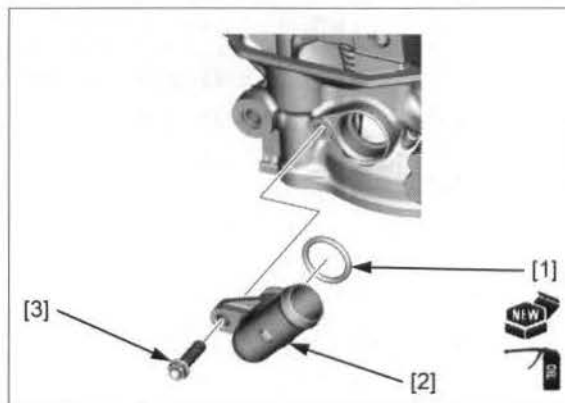
Install the water hose joint to the cylinder head.

Install and tighten the bolt [3] securely.

Install the ECT sensor (page 4-24).

Install the spark plug (page 3-11).

Install the cylinder head (page 10-23).

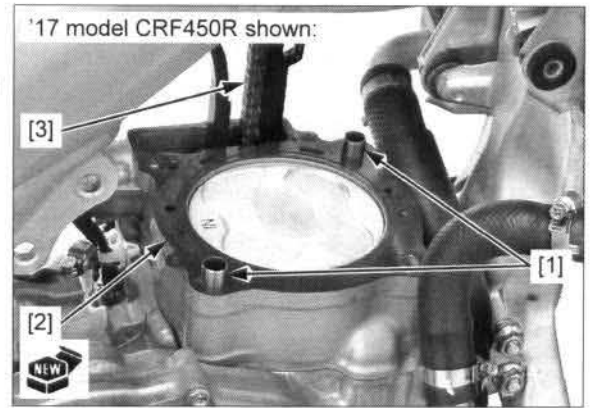


INSTALLATION

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

NOTE:

- Be careful not to drop the cam chain [3] and dowel pins into the crankcase.



Install the cylinder head [1] onto the cylinder.

NOTE:

- Be careful not to drop the cam chain [2] into the crankcase.

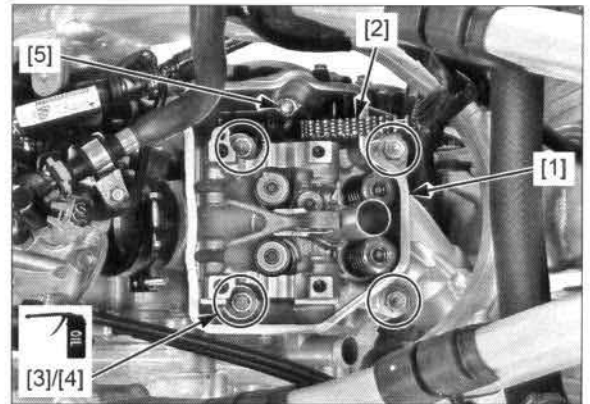
Be careful not to drop the washers into the crankcase.

Apply engine oil to the cylinder head bolt threads and seating surface.

Install the cylinder head bolts [3] with the washers [4]. Tighten the cylinder head bolts in a crisscross pattern in two or three steps to the specified torque.

TORQUE: 50 N·m (5.1 kgf·m, 37 lbf·ft)

Install and tighten the cylinder head 6 mm bolt [5].



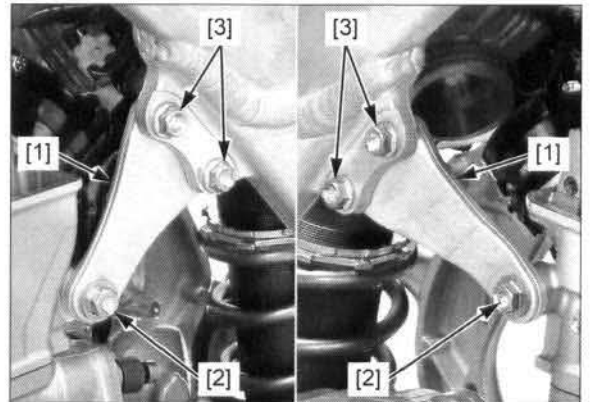
Install the cylinder head hanger plates [1], hanger bolts [2] and hanger plate bolts [3].

Tighten the cylinder head hanger bolts to the specified torque.

TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)

Tighten the cylinder head hanger plate bolts to the specified torque.

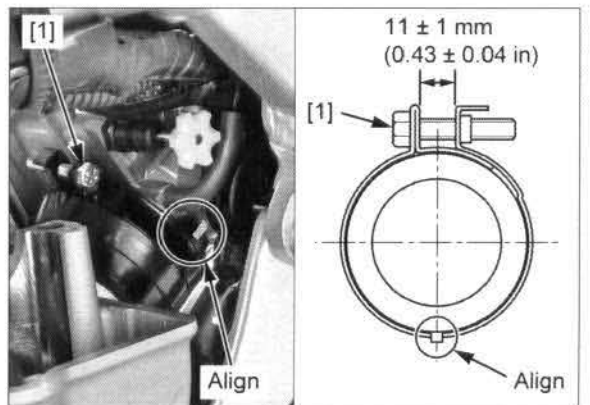
TORQUE: 32 N·m (3.3 kgf·m, 24 lbf·ft)



Install the throttle body by aligning its tab with the insulator groove.

Align the insulator band hole with the insulator tab.

Tighten the insulator band screw [1] to the specified range as shown.



CYLINDER HEAD/VALVES

Install the washer [1] and right radiator lower mounting bolt [2].

Tighten the bolt securely.

Connect the radiator hose A [3].

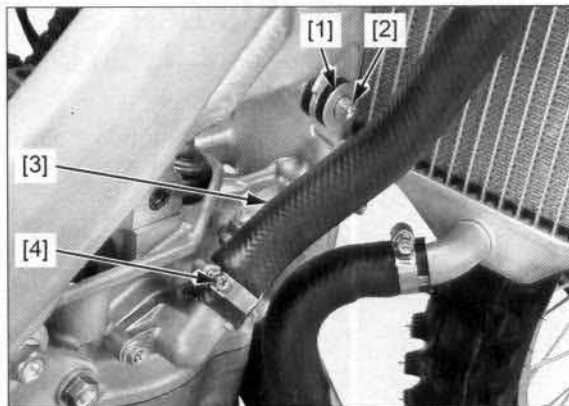
Tighten the hose band screw [4] to the specified range (page 9-7).

Install the following:

- Shims (page 3-15)
- Rocker arms (page 10-14)
- Ignition coil (page 5-9)
- Air cleaner housing (page 7-24)

Connect the ECT sensor 2P (Black) connector (page 4-24).

Fill the radiator with the recommended coolant mixture to the filler neck and bleed the air (page 9-5).



11. CYLINDER/PISTON/CAM CHAIN TENSIONER

SERVICE INFORMATION.....	11-2	CAM CHAIN TENSIONER	11-4
TROUBLESHOOTING	11-2	CYLINDER/PISTON	11-6
COMPONENT LOCATION.....	11-3		

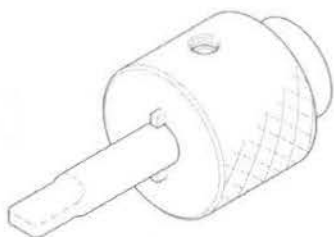
SERVICE INFORMATION

GENERAL

- This section covers maintenance of the cylinder, piston, and cam chain tensioner. These procedures can be done with the engine installed in the frame.
- Before disassembly, clean the engine thoroughly to prevent dirt from entering it.
- This motorcycle is equipped with a piston pin that has the Diamond-Like Carbon coating. Be careful not to damage the piston pin and do not polish it.
- Be careful not to damage the mating surfaces when removing the cylinder. For example, do not use a screwdriver to pry the cylinder.
- Clean all disassembled parts with cleaning solvent before inspection, use compressed air to dry the parts.
- Be careful not to damage the cylinder inner surface and piston outer surface.
- Clean the oil passages in the cylinder with compressed air before installing it.

TOOL

Cam chain tensioner holder
070MG-0010100



or 07AMG-001A100 (U.S.A. only)

TROUBLESHOOTING

- Engine top-end problems usually affect engine performance. These problems can be diagnosed by a compression test or by tracing engine noise to the top-end with a sounding rod stethoscope.
- If the performance is poor at low speeds, check for white smoke in the crankcase and cylinder head breather hose. If the hose is smoky, check for a seized piston rings.

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

- Leaking or damaged cylinder gasket
- Worn, stuck or broken piston rings
- Worn or damaged cylinder and piston
- Loose spark plug

Compression too high, over-heating or knocking

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

Abnormal noise

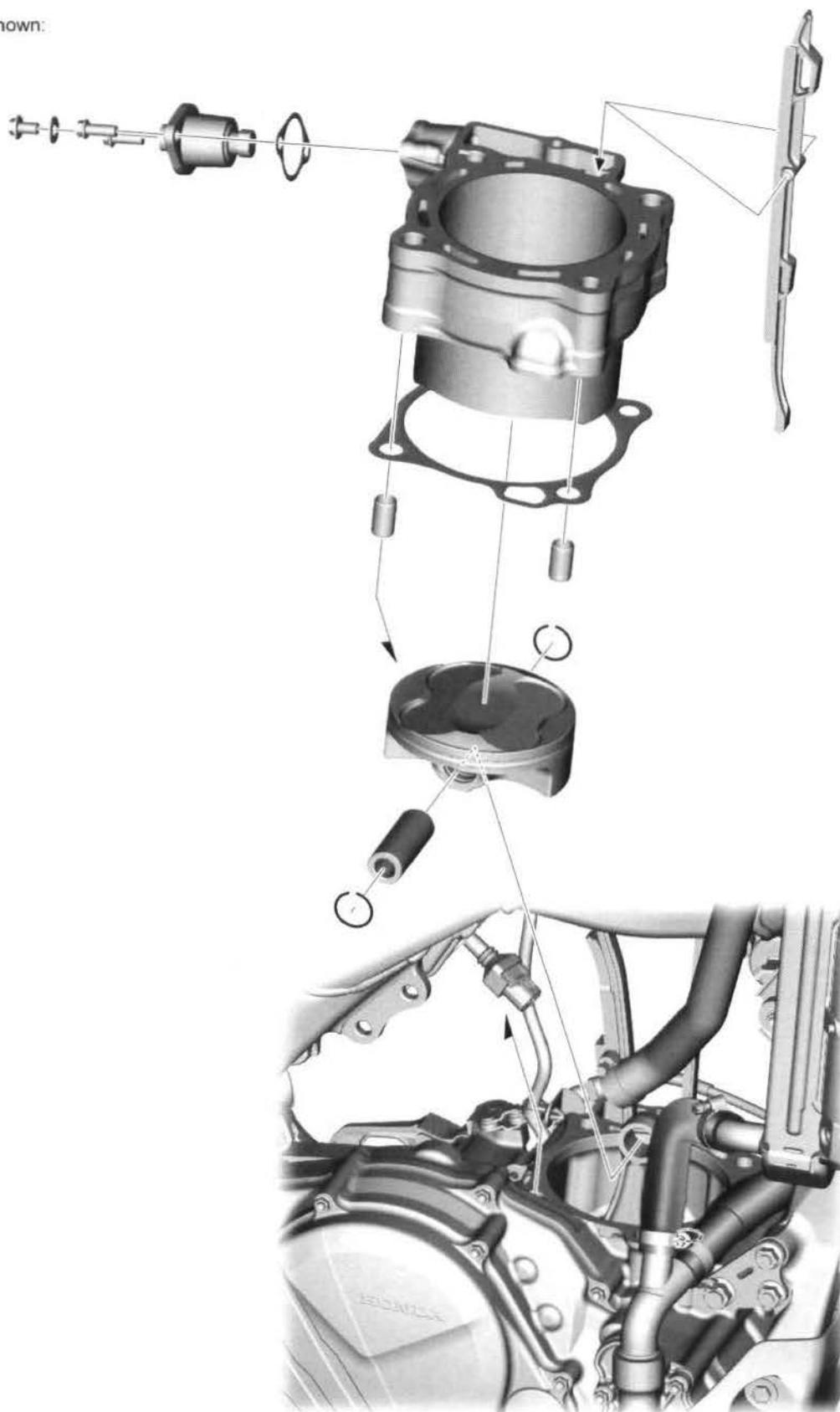
- Worn cylinder and piston
- Worn piston pin or piston pin hole
- Worn connecting rod small end
- Worn connecting rod big end bearing (page 14-17)

Excessive smoke

- Faulty cylinder, piston and piston rings
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall

COMPONENT LOCATION

'17 model
CRF450R shown:



CAM CHAIN TENSIONER

CAM CHAIN TENSIONER LIFTER

REMOVAL

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

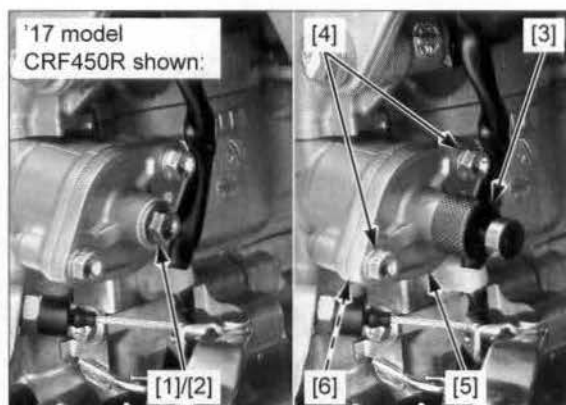
Insert the special tool into the cam chain tensioner lifter hole.

TOOL:

Cam chain tensioner holder [3] 070MG-0010100 or 07AMG-001A100 (U.S.A. only)

Turn the cam chain tensioner holder clockwise fully and lock the cam chain tensioner lifter by pushing the handle.

Remove the bolts [4], cam chain tensioner lifter [5] and gasket [6].



INSTALLATION

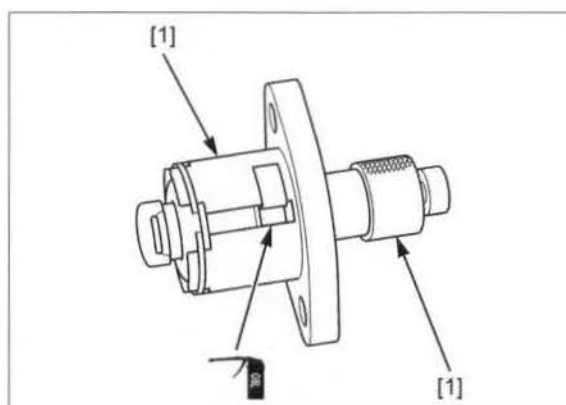
Apply 2.0 cm³ (0.07 US oz, 0.07 Imp oz) engine oil to the cam chain tensioner lifter [1] spring area through its slit.

Insert the special tool into the cam chain tensioner lifter hole.

TOOL:

Cam chain tensioner holder [2] 070MG-0010100 or 07AMG-001A100 (U.S.A. only)

Turn the cam chain tensioner holder clockwise fully and lock the cam chain tensioner lifter by pushing the handle.



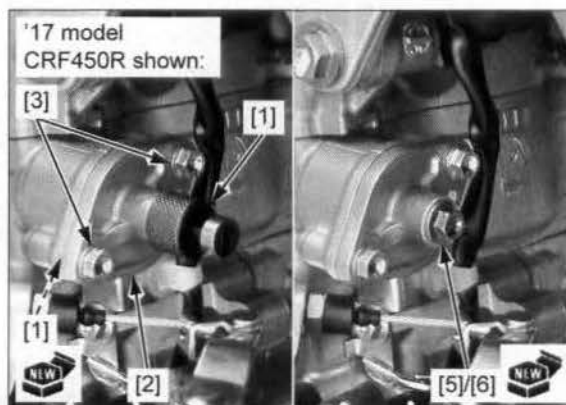
Install a new gasket [1] and cam chain tensioner lifter [2].

Install and tighten the bolts [3] securely.

Remove the tensioner holder [4].

Install the cam chain tensioner lifter bolt [5] with a new sealing washer [6].

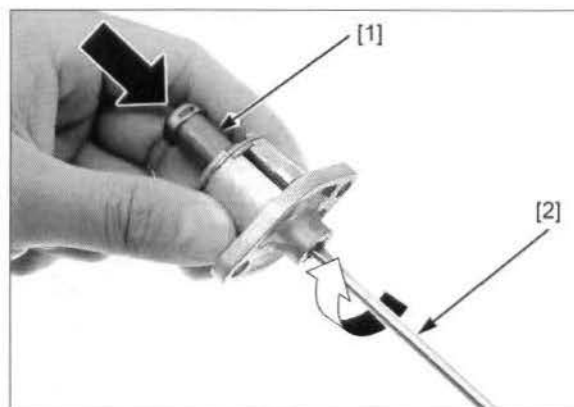
Tighten the cam chain tensioner lifter bolt securely.



INSPECTION

Check the lifter operation:

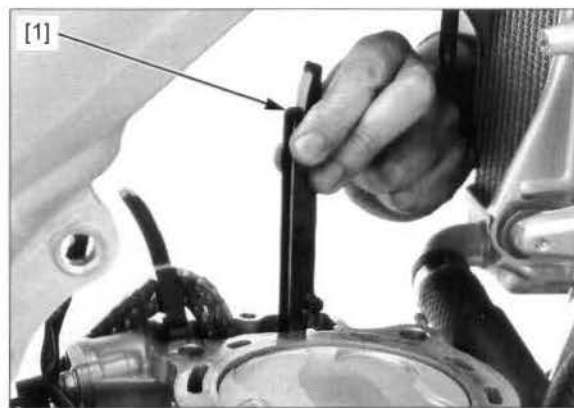
- The tensioner shaft [1] should not go into the tensioner lifter body when it is pushed.
- When it is turned clockwise with a screwdriver [2], the tensioner shaft should be pulled into the tensioner lifter body. The tensioner shaft should spring out of the tensioner lifter body as soon as the screwdriver is released.

**CAM CHAIN GUIDE REMOVAL/INSTALLATION**

Remove the cylinder head (page 10-15).

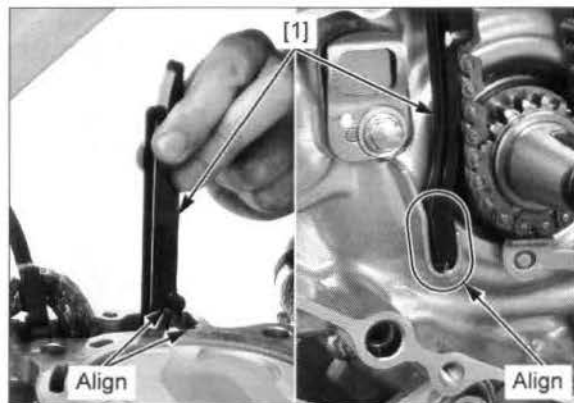
Remove the cam chain guide [1].

Inspect the cam chain guide for excessive wear or damage, replace it if necessary.



Install the cam chain guide [1] by aligning its tabs with the grooves of the cylinder and guide end with the groove of the crankcase.

Install the cylinder head (page 10-23).



CAM CHAIN TENSIONER REMOVAL/INSTALLATION

Remove the following:

- Camshaft (page 10-8)
- Flywheel (page 13-6)

Remove the bolt [1] and cam chain tensioner [2].
Remove the collar [3] from the cam chain tensioner.

Inspect the cam chain tensioner for excessive wear or damage, replace it if necessary.

Install the collar into the cam chain tensioner.

Apply locking agent to the cam chain tensioner bolt threads.

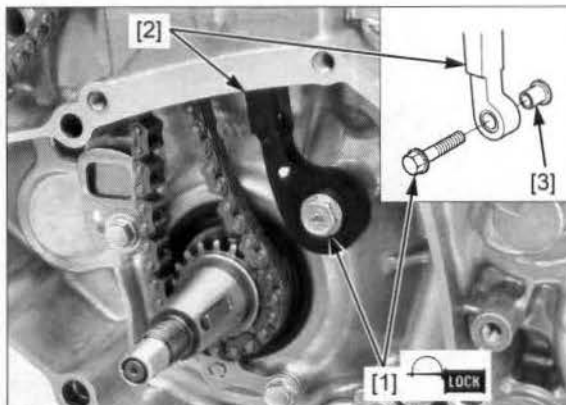
Install the cam chain tensioner and cam chain tensioner bolt.

Tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the following:

- Flywheel (page 13-7)
- Camshaft (page 10-9)



CYLINDER/PISTON

CYLINDER REMOVAL

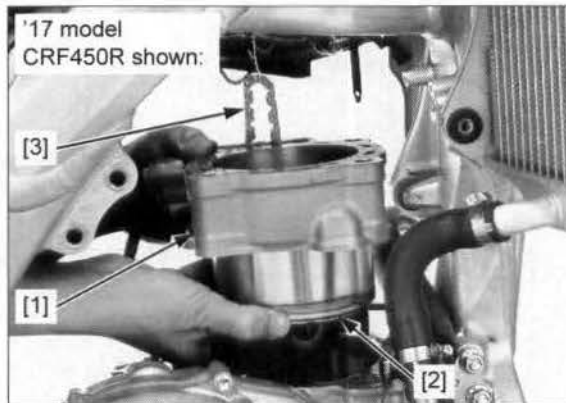
Remove the following:

- Cylinder head (page 10-15)
- Cam chain guide (page 11-5)

Remove the cylinder [1] while holding the piston [2].

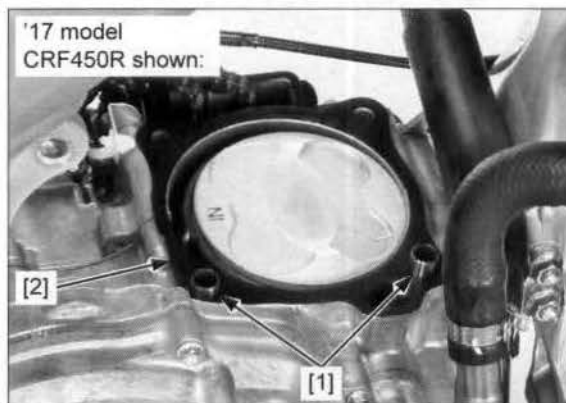
NOTE:

- Be careful not to drop the cam chain [3] into the crankcase.



Be careful not to drop the dowel pins into the crankcase.

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



PISTON REMOVAL

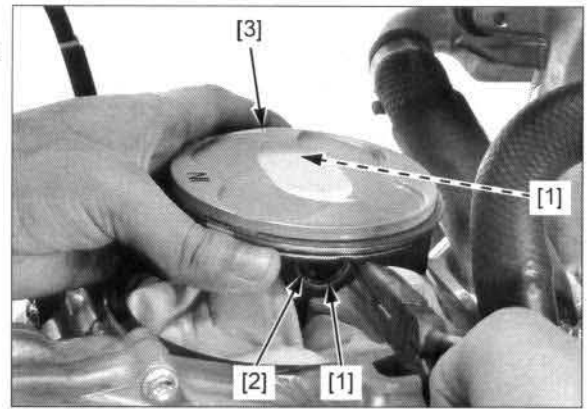
Place a clean shop towel over the crankcase to prevent the piston pin clip from dropping into the crankcase.

Remove the piston pin clips [1] with pliers.

Press the piston pin [2] out of the piston [3] and remove the piston.

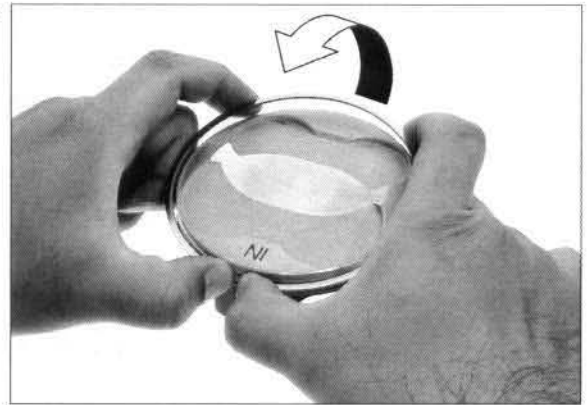
NOTE:

- Be careful not to damage the piston pin.

**PISTON RING REMOVAL**

Be careful not to damage the piston rings by spreading the ends too far.

Spread the piston rings and remove them by lifting up at a point just opposite the gap.

**INSPECTION**

Inspect the following parts for scratch, damage, abnormal wear and deformation.

- Cylinder
- Piston
- Piston rings
- Piston pin
- Connecting rod small end

Measure each part and calculate the clearance according to CYLINDER/PISTON SPECIFICATIONS (page 1-7).

Replace any part if it is out of service limit.

NOTE:

- Do not polish the piston pin, it may cause engine damage.

PISTON RING INSTALLATION

Clean the piston ring grooves thoroughly.

NOTE:

- Be careful not to damage the piston when cleaning the piston ring grooves.

Apply engine oil to each piston ring entire surface.

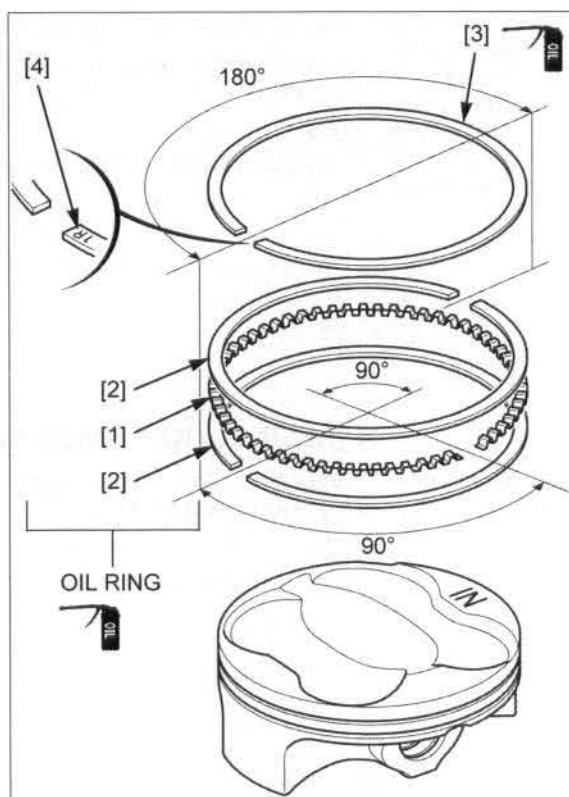
Install the spacer [1] first, then install the side rails [2] on the piston.

Install the top ring [3] on the piston with "1R" mark [4] side facing up.

NOTE:

- Do not damage the piston ring by spreading the ends too far.
- Be careful not to damage the piston during piston ring installation.
- Space the end gaps 180° apart between the top ring and upper side rail.
- Space each oil ring end gaps 90° apart.

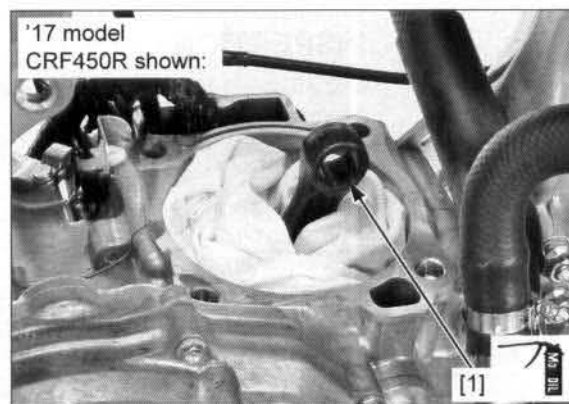
After installation, check that the rings rotate freely without sticking.



PISTON INSTALLATION

Place a shop towel over the cylinder opening to prevent dust or dirt from entering the crankcase.

Apply molybdenum oil solution to the connecting rod small end [1] inner surface.



Apply engine oil to the piston [1] outer surface and piston pin hole.

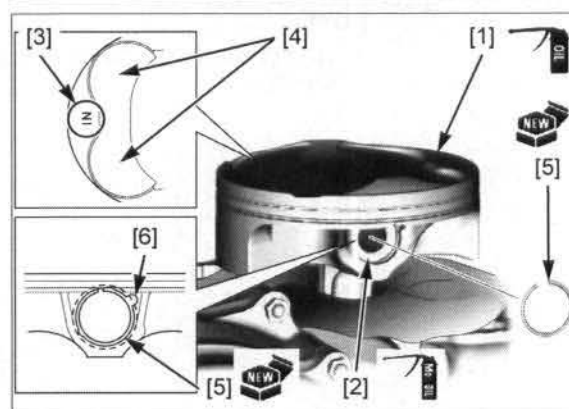
Apply molybdenum oil solution to the piston pin [2] outer surface.

Install the piston with the "IN" mark [3] and/or large valve recesses [4] facing the intake side.

Install the piston pin and new piston pin clips [5].

NOTE:

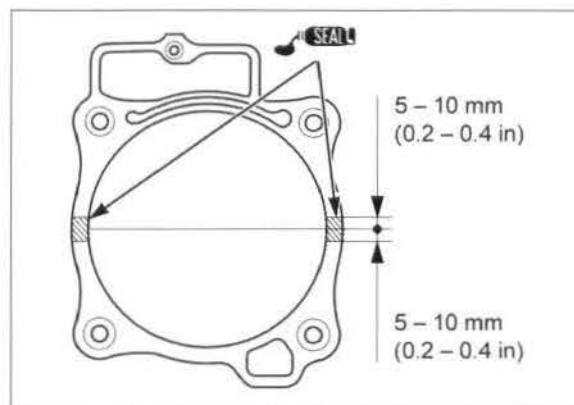
- Be careful not to damage the piston pin.
- Always replace piston pin clips with new ones.
- Be careful not to drop the piston pin clips into the crankcase.
- Do not align the piston pin clip end gap with the piston cut-out [6].
- Make sure that the piston pin clips are firmly seated in the grooves.



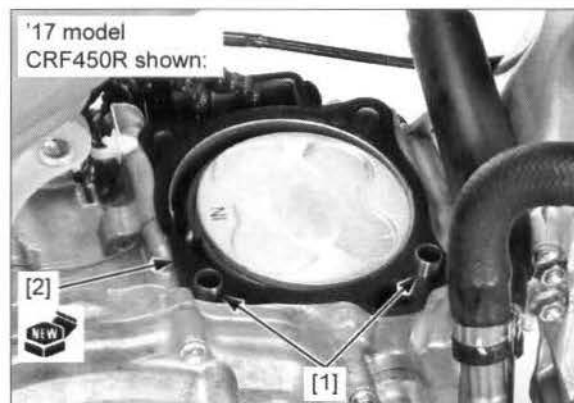
CYLINDER INSTALLATION

Clean any gasket material from the cylinder mating surfaces of the crankcase.

Apply liquid sealant (TB1141G manufactured by ThreeBond or equivalent) to the cylinder mating surface of the crankcase as shown.



Be careful not to drop the dowel pins into the crankcase. Install the dowel pins [1] and new gasket [2].



Apply engine oil to the cylinder bore, piston outer surface, and piston rings.

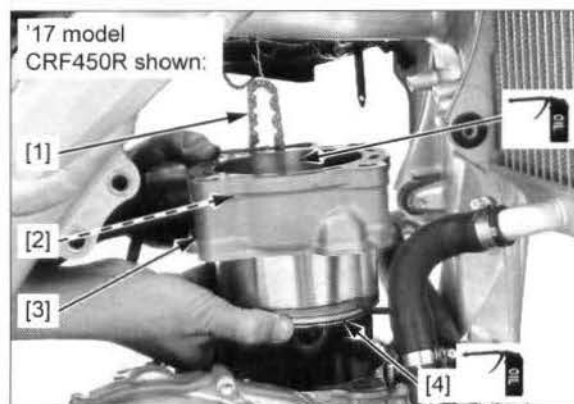
Route the cam chain [1] and cam chain tensioner [2] through the cylinder [3] and install the cylinder while compressing the piston rings [4].

NOTE:

- Be careful not to damage the piston ring and cylinder wall.

Install the following:

- Cam chain guide (page 11-5)
- Cylinder head (page 10-23)



MEMO



12. CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

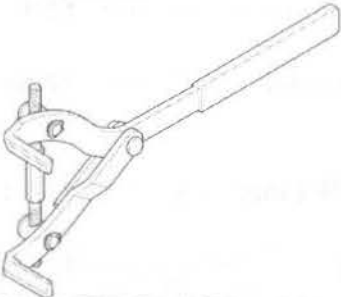
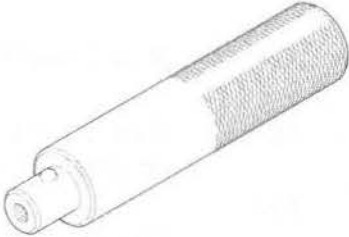


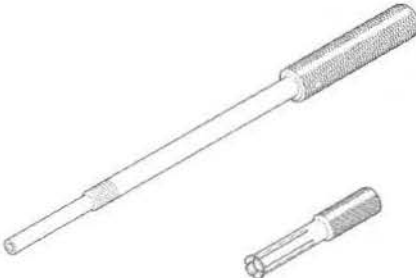
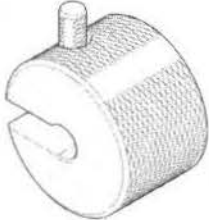
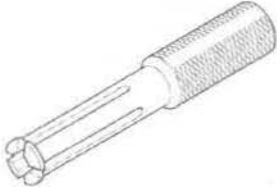


SERVICE INFORMATION	12-2	CLUTCH	12-11
TROUBLESHOOTING	12-4	KICKSTARTER ('17 model).....	12-19
COMPONENT LOCATION	12-5	STARTER CLUTCH (Except '17 model CRF450R)	12-23
RIGHT CRANKCASE COVER	12-8	GEARSHIFT LINKAGE	12-26

SERVICE INFORMATION

GENERAL

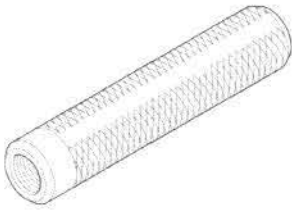
- This section covers service of the clutch, kickstarter ('17 model), starter clutch (Except '17 model CRF450R), and gearshift linkage. All service can be done with the engine installed in the frame.
- The clutch discs/plates can be serviced without removing the right crankcase cover.
Replace the engine oil if the clutch discs and plates are replaced.
- Engine oil viscosity and level have an effect on clutch disengagement. Oil additives also affect clutch performance and are not recommended. When the clutch does not disengage or the motorcycle creeps with the clutch pulled in, inspect the engine oil level before servicing the clutch system.

TOOLS

Clutch center holder 07724-0050002  or 07724-0050001 (U.S.A. only)	Driver 07749-0010000 	Attachment, 28 x 30 mm 07946-1870100 
Pilot, 12 mm 07746-0040200 	Bearing remover set, 12 mm 07936-1660101  not available in U.S.A.	Remover weight 07741-0010201  or 07936-371020A (U.S.A. only)
Remover head, 12 mm 07936-1660110  not available in U.S.A.	Remover shaft 07936-1660120  not available in U.S.A.	Bearing remover, 12 mm 07936-166010A (U.S.A. only) 

CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

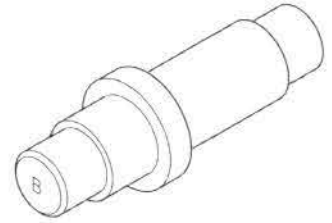
Remover handle
07936-3710100 (U.S.A. only)



Pilot, 16 mm
07746-0041300



Needle bearing driver
07AMD-MENA200 (U.S.A. only)



Gear holder, M2.5
07724-0010100



or 07724-001A100 (U.S.A. only)

TROUBLESHOOTING

Clutch lever is too hard to pull in

- Damaged clutch lifter mechanism
- Faulty clutch lifter needle bearing
- Clutch lifter piece installed improperly

Transmission jumps out of gear

- Worn gearshift drum stopper arm
- Weak or broken gearshift arm return spring
- Loose stopper arm bolt
- Bent shift fork shaft (page 14-12)
- Damaged shift drum guide grooves (page 14-12)
- Damaged or bent shift fork (page 14-12)
- Worn gear engagement dogs or slots (page 14-12)
- Increase gearshift pedal backlash.

Gearshift pedal will not return

- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

Clutch slips when accelerating

- Incorrect clutch adjustment
- Worn clutch discs
- Weak clutch springs
- Transmission oil mixed with molybdenum or graphite additives

Clutch will not disengage or motorcycle creeps with clutch disengaged

- Clutch plate warped
- Loose clutch center lock nut
- Oil level too high
- Improper oil viscosity
- Damaged clutch lifter mechanism
- Clutch lifter piece/clutch lifter rod installed improperly
- Worn clutch outer/clutch center grooves

Hard to shift

- Incorrect clutch lever freeplay adjustment (page 3-26)
- Incorrect engine oil viscosity (page 3-16)
- Bent shift fork (page 14-12)
- Bent shift fork shaft (page 14-12)
- Bent shift fork claw (page 14-12)
- Loose stopper arm bolt
- Damaged gearshift drum stopper arm and return spring pin
- Loose gearshift drum center pin
- Damaged gearshift drum center
- Damaged gearshift drum guide grooves (page 14-12)
- Bent gearshift spindle
- Damaged gearshift spindle
- Increase gearshift pedal backlash.

Motorcycle creeps with the engine idling

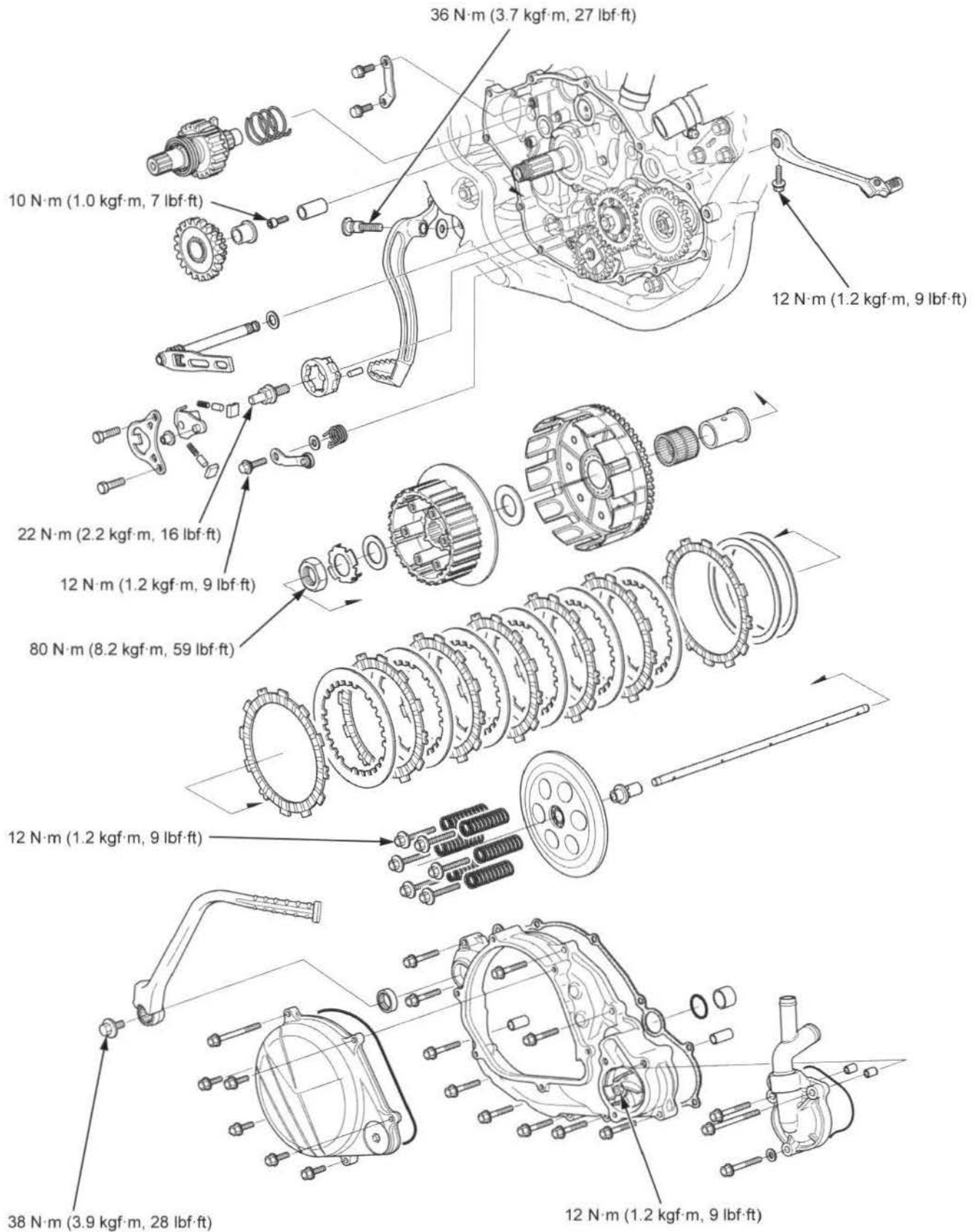
- Incorrect clutch adjustment
- Clutch plate warped
- Faulty clutch lifter
- Incorrect transmission oil

Starter motor operate properly, but engine does not start (Except '17 model CRF450R)

- Faulty starter clutch
- Damaged starter driven gear
- Damaged starter reduction gear/shaft, starter idle gear/shaft
- Damaged starter motor pinion gear
- Faulty starter/ignition relay or related circuit ('17 model CRF450RX)
- Faulty starter/main relay or related circuit (After '17 model)

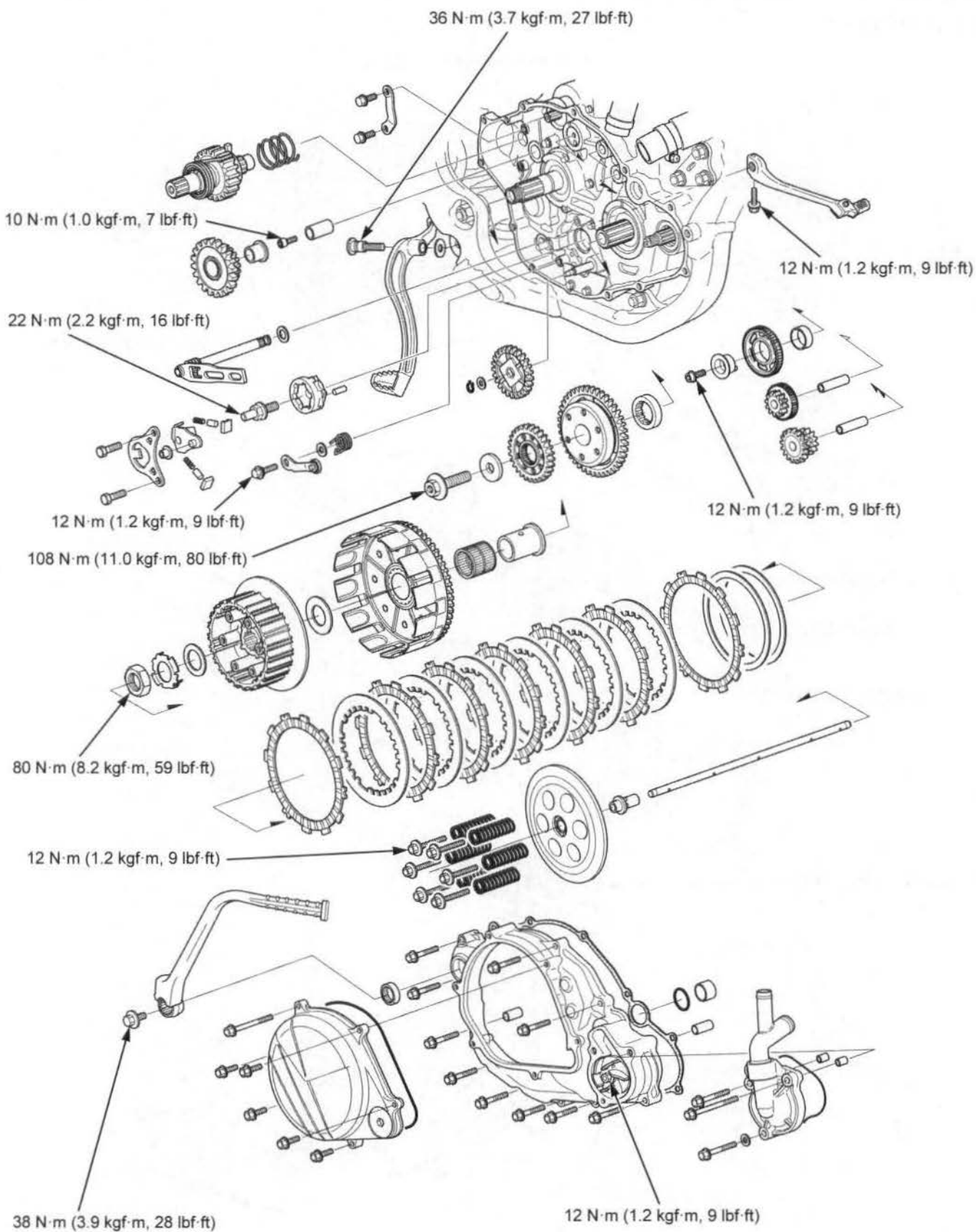
COMPONENT LOCATION

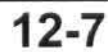
'17 model CRF450R:



CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

'17 model CRF450RX:





RIGHT CRANKCASE COVER

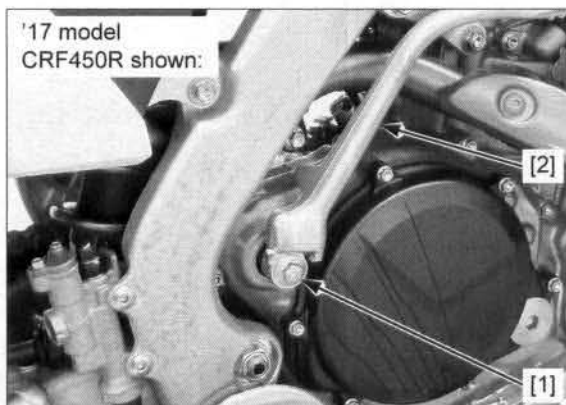
REMOVAL

Drain the coolant (page 9-5).

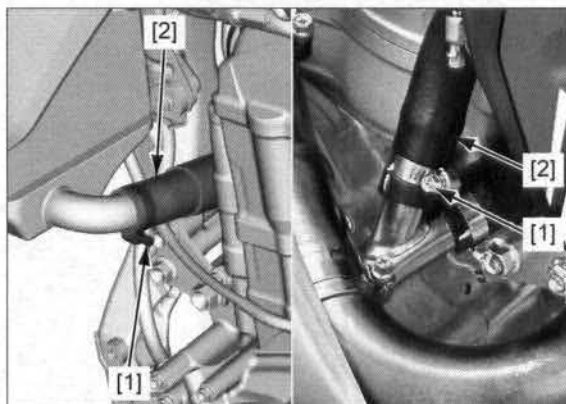
Drain the engine oil (page 3-16).

Remove the brake pedal pivot bolt (page 18-18).

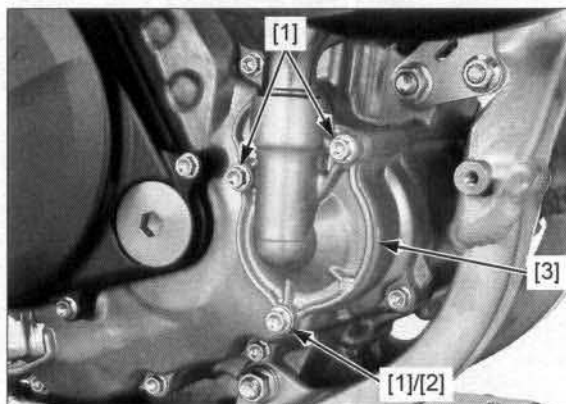
'17 model: Remove the bolt [1] and kickstarter pedal [2].



Loosen the radiator hose band screws [1] and disconnect the radiator hoses [2].

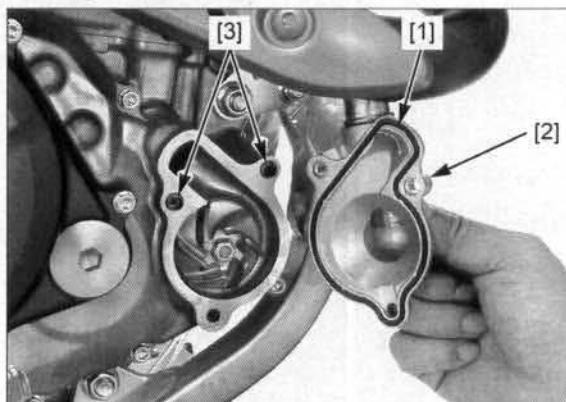


Remove the bolts [1], sealing washer [2], water pump cover [3].



Remove the O-ring [1] from the water pump cover [2].

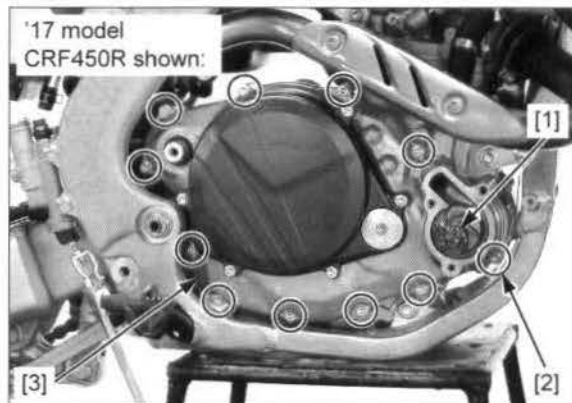
Remove the dowel pins [3].



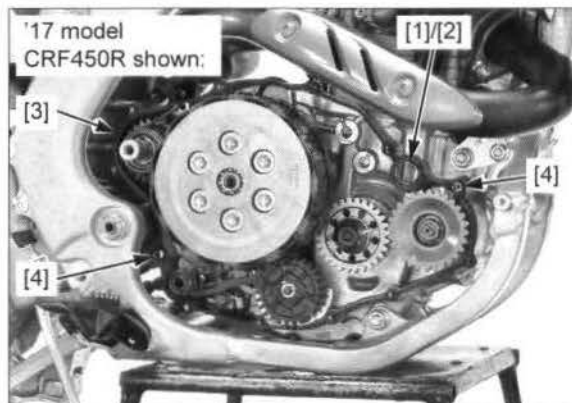
If you plan to service the water pump/mechanical seal, loosen the impeller [1].

Loosen the right crankcase cover bolts [2] in a crisscross pattern in two or three steps.

Remove the bolts and right crankcase cover [3].



Remove the water by-pass pipe [1] and O-ring [2].
Remove the gasket [3] and dowel pins [4].



'17 model: Check the kickstarter spindle oil seal [1] for deterioration or damage.

NOTE:

- Install the oil seal with it marked side facing out so that it is flush with the right crankcase cover top surface.
- Apply grease to the oil seal lips.



After '17 model: Check the kickstarter spindle cap [1] for deterioration or damage.

NOTE:

- Kickstarter spindle cap is flush with the right crankcase cover top surface.



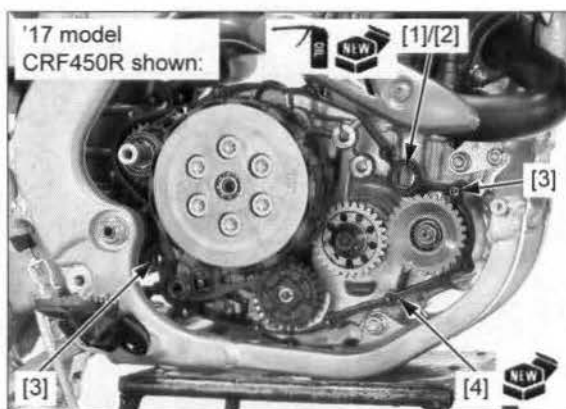
INSTALLATION

Apply engine oil to a new O-ring.

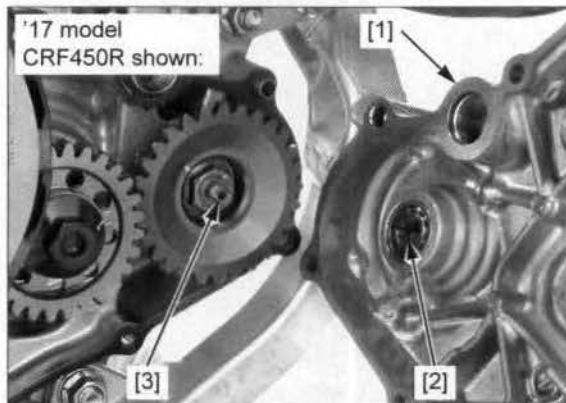
Install the O-ring [1] onto the by-pass pipe [2].

Install the by-pass pipe with the O-ring onto the crankcase.

Install the dowel pins [3] and a new gasket [4].



Install the right crankcase cover [1] while aligning the water pump shaft slit [2] with balancer shaft end [3].

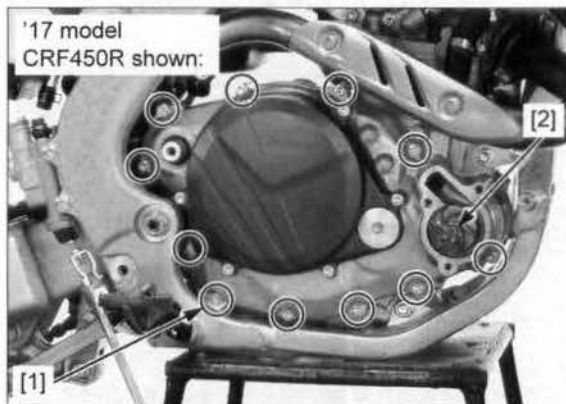


Install the right crankcase cover bolts [1].

Tighten the right crankcase cover bolts in a crisscross pattern in two or three steps.

If you loosen the impeller [2], tighten it to the specified torque.

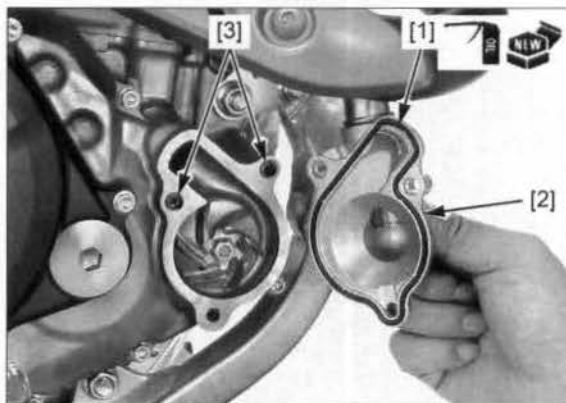
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



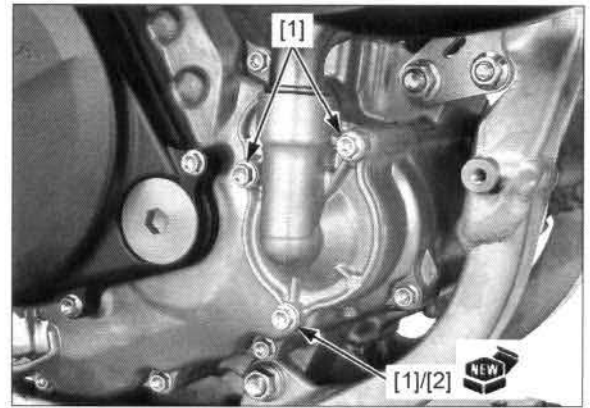
Apply engine oil to a new O-ring.

Install the O-ring [1] onto the water pump cover [2].

Install the dowel pins [3], water pump cover/O-ring onto the right crankcase cover.



Install the bolts [1] and a new sealing washer [2].
Tighten the bolts securely.

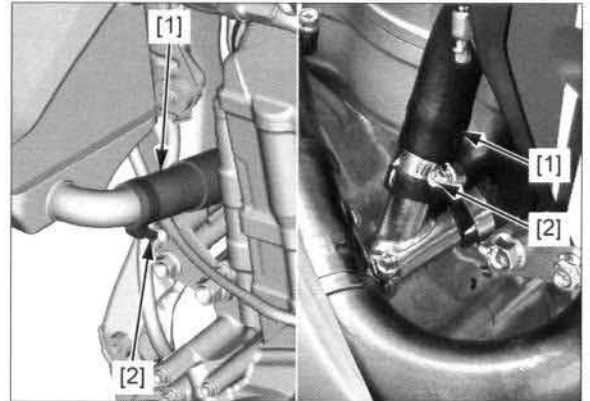


Connect the radiator hoses [1].

NOTE:

- Route the radiator hoses properly (page 1-24).

Tighten the radiator hose band screws [2] to the specified range (page 9-7).



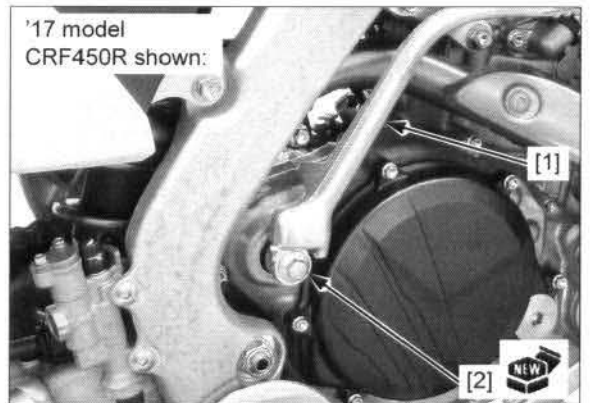
'17 model: Install the kickstarter pedal [1].
Install a new kickstarter pedal bolt [2].
Tighten the pivot bolt to the specified torque.

TORQUE: 38 N·m (3.9 kgf·m, 28 lbf·ft)

Install the brake pedal (page 18-18).

Add the recommended coolant mixture to the filler neck and bleed the air (page 9-5).

Fill the engine with the recommended oil (page 3-16).
Start the engine and check for oil and coolant leaks.



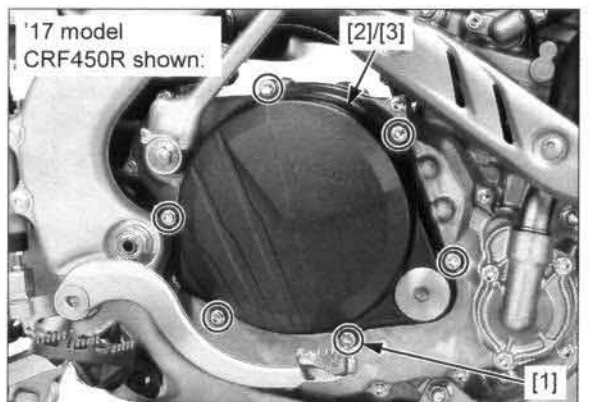
CLUTCH

REMOVAL

Drain the engine oil (page 3-16).

Loosen the clutch cover bolts [1] in a crisscross pattern in two or three steps.

Remove the bolts, clutch cover [2] and O-ring [3].

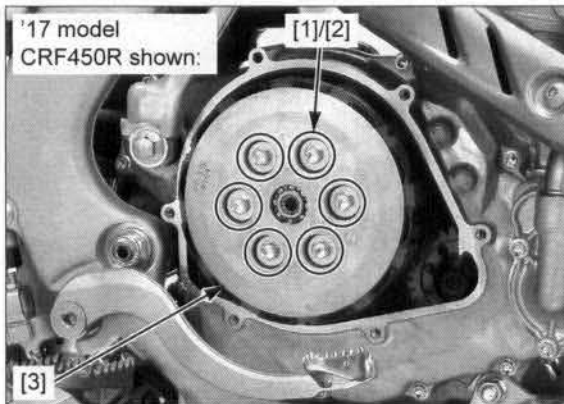


CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

Loosen the clutch spring bolts/washers [1] in a crisscross pattern in two or three steps.

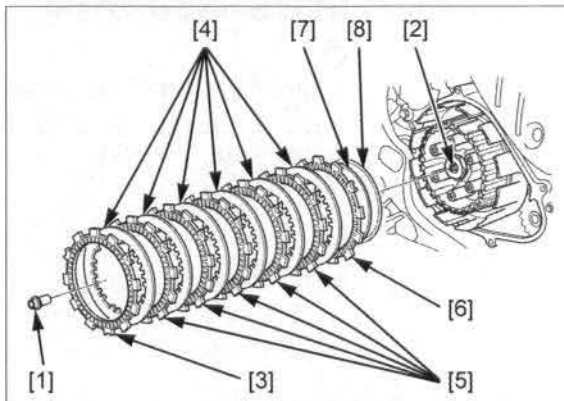
Remove the bolt/washers, and clutch springs [2].

Remove the clutch pressure plate [3].

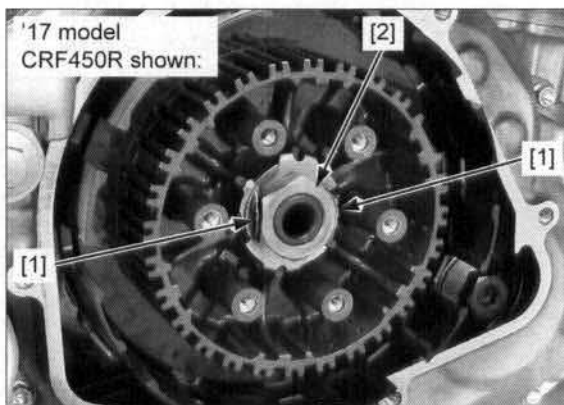


Remove the following:

- Clutch lifter piece [1]
- Clutch lifter rod [2]
- Clutch disc C [3]
- Six clutch plates [4]
- Five clutch discs B [5]
- Clutch disc A [6]
- Judder spring [7]
- Spring seat [8]



Bend the tabs [1] of the lock washer away from the lock nut [2].



Install the special tool as shown.

TOOL:

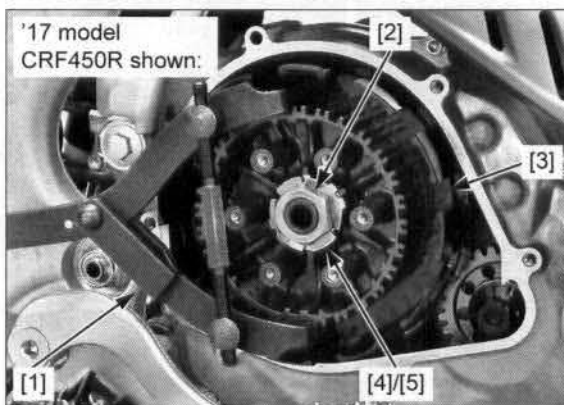
Clutch center holder [1]

07724-0050002 or
07724-0050001
(U.S.A. only)

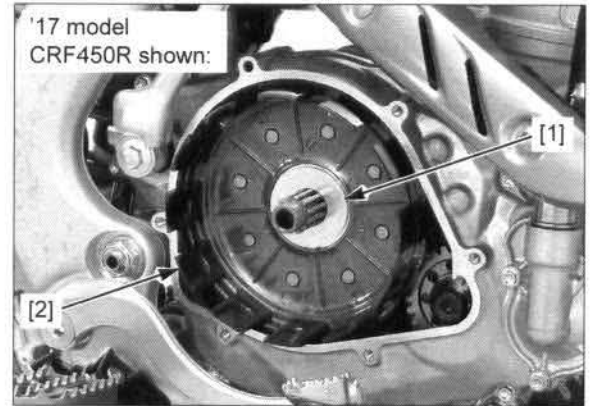
Loosen the clutch center lock nut [2] while holding the clutch center [3] with the special tool.

Remove the lock nut, lock washer [4], and thrust washer [5].

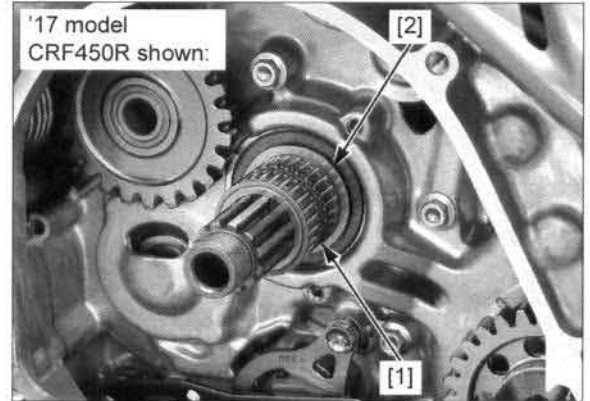
Remove the special tool and clutch center.



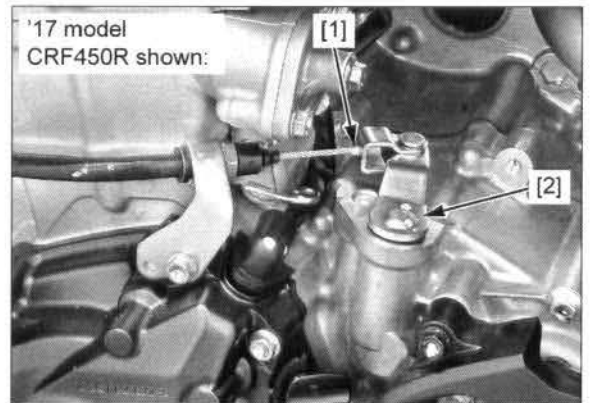
Remove the thrust washer [1] and clutch outer [2].



Remove the needle bearing [1] and clutch outer guide [2].



Disconnect the clutch cable [1] and remove the clutch lifter arm [2].



INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation.

- Clutch springs
- Clutch pressure plate
- Clutch lifter peace
- Clutch lifter rod
- Clutch discs/plates
- Judder spring
- Spring seat
- Clutch center
- Clutch outer/primary driven gear
- Needle bearing
- Clutch outer guide
- Clutch lifter arm

Replace if necessary.

Measure each part according to CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS (page 1-7).

Replace any parts if it is out of service limit.

NOTE:

- Replace the clutch springs (6 pcs) as a set.
- Replace the clutch discs and plates as a set.

CLUTCH PRESSURE PLATE BEARING REPLACEMENT

Remove the clutch pressure plate (page 12-11).

Drive the bearing [1] out.

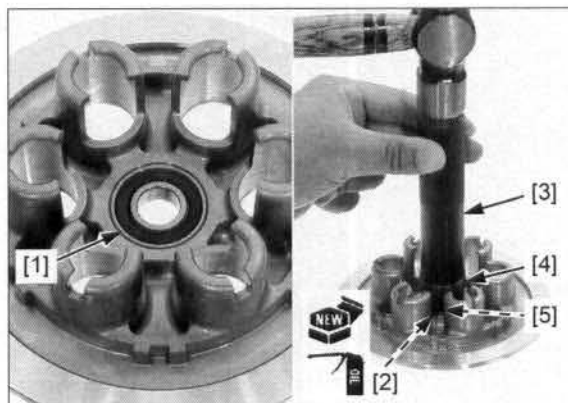
Apply engine oil to a new bearing.

Drive in the bearing with its sealed side facing up.

Drive in the bearing [2] using the special tools into the clutch pressure plate until it is fully seated.

TOOLS:

Driver [3]	07749-0010000
Attachment, 28 x 30 mm [4]	07946-1870100
Pilot, 12 mm [5]	07746-0040200



LIFTER ARM BEARING REPLACEMENT

Remove the engine (page 15-4).

Remove the clutch lifter rod and clutch lifter arm (page 12-11).

Remove the oil seal [1].

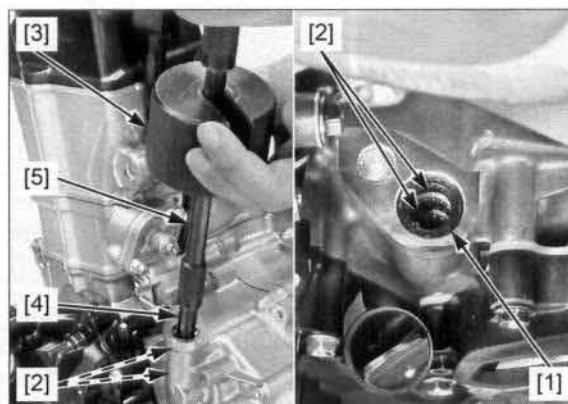
Remove the needle bearings [2] using the special tools.

TOOLS:

Bearing remover set, 12 mm	07936-1660101
Remover weight [3]	07741-0010201
Remover head, 12 mm [4]	07936-1660110
Remover shaft [5]	07936-1660120

U.S.A. TOOLS:

Bearing remover, 12 mm	07936-166010A
Remover handle	07936-3710100
Remover weight	07936-371020A



Apply engine oil to new needle bearings.

Drive in the needle bearings [1] to the specified depth using the special tools as shown.

TOOLS:

Driver [2] 07749-0010000

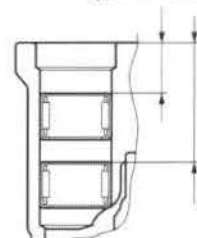
Pilot, 16 mm [3] 07746-0041300

U.S.A. TOOL:

Needle bearing driver 07AMD-MENA200



11.2 – 11.7 mm
(0.44 – 0.46 in)



26.7 – 27.2 mm
(1.05 – 1.07 in)

Install a new oil seal to the specified depth as shown.

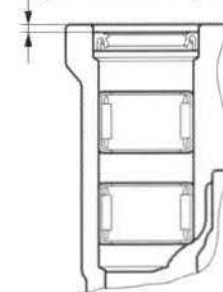
Apply grease to the oil seal [1] lips.

Install the clutch lifter arm and clutch lifter rod (page 12-16).

Install the engine (page 15-6).

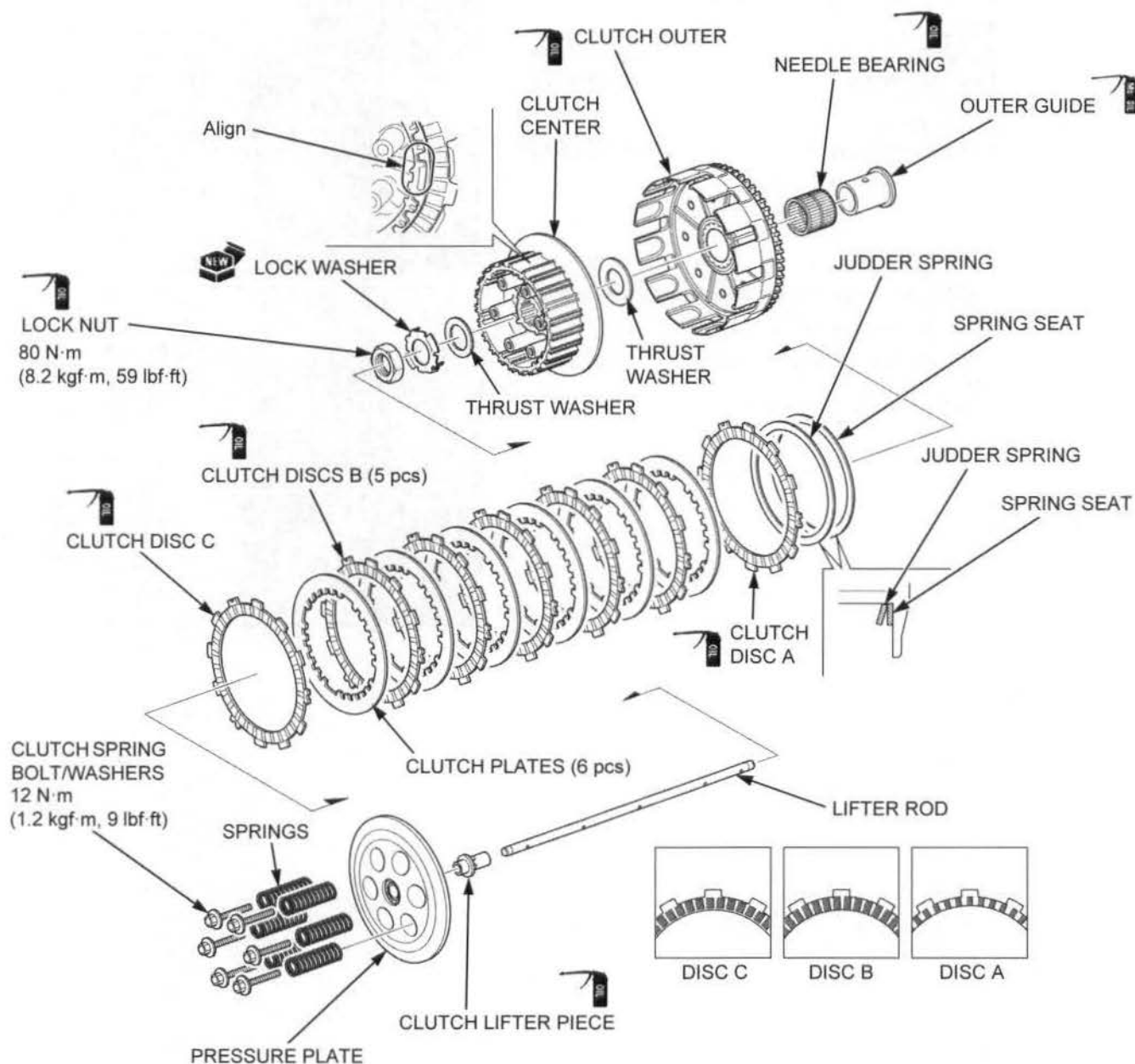


1.2 – 1.8 mm
(0.04 – 0.07 in)



CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

INSTALLATION

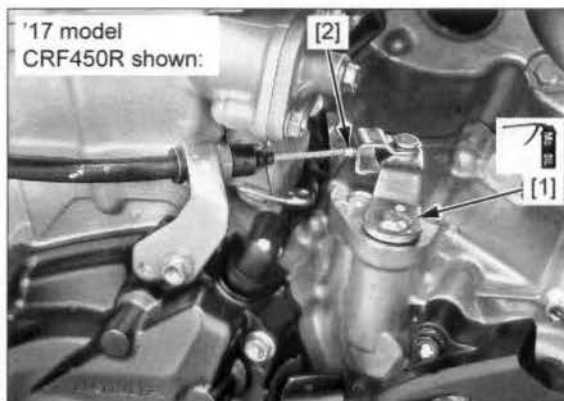


Apply molybdenum oil solution to the clutch lifter arm cam area.

Install the clutch lifter arm [1] into the left crankcase.

Connect the clutch cable [2] end to the lifter arm.

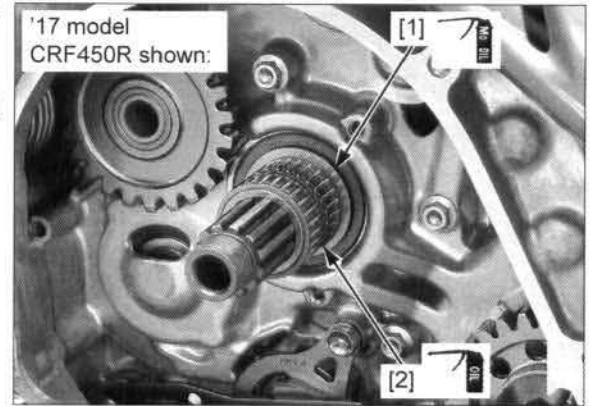
'17 model
CRF450R shown:



Apply molybdenum oil solution to the clutch outer guide sliding surface.

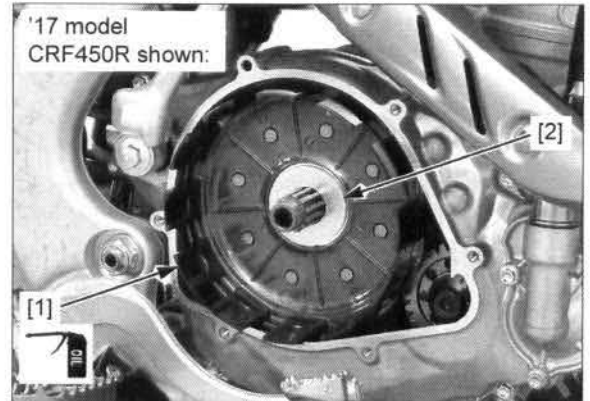
Apply engine oil to the needle bearing.

Install the clutch outer guide [1] and needle bearing [2] onto the mainshaft.



Apply engine oil to the clutch outer [1] sliding area.

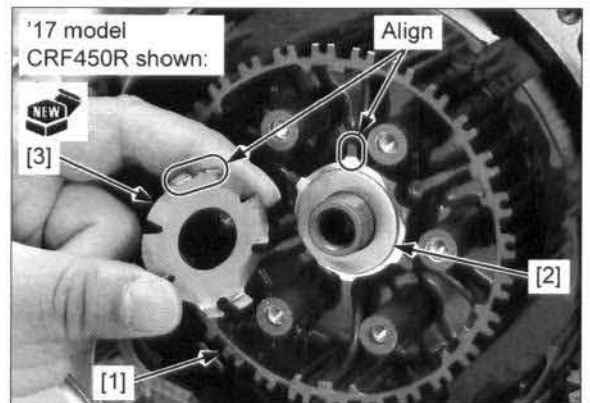
Install the clutch outer and thrust washer [2].



Install the clutch center [1] onto the mainshaft.

Install the thrust washer [2].

Install a new lock washer [3] by aligning its grooves with the clutch center ribs.



Apply engine oil to the threads and seating surface of the clutch center lock nut [1], then install it onto the mainshaft.

Install the special tool as shown.

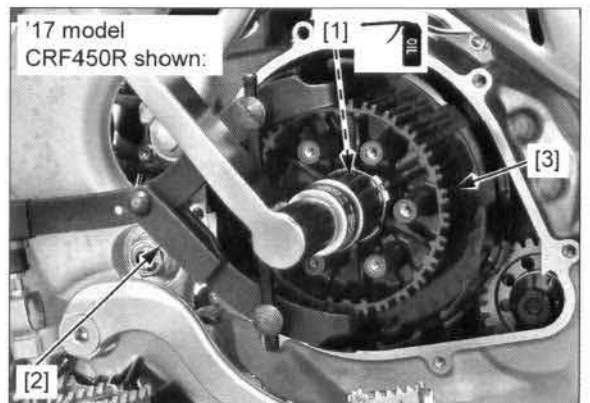
TOOL:

Clutch center holder [2]

07724-0050002 or
07724-0050001
(U.S.A. only)

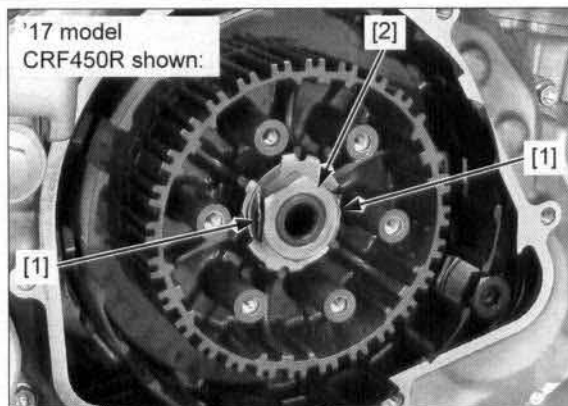
Tighten the lock nut to the specified torque while holding the clutch center [3] with the special tool.

TORQUE: 80 N·m (8.2 kgf·m, 59 lbf·ft)



CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

Bend the tabs [1] of the lock washer up against the clutch center lock nut [2].



Install the spring seat [1] and judder spring [2] as shown.

Coat the clutch disc lining surfaces with clean engine oil.

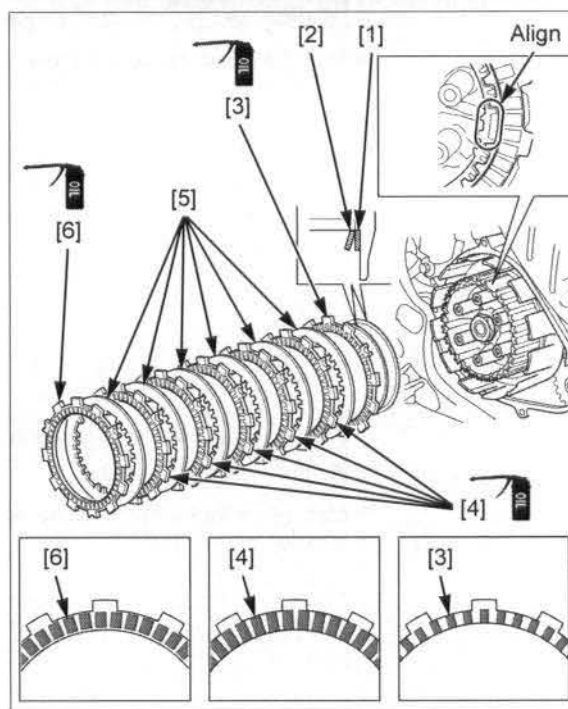
Install the clutch disc A (larger I.D. disc) [3].

Install the five clutch discs B [4] and six clutch plates [5] alternately, starting with the clutch plate.

NOTE:

- Install the clutch plates by aligning its larger grooves with the larger lugs of the clutch center as shown.

Install the clutch disc C [6].



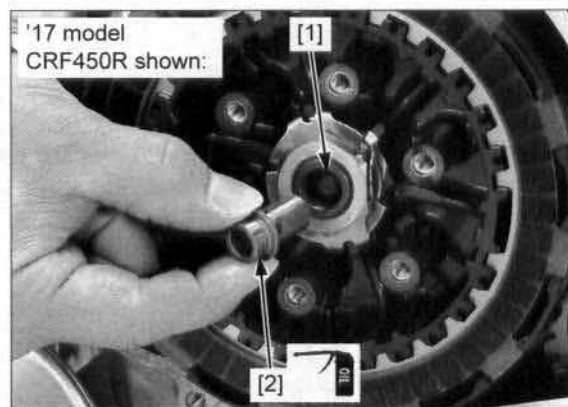
Insert the clutch lifter rod [1] into the mainshaft.

NOTE:

- Check the lifter rod installation by turning the clutch lifter arm.

Apply engine oil to the bearing contact surface of the clutch lifter piece.

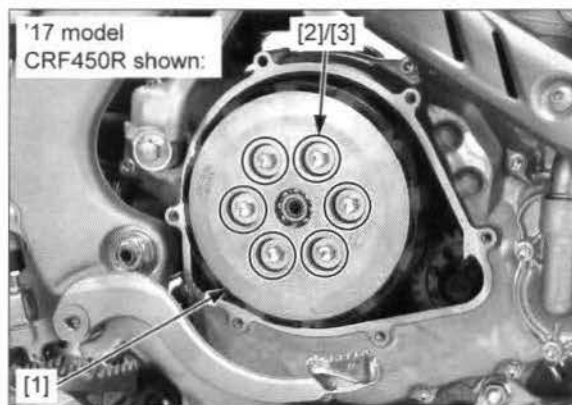
Install the clutch lifter piece [2].



Install the clutch pressure plate [1].

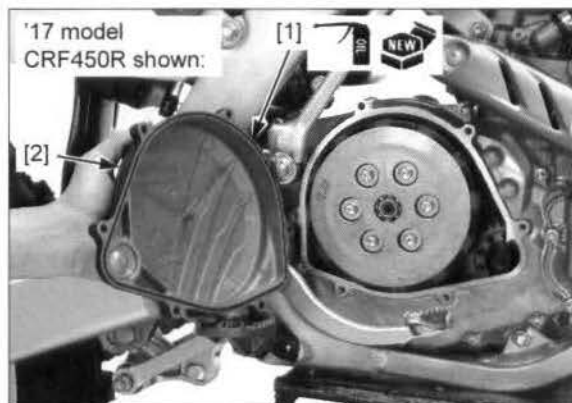
Install the clutch springs [2] and bolt/washers [3].
Tighten the bolt/washers to the specified torque in a crisscross pattern in two or three steps.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Apply engine oil to a new O-ring [1] and install it onto the clutch cover [2].

Install the clutch cover with the O-ring onto the right crankcase cover.

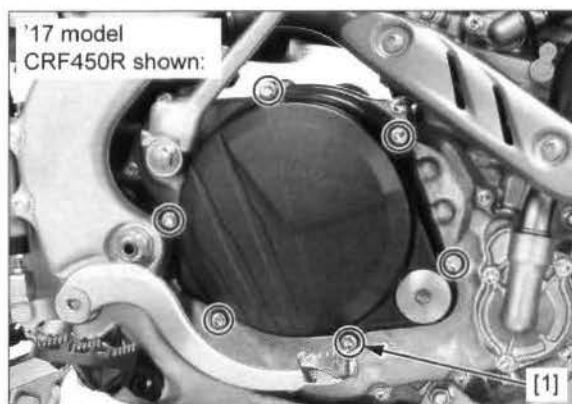


Install and tighten the cover bolts [1] in a crisscross pattern in two or three steps.

Adjust the clutch lever freeplay (page 3-26).

Fill the engine with the recommended oil (page 3-16).

Start the engine and check for oil leaks.



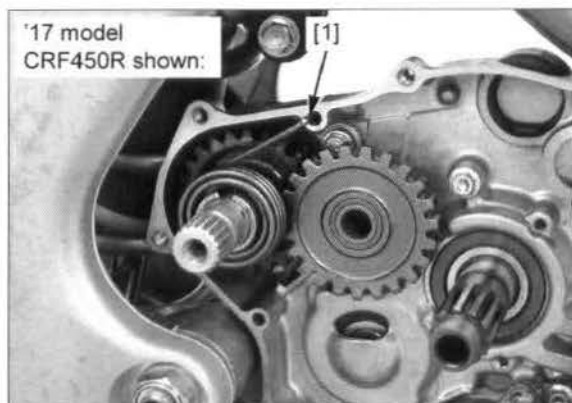
KICKSTARTER ('17 model)

REMOVAL

Remove the right crankcase cover (page 12-8).

Remove the clutch (page 12-11).

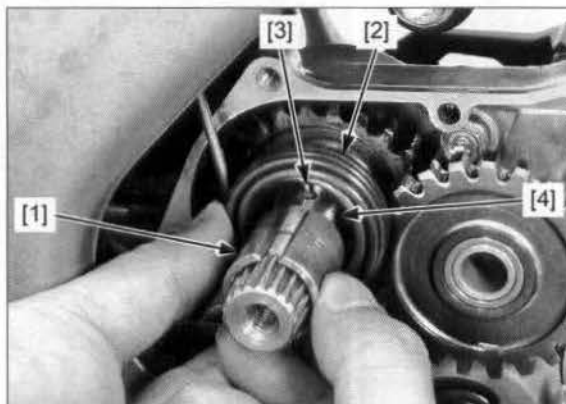
Unhook the kickstarter return spring [1] from the crankcase.



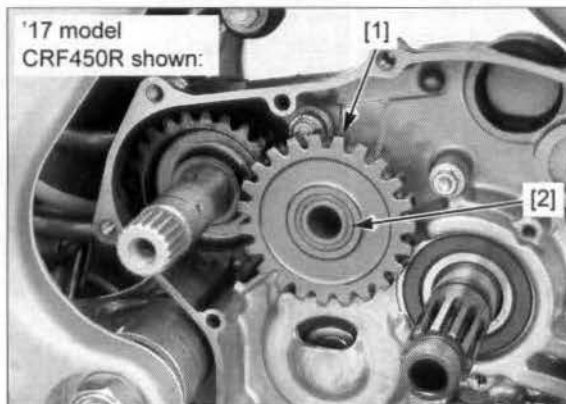
CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

Remove the spring collar [1].

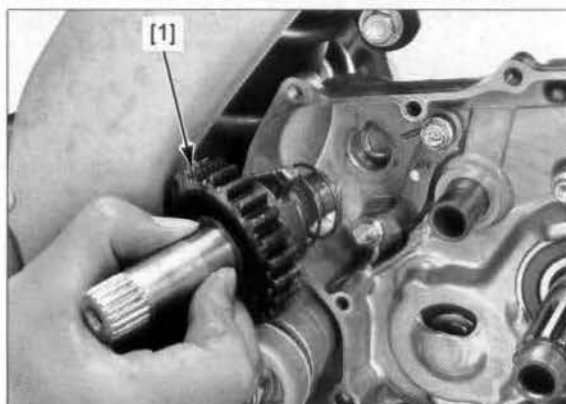
Remove the kickstarter return spring [2] by releasing its end [3] from the kickstarter spindle [4] hole.



Remove the idle gear [1], and collar [2].

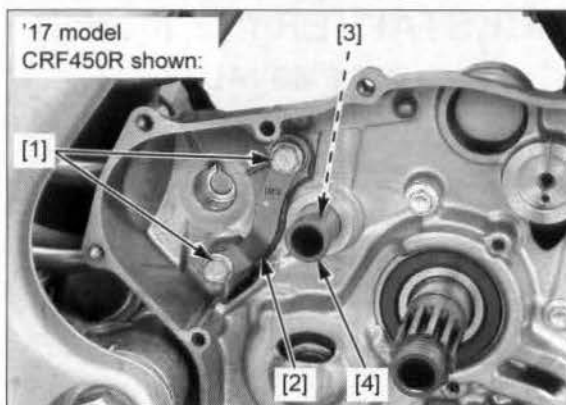


Remove the kickstarter spindle assembly [1].



Remove the bolts [1] and stopper plate [2].

Remove the bolt [3] and idle gear shaft [4].



DISASSEMBLY/ASSEMBLY

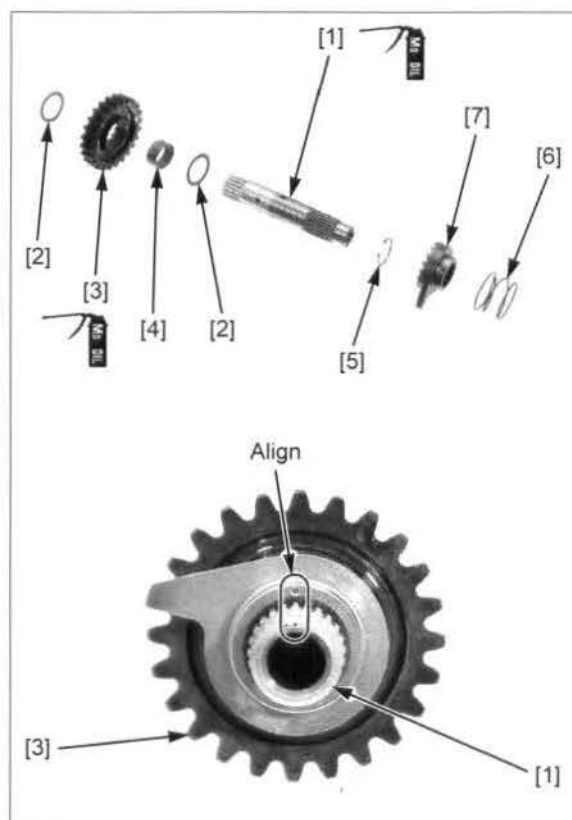
Remove the following from the kickstarter spindle [1]:

- Two thrust washers [2]
- Pinion gear [3]
- Bushing [4]
- Snap ring [5]
- Ratchet spring [6]
- Kickstarter ratchet [7]

Installation is in the reverse order of removal.

NOTE:

- Apply molybdenum oil solution to the pinion gear inner surface, and kickstarter spindle spline area.
- 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.
- Install the kickstarter ratchet by aligning its punch mark with the kickstarter spindle punch mark.

**INSPECTION**

Inspect the following parts for scratches, damage, abnormal wear, or deformation.

- Idle gear
- Pinion gear
- Kickstarter spindle
- Kickstarter Ratchet
- Bushing
- Return spring
- Ratchet spring

Replace if necessary.

Measure each part according to CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS (page 1-7).

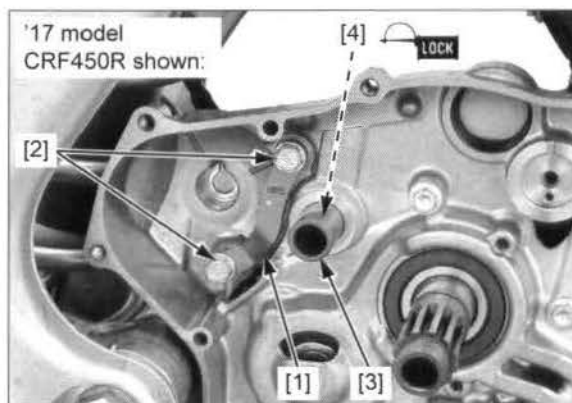
Replace any part if it is out of service limit.

INSTALLATION

Install the stopper plate [1] and bolts [2].
Tighten the bolts securely.

Apply locking agent to the idle gear shaft bolts threads.
Install the starter idle gear shaft [3] and bolt [4].
Tighten the bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

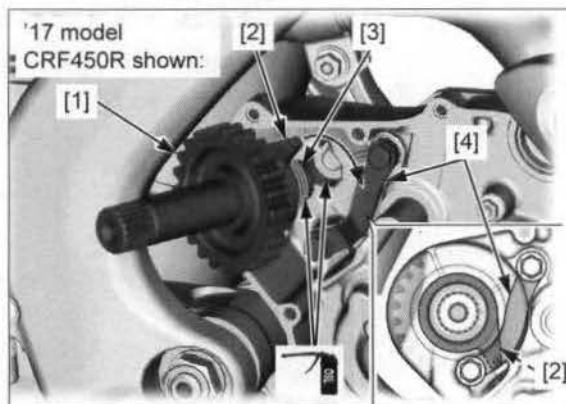


CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

Apply engine oil to the kickstarter spindle journal.

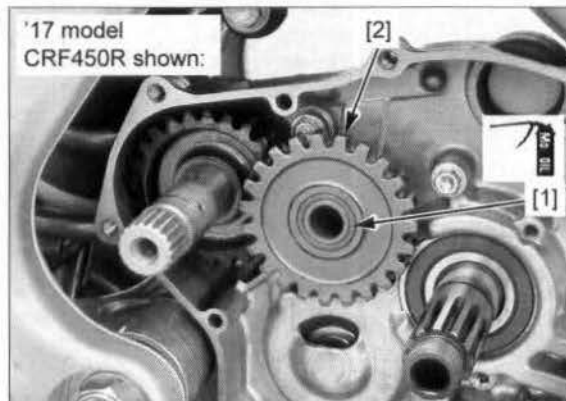
Be careful not to let the ratchet spring fall off.

Install the kickstarter assembly [1] with its ratchet tab [2] facing up by compressing the ratchet spring [3] fully, and rotate it clockwise until the ratchet tab contacts the stopper plate [4] as shown.



Apply molybdenum oil solution to the collar whole surface.

Install the collar [1] and idle gear [2].



Install the kickstarter return spring [1].

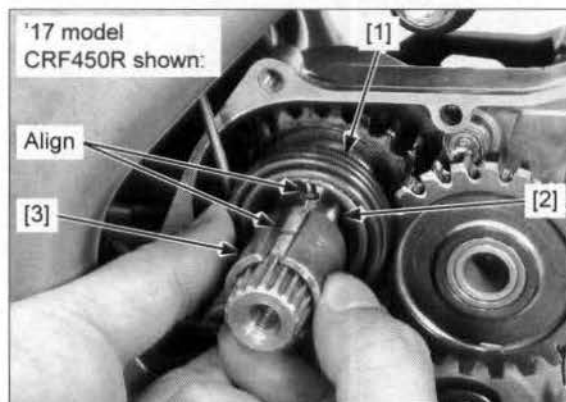
NOTE:

- Install the return spring end into the kickstarter spindle [2] hole.

Install the spring collar [3].

NOTE:

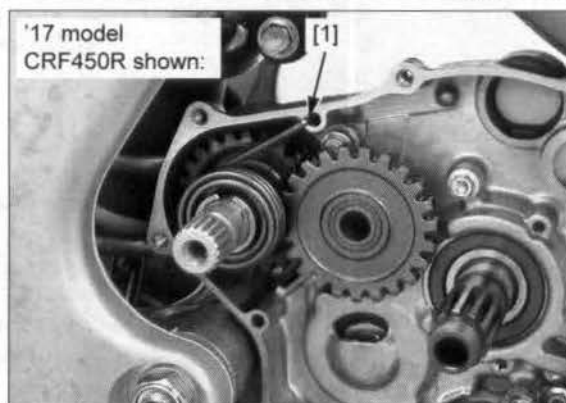
- Align the collar slit with the return spring end.



Hook the return spring end [1] into the hole of the crankcase.

Install the clutch (page 12-16).

Install the right crankcase cover (page 12-10).



STARTER CLUTCH (Except '17 model CRF450R)

REMOVAL

Remove the following:

- Right crankcase cover (page 12-8)
- Clutch (page 12-11)
- Oil pump driven gear (page 8-5)
- Balancer driven gear (page 14-6)

Remove the following:

- Starter reduction gear A [1]
- Starter reduction gear B [2]
- Starter reduction gear shafts [3]

Remove the following:

- Starter idle gear shaft bolt [1]
- Starter idle gear shaft [2]
- Starter idle gear [3]
- Bushing [4]

Temporarily install the clutch outer guide [1], needle bearing [2], clutch outer [3].

Install the special tool between the primary drive gear [4] and driven gear.

TOOL:

Gear holder, M2.5 [5]

**07724-0010100 or
07724-001A100
(U.S.A. only)**

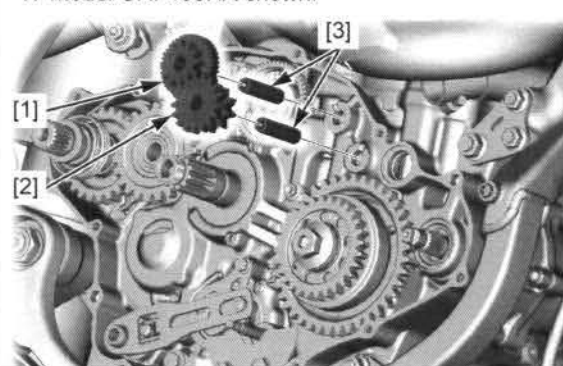
Remove the primary drive gear bolt [6] and washer [7].

Remove the special tool, clutch outer, needle bearing, clutch outer guide.

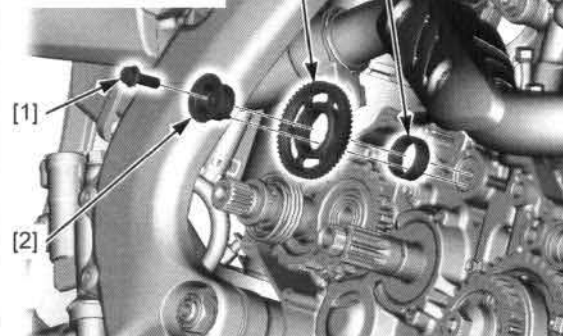
Remove the primary drive gear.

Remove the starter driven gear [1] with the needle bearing [2] and starter clutch assembly [3].

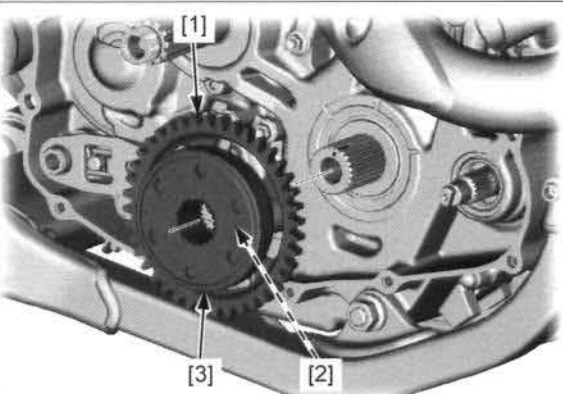
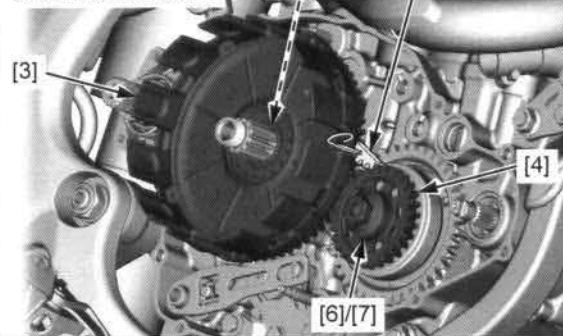
'17 model CRF450RX shown:



'17 model
CRF450RX shown:



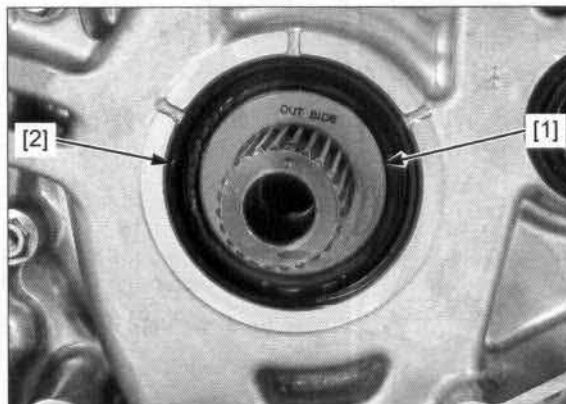
'17 model
CRF450RX shown:



CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

Remove the crankshaft collar [1].

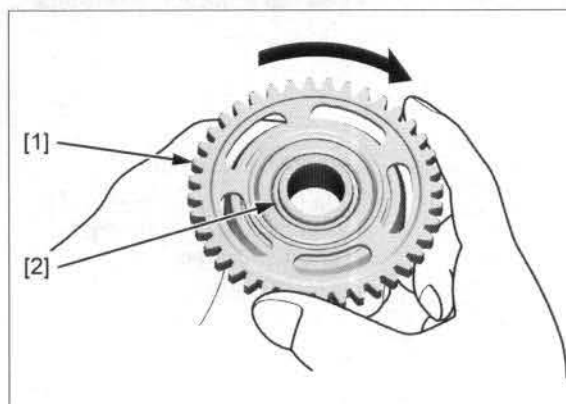
Check the oil seal [2], replace if necessary (page 14-24).



Check that the starter driven gear [1] turns clockwise smoothly and does not turn counterclockwise.

Remove the driven gear by turning the gear clockwise.

Remove the needle bearing [2] from the starter clutch assembly.



INSPECTION

Inspect the following parts for scratches, damage, abnormal wear, or deformation.

- Starter reduction gear A/B
- Starter reduction gear shafts
- Starter idle gear shaft/bushing
- Starter idle gear
- Primary drive gear
- Starter driven gear
- Needle bearing
- Starter clutch assembly

Replace if necessary.

Measure each part according to CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS (page 1-7).

Replace any part if it is out of service limit.

INSTALLATION

Apply engine oil to the one-way clutch [1] whole surface.

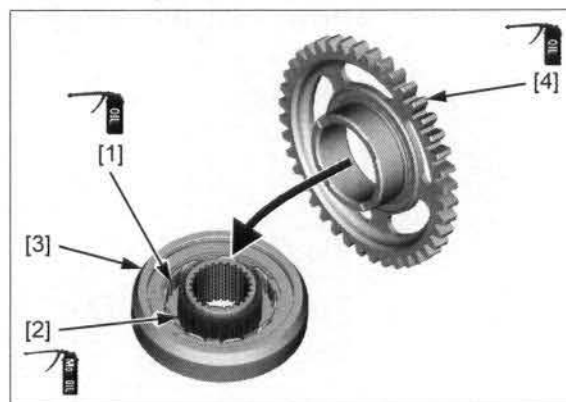
Apply molybdenum oil solution to the needle bearing whole surface.

Install the needle bearing [2] to the starter clutch assembly [3].

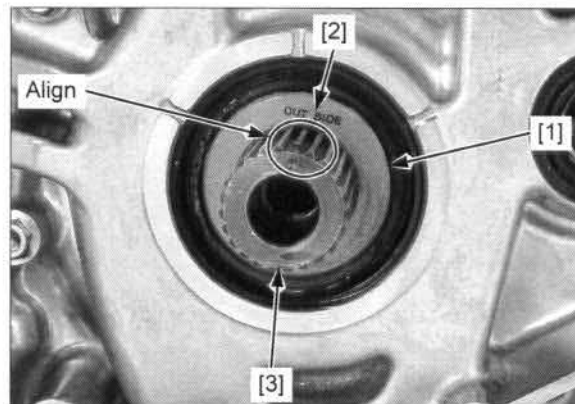
Apply engine oil to the starter driven gear teeth.

Install the starter driven gear [4] to the starter clutch assembly by turning the gear clockwise.

Recheck the starter clutch operation (page 12-24).



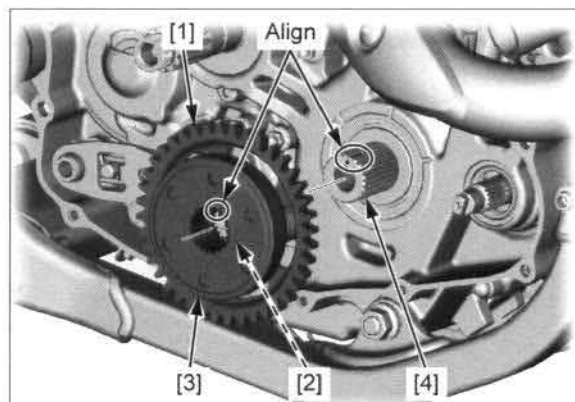
Install the crankshaft collar [1] with its "OUT SIDE" mark [2] facing outside by aligning its wide cut-out spline with the punch mark on the crankshaft [3].



Install the starter driven gear [1] with the needle bearing [2] and starter clutch assembly [3].

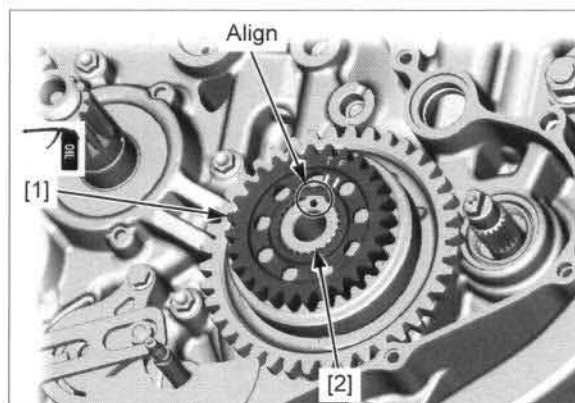
NOTE:

- Align the starter driven gear wide cut-out spline with the aligning its wide cut-out spline with the punch mark on the crankshaft [4].



Apply engine oil to the primary drive gear tooth.

Install the primary drive gear [1] with marked side facing outside while aligning its wide cut-out spline with the punch mark on the crankshaft [2].



Temporarily install the clutch outer guide [1], needle bearing [2], clutch outer [3].

Install the special tool between the primary drive gear [4] and driven gear.

TOOL:

Gear holder, M2.5 [5]

**07724-0010100 or
07724-001A100
(U.S.A. only)**

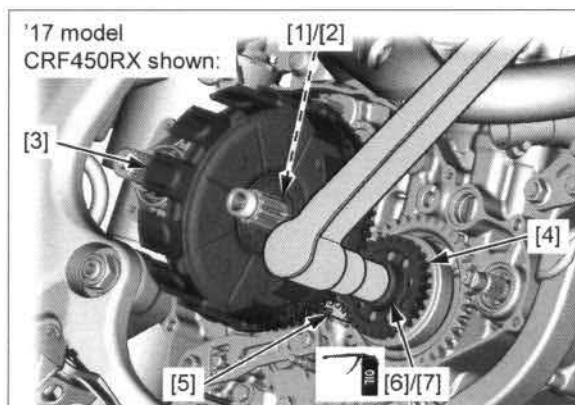
Apply engine oil to the primary drive gear bolt threads and seating surface.

Install the bolt [6] and washer [7].

Tighten the bolt to the specified torque.

TORQUE: 108 N·m (11.0 kgf·m, 80 lbf·ft)

Remove the special tool, clutch outer, needle bearing, clutch outer guide.



'17 model
CRF450RX shown:

CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

Apply molybdenum oil solution to the bushing and starter idle gear shaft whole surface.
Apply engine oil to the starter idle gear tooth.
Apply locking agent to the starter idle gear bolt threads.

Install the following:

- Bushing [1]
- Starter idle gear [2]
- Starter idle gear shaft [3]
- Starter idle gear shaft bolt [4]

NOTE:

- Align the gear shaft pin with the crankcase hole.

Tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

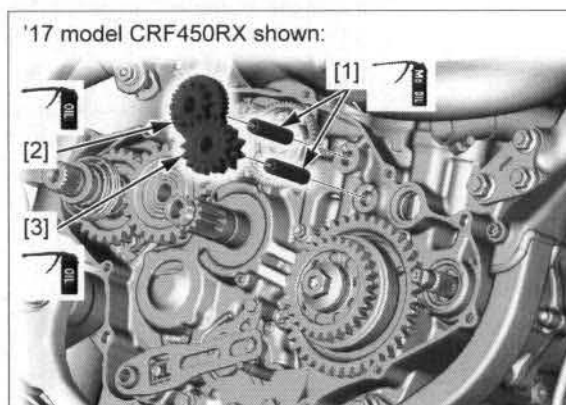
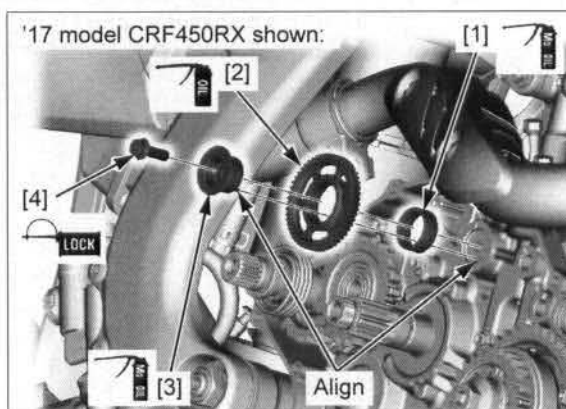
Apply molybdenum oil solution to the reduction gear shafts whole surface.
Apply engine oil to the reduction gear tooth.

Install the following:

- Starter reduction gear shafts [1]
- Starter reduction gear A [2]
- Starter reduction gear B [3]

Install the following:

- Balancer driven gear (page 14-6)
- Oil pump driven gear (page 8-5)
- Right crankcase cover (page 12-10)
- Clutch (page 12-16)

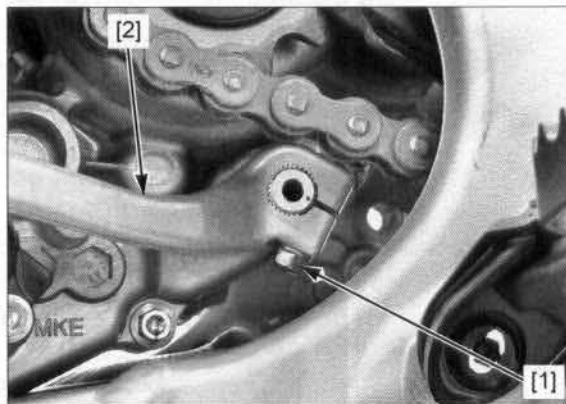


GEARSHIFT LINKAGE

REMOVAL

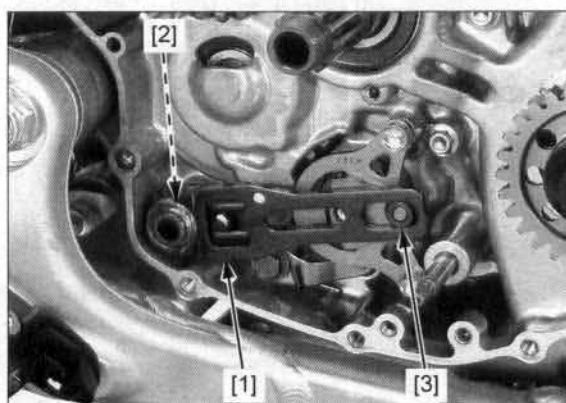
Remove the oil pump driven gear (page 8-5).

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



Remove the gearshift spindle assembly [1] and washer [2] from the crankcase.

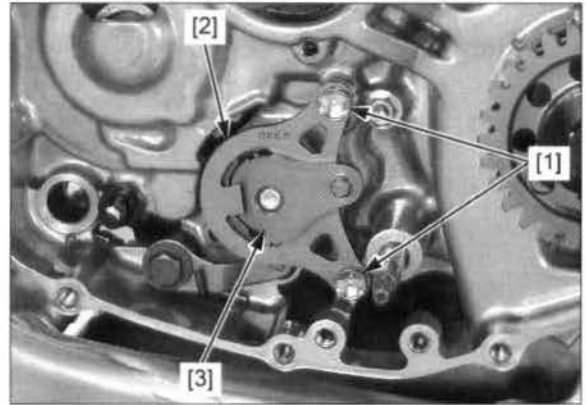
Remove the shifter collar [3].



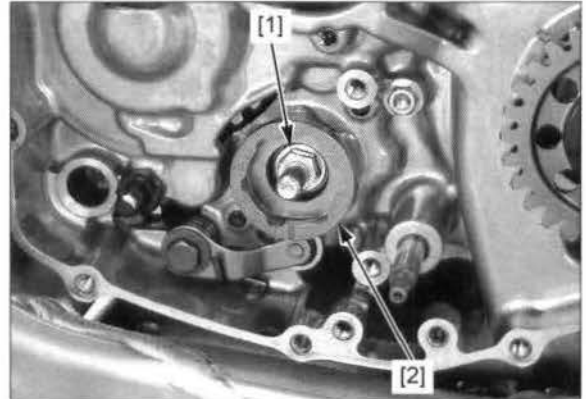
Remove the bolts [1], guide plate [2] and drum shifter [3] as an assembly.

NOTE:

- Be careful not to drop the ratchet pawls, plungers, and springs.

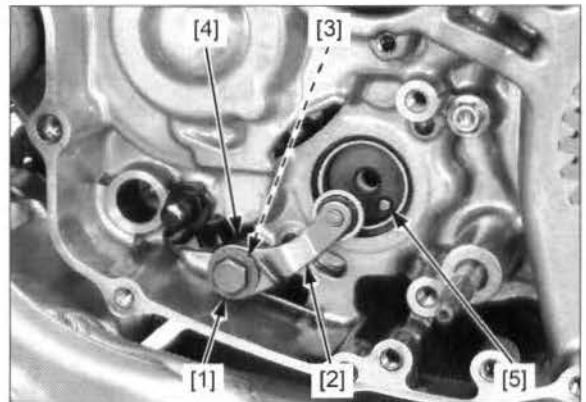


Remove the gearshift drum center pin [1] and gearshift drum center [2].



Remove the bolt [1], stopper arm [2], washer [3], return spring [4].

Remove the drum pin [5].



INSPECTION

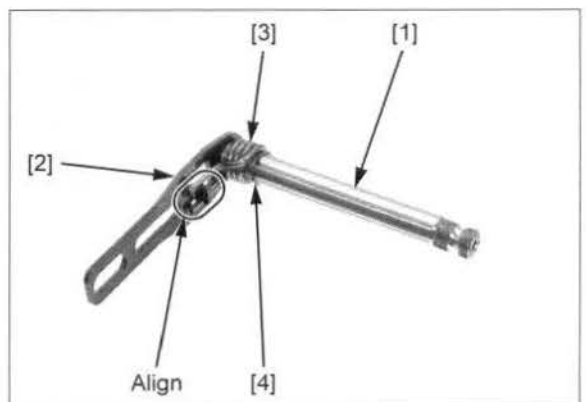
GEARSHIFT SPINDLE

Check the gearshift spindle [1]/spindle plate [2] for bend, wear or damage.

Check the return spring [3] for fatigue or damage. If necessary, remove the snap ring [4] and return spring from the gearshift spindle and replace the spring.

NOTE:

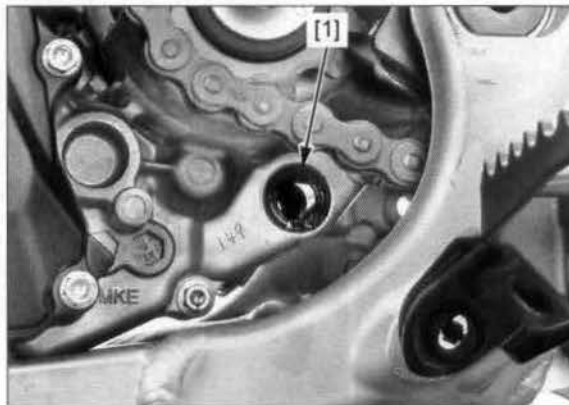
- Align the return spring end with the spindle plate hook as shown.
- Do not reuse the snap ring which could easily spin in the groove.
- Make sure that the snap ring is firmly seated in the groove.



CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

Check the gearshift spindle oil seal [1] for wear or damage.

If replacing the oil seal, install it until it is fully seated with its marked side facing out.
Apply grease to the oil seal lips.



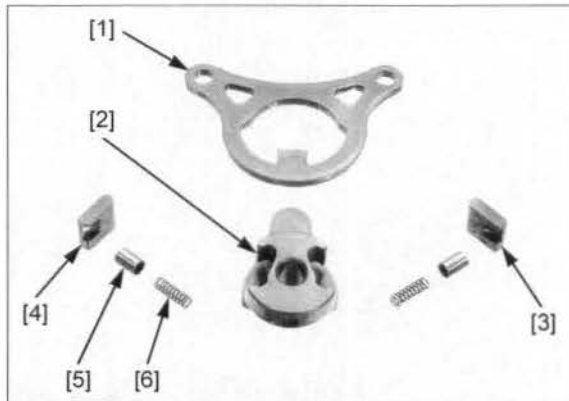
RATCHET PAWL

Remove the following:

- Guide plate [1]
- Drum shifter [2]
- Ratchet pawl A [3]
- Ratchet pawl B [4]
- Plungers [5]
- Springs [6]

Clean the ratchet pawls, plungers, springs and drum shifter with engine oil.

Check each part for wear or damage.
Replace them if necessary.

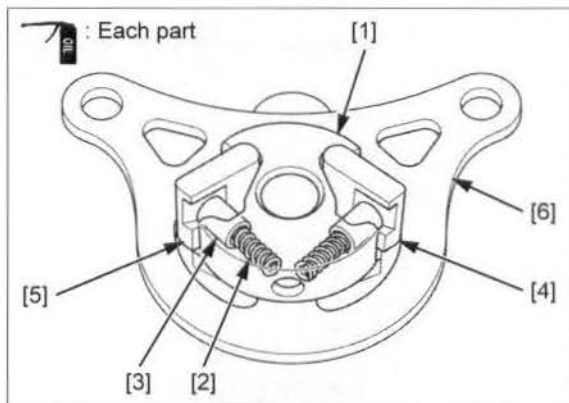


Apply engine oil to each part.

Assemble the drum shifter [1], springs [2], plungers [3] and ratchet pawl A [4]/B [5] in the guide plate [6] as shown.

NOTE:

- Do not interchange the ratchet pawls A and B.



INSTALLATION

Install the drum pin [1] into the hole on the gearshift drum.

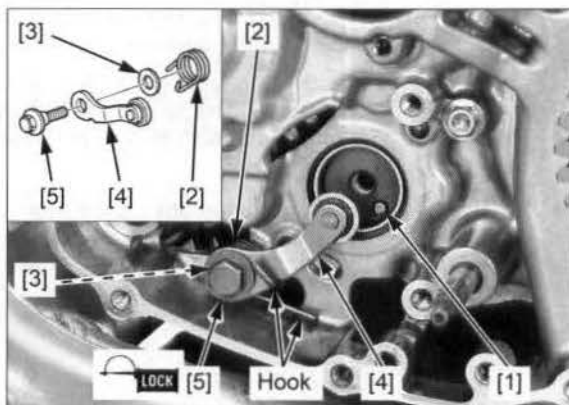
Apply locking agent to the stopper arm bolt threads.

Install the return spring [2], washer [3] and stopper arm [4] while hooking the return spring ends as shown.

Install and tighten the stopper arm bolt [5] to the specified torque.

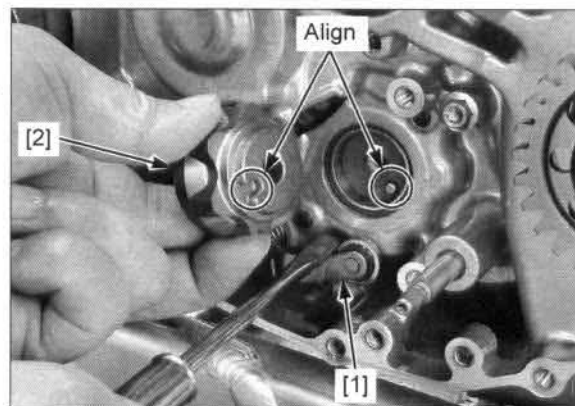
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Check the stopper arm for proper operation.



Move the stopper arm [1] out of the way using a screwdriver.

Install the gearshift drum center [2] by aligning its groove with the drum pin.

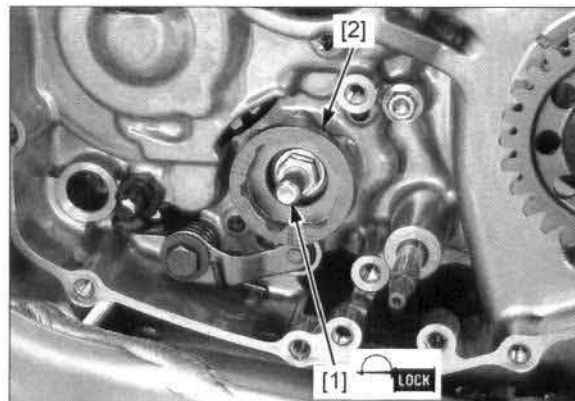


Apply locking agent to the gearshift drum center pin threads.

Install and tighten the gearshift drum center pin [1] to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Check the gearshift drum center [2] installation by turning it.

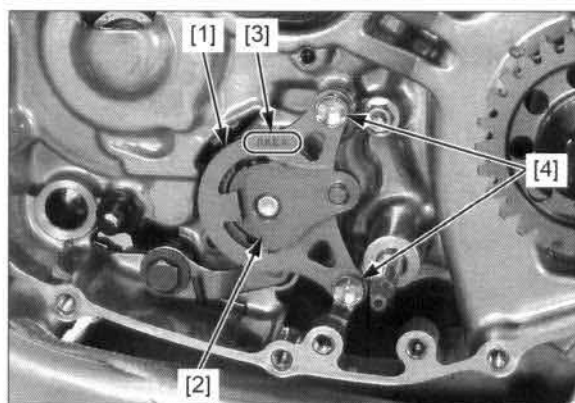


Set the drum center in a position other than neutral. While holding the ratchet pawls in place in the guide plate [1] and drum shifter [2], install the drum shifter assembly by aligning the hole of the drum shifter with the gearshift drum center pin.

NOTE:

- Install the drum shifter assembly with the "MKEA" mark [3] facing out.
- Be careful not to drop the ratchet pawls, plungers, and springs.

Install and tighten the guide plate bolts [4] securely.

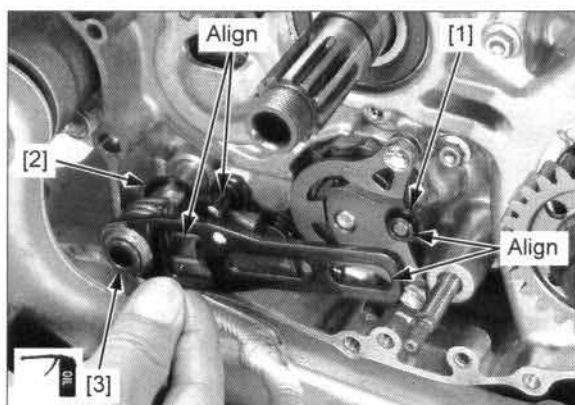


Install the shifter collar [1] onto the drum shifter.

Install the washer [2] onto the gearshift spindle [3].

Apply engine oil to the gearshift spindle serration area to avoid the oil seal damage.

Install the gearshift spindle assembly into the crankcase while aligning the spring ends with the return spring pin and the spindle hole with the shifter collar.



CLUTCH/KICKSTARTER/STARTER CLUTCH/GEARSHIFT LINKAGE

Wipe off any oil from the gearshift spindle [1] serration area.

Install the gearshift pedal [2] by aligning its slit with the punch mark of the spindle.

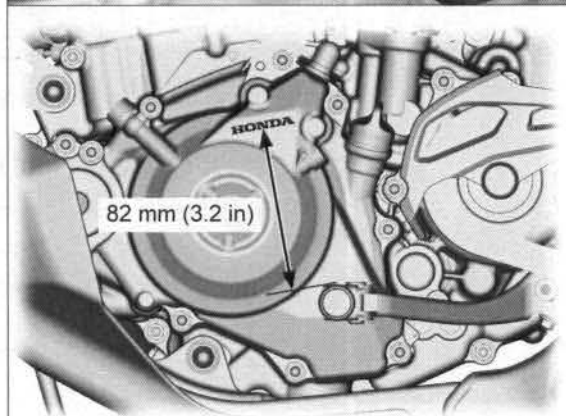
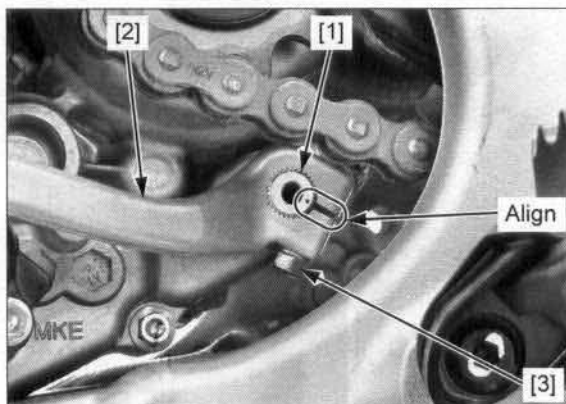
Install and tighten the pinch bolt [3] to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Check the dimension between the gearshift pedal end and "HONDA" logo as shown.

Move the gearshift pedal and check the shift mechanism for smooth operation.

Install the oil pump driven gear (page 8-5).




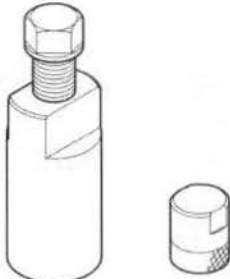
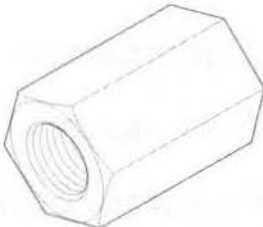

SERVICE INFORMATION.....	13-2	FLYWHEEL	13-6
COMPONENT LOCATION.....	13-3	STATOR/CKP SENSOR.....	13-9
LEFT CRANKCASE COVER.....	13-4		

SERVICE INFORMATION

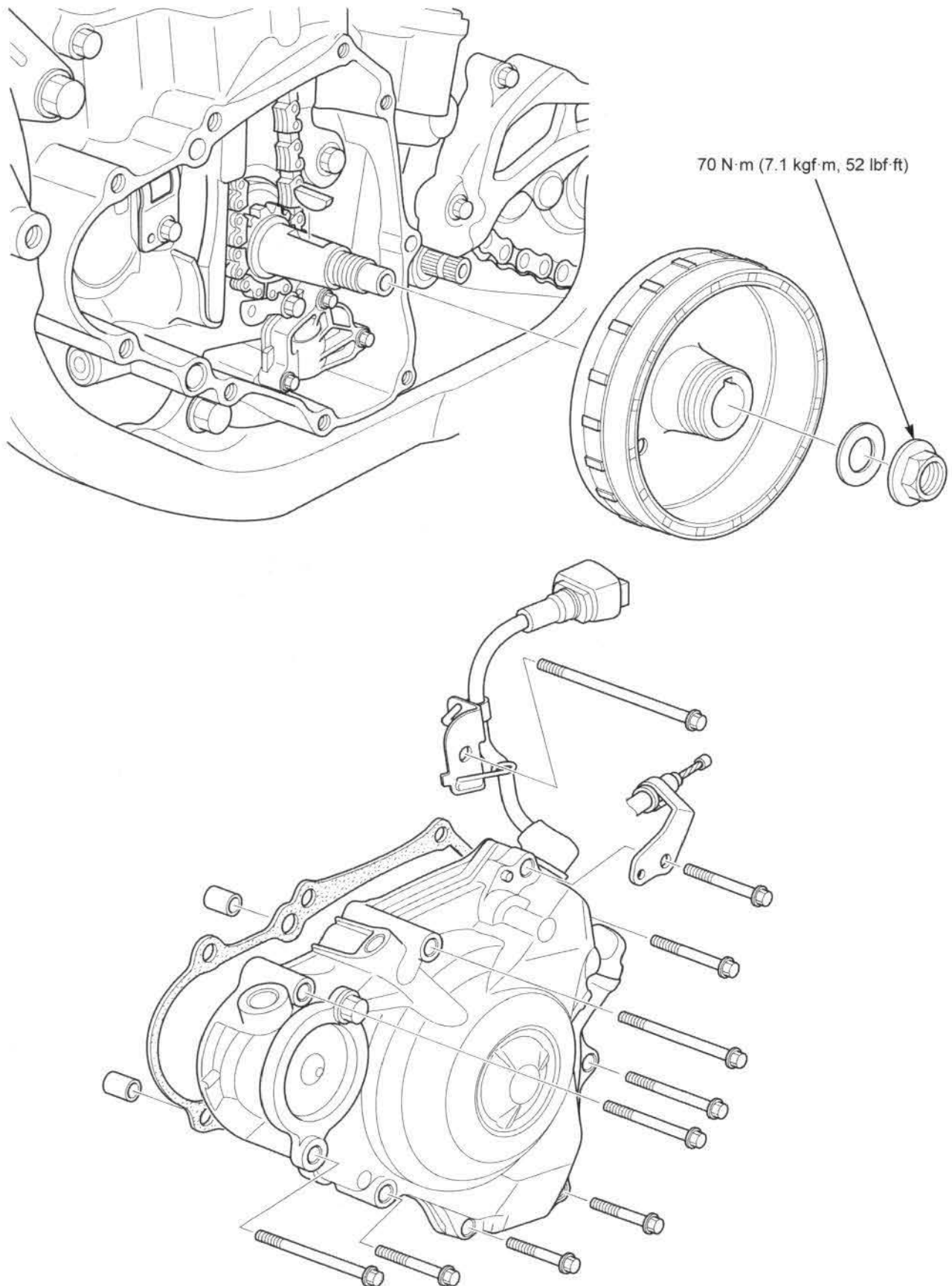
GENERAL

- This section covers service of the alternator stator and flywheel. All service can be done with the engine installed in the frame.
- Engine lubricating oil is fed through the left crankcase cover. Clean the oil passage before installing the left crankcase cover.
- For alternator inspection (page 19-13).
- For CKP sensor inspection (page 5-8).

TOOLS

<p>Gear holder, M2.5 07724-0010100</p>  <p>or 07724-001A100 (U.S.A. only)</p>	<p>Flywheel puller 070MC-HP10100</p>  <p>or 070MC-HP1A100 (U.S.A. only)</p>	<p>Flywheel puller adapter 070MG-KSE0100</p>  <p>Not available in U.S.A.</p>
<p>Thread protector 07AMC-MEBA110 (U.S.A. only)</p>  <p>NOTE: This thread protector is included with 07AMC-MEBA100 or can be ordered separately</p>		

COMPONENT LOCATION



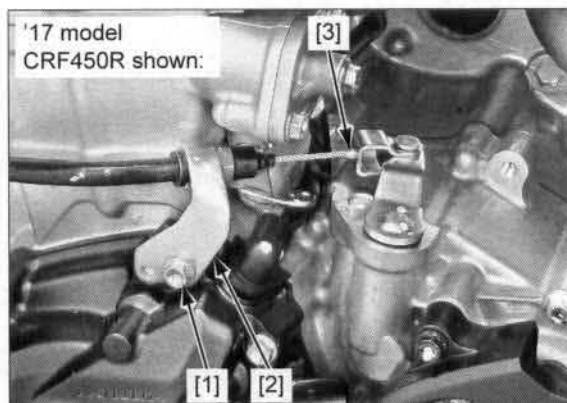
LEFT CRANKCASE COVER

REMOVAL

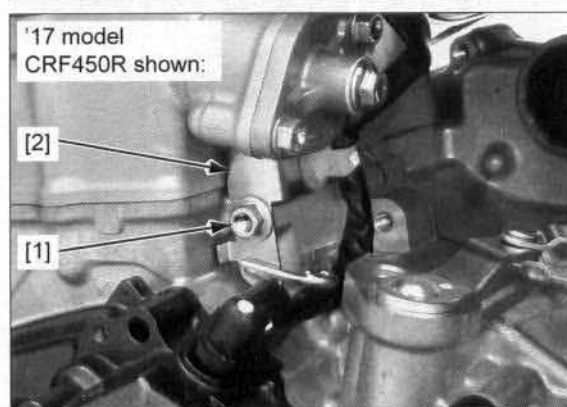
Remove the gearshift pedal (page 12-26).
Drain the engine oil (page 3-16).

Remove the left crankcase cover bolt (6 x 35 mm) [1] and cable stay [2].

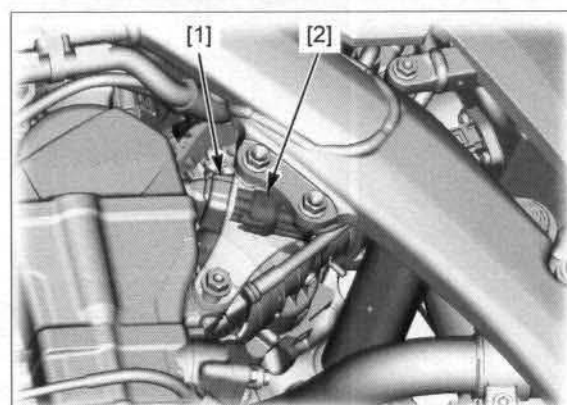
Disconnect the clutch cable [3].



Remove the crankcase bolt (6 x 75 mm) [1] and alternator/CKP sensor wire stay [2].



Release the boot [1] and disconnect the alternator/CKP sensor 6P (Black) connector [2].



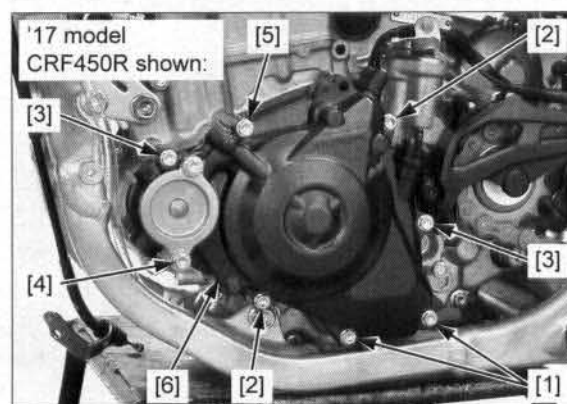
Loosen the bolts in a crisscross pattern in two or three steps:

- Two 6 x 25 mm bolts [1]
- Two 6 x 35 mm bolts [2]
- Two 6 x 40 mm bolts [3]
- Oil filter cover bolt (6 x 50 mm) [4]
- 6 x 55 mm bolt [5]

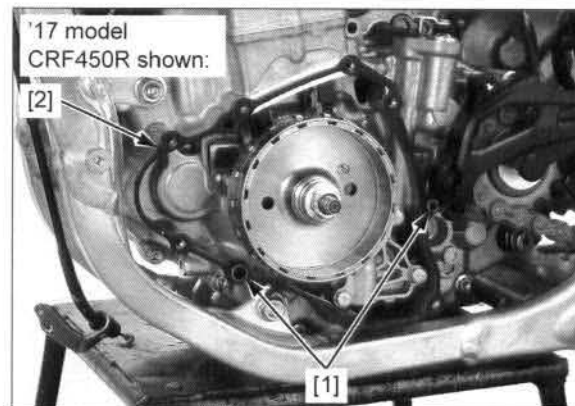
Remove the bolts and left crankcase cover [6].

NOTE:

- The left crankcase cover (stator) is magnetically attracted to the flywheel, be careful during removal.
- Mark and store the bolts to be sure of their correct locations for reassembly.

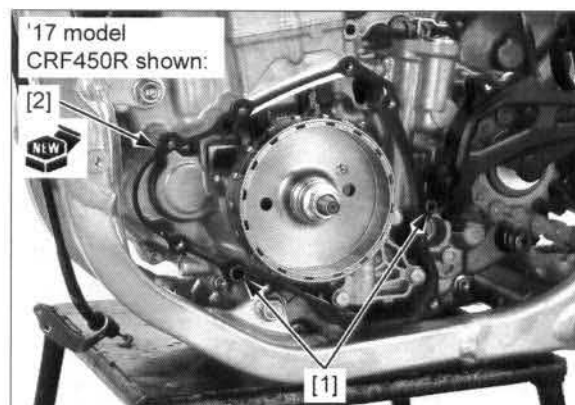


Remove the dowel pins [1] and gasket [2].



INSTALLATION

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



Install the left crankcase cover [1].

NOTE:

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

Install the bolts:

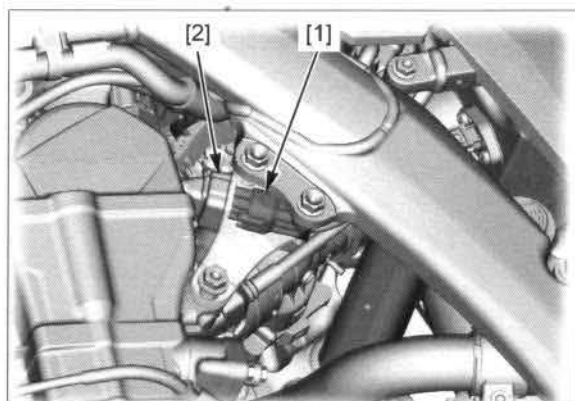
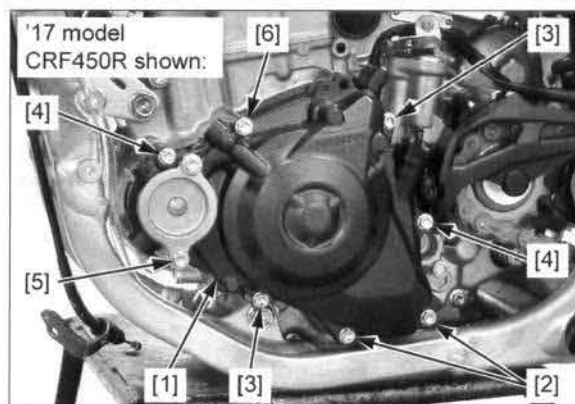
- Two 6 x 25 mm bolts [2]
- Two 6 x 35 mm bolts [3]
- Two 6 x 40 mm bolts [4]
- Oil filter cover bolt (6 x 50 mm) [5]
- 6 x 55 mm bolt [6]

Tighten the bolts securely.

NOTE:

- Tighten the bolts in a crisscross pattern in two or three steps.

Connect the alternator/CKP sensor 6P (Black) connector [1] and install the boot [2].



ALTERNATOR

Install the alternator/CKP sensor wire stay [1].

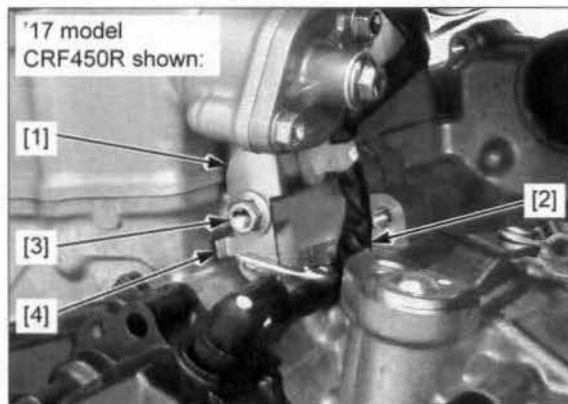
NOTE:

- Route the alternator/CKP sensor wire [2] as shown.

Install the crankcase bolt [3] and tighten it securely.

NOTE:

- Make sure that the stay end [4] touches the crankcase.



Connect the clutch cable [1] end to the lifter arm.

Install the clutch cable stay [2] and left crankcase cover bolt (6 x 35 mm) [3].

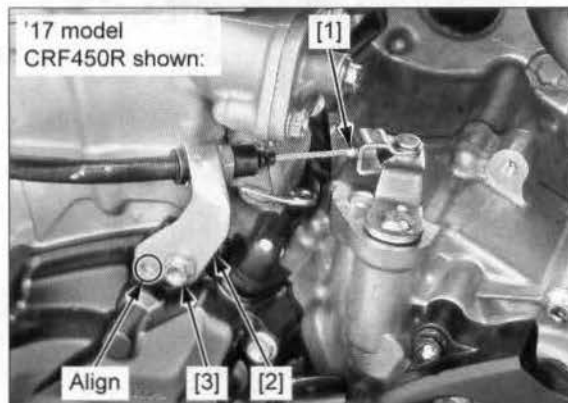
Tighten the bolt securely.

NOTE:

- Align the stay boss with the left crankcase cover hole.
- Route the clutch cable properly (page 1-24).

Install the gearshift pedal (page 12-30).

After installation, fill the engine with the recommended oil (page 3-16).



FLYWHEEL

REMOVAL

NOTE:

- Do not use a band strap wrench on this flywheel.

Remove the left crankcase cover (page 13-4).

Remove the oil pump driven gear (page 8-5).

Temporarily install the clutch outer guide [1], needle bearing [2], clutch outer [3].

Install the special tool between the primary drive gear [4] and driven gear.

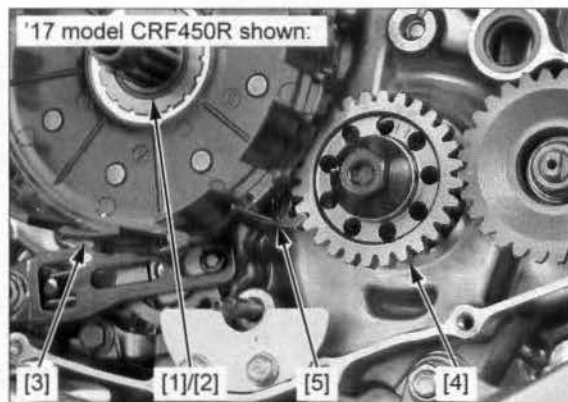
TOOL:

Gear holder, M2.5 [5]

07724-0010100 or
07724-001A100
(U.S.A. only)

Remove the flywheel nut [6] and washer [7].

Remove the clutch outer, needle bearing, clutch outer guide, special tools.



Be careful not to bottom the adapter against the crankshaft end. It may damage the oil hole of the crankshaft.

Screw the special tool onto the crankshaft.

TOOL:

Flywheel puller adapter [1]

070MG-KSE0100
Not available in U.S.A.

U.S.A. TOOL:

Thread protector

07AMC-MEBA110

(This thread protector is included with 07AMC-MEBA100 or can be ordered separately)

Attach the special tool on the flywheel.

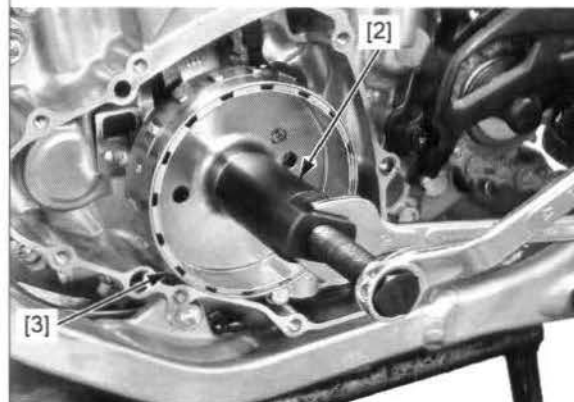
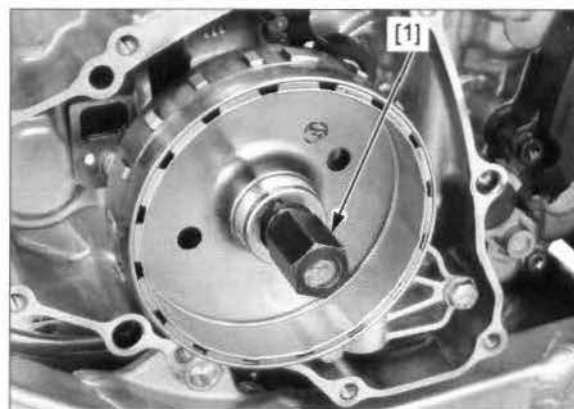
TOOL:

Flywheel puller [2]

070MC-HP10100 or 070MC-HP1A100
(U.S.A. only)

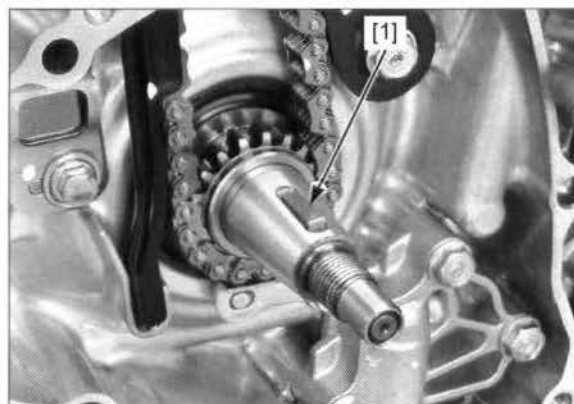
Remove the flywheel [3].

Remove the special tools.



Be careful not to damage the crankshaft.

Remove the woodruff key [1].



INSTALLATION

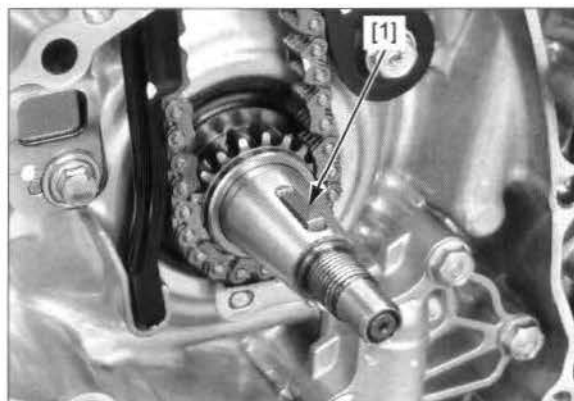
NOTE:

- Do not use a band strap wrench on this flywheel.

Clean any oil from the tapered portion of the crankshaft and flywheel.

Be careful not to damage the crankshaft.

Install the woodruff key [1].



ALTERNATOR

Install the flywheel to the crankshaft by aligning the groove of the flywheel with the woodruff key.



Temporarily install the clutch outer guide [1], needle bearing [2], clutch outer [3].

Install the special tool between the primary drive gear [4] and driven gear.

TOOL:

Gear holder, M2.5 [5]

07724-0010100 or
07724-001A100
(U.S.A. only)

Apply engine oil to the flywheel nut [6] threads and seating surface.

Install the washer [7] and nut.

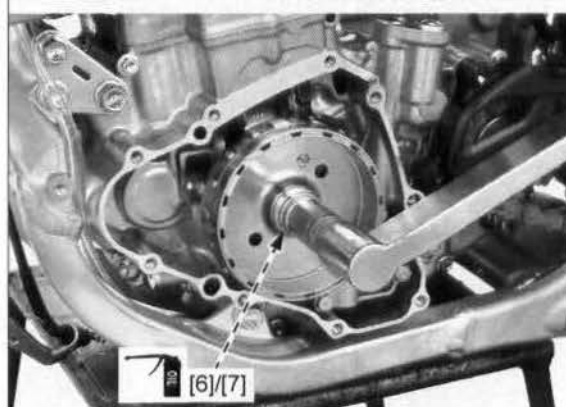
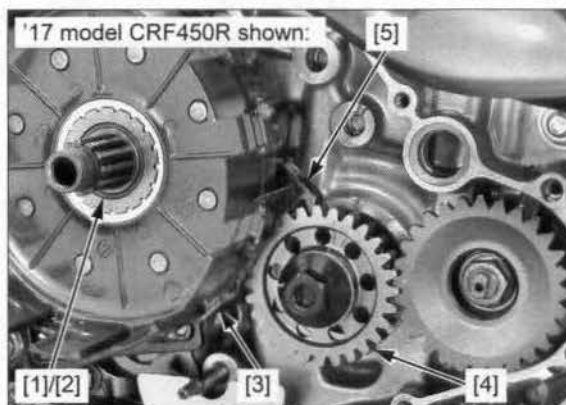
Tighten the nut to the specified torque.

TORQUE: 70 N·m (7.1 kgf·m, 52 lbf·ft)

Remove the special tool, clutch outer, needle bearing, and clutch outer guide.

Install the left crankcase cover (page 13-5).

Install the oil pump driven gear (page 8-5).



STATOR/CKP SENSOR

REMOVAL/INSTALLATION

Remove the left crankcase cover (page 13-4).

Remove the wire grommet [1] from the left crankcase cover.

Remove the CKP sensor mounting bolts [2] and CKP sensors [3].

Remove the stator mounting bolts [4] and stator [5].

Check the oil seal [6] for damage or deterioration, replace it if necessary.

If replacing the oil seal, install it into the left crankcase cover until it is fully seated.

Check the washer [7] and snap ring [8] are installed in the left crankcase cover securely.

Installation is in the reverse order of removal.

NOTE:

- Apply locking agent to the stator mounting bolt and CKP sensor mounting bolt threads.
- Apply liquid sealant (TB1207B manufactured by ThreeBond or an equivalent) to the wire grommet seating surface.

TORQUE:

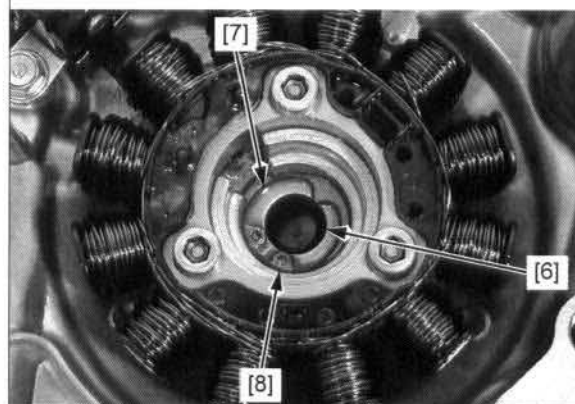
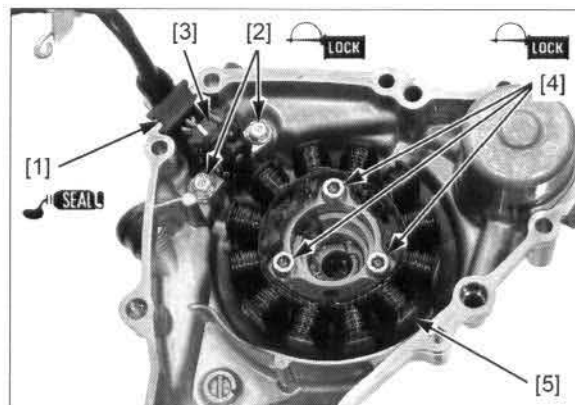
Stator mounting bolt:

10 N·m (1.0 kgf·m, 7 lbf·ft)

CKP sensor mounting bolt:

5.2 N·m (0.5 kgf·m, 3.8 lbf·ft)

Install the left crankcase cover (page 13-5).



MEMO

14. CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

SERVICE INFORMATION.....	14-2
TROUBLESHOOTING	14-4
COMPONENT LOCATION	14-5
REED VALVE.....	14-6
BALANCER DRIVEN GEAR/BALANCER SHAFT.....	14-6



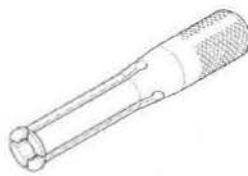
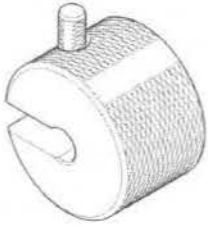
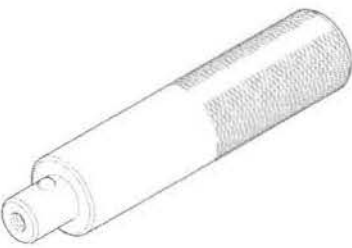

PRIMARY DRIVE GEAR (’17 model CRF450R).....	14-7
CRANKCASE.....	14-9
TRANSMISSION	14-12
CRANKSHAFT	14-17
CRANKCASE BEARING/OIL SEAL REPLACEMENT	14-18



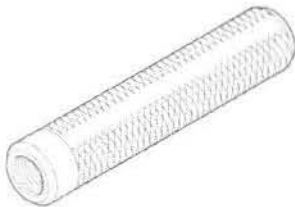



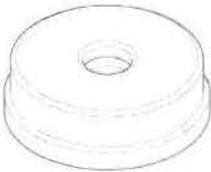

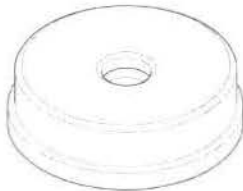

SERVICE INFORMATION

GENERAL

- This section covers crankcase separation for service of the crankshaft, transmission and balancer.
- The primary drive gear, balancer driven gear, and reed valve can be serviced with the engine installed in the frame.
- The crankcase must be separated to service the balancer shaft, crankshaft, transmission, and scavenge pump.
- The following parts must be removed before separating the crankcase.
 - Engine (page 15-4)
 - Cylinder/Piston (page 11-6)
 - Starter motor (Except '17 model CRF450R) (page 6-7)
 - Clutch (page 12-11)
 - Flywheel (page 13-6)
 - Cam chain tensioner (page 11-4)
 - Cam chain guide (page 11-5)
 - Oil feed pump (page 8-4)
 - Oil filter screen (page 8-8)
 - Reed valve (page 14-6)
 - Kickstarter ('17 model) (page 12-19)
 - Oil pump driven gear (page 8-5)
 - Gearshift linkage (page 12-26)
 - Balancer driven gear (page 14-6)
 - Primary drive gear ('17 model CRF450R) (page 14-7)
 - Primary drive gear/starter clutch/starter reduction gear/starter idle gear (Except '17 model CRF450R) (page 12-23)
- Be careful not to damage the crankcase mating surfaces when servicing.
- Clean the oil passages before assembling the crankcase halves.

TOOLS

<p>Gear holder, M2.5 07724-0010100</p>  <p>or 07724-001A100 (U.S.A. only)</p>	<p>Remover shaft, 15 mm 07936-KC10100</p> 	<p>Remover head, 15 mm 07936-KC10200</p> 
<p>Remover weight 07741-0010201</p>  <p>or 07936-371020A (U.S.A. only)</p>	<p>Driver 07749-0010000</p> 	<p>Attachment, 32 x 35 mm 07746-0010100</p> 

<p>Pilot, 15 mm 07746-0040300</p> 	<p>Bearing remover set, 17 mm 07936-3710300</p> 	<p>Remover handle 07936-3710100</p> 
<p>Attachment, 37 x 40 mm 07746-0010200</p> 	<p>Pilot, 17 mm 07746-0040400</p> 	<p>Attachment, 52 x 55 mm 07746-0010400</p> 
<p>Attachment, 62 x 68 mm 07746-0010500</p> 	<p>Pilot, 25 mm 07746-0040600</p> 	<p>Attachment, 72 x 75 mm 07746-0010600</p> 
<p>Pilot, 30 mm 07746-0040700</p> 		

TROUBLESHOOTING

Excessive engine noise

- Worn or damaged crankcase bearings
- Worn or damaged connecting rod big end bearing
- Worn connecting rod small end
- Worn, seized, or chipped transmission gear
- Improper balancer installation
- Worn or loose cam chain
- Incorrect valve adjustment (page 3-12)
- Sticking valve or broken valve spring (page 10-15)
- Worn or damaged camshaft (page 10-8)
- Worn cam sprocket teeth (page 10-8)
- Worn or damaged cam chain tensioner (page 11-4)
- Faulty cylinder, piston, or piston rings (page 11-6)

Hard to shift

- Bent shift fork
- Bent shift fork claw
- Bent shift fork shaft
- Damaged gearshift drum grooves
- Incorrect engine oil weight (page 3-15)
- Improper clutch lever freeplay adjustment (page 3-26)
- Faulty clutch operation (page 12-11)
- Bent or damaged gearshift spindle (page 12-26)
- Damaged gearshift drum stopper arm (page 12-26)
- Loose gearshift drum stopper arm bolt (page 12-26)

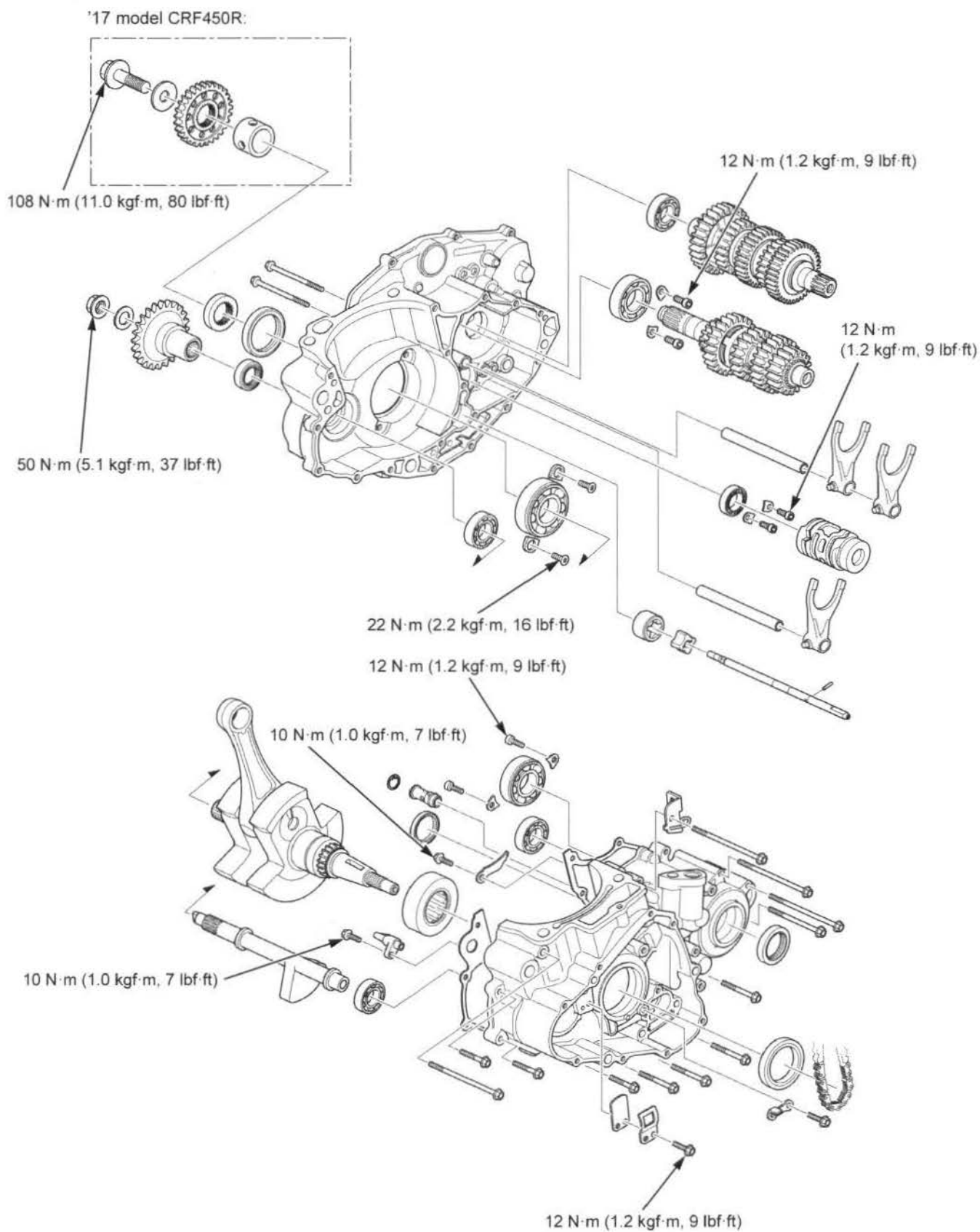
Transmission jumps out of gear

- Worn gear dogs
- Worn gearshift drum grooves
- Bent shift fork shaft
- Worn or bent shift forks
- Broken gearshift drum stopper arm (page 12-26)
- Broken gearshift drum stopper arm spring (page 12-26)
- Loose gearshift drum stopper arm bolt (page 12-26)
- Weak or broken gearshift spindle return spring (page 12-26)

Engine vibration

- Excessive crankshaft runout
- Improper balancer timing

COMPONENT LOCATION



REED VALVE

REMOVAL/INSTALLATION

Remove the flywheel (page 13-6).

Remove the bolt/washer [1], stopper [2], and reed valve [3].

Check the reed valve for bent or damage.

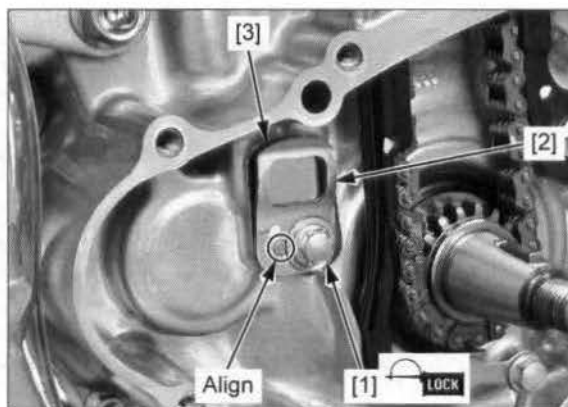
Installation is in the reverse order of removal.

NOTE:

- Align the reed valve and stopper holes with the left crankcase boss.
- Apply locking agent to the mounting bolt threads.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the flywheel (page 13-7).



BALANCER DRIVEN GEAR/BALANCER SHAFT

BALANCER DRIVEN GEAR REMOVAL

Remove the right crankcase cover (page 12-8).

Install the special tool between the primary drive gear [1] and balancer driven gear [2].

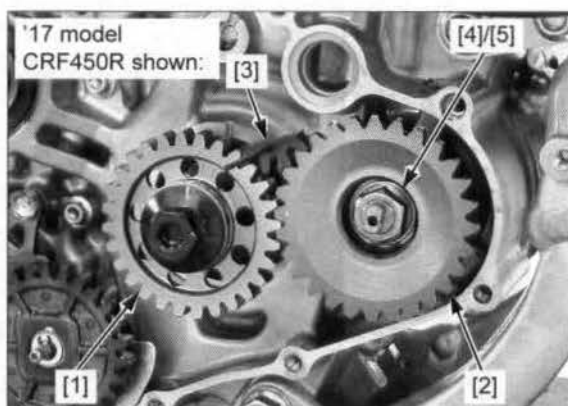
TOOL:

Gear holder, M2.5 [3]

07724-0010100 or
07724-001A100
(U.S.A. only)

Remove the lock nut [4], washer [5], balancer driven gear, and special tool.

Check the balancer driven gear for wear or damage.



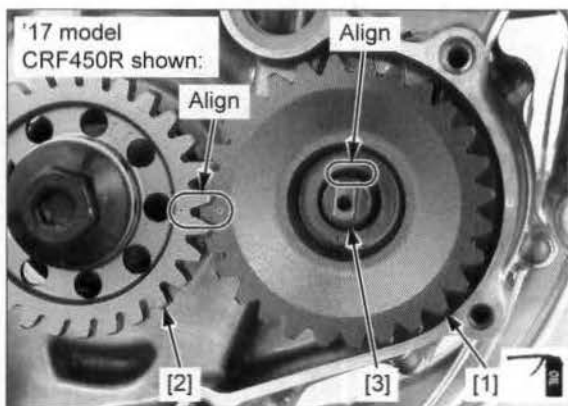
BALANCER DRIVEN GEAR INSTALLATION

Apply engine oil to the balancer driven gear tooth.

Install the balancer driven gear [1].

NOTE:

- Align the punch marks on the balancer driven gear and primary drive gear [2].
- Align the balancer driven gear wide cut-out spline with the clinched tooth of the balancer shaft [3].



Install the special tool between the primary drive gear [1] and balancer driven gear [2].

TOOL:

Gear holder, M2.5 [3]

07724-0010100 or
07724-001A100
(U.S.A. only)

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

Install the washer [4] and lock nut [5].

Tighten the lock nut to the specified torque.

TORQUE: 50 N·m (5.1 kgf·m, 37 lbf·ft)

Install the right crankcase cover (page 12-10).

**BALANCER SHAFT REMOVAL/
INSTALLATION**

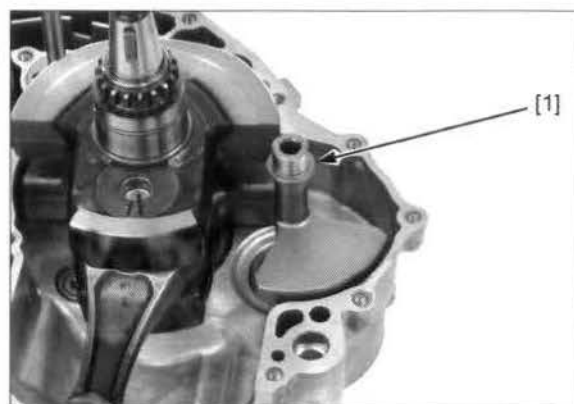
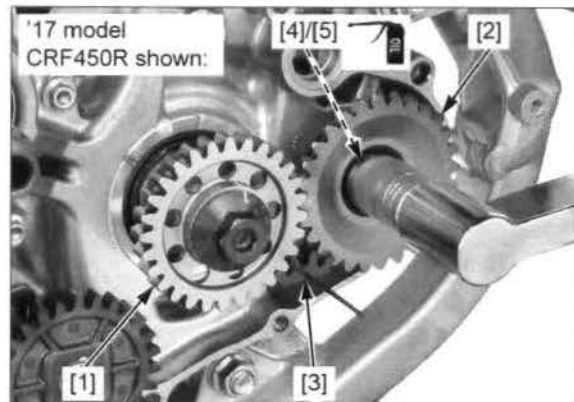
Separate the crankcase halves (page 14-9).

Rotate the balancer shaft [1] to keep away from the crankshaft, and remove it.

Check the balancer shaft for wear, bent, or damage.

Installation is in the reverse order of removal.

Assemble the crankcase halves (page 14-11).



**PRIMARY DRIVE GEAR
(17 model CRF450R)**

REMOVAL

Remove the oil pump driven gear (page 8-5).

Remove the balancer driven gear (page 14-6).

Temporarily install the clutch outer guide [1], needle bearing [2] and clutch outer [3] to the mainshaft.

Install the special tool between the primary drive gear [4] and driven gear.

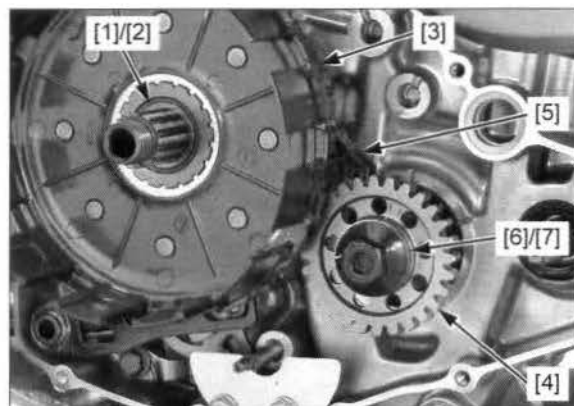
TOOL:

Gear holder, M2.5 [5]

07724-0010100 or
07724-001A100
(U.S.A. only)

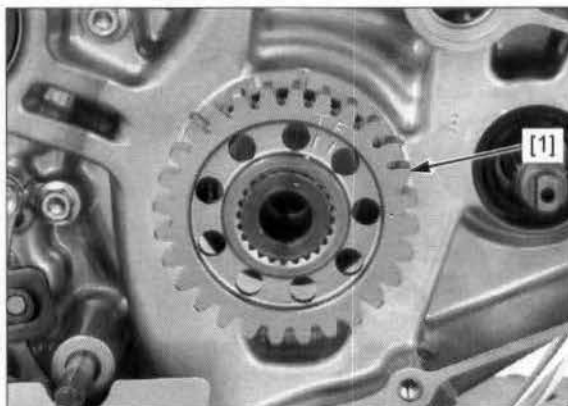
Remove the primary drive gear bolt [6] and washer [7].

Remove the special tool, clutch outer, needle bearing, and clutch outer guide.



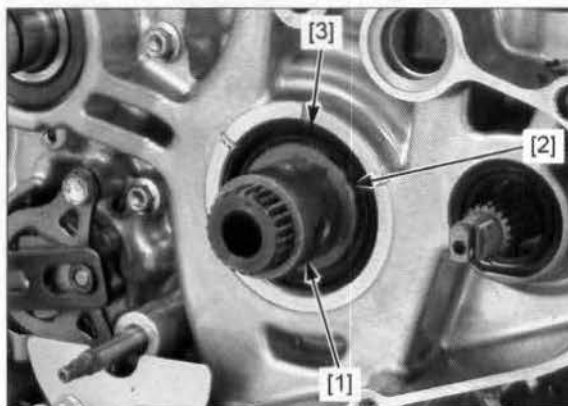
Remove the primary drive gear [1].

Check the primary drive gear for wear or damage.



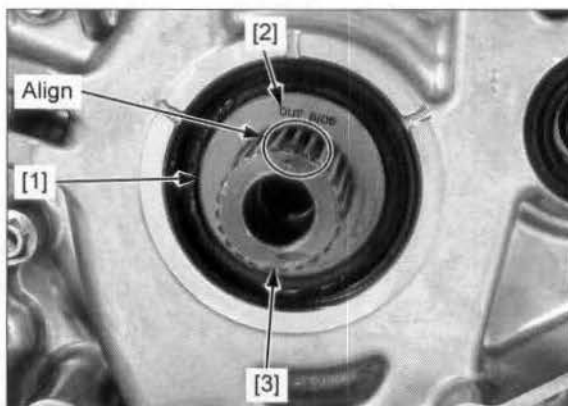
Remove the collar [1] and crankshaft collar [2].

Check the oil seal [3] for wear or damage, replace it if necessary (page 14-24).

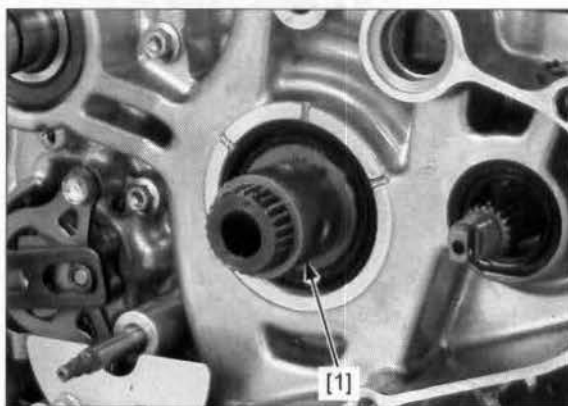


INSTALLATION

Install the crankshaft collar [1] with its "OUT SIDE" mark [2] facing outside by aligning its wide cut-out spline with the punch mark on the crankshaft [3].

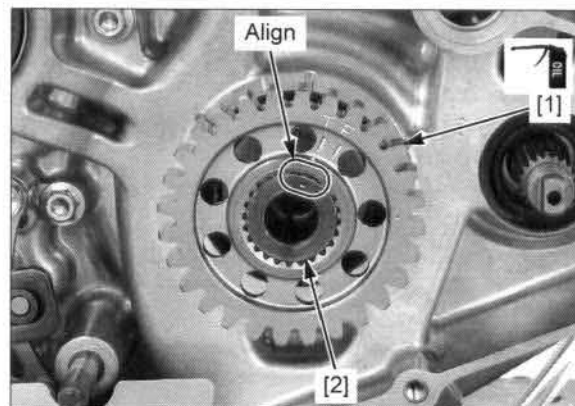


Install the collar [1].



Apply engine oil to the primary drive gear tooth.

Install the primary drive gear [1] with marked side facing outside while aligning its wide cut-out spline with the punch mark on the crankshaft [2].



Temporarily install the clutch outer guide [1], needle bearing [2], clutch outer [3].

Install the special tool between the primary drive gear [4] and driven gear.

TOOL:

Gear holder, M2.5 [5]

**07724-0010100 or
07724-001A100
(U.S.A. only)**

Apply engine oil to the primary drive gear bolt threads and seating surface.

Install the bolt [6] and washer [7].

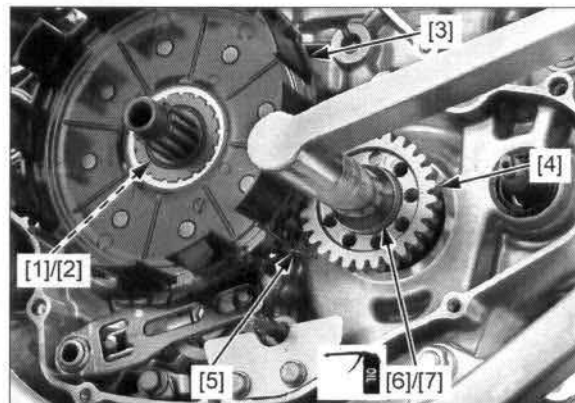
Tighten the bolt to the specified torque.

TORQUE: 108 N·m (11.0 kgf·m, 80 lbf·ft)

Remove the special tool, clutch outer, needle bearing, clutch outer guide.

Install the balancer driven gear (page 14-6).

Install the oil pump driven gear (page 8-5).



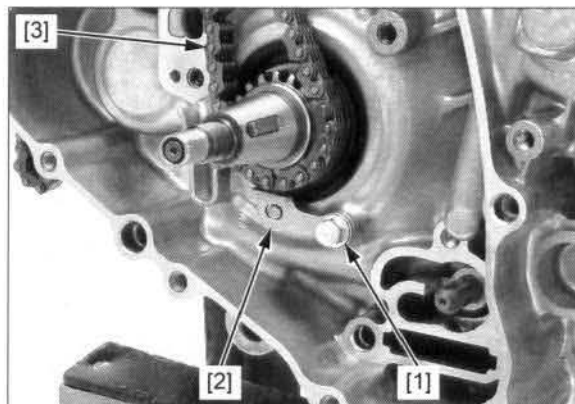
CRANKCASE

SEPARATION

For removal of necessary parts before separating the crankcase (page 14-2).

Remove the bolt [1] and cam chain guide plate [2].

Remove the cam chain [3].



CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

Loosen the crankcase bolts (right side) in a crisscross pattern in two or three steps.

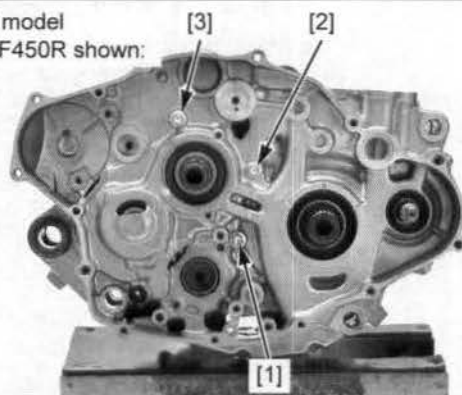
Remove the following:

- 6 x 60 mm bolt [1]
- 6 x 70 mm bolt [2]
- 6 x 80 mm bolt [3]

NOTE:

- Mark and store the bolts to be sure of their correct locations for reassembly.

'17 model
CRF450R shown:



Loosen the crankcase bolts (left side) in a crisscross pattern in two or three steps.

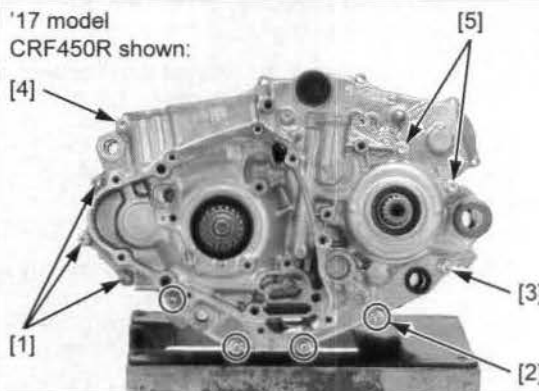
Remove the following:

- Three 6 x 28 mm bolts [1]
- Four 6 x 40 mm bolts [2]
- 6 x 50 mm bolt [3]
- 6 x 70 mm bolt [4]
- Two 6 x 75 mm bolts [5]

NOTE:

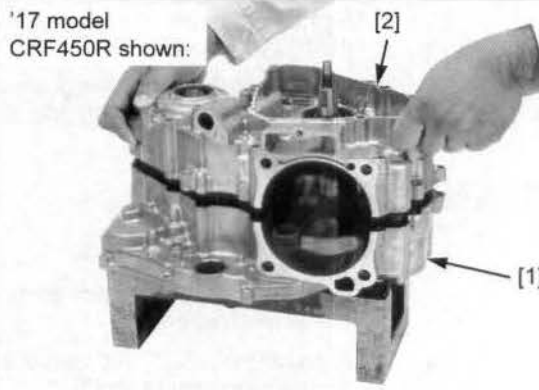
- Mark and store the bolts to be sure of their correct locations for reassembly.

'17 model
CRF450R shown:

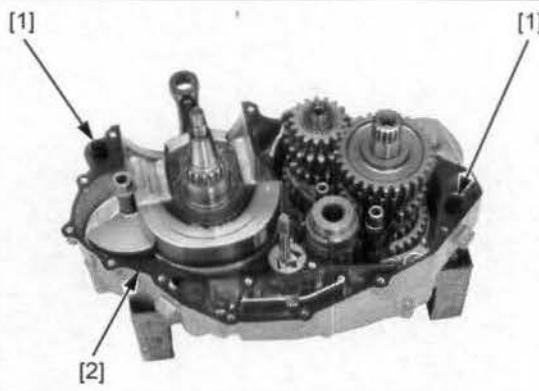


Place the right crankcase [1] facing down and separate the left crankcase [2] and right crankcase halves.

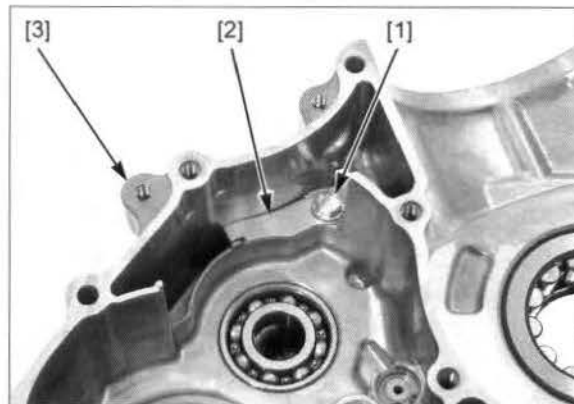
'17 model
CRF450R shown:



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



Remove the bolt [1] and guide plate [2] from the left crankcase.



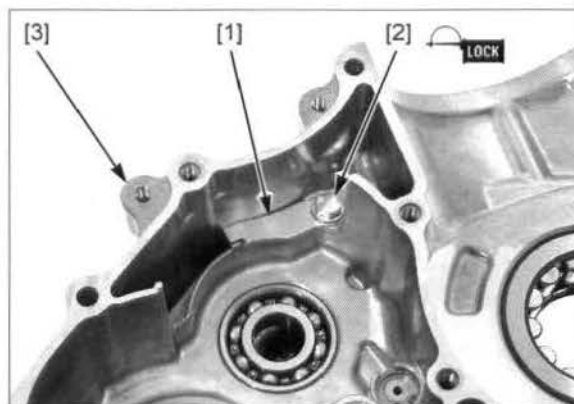
ASSEMBLY

Apply locking agent to the guide plate bolt threads.

Install the guide plate [1] and bolt [2] onto the left crankcase [3].

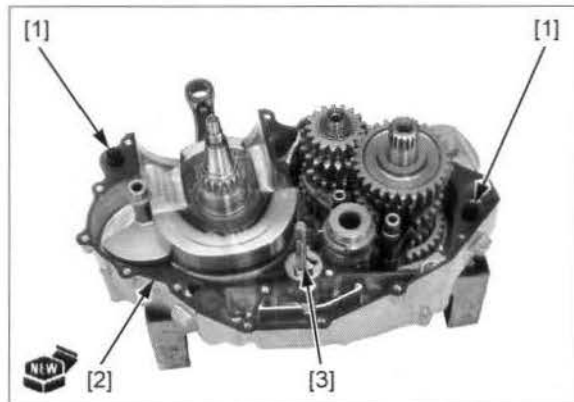
Tighten the bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



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

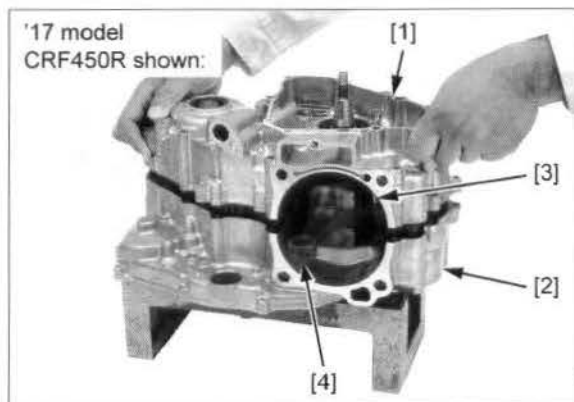
Check the oil pump shaft [3] is rotating smoothly.



Install the left crankcase [1] on the right crankcase [2].

NOTE:

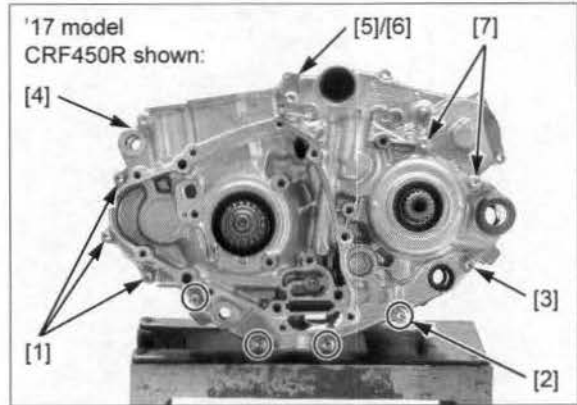
- Be sure that the piston jet [3] does not interfere with the connecting rod small end [4].



Install the following:

- Three 6 x 28 mm bolts [1]
- Four 6 x 40 mm bolts [2]
- 6 x 50 mm bolt [3]
- 6 x 70 mm bolt [4]
- Alternator/CKP sensor wire stay [5]/6 x 75 mm bolt [6]
- Two 6 x 75 mm bolts [7]

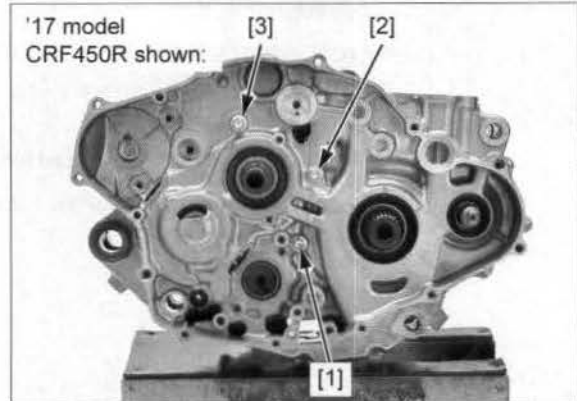
Tighten the bolts in a crisscross pattern in two or three steps securely.



Install the following:

- 6 x 60 mm bolt [1]
- 6 x 70 mm bolt [2]
- 6 x 80 mm bolt [3]

Tighten the bolts in a crisscross pattern in two or three steps securely.



Apply engine oil to the cam chain.

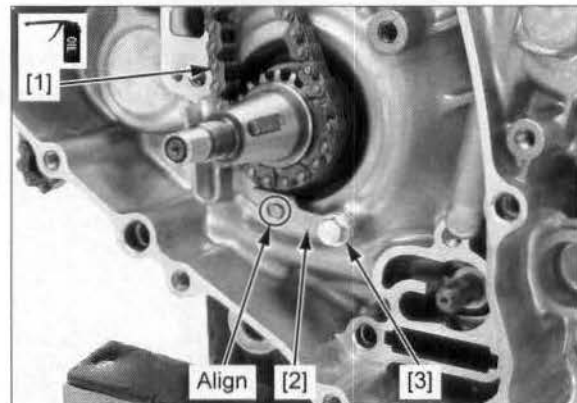
Install the cam chain [1] onto the timing sprocket.

Align the guide plate hole with the left crankcase boss.

Install the cam chain guide plate [2] and bolt [3].

Tighten the bolt securely.

For installation of the removed parts for the crankcase service (page 14-2).



TRANSMISSION

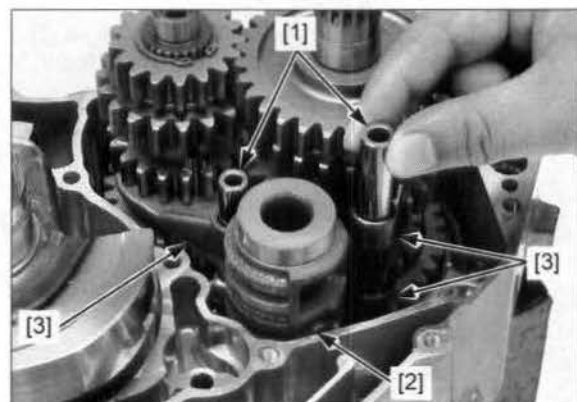
REMOVAL/DISASSEMBLY

Remove the scavenge pump (page 8-4).

Remove the shift fork shafts [1].

Release the shift fork guide pins from the gearshift drum [2] grooves and remove the gearshift drum.

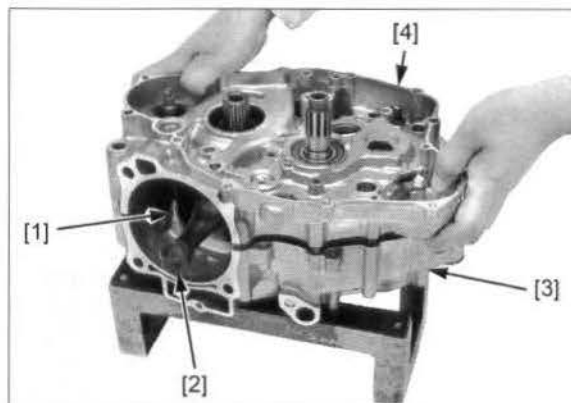
Remove the shift forks [3].



Be sure that the piston jet [1] does not interfere with the connecting rod small end [2].

Temporarily install the left crankcase on the right crankcase.

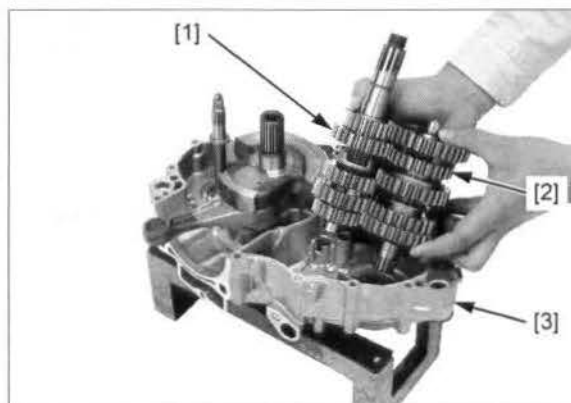
Place the left crankcase [3] facing down and separate the right crankcase [4] and left crankcase halves.



Remove the mainshaft [1] and countershaft [2] assembly from the left crankcase [3].

Disassemble the transmission:

- Clean all disassembled parts in solvent thoroughly.
- Keep track of the disassembled parts (gears, bushings, needle bearing, thrust 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 scratches, damage, abnormal wear, or deformation.

- Transmission gears
- Transmission bushings
- Transmission bearings
- Gearshift drum/bearing
- Shift forks
- Shift fork shafts
- Mainshaft
- Countershaft

Measure each part according to CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER SPECIFICATIONS (page 1-8).

Replace any part if it is out of service limit.

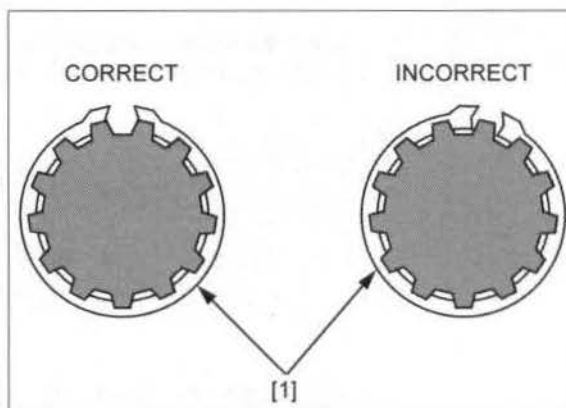
ASSEMBLY

Apply molybdenum oil solution to the mainshaft and countershaft spline areas and transmission gear sliding surfaces.


Assemble all parts into their original positions.

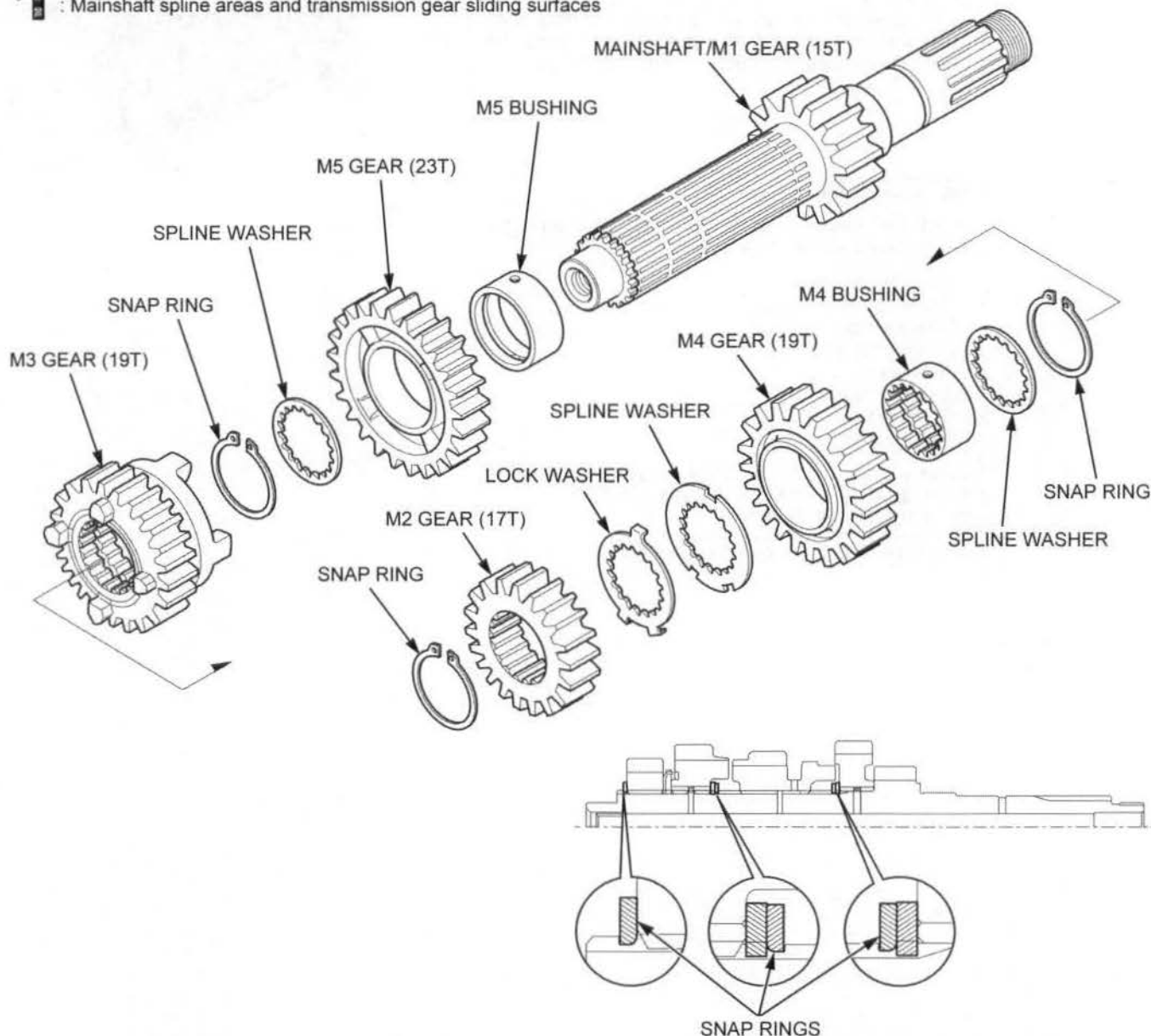
NOTE:

- Check the gears for freedom of movement or rotation on the shaft.
- Install the washers and snap rings with the chamfered edge facing the thrust load side. Confirm the inner side of snap rings and washer when you detect the chamfered side.
- Do not reuse worn snap ring which could easily spin in the groove.
- Check that the snap rings [1] are seated in the shaft grooves and align their end gaps with the grooves of the spline.

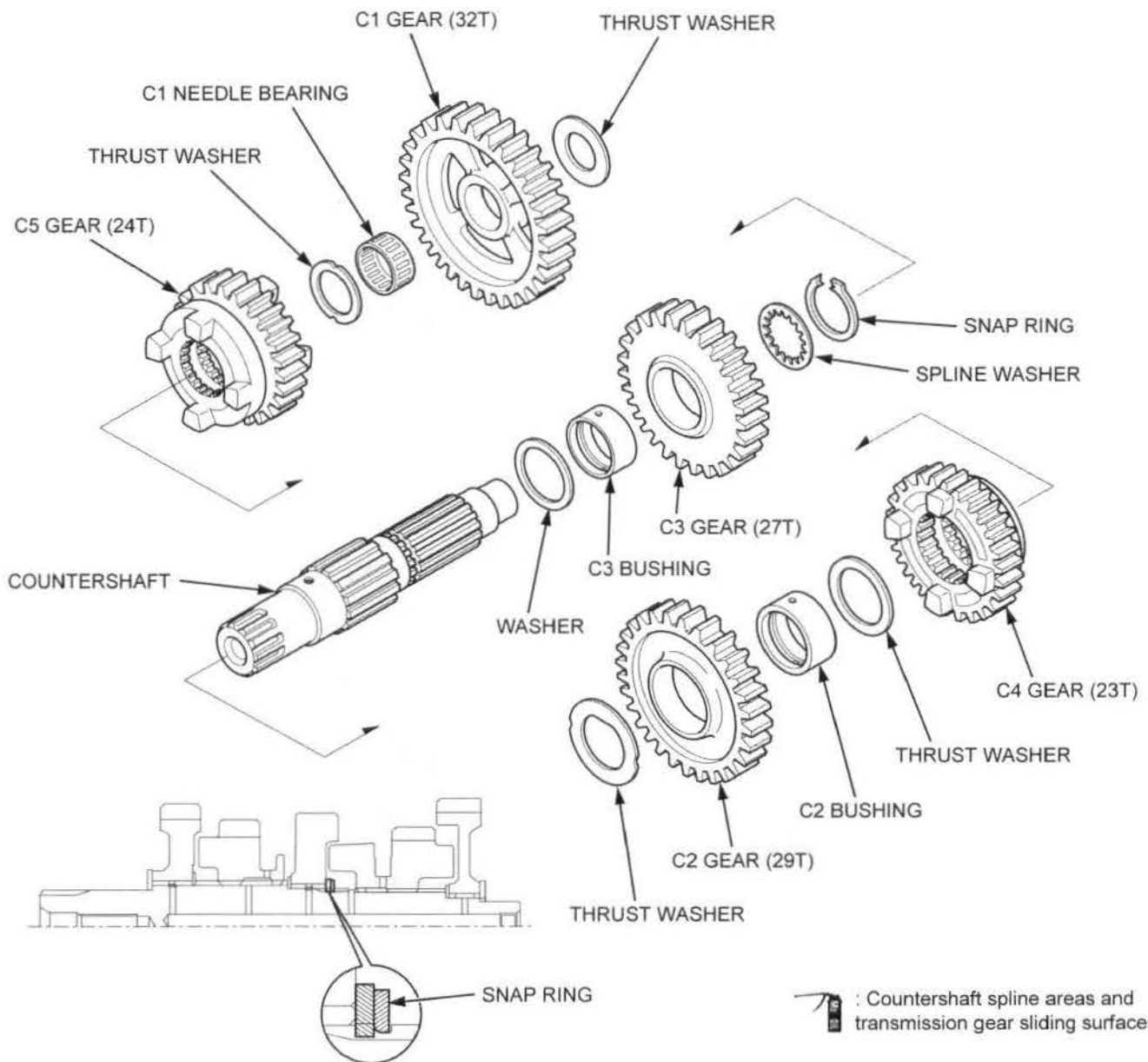


MAINSHAFT:

 : Mainshaft spline areas and transmission gear sliding surfaces

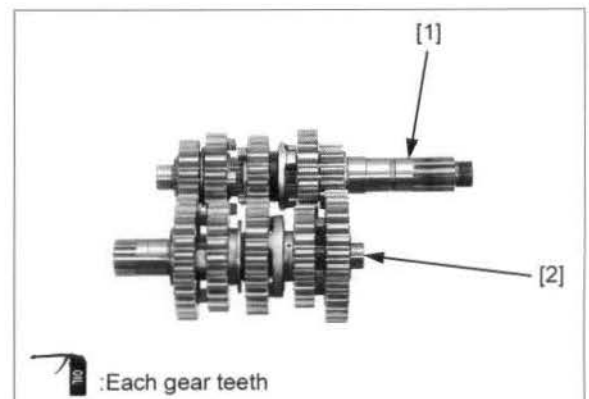


COUNTERSHAFT:



INSTALLATION

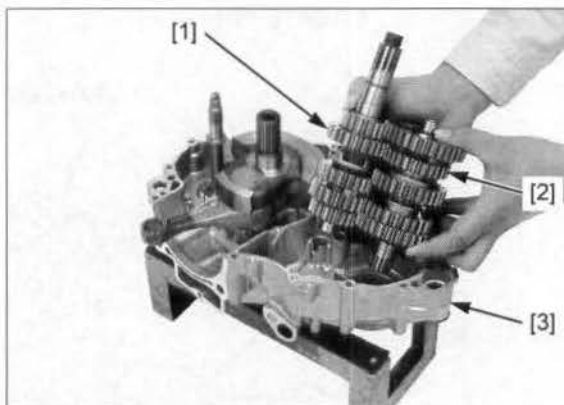
Apply engine oil to each transmission gear teeth.
Engage the mainshaft [1] and countershaft [2] gears.



CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

Install the mainshaft [1] and countershaft [2] assembly into the left crankcase [3].

Make sure the two thrust washers of the countershaft both ends are installed.

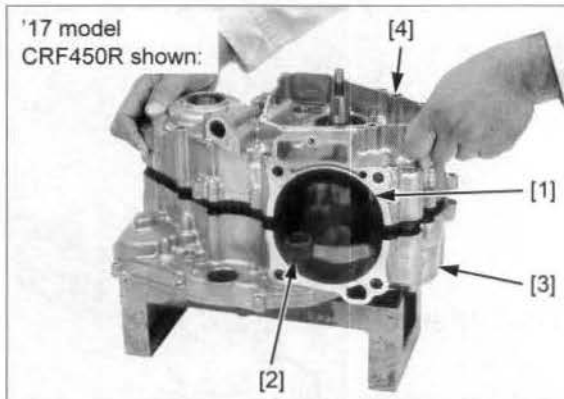


Be sure that the piston jet [1] does not interfere with the connecting rod small end [2].

Temporarily install the right crankcase on the left crankcase.

Place the right crankcase [3] facing down and separate the left crankcase [4] and right crankcase halves.

'17 model
CRF450R shown:



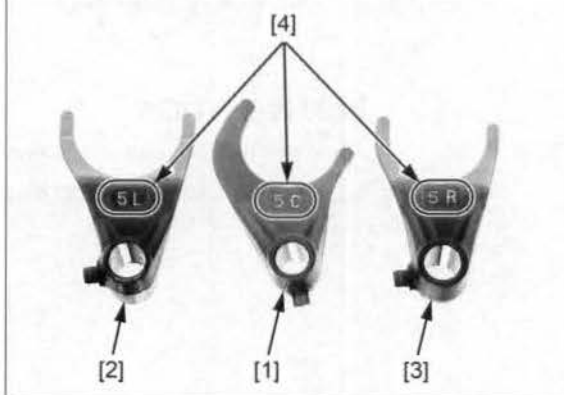
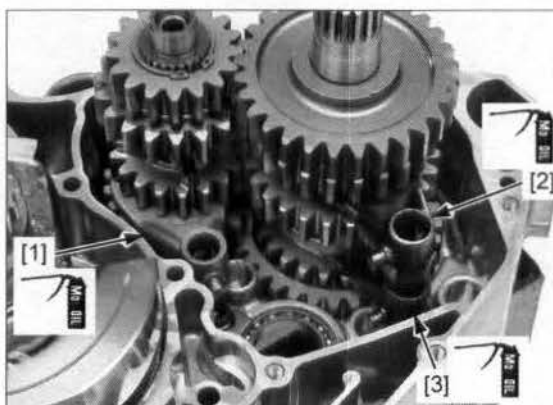
Apply molybdenum oil solution to the shift fork claws and guide pins.

Install the following to the shifter grooves of each sliding gear:

- Countershaft shift fork [1]
- Mainshaft left shift fork [2]
- Mainshaft right shift fork [3]

NOTE:

- Install the shift forks with their identification marks [4] facing up.
- Each shift fork has an identification mark.
 - Countershaft shift fork: "5C"
 - Mainshaft left shift fork: "5L"
 - Mainshaft right shift fork: "5R"

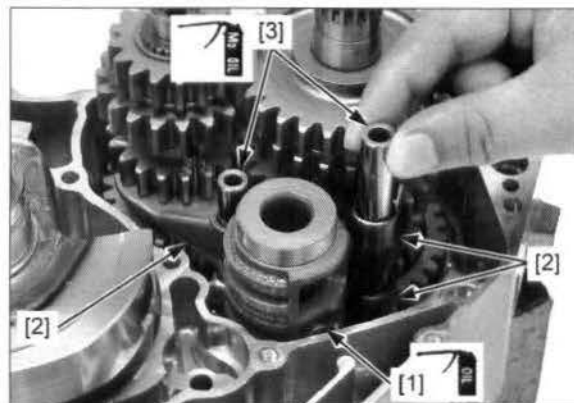


Apply engine oil to the gearshift drum guide grooves. Install the gearshift drum [1] by aligning the guide pins on the shift forks [2] with the guide grooves in the gearshift drum.

Apply molybdenum oil solution to the shift fork shaft [3] outer surfaces. Slide the shift fork shafts through the shift forks into the crankcase.

Install the scavenge pump (page 8-4).

Assemble the crankcase halves (page 14-11).



CRANKSHAFT

REMOVAL/INSTALLATION

Separate the crankcase halves (page 14-9).

Rotate the balancer shaft [1] to keep away from the crankshaft [2].

Remove the crankshaft from the right crankcase [3].

Installation is in the reverse order of removal.

NOTE:

- Be careful not to damage the crankshaft.
- Coat the oil seal contacting surface of the crankshaft with engine oil.

Assemble the crankcase halves (page 14-11).



INSPECTION

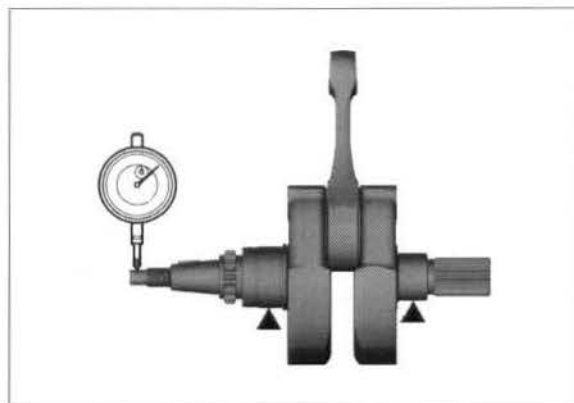
Be careful not to damage the main journal.

Place the crankshaft on a stand or V-blocks.

Set the dial indicator as shown.

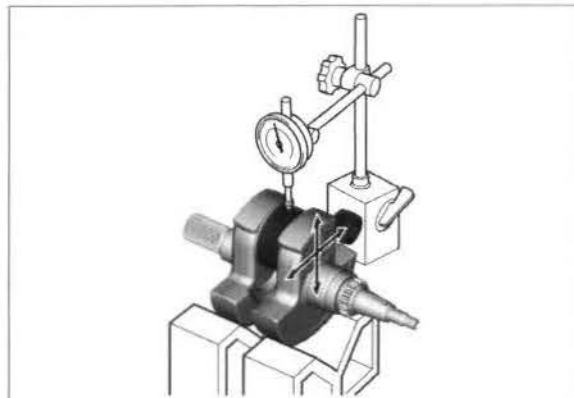
Rotate the crankshaft two revolutions (720°) and read the runout.

SERVICE LIMIT: 0.05 mm (0.002 in)



Measure the connecting rod big end radial clearance.

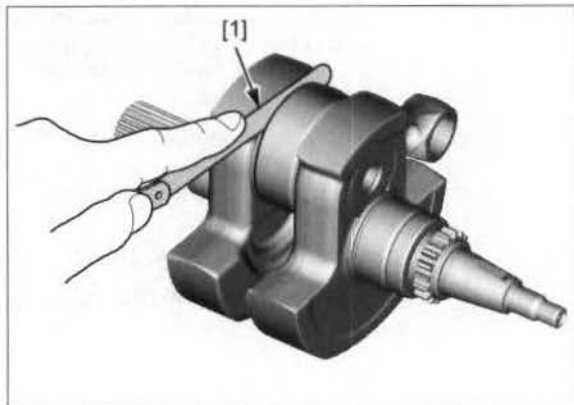
SERVICE LIMIT: 0.05 mm (0.002 in)



CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

Measure the connecting rod big end side clearance using a feeler gauge [1].

SERVICE LIMIT: 0.65 mm (0.026 in)



CRANKCASE BEARING/OIL SEAL REPLACEMENT

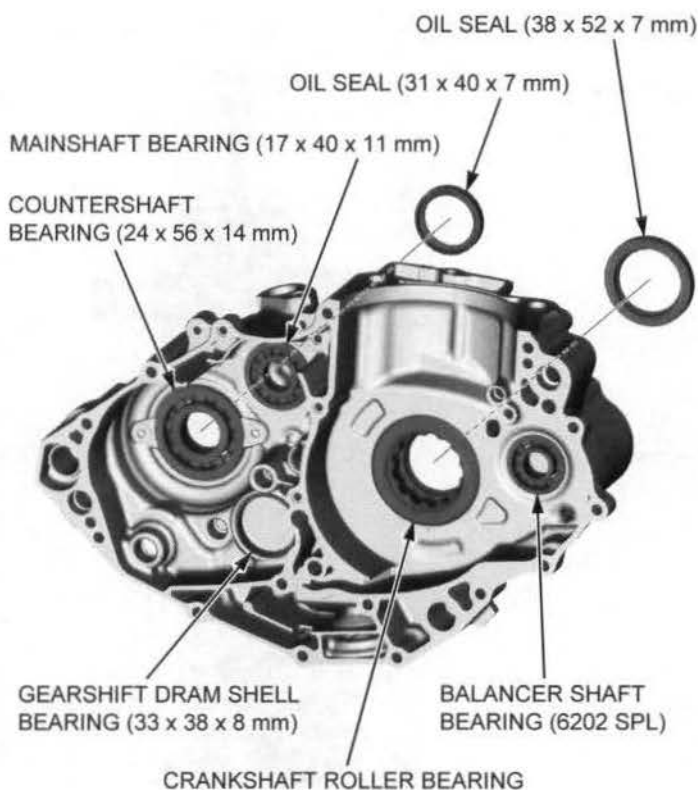
Separate the crankcase halves (page 14-9).

Remove the following:

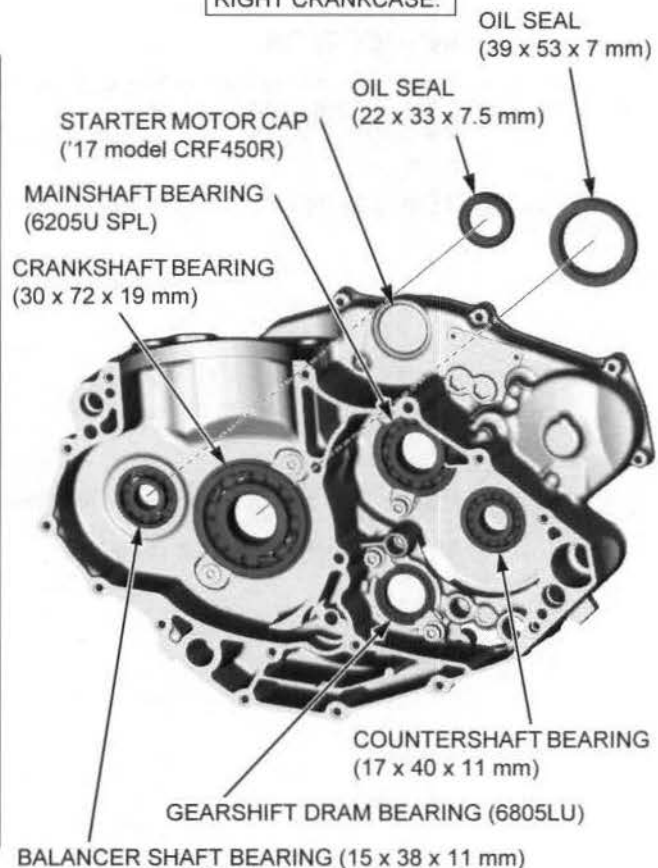
- Transmission (page 14-12)
- Crankshaft (page 14-17)
- Reed valve (page 14-6)
- Piston jet (page 8-8)

CRANKCASE BEARING/OIL SEAL LOCATION

LEFT CRANKCASE:



RIGHT CRANKCASE:



LEFT CRANKCASE BEARING/OIL SEAL REPLACEMENT

BALANCER SHAFT

Remove the balancer shaft bearing (6202 SPL) [1] using special tools.

TOOLS:

Remover shaft, 15 mm [2]

Remover head, 15 mm [3]

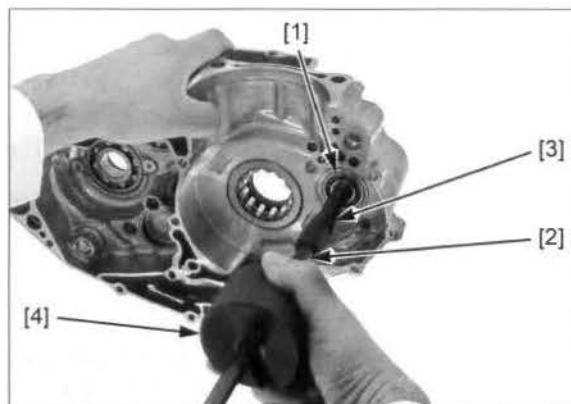
Remover weight [4]

07936-KC10100

07936-KC10200

07741-0010201 or

07936-371020A
(U.S.A. only)



Drive in a new bearing squarely with the marked side facing up.

Drive in a new balancer shaft bearing (6202 SPL) [1] until it is fully seated using special tools.

TOOLS:

Driver [2]

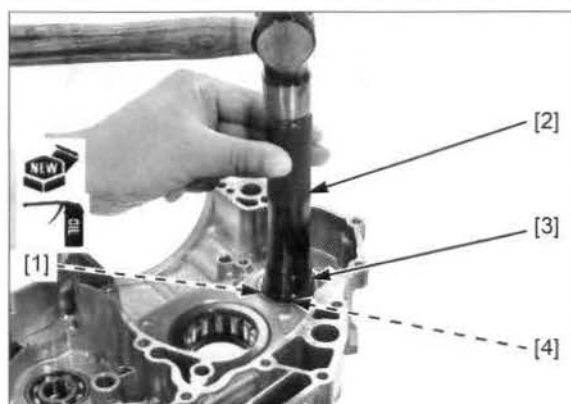
Attachment, 32 x 35 mm [3]

Pilot 15 mm [4]

07749-0010000

07746-0010100

07746-0040300



After installation, apply engine oil to the bearing.

MAINSHAFT

Remove the mainshaft bearing (17 x 40 x 11 mm) [1] using special tools.

TOOLS:

Remover shaft set, 17 mm [2]

Remover handle [3]

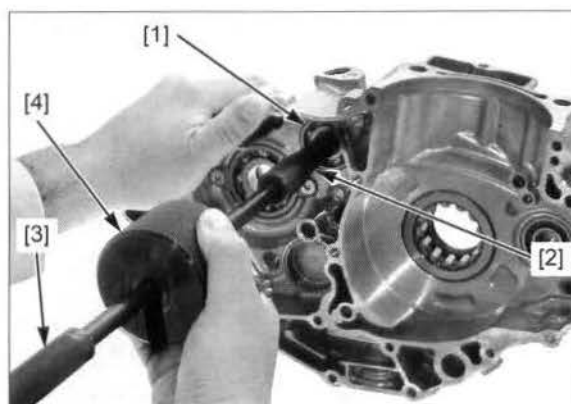
Remover weight [4]

07936-3710300

07936-3710100

07741-0010201 or

07936-371020A
(U.S.A. only)



Drive in a new bearing squarely with the sealed side facing down.

Drive in a new mainshaft bearing (17 x 40 x 11 mm) [1] until it is fully seated using special tools.

TOOLS:

Driver [2]

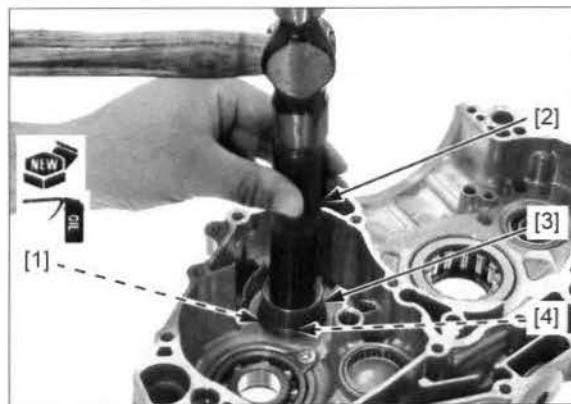
Attachment, 37 x 40 mm [3]

Pilot 17 mm [4]

07749-0010000

07746-0010200

07746-0040400



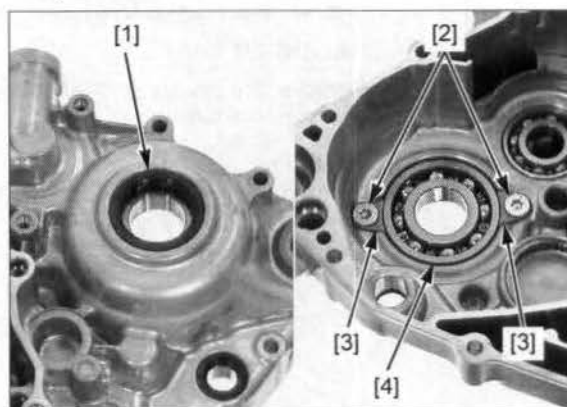
After installation, apply engine oil to the bearing.

COUNTERSHAFT

Remove the oil seal (31 x 40 x 7 mm) [1].

Remove the torx screws [2], set plates [3].

Drive out the countershaft bearing (24 x 56 x 14 mm) [4].



Drive in a new bearing squarely with the marked side facing down.

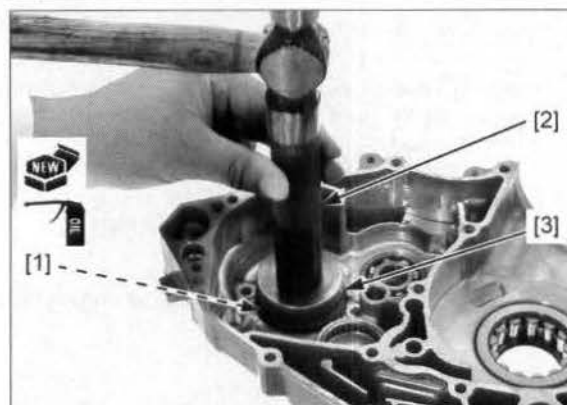
Drive in a new countershaft bearing (24 x 56 x 14 mm) [1] until it is fully seated using special tools.

TOOLS:

Driver [2] 07749-0010000

Attachment, 52 x 55 mm [3] 07746-0010400

After installation, apply engine oil to the bearing.

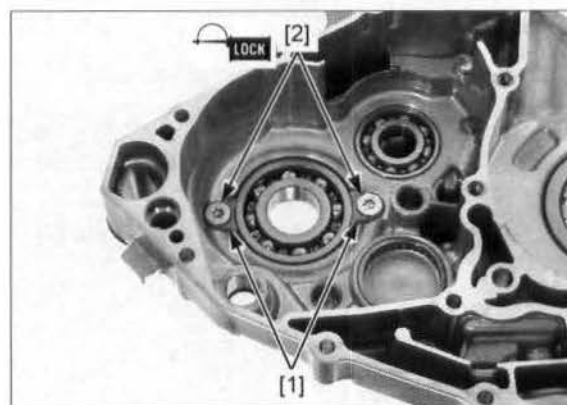


Apply locking agent to the torx screw threads.

Install the set plates [1] and torx screws [2].

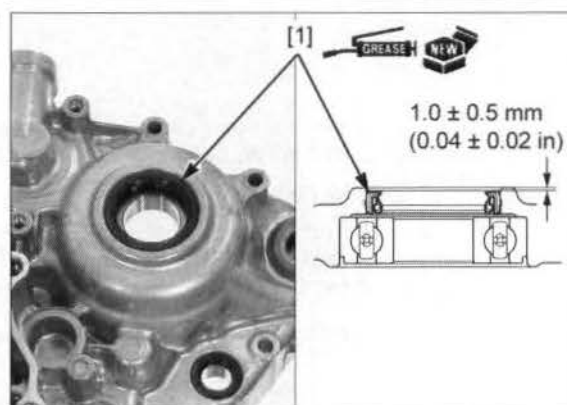
Tighten the screws to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Install a new oil seal (31 x 40 x 7 mm) [1] to the specified depth with its flat side facing up as shown.

Apply grease to the oil seal lips.

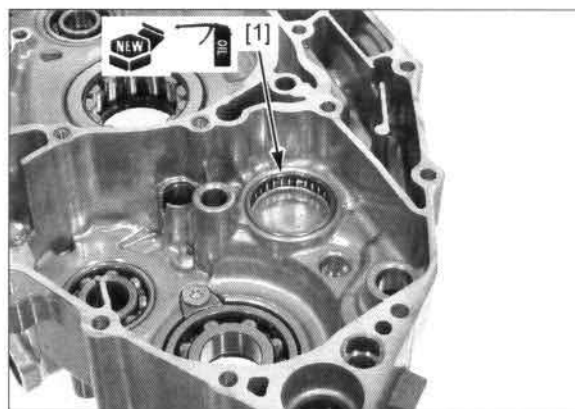


GEARSHIFT DRUM

Remove the gearshift drum shell bearing (33 x 38 x 8 mm) [1].

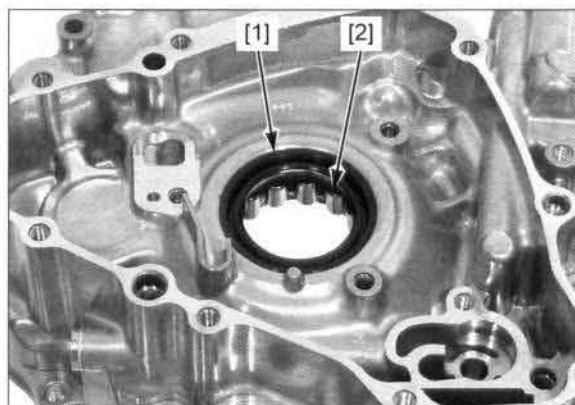
Install a new shell bearing (33 x 38 x 8 mm) with its marked side facing up until it is fully seated.

After installation, apply engine oil to the bearing.



CRANKSHAFT

Remove the oil seal (38 x 52 x 7 mm) [1] and crankshaft roller bearing [2].



Drive in a new bearing squarely with the marking side facing up.

Drive in a new crankshaft roller bearing [1] until it is fully seated using special tools.

TOOLS:

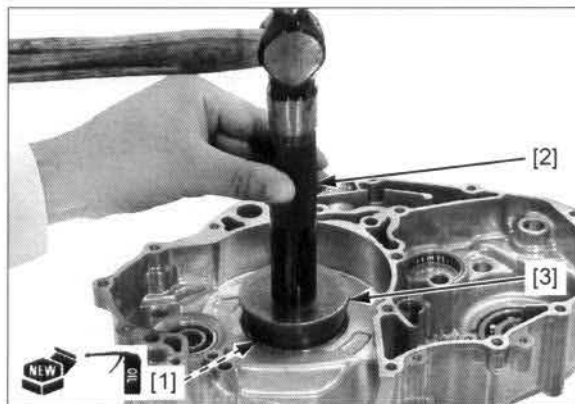
Driver [2]

07749-0010000

Attachment, 62 x 68 mm [3]

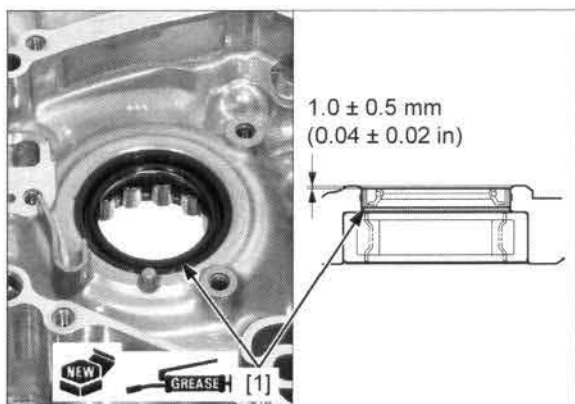
07746-0010500

After installation, apply engine oil to the bearing.



Install a new oil seal (38 x 52 x 7 mm) [1] to the specified depth with its flat side facing down as shown.

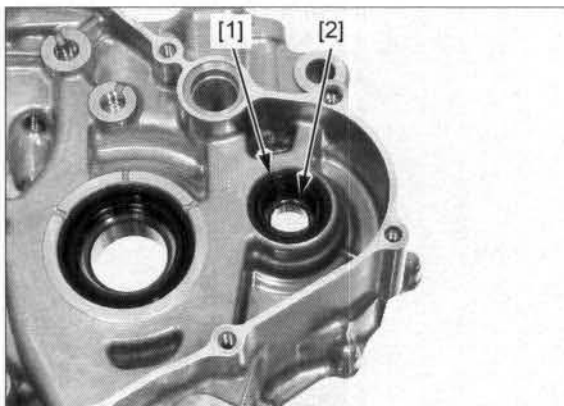
Apply grease to the oil seal lips.



RIGHT CRANKCASE BEARING/OIL SEAL REPLACEMENT

BALANCER SHAFT

Remove the oil seal (22 x 33 x 7.5 mm) [1] and balancer shaft bearing (15 x 38 x 11 mm) [2].



Drive in a new bearing squarely with the marked side facing up.

Drive in a new balancer shaft bearing (15 x 38 x 11 mm) [1] until it is fully seated using special tools.

TOOLS:

Driver [2]

07749-0010000

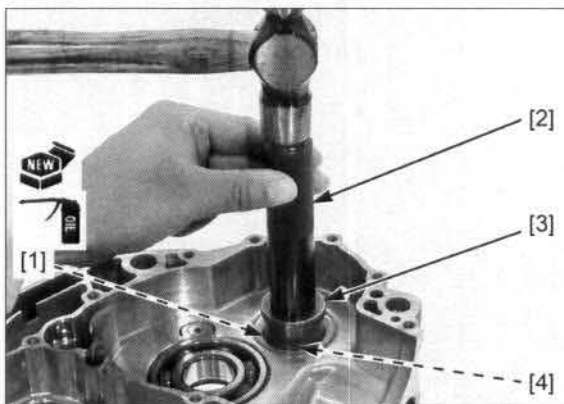
Attachment, 37 x 40 mm [3]

07746-0010200

Pilot 15 mm [4]

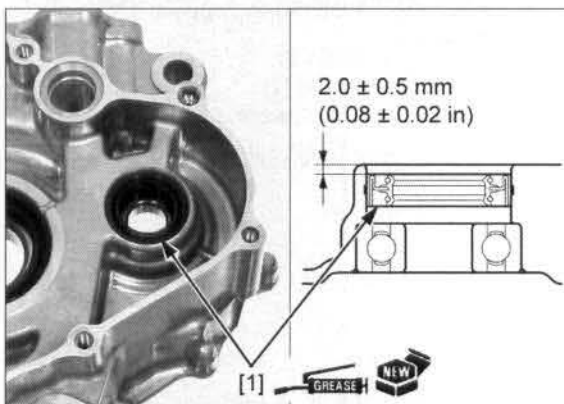
07746-0040300

After installation, apply engine oil to the bearing.



Install a new oil seal (22 x 33 x 7.5 mm) [1] to the specified depth with its metal side facing down as shown.

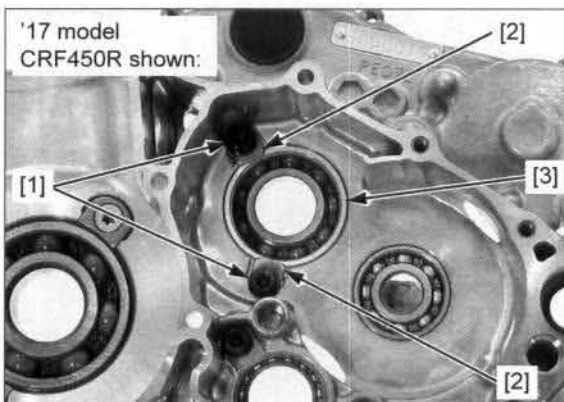
Apply grease to the oil seal lips.



MAINSHAFT

Remove the socket bolts [1] and set plates [2].

Drive out the mainshaft bearing (6205U SPL) [3].



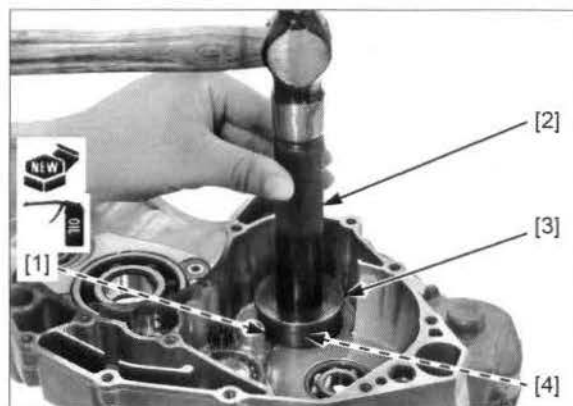
Drive in a new bearing squarely with the sealed side facing down.

Drive in a new mainshaft bearing (6205U SPL) [1] until it is fully seated using special tools.

TOOLS:

Driver [2]	07749-0010000
Attachment, 52 x 55 mm [3]	07746-0010400
Pilot 25 mm [4]	07746-0040600

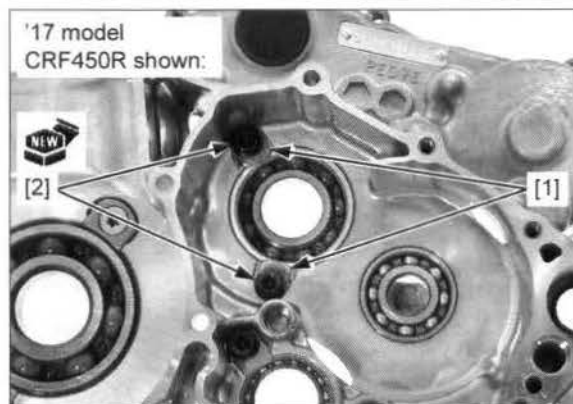
After installation, apply engine oil to the bearing.



Install the set plates [1] and new socket bolts [2].

Tighten the socket bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

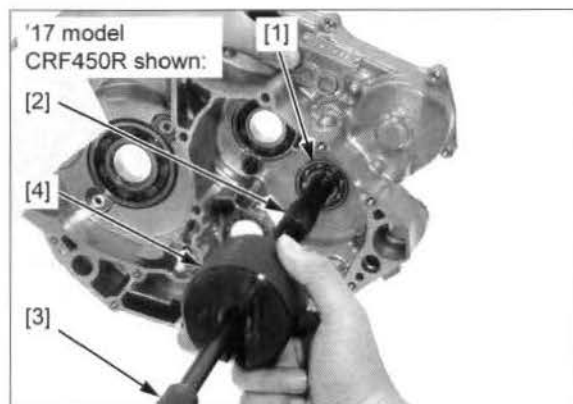


COUNTERSHAFT

Remove the countershaft bearing (17 x 40 x 11 mm) [1] using special tools.

TOOLS:

Remover shaft set, 17 mm [2]	07936-3710300
Remover handle [3]	07936-3710100
Remover weight [4]	07741-0010201 or 07936-371020A (U.S.A. only)



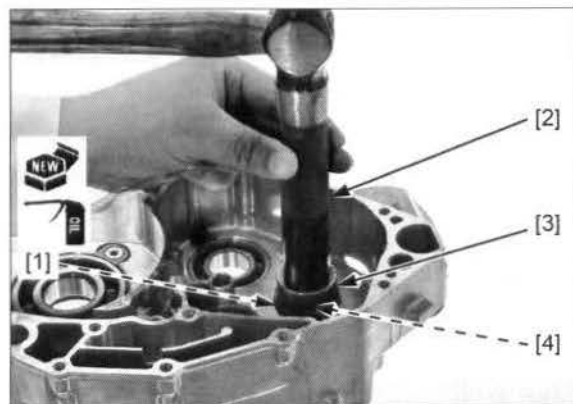
Drive in a new bearing squarely with the sealed side facing down.

Drive in a new countershaft bearing (17 x 40 x 11 mm) [1] until it is fully seated using special tools.

TOOLS:

Driver [2]	07749-0010000
Attachment, 37 x 40 mm [3]	07746-0010200
Pilot 17 mm [4]	07746-0040400

After installation, apply engine oil to the bearing.



GEARSHIFT DRUM

Remove the socket bolts [1] and set plates [2].

Remove the gearshift drum bearing (6805LU) [3].

Install a new bearing squarely with the marked side facing down.

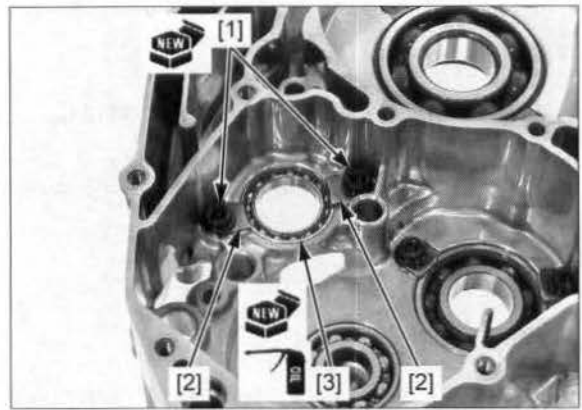
Install the gearshift drum bearing (6805LU) until it is fully seated.

After installation, apply engine oil to the bearing.

Install the set plates and new socket bolts.

Tighten the socket bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



CRANKSHAFT

Remove the oil seal (39 x 53 x 7 mm) [1].

Remove the torx screws [2] and set plates [3].

Drive out the crankshaft bearing (30 x 72 x 19 mm) [4].

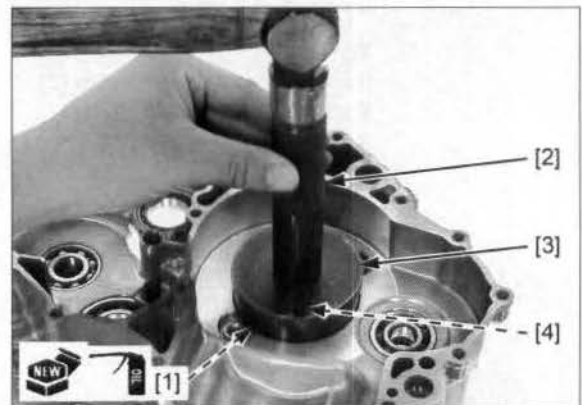
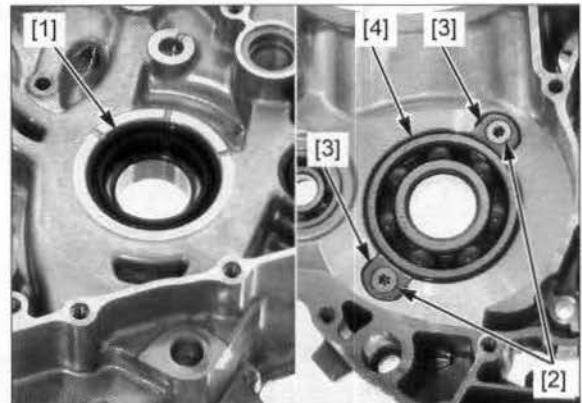
Drive in a new bearing with the marking side facing up.

Drive in a new crankshaft bearing (30 x 72 x 19 mm) [1] until it is fully seated using special tools.

TOOLS:

Driver [2]	07749-0010000
Attachment, 72 x 75 mm [3]	07746-0010600
Pilot 30 mm [4]	07746-0040700

After installation, apply engine oil to the bearing.

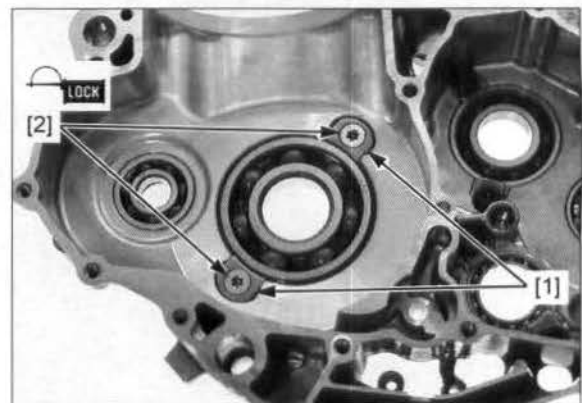


Apply locking agent to the torx screw threads.

Install the set plates [1] and torx screws [2].

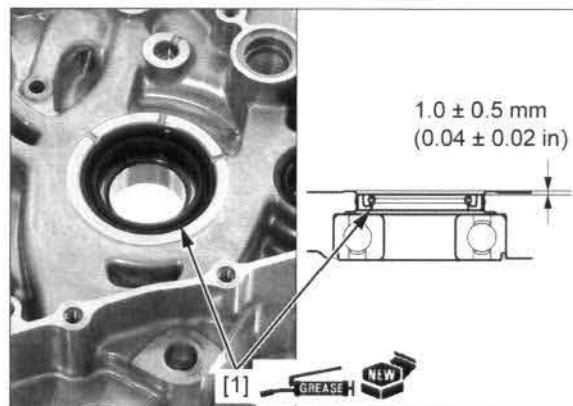
Tighten the screws to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



Install a oil seal (39 x 53 x 7 mm) [1] to the specified depth with its flat side facing down as shown.

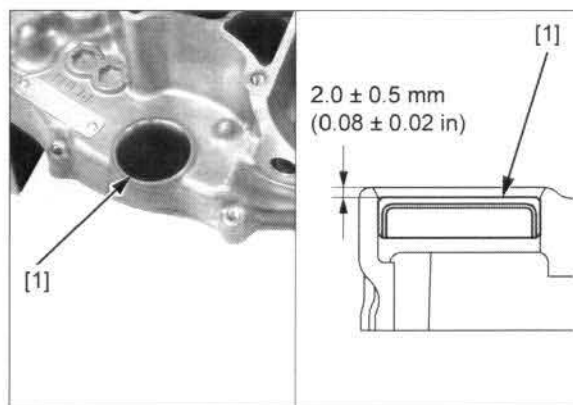
Apply grease to the oil seal lips.



STARTER MOTOR CAP ('17 model CRF450R)

Remove the starter motor cap [1].

Install a starter motor cap to the specified depth with its flat side facing up as shown.



MEMO

15. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION..... 15-2

COMPONENT LOCATION..... 15-3

ENGINE REMOVAL 15-4

ENGINE INSTALLATION 15-6

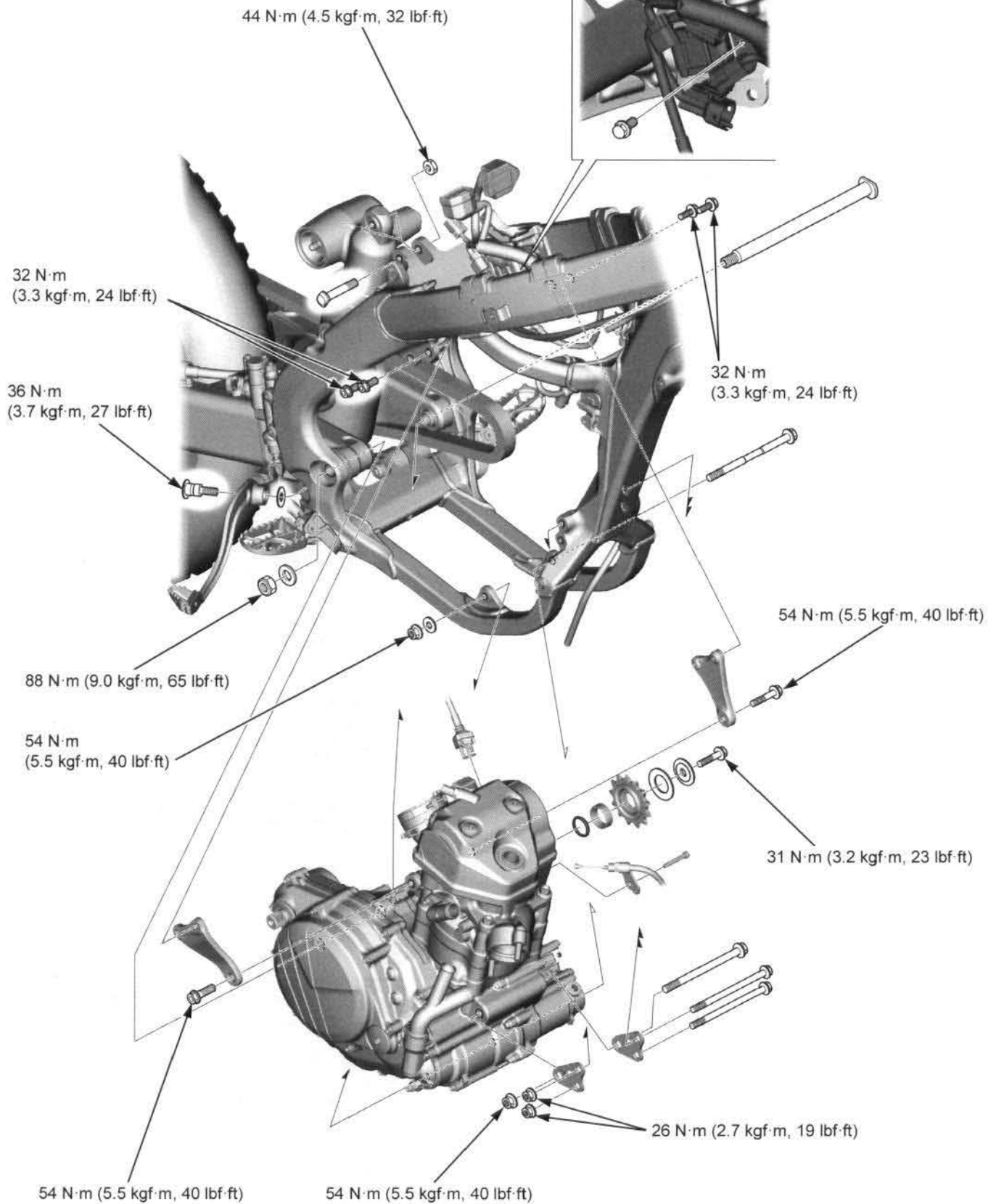
SERVICE INFORMATION

GENERAL

- When removing/installing the engine, tape the frame around the engine beforehand for frame protection.
- During engine removal and installation, support the motorcycle using a workstand or equivalent.
- The following components require engine removal for service.
 - Crankcase (page 14-9)
 - Scavenge pump (page 8-4)
 - Balancer shaft (page 14-7)
 - Transmission (page 14-12)
 - Crankshaft (page 14-17)
- The following components can be serviced with the engine installed in the frame.
 - Cylinder head/Valves (page 10-15)
 - Cylinder/Piston (page 11-6)
 - Throttle body (page 7-24)
 - Clutch (page 12-11)
 - Kickstarter ('17 model) (page 12-19)
 - Gearshift linkage (page 12-26)
 - Water pump (page 9-7)
 - Primary drive gear ('17 model CRF450R) (page 14-7)
 - Primary drive gear/starter clutch (Except '17 model CRF450R) (page 12-23)
 - Flywheel (page 13-6)
 - Oil feed pump (page 8-4)
 - Reed valve (page 14-6)

COMPONENT LOCATION

'17 model
CRF450R shown:



ENGINE REMOVAL

Drain the engine oil (page 3-16).

Drain the coolant (page 9-5).

Remove the following:

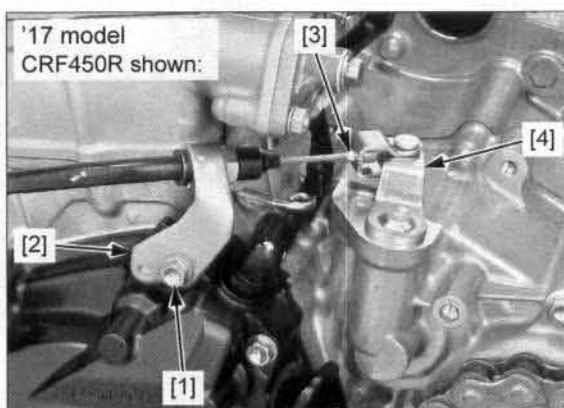
- Drive sprocket cover (page 2-5)
- Radiator (page 9-6)
- Regulator/ rectifier (page 19-11)
- Fuel tank (CRF450R) (page 7-11)
- Fuel tank (CRF450RX) (page 7-12)
- Throttle body (page 7-24)
- Ignition coil (page 5-9)
- Gearshift pedal (page 12-26)
- Kickstarter pedal ('17 model) (page 12-8)
- Brake pedal pivot bolt (page 18-18)

Disconnect the following:

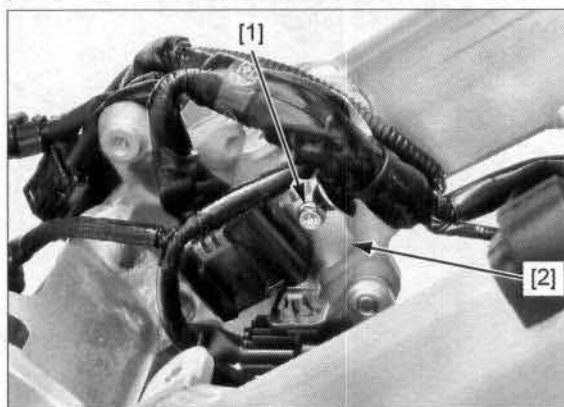
- ECT sensor 2P (Black) connector (page 4-24)
- Alternator/CKP sensor 6P (Black) connector (page 13-4)

Remove the left crankcase cover bolt (6 x 35 mm) [1] and clutch cable stay [2].

Disconnect the clutch cable [3] from the clutch lifter arm [4].

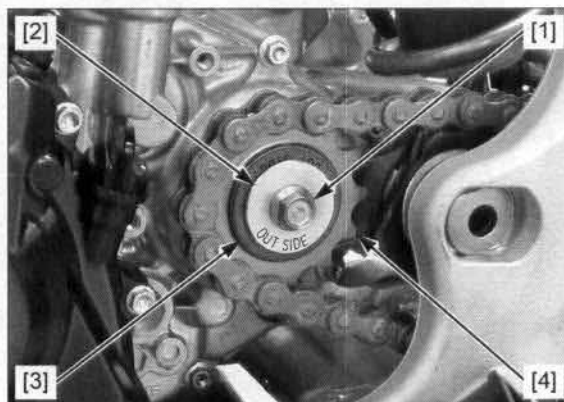


Remove the bolt [1] and release the connector stay [2].



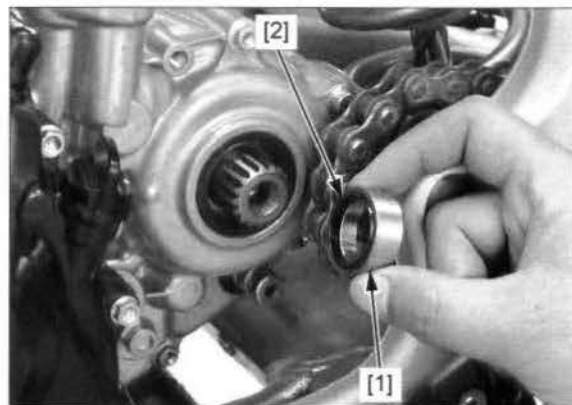
Fully slacken the drive chain (page 3-18).

Remove the drive sprocket bolt [1], collar [2], spring washer [3], and drive sprocket [4].



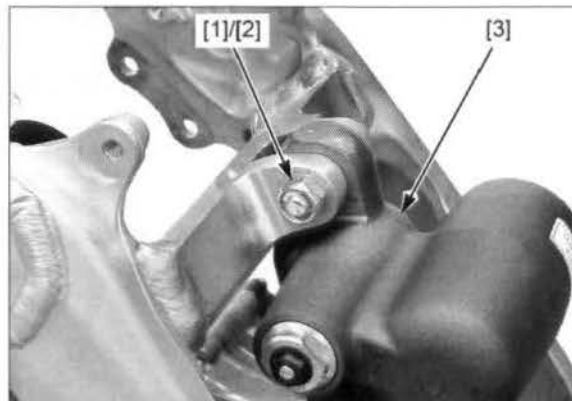
Be careful not to damage the collar and countershaft.

Remove the countershaft collar [1] and seal ring [2].



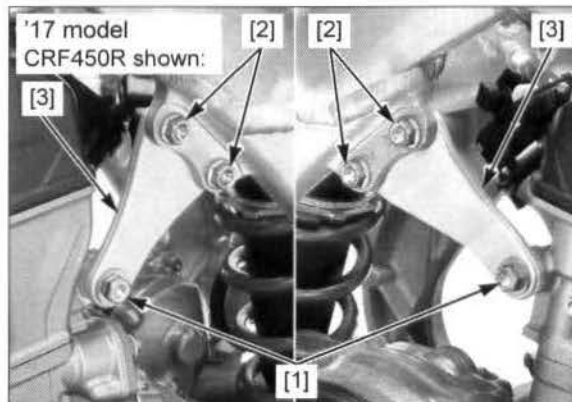
Remove the rear shock absorber upper mounting nut [1] and bolt [2].

Swing the rear shock absorber [3] rearward.



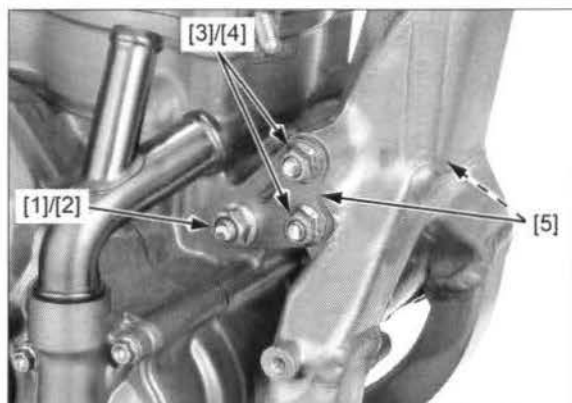
Remove the following:

- Cylinder head hanger bolt [1]
- Cylinder head hanger plate bolt [2]
- Cylinder head hanger plates [3]



Remove the following:

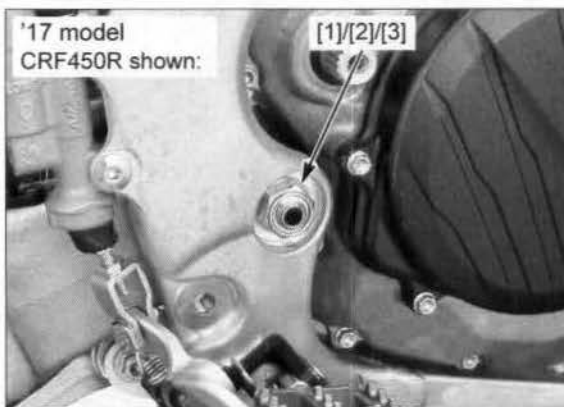
- Front engine hanger nut [1]
- Front engine hanger bolt [2]
- Front engine hanger plate nut [3]
- Front engine hanger plate bolt [4]
- Front engine hanger plates [5]



ENGINE REMOVAL/INSTALLATION

Remove the swingarm pivot nut [1], washer [2], and bolt [3].

'17 model
CRF450R shown:

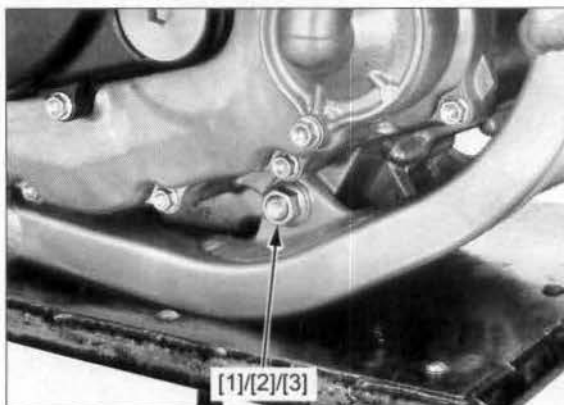


Remove the lower engine hanger nut [1], washer [2], and bolt [3].

Remove the engine from the right side of the frame.

NOTE:

- Note the direction of the hanger plates and hanger bolts.
- Temporarily install the swingarm pivot bolt so the frame can be moved and stored safely.



ENGINE INSTALLATION

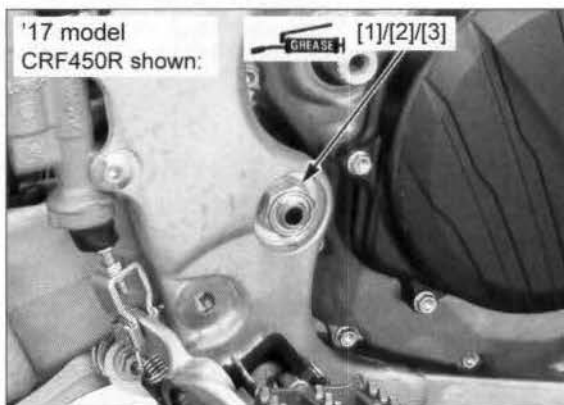
Carefully align the mounting points to prevent damage to engine, frame, wires, and cables.

Set the engine into the frame in the reverse order of removal.

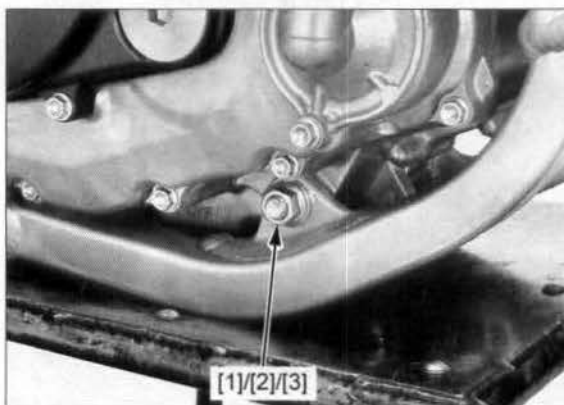
Apply thin coat of grease to the swingarm pivot bolt outer surface.

Loosely install the swingarm pivot bolt [1], washer [2], and nut [3].

'17 model
CRF450R shown:

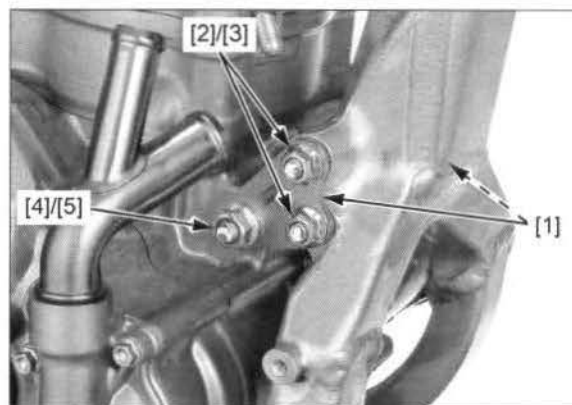


Loosely install the lower engine hanger bolt [1], washer [2], and nut [3].



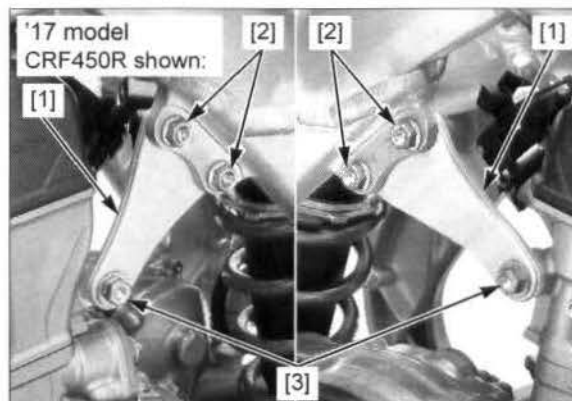
Loosely install the following:

- Front engine hanger plates [1]
- Front engine hanger plate bolt [2]
- Front engine hanger plate nut [3]
- Front engine hanger bolt [4]
- Front engine hanger nut [5]



Loosely install the following:

- Cylinder head hanger plates [1]
- Cylinder head hanger plate bolt [2]
- Cylinder head hanger bolt [3]



Tighten the fasteners to the specified torque.

TORQUE:

Swingarm pivot nut:

88 N·m (9.0 kgf·m, 65 lbf·ft)

Lower engine hanger nut:

54 N·m (5.5 kgf·m, 40 lbf·ft)

Front engine hanger plate nut:

26 N·m (2.7 kgf·m, 19 lbf·ft)

Front engine hanger nut:

54 N·m (5.5 kgf·m, 40 lbf·ft)

Cylinder head hanger plate bolt:

32 N·m (3.3 kgf·m, 24 lbf·ft)

Cylinder head hanger bolt:

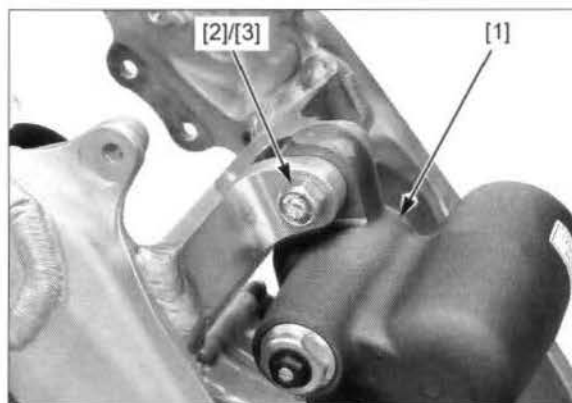
54 N·m (5.5 kgf·m, 40 lbf·ft)

Install the rear shock absorber [1].

Install the rear shock absorber upper mounting bolt [2] and nut [3].

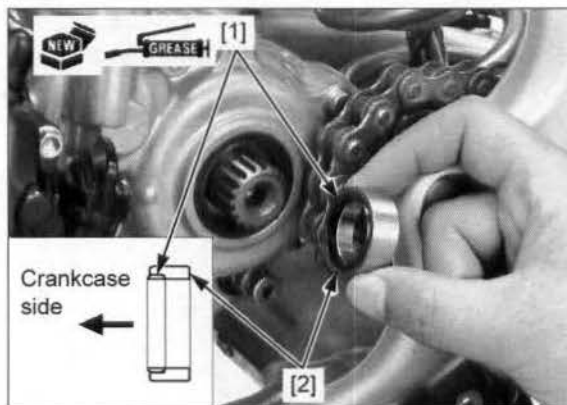
Tighten the nut to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)

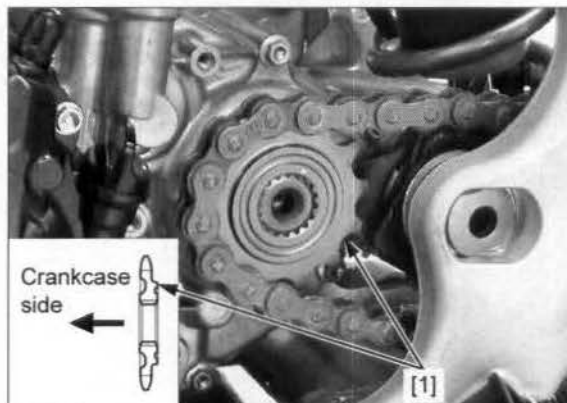


ENGINE REMOVAL/INSTALLATION

Apply grease to a new seal ring [1] and install it to the countershaft collar [2].
Install them to the countershaft.



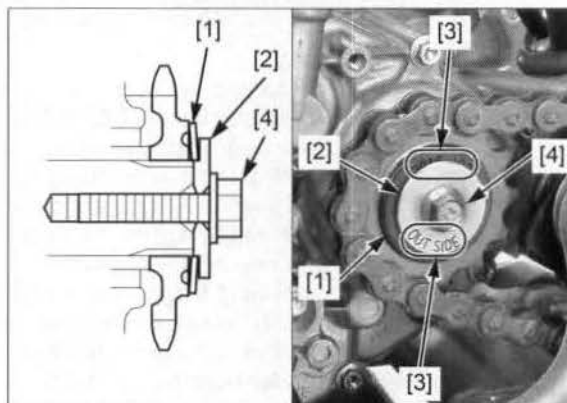
Install the drive sprocket [1] in the drive chain and onto the countershaft as shown.



Install the spring washer [1] and collar [2] with the "OUT SIDE" marks [3] facing out.

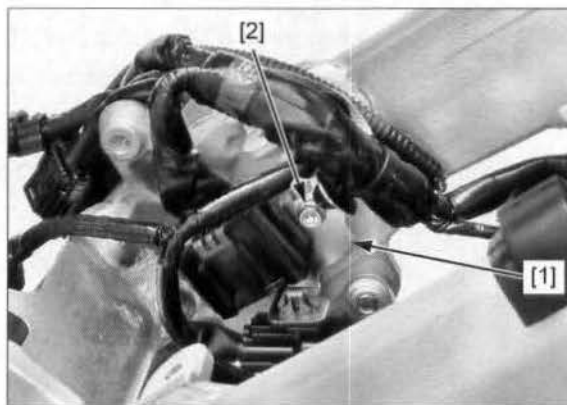
Install and tighten the drive sprocket bolt [4] to the specified torque.

TORQUE: 31 N·m (3.2 kgf·m, 23 lbf·ft)



Install the connector stay [1] and bolt [2].

Tighten the bolt securely.



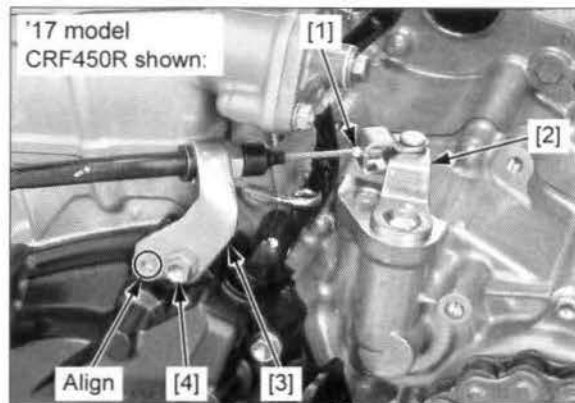
Connect the clutch cable [1] end to the clutch lifter arm [2].

Install the clutch cable stay [3] and left crankcase cover bolt (6 x 35 mm) [4].

Tighten the bolt securely.

NOTE:

- Align the stay boss with the left crankcase cover hole.
- Route the clutch cable properly (page 1-24).



Connect the following:

- ECT sensor 2P (Black) connector (page 4-24)
- Alternator/CKP sensor 6P (Black) connector (page 13-5)

Install the following:

- Ignition coil (page 5-9)
- Throttle body (page 7-27)
- Regulator/ rectifier (page 19-11)
- Fuel tank (CRF450R) (page 7-11)
- Fuel tank (CRF450RX) (page 7-12)
- Radiator (page 9-6)
- Gearshift pedal (page 12-30)
- Kickstarter pedal ('17 model) (page 12-11)
- Brake pedal pivot bolt (page 18-18)
- Drive sprocket cover (page 2-5)

Fill the radiator with the recommended coolant mixture to the filler neck and bleed the air (page 9-5).

Fill the engine with the recommended oil (page 3-16).

After installing the engine, perform the following inspections and adjustments:

- Throttle grip freeplay (page 3-8)
- Drive chain slack (page 3-18)
- Clutch lever freeplay (page 3-26)

Check the exhaust system and cooling system for leaks.

MEMO



16. FRONT WHEEL/SUSPENSION/STEERING

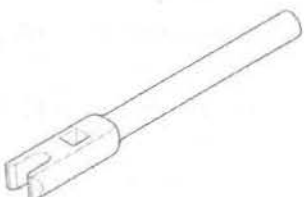

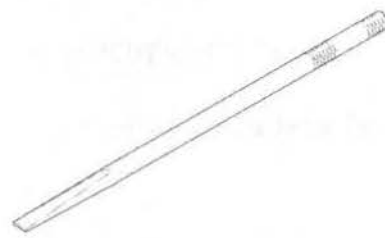
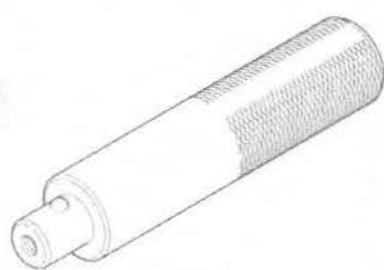



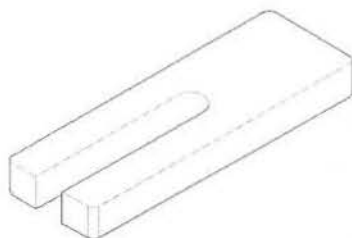

SERVICE INFORMATION.....	16-2	FORK	16-9
TROUBLESHOOTING	16-4	HANDLEBAR.....	16-30
COMPONENT LOCATION	16-5	STEERING STEM	16-36
FRONT WHEEL	16-6	CLUTCH LEVER.....	16-41

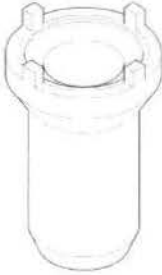
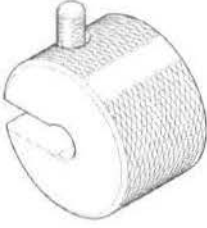
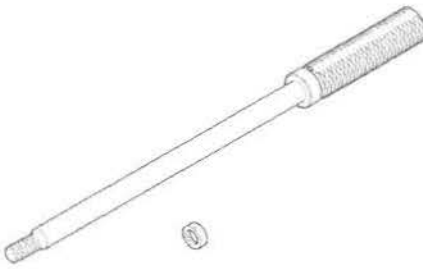
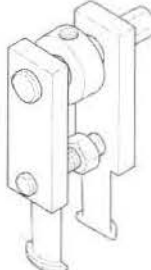
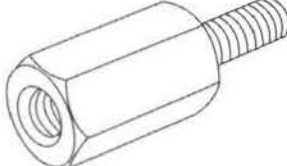
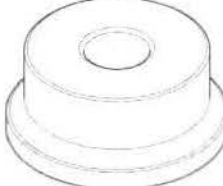


SERVICE INFORMATION

GENERAL

- Keep grease off the brake pads and disc.
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- When servicing the front wheel, fork, or steering stem, support the motorcycle using a workstand or equivalent.
- After the front wheel installation, check the brake operation by applying the brake lever.
- For the brake system information (page 18-2).
- When using the lock nut wrench, use a 500 mm (20.0 in) long deflecting beam type torque wrench. 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 fork damper. The specification given on this page is actual torque applied to the fork damper, not the reading on the torque wrench when used with the lock nut wrench. The procedure later in the text gives the actual and indicated torque.

TOOLS

Spoke wrench, 6.1 mm 07JMA-MR60100 	Bearing remover head, 20 mm 07746-0050600 	Bearing remover shaft 07GGD-0010100 
Driver 07749-0010000 	Attachment, 37 x 40 mm 07746-0010200 	Pilot, 20 mm 07746-0040500 
Lock nut wrench, 50 mm 07WMA-KZ30100 	Piston base 07958-2500001  or 07AMB-KZ3A100 (U.S.A. only)	Fork seal driver, 49 mm 070MD-KRN0100  or 070MD-KRNA100 (U.S.A. only)

<p>Steering stem socket 07916-3710101</p> 	<p>Remover weight 07741-0010201</p>  <p>or 07936-371020A (U.S.A. only)</p>	<p>Ball race remover shaft 07JAC-PH80200</p>  <p>Not available in U.S.A.</p>
<p>Adjustable bearing puller, 45 – 75 mm 07YAC-0010102</p> 	<p>Adapter, 8 mm x 3/8 x 16 thread 07YAC-001A200 (U.S.A. only)</p>  <p>NOTE: Used with 07YAC-0010102</p>	<p>Bearing race installer (2 required) 070MF-MEN0100</p>  <p>or 070MF-MENA100 (U.S.A. only)</p>
<p>Installer shaft 07VMF-KZ30200</p> 	<p>Attachment, 30 mm I.D. 07746-0030300</p> 	

TROUBLESHOOTING

Hard steering

- Steering stem adjusting nut too tight
- Faulty or damaged steering head bearings/races
- Bent steering stem
- Insufficient tire pressure
- Faulty tire

Steers to one side or does not track straight

- Bent fork tube
- Bent axle
- Wheel installed incorrectly
- Unequal fork oil quantity in each fork tube
- Faulty steering head bearings
- Bent frame
- Worn wheel bearings
- Loose steering adjusting nut
- Unevenly adjusted right and left fork legs

Front wheel wobbling

- Bent rim
- Worn wheel bearings
- Bent spokes
- Faulty tire
- Insufficient tire pressure
- Axle not tightened properly
- Unbalanced tire and wheel

Wheel hard to turn

- Faulty wheel bearings
- Bent axle
- Brake drag

Soft suspension

- Weak fork springs
- Insufficient fork oil in fork
- Incorrect fork oil weight
- Insufficient tire pressure

Stiff suspension

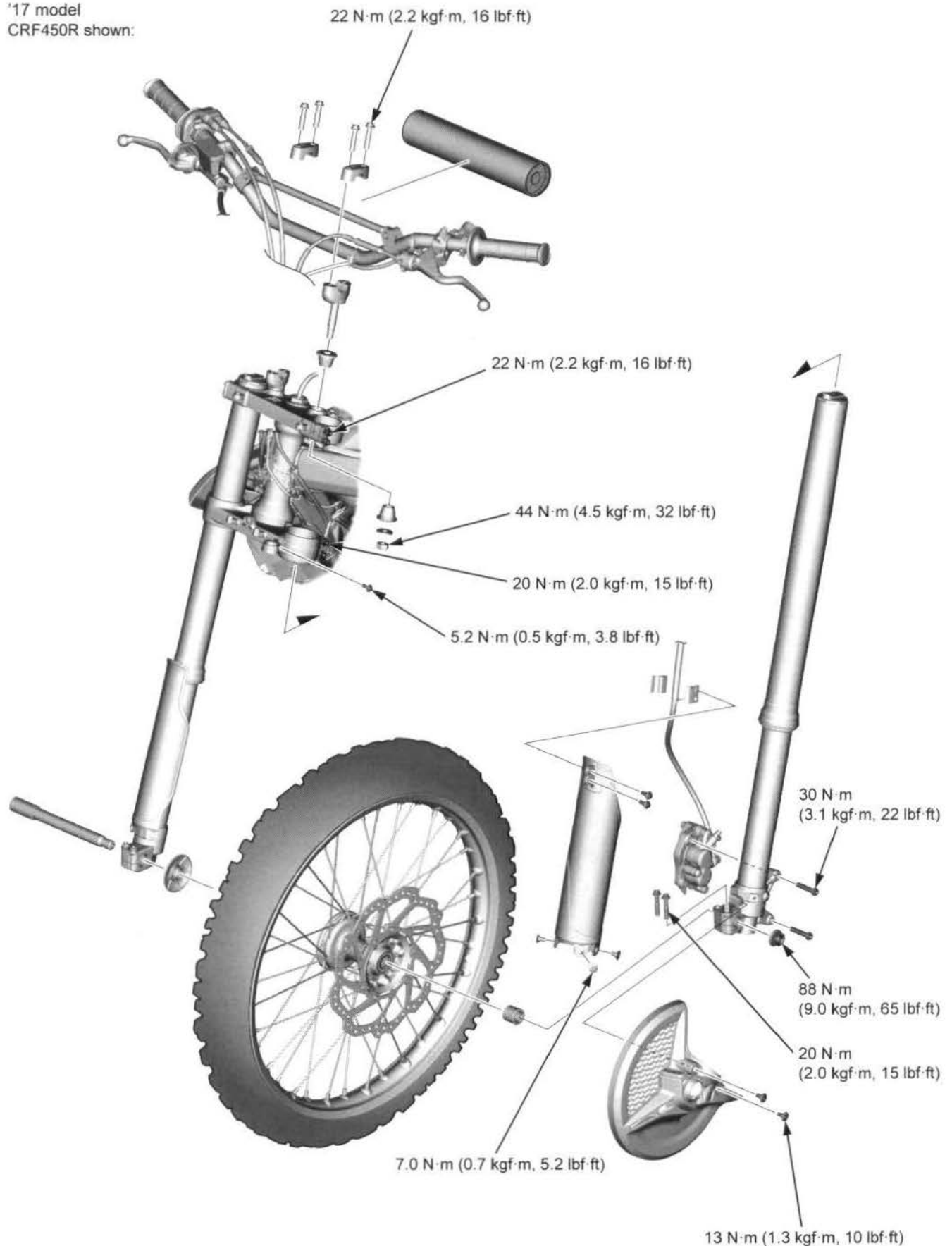
- Excessive fork oil quantity
- Fork oil viscosity too thick
- Bent or damaged fork tubes
- Clogged fork oil passage

Front suspension noise

- Insufficient fork oil in fork
- Loose fork fasteners

COMPONENT LOCATION

'17 model
CRF450R shown:



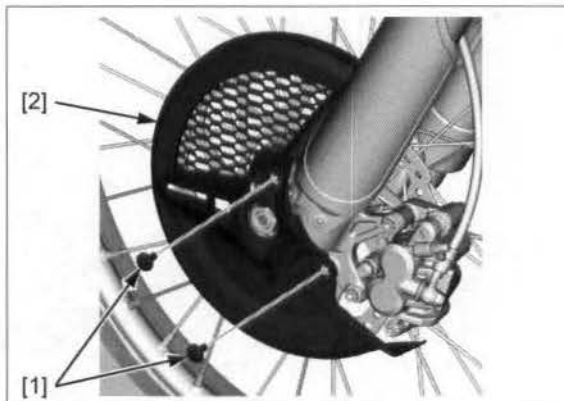
FRONT WHEEL

REMOVAL

Remove the engine guard (page 2-6).

Raise the front wheel off the ground by placing a workstand or equivalent under the engine.

Remove the bolts [1] and brake disc cover [2].



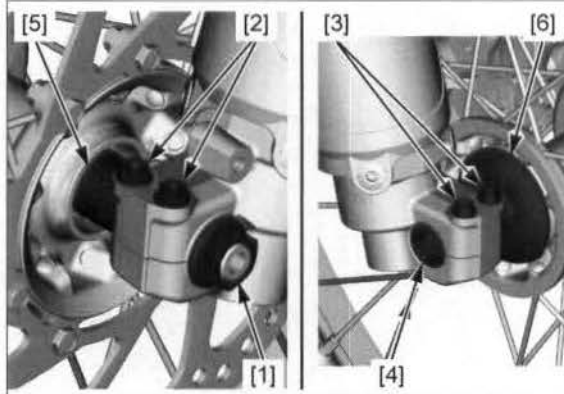
Remove the axle nut [1] and loosen the left axle holder bolts [2].

Loosen the right axle holder bolts [3].

Remove the axle [4] and front wheel.

Remove the left side collar [5] and right side collar [6] from the front wheel.

Do not operate the brake lever after removing the front 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.

- Front axle
- Spoke
- Wheel rim

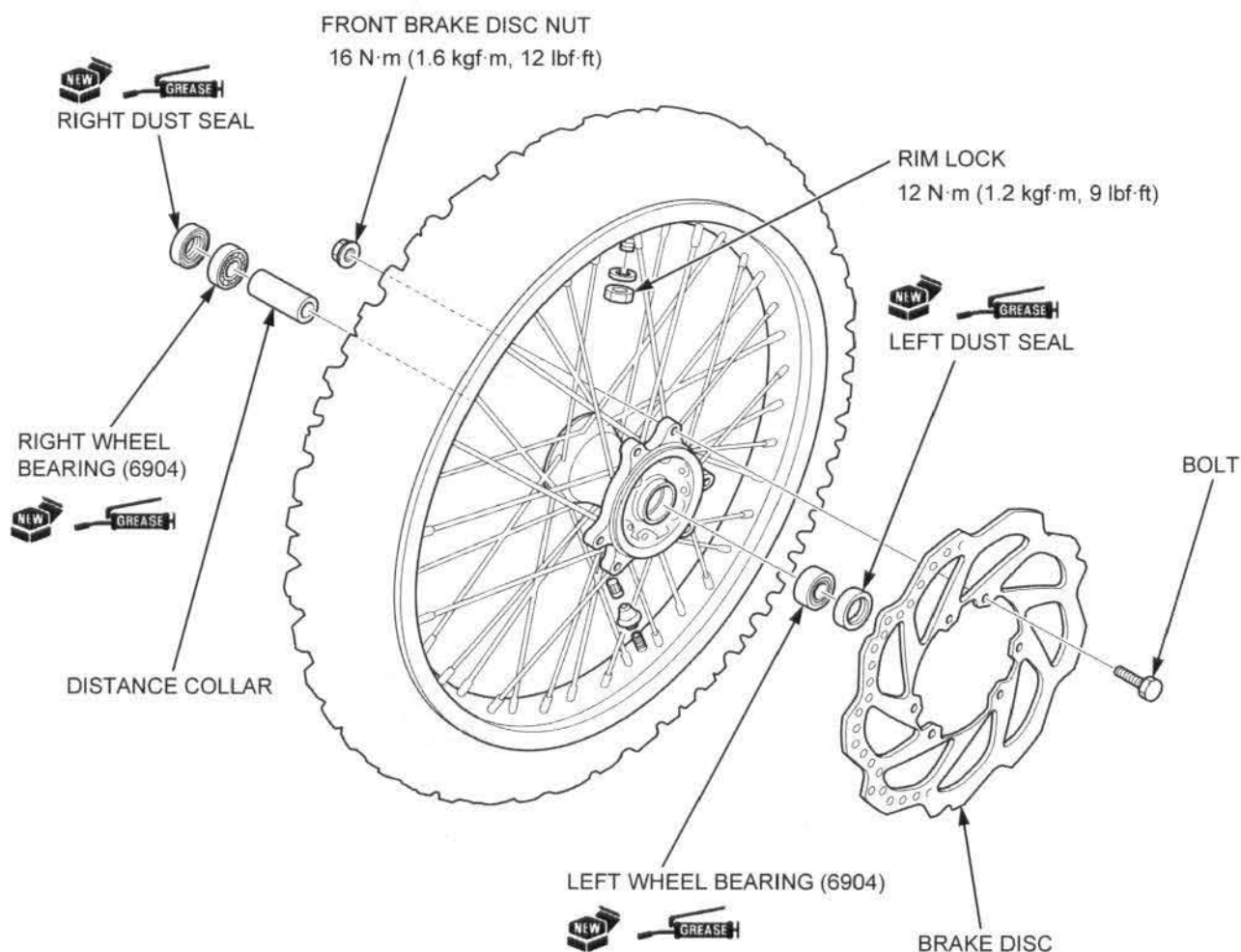
Measure each part according to FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS.

- '17 model: (page 1-8)
- After '17 model: (page 1-9)

Replace any part if it is out of service limit.

DISASSEMBLY/ASSEMBLY

- Install the front wheel dust seal until it is flush with the wheel hub surface.
- Install the front brake disc with the "⇄" marked side facing out.



WHEEL CENTER ADJUSTMENT

Place the rim on a work bench.
Place the hub 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 [1] to the side of the rim [2] is 27.0 – 29.0 mm (1.06 – 1.14 in) as shown.

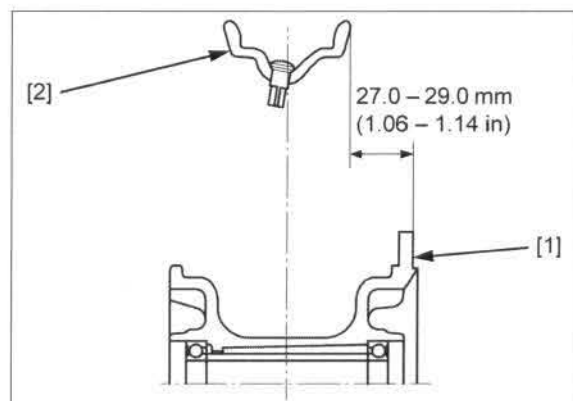
Tighten the spokes to the specified torque in a crisscross pattern in 2 or 3 steps.

TOOL:

Spoke wrench, 6.1 mm

07JMA-MR60100

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



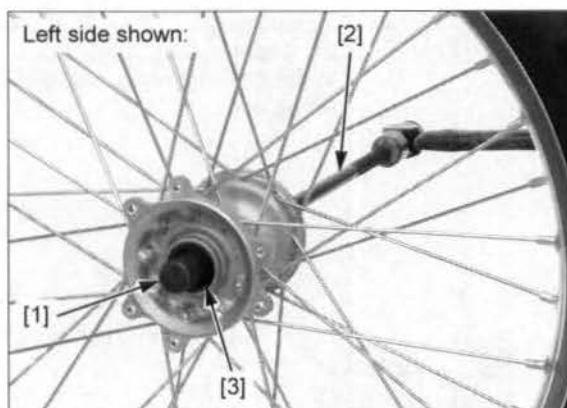
WHEEL BEARING REPLACEMENT

Replace the wheel bearings in pairs. Do not reuse old bearings.

Install the remover head [1] into the wheel bearing. From the opposite side, install the remover shaft [2] and drive the wheel bearing [3] out of the wheel hub. Remove the distance collar and drive out the other bearing.

TOOLS:

Bearing remover head, 20 mm 07746-0050600
Bearing remover shaft 07GGD-0010100



Pack each wheel bearing cavity with grease.

Replace the wheel bearings in pairs. Do not reuse old bearings.

Drive a new left wheel bearing [1] in the wheel hub until it is fully seated using special tools.

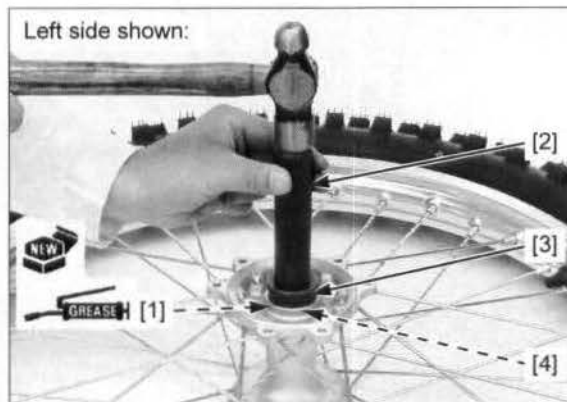
NOTE:

- Install the wheel bearings with the sealed side toward the outside.

TOOLS:

Driver [2] 07749-0010000
Attachment, 37 x 40 mm [3] 07746-0010200
Pilot, 20 mm [4] 07746-0040500

Install the distance collar into place, then drive a new right wheel bearing using the same special tools until it is seated on the collar.



INSTALLATION

Clean the clamping surface of the axle and axle holders.

Install the left side collar [1] and right side collar [2] onto the front wheel.

Install the front wheel between the fork legs so that the brake disc is positioned between the pads, being careful not to damage the pads.

Apply a thin coat of grease to the axle outer surface.

Align the surfaces of the axle and right fork leg.

Insert the axle [3] from the right side.

Install and tighten the axle nut [4] to the specified torque while holding the axle.

TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)

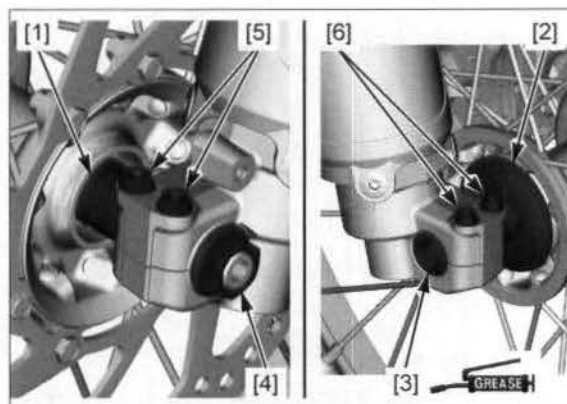
Tighten the left axle holder bolts [5] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

With the front brake applied, pump the front suspension up and down several times to seat the axle and check the front brake operation.

Be sure the fork legs are parallel, then tighten the right axle holder bolts [6] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

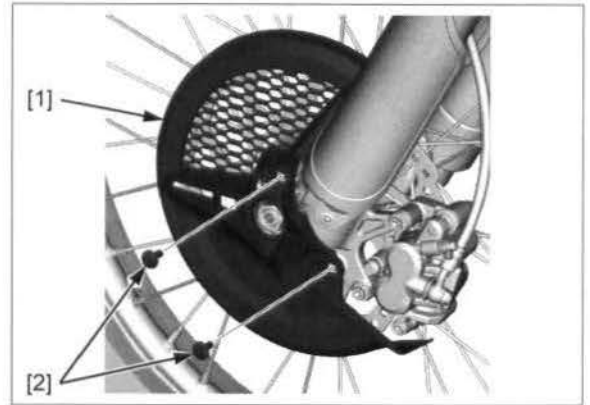


Install the brake disc cover [1] and bolts [2].

Tighten the bolts to the specified torque.

TORQUE: 13 N·m (1.3 kgf·m, 10 lbf·ft)

Install the engine guard (page 2-6).

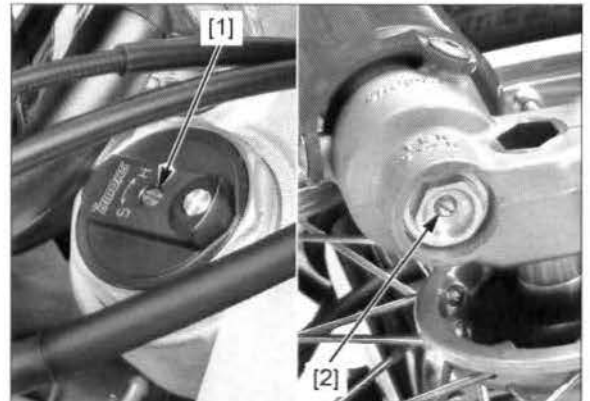


FORK

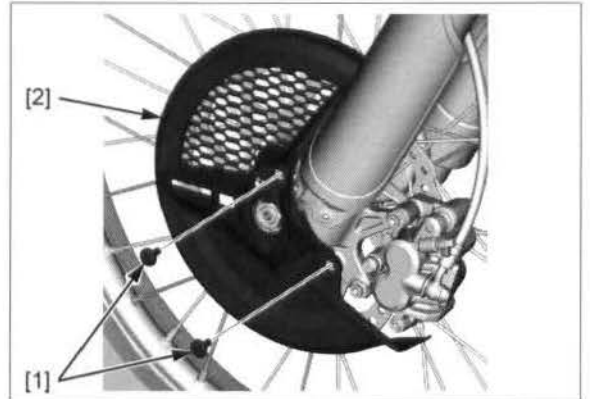
REMOVAL

Record the present positions of the compression [1] and rebound [2] damping adjuster.

Turn the compression and rebound damping adjusters counterclockwise and set them in the full soft position.



Remove the bolts [1] and brake disc cover [2].



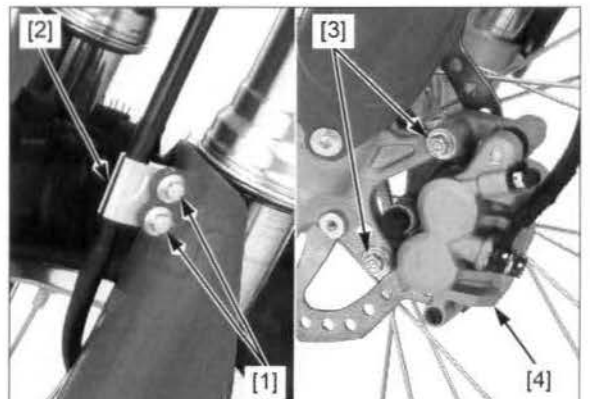
Remove the bolts [1] and brake hose clamps [2].

Remove the brake caliper mounting bolts [3] and front brake caliper/bracket assembly [4].

NOTE:

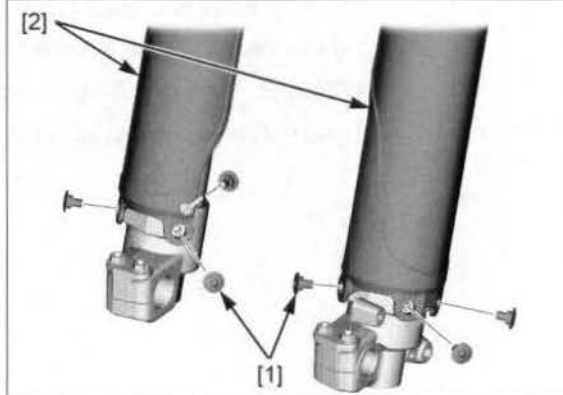
- Do not suspend the brake caliper/bracket assembly from the brake hose. Do not twist the brake hose.
- Do not operate the brake lever after removing the caliper/bracket assembly and front wheel. To do so will cause difficulty in fitting the brake disc between the brake pads.

Remove the front wheel (page 16-6).



FRONT WHEEL/SUSPENSION/STEERING

Remove the fork protector mounting bolts [1] and fork protectors [2].



When the forks are ready to be disassembled, perform the following procedure:

Remove the handlebar and holders (page 16-30).

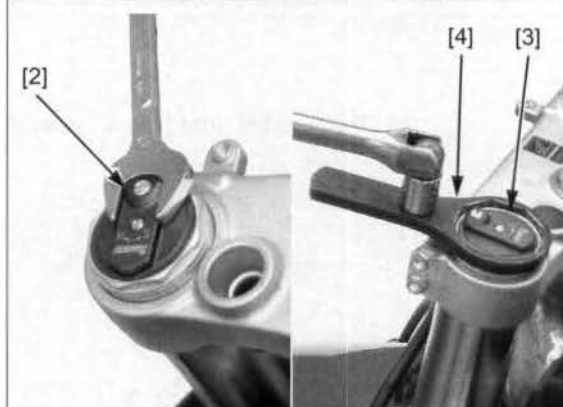
Loosen the fork top bridge pinch bolts [1].

Loosen the fork bolt [2], but do not remove it yet.

Loosen the fork damper [3] using the special tool, but do not remove it yet.

TOOL:

Lock nut wrench, 50 mm [4] 07WMA-KZ30100



Loosen the fork bottom bridge pinch bolts [2] and pull the fork leg down and out.



DISASSEMBLY

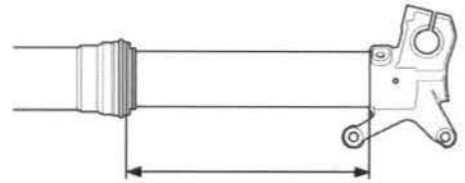
Be careful not to scratch the slide pipe and not to damage the dust seal.

Clean the fork assembly, the sliding surface of the slide pipe and bottom of the slider around the center bolt before disassembling the fork.

Measure and record the length between the axle holder and outer tube before disassembling the fork.

NOTE:

- This procedure is necessary for checking of the installation condition of the fork center bolt and lock nut when the fork assembling.

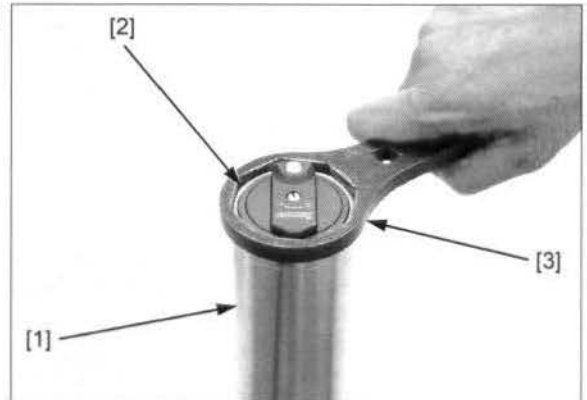


Hold the outer tube [1] and remove the fork damper [2] using the special tool from the outer tube.

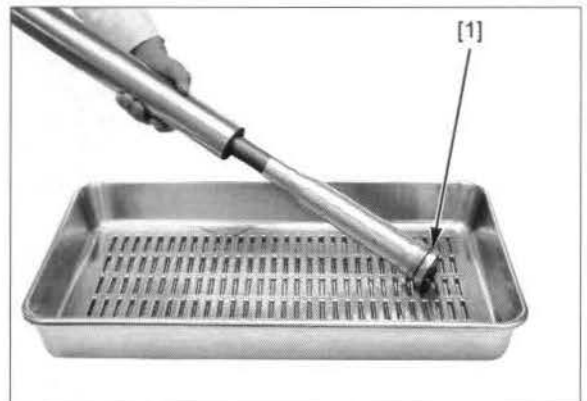
TOOL:

Lock nut wrench, 50 mm [3] 07WMA-KZ30100

Slide the outer tube down onto the axle holder.



Drain the fork oil from the inside of the fork tube and fork damper oil holes by pumping the fork several times. Remove the O-ring [1] from the fork damper.

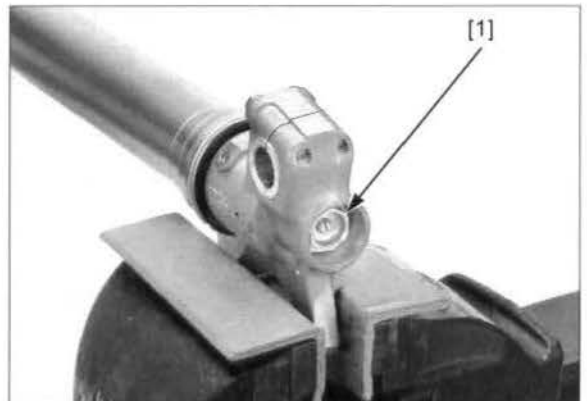


If you plan to only fork oil exchange, skip the following procedures and perform the remaining fork oil draining (page 16-22).

Do not over-tighten the vise on the axle holder.

Set the axle holder of the slide pipe in a vise with a piece of wood or soft jaws to avoid damage.

Loosen the fork center bolt [1].

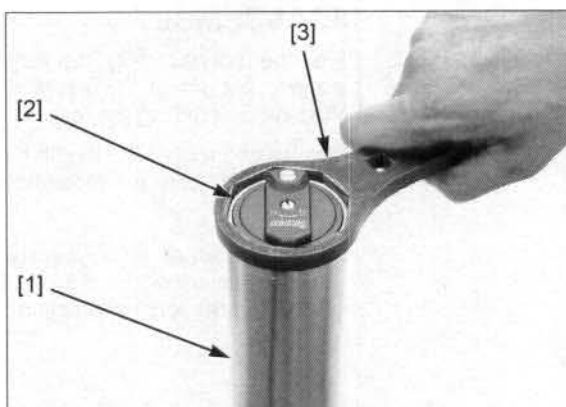


FRONT WHEEL/SUSPENSION/STEERING

Hold the outer tube [1] and temporarily install the fork damper [2] using the special tool.

TOOL:

Lock nut wrench, 50 mm [3] 07WMA-KZ30100



Be careful not to damage the piston rod.

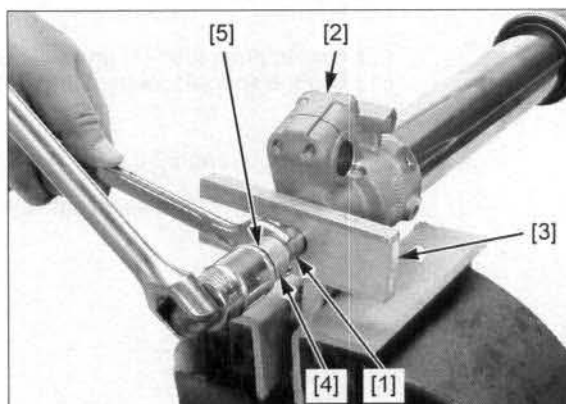
Push the outer tube until the fork center bolt lock nut [1] is fully exposed and install the special tool or mechanic's stopper tool between the axle holder [2] and fork center bolt lock nut.

TOOL:

Piston base [3] 07958-2500001

U.S.A. TOOL:

Fork rod stopper 07AMB-KZ3A100



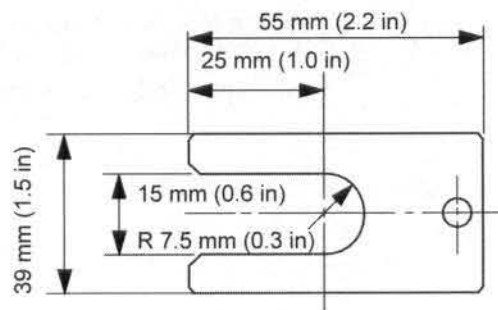
Make the mechanic's stopper tool from a thin piece of steel (2.0 mm (0.08 in) thick) as shown if you do not have a special tool.

Hold the fork center bolt lock nut using the 17 mm open end wrench and remove the fork center bolt [4] from the fork damper.

NOTE:

- Do not remove the lock nut from the fork damper piston rod. If the lock nut is removed, the piston rod will fall into the fork damper and you will not be able to reassemble the fork damper.

Remove the O-ring [5] from the fork center bolt.

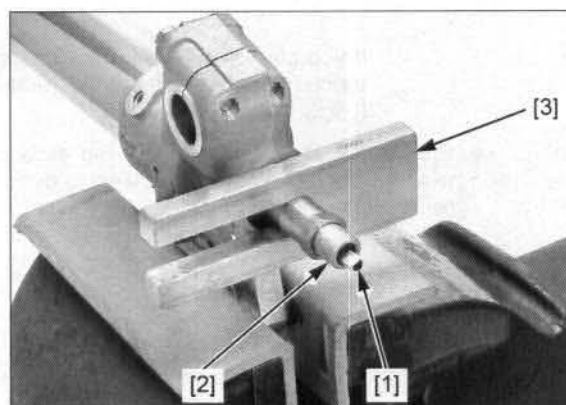


Remove the push rod [1] from the piston rod [2].

Be careful not to damage the piston rod.

Remove the piston base [3] or mechanic's stopper tool while pushing the outer tube.

Remove the fork assembly from the vice.

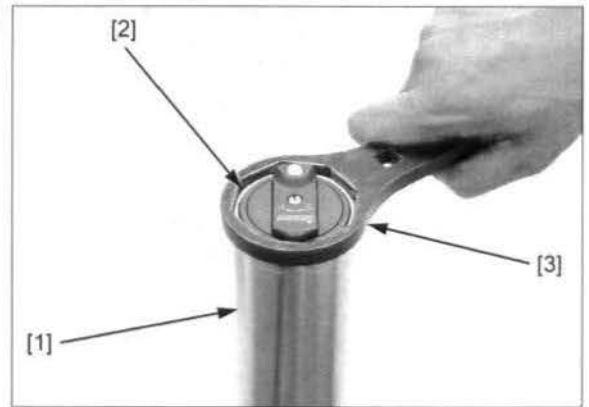


Hold the outer tube [1] and remove the fork damper [2] using the special tool from the outer tube.

TOOL:

Lock nut wrench, 50 mm [3] 07WMA-KZ30100

Slide the outer tube down onto the axle holder.

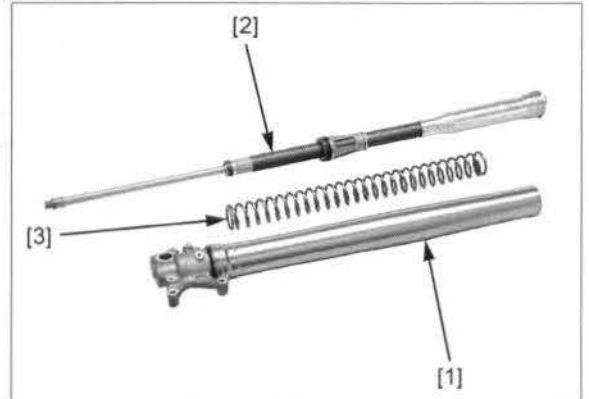


Remove the following from the fork assembly [1]:

- Fork damper assembly [2]
- Fork spring [3]

If you plan to not remove the slide pipe from the outer tube, drain the remaining fork oil in the outer tube (page 16-22).

Refer to the fork damper disassembling (page 16-14).



Be careful not to scratch the slide pipe surface.

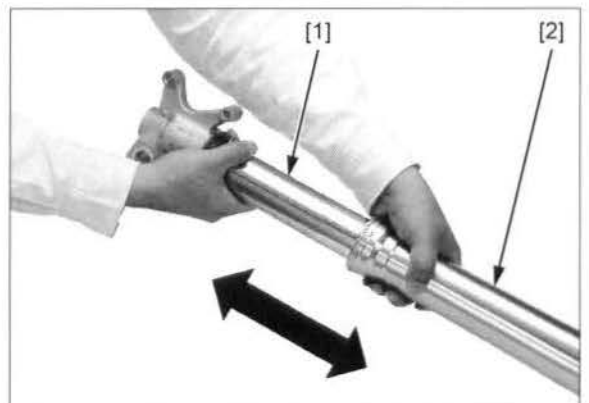
Remove the dust seal [1] and stopper ring [2].

Check that the slide pipe moves smoothly in the outer tube.

If it does not, check the slide pipe for bends or damage and slider bushings for wear or damage.



Using quick successive motions, pull the slide pipe [1] out of the outer tube [2].



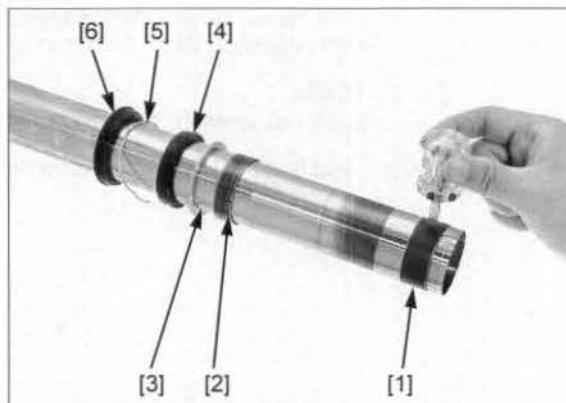
FRONT WHEEL/SUSPENSION/STEERING

Do not damage the slider bushing, especially the sliding surface. To prevent loss of tension, do not open the slider bushing more than necessary.

Carefully remove the slider bushing [1] by prying the slot with a screwdriver until the slider bushing can be pulled off by hand.

Remove the following:

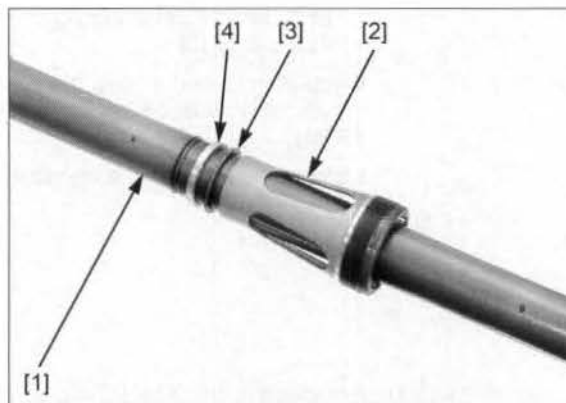
- Guide bushing [2]
- Back-up ring [3]
- Oil seal [4]
- Stopper ring [5]
- Dust seal [6]



FORK DAMPER DISASSEMBLY

Remove the following from the fork damper assembly [1]:

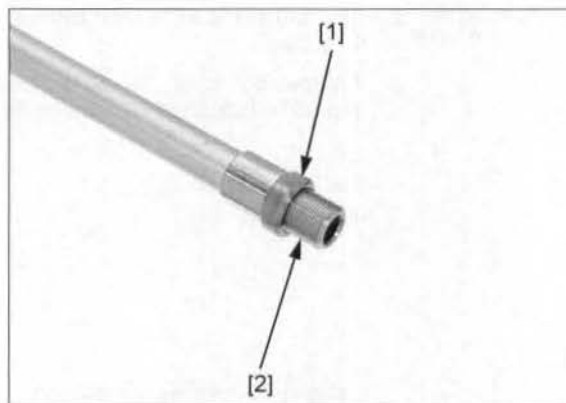
- Spring seat collar [2]
- Back-up ring [3]
- Seat stopper [4]



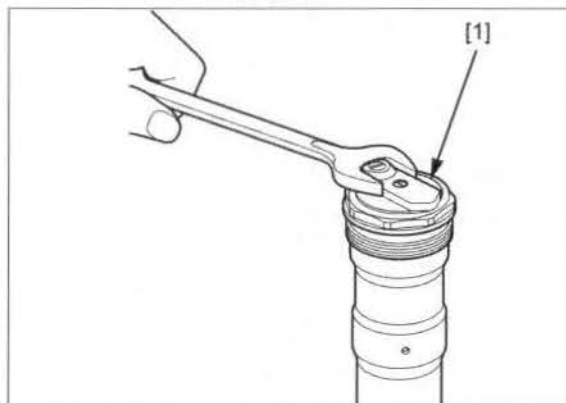
Check the fork center bolt lock nut [1] is installed on the fork damper piston rod [2] properly.

NOTE:

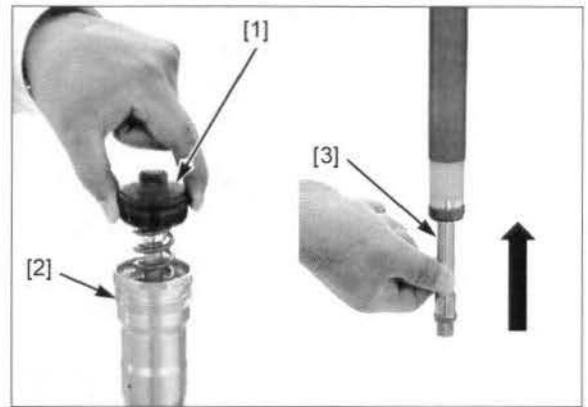
- If the lock nut was removed, the piston rod will fall into the fork damper and you will not be able to reassemble the fork damper.



Loosen the fork bolt [1].



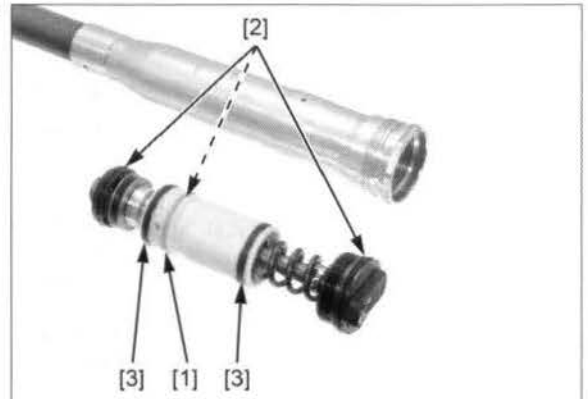
Remove the fork bolt assembly [1] from the fork damper [2] while pumping the piston rod [3] slowly.



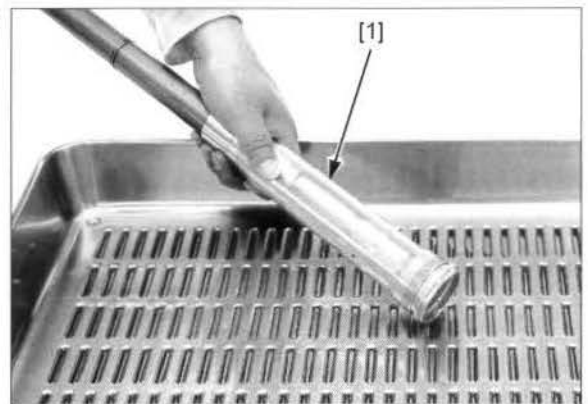
Remove the piston ring [1] and O-rings [2] from the fork bolt assembly.

NOTE:

- Do not disassemble the fork bolt assembly.
- Be careful not to damage the slider bushings [3].



Empty the fork oil from the fork damper [1] by pumping the piston rod several times.



INSPECTION

Inspect the following parts for damage, abnormal wear, bend, deformation, scoring and teflon coating wear.

- Outer tube
- Slide pipe
- Fork spring
- Spring seat collar/bushing
- Fork bolt assembly bushings/piston ring
- Fork center bolt
- Push rod
- Slider bushing/guide bushing/back-up ring
- Fork damper

Measure each part according to FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS.

- '17 model: (page 1-8)
- After '17 model: (page 1-9)

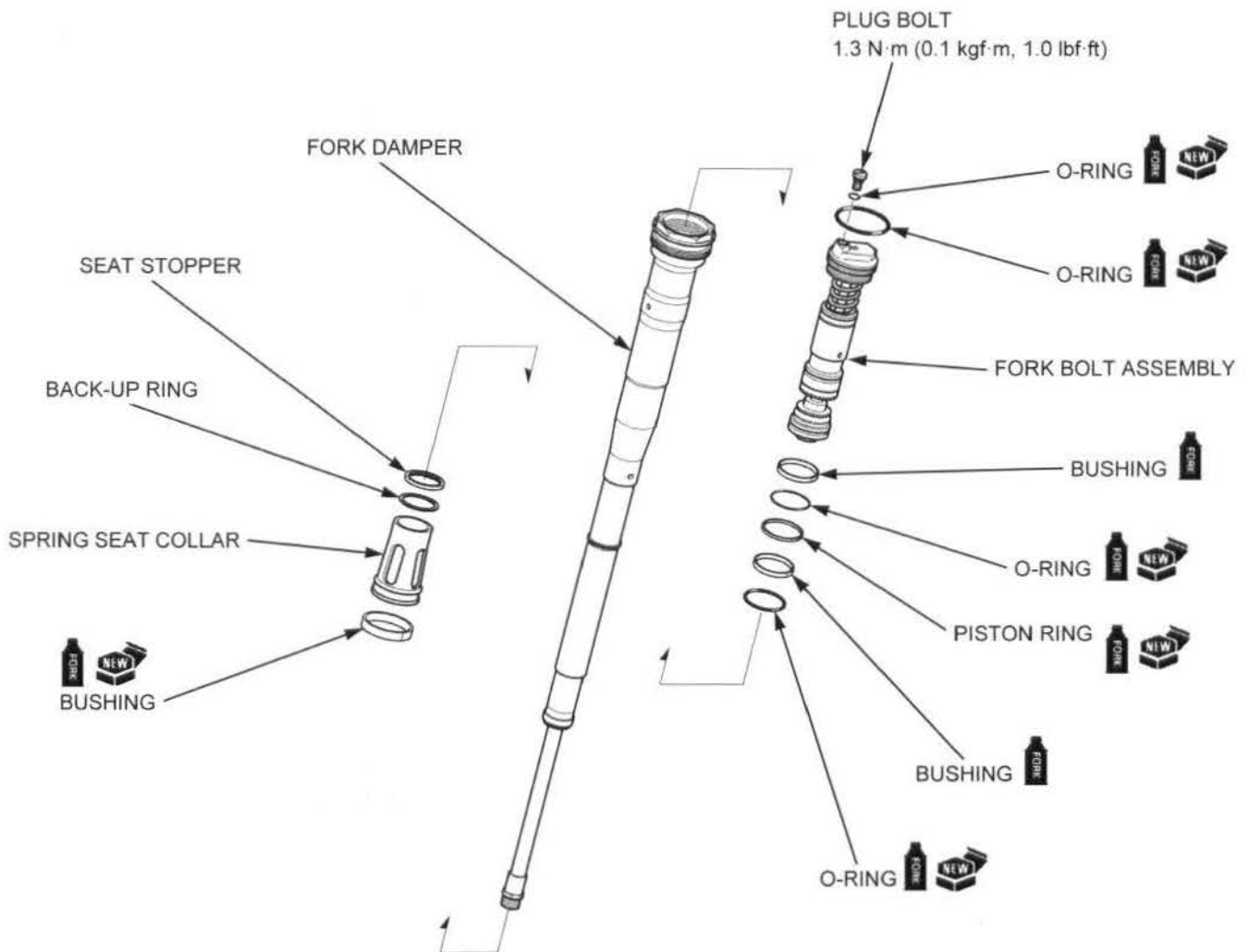
Replace any part if it is out of service limit.

Inspect the fork damper operation by pumping the piston rod.

NOTE:

- The oil seal is built into the fork damper. For this reason, you feel slightly friction when inspecting the damper operation after oil draining.
If you can not determine whether operation malfunction or oil seal friction, fill the fork damper with fork oil and recheck.

FORK DAMPER ASSEMBLY



FORK DAMPER REFILLING/ASSEMBLY

Extend the piston rod [1] to its maximum length.

Pour the recommended fork oil into the fork damper [2].

RECOMMENDED FORK OIL:

Pro Honda HP Fork Oil SS-19

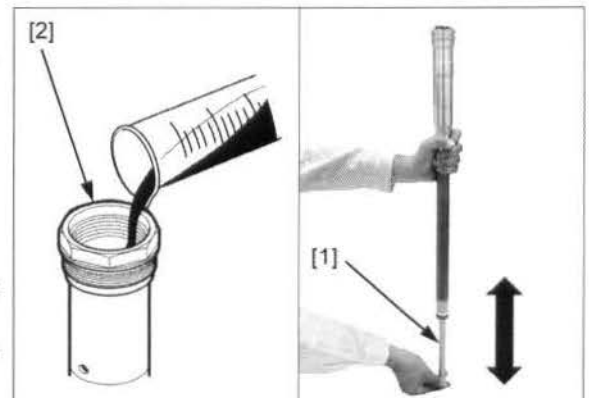
FILLING OIL CAPACITY:

248 cm³ (8.4 US oz, 8.7 Imp oz)

NOTE:

- Slightly overfill the damper as a little oil will flow out during the air bleed procedure.

Pump the piston rod slowly several times and bleed any air from the fork damper.

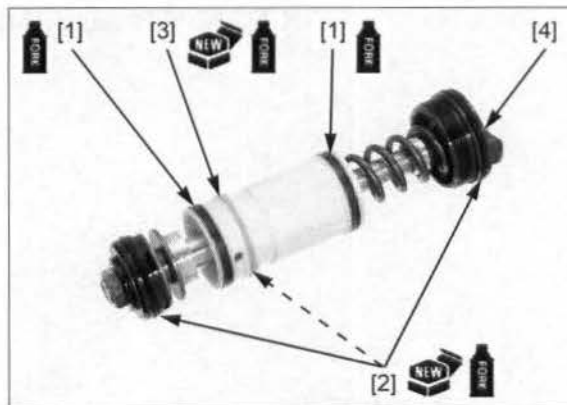


FRONT WHEEL/SUSPENSION/STEERING

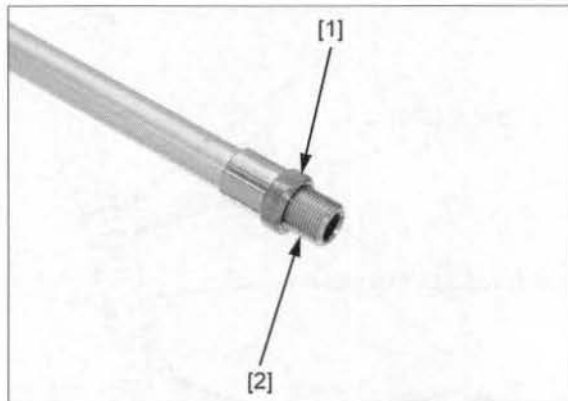
Clean the fork bolt assembly threads.

Apply recommended fork oil to the slider bushings [1], new O-rings [2] and piston ring [3].

Install new O-rings and piston ring to the fork bolt assembly [4].



Check the fork center bolt lock nut [1] is installed on the fork damper piston rod [2] properly.



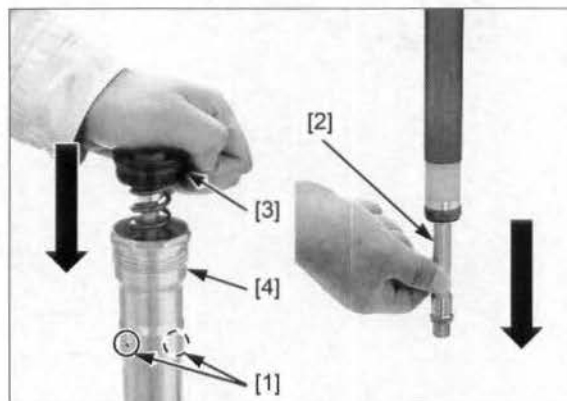
Clean the fork damper threads.

Cover the oil holes [1] of the fork damper with a shop towel and compress the piston rod [2] all the way.

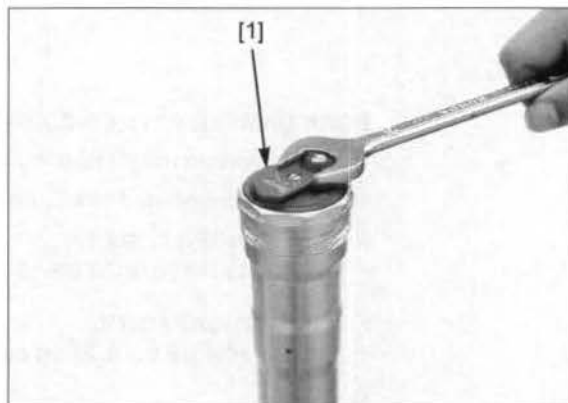
Pull the piston rod out 20 mm (0.8 in) and install the fork bolt assembly [3] into the fork damper [4].

Be careful not to damage the fork cap bushings.

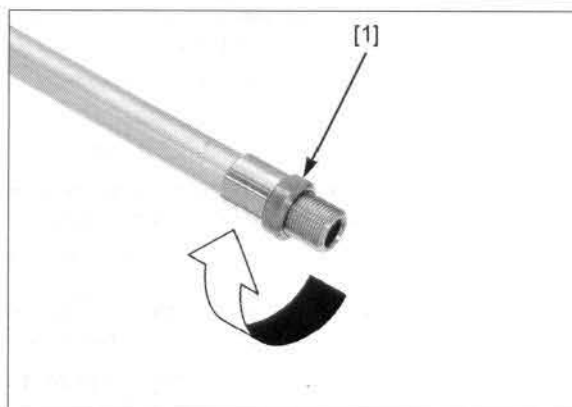
Push the fork bolt assembly in slowly while pulling the piston rod out.



Temporarily tighten the fork bolt [1].



Turn the fork center bolt lock nut [1] clockwise until it is fully seated.



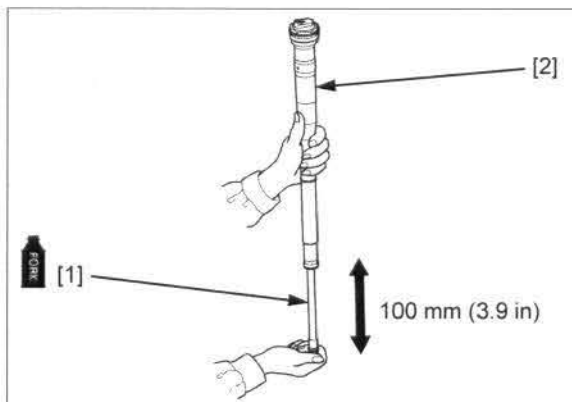
After assembling the fork damper, perform following procedure to bleed the air from the fork damper:

Make sure that the compression damping adjuster is in the full soft position.

Check the piston rod [1] sliding surface for damage.

Apply recommended fork oil to the piston rod sliding surface.

Hold the fork damper [2] in an upright position and pump the fork piston rod 100 mm (3.9 in) slowly, several times.



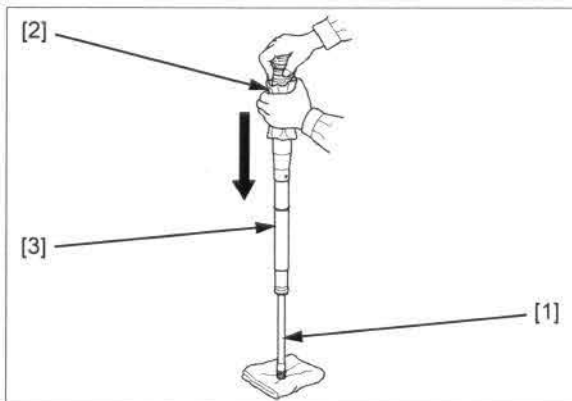
Cover the piston rod [1] end to prevent damage.

Cover the fork damper oil holes with shop towel [2].

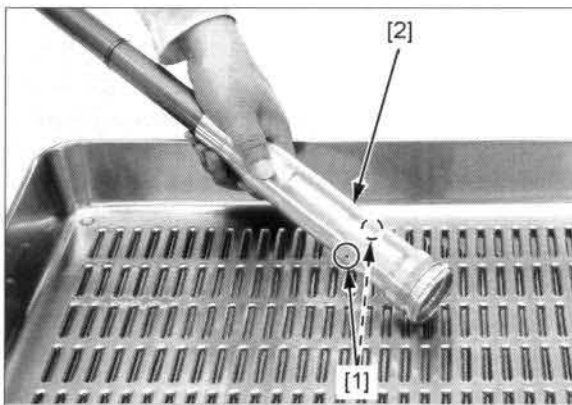
Blow out any extra fork oil in the fork damper [3] by fully stroking the piston rod.

NOTE:

- By doing this procedure, about 5 cm³ (0.2 US oz, 0.2 Imp oz) of fork oil will be drained from the fork damper through the oil holes. This will cause 243 cm³ (8.2 US oz, 8.6 Imp oz) of fork oil to be left in the fork damper.



Drain the extra fork oil from the oil holes [1] of the fork damper [2].



Be careful not to bend or damage the piston rod when the piston rod is stroked.

FRONT WHEEL/SUSPENSION/STEERING

Blow out any oil from the oil hole [1] of the fork damper [2] using compressed air.

Wipe off the oil completely from the fork damper

If you cannot use compressed air, remove the plug bolt [3] from the fork bolt assembly.

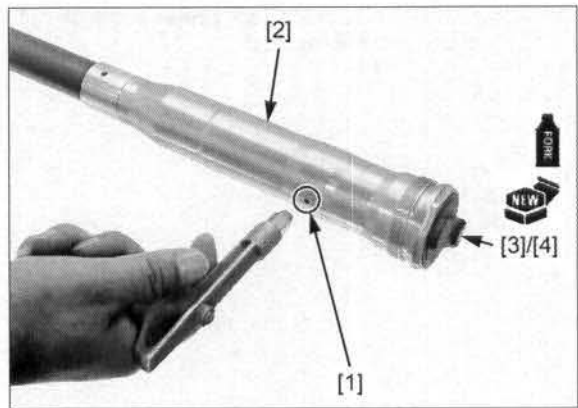
Hold the fork damper upside down for 10 minutes and drain the oil from the fork damper spring chamber.

Apply fork oil to a new O-ring and install it to the plug bolt.

Install the plug bolt with the O-ring [4].

Tighten the plug bolt to the specified torque.

TORQUE: 1.3 N·m (0.1 kgf·m, 1.0 lbf·ft)



FORK DAMPER OPERATION INSPECTION

After air bleeding, perform following procedure to inspect the fork damper operation:

Make sure that the compression damping adjuster is in the full soft position.

Check the piston rod [1] sliding surface for damage.

Apply recommended fork oil to the piston rod sliding surface.

Cover the piston rod end to prevent damage.

Fully stroke the piston rod by pushing down the fork damper [2].

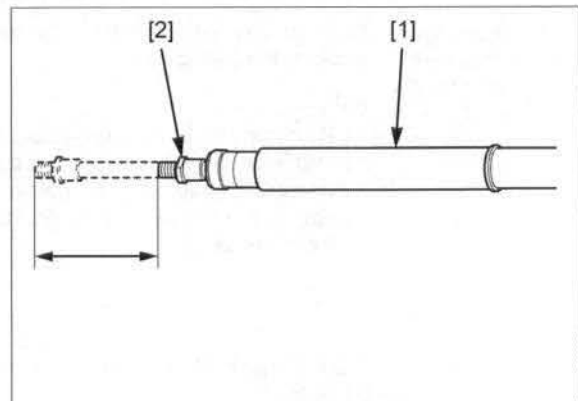
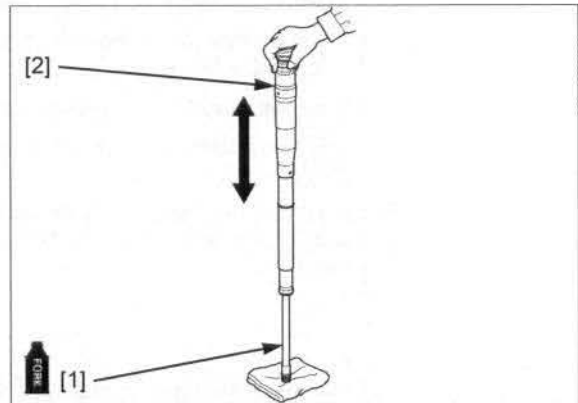
Check the piston rod for smooth operation.

If the piston rod operation is not smooth, check the piston rod for bends or damage.

Hold the fork damper [1] on level ground while the piston rod [2] is fully extended and compressed by hand.

Release the piston rod then check that it extends to its maximum length.

If the piston rod does not extend to maximum, bleed air in the fork damper again (page 16-19).



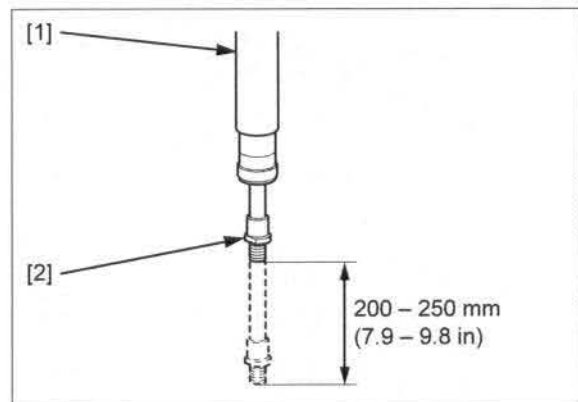
Wipe off any oil completely from the fork damper [1].

Compress the piston rod [2] 200 – 250 mm (7.9 – 9.8 in) from fully extended and hold the fork damper in an upright position for 10 minutes.

There should be no oil leaking from the fork damper and piston rod.

If oil leaks from the fork damper or piston rod, replace the fork damper assembly.

Hold the fork damper on level ground and release the piston rod, then check that the piston rod extends to its maximum length.

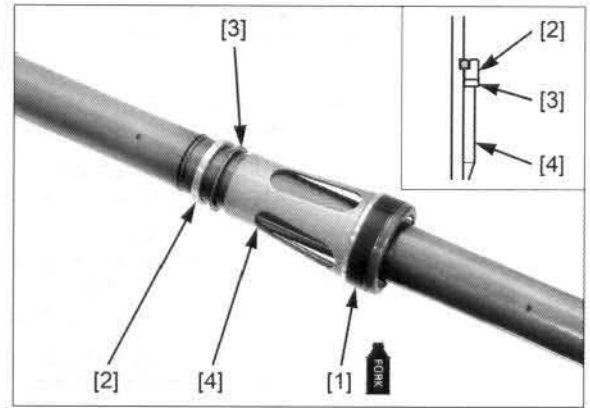


Be careful not to bend or damage the piston rod when the piston rod is stroked.

Apply recommended fork oil to the slider bushing [1].

Install the back-up ring with its black coated side facing the seat stopper.

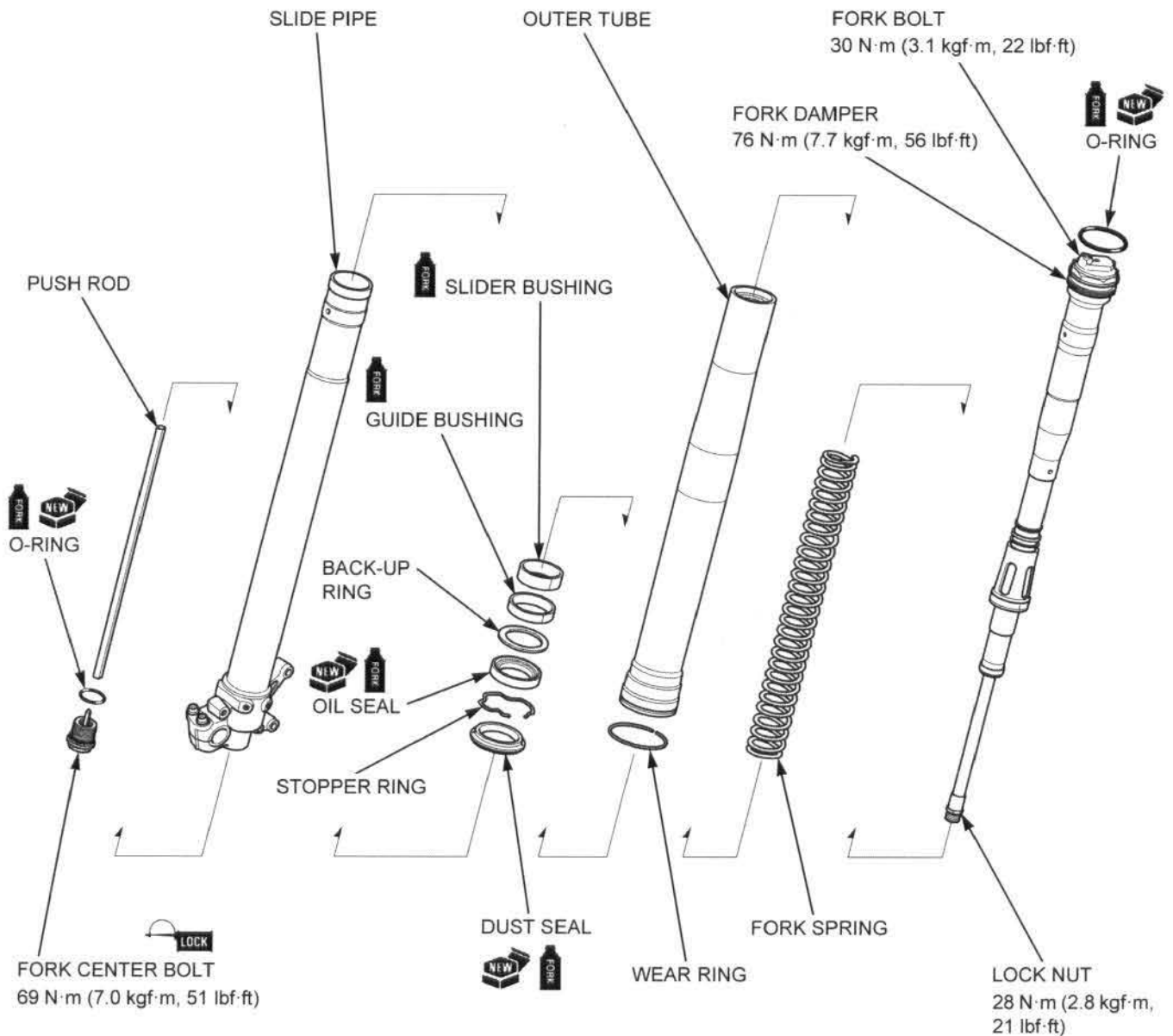
Install the seat stopper [2], back-up ring [3] and spring seat collar [4] to the fork damper in the shown direction.



ASSEMBLY

NOTE:

- Before assembly, wash all parts with a high flash point or non-flammable solvent and wipe them dry.



PREPARATION FOR FORK OIL FILLING (WHEN THE FORK DAMPER AND SPRING IS REMOVED)

If the fork damper and spring is removed and the outer tube and slide pipe have not been disassembled, perform the following procedure:

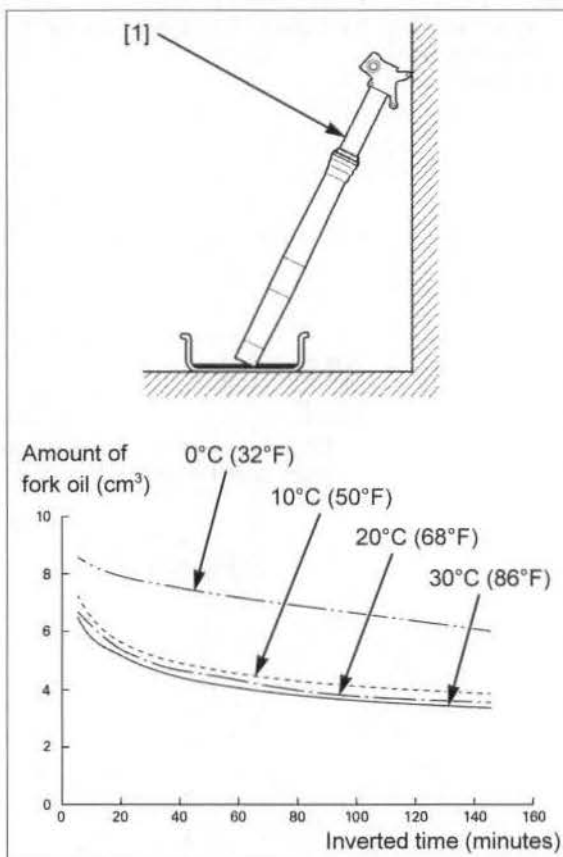
Place the fork [1] upside down and drain the fork oil from the inside of the outer tube and slide pipe.

By standing time and temperature, the amount of remaining oil in the fork is varied. For more details, refer to the following table (for example, the amount of remaining oil is 5.4 cm³ at 20°C/ 68°F, for 20 minutes).

Amount of remaining fork oil after draining (The fork damper and spring is removed) unit: cm³

		minutes							
		5	10	20	35	55	85	145	
°C/F	30/86	6.5	5.7	5.2	4.5	4.1	3.7	3.3	
	20/68	6.7	6.2	5.4	4.7	4.4	3.8	3.5	
	10/50	7.3	6.4	5.6	5.0	4.6	4.2	3.8	
	0/32	8.6	8.2	7.9	7.6	7.3	6.8	6.0	

After oil draining, install the fork damper and spring (page 16-24) and fill the fork with recommended fork oil.



PREPARATION FOR FORK OIL FILLING (WHEN THE FORK DAMPER IS NOT REMOVED)

If the fork damper has not been removed from the fork (only fork oil exchange), perform the following procedure:

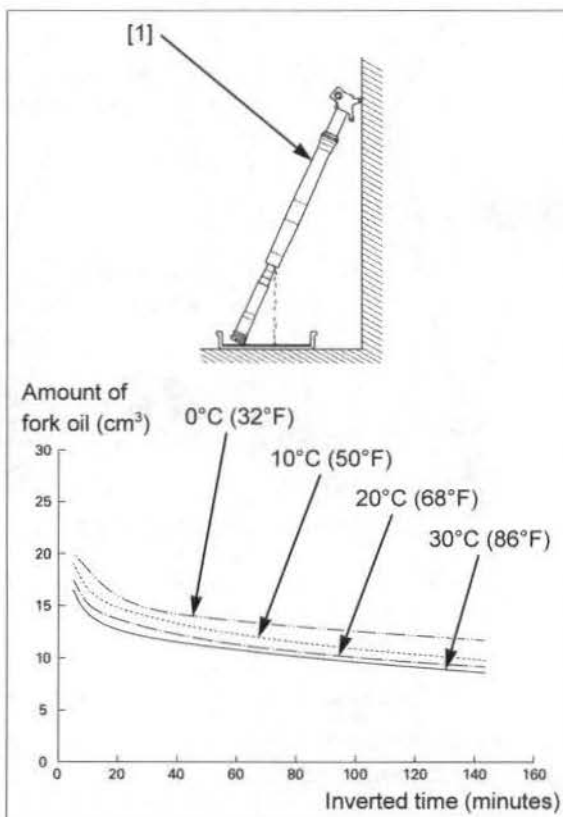
Place the fork [1] upside down and drain the fork oil from the fork inside.

By standing time and temperature, the amount of remaining oil in the fork is varied. For more details, refer to the following table (for example, the amount of remaining oil is 13.7 cm³ at 20°C/ 68°F, for 20 minutes).

Amount of remaining fork oil after draining (The fork damper is not removed) unit: cm³

		minutes							
		5	10	20	35	55	85	145	
°C/F	30/86	16.5	14.1	12.7	11.8	11.0	10.1	8.6	
	20/68	17.4	15.0	13.7	12.6	11.5	10.5	9.1	
	10/50	18.9	16.5	14.8	13.7	12.5	11.4	9.8	
	0/32	20.0	18.4	15.9	14.5	13.7	13.0	11.7	

After oil draining, fill the fork with recommended fork oil (page 16-27) and assemble the fork.



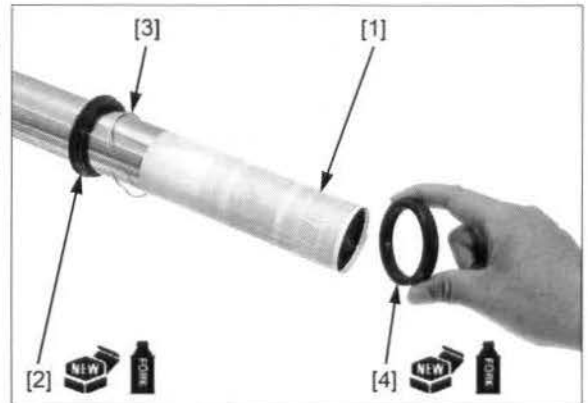
FORK ASSEMBLY

Wrap the end of the slider with tape [1].
Coat new fork dust seal and oil seal lips with recommended fork oil.

Install the dust seal [2] and stopper ring [3] onto the slide pipe.

Install the oil seal [4] onto the slide pipe with its marked side facing the dust seal.

Remove the tape from the end of the slide pipe.

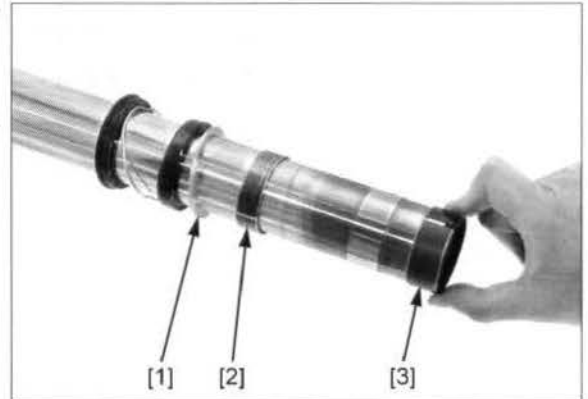


Be careful not to damage the slider bushing coating. Do not open the slider bushing more than necessary.

Install the back-up ring [1], guide bushing [2] and slider bushing [3].

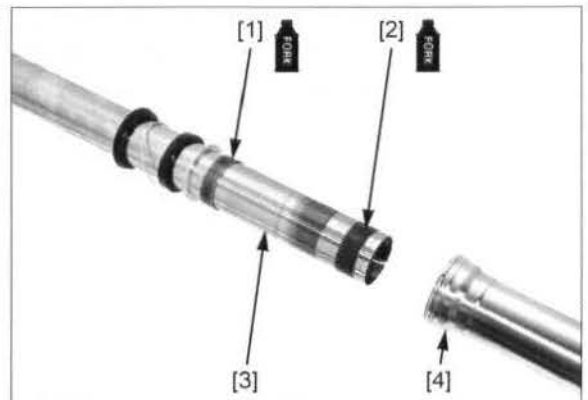
NOTE:

- Remove the burrs from the bushing mating surface, being careful not to peel off the coating.



Coat the guide bushing [1] and slider bushing [2] with recommended fork oil.

Install the slide pipe [3] into the outer tube [4].

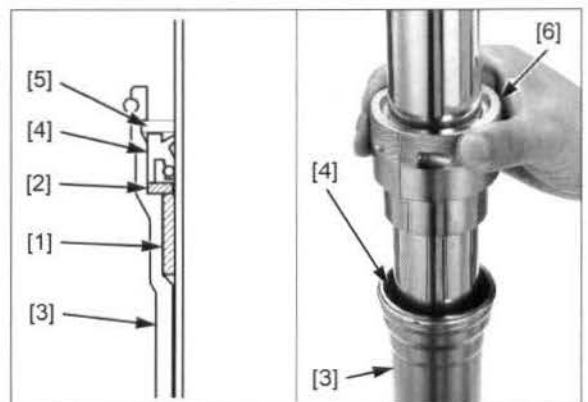


Drive in the guide bushing [1] together with the back-up ring [2] into the outer tube [3] using the special tool. Drive the oil seal [4] into the outer tube until the stopper ring groove [5] is visible using the special tool.

TOOL:

Fork seal driver, 49 mm [6]

070MD-KRN0100 or
070MD-KRNA100
(U.S.A. only)



FRONT WHEEL/SUSPENSION/STEERING

Install the stopper ring [1] into the groove of the outer tube securely.

Drive the dust seal [2] into the outer tube using the special tool.

TOOL:

Fork seal driver, 49 mm [3]

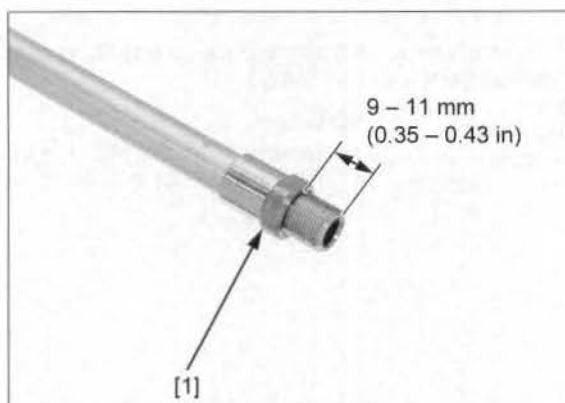
070MD-KRN0100 or
070MD-KRNA100
(U.S.A. only)



Tighten the fork center bolt lock nut [1] fully and make sure that the length between the lock nut end and piston rod end is in the standard value.

STANDARD: 9 – 11 mm (0.35 – 0.43 in)

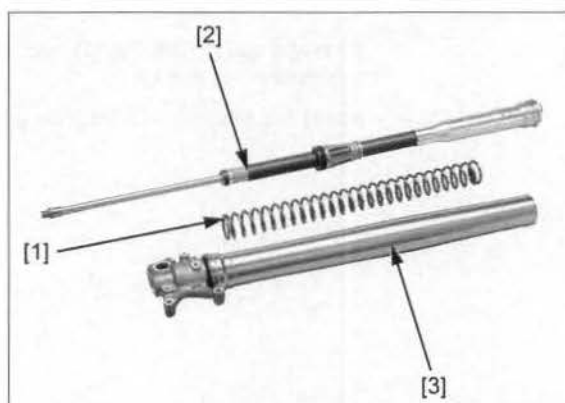
Wipe off any oil completely from the fork damper.



Blow out the oil off completely from the fork spring and damper.

Put the fork spring [1] on the fork damper [2].

Put the fork damper/spring into the fork assembly [3].

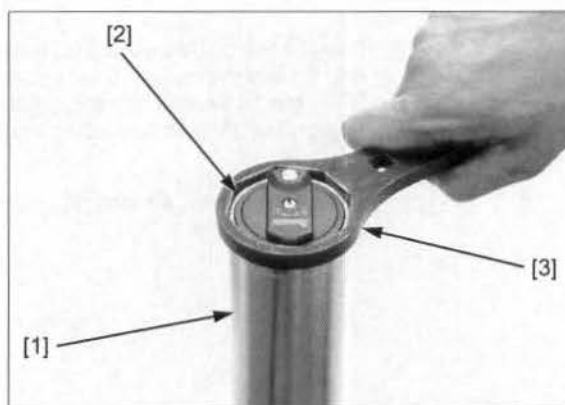


Hold the outer tube [1] and temporarily tighten the fork damper [2] using the special tool.

TOOL:

Lock nut wrench, 50 mm [3]

07WMA-KZ30100



Do not over-tighten the vise on the axle holder.

Set the axle holder [1] of the slide pipe in a vise with pieces of wood or soft jaws to avoid damage.

Be careful not to damage the piston rod.

Push the outer tube until the fork center bolt lock nut [2] is fully exposed and install the piston base or mechanic's stopper tool between the axle holder and lock nut.

TOOL:

Piston base [3]

07958-2500001

U.S.A. TOOL:

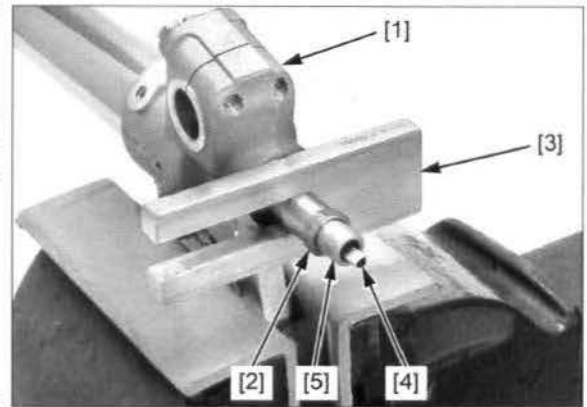
Fork rod stopper

07AMB-KZ3A100

Install the push rod [4] into the piston rod [5] until it stops.

NOTE:

- Check the push rod installation by turning the push rod right and left.



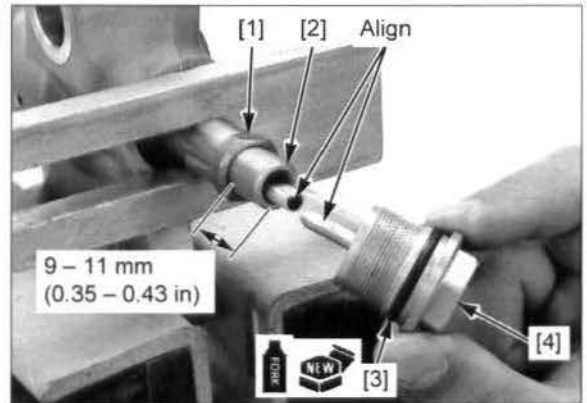
Recheck the length between the fork center bolt lock nut [1] end and piston rod [2] end is in the standard value.

STANDARD: 9 – 11 mm (0.35 – 0.43 in)

Apply recommended fork oil to a new O-ring [3] and install it to the center bolt [4].

Install the center bolt to the piston rod by aligning the each flat-side of the center bolt adjusting rod and push rod.

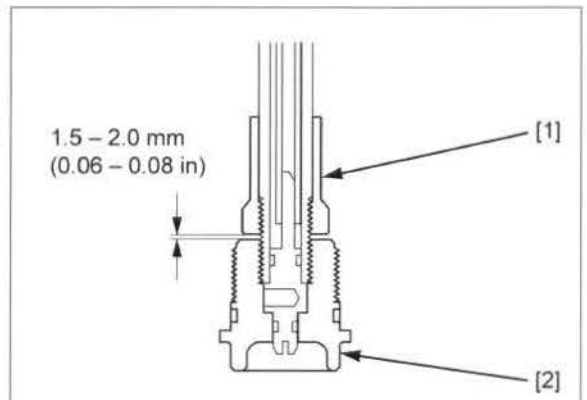
Tighten the center bolt fully by hand.



Measure the clearance between the fork center bolt lock nut [1] and fork center bolt [2].

STANDARD: 1.5 – 2.0 mm (0.06 – 0.08 in)

If the clearance is out of specification, reinstall the lock nut and center bolt.



Tighten the fork center bolt lock nut [1] by hand until it touches the fork center bolt [2].

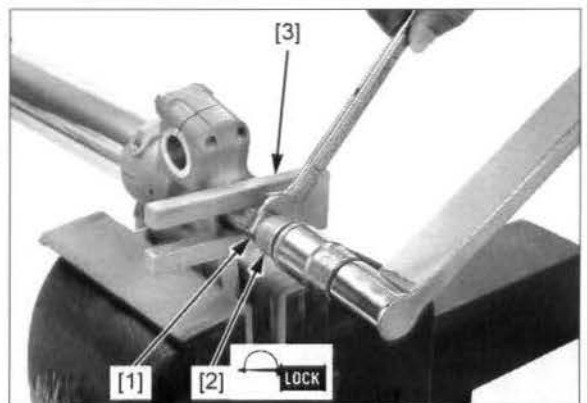
Tighten the lock nut to the specified torque.

TORQUE: 28 N·m (2.9 kgf·m, 21 lbf·ft)

Clean and apply locking agent to the center bolt threads.

Be careful not to damage the piston rod.

Remove the piston base [3] or mechanic's stopper tool while pushing the outer tube.

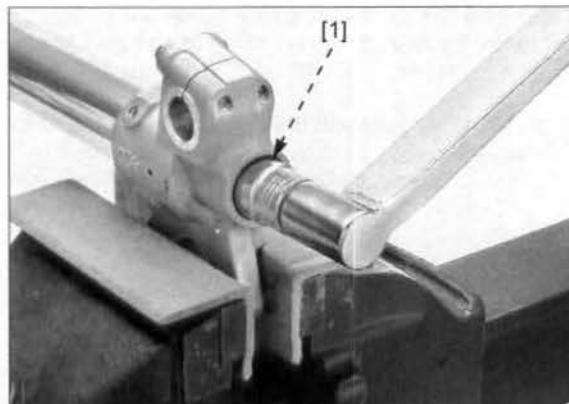


FRONT WHEEL/SUSPENSION/STEERING

Install the fork center bolt [1] into the axle holder and tighten it to the specified torque.

TORQUE: 69 N·m (7.0 kgf·m, 51 lbf·ft)

Remove the fork from the vice.



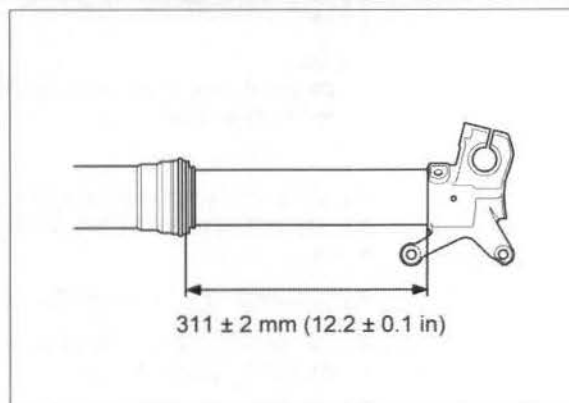
Measure the length between the axle holder and outer tube.

Compare the length at assembly and disassembly; they should be same length.

STANDARD: 311 ± 2 mm (12.2 ± 0.1 in)

If the length at assembly is longer than at disassembly, check the fork center bolt and fork center bolt lock nut installation.

Remove the fork damper from the outer tube.



Hold the outer tube [1] and remove the fork damper [2] from the outer tube using the special tool.

TOOL:

Lock nut wrench, 50 mm [3] 07WMA-KZ30100

Fill the recommended fork oil into the outer tube.

RECOMMENDED FORK OIL:

Pro Honda HP Fork Oil SS-19

STANDARD FORK OIL CAPACITY:

CRF450R:

'17 model: 352 cm³ (11.9 US oz, 12.4 Imp oz)

After '17 model: 349 cm³ (11.8 US oz, 12.3 Imp oz)

CRF450RX:

'17 model: 350 cm³ (11.8 US oz, 12.3 Imp oz)

After '17 model: 351 cm³ (11.9 US oz, 12.4 Imp oz)

If you did not disassemble the fork, calculate the amount of remaining oil in the fork then subtract this amount from the standard fork oil capacity to determine how much fork oil to use.

The amount of remaining oil in the fork is refer to below:

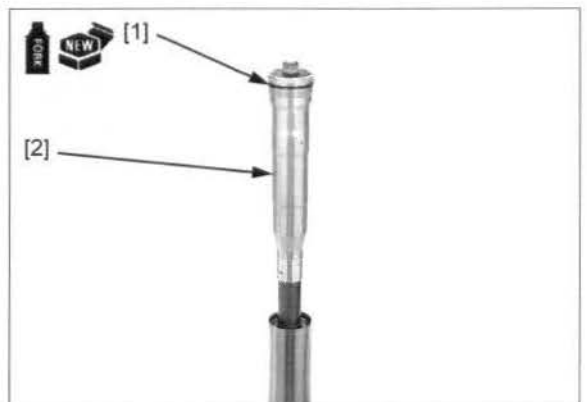
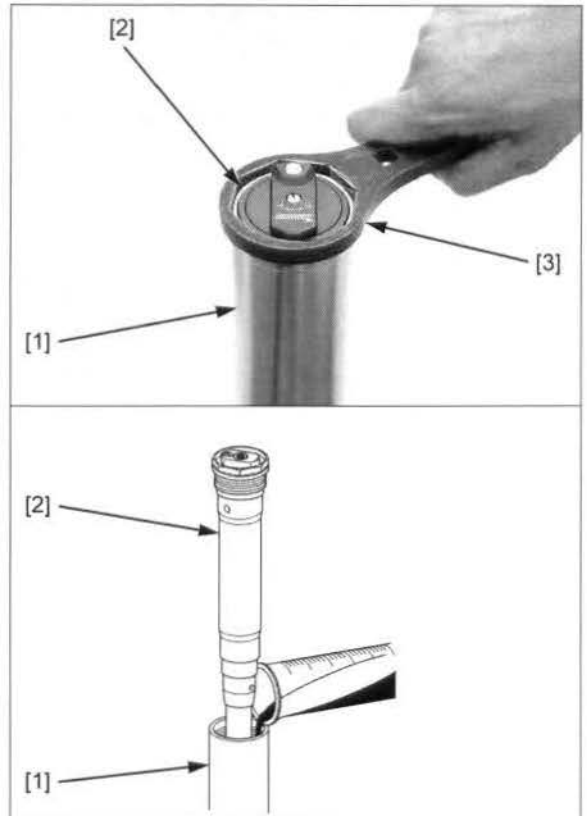
- When the fork damper and spring were removed (page 16-22)
- When the fork damper was not removed (only fork oil exchange) (page 16-22)

You can adjust the fork oil capacity in the range of below:

Except After '17 model CRF450R:		
Maximum fork oil capacity:		
387 cm ³ (13.1 US oz, 13.6 Imp oz)	Slightly stiffer (near full compression)	
Minimum fork oil capacity:		
302 cm ³ (10.2 US oz, 10.6 Imp oz)	Slightly softer (near full compression)	

After '17 model CRF450R:		
Maximum fork oil capacity:		
381 cm ³ (12.9 US oz, 13.4 Imp oz)	Slightly stiffer (near full compression)	
Minimum fork oil capacity:		
296 cm ³ (10.0 US oz, 10.4 Imp oz)	Slightly softer (near full compression)	

Apply recommended fork oil to a new O-ring [1] and install it to the fork damper [2].

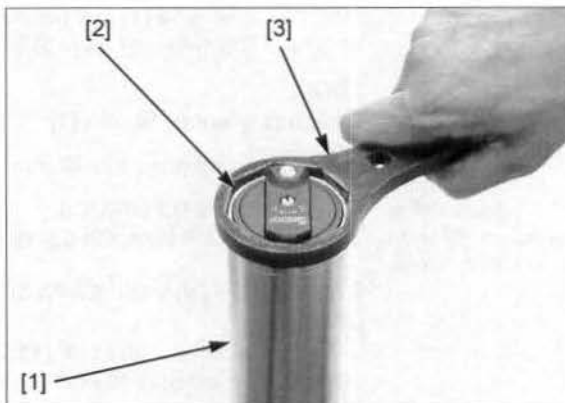


FRONT WHEEL/SUSPENSION/STEERING

Pull up the outer tube [1] slowly and temporarily tighten the fork damper [2] using the special tool.

TOOL:

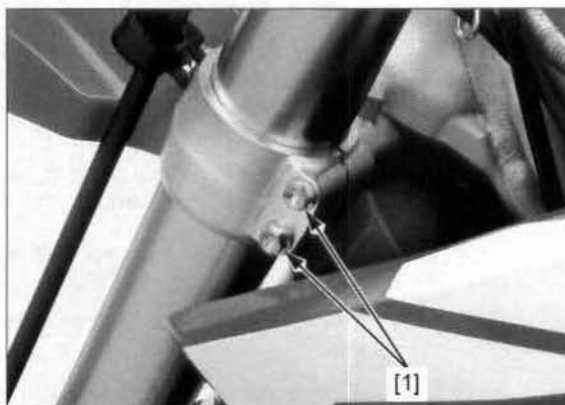
Lock nut wrench, 50 mm [3] 07WMA-KZ30100



INSTALLATION

Install the fork leg and tighten the bottom bridge pinch bolts [1] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)



When the fork damper is removed, tighten the fork damper [1] to the specified torque using the special tool.

TOOL:

Lock nut wrench, 50 mm [2] 07WMA-KZ30100

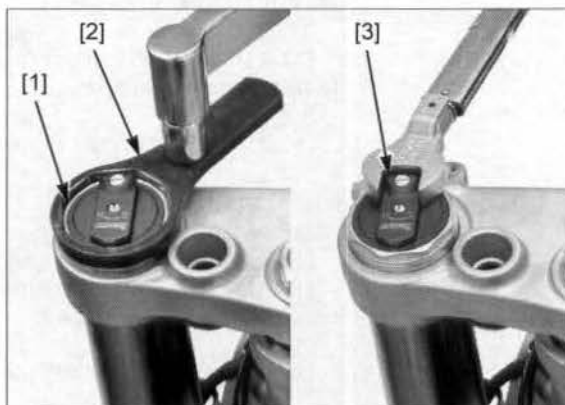
TORQUE:

Actual: 76 N·m (7.7 kgf·m, 56 lbf·ft)

Indicated: 69 N·m (7.0 kgf·m, 51 lbf·ft)

When the fork bolt is removed, tighten the fork bolt [3] to the specified torque using the special tool.

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)

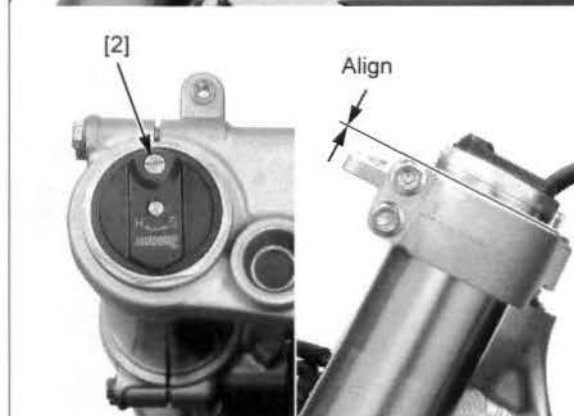


Refer to torque wrench reading information in "SERVICE INFORMATION" (page 16-2).

Loosen the bottom bridge pinch bolts [1].

Position the fork outer tubes so the plug bolts [2] are in position forward.

Align the top surface of the top bridge with the outer tube groove as shown.



Tighten the bottom bridge pinch bolts [1] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

Tighten the top bridge pinch bolts [2] to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

NOTICE

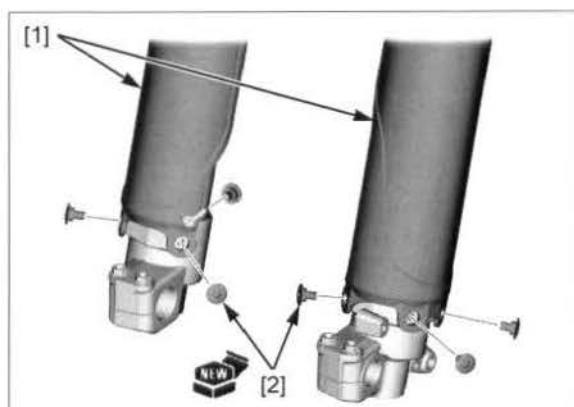
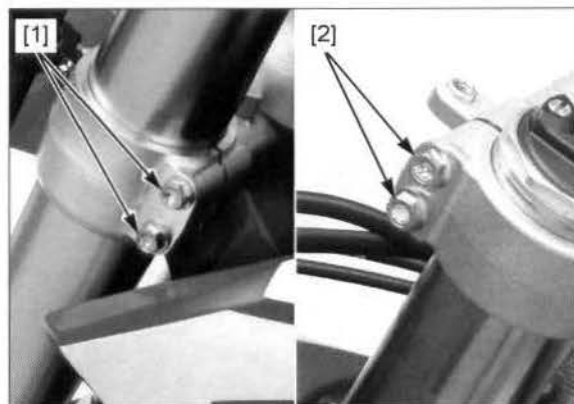
Over-tightening the pinch bolts can deform the outer tube. A deformed outer tube must be replaced.

Adjust the front fork air pressure to atmospheric pressure (page 3-29).

Install fork protectors [1] and new fork protector mounting bolts [2].

Tighten the fork protector mounting bolts to the specified torque.

TORQUE: 7.0 N·m (0.7 kgf·m, 5.2 lbf·ft)



FRONT WHEEL/SUSPENSION/STEERING

Temporarily install the front wheel.

Clean the threads of the brake caliper mounting bolts and apply locking agent to the bolt threads. Install the brake caliper mounting bolts [1] and front brake caliper/bracket assembly [2]. Tighten the front brake caliper mounting bolts to the specified torque.

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)

Install the brake hose clamp [3] and bolts [4]. Tighten the bolts securely.

NOTE:

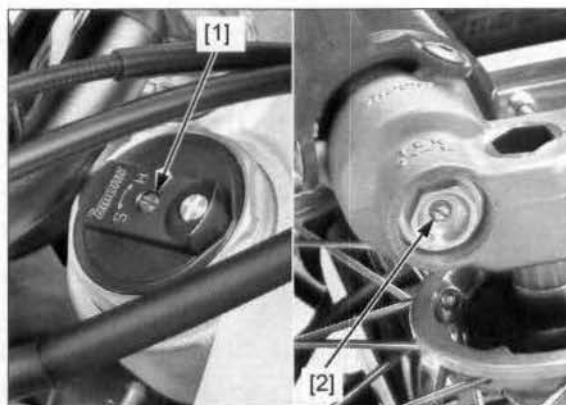
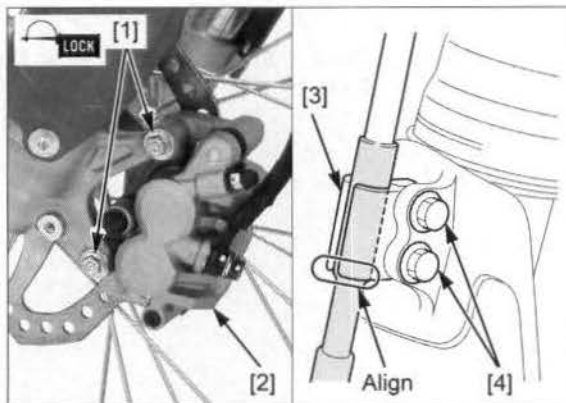
- Align the brake hose protector end with the hose clamp end.

Install the following:

- Handlebar (page 16-33)
- Front wheel (page 16-8)

Inspect the wear rings (page 3-29).

Return the compression [1] and rebound [2] damping adjusters to the original positions as noted during removal.



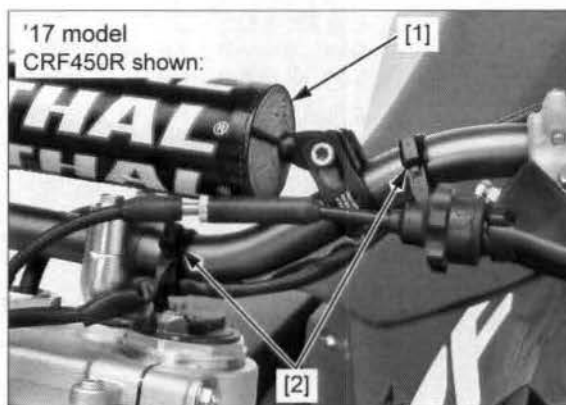
HANDLEBAR

REMOVAL

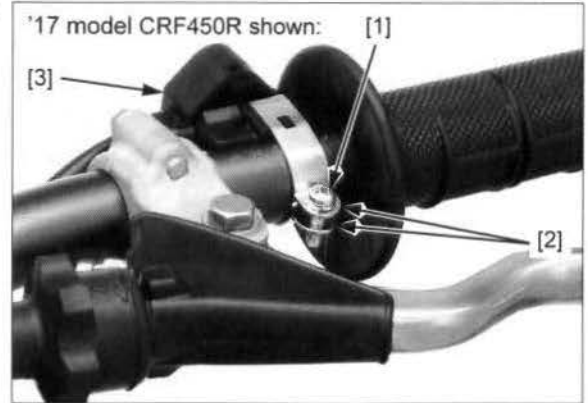
Remove the front number plate (page 2-4).

Remove the handlebar pad [1] from the handlebar.

Remove the wire bands [2].

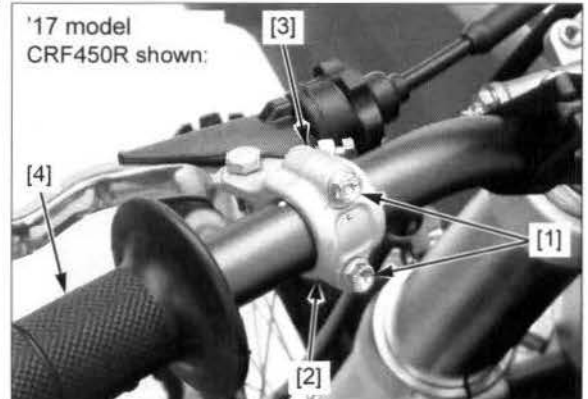


Remove the screw [1], holders [2], and engine stop/mode select switch [3].



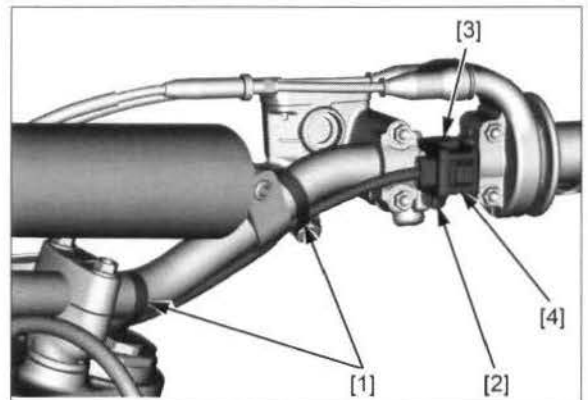
Remove the bolts [1], holder [2], and clutch lever bracket [3].

Remove the left handlebar grip [4] if necessary.



Except '17 model CRF450R: Remove the wire bands [1].

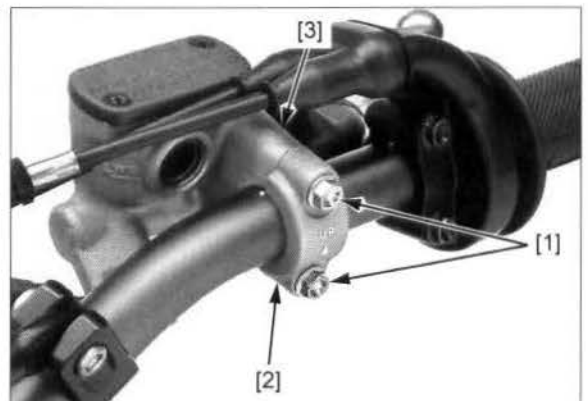
Remove the screw [2], holder [3], and starter switch [4].



Remove the bolts [1], front brake master cylinder holder [2], and master cylinder [3].

NOTE:

- Do not disconnect the hydraulic line.
- Do not allow the brake master cylinder to hang from its hose.
- Keep the brake master cylinder upright to prevent air from entering the hydraulic system.



FRONT WHEEL/SUSPENSION/STEERING

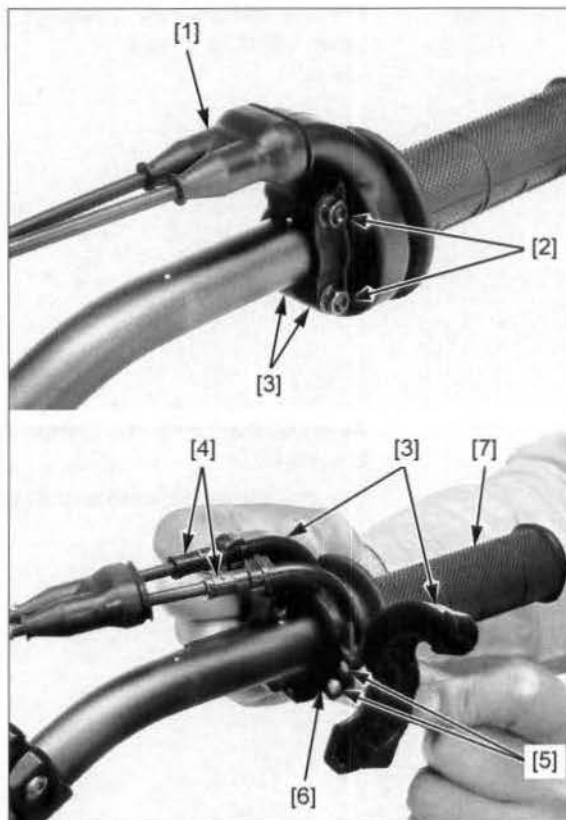
Release the dust cover [1].

Remove the bolts [2] and separate the throttle housing [3].

Release the wire guides [4] from the throttle housing.

Release the throttle wires [5] from the throttle pipe [6].

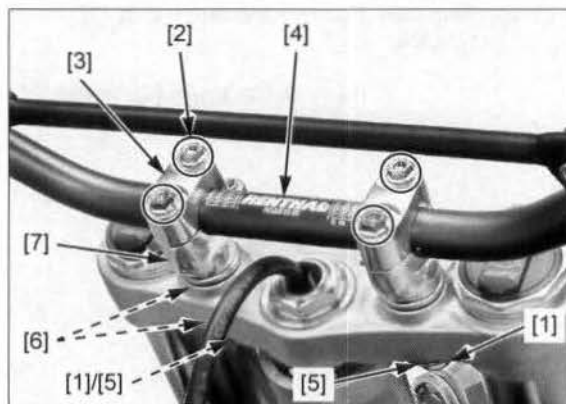
Remove the right handlebar grip [7] from the throttle pipe if necessary.



Loosen the handlebar lower holder nuts [1].

Remove the bolts [2], upper holders [3], and handlebar [4].

Remove the lower holder nuts, washers [5], bushings [6], and lower holders [7].

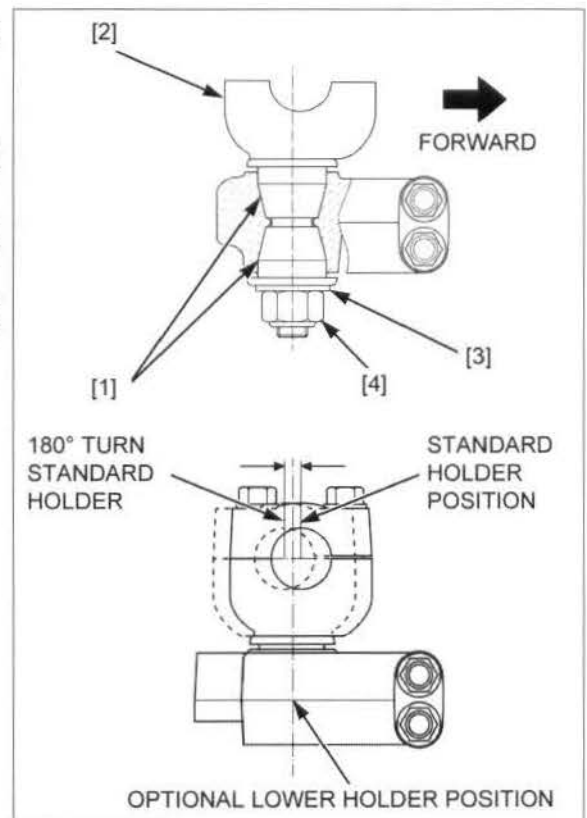


INSTALLATION

Temporarily install the bushings [1], lower holders [2], washers [3], and lower holder nuts [4] as shown (standard position).

NOTE:

- The standard handlebar position is offset to 3.0 mm (0.1 in) forward from the center axis of the lower holder.
- By replacing the optional lower holders, the bar position will be moved 3.0 mm (0.1 in) rearward of the standard position (no offset).
- By turning the standard lower holder 180°, the bar position will be moved 6.0 mm (0.2 in) rearward of the standard position.

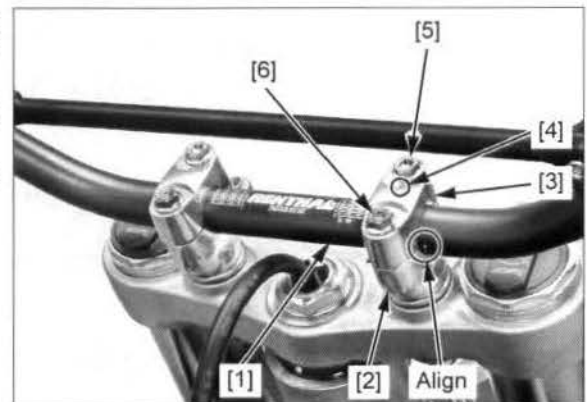


Place the handlebar [1] on the lower holders [2] aligning the paint mark on the handlebar with the top surface of the lower holders.

Install the upper holders [3] with its punch mark [4] facing forward.

Install and tighten the front bolts [5] first, then the rear bolts [6] to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



Tighten the lower holder nuts [1] to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)



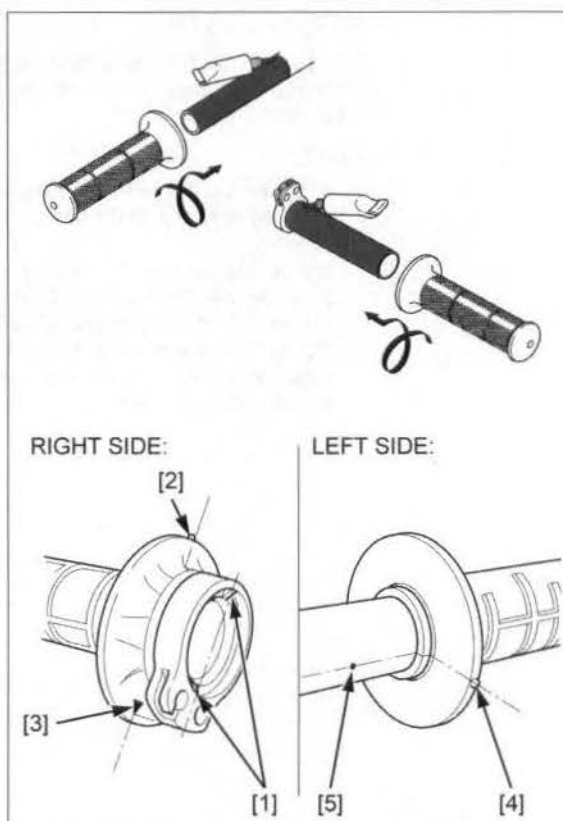
FRONT WHEEL/SUSPENSION/STEERING

If the handlebar grips are removed, apply Honda Bond A or Pro Honda Handgrip Cement (U.S.A. only) to the inner surface of the grip rubber and to the clean surfaces of the throttle pipe and left side of the handlebar.

Allow the adhesive to dry for approximately an hour before using.

Wait 3 – 5 minutes and install the grip. Rotate the grips for even application of the adhesive.

Align the edges [1] on the throttle pipe end with the tab [2] and "△" mark [3] of the right handlebar grip. Align the tab [4] on the left handlebar grip with the paint mark [5] on the handlebar.



Apply specified grease (page 1-22) to the throttle cable ends and throttle pipe flange groove.

Put the throttle pipe/grip on the handlebar.

Connect the throttle cables [1] to the throttle pipe [2].

Install the wire guides [3] onto the throttle housings [4].

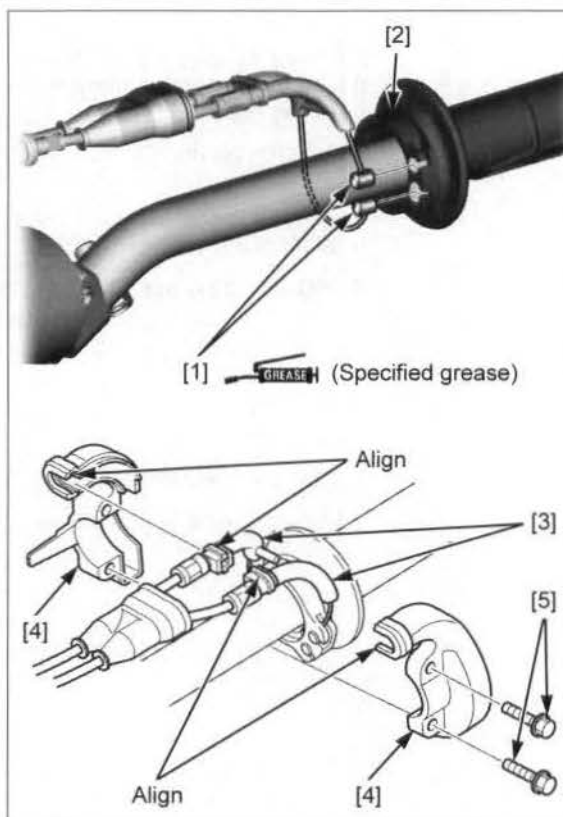
NOTE:

- Align the lug of the wire guides with the groove of the throttle housings.

Install the throttle housings and bolts [5] but do not tighten them yet.

NOTE:

- Be careful not to pinch the throttle wires by the housings.



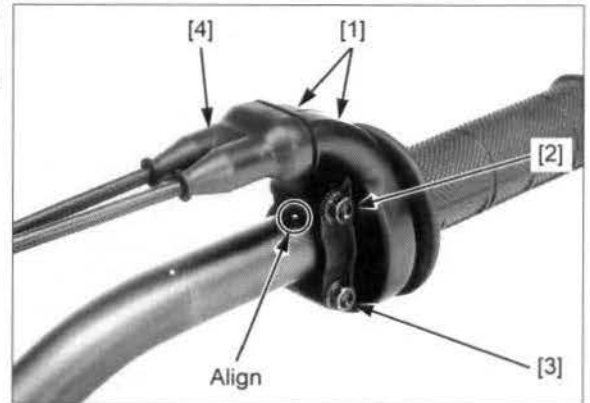
Align the throttle housings [1] end with the paint mark on the handlebar.

Tighten the upper bolt [2] first, then the lower bolt [3] to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the dust cover [4].

Adjust the throttle grip freeplay (page 3-8).

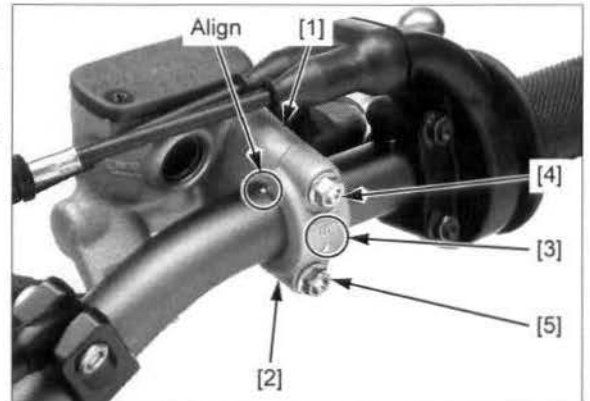


Install the brake master cylinder [1] and holder [2] with the "UP" mark [3] on the holder facing up.

Align the end of the holder with the paint mark on the handlebar.

Install and tighten the upper master cylinder holder bolt [4] first, then the lower bolt [5] to the specified torque.

TORQUE: 9.9 N·m (1.0 kgf·m, 7.3 lbf·ft)



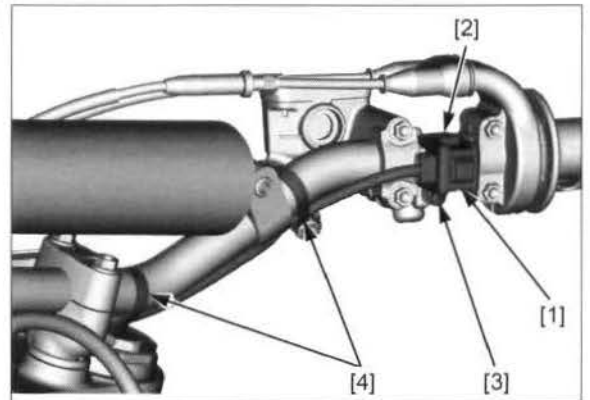
Except '17 model CRF450R: Install the starter switch [1], holder [2], and screw [3] and tighten the screw to the specified torque.

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

NOTE:

- Route the wire properly (page 1-24).

Install the wire bands [4].



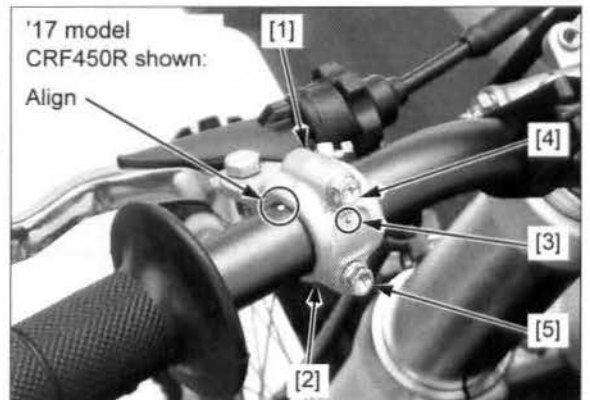
Install the clutch lever bracket [1] and holder [2] with the punch mark [3] on the holder facing up.

Align the end of the holder with the paint mark on the handlebar.

Install and tighten the clutch lever bracket holder upper bolt [4] first, then the lower bolt [5] to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Adjust the clutch lever freeplay (page 3-26).



FRONT WHEEL/SUSPENSION/STEERING

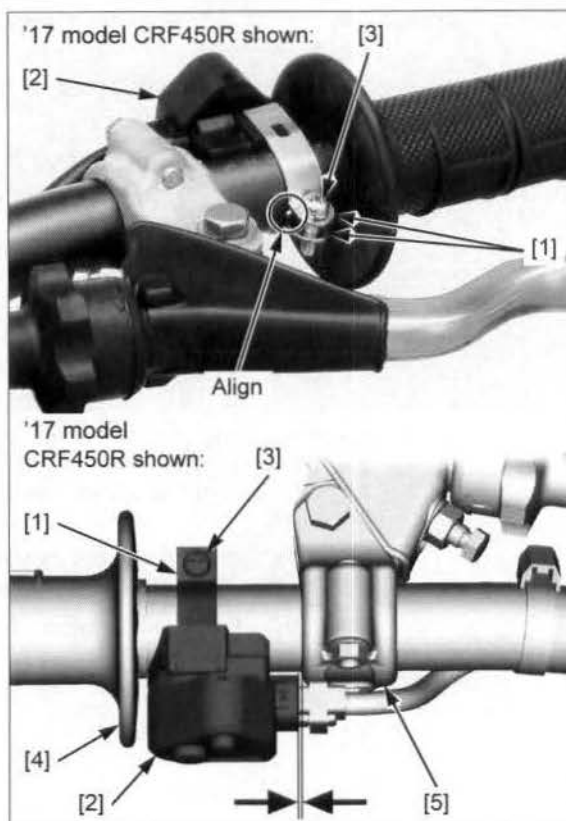
Install the holders [1], engine stop/mode select switch [2], and screw [3] on the handlebar.

NOTE:

- Align the end of each holder with the paint mark on the handlebar as shown.
- Be careful not to deformation the left handlebar grip [4] when installing the engine stop/mode select switch.
- Check that the engine stop/mode select switch interfere with the holder [5].

Tighten the engine stop switch screw to the specified torque.

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



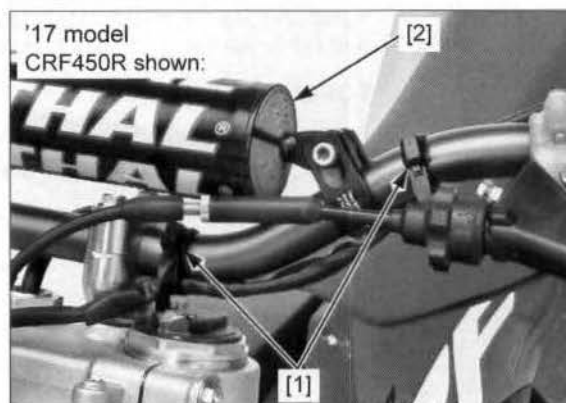
Clamp the engine stop switch wire with the wire bands [1].

NOTE:

- Route the wire properly (page 1-24).

Install the handlebar pad [2].

Install the front number plate (page 2-4).



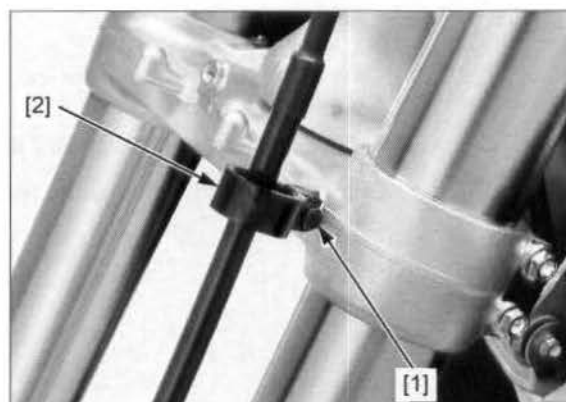
STEERING STEM

REMOVAL

Remove the following:

- Front fender (page 2-5)
- Handlebar (page 16-30)
- Front wheel (page 16-6)

Remove the bolt [1] and brake hose guide [2].



Pull out the fuel tank breather hose [1] from the steering stem.
Remove the steering stem nut [2] and washer [3].
Remove the fork legs (page 16-9).
Remove the fork top bridge [4].

CRF450R shown:



Remove the steering stem adjusting nut [1] using the special tool.

TOOL:

Steering stem socket [2] 07916-3710101

CRF450R shown:



Remove the upper dust seal [1], upper tapered roller bearing [2] and steering stem [3].

Check the bearings and outer races for wear or damage.

Replace the bearings and outer races as a set, if necessary (page 16-37).

CRF450R shown:



BEARING REPLACEMENT

Always replace the bearings and outer races as a set.

Remove the upper and lower outer races from the head pipe using the special tools.

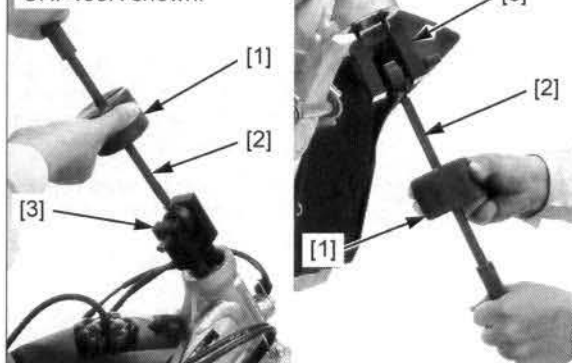
TOOLS:

Remover weight [1] 07741-0010201
Ball race remover shaft [2] 07JAC-PH80200
Adjustable Bearing Puller, 45 – 75 mm [3] 07YAC-0010102

U.S.A. TOOLS:

Remover weight 07936-371020A
Adjustable Bearing Puller, 45 – 75 mm 07YAC-0010102
Adapter, 8 mm x 3/8 x 16 thread 07YAC-001A200 and commercially available slide hammer, 3/8 x 16 thread

CRF450R shown:



FRONT WHEEL/SUSPENSION/STEERING

Install a new lower outer race [1] and special tools as shown.

Hold the shaft with a wrench and turn the nut to install the lower outer race.

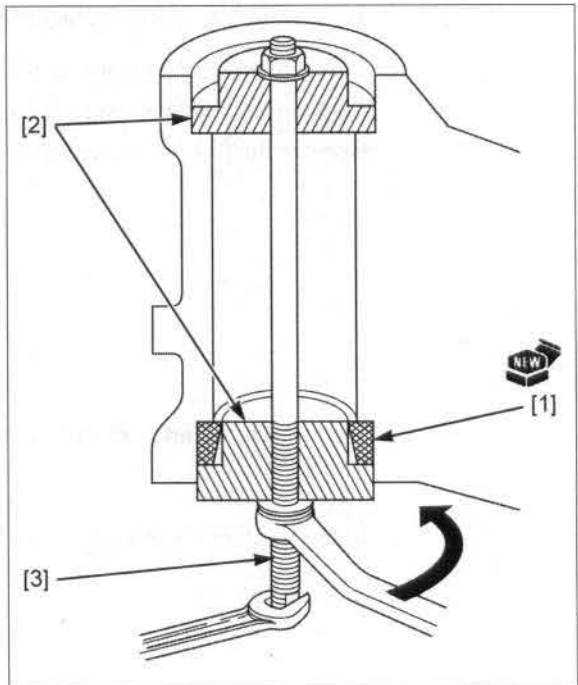
TOOLS:

Bearing race installer
(2 required) [2]

Installer shaft [3]

Remove the special tools.

070MF-MEN0100 or
070MF-MENA100
(U.S.A. only)
07VMF-KZ30200



Install a new upper outer race [1] and special tools as shown.

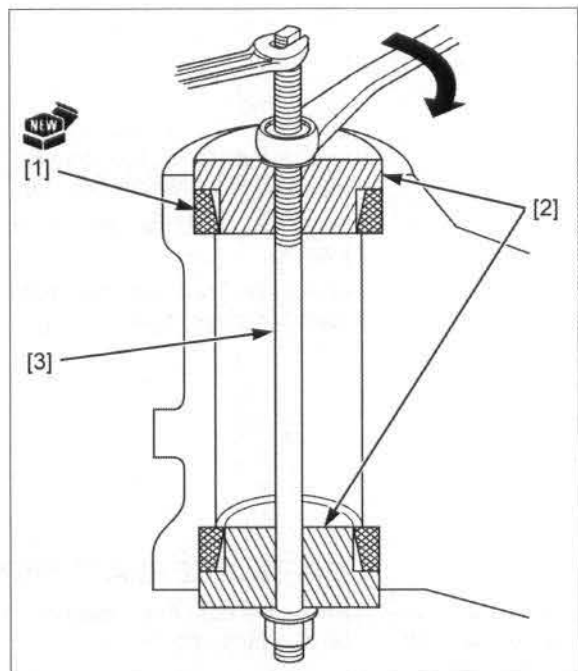
Hold the shaft with a wrench and turn the nut to install the upper outer race.

TOOLS:

Bearing race installer
(2 required) [2]

Installer shaft [3]

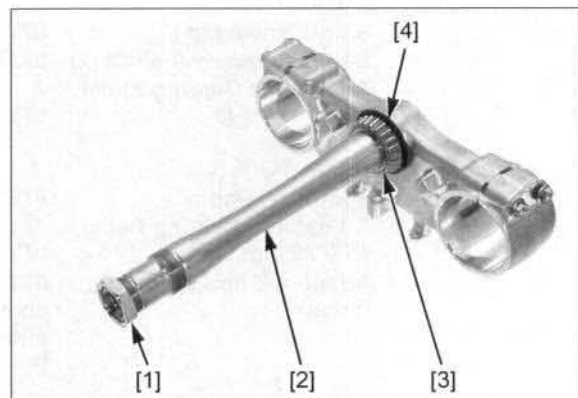
070MF-MEN0100 or
070MF-MENA100
(U.S.A. only)
07VMF-KZ30200



Temporarily install the steering stem nut [1] onto the stem [2] to prevent the threads from being damaged when removing the lower tapered roller bearing [3] from the steering stem.

Remove the lower tapered roller bearing with a chisel or equivalent tools, being careful not to damage the steering stem.

Remove the dust seal [4].



When using the special tool the smaller outside diameter must face the bearing.

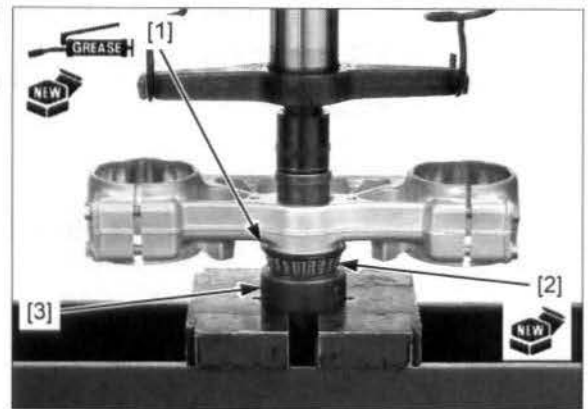
Apply specified grease (page 1-22) to the lips of a new dust seal [1] and install it over the steering stem.

Install a new lower tapered roller bearing [2] using a hydraulic press and the special tool as shown.

TOOL:

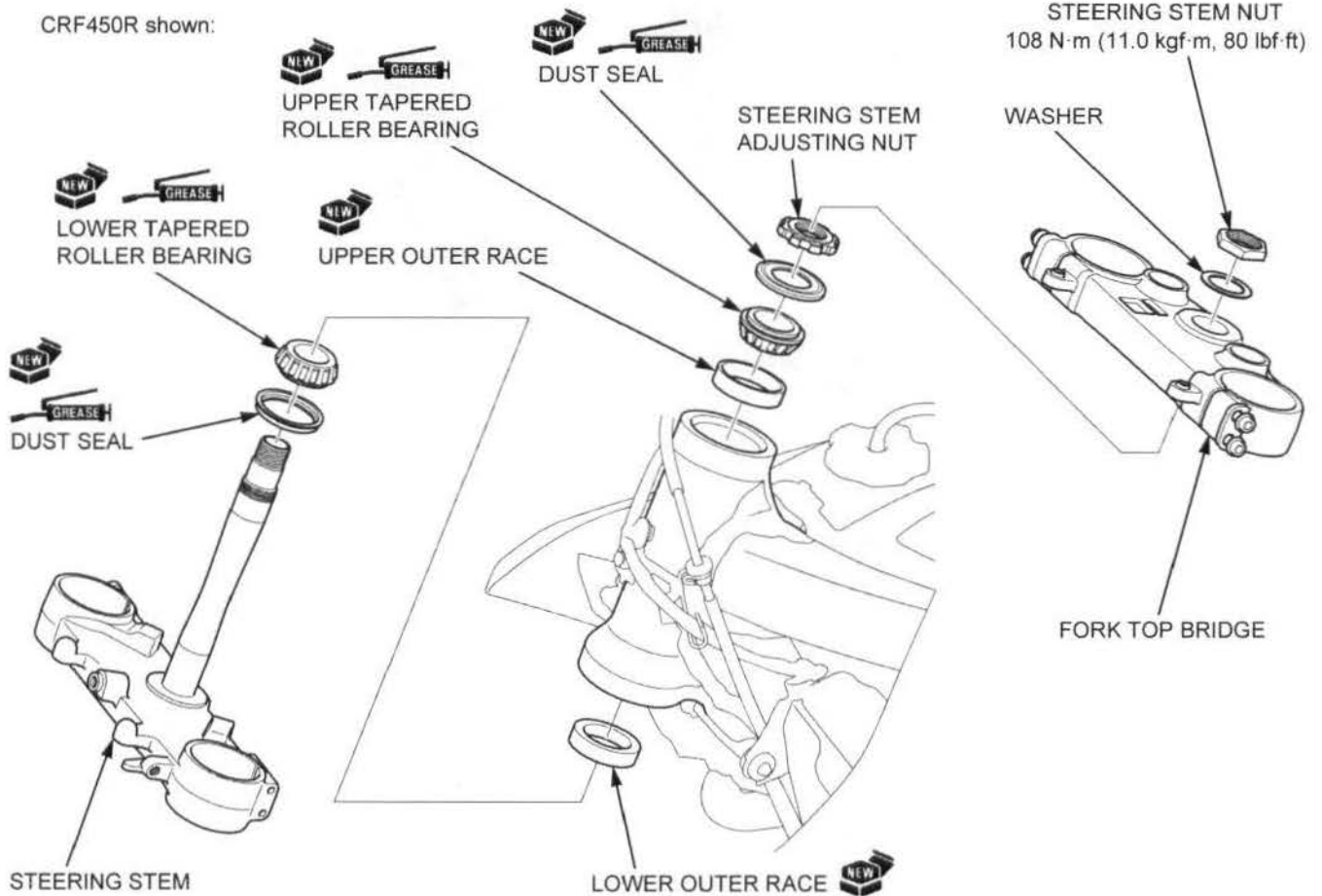
Attachment, 30 mm I.D. [3]

07746-0030300



INSTALLATION

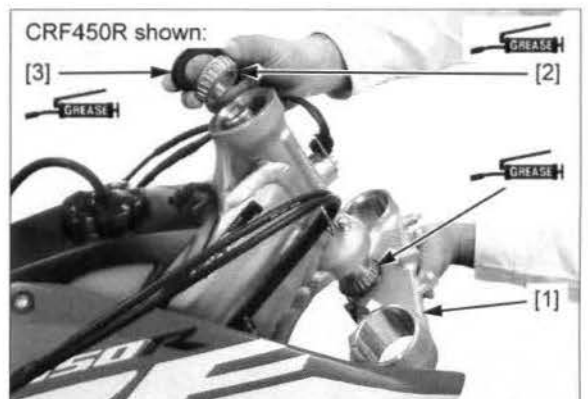
CRF450R shown:



Apply specified grease (page 1-22) to each steering head bearing rolling area and a new upper dust seal lip.

Insert the steering stem [1] into the steering head pipe and install the following while holding the stem:

- Upper tapered roller bearing [2]
- Upper dust seal [3]



FRONT WHEEL/SUSPENSION/STEERING

Install the steering stem adjusting nut [1].

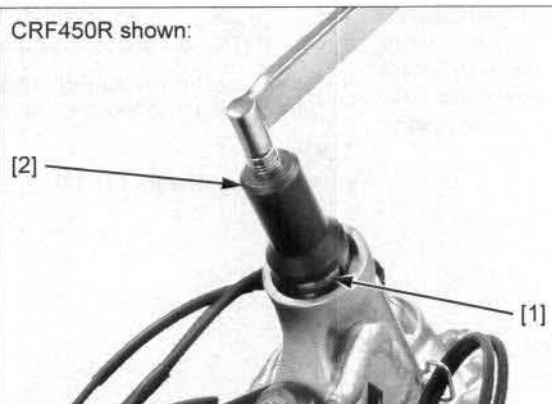
Tighten the steering stem adjusting nut to the specified torque using the special tool while holding the steering stem.

TOOL:

Steering stem socket [2] 07916-3710101

TORQUE: 29.5 N·m (3.0 kgf·m, 22 lbf·ft)

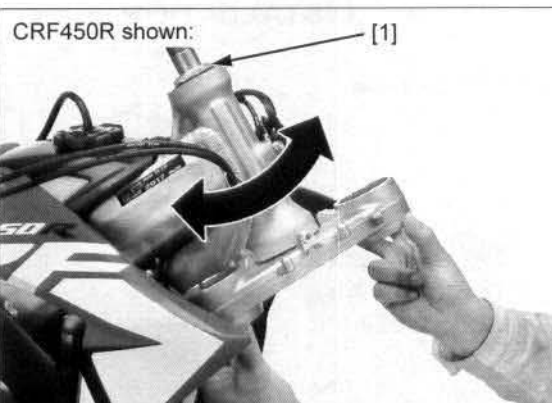
CRF450R shown:



Move the steering stem lock-to-lock several times to seat the bearings.

Loosen the steering stem adjusting nut [1] fully.

CRF450R shown:



Retighten the steering stem adjusting nut [1] to the specified torque using the special tool while holding the steering stem.

TOOL:

Steering stem socket [2] 07916-3710101

TORQUE: 7.0 N·m (0.7 kgf·m, 5.2 lbf·ft)

Recheck that the steering stem moves smoothly without play or binding.

CRF450R shown:



Install the top bridge [1], washer [2], and steering stem nut [3].

Temporarily install the fork legs.

Tighten the steering stem nut to the specified torque.

TORQUE: 108 N·m (11.0 kgf·m, 80 lbf·ft)

Recheck the steering stem adjustment before installing the removed parts.

Install the fork legs (page 16-28).

Install the fuel tank breather hose to the steering stem.

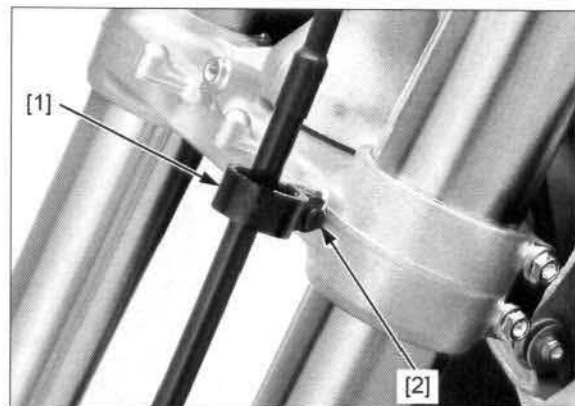
CRF450R shown:



Install the brake hose guide [1] and bolt [2] and tighten the bolt to the specified torque.

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

Install the front fender (page 2-5).



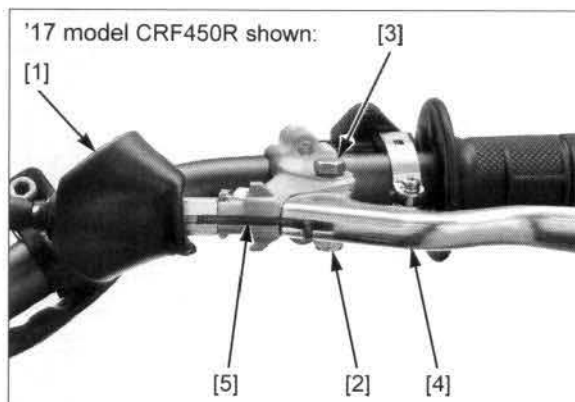
CLUTCH LEVER

REMOVAL/INSTALLATION

Release the clutch lever cover [1].

Remove the clutch lever pivot nut [2] and bolt [3].

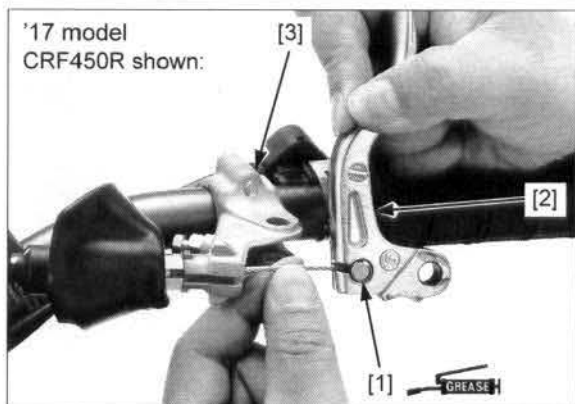
Remove the clutch lever [4] by releasing the clutch cable [5].



Apply grease to the clutch cable end.

Connect the clutch cable [1] to the clutch lever [2].

Install the clutch lever to the clutch lever bracket [3].



Apply grease to the clutch lever pivot bolt sliding surface.

Install and tighten the clutch lever pivot bolt [1] to the specified torque.

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

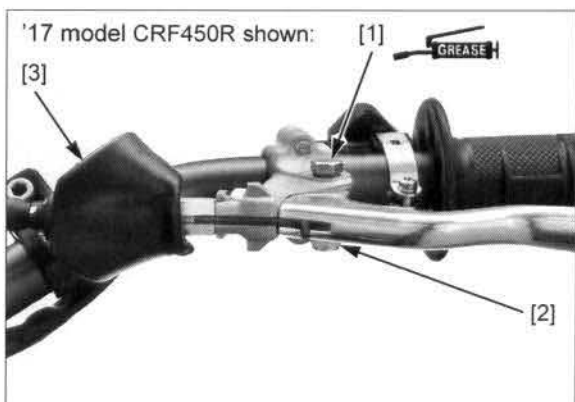
Loosen the clutch lever pivot bolt 45° – 90°.

Install and tighten the clutch lever pivot nut [2] to the specified torque while holding the clutch lever pivot bolt.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Reinstall the clutch lever cover [3].

Adjust the clutch lever freeplay (page 3-26).



MEMO



17. REAR WHEEL/SUSPENSION

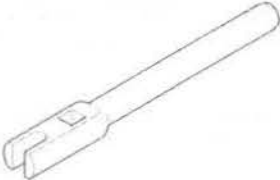
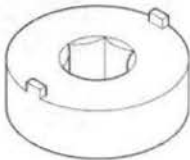
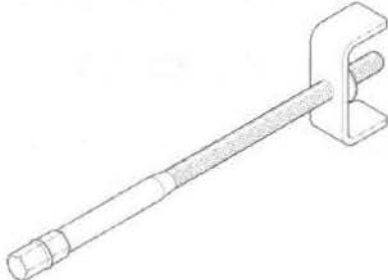


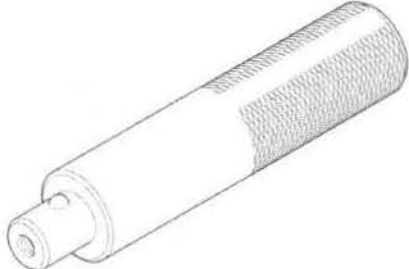


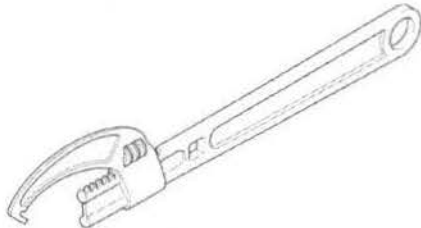
SERVICE INFORMATION.....	17-2	SHOCK ABSORBER.....	17-9
TROUBLESHOOTING	17-4	CUSHION LINKAGE.....	17-27
COMPONENT LOCATION.....	17-5	DRIVE CHAIN GUIDE/DRIVE CHAIN GUIDE SLIDER.....	17-33
REAR WHEEL.....	17-6	SWINGARM.....	17-34



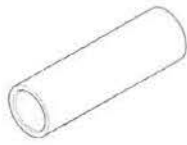

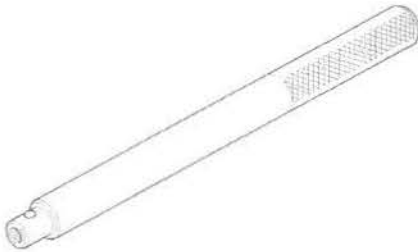






SERVICE INFORMATION

GENERAL

- The shock absorber contains nitrogen under high pressure. Do not allow fire or heat near the shock absorber.
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- When servicing the rear wheel, shock absorber, and swingarm, support the motorcycle using a workstand or equivalent.
- Optional rear wheel sprockets, drive chain, shock springs, and pin spanners are available. For optional parts:
 - '17 model: (page 1-53)
 - After '17 model: (page 1-55)
- For brake system information (page 18-2).
- Use Honda genuine replacement bolts and nuts for all suspension pivot and mounting points.
- After the rear wheel installation, check the brake operation by applying the brake pedal.

TOOLS

Spoke wrench, 6.6 mm 070MA-KZ30100 	Retainer wrench, 48 mm 07YMA-KZ40100  or 07HMA-KS70100 (U.S.A. only)	Retainer wrench body 07710-0010401 
Bearing remover head, 25 mm 07746-0050800 	Bearing remover shaft 07GGD-0010100 	Driver 07749-0010000 
Attachment, 40 x 42 mm 07746-0010900 	Pilot, 25 mm 07746-0040600 	Pin spanner (2 required) 07702-0020001  or Pin spanner A (2 required) 89201-KS6-810

<p>Piston ring guide 070MG-KZ30100</p>  <p>not available in U.S.A.</p>	<p>Slider guide, 16 mm 07PMG-KZ40100</p>  <p>not available in U.S.A.</p>	<p>Collar, 23 x 17 mm 07GMD-KT8A110 (U.S.A. only)</p> 
<p>Attachment, 30 mm I.D. 07746-0030300</p> 	<p>Driver, 15 x 280L 07949-3710001</p> 	<p>Attachment, 24 x 26 mm 07746-0010700</p> 
<p>Pilot, 20 mm 07746-0040500</p> 	<p>Pilot, 19 mm 07746-0041400</p> 	<p>Attachment, 25 mm I.D. 07746-0030200</p> 
<p>Pilot, 22 mm 07746-0041000</p> 	<p>Attachment, 28 x 30 mm 07946-1870100</p> 	

TROUBLESHOOTING

Soft suspension

- Weak shock absorber springs
- Incorrect suspension adjustment
- Shock oil leakage from damper unit
- Insufficient tire pressure
- Faulty tire

Stiff suspension

- Damaged shock absorber or swingarm pivot bearing
- Bent damper rod
- Damaged suspension linkage
- Bent swingarm or frame
- Over-tightening swingarm pivot nut
- Incorrect suspension adjustment
- Tire pressure too high

Steers to one side or does not track straight

- Bent axle
- Axle alignment/chain adjustment not equal on both sides
- Bent swingarm pivot or frame
- Worn swingarm pivot bearing

Rear wheel wobbling

- Bent rim
- Worn wheel bearings
- Bent spokes
- Unbalanced tire and wheel
- Faulty tire
- Insufficient tire pressure
- Faulty swingarm pivot bearings
- Loose axle nut
- Loose suspension fasteners
- Bent swingarm or frame

Rear wheel turns hard

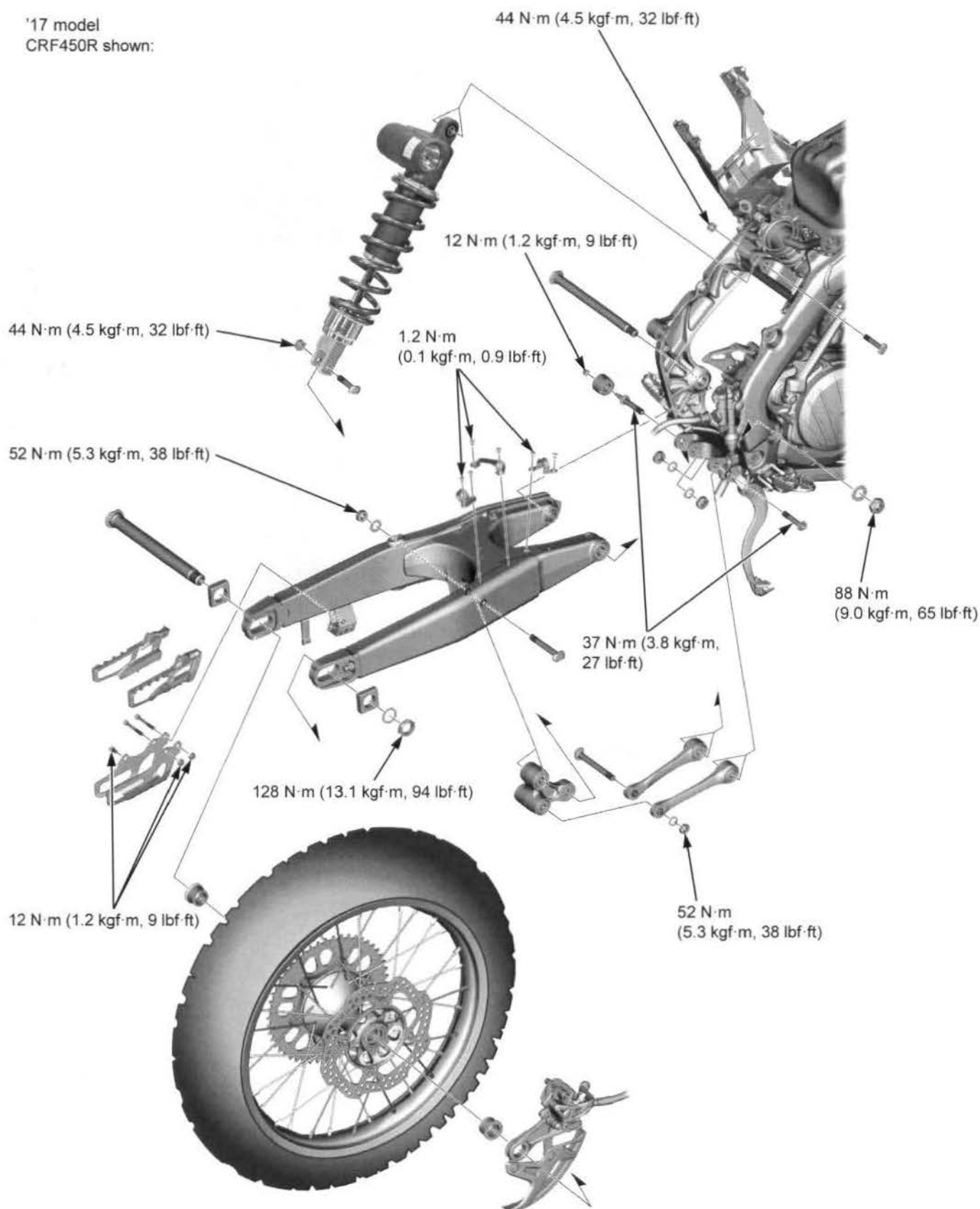
- Faulty wheel bearings
- Bent axle
- Brake drag (page 18-3)
- Drive chain too tight (page 3-18)

Rear suspension noise

- Faulty shock absorber
- Loose suspension fasteners

COMPONENT LOCATION

'17 model
CRF450R shown:



REAR WHEEL

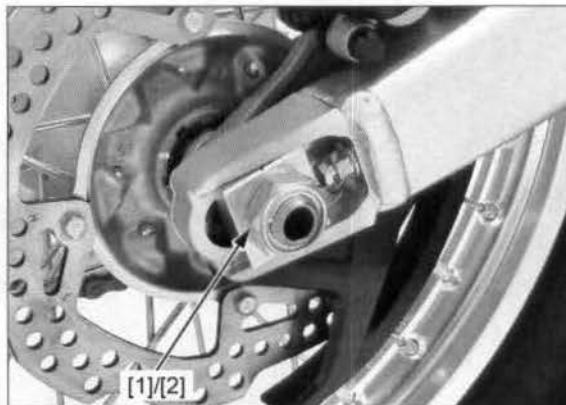
REMOVAL

Remove the engine guard (page 2-6).

Raise the rear wheel off the ground by placing a workstand or equivalent under the engine.

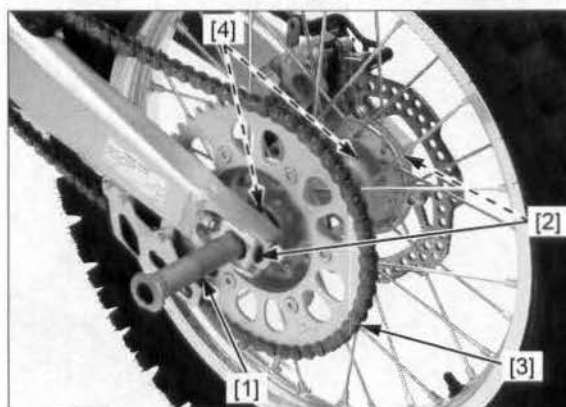
Fully slacken the drive chain (page 3-18).

Remove the axle nut [1] and washer [2].



Remove the axle [1] and adjusting blocks [2].

Derail the drive chain [3] from the driven sprocket by pushing the rear wheel forward.



Remove the rear wheel.

Remove side collars [4] from the rear wheel.

Do not operate the brake pedal 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 bend.

- Rear axle
- Spoke
- Wheel rim

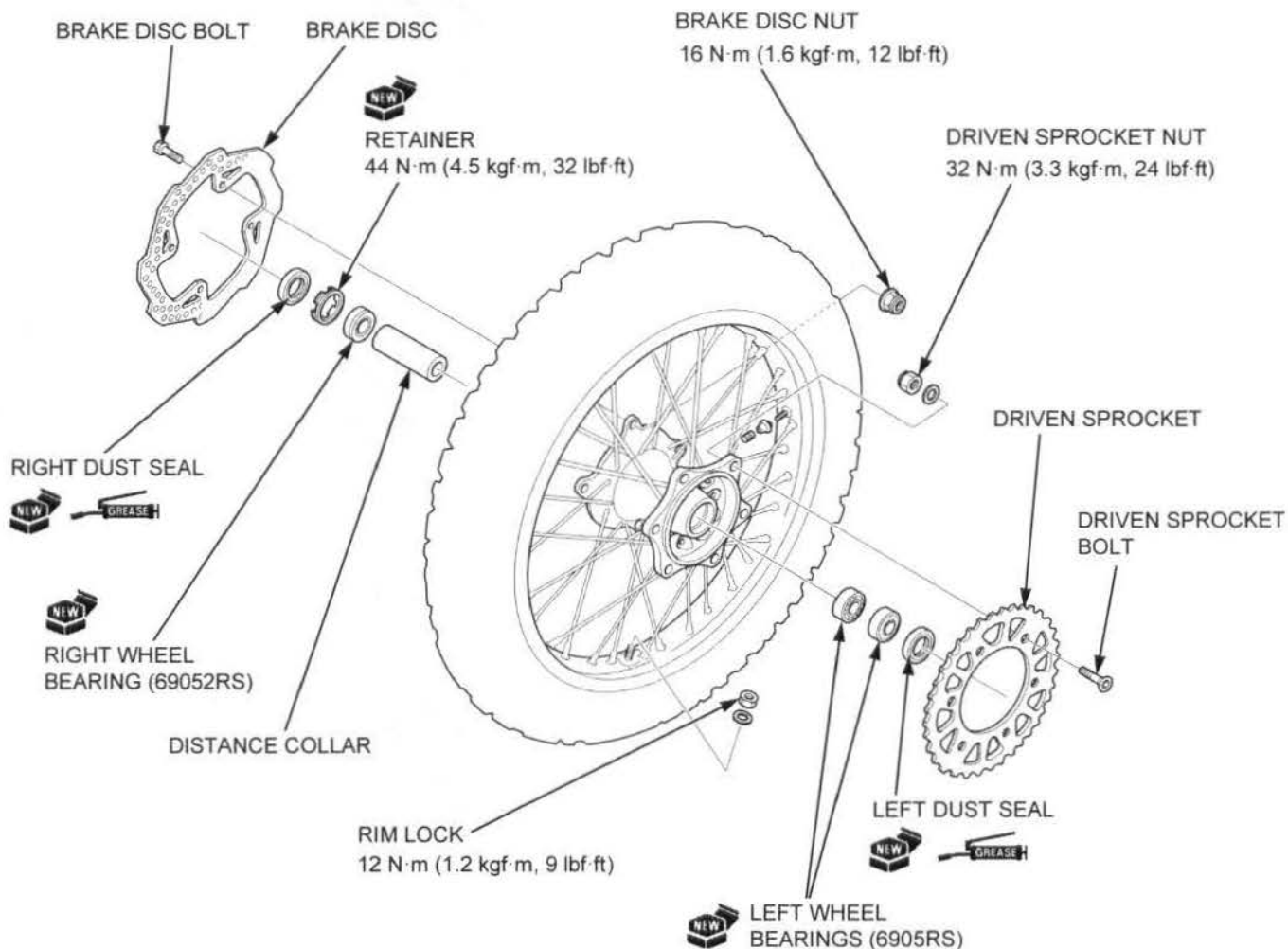
Measure each part according to REAR WHEEL/SUSPENSION SPECIFICATIONS.

- '17 model: (page 1-9)
- After '17 model: (page 1-10)

Replace any part if it is out of service limit.

DISASSEMBLY/ASSEMBLY

- Install the rear wheel dust seal until it is flush with the wheel hub surface.
- Install the rear brake disc with the marked side facing out.
- Tighten the spokes and rim lock to the specified torque (page 3-30).



WHEEL CENTER ADJUSTMENT

Place the rim on a work bench.
Place the hub in the center of the rim and begin lacing with new spokes.

Adjust the hub position so the distance from the hub left end surface to the side of the rim is in the standard value.

STANDARD:

CRF450R: 49.0 – 51.0 mm (1.93 – 2.01 in)

CRF450RX: 48.0 – 50.0 mm (1.89 – 1.96 in)

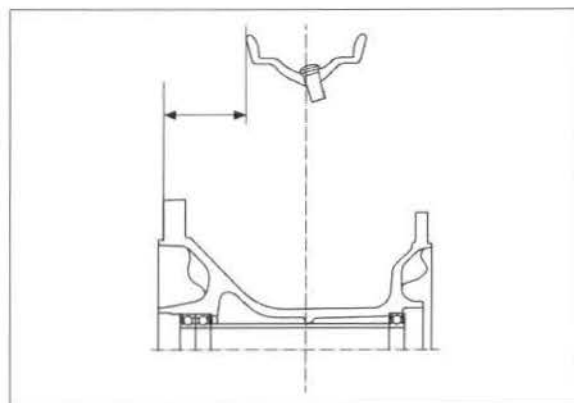
Tighten the spokes to the specified torque in a crisscross pattern in 2 or 3 steps.

TOOL:

Spoke wrench, 6.6 mm

070MA-KZ30100

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



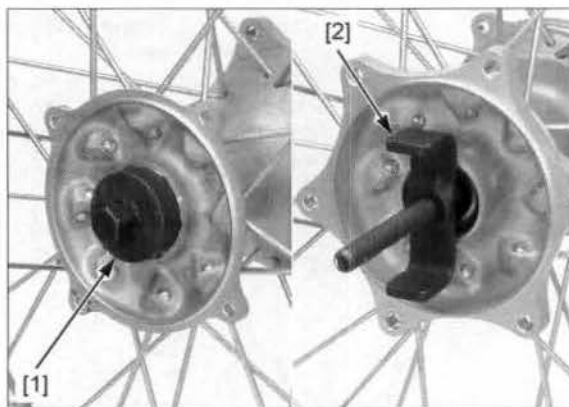
REAR WHEEL/SUSPENSION

WHEEL BEARING REPLACEMENT

Remove the bearing retainer using the special tools.

TOOLS:

Retainer wrench, 48 mm [1] 07YMA-KZ40100 or
07HMA-KS70100
(U.S.A. only)
Retainer wrench body [2] 07710-0010401



Replace the wheel bearings as a set. Do not reuse old bearing.

Install the remover head [1] into the bearing. From the opposite side, install the remover shaft [2] and drive the bearing out of the wheel hub. Remove the distance collar and drive out the other bearings.

TOOLS:

Bearing remover head, 25 mm 07746-0050800
Bearing remover shaft 07GGD-0010100



Replace the wheel bearings as a set. Do not reuse old bearing.

Drive in a new right wheel bearing [1] first with the marked side facing up until it is fully seated.

TOOLS:

Driver [2] 07749-0010000
Attachment, 40 x 42 mm [3] 07746-0010900
Pilot, 25 mm [4] 07746-0040600

Install the distance collar into place, then drive new left wheel bearings using the same tools.

NOTE:

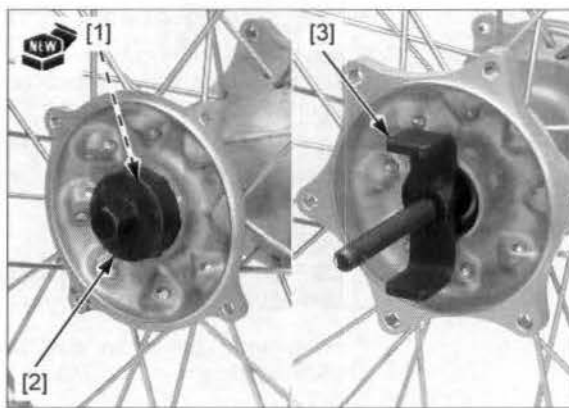
- Drive the inside left wheel bearing with the sealed side facing down.
- Drive the outside left wheel bearing with the sealed side facing up.

Install and tighten a new bearing retainer [1] to the specified torque using the special tools.

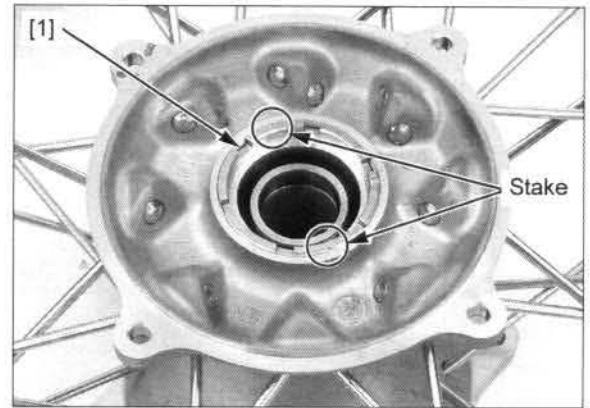
TOOLS:

Retainer wrench, 48 mm [2] 07YMA-KZ40100 or
07HMA-KS70100
(U.S.A. only)
Retainer wrench body [3] 07710-0010401

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)



Stake the edge of the retainer [1].



INSTALLATION

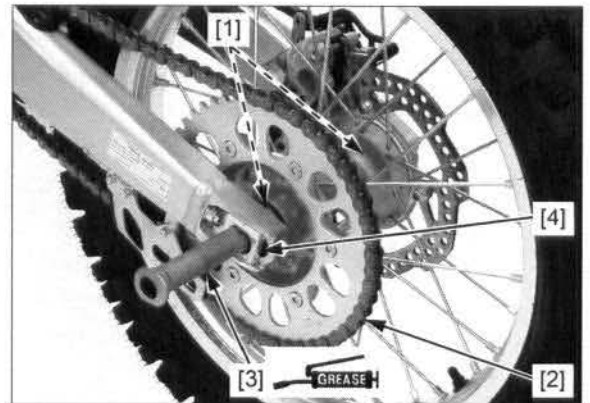
Install the side collars [1] onto the rear wheel.

Be careful not to damage the brake pads.

Place the rear wheel into the swingarm carefully aligning the brake disc between the brake pads.

Install the drive chain [2] over the driven sprocket.

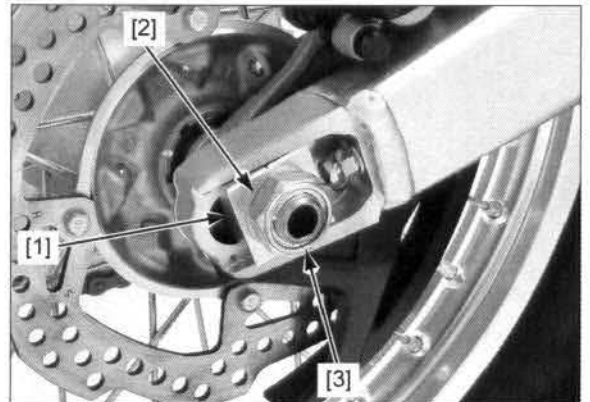
Apply a thin coat of grease to the axle [3] outer surface. Install the adjusting block [4] and axle from the left side.



Install the adjusting block [1], washer [2], and axle nut [3].

Adjust the drive chain slack (page 3-18).

Install the engine guard (page 2-6).



SHOCK ABSORBER

REMOVAL

Remove the engine guard (page 2-6).

Raise the rear wheel off the ground by placing a workstand or equivalent under the engine.

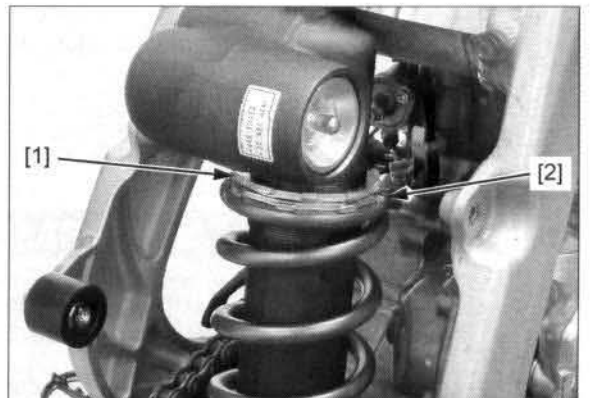
Remove the air cleaner housing (page 7-23).

If you plan to disassemble the shock absorber, perform the following procedure.

- Measure and record the spring set length.
- Loosen the spring adjuster lock nut [1] and adjusting nut [2] completely using the special tool.

TOOLS:

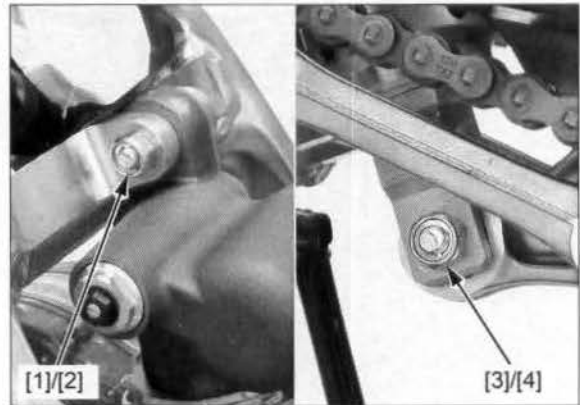
Pin spanner (2 required) 07702-0020001 or
Pin spanner A (2 required) 89201-KS6-810



REAR WHEEL/SUSPENSION

Remove the upper mounting nut [1] and bolt [2].

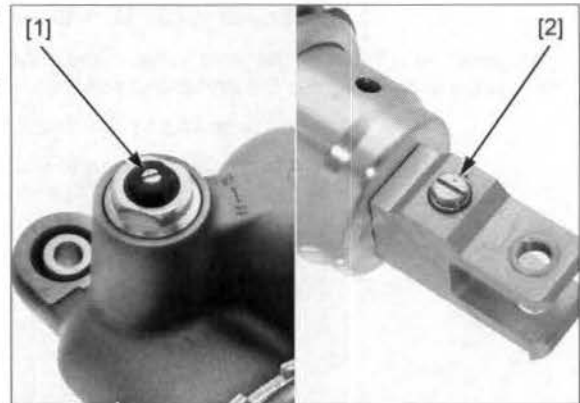
Remove the shock absorber lower mounting nut [3], bolt [4] and shock absorber.



DISASSEMBLY

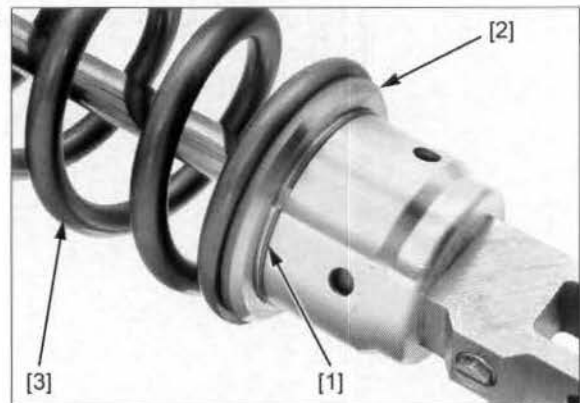
Record the current position of the compression (low speed side) [1] and rebound [2] damping adjusters.

Turn the damping adjusters counterclockwise to the softest position.



Remove the stopper ring [1] and spring seat [2] while compressing the shock absorber spring [3].

Remove the shock absorber spring.



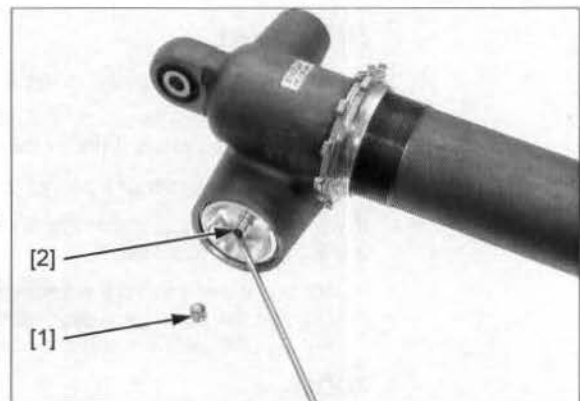
BLADDER REPLACEMENT

Replace the bladder when oil leaks around the chamber cap or oil spills out when releasing the nitrogen from the reservoir.

Perform this procedure before draining the oil from the damper.

Remove the valve cap [1].

Depress the valve core [2] to release the nitrogen from the reservoir.

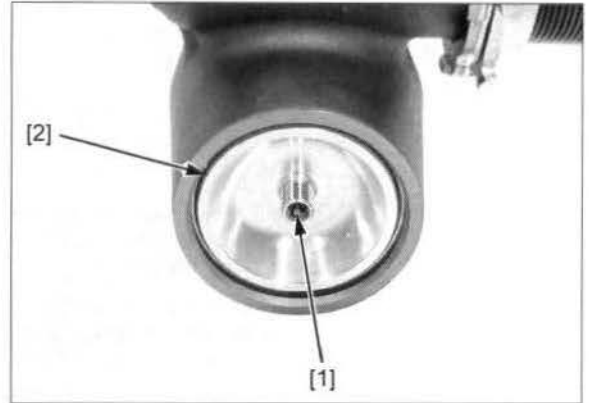


Point the valve away from you to prevent debris getting in your eyes.

⚠ WARNING

- The chamber cap will be under significant pressure and could cause serious injury.
- Release all nitrogen pressure before disassembly.
- Wear protective clothing and adequate eye protection to prevent injury and debris entering your eyes.

Remove the valve core [1] from the chamber cap [2].



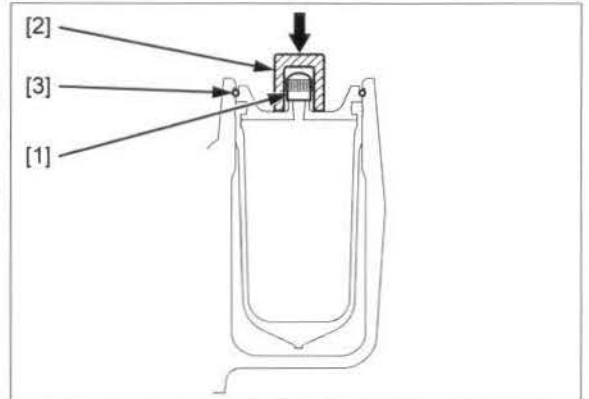
Install the valve cap [1].

NOTICE

To avoid damaging the threads of the gas valve, install the valve cap before depressing the chamber cap.

Depress the chamber cap just the minimum amount for stopper ring access.

Put a suitable tool [2] on the chamber cap and push it in by lightly tapping on the tool with a plastic hammer until you have good access to the stopper ring [3].



Two small screwdrivers [1] and shop towel [2] are required to remove the stopper ring [3].

To avoid damaging the inside surfaces of the reservoir, cover the screwdriver with a shop towel.

The stopper ring groove in the reservoir is ramped toward the inside to give the stopper ring a square shoulder on which to seat securely.

To remove the stopper ring, first push one end of the stopper ring out of its groove, then slip the second screwdriver between the stopper ring and reservoir to act as a ramp.

Now, use the other screwdriver to pull the stopper ring completely out.

Check the stopper ring groove for burrs.

Remove any burrs with a fine emery cloth before removing the chamber cap out of the reservoir.

Set the shock absorber upper mount in a vise with a piece of wood or soft jaws to avoid damage.

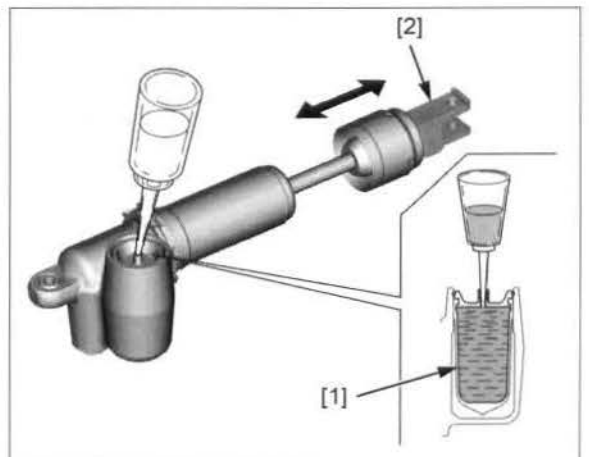
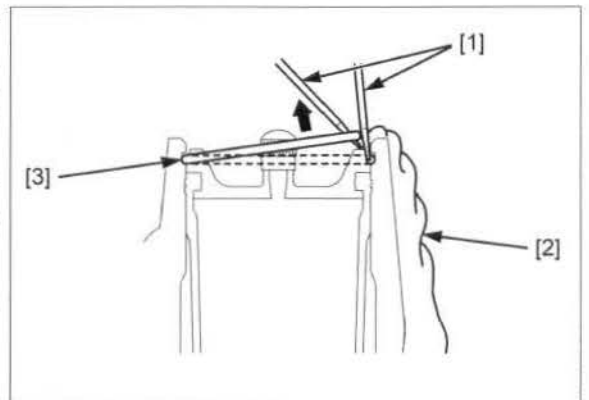
Remove the valve cap.

Using a suitable squeeze bottle, fill the reservoir with the recommended shock oil [1].

RECOMMENDED SHOCK OIL:

Pro Honda HP Shock Oil SS-25

Slowly pump the damper rod [2] until no air bubbles appear in the valve core hole, then pull the damper rod all the way out.

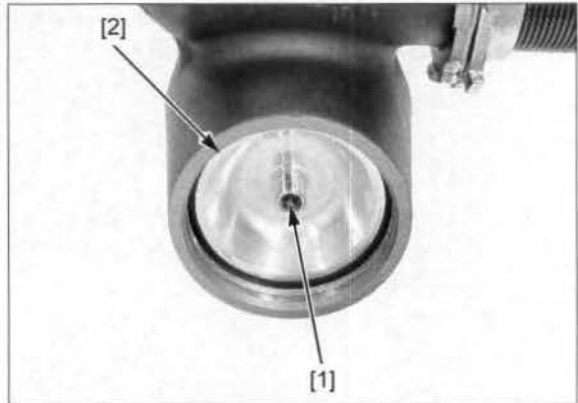


REAR WHEEL/SUSPENSION

Install the valve core [1] securely.
Wear protective clothing and a face guard to protect your eyes and face in case the chamber cap pops out quickly and forcibly.
Remove the chamber cap [2] and bladder following the procedure below:

NOTE:

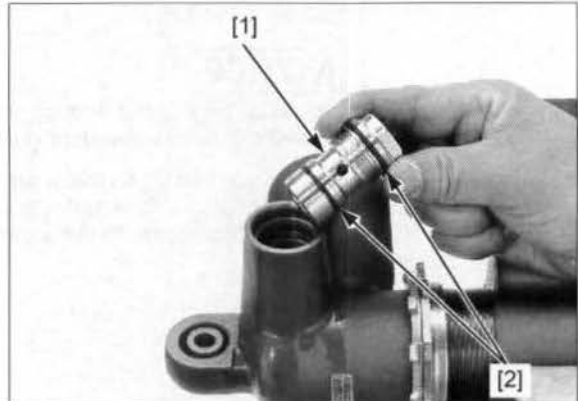
- The chamber cap will be removed with hydraulic pressure so its force can be significant considering the air in the bladder.
1. Wrap the shop towel around the chamber cap. Compress the damper rod slowly to force the chamber cap out.



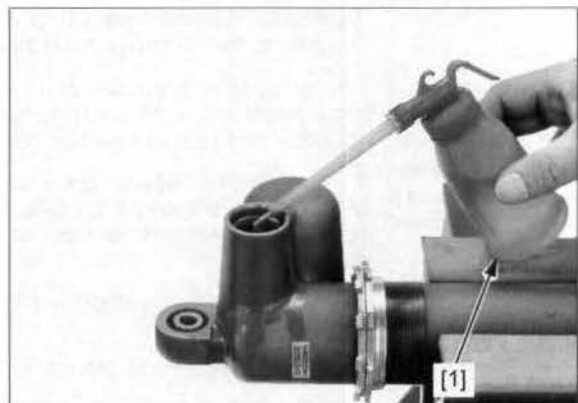
2. Set the damper case in a vise with pieces of wood or soft jaws with the compression adjuster [1] facing up.

NOTE:

- Do not over-tighten the vise and distort the damper case.
- Remove the compression adjuster and O-rings [2].



3. Fill the damper case and reservoir with recommended shock oil [1] through the compression adjuster hole, while slowly pulling the damper rod out.
4. Reinstall the compression adjuster after filling the damper.



NOTE:

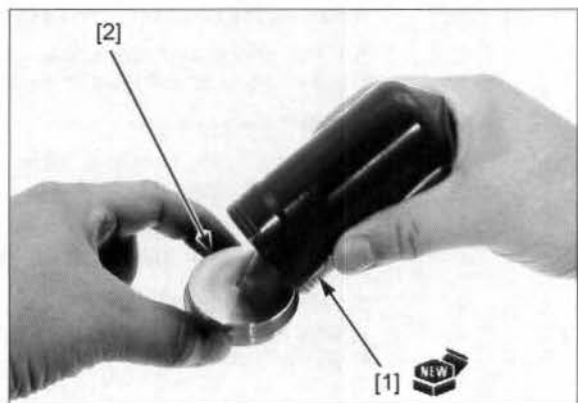
- The damper case must be kept upright to prevent shock oil from leaking out.
5. Place the damper case with the reservoir chamber cap facing up.
 6. Repeat steps 1 to 5 until the chamber cap is removed from the reservoir.

Remove the bladder [1] from the chamber cap [2].

NOTE:

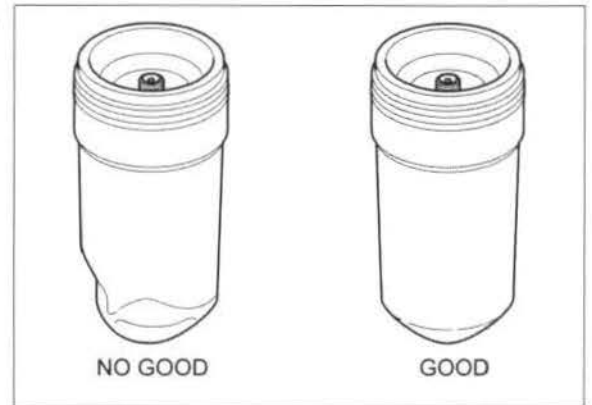
- Do not use any sort of tool to remove the bladder, because it may damage the chamber cap.

Attach a new bladder to the chamber cap.



Replace the bladder with a new one. Do not reuse the removed one.

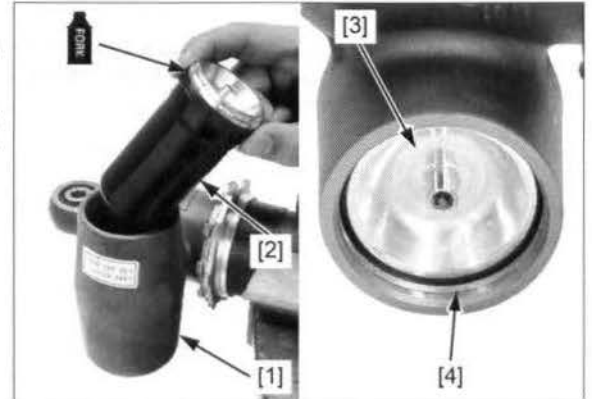
If the bladder becomes distorted during installation, depress the valve core to reform it.



Clean the inside of the reservoir [1].

Apply a light coat of recommended shock oil to the lips of the bladder [2].

Put the chamber cap [3] with the bladder on the reservoir and press in them until you have good access to the stopper ring groove [4].



Install the stopper ring [1] into the groove securely.

Temporarily fill the reservoir [2] with air slowly until the chamber cap seats against the stopper ring.



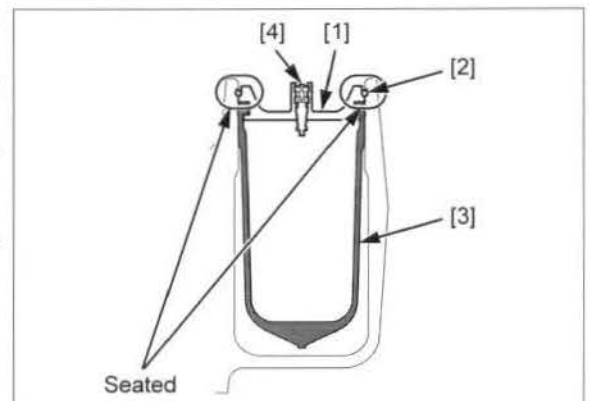
Make sure the chamber cap [1] is completely seated on the stopper ring [2] as shown.

If the chamber cap does not seat fully, the chamber cap may fly out when filling the reservoir with nitrogen.

Release the air from the bladder [3] by depressing the valve core [4].

Fill and bleed the shock absorber (page 17-23).

Fill the reservoir with nitrogen to the specified pressure (page 17-24).



DAMPER DISASSEMBLY

Release the nitrogen from the reservoir (page 17-10).

Remove the compression adjuster [1], O-rings [2].

NOTE:

- Before disposal of the shock absorber, release the nitrogen by pressing the valve core. Then remove the valve core from the chamber cap.

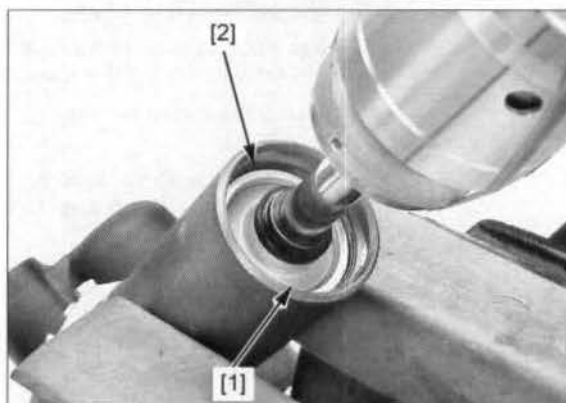
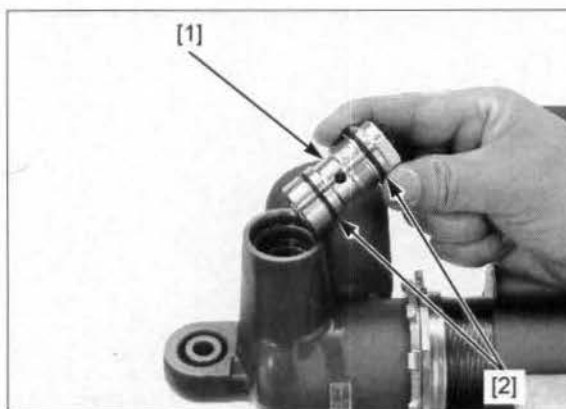
Drain most of the shock oil from the damper and reservoir by pumping the damper rod in and out several times.

Do not over-tighten the vise and distort the damper case.

Set the damper case in a vise with a piece of wood or soft jaws to avoid damage.

Remove the end plate [1] and tape or tie it to the rubber stopper so it will not get in the way.

Push in the rod guide case [1] until you have good access to the stopper ring [2].



Two small screwdrivers [1] are required to remove the stopper ring [2].

The stopper ring groove in the damper case is ramped toward the inside to give the stopper ring a square shoulder on which to seat securely.

To remove the stopper ring, first push one end of the stopper ring out of its groove, then slip the second screwdriver between the stopper ring and damper case to act as a ramp.

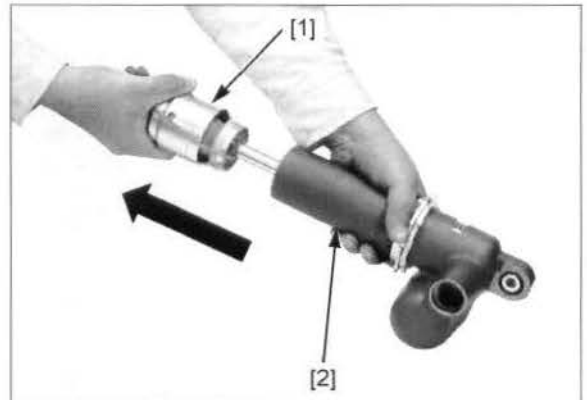
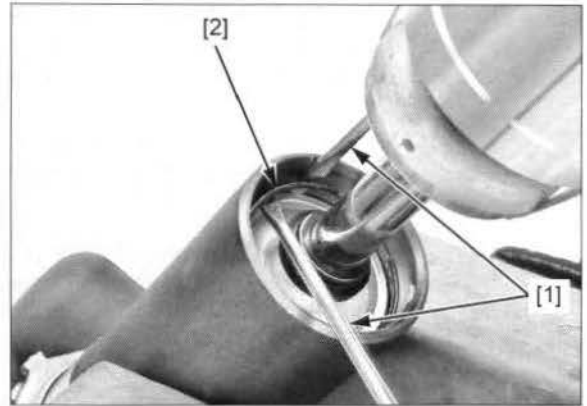
Now, use the other screwdriver to pull the stopper ring completely out.

Check the stopper ring groove for burrs.

Burrs will damage the damper rod piston ring.

Remove any burrs with a fine emery cloth before pulling the damper rod out of the damper case.

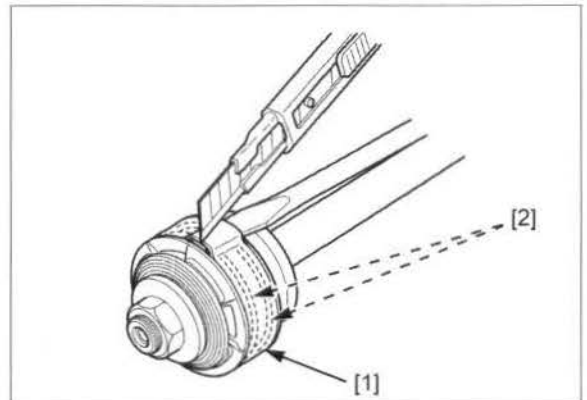
Carefully pull the damper rod assembly [1] out of the damper case [2].



PISTON RING REPLACEMENT

Inspect the piston ring [1].

If the piston ring is damaged, cut the piston ring and replace it along with new O-rings [2].



Apply recommended shock oil to new O-rings [1] and piston ring [2].

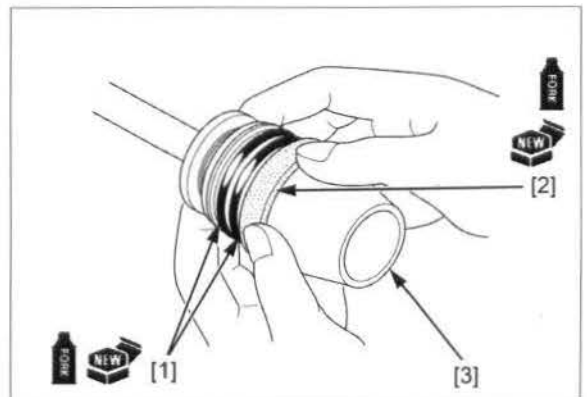
Place the special tool over the piston and install the O-rings and piston ring into place by hand.

TOOL:

Piston ring guide [3]

070MG-KZ30100
not available in
U.S.A.

Compress the piston ring against the ring groove and seat the piston ring into the ring groove.



DAMPER ROD DISASSEMBLY

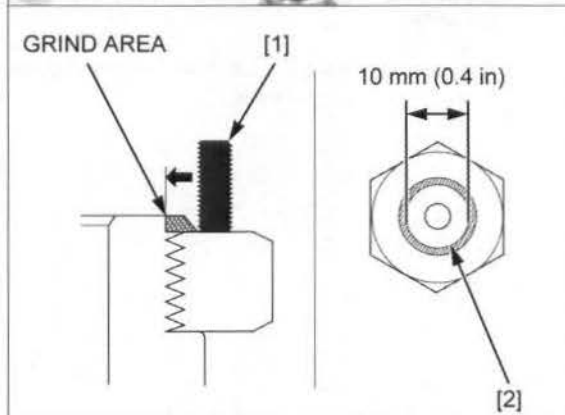
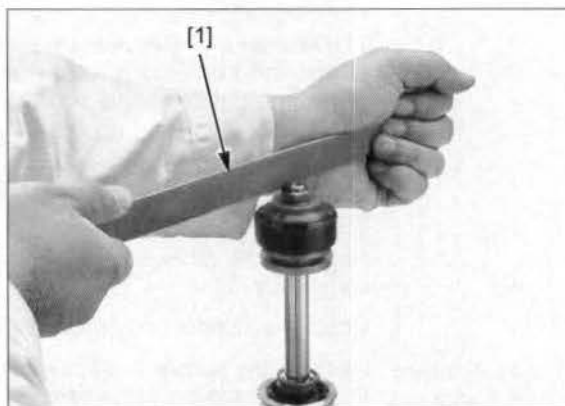
To keep lint or dirt from getting onto the damper rod parts, do not wear gloves while working on the damper rod.

Do not over-tighten the vise and distort the shock mount.

Set the shock absorber lower mount in a vise with a piece of wood or soft jaws to avoid damage.

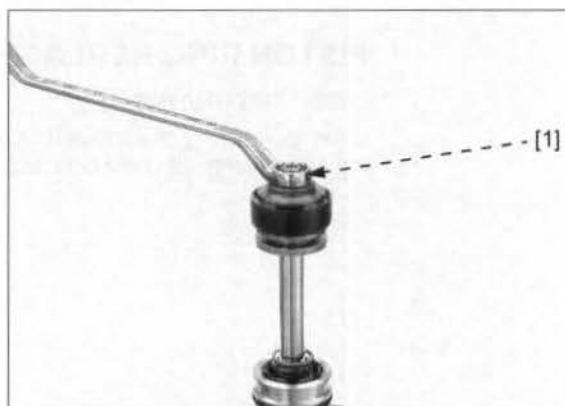
Be careful not to over-file.

Grind the damper rod end with a file [1] as shown. File the damper rod end nut by hand so that the O.D. of the rod end [2] is about 10 mm (0.4 in).



Turn the damper rod end nut [1] back-and-forth in 1/4 turn increments until it loosens, then rotate another 1/4 turn and repeat turning back-and-forth until the damper rod end nut loosens completely.

If the damper rod is cracked or damaged when removing the damper rod end nut, replace the damper rod assembly with a new one.



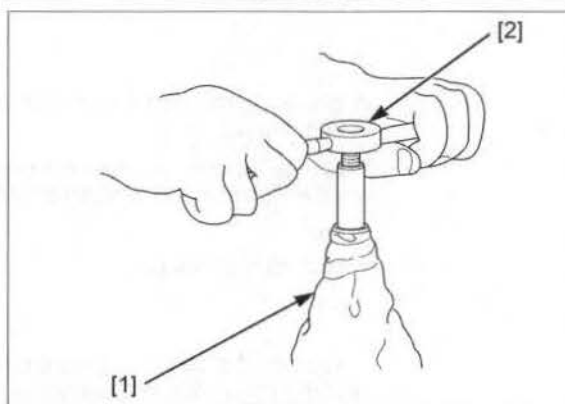
Make sure that filings are not stuck in the damper rod.

Cover the damper rod with a clean shop towel [1].

Remove the burrs from the damper rod end with a file and correct the threads with a die [2].

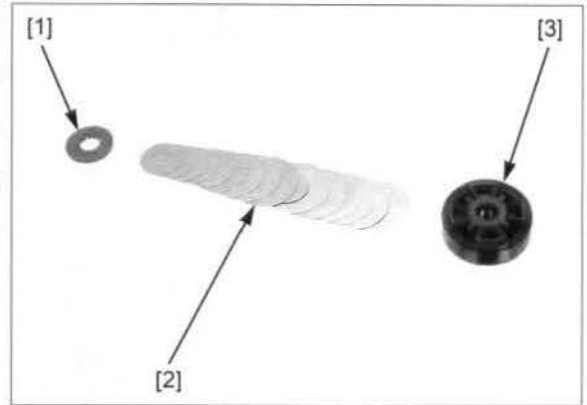
DIE: 12 x 1.25 mm

Clean the damper rod with solvent after correcting the threads.

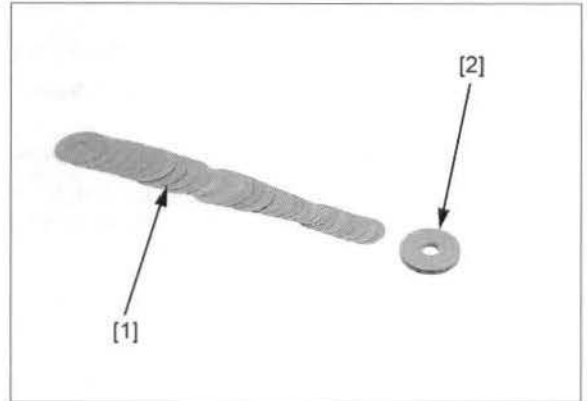


Remove the piston washer [1], rebound valves [2] and piston [3] from the damper rod.

- Use a piece of mechanics wire to keep the removed valves in the correct order.
- Keep dust and abrasive away from all damper rod parts.
- Thoroughly clean the valves in solvent and blow them dry with compressed air.
- Be careful not to get solvent on the O-rings and piston ring.
- The valve arrangement and number of valves shown is typical and may not represent this model exactly.



Remove the compression valves [1] and valve stopper [2].

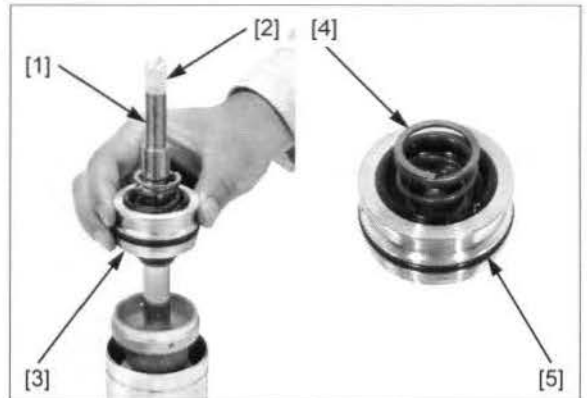


Wrap the threads of the damper rod [1] with tape [2].

Remove the rod guide case assembly [3] from the damper rod.

Remove the rebound spring [4] from the rod guide case.

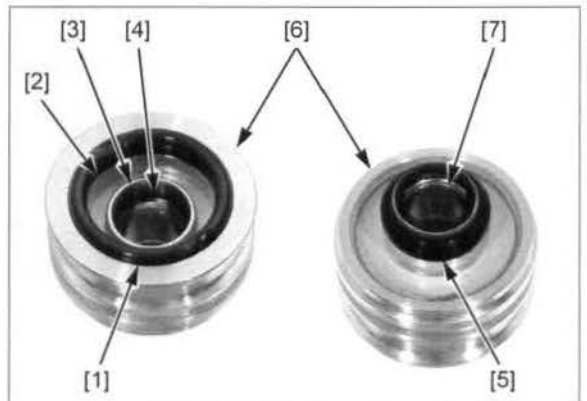
Remove the O-ring [5] from the rod guide case.



Remove the rebound rubber [1], rebound seat [2], spring seat B [3], oil seal [4], and dust seal [5] from the rod guide case [6].

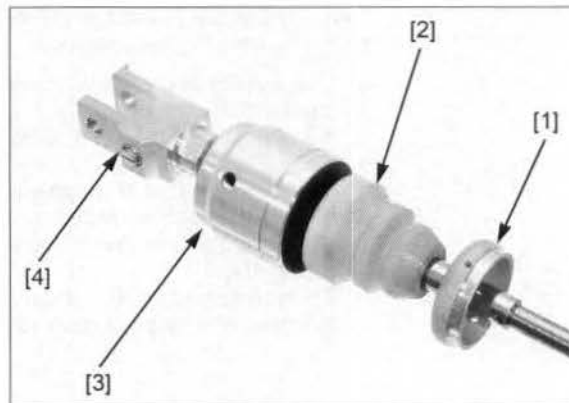
Visually inspect the rod guide case metal [7].

If the metal is worn, replace the rod guide case with a new one.



REAR WHEEL/SUSPENSION

Remove the end plate [1], rubber stopper [2] and spring seat stopper [3] from the damper rod [4].



INSPECTION

Inspect the rebound spring for weakness or damage.

Inspect the compression adjuster for wear, scratches or damage.

Inspect the damper rod for damage or distortion.

Check the spherical bearing for wear or damage. If it is worn or damaged, it must be replaced (page 17-25).

DAMPER ASSEMBLY

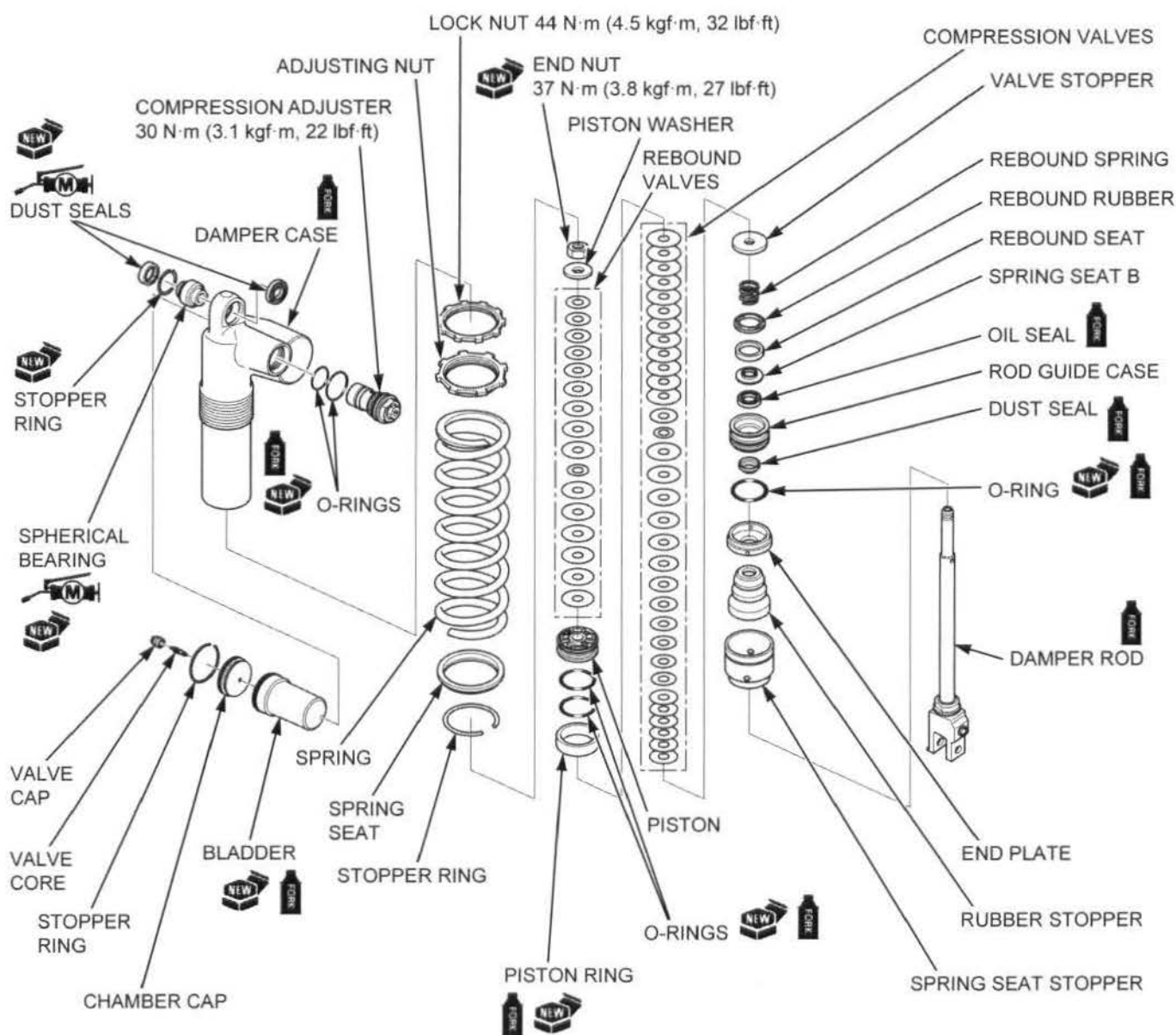
Before assembly, wash all parts with solvent and blow them dry with compressed air.

Make sure there is no dust or lint on any of the parts.

Turn the rebound and compression (low speed side) adjusters counterclockwise to the softest position.

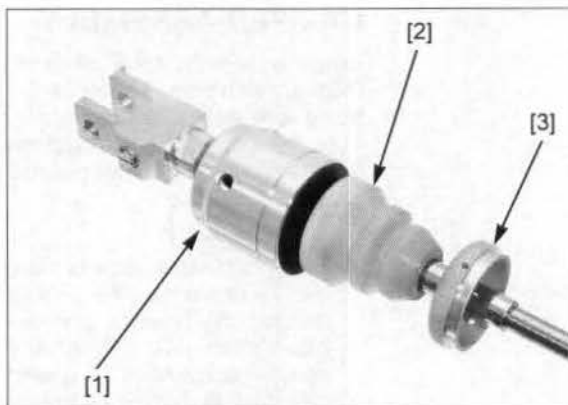
NOTICE

- Never assemble valves which might have gotten dusty or otherwise contaminated during the disassembly process. Disassemble them, thoroughly clean them with solvent and blow them dry with compressed air before assembly.
- Use care to avoid getting solvent on the piston ring and O-rings.
- The valve arrangement and number of valves may differ from those shown.



REAR WHEEL/SUSPENSION

Install the spring seat stopper [1], rubber stopper [2] and end plate [3].

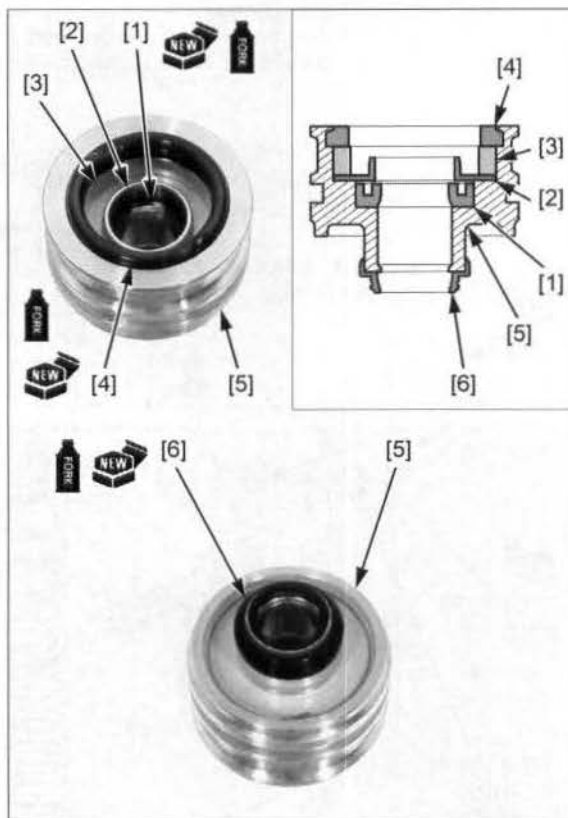


Apply recommended shock oil to new rebound rubber, oil seal, and dust seal.

Install the oil seal [1] until it is fully seated with its flat side facing down.

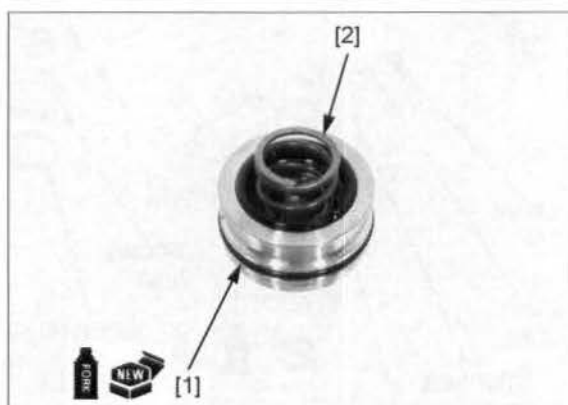
Install the spring seat B [2], rebound seat [3], and rebound rubber [4] onto the rod guide case [5].

Install the dust seal [6] onto the rod guide case.



Apply recommended shock oil to a new O-ring.

Install the O-ring [1] and rebound spring [2].



Install the special tool onto the damper rod.

TOOL:

Slider guide, 16 mm [1]

07PMG-KZ40100
not available in
U.S.A.

Coat the damper rod sliding surface with shock oil.

Carefully install the rod guide case assembly [2] over the damper rod as shown.

Remove the special tool.

Check the rod guide case assembly by sliding it up and down fully to be sure there is no restriction.

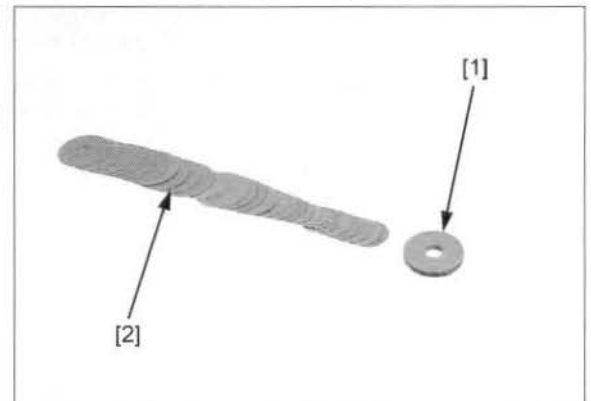


The valve arrangement and number of valves may vary from those shown.

Install the valve stopper [1] and compression valves [2] onto the damper rod.

NOTE:

- Put the valve stopper with its chamfered edge facing opposite side of the valves.



Install the piston [1] onto the damper rod with its ribs side facing up as shown.

Install the rebound valves [2].

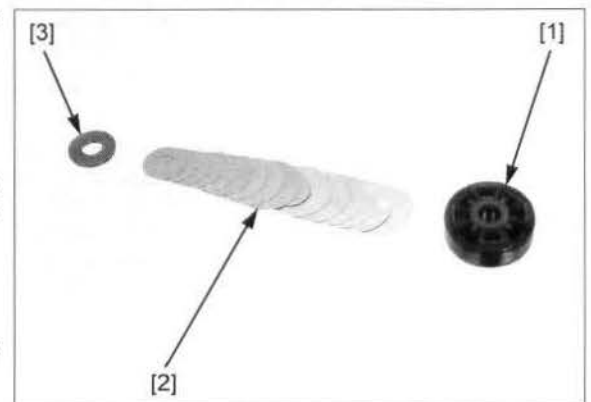
NOTICE

Be careful not to bind the valves when installing the piston onto the damper rod. Also, check that they are concentric with the damper rod.

Install the piston washer [3].

NOTE:

- Put the piston washer with its chamfered edge facing opposite side of the valves.

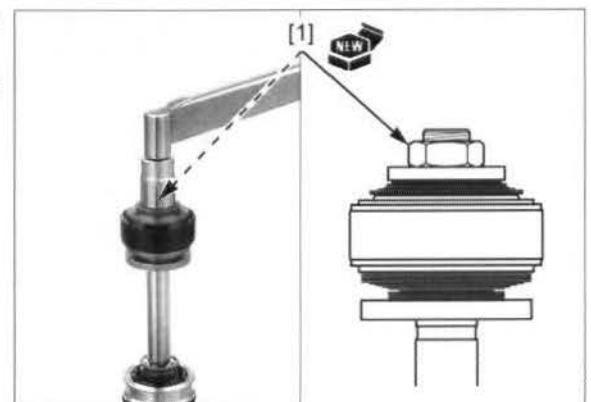


Do not over-tighten the vise and distort the shock mount.

Set the shock absorber lower mount in a vise with a piece of wood or soft jaws to avoid damage.

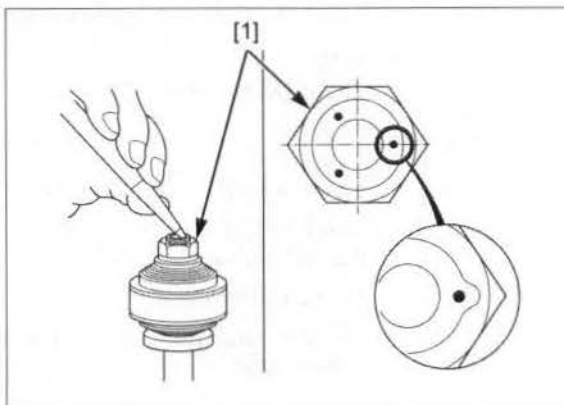
Install and tighten a new damper rod end nut [1] to the specified torque.

TORQUE: 37 N·m (3.8 kgf·m, 27 lbf·ft)



REAR WHEEL/SUSPENSION

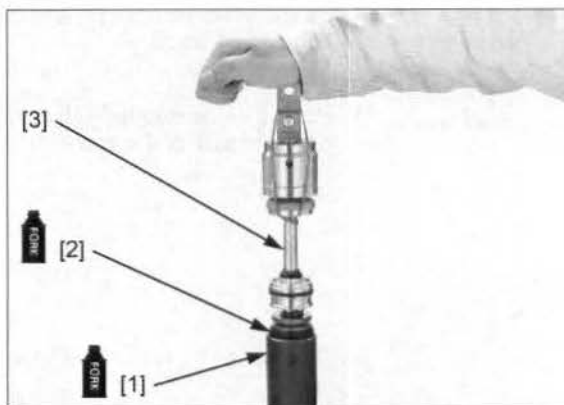
Stake the end of the damper rod to the end nut [1] in three places as shown.



Do not over-tighten the vise and distort the shock mount.

Set the shock absorber upper mount in a vise with a piece of wood or soft jaws to avoid damage.

Coat the damper case [1] inner surface and piston ring [2] with recommended shock oil and insert the damper rod assembly [3] carefully.

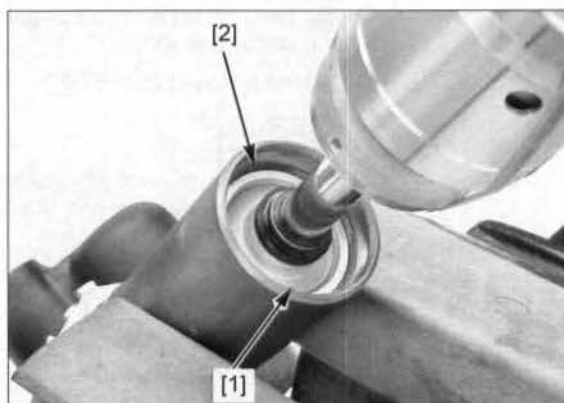


Do not over-tighten the vise and distort the damper case.

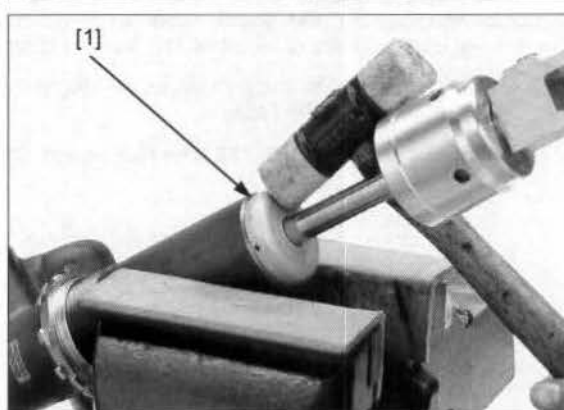
Set the damper case in a vise with a piece of wood or soft jaws to avoid damage.

Install the stopper ring [1] into the groove in the damper case [2].

After assembly, check that the stopper ring is seated in the groove of the damper case completely. Make sure the rod guide case is seated against the stopper ring by pulling the damper rod all the way out. You should not be able to pull the damper rod out of the damper case.



Drive the end plate [1] squarely and evenly into the damper case with a plastic hammer.



Fill the damper case and reservoir with recommended shock oil [1] through the compression adjuster hole.

RECOMMENDED SHOCK OIL:

Pro Honda HP Shock Oil SS-25

STANDARD OIL CAPACITY:

370 cm³ (12.5 US oz, 13.0 Imp oz)

Slowly pump the damper rod until there are no bubbles in the shock oil that overflows from the damper case.

Do not let oil flow out of the reservoir.

Remove the damper unit from the vise while holding the compression adjuster hole facing up.

Move the damper unit up and down to bleed any air from the damper case [1] completely while covering the compression adjuster hole [2].

Rotate the damper unit left and right to bleed any air from the reservoir [3] completely while covering the compression adjuster hole.

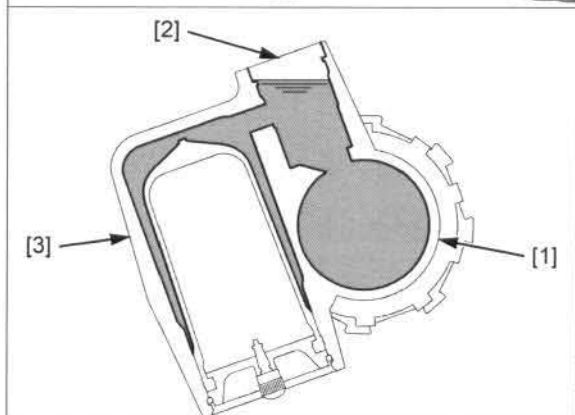
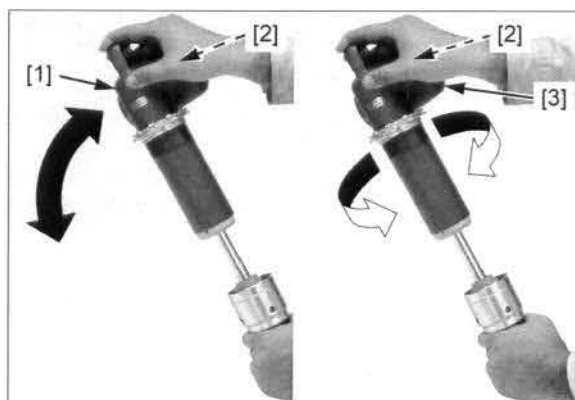
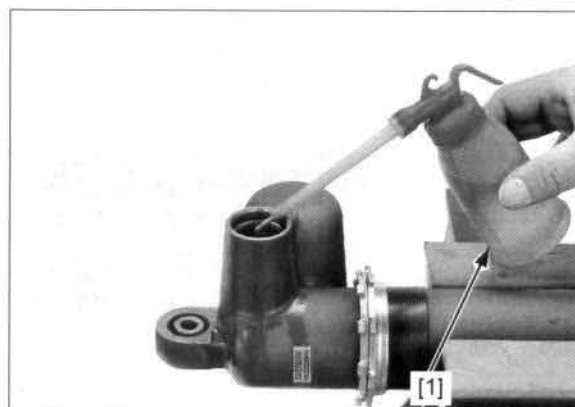
NOTE:

- When air bleeding, be sure to hold the damper unit so that the filler hole points up.

Be sure the reservoir pressure is correct using an accurate pressure gauge.

Temporarily charge the reservoir with 49 kPa (0.5 kgf/cm², 7.1 psi) of air slowly to inflate the bladder.

Check for any shock oil [3] that may leak out of the valve while pressurizing. Replenish oil as necessary.



Fill the damper with recommended shock oil to the compression adjuster hole neck.

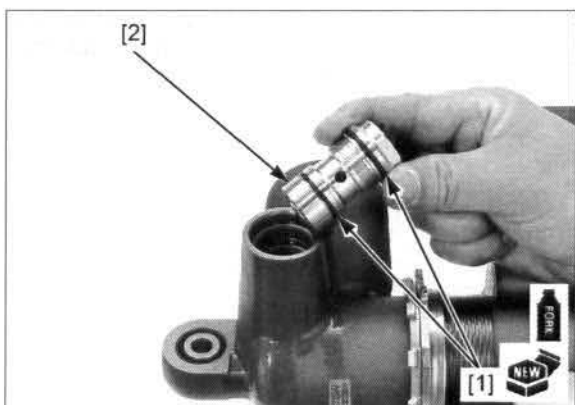
Apply shock oil to new O-rings [1] and install them to the compression adjuster [2].

Dip the compression adjuster in clean shock oil. Install and tighten the compression adjuster to the specified torque.

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)

Do not let oil flow out of the reservoir.

Check the oil leaks.



REAR WHEEL/SUSPENSION

Release the air that was in the reservoir at precompression.

Fill the reservoir with 980 kPa (9.9 kgf/cm², 142 psi) of nitrogen gas.

CAUTION

The shock absorber is fitted with a gas-filled reservoir. The use of an unstable gas can cause a fire or explosion, resulting in serious injury. Use only nitrogen gas to pressurize the shock absorber.

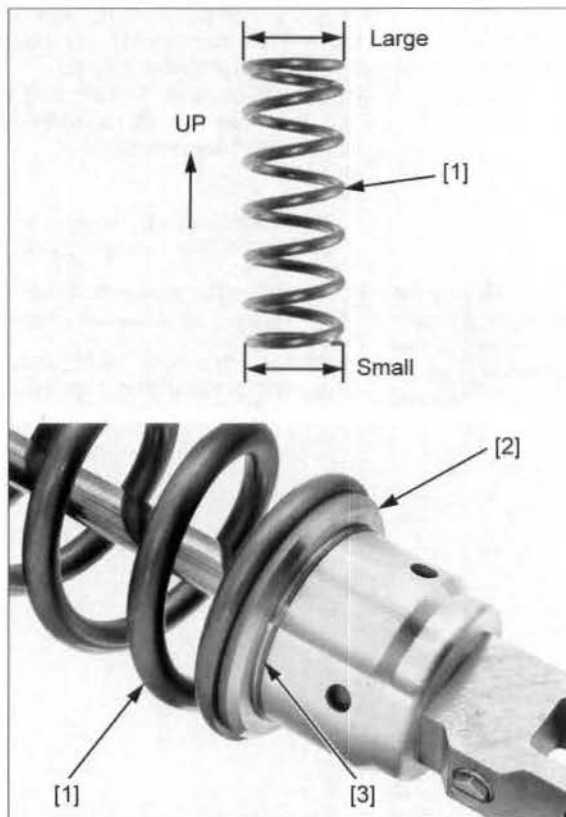
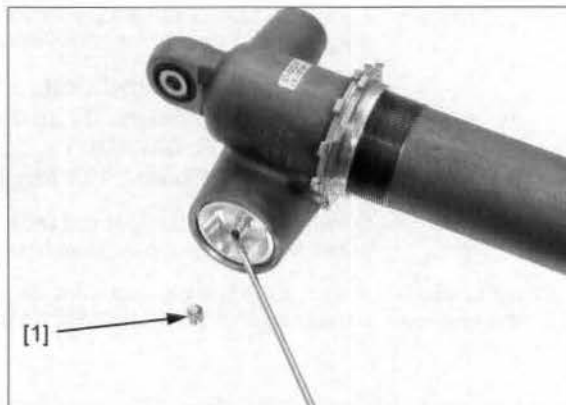
Install the valve cap [1].

Install the shock absorber spring [1] with its small O.D. side facing toward the lower mount.

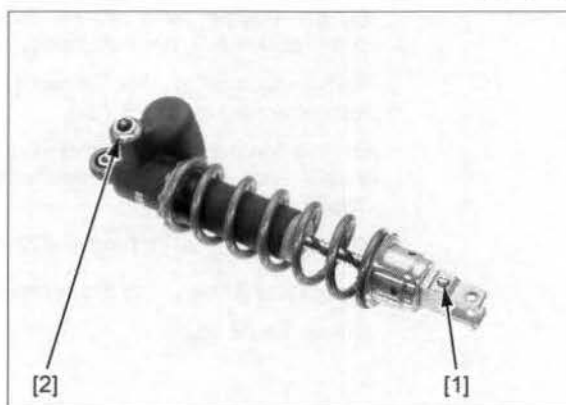
Install the spring seat [2].

Install the stopper ring [3] while compressing the shock absorber spring.

Make sure that the stopper ring is seated in the groove of the spring seat stopper completely.



Turn the shock absorber lower mount so the rebound adjuster screw [1] is on the same side of the compression adjuster [2].



One turn of the adjusting nut changes the spring length by 1.5 mm (0.06 in).

Turn the spring adjusting nut [1] until the spring length measurement recorded at disassembly is reached or until the spring length is as specified below.

STANDARD SPRING LENGTH:

CRF450R:

'17 model: 236.0 mm (9.29 in)

After '17 model: 234.0 mm (9.21 in)

CRF450RX: 231.0 mm (9.09 in)

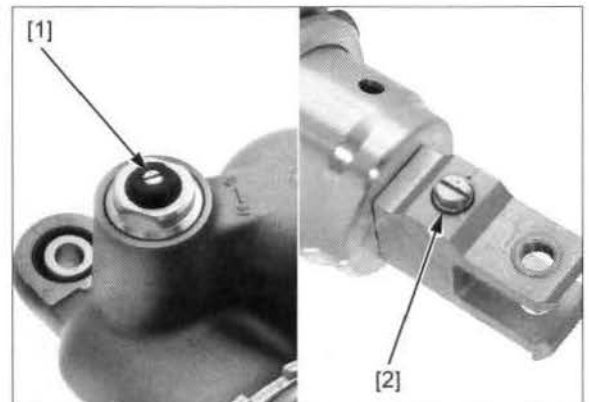
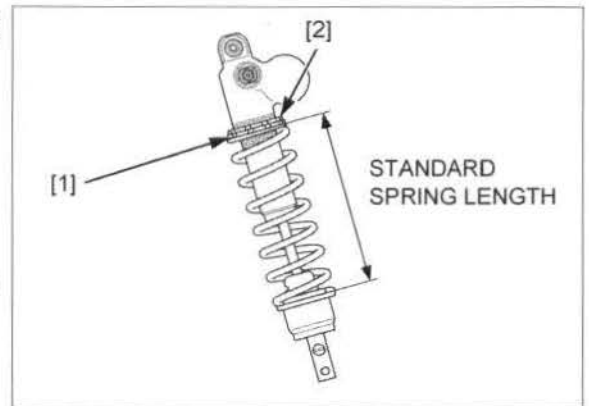
Hold the spring adjusting nut and tighten the spring adjuster lock nut [2] to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)

Use this standard spring length as the baseline.

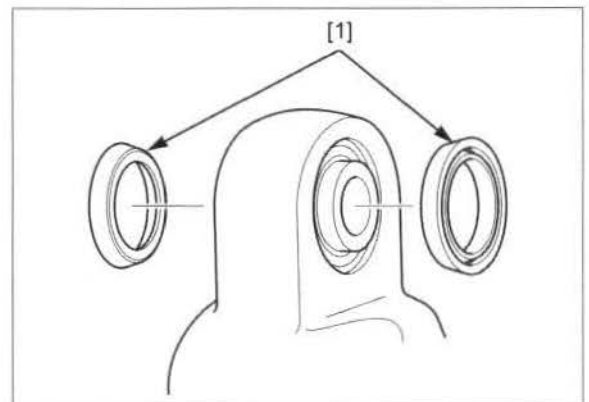
See the Owner's Manual for detailed instructions on adjusting preload and damping for riding conditions and rider skill.

If the compression (low speed side) [1] and rebound [2] damping adjuster turned, return them to the original positions as noted during removal.



SPHERICAL BEARING REPLACEMENT

Remove the dust seals [1] from the upper mount.



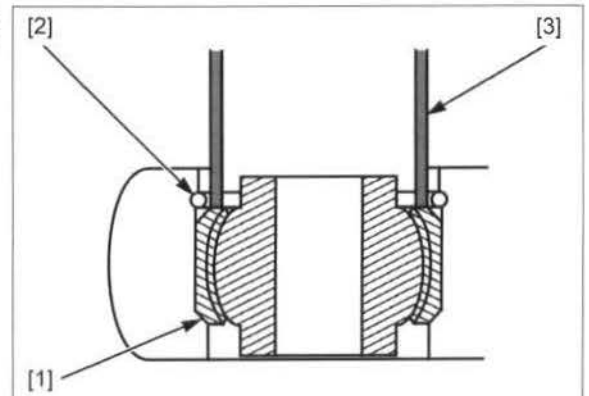
Press the spherical bearing [1] to get the clearance necessary to remove the stopper ring [2] using the special tool.

TOOL:

Collar, 23 x 17 mm [3]

07GMD-KT8A110
(U.S.A. only)

Remove the stopper ring.



REAR WHEEL/SUSPENSION

Press the spherical bearing [1] out of the upper mount using the special tools.

TOOLS:

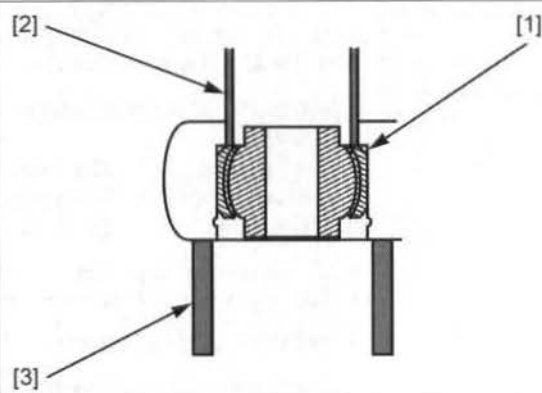
Collar, 23 x 17 mm [2]

Attachment, 30 mm I.D. [3]

07GMD-KT8A110

(U.S.A. only)

07746-0030300



Drive the bearing in evenly; do not allow it to tilt.

Apply molybdenum disulfide grease to a new spherical bearing [1] rolling area.

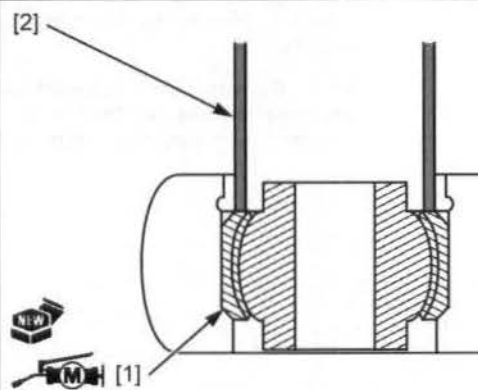
Press the spherical bearing into the upper mount.

TOOL:

Collar, 23 x 17 mm [2]

07GMD-KT8A110

(U.S.A. only)



Install a new stopper ring [1] into the groove of the upper mount securely.

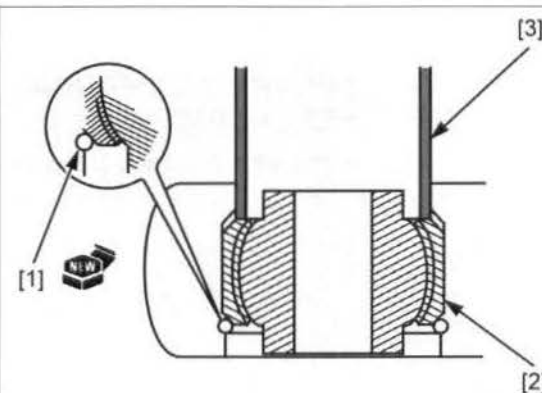
Press the spherical bearing [2] from the opposite side using the special tool, until it seats against the stopper ring.

TOOL:

Collar, 23 x 17 mm [3]

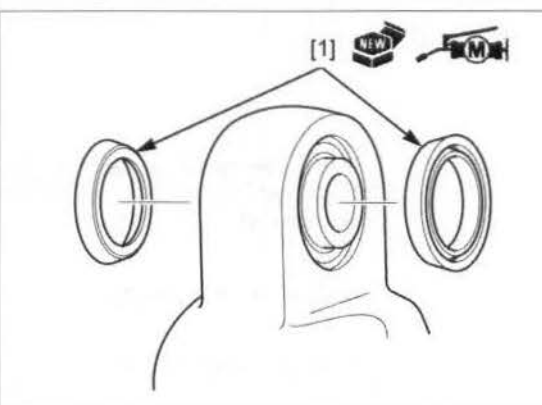
07GMD-KT8A110

(U.S.A. only)



Be sure to install the correct dust seal in each side.

Apply molybdenum disulfide grease to new dust seal [1] lips and install them with the flat side facing toward the inside.



INSTALLATION

Set the shock absorber to the cushion arm with the rebound damping adjuster facing left side.
Install the lower mounting bolt [1] by aligning the flat side of the bolt with the stopper on the shock absorber.

Install and tighten the lower mounting nut [2] to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)

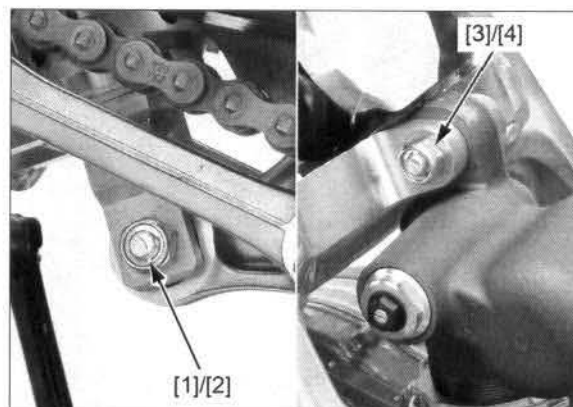
Install the rear shock absorber upper mounting bolt [3] by aligning cut-outs of the frame and upper mounting bolt.

Install and tighten the shock absorber upper mounting nut [4] to the specified torque.

TORQUE: 44 N·m (4.5 kgf·m, 32 lbf·ft)

Install the air cleaner housing (page 7-24).

Install the engine guard (page 2-6).



CUSHION LINKAGE

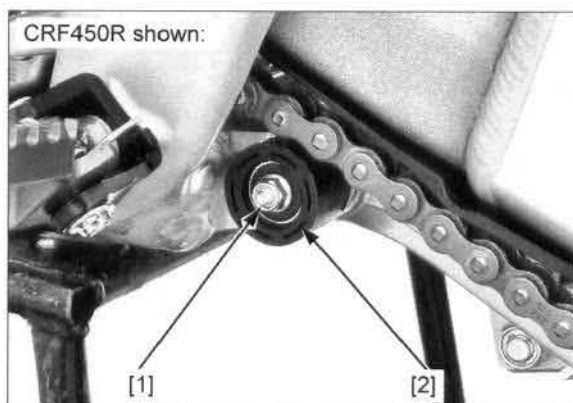
REMOVAL

Remove the engine guard (page 2-6).

Remove the brake pedal pivot bolt (page 18-18).

Raise the rear wheel off the ground by placing a workstand or equivalent under the engine.

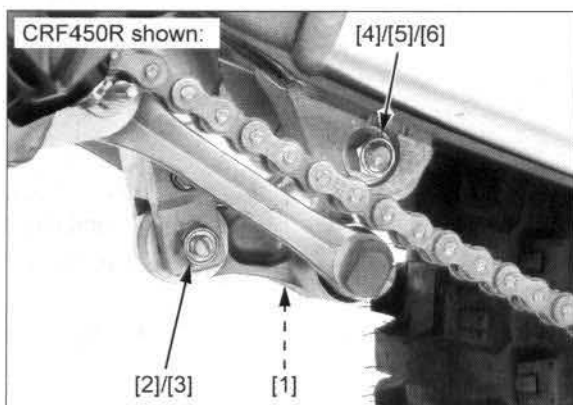
Remove the nut [1] and lower drive chain roller [2].



Loosen the cushion connecting rod nut [1] (cushion arm side).

Remove the following:

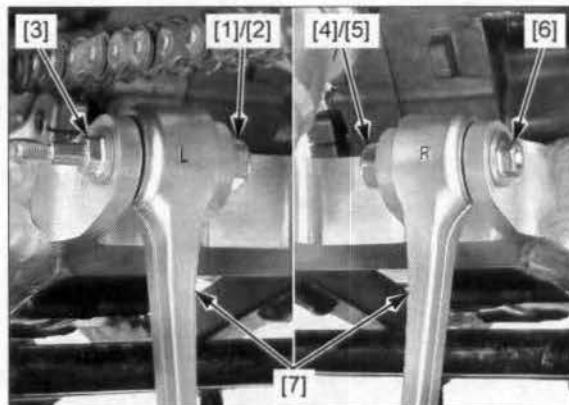
- Shock absorber lower mounting nut [2]/bolt [3]
- Cushion arm nut [4]/washer [5]/bolt [6] (swingarm side)



REAR WHEEL/SUSPENSION

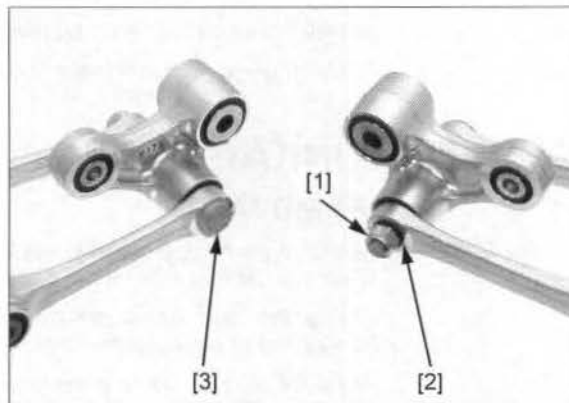
Remove the following:

- Left cushion connecting rod nut [1]/washer [2]/bolt [3] (frame side)
- Right cushion connecting rod nut [4]/washer [5]/bolt [6] (frame side)
- Cushion arm/cushion connecting rod assembly [7]

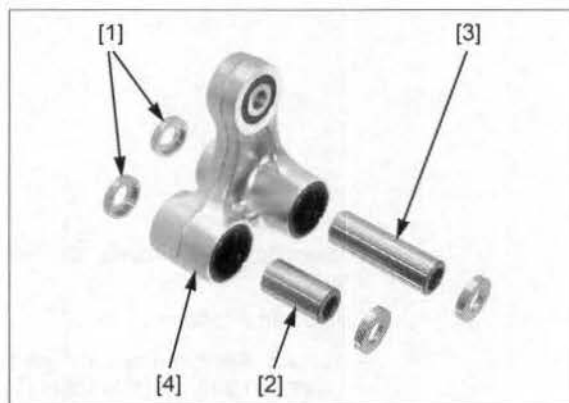


DISASSEMBLY

Separate the left/right cushion connecting rods from the cushion arm by removing the nut [1], washer [2], and bolt [3].



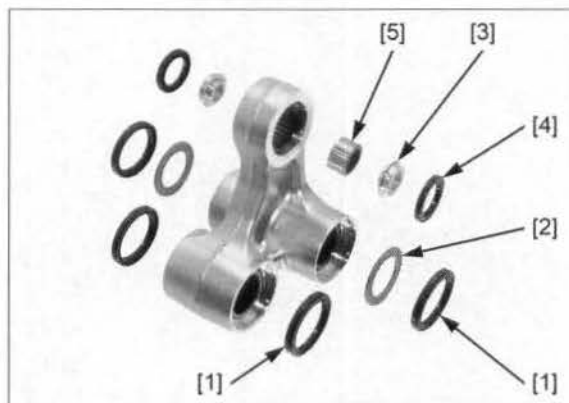
Remove the side collars [1], pivot collar (swingarm side) [2], and pivot collar (cushion connecting rod side) [3] from the cushion arm [4].



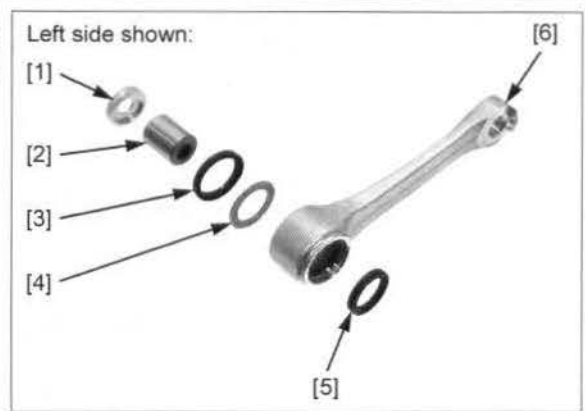
Remove the dust seals (swingarm and cushion connecting rod side) [1] and thrust washers [2].

Remove the side collars [3] with the shock absorber side dust seals [4].

Remove the pivot collar [5].



Remove the side collars [1], connecting rod collar [2], dust seals (25 x 32 x 4 mm) [3], thrust washers [4], and dust seals (20 x 27 x 4 mm) [5] from the cushion connecting rods [6].



INSPECTION

The bearings should turn smoothly and quietly.

Inspect the following parts for damage, abnormal wear, deformation and bend.

- Cushion arm/collars/needle bearings
- Cushion connecting rod/collars/thrust washers/needle bearings

Replace if necessary.

BEARING REPLACEMENT

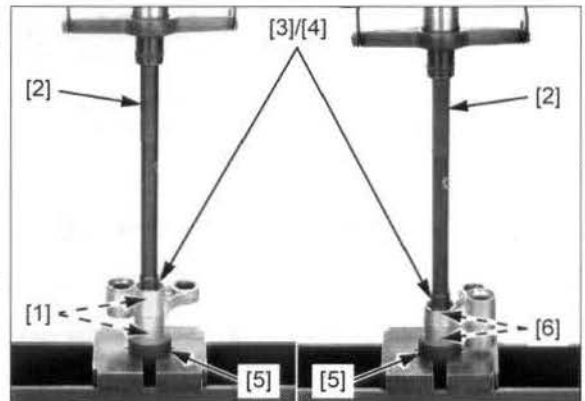
CUSHION ARM NEEDLE BEARING

Press the cushion connecting rod side needle bearings [1] out of the cushion arm using special tools and a hydraulic press.

TOOLS:

Driver, 15 x 280L [2]	07949-3710001
Attachment, 24 x 26 mm [3]	07746-0010700
Pilot, 20 mm [4]	07746-0040500
Attachment, 30 mm I.D. [5]	07746-0030300

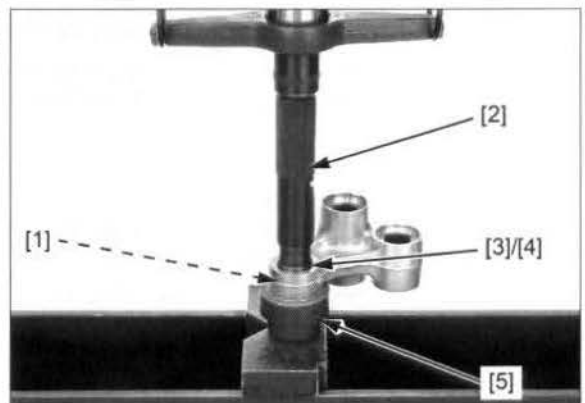
Press the swingarm side needle bearings [6] out of the cushion arm using same tools.



Press the shock absorber side needle bearing [1] out of the cushion arm using special tools and a hydraulic press.

TOOLS:

Driver [2]	07749-0010000
Attachment, 24 x 26 mm [3]	07746-0010700
Pilot, 19 mm [4]	07746-0041400
Attachment, 30 mm I.D. [5]	07746-0030300



REAR WHEEL/SUSPENSION

Apply molybdenum disulfide grease to new cushion connecting rod side needle bearing rolling areas.

Press in the needle bearing with the marked side facing up.

Press in the needle bearings [1] using special tools and a hydraulic press until the specified depth as shown.

TOOLS:

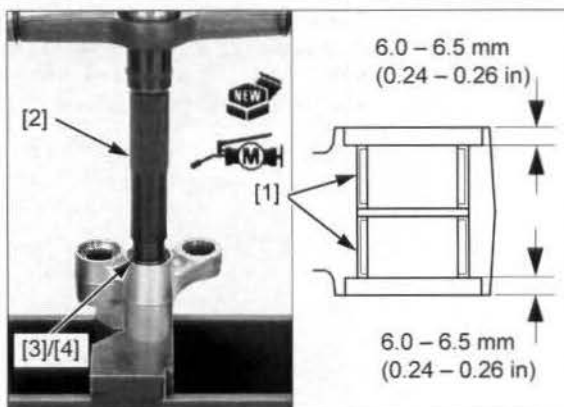
Driver [2] 07749-0010000

Attachment, 24 x 26 mm [3] 07746-0010700

Pilot, 20 mm [4] 07746-0040500

NOTE:

- Be careful not to drop the bearing roller.



Apply molybdenum disulfide grease to new swingarm side needle bearing rolling areas.

Press in the needle bearing with the marked side facing up.

Press in the needle bearings [1] using special tools and a hydraulic press until the specified depth as shown.

TOOLS:

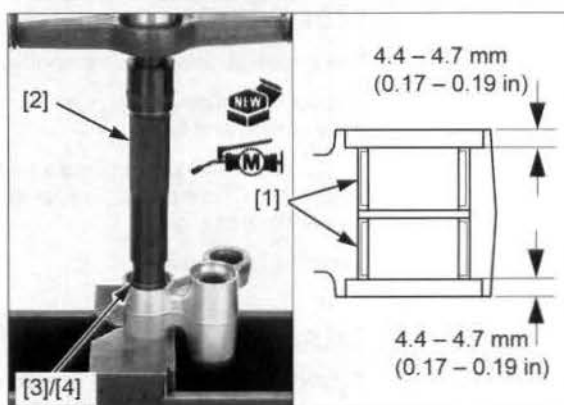
Driver [2] 07749-0010000

Attachment, 24 x 26 mm [3] 07746-0010700

Pilot, 20 mm [4] 07746-0040500

NOTE:

- Be careful not to drop the bearing rollers.



Apply molybdenum disulfide grease to a new shock absorber side needle bearing rolling area.

Press the needle bearing marked side.

Press in the needle bearing [1] using special tools and a hydraulic press until the specified depth as shown.

TOOLS:

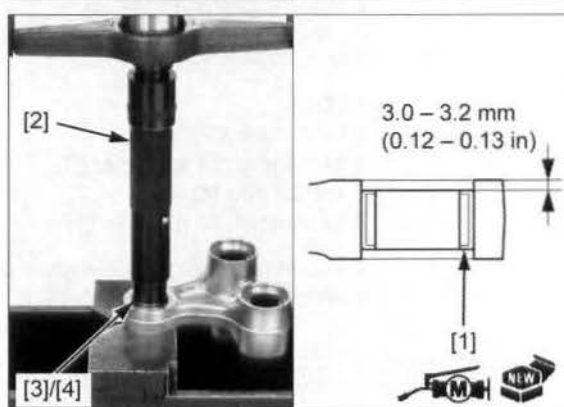
Driver [2] 07749-0010000

Attachment, 24 x 26 mm [3] 07746-0010700

Pilot, 19 mm [4] 07746-0041400

NOTE:

- Be careful not to drop the bearing rollers.



CUSHION CONNECTING ROD NEEDLE BEARING

Press the needle bearings [1] out of the cushion connecting rods using special tools and a hydraulic press.

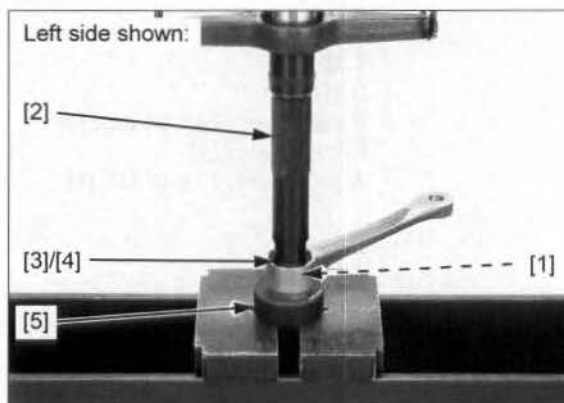
TOOLS:

Driver [2] 07749-0010000

Attachment, 24 x 26 mm [3] 07746-0010700

Pilot, 20 mm [4] 07746-0040500

Attachment, 25 mm I.D. [5] 07746-0030200



Apply molybdenum disulfide grease to new needle bearing rolling area.

Press the needle bearing with the marked side facing up.

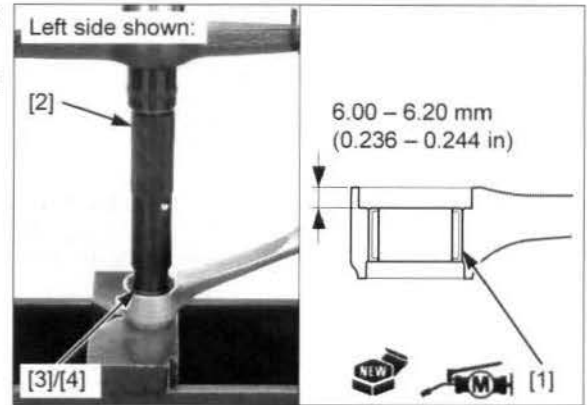
Press in the needle bearing [1] using special tools and a hydraulic press until the specified depth as shown.

TOOLS:

Driver [2] 07749-0010000
Attachment, 24 x 26 mm [3] 07746-0010700
Pilot, 20 mm [4] 07746-0040500

NOTE:

- Be careful not to drop the bearing rollers.



ASSEMBLY

NOTE:

- Make sure the needle bearing rollers are in position before installing.

Number of needle rollers (cushion arm):

Cushion connecting rod side: 32 pcs

Swingarm side: 32 pcs

Shock absorber side: 27 pcs

Number of needle rollers (cushion connecting rod):

32 pcs

Apply molybdenum disulfide grease to a new dust seal lips and side collar inside surfaces.

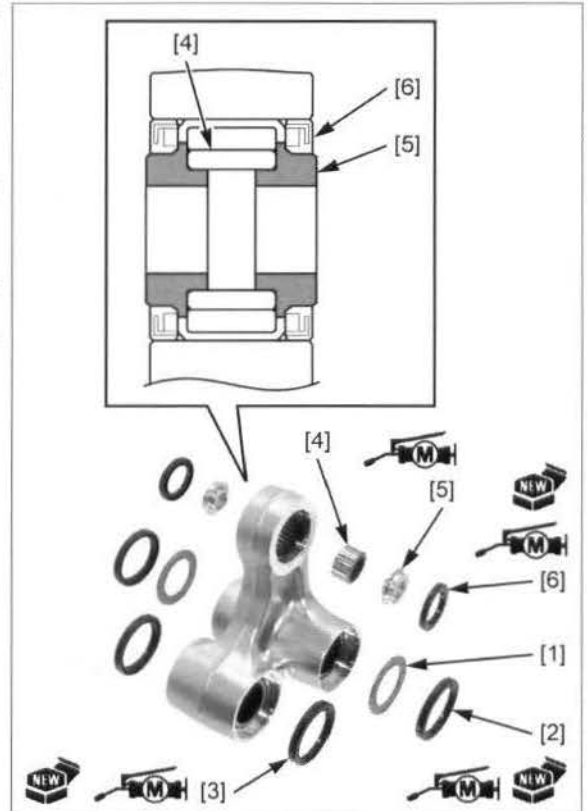
Install the washers [1] and dust seals [2] (cushion connecting rod side).

Install the dust seals [3] (swingarm side).

Install the pivot collar [4], side collars [5] and dust seals [6] (shock absorber side).

NOTE:

- Install the side collars with their larger O.D. side facing out.
- Install each dust seal until it is flush with the cushion arm surface with their marked side facing out.



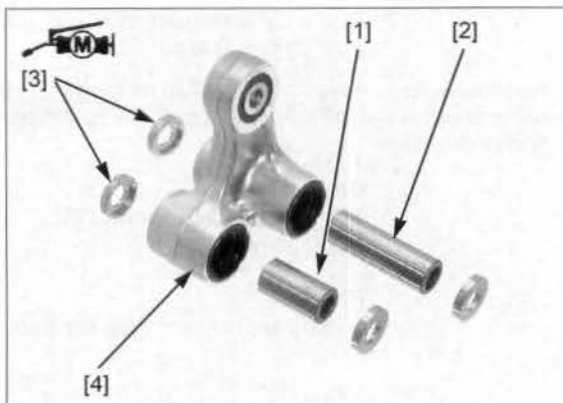
REAR WHEEL/SUSPENSION

Apply molybdenum disulfide grease to the side collar inside surfaces.

Install the pivot collar (swingarm side) [1], pivot collar (cushion connecting rod side) [2], and side collars [3] to the cushion arm [4].

NOTE:

- Install the side collars with their grooves facing in.
- The cushion connecting rod side pivot collar is longer than the swingarm side pivot collar.

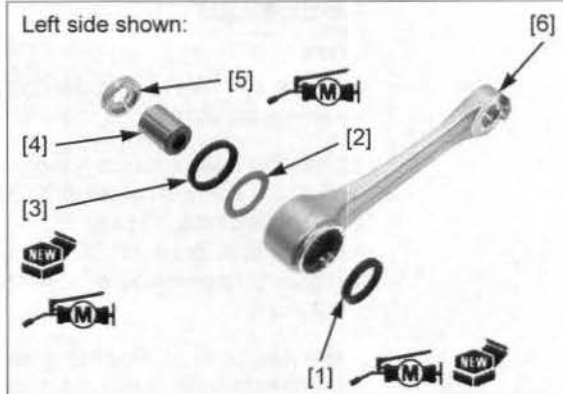


Apply molybdenum disulfide grease to new dust seal lips and side collar inside surfaces.

Install the dust seals (20 x 27 x 4 mm) [1], thrust washers [2], dust seals (25 x 32 x 4 mm) [3], connecting rod collars [4] and side collars [5] to the cushion connecting rods [6].

NOTE:

- Install the side collars with their grooves facing in.
- Install each dust seal until it is flush with the cushion connecting rod surface with their marked side facing out.



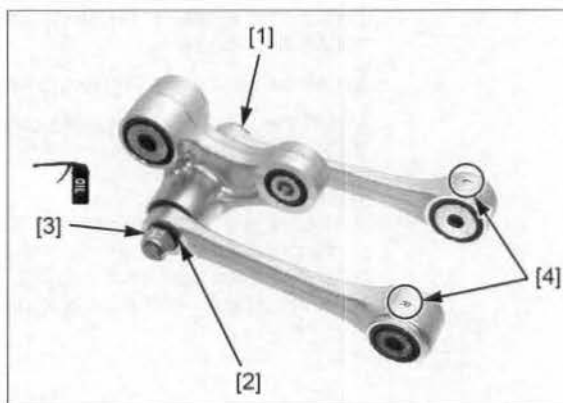
Apply engine oil to the cushion connecting rod nut (cushion arm side) threads and seating surface.

Assemble the left/right cushion connecting rod and cushion arm.

Loosely install the bolt [1], washer [2], and nut [3].

NOTE:

- The cushion connecting rods have identification marks [4]. Install them in the correct side as shown.



INSTALLATION

Apply engine oil to the cushion arm and cushion connecting rod nut threads and seating surface.

Put the cushion connecting rods/cushion arm assembly with the connecting rods identification marks [1] facing up.

Loosely install the following:

- Left cushion connecting rod bolt [2]/washer [3]/nut [4] (frame side)
- Right cushion connecting rod bolt [5]/washer [6]/nut [7] (frame side)
- Cushion arm bolt [8]/washer [9]/nut [10] (swingarm side)
- Shock absorber lower mounting bolt [11]/nut [12]

Tighten the bolts and nuts to the specified torque.

NOTE:

- Tighten the cushion connecting rod bolts (frame side) while holding the nuts.

TORQUE:

Cushion connecting rod bolt (frame side):

37 N·m (3.8 kgf·m, 27 lbf·ft)

Cushion arm nut (swingarm side):

52 N·m (5.3 kgf·m, 38 lbf·ft)

Cushion arm nut [13]

(cushion connecting rod side):

52 N·m (5.3 kgf·m, 38 lbf·ft)

Shock absorber lower mounting nut:

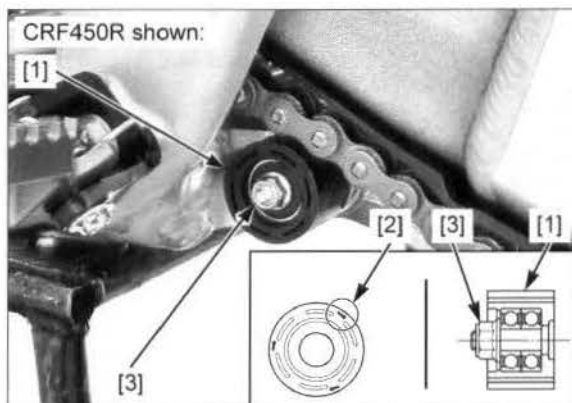
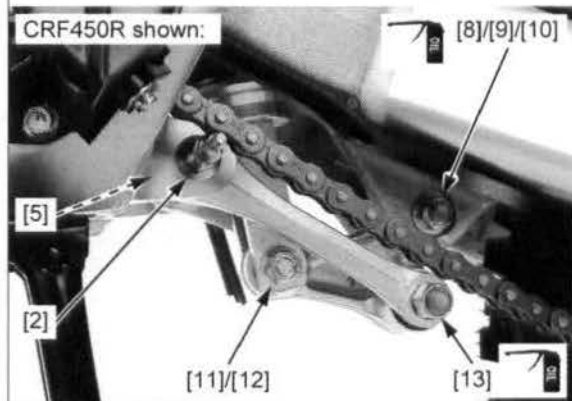
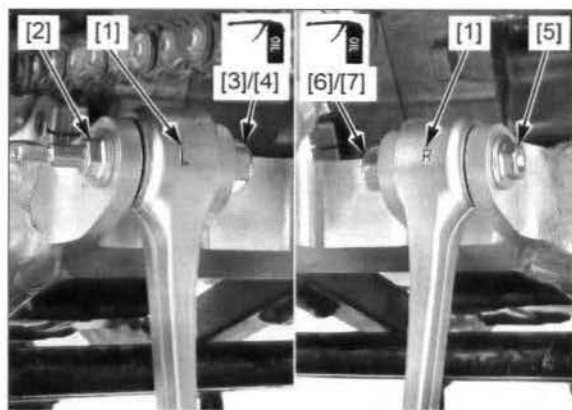
44 N·m (4.5 kgf·m, 32 lbf·ft)

Install the lower roller [1] with the "—" mark [2] facing out as shown.

Install and tighten the nut [3] to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

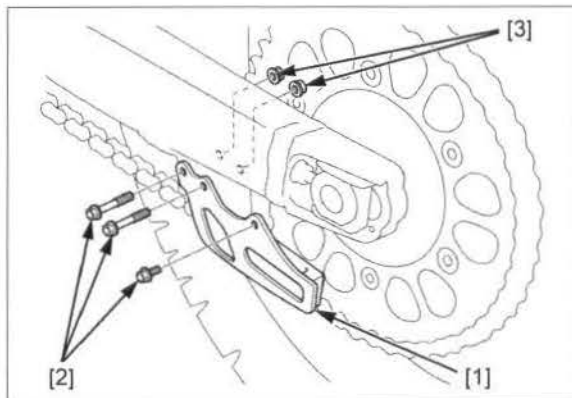
Install the engine guard (page 2-6).



DRIVE CHAIN GUIDE/DRIVE CHAIN GUIDE SLIDER

REMOVAL/INSTALLATION

Release the drive chain guide/drive chain guide slider [1] from the swingarm by removing the bolts [2], nuts [3].



REAR WHEEL/SUSPENSION

Slide the drive chain guide sliders [1] forward and separate them.

Remove the drive chain guide [2].

Check the drive chain guide slider for wear or damage (page 3-22).

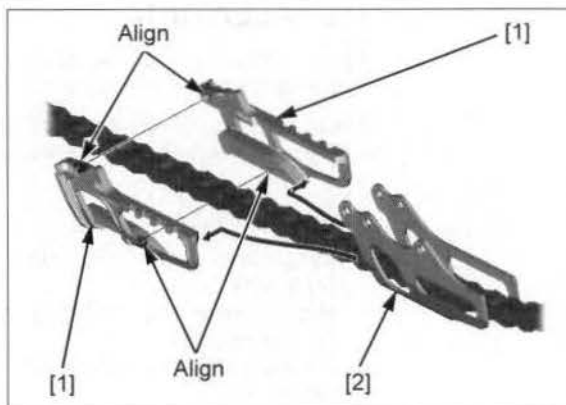
Installation is in the reverse order of removal.

NOTE:

- Align the slider bosses and grooves.

TORQUE:

Drive chain guide mounting bolt/nut:
12 N·m (1.2 kgf·m, 9 lbf·ft)



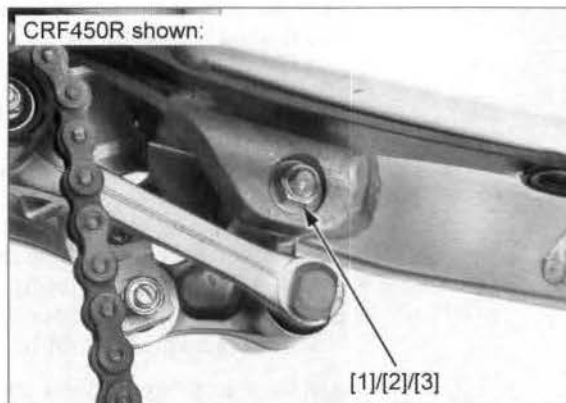
SWINGARM

REMOVAL

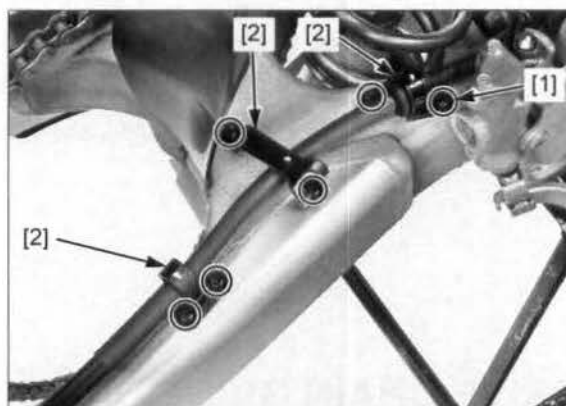
Remove the following:

- Drive chain guide/drive chain guide slider (page 17-33)
- Rear wheel (page 17-6)
- Brake pedal pivot bolt (page 18-18)

Remove the cushion arm nut [1], washer [2], and bolt [3] (swingarm side).

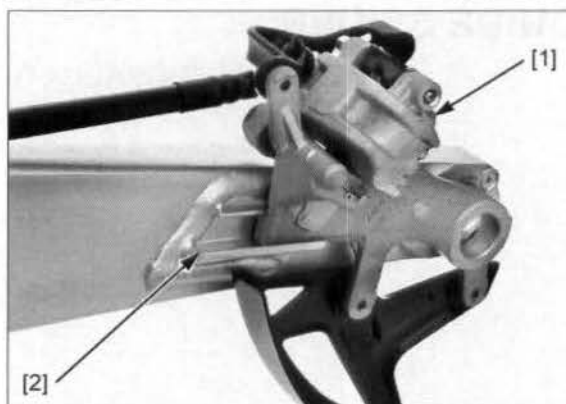


Remove the screws [1] and brake hose guides [2].

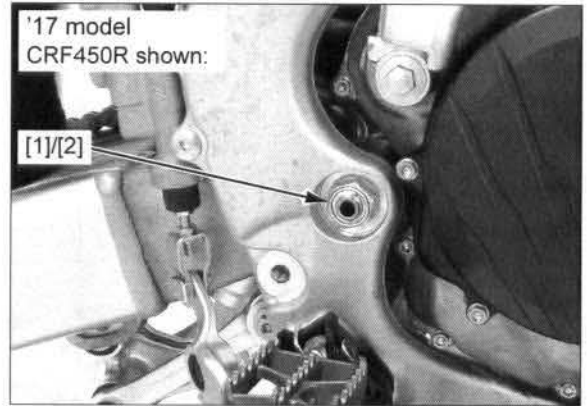


Do not hang the brake caliper by the brake hose. Do not twist the brake hose. Do not operate the brake pedal after removing the rear wheel.

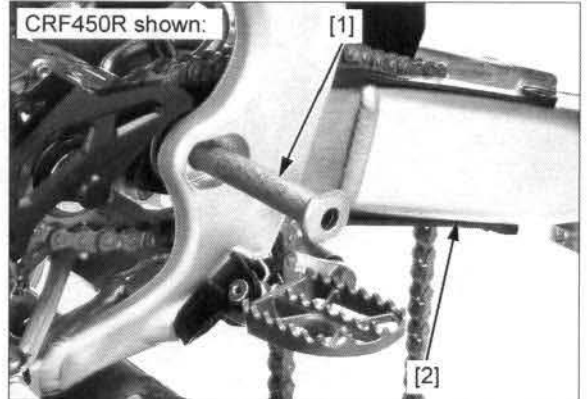
Remove the rear brake caliper/bracket assembly [1] from the slide rail [2] of the swingarm.



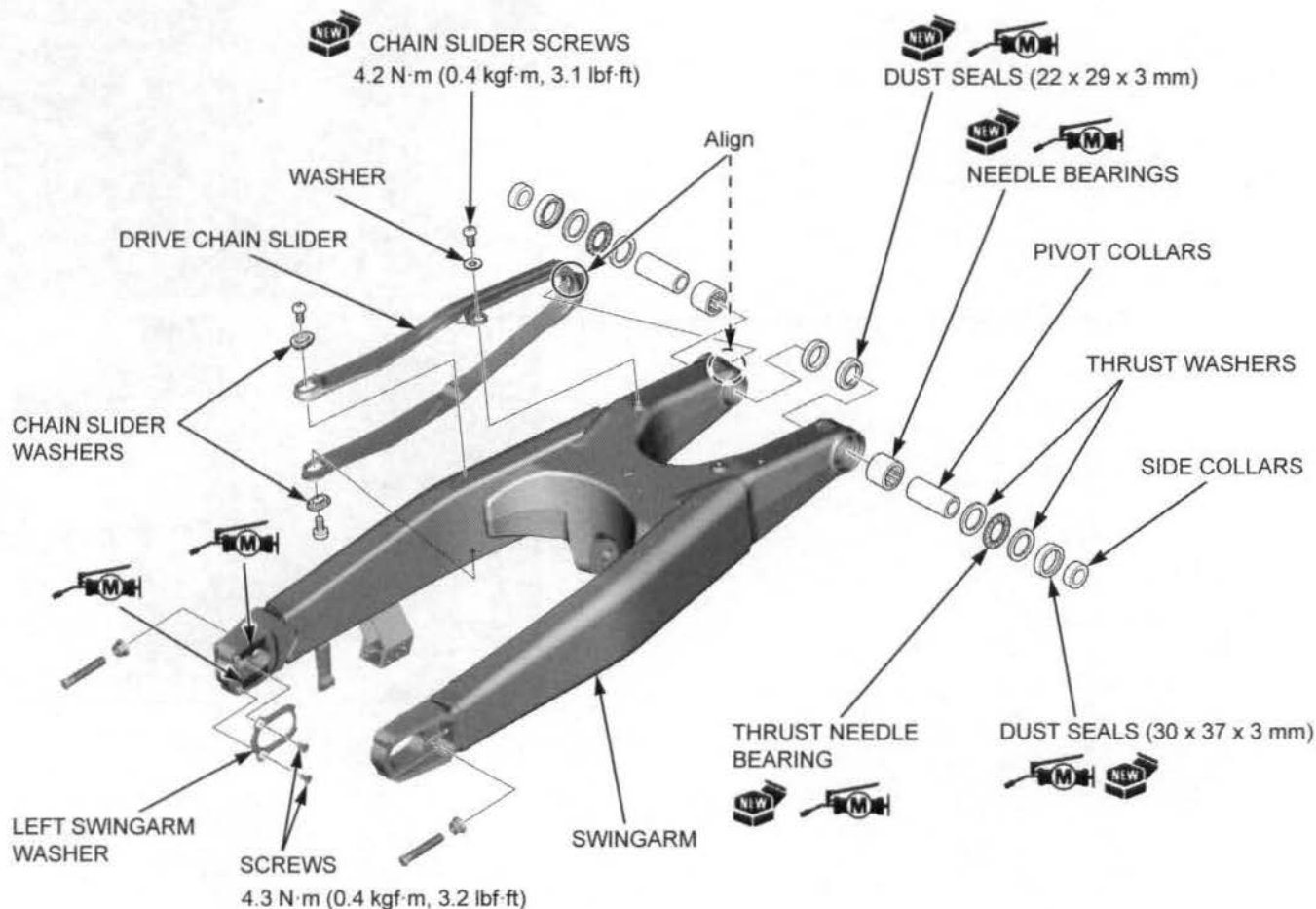
Remove the swingarm pivot nut [1] and washer [2].



Remove the swingarm pivot bolt [1] and swingarm [2].



DISASSEMBLY/ASSEMBLY



NOTE:

- Check the drive chain slider for wear or damage (page 3-22).
- Make sure the needle bearing rollers (32 pcs) are in position before installing.
- Align the drive chain slider slot with the swingarm boss.
- Install the dust seals until it is flush with the swingarm surface.

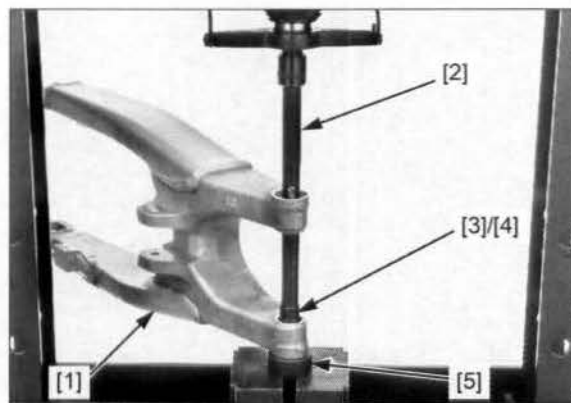
BEARING REPLACEMENT

Press the needle bearings out of the swingarm [1] using special tools and a hydraulic press.

TOOLS:

Driver, 15 x 280L [2]
Attachment, 24 x 26 mm [3]
Pilot, 22 mm [4]
Attachment, 30 mm I.D. [5]

07949-3710001
07746-0010700
07746-0041000
07746-0030300



Press the needle bearing into the swingarm pivot by pushing the marked side.

Apply molybdenum disulfide grease to a new needle bearing rolling area.

Press in the needle bearing [1] until it is flush with the swingarm surface using the special tools and a hydraulic press.

TOOLS:

Driver [2] 07749-0010000

Attachment, 28 x 30 mm [3] 07946-1870100

Pilot, 22 mm [4] 07746-0041000

NOTE:

- Be careful not to drop the needle bearing rollers.

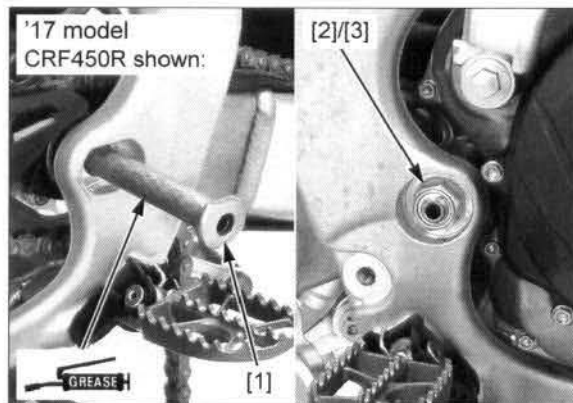
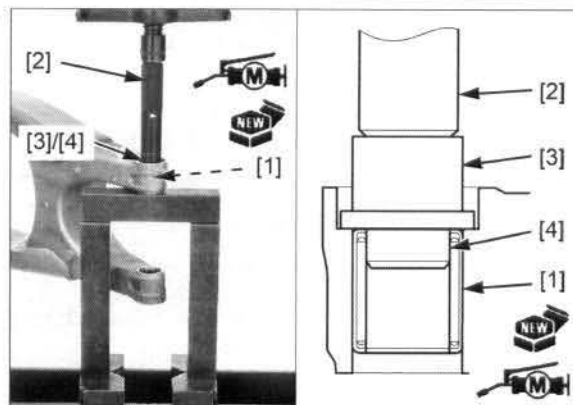
INSTALLATION

Apply a thin coat of grease to the swingarm pivot bolt outer surface.

Install the swingarm between the engine and frame.
Install the swingarm pivot bolt [1] from the left side through the frame, swingarm pivot and engine.

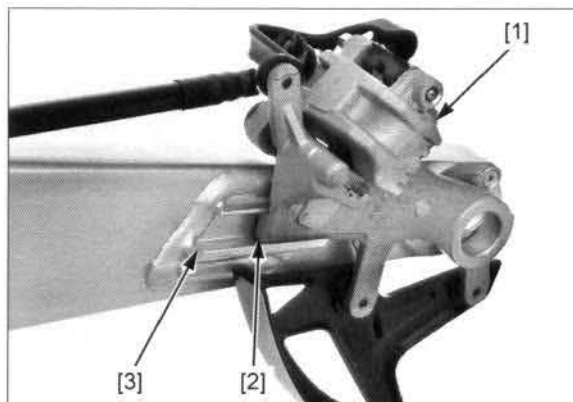
Install the washer [2] and swingarm pivot nut [3].
Tighten the swingarm pivot nut to the specified torque.

TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)



Do not twist the brake hose.

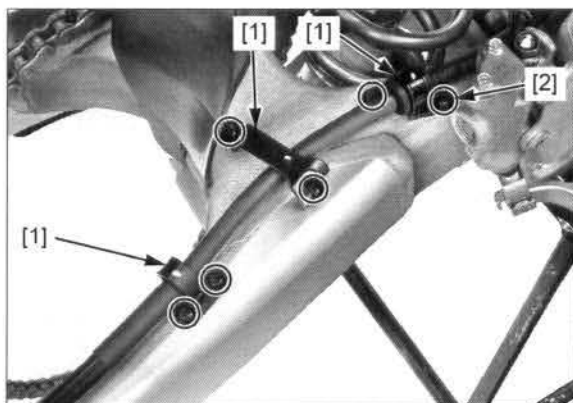
Install the rear brake caliper/bracket assembly [1] to the swingarm by aligning the bracket tab [2] with the slide rail [3] of the swingarm.



Install the brake hose guides [1] and screws [2].

Tighten the screws to the specified torque.

TORQUE: 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)



REAR WHEEL/SUSPENSION

Apply engine oil to the cushion arm nut [1] (swingarm side) threads and seating surface.

Install the cushion arm bolt [2], washer [3] and nut (swingarm side).

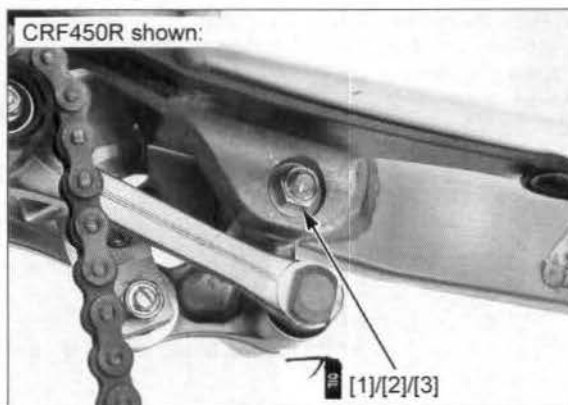
Tighten the nut to the specified torque.

TORQUE: 52 N·m (5.3 kgf·m, 38 lbf·ft)

Install the following:

- Brake pedal pivot bolt (page 18-18)
- Rear wheel (page 17-9)
- Drive chain guide/drive chain guide slider (page 17-33)

CRF450R shown:



SERVICE INFORMATION.....	18-2	FRONT MASTER CYLINDER.....	18-11
TROUBLESHOOTING	18-3	REAR MASTER CYLINDER.....	18-13
COMPONENT LOCATION	18-4	FRONT BRAKE CALIPER	18-15
BRAKE FLUID REPLACEMENT/ AIR BLEEDING	18-6	REAR BRAKE CALIPER.....	18-17
BRAKE PADS/DISC	18-9	BRAKE PEDAL	18-18

SERVICE INFORMATION

GENERAL

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

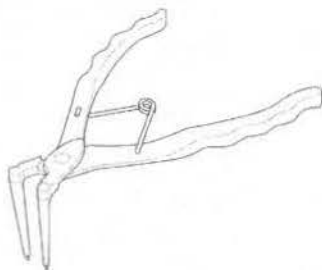
NOTICE

Spilled brake fluid will severely damage plastic parts and painted surfaces. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cap; 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 high quality brake degreasing agent.
- Check the brake system by applying the brake lever or pedal after the air bleeding.
- Never allow contaminants (dirt, water, etc.) to get into an open reservoir.
- Once the hydraulic system has been opened, or if the brake feels spongy, the system must be bled.
- Always use fresh Honda 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.

TOOL

Snap ring pliers
07914-SA50001



TROUBLESHOOTING

Brake lever/pedal soft or spongy

- Air in hydraulic system
- Leaking hydraulic system
- Contaminated brake pads/disc
- Worn caliper piston seals
- Worn master cylinder piston cups
- Worn brake pads/disc
- Contaminated caliper
- Caliper bracket not sliding properly
- Low brake fluid level
- Clogged fluid passage
- Warped/deformed brake disc
- Sticking/worn caliper piston
- Sticking/worn master cylinder piston
- Contaminated master cylinder
- Bent brake lever/pedal

Brake lever/pedal hard

- Sticking/worn caliper piston
- Caliper bracket not sliding properly
- Clogged/restricted fluid passage
- Worn caliper piston seals
- Sticking/worn master cylinder piston
- Bent brake lever/pedal

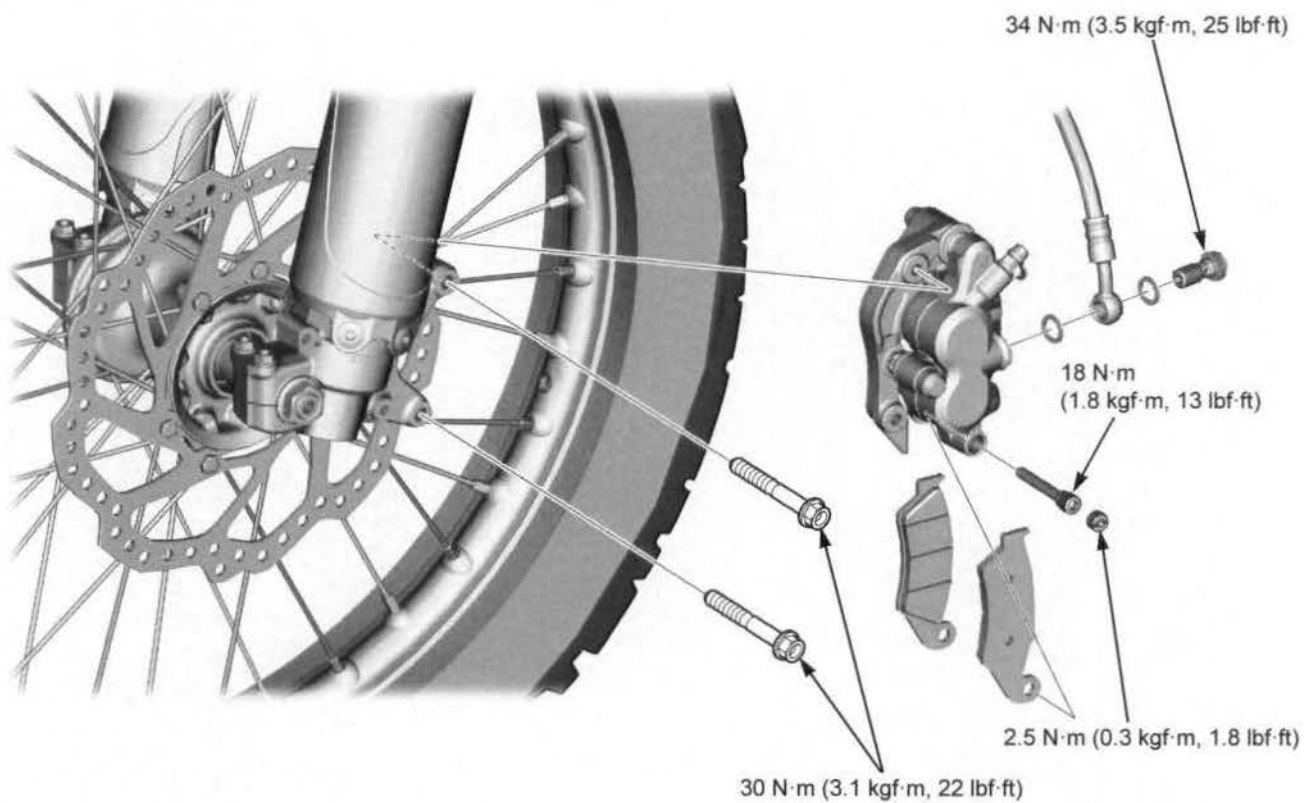
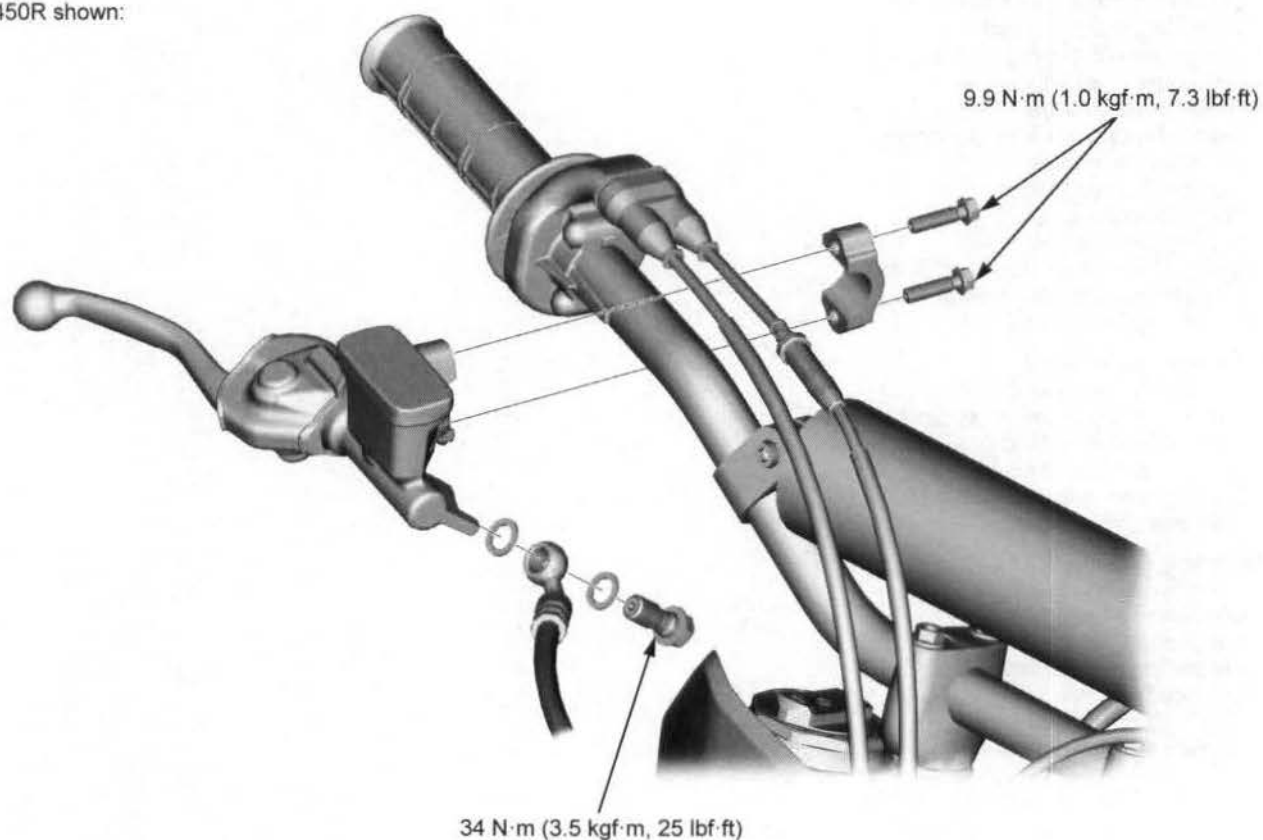
Brake drags

- Contaminated brake pads/disc
- Misaligned wheel
- Warped/deformed brake disc
- Caliper bracket not sliding properly
- Clogged/restricted brake hydraulic system
- Sticking/worn caliper piston
- Sticking master cylinder piston

COMPONENT LOCATION

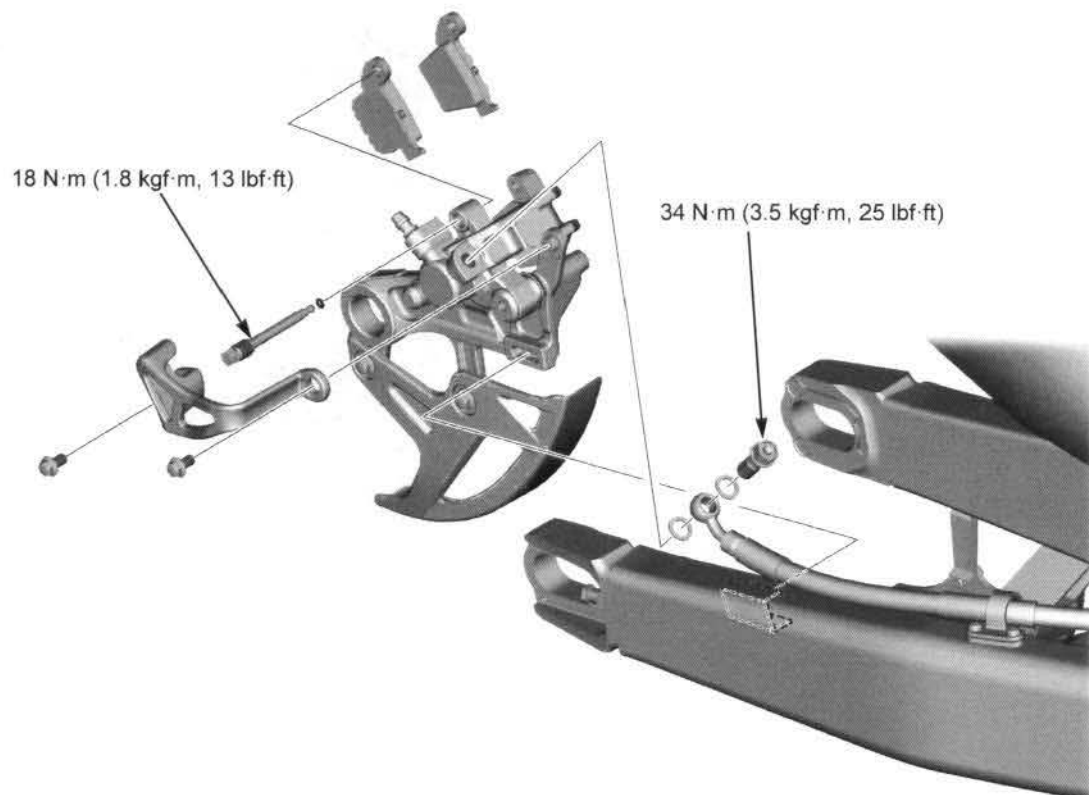
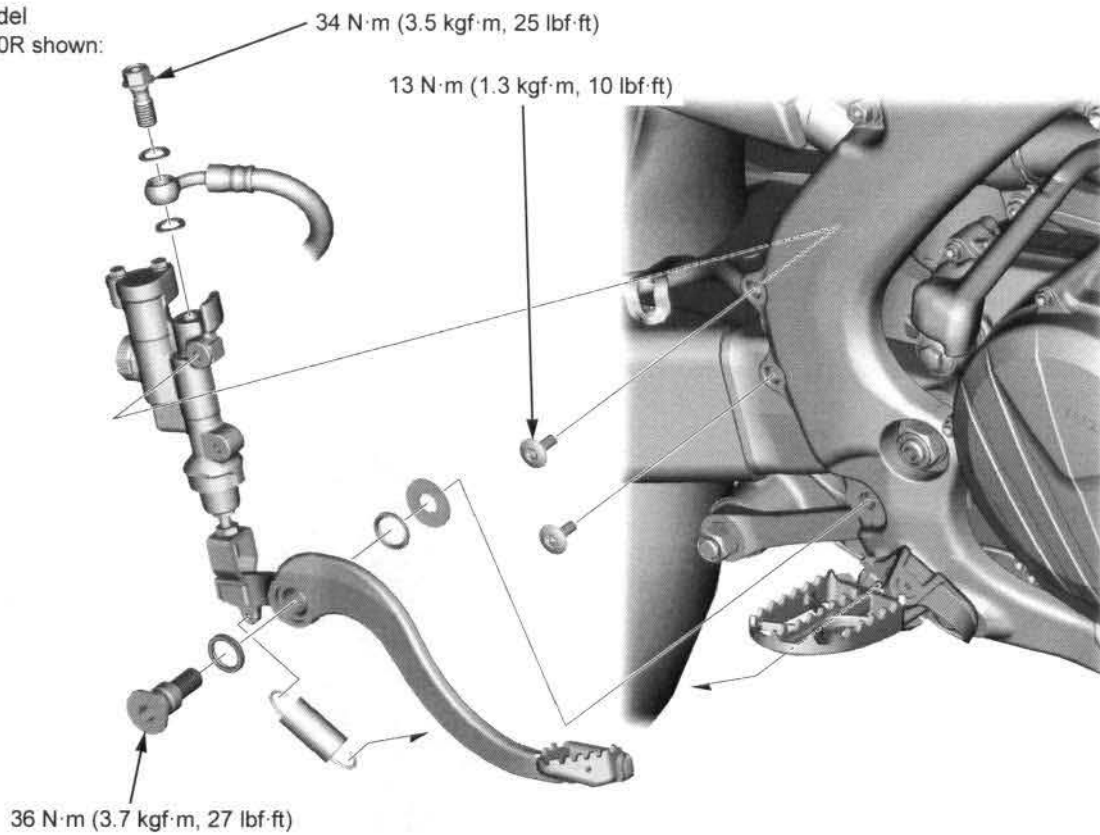
FRONT:

'17 model
CRF450R shown:



REAR:

'17 model
CRF450R shown:



BRAKE FLUID REPLACEMENT/AIR BLEEDING

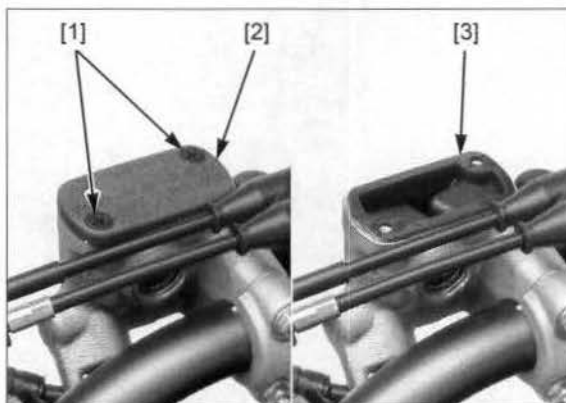
NOTE:

- When using a commercially available brake bleeder, follow the manufacturer's operating instruction.
- Do not allow foreign material to enter the system when draining/filling the reservoir.

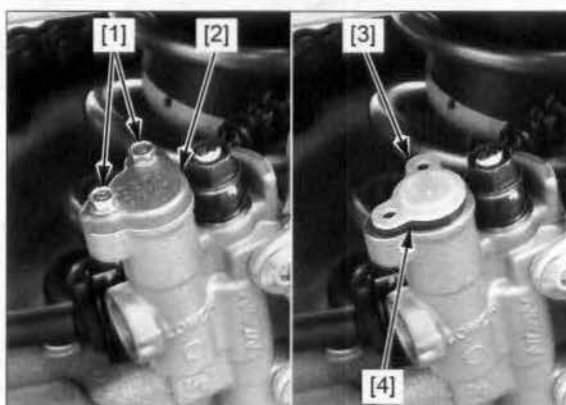
BRAKE FLUID DRAINING

Check the master cylinder parallel to the ground, before removing the reservoir cover.

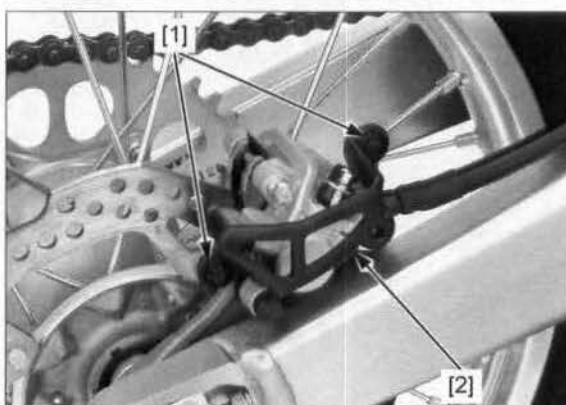
Front: Remove the screws [1], reservoir cover [2] and diaphragm [3].



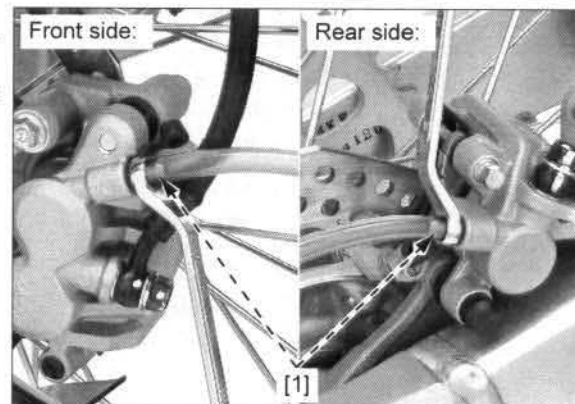
Rear: Remove the bolts [1], reservoir cover [2], set plate [3] and diaphragm [4].



Rear: Remove the bolts [1] and rear brake caliper guard [2].



Connect a bleed hose to the bleed valve [1].
Loosen the bleed valve and pump the brake lever or pedal.
Stop operating the brake when no more fluid flows out of the bleed valve.



BRAKE FLUID FILLING/AIR BLEEDING

Do not mix different types of fluid; they are not compatible.

Fill the reservoir to the upper level line [1] with the recommended brake fluid from a sealed container.

Connect a automatic refill system to the reservoir.

If an automatic refill system is not used, add fluid when the fluid level in the reservoir is low.

NOTE:

- Check the fluid level often while bleeding the brake to prevent air from being pumped into the system.

Connect a commercially available brake bleeder to the bleed valve [2].

Operate the brake bleeder and loosen the bleed valve.

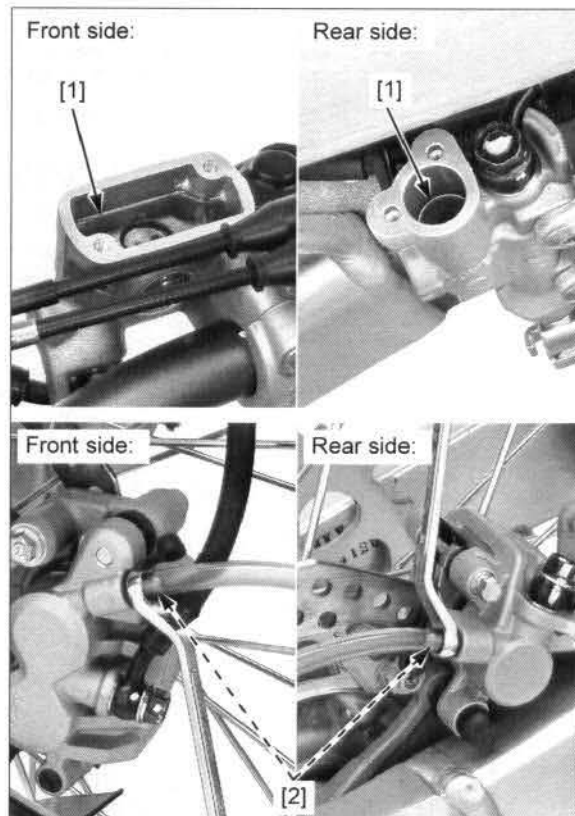
If air enters the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Perform the bleeding procedure until the system is completely flushed/bled.

Close the bleed valve and operate the brake lever/pedal. If it still feels spongy, bleed the system again.

After bleeding the system completely, tighten the brake caliper bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)



HYDRAULIC BRAKE

If a brake bleeder is not available, perform the following procedures:

Fill the reservoir to the upper level line [1] with the recommended brake fluid from a sealed container.

Connect a bleed hose to the bleed valve [2].

Wrap a clean shop towel around the reservoir to prevent brake fluid spilling.

Pressurize the system with the brake lever or pedal until there are no air bubbles in the brake fluid flowing out of the small hole in the reservoir and lever or pedal resistance is felt.

1. Squeeze the brake lever or push the brake pedal, open the bleed valve 1/4 turn and then close the bleed valve.

NOTE:

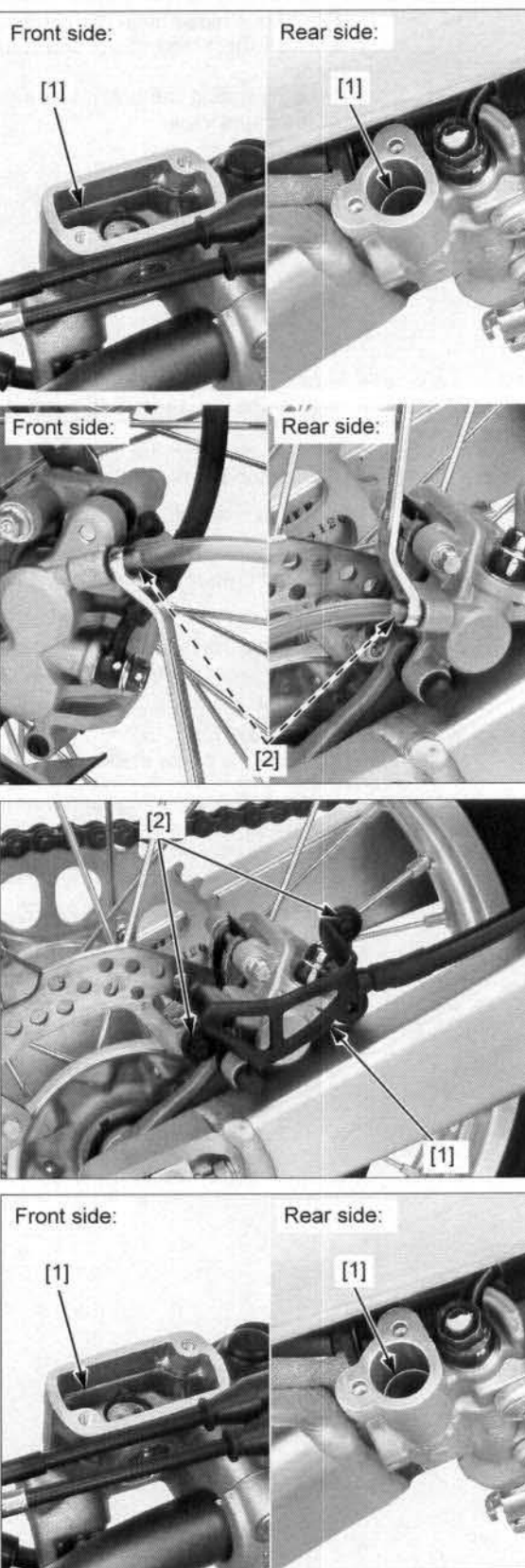
- Do not release the brake lever or pedal until the bleed valve has been closed.
2. Release the brake lever or pedal slowly and wait several seconds after it reaches the end of its travel.
 3. Repeat steps 1 to 2 until there are no air bubbles in the bleed hose.

After bleeding air completely, tighten the bleed valves to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

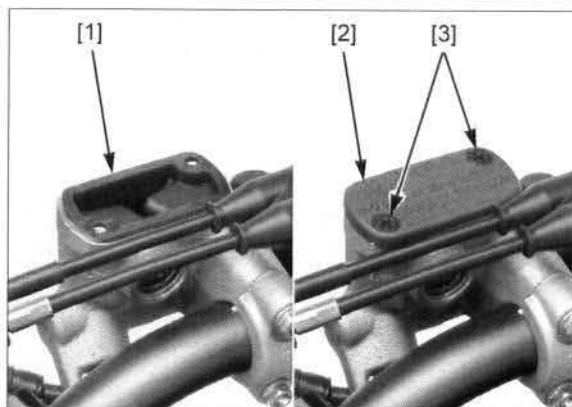
Rear: For the rear brake, install the brake caliper guard [1] and tighten the bolts [2] securely.

Fill each reservoir with the recommended brake fluid to the upper level line [1].



Front: Install the diaphragm [1] and reservoir cover [2]. Tighten the reservoir cover screws [3] to the specified torque.

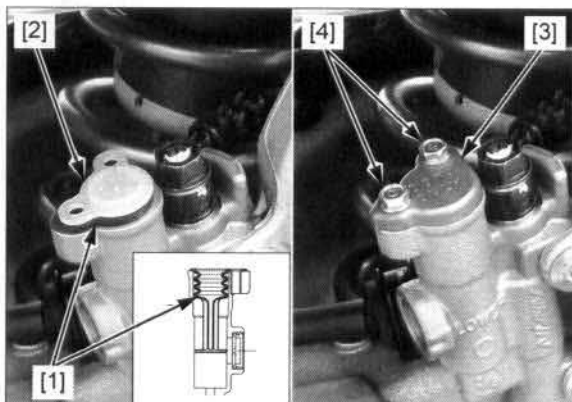
TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)



Rear: Straighten the diaphragm [1] and install it to the rear master cylinder. Check the diaphragm installation as shown.

Install the set plate [2] and reservoir cover [3]. Tighten the reservoir cover bolts [4] to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)



BRAKE PADS/DISC

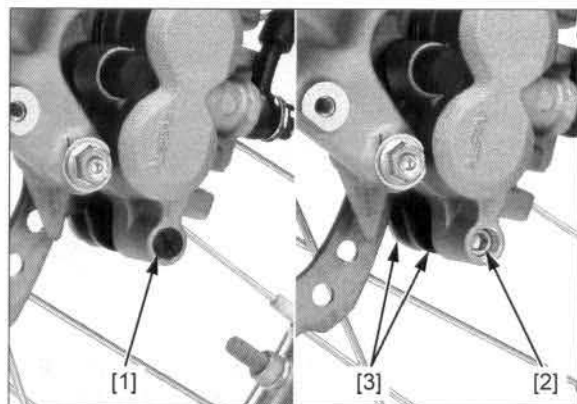
FRONT BRAKE PADS REPLACEMENT

Remove the disc cover (page 16-6).

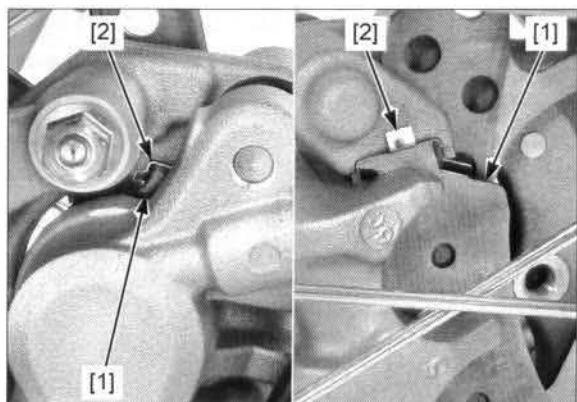
Remove the pad pin plug [1], pad pin [2], and brake pads [3].

Clean the inside of the brake caliper especially around the caliper pistons.

Make sure the retainer and pad spring are installed correctly.

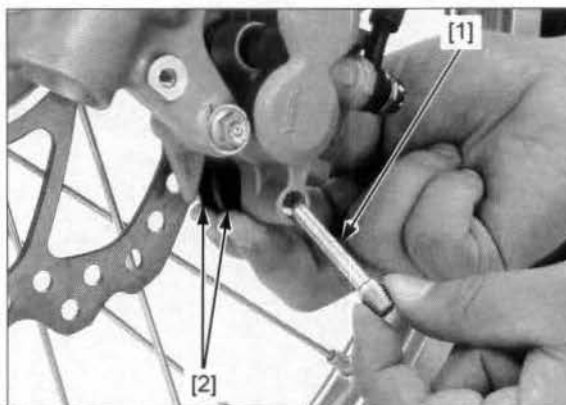


Install new brake pads [1] to the brake caliper so their ends seat against the retainer [2].



HYDRAULIC BRAKE

Install the pad pin [1] by pushing the brake pads [2] against the pad spring.



Tighten the pad pin [1] to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

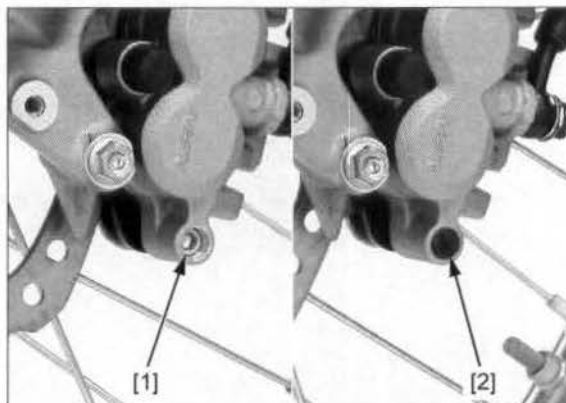
Install and tighten the pad pin plug [2] to the specified torque.

TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)

Apply the brake lever to force the caliper piston out of the caliper.

Rotate the wheel by hand and check the brake operation.

Install the front brake disc cover (page 16-9).



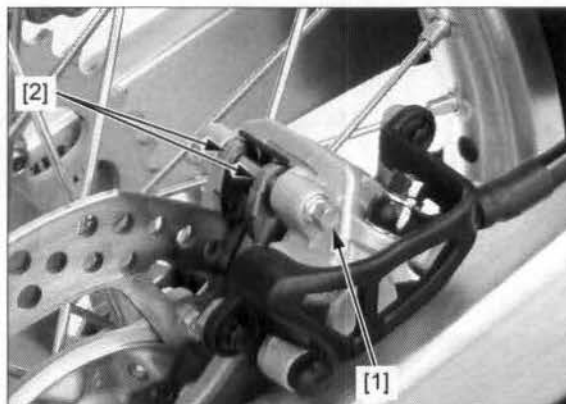
REAR BRAKE PADS REPLACEMENT

Remove the pad pin [1] and brake pads [2].

Clean the inside of the brake caliper especially around the caliper pistons.

Make sure the retainer and pad spring are installed correctly.

Check that the brake pad pin stopper ring is in good condition, and replace if necessary.



Install new brake pads [1] to the brake caliper so their ends seat against the retainer.

Apply silicone grease to the stopper ring [2].

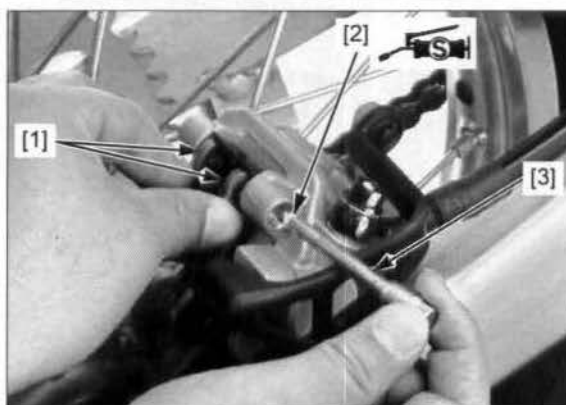
Install the pad pin [3] by pushing the brake pads against the pad spring.

Tighten the pad pin to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Apply the brake pedal to force the caliper piston out of the caliper.

Rotate the wheel by hand and check the brake operation.



BRAKE DISC INSPECTION

Visually inspect the brake discs for damage or cracks.

Measure the brake disc according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-10).

Replace if necessary.

FRONT MASTER CYLINDER**REMOVAL**

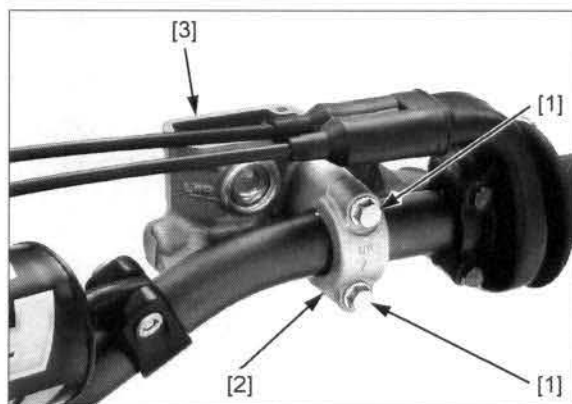
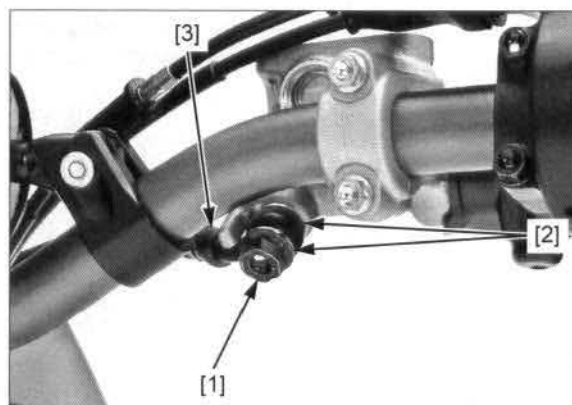
Except '17 model CRF450R: Release the starter switch (page 20-11).

Drain the front brake hydraulic system (page 18-6).

When removing the oil bolt, cover the end of the hose to prevent contamination. Secure the hose to prevent brake fluid from leaking out.

Remove the brake hose oil bolt [1], sealing washers [2] and brake hose [3].

Remove the bolts [1], holder [2] and master cylinder assembly [3].



DISASSEMBLY/ASSEMBLY

NOTE:

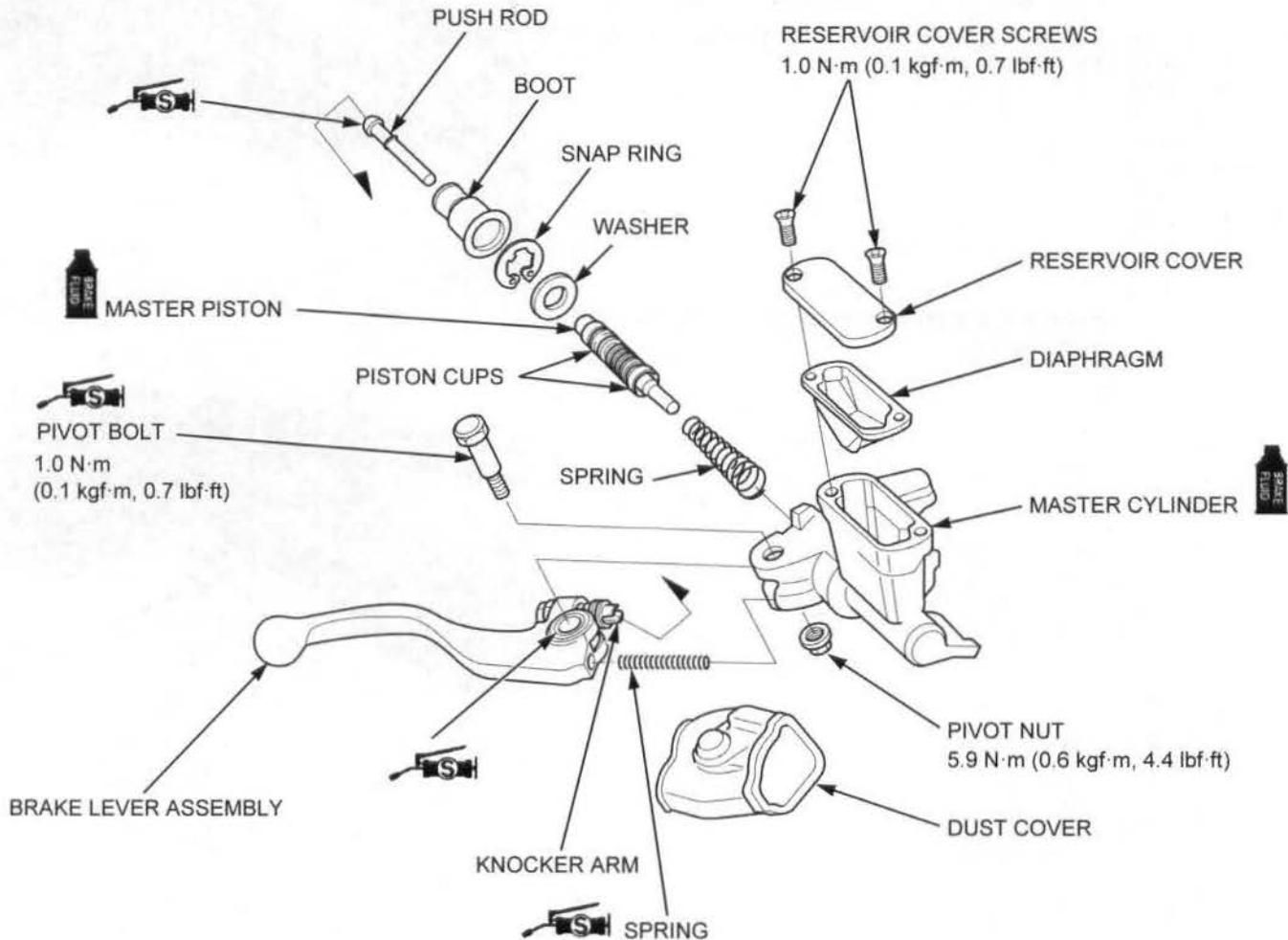
- When removing and installing the snap ring, use the special tool.

TOOL:

Snap ring pliers

07914-SA50001

- Install the snap ring with the chamfered edge facing the thrust road 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.



INSPECTION

Inspect the following parts for scoring, scratches, deterioration and damage.

- Master cylinder
- Master piston
- Piston cups
- Spring
- Boot
- Brake lever/knocker arm
- Push rod

Measure each part according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-10).

Replace any part if it is out of service limit.

INSTALLATION

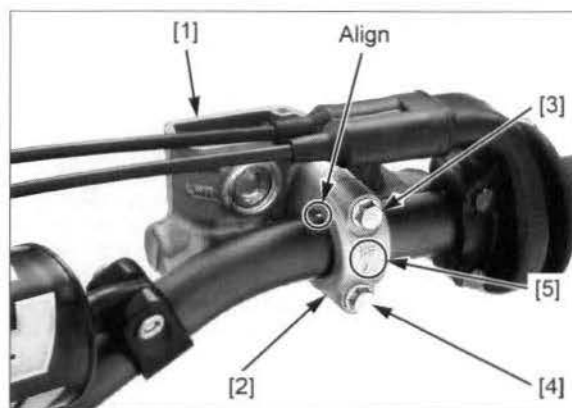
Install the master cylinder assembly [1], holder [2] and upper bolt [3], and lower bolt [4].

NOTE:

- Install the master cylinder holder with the "UP" mark [5] facing up.
- Align the end of the master cylinder with the handlebar punch mark.

Tighten the front master cylinder holder upper bolt first, then the lower bolt to the specified torque.

TORQUE: 9.9 N·m (1.0 kgf·m, 7.3 lbf·ft)



Install the brake hose [1], new sealing washers [2], and brake hose oil bolt [3].

NOTE:

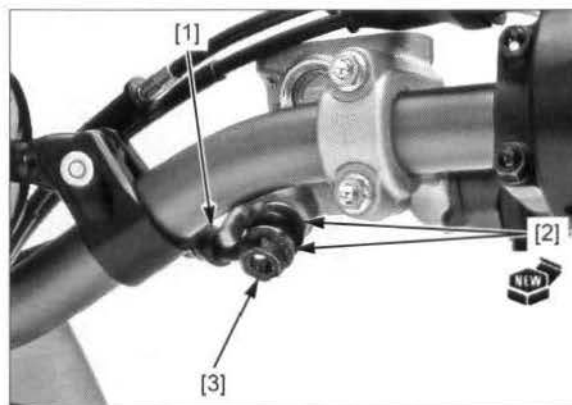
- Route the hose properly (page 1-24).

Tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill and bleed the front brake hydraulic system (page 18-7).

Except '17 model CRF450R: Install the starter switch (page 20-11).



REAR MASTER CYLINDER

REMOVAL/INSTALLATION

Drain the rear brake hydraulic system (page 18-6).
Remove the brake pedal (page 18-18).

When removing the brake hose bolt, cover the end of the hose to prevent contamination. Secure the hose to prevent brake fluid from leaking out.

Remove the brake hose oil bolt [1], sealing washers [2], and brake hose [3].

Remove the master cylinder mounting bolts [4] and rear master cylinder [5].

Installation is in the reverse order of removal.

NOTE:

- Always replace the sealing washers with new ones.
- Route the hose properly (page 1-24).

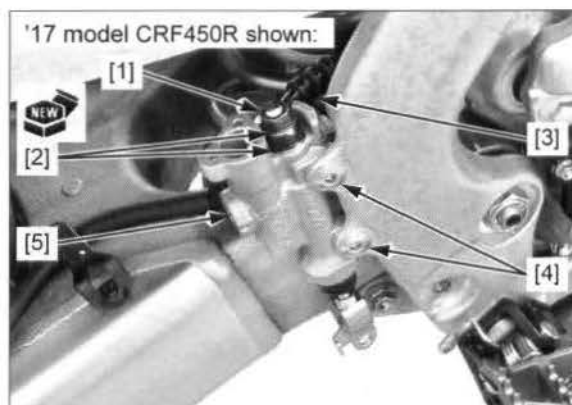
TORQUE:

Rear master cylinder mounting bolt:
13 N·m (1.3 kgf·m, 10 lbf·ft)

Brake hose oil bolt:
34 N·m (3.5 kgf·m, 25 lbf·ft)

Install the brake pedal (page 18-18).

Fill and bleed the rear brake hydraulic system (page 18-7).



DISASSEMBLY/ASSEMBLY

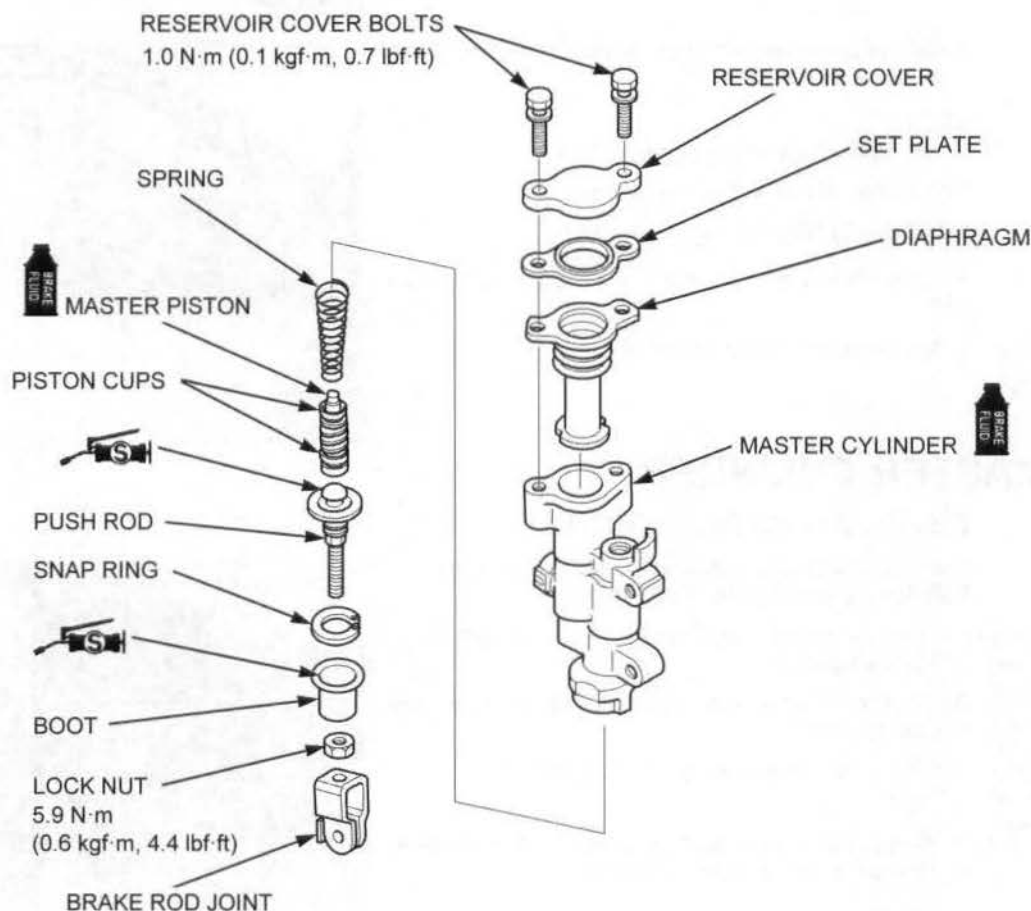
NOTE:

- 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 road 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.

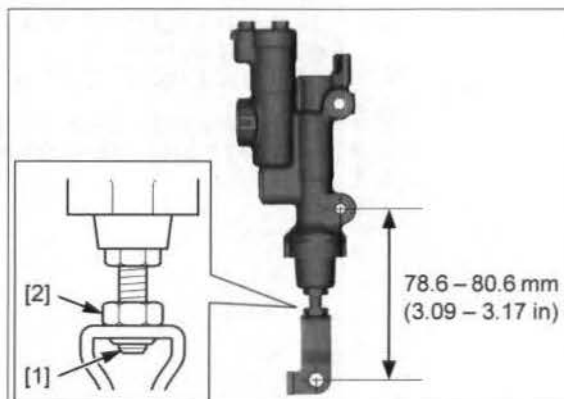


When the master cylinder has been assembled, adjust the push rod length so that the distance from the center of the master cylinder lower mounting bolt hole to the center of the joint pin hole is standard length as shown.

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: 5.9 N·m (0.6 kgf·m, 4.4 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 front brake hydraulic system (page 18-6).

Remove the disc cover (page 16-6).

When removing the brake hose bolt, cover the end of the hose to prevent contamination.

Secure the hose to prevent brake fluid from leaking out.

Remove the brake hose oil bolt [1], sealing washers [2] and brake hose [3].

Remove the caliper mounting bolts [4] and brake caliper [5].

Installation is in the reverse order of removal.

NOTE:

- Replace the sealing washer with new ones.
- Apply locking agent to the caliper mounting bolt threads.
- Route the hose properly (page 1-24).

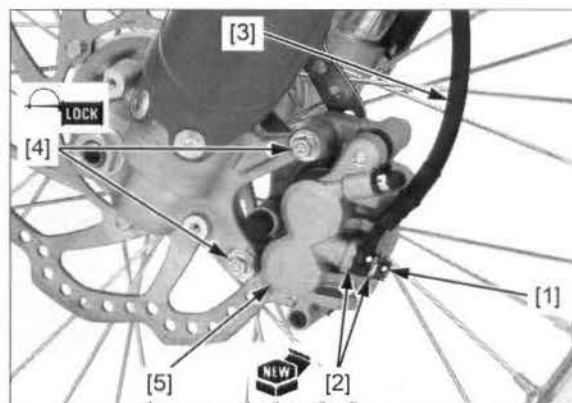
TORQUE:

Brake caliper mounting bolt:
30 N·m (3.1 kgf·m, 22 lbf·ft)

Brake hose oil bolt:
34 N·m (3.5 kgf·m, 25 lbf·ft)

After installation, fill and bleed the front brake hydraulic system (page 18-7).

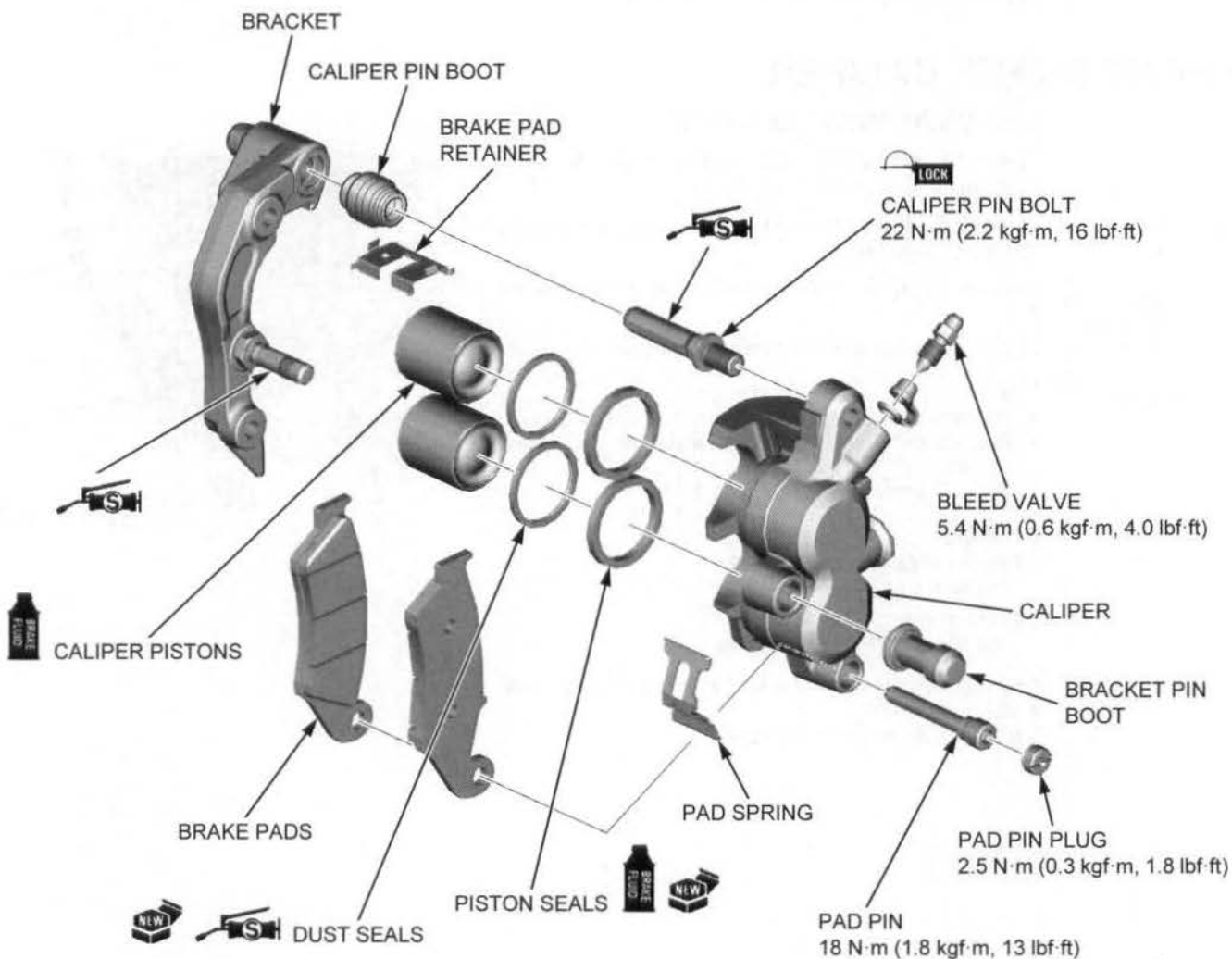
Install the disc cover (page 16-9).



DISASSEMBLY/ASSEMBLY

NOTE:

- Mark the pistons to ensure that they are reinstalled in their original locations.
- When removing the caliper pistons with compressed air, place a shop towel over the pistons to prevent damaging the pistons and caliper body. Do not use high pressure or bring the nozzle too close to the fluid inlet.
- Install the pistons with the opening toward the pads.



INSPECTION

Check the following parts for scoring, scratches, deterioration, or damage.

- Caliper cylinders
- Caliper pistons

Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-10).

Replace any part if it is out of service limit.

REAR BRAKE CALIPER

REMOVAL/INSTALLATION

Drain the rear brake hydraulic system (page 18-6).
Remove the brake pads (page 18-10).

When removing the brake hose bolt, cover the end of the hose to prevent contamination. Secure the hose to prevent brake fluid from leaking out.

Remove the brake hose oil bolt [1], sealing washers [2], and brake hose [3].

Remove the rear wheel (page 17-6).

Remove the brake caliper/bracket assembly [4] from the swingarm [5].

Installation is in the reverse order of removal.

NOTE:

- Replace the sealing washers with new ones.
- Route the hose properly (page 1-24).

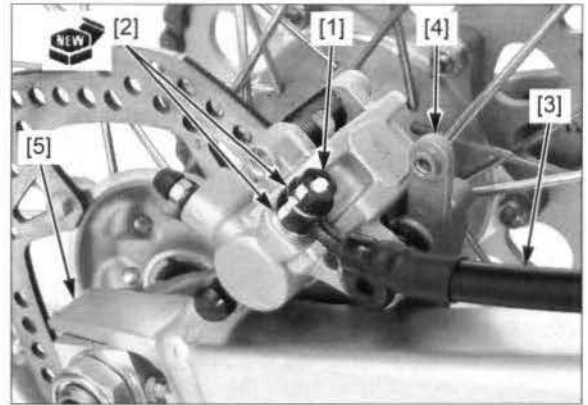
TORQUE:

Brake hose oil bolt:

34 N·m (3.5 kgf·m, 25 lbf·ft)

Install the brake pads (page 18-10).

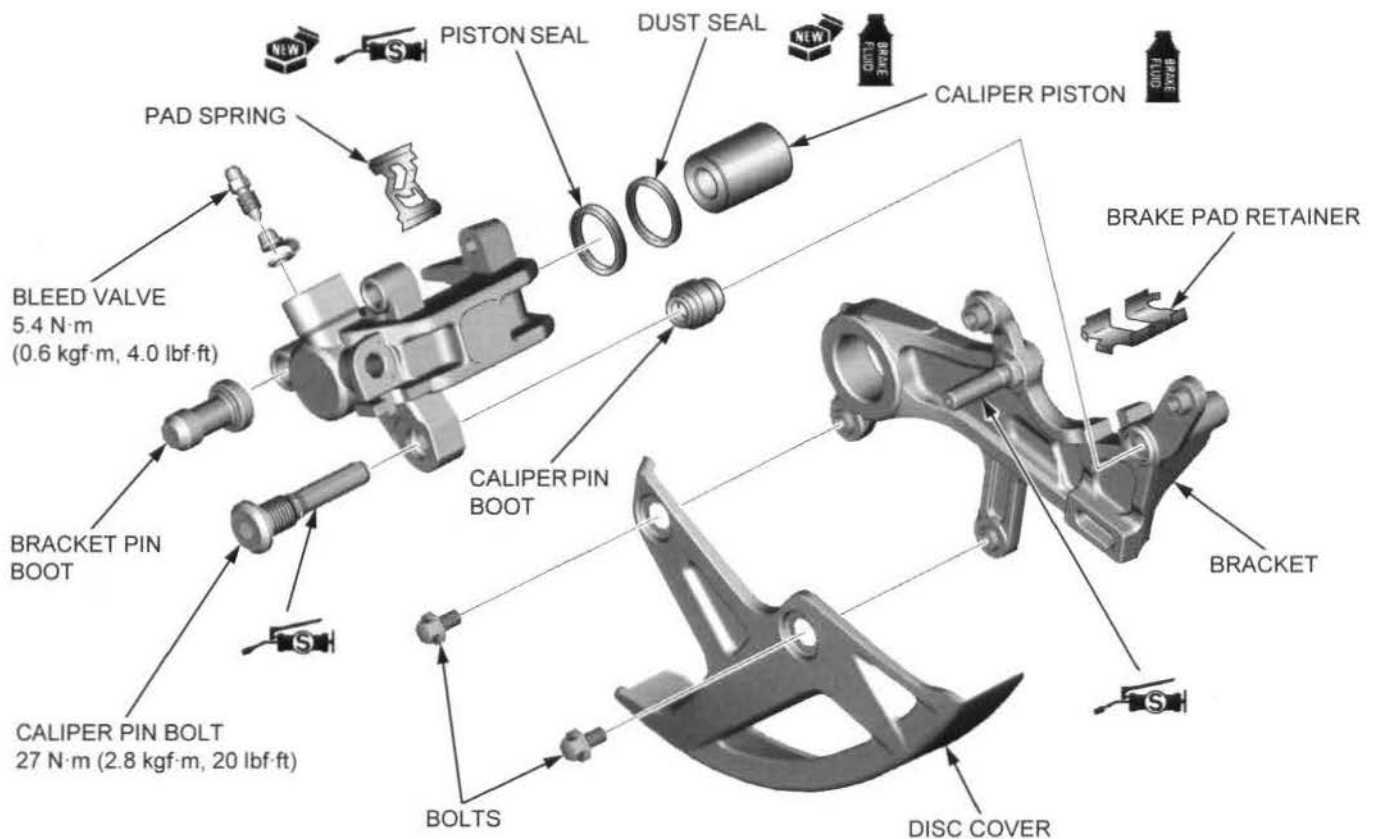
Fill and bleed the rear brake hydraulic system (page 18-7).



DISASSEMBLY/ASSEMBLY

NOTE:

- When removing the caliper piston with compressed air, place a shop towel over the piston to prevent damaging the piston and caliper body. Do not use high pressure or bring the nozzle too close to the fluid inlet.
- Install the piston with the opening toward the pads.



INSPECTION

Check the following parts for scoring, scratches, deterioration, or damage.

- caliper cylinders
- caliper pistons

Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-10).

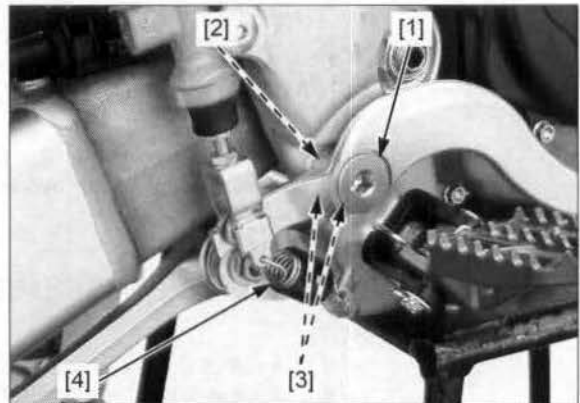
Replace any part if it is out of service limit.

BRAKE PEDAL

REMOVAL

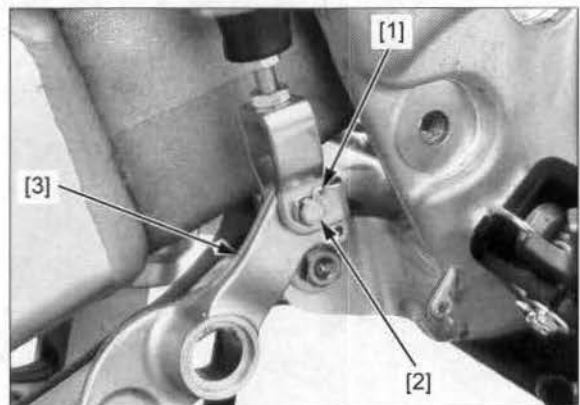
Remove the brake pedal pivot bolt [1], washer [2] and dust seals [3].

Remove the return spring [4].



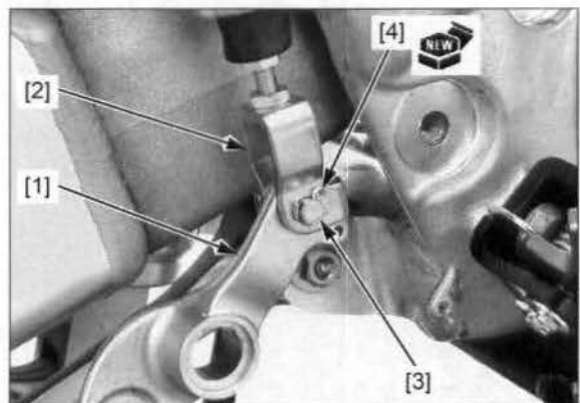
Remove the cotter pin [1].

Remove the joint pin [2] and brake pedal [3].



INSTALLATION

Connect the brake pedal [1] to the push rod joint [2] with the joint pin [3] and a new cotter pin [4].

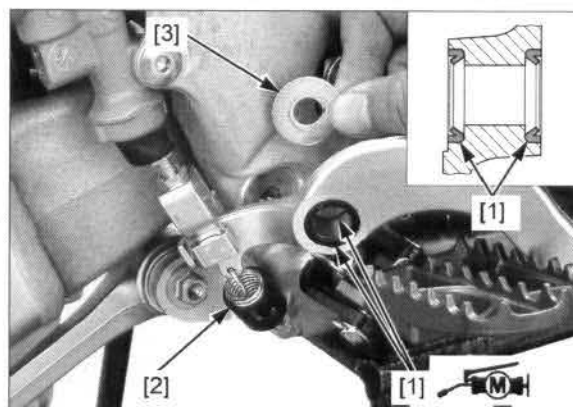


Replace the dust seals with new ones if they are damaged or deteriorated.

Apply specified grease (page 1-22) to the dust seal lips. Install the dust seals [1] to the brake pedal with its lip side facing out as shown.

Install the return spring [2].

Set the washer [3] to the frame.



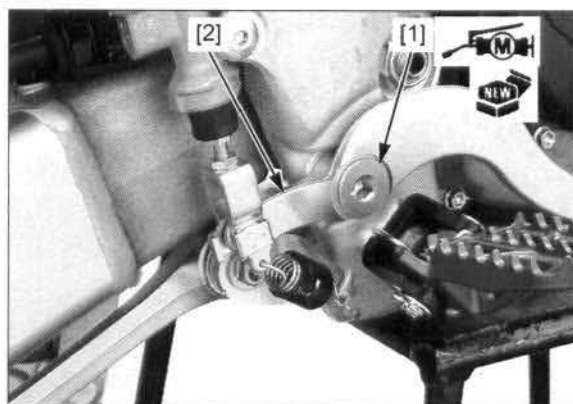
Apply molybdenum disulfide grease to a new brake pedal pivot bolt [1] sliding surface.

Install the brake pedal [2].

Install and tighten the brake pedal pivot bolt to the specified torque.

TORQUE: 36 N·m (3.7 kgf·m, 27 lbf·ft)

Adjust the brake pedal height if necessary (page 3-25).



MEMO



19. BATTERY/CHARGING SYSTEM

SERVICE INFORMATION	19-2	CHARGING SYSTEM INSPECTION (Except '17 model CRF450R)	19-10
TROUBLESHOOTING (Except '17 model CRF450R)	19-4	REGULATOR/RECTIFIER	19-11
COMPONENT LOCATION	19-6	ALTERNATOR CHARGING COIL	19-13
SYSTEM DIAGRAM	19-6	CONDENSER ('17 model)	19-14
BATTERY (Except '17 model CRF450R)	19-9		

SERVICE INFORMATION**GENERAL****⚠ WARNING**

'17 model CRF450RX:

- 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.

After '17 model:

- If electrolyte gets on your skin or clothes, flush with clean water such as tap water etc. immediately.
- If electrolyte gets on your eyes, flush with large quantities of water immediately and consult an eye doctor.

NOTICE

- After '17 model: Do not jump-start the motorcycle. It may blow out the built-in fuse in the lithium ion battery.
- For a battery remaining in a stored motorcycle, disconnect the negative battery cable from the battery terminal.
- The maintenance free battery must be replaced when it reaches the end of its service life.
- Battery voltage may recover after battery charging, but under heavy load, battery voltage will drop quickly and eventually die out. For this reason, the charging system is often suspected as the problem. Battery overcharge often results from problems in the battery itself, which may appear to be an overcharging symptom. If one of the battery cells is shorted and battery voltage does not increase, the regulator/rectifier supplies excess voltage to the battery. Under these conditions, the electrolyte level goes down quickly.
- Before troubleshooting the charging system, check for proper use and maintenance of the battery. Check if the battery is frequently under heavy load.
- When checking the charging system, always follow the steps in the troubleshooting flow chart (page 19-4).
- For alternator/stator servicing (page 13-2).
- The '17 model CRF450RX is equipped with the starter/ignition relay that is composed of the starter relay and ignition relay (page 19-6).
- The After '17 model CRF450R and CRF450RX is equipped with the starter/main relay that is composed of the starter relay, main relay and diode (page 19-8).
- The following color codes are used throughout this section.

Bl = Black
R = Red

Bu = Blue
W = White

Br = Brown
Y = Yellow

G = Green

Lg = Light green

O = Orange

'17 model CRF450RX:

- 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.
- The battery can be damaged if overcharged or undercharged, or if left to discharge for a long period. These same conditions contribute to shortening the "life span" of the battery. Even under normal use, the performance of the battery deteriorates after 2-3 years.
- 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.

After '17 model:

- For extended storage, remove the battery and store it in a cool space.
- The battery can be damaged if overcharged or undercharged, or if left to discharge for a long period. These same conditions contribute to shortening the "life span" of the battery.
- The battery will self-discharge when the motorcycle is not in use. For this reason, charge the battery at a suitable time to prevent it from discharging.

BATTERY CHARGING (Except '17 model CRF450R)

- Turn power ON/OFF at the charger, not at the battery terminal.
- '17 model: 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.
- After '17 model: These models are equipped with a Lithium Ion (Li-Ion) battery. To charge the battery, use only the specified lithium-ion type battery charger: OptiMATE lithium LFP 4s-5A (U.S.A. only) or C1401B manufactured by ELIY Power Co., Ltd. Follow the manufacturer's instructions.
- Quick charging should only be done in an emergency; slow charging is preferred.

BATTERY TESTING (Except '17 model CRF450R)

Refer to the instruction in the Operation Manual for the recommended battery tester for details about battery testing. The recommended battery tester puts a "load" on the battery so that the actual battery condition can be measured.

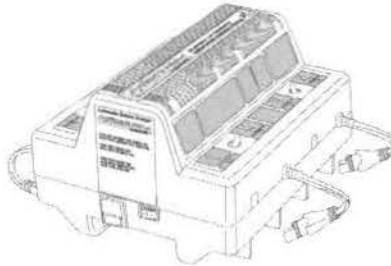
Recommended battery tester ('17 model only): Micro 404XL (U.S.A. only)

TOOLS

Battery tester ('17 model only)
Micro 404XL (U.S.A. only)



Lead-acid battery ('17 model):
OptiMATE PRO-4 Battery charger
TMNTS53 (U.S.A. only)



Li-ion battery (After '17 model):
OptiMATE lithium 4s-5A battery charger
TMNTM291 (U.S.A. only)



TROUBLESHOOTING
(Except '17 model CRF450R)

BATTERY IS DAMAGED OR WEAK

1. BATTERY TEST

Remove the battery (page 19-9).

Check the battery condition using the recommended battery tester.

RECOMMENDED BATTERY TESTER ('17 model only): Micro 404XL (U.S.A. only)

Is the battery in good condition?

YES – GO TO STEP 2.

NO – Faulty battery.

2. CURRENT LEAKAGE TEST

Install the battery (page 19-9).

Check the battery current leakage test (page 19-10).

Is there current leakage?

YES – Short circuit in the wire harness.

NO – GO TO STEP 3.

3. CHARGING VOLTAGE INSPECTION

Measure and record the battery voltage using a digital multimeter (page 19-9).

Start the engine.

Measure the charging voltage (page 19-10).

Compare the measurements to the results of the following calculation.

STANDARD:

Measured BV < Measured CV < 15.5 V

- **BV = Battery Voltage**
- **CV = Charging Voltage**

Is the measured charging voltage within the standard voltage?

YES – Faulty battery.

NO – • '17 model CRF450RX: GO TO STEP 4.
• After '17 model: GO TO STEP 5.

4. STARTER/IGNITION RELAY INSPECTION
('17 model CRF450RX)

Check the starter/ignition relay (page 6-13).

Is the starter/ignition relay correct?

YES – GO TO STEP 6.

NO – • Loose or poor contacts of the related terminal
• Open or short circuit in the related wire
• Faulty starter/ignition relay

5. STARTER/MAIN RELAY INSPECTION
(After '17 model)

Check the starter/main relay (page 6-15).

Is the starter/main relay correct?

YES – GO TO STEP 7.

NO – • Loose or poor contacts of the related terminal
• Open or short circuit in the related wire
• Faulty starter/main relay

6. CONDENSER INSPECTION
(**'17 model CRF450RX**)

Check the condenser (page 19-14).

Is the condenser correct?

YES – GO TO STEP 7.

NO – • Loose or poor contacts of the related terminal
• Open or short circuit in the related wire
• Faulty condenser

7. REGULATOR/RECTIFIER SYSTEM INSPECTION

Check the regulator/rectifier (page 19-12).

Are the regulator/rectifier and related wires correct?

YES – GO TO STEP 8.

NO – • Loose or poor contacts of the related terminal
• Open or short circuit in the related wire
• Faulty regulator/rectifier

8. ALTERNATOR CHARGING COIL INSPECTION

Check the alternator charging coil (page 19-13).

Is the alternator charging coil correct?

NO – Faulty charging coil.

YES – Replace the ECM with a known good one (page 4-25) and recheck.

STARTER MOTOR CANNOT BE TURNED (After '17 model)**1. STARTER SYSTEM INSPECTION**

Check that the starter motor can be turned.

Can the starter motor be turned?

YES – GO TO STEP 2.

NO – Check the starter system (page 6-3).

2. BATTERY CONDITION INSPECTION

Check the battery for cracked or deformed case, electrolyte leakage, nasty smell or heat generation.

Is the battery in above conditions?

YES – Follow the emergency manual.

NO – GO TO STEP 3.

3. BATTERY VOLTAGE INSPECTION

Leave the battery for 30 minutes and check the battery voltage.

Is the voltage below 6 V or above 14.6?

YES – Replace the battery (page 19-9).

NO – GO TO STEP 4.

4. CHARGING CONDITION INSPECTION

Charge the battery using only the specified lithium-ion type battery charger: OptiMATE lithium LFP 4s-5A (U.S.A. only) or C1401B manufactured by ELIY Power Co., Ltd.). Follow the manufacturer's instructions.

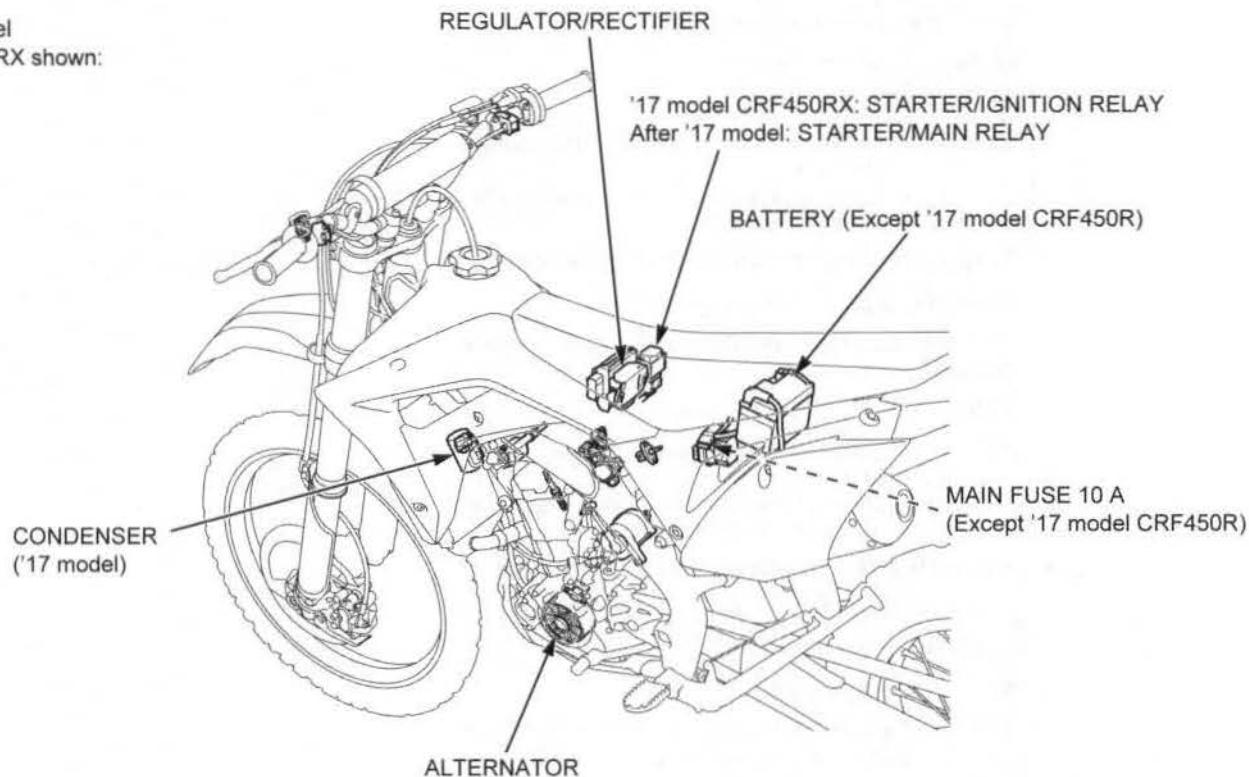
Is the battery charged?

YES – Battery is normal.

NO – Replace the battery (page 19-9).

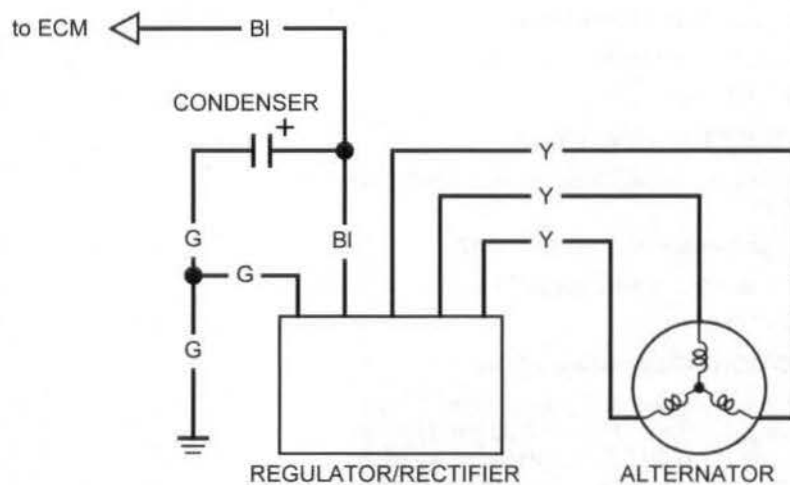
COMPONENT LOCATION

'17 model
CRF450RX shown:

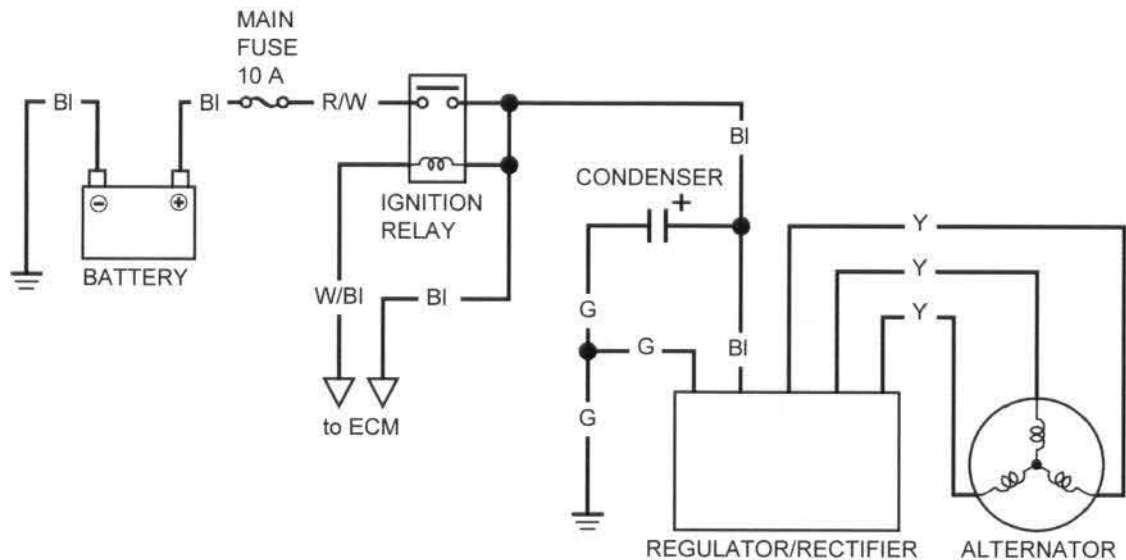


SYSTEM DIAGRAM

'17 model:
CRF450R:



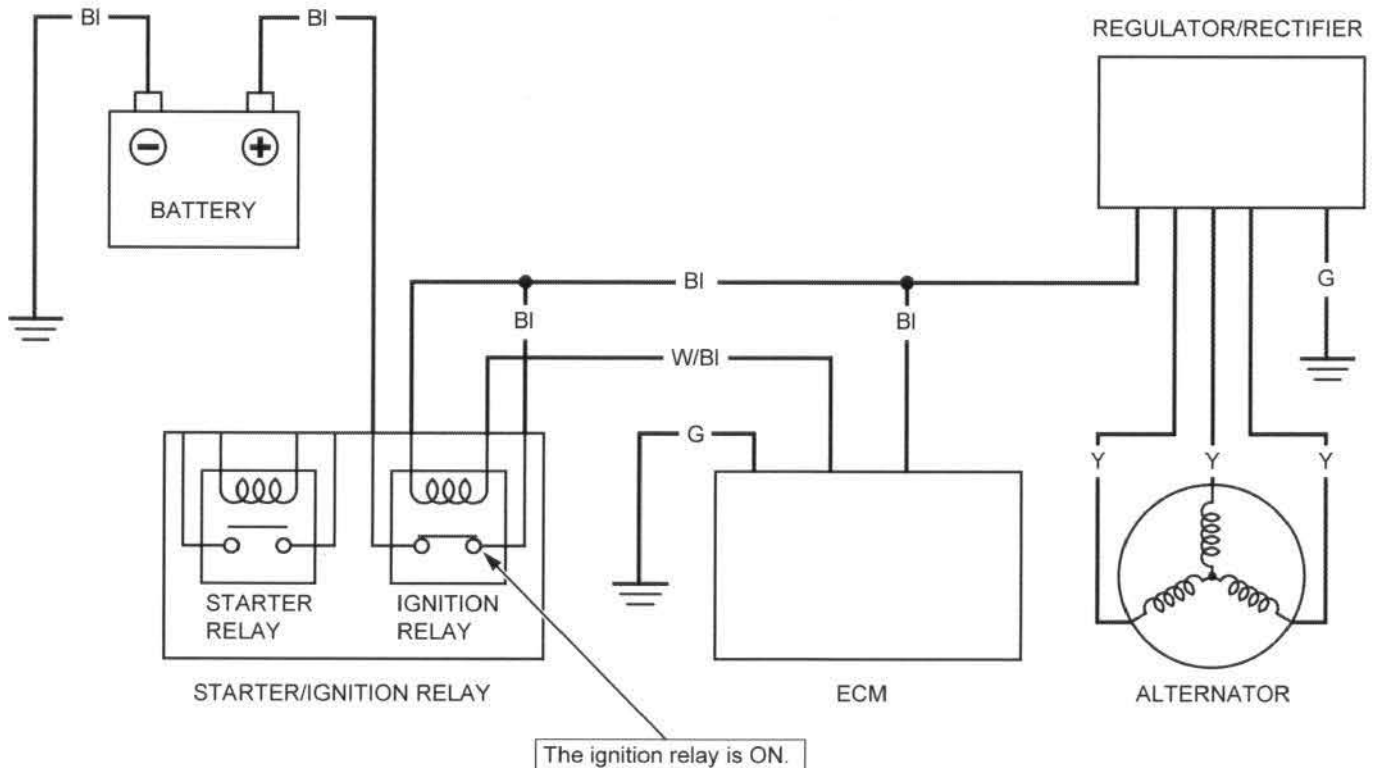
CRF450RX:



STARTER/IGNITION RELAY (CRF450RX)

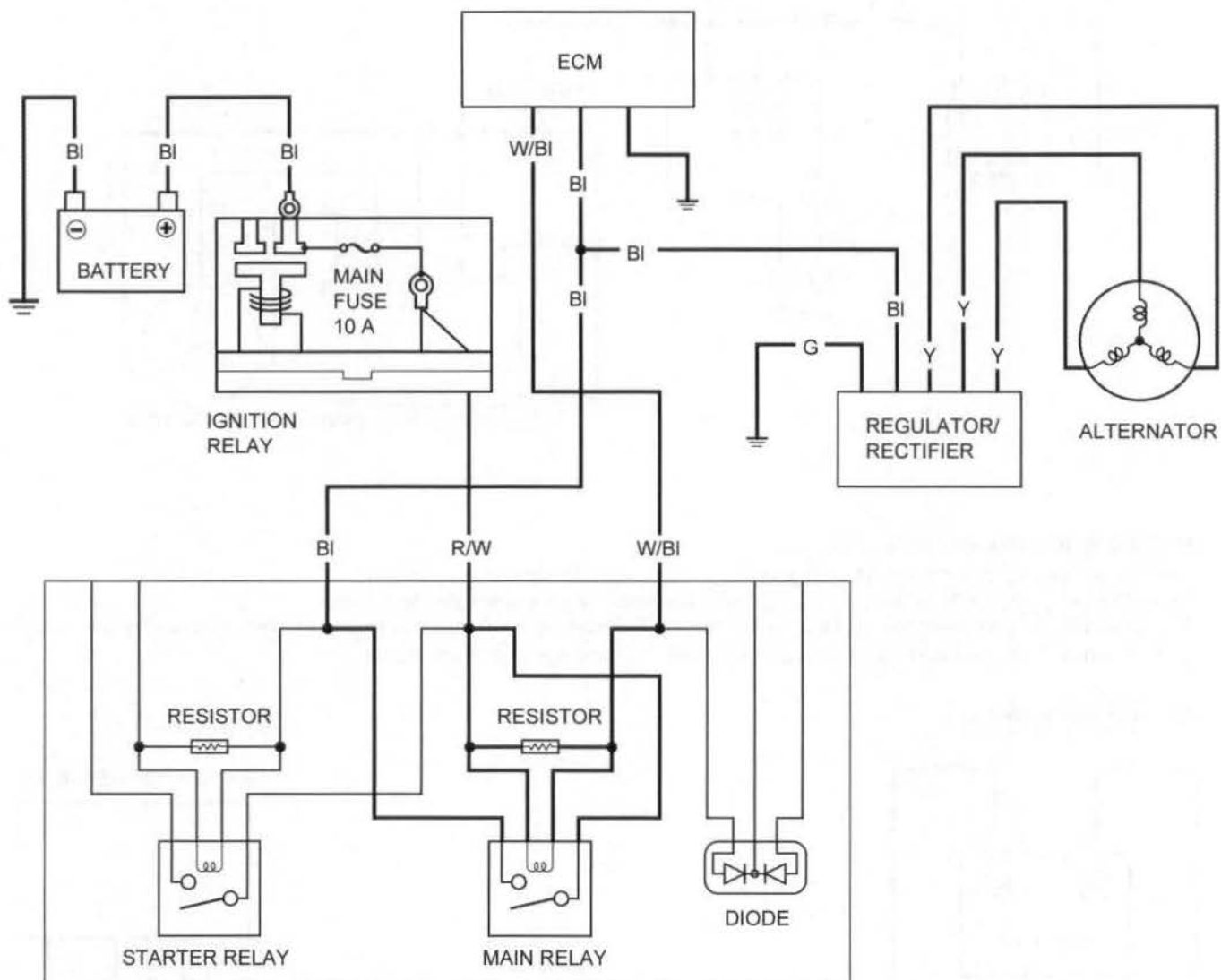
- Starter relay: refer to "ELECTRIC STARTER (Except '17 model CRF450R)" (page 6-5).
- The ignition relay has a role to form a charging circuit by connecting the alternator and battery. After starting the engine (the engine rotation is increased), The alternator will start charging the battery by the relay is turned ON by ECM. When the engine is stopped, the relay is turned OFF and will shut off the circuit.

When the engine running:



BATTERY/CHARGING SYSTEM

After '17 model:



BATTERY (Except '17 model CRF450R)

REMOVAL/INSTALLATION

Remove the seat (page 2-3).

Remove the battery band [1].

Remove the battery terminal bolt [2] and disconnect the battery negative (-) cable [3].

Remove the battery terminal bolt and disconnect the battery positive (+) cable [4].

Remove the battery [5].

Remove the mounting bolts [6], washers [7], and battery box [8].

Installation is in the reverse order of removal.

NOTE:

- Connect the positive (+) terminal first and then the negative (-) cable.

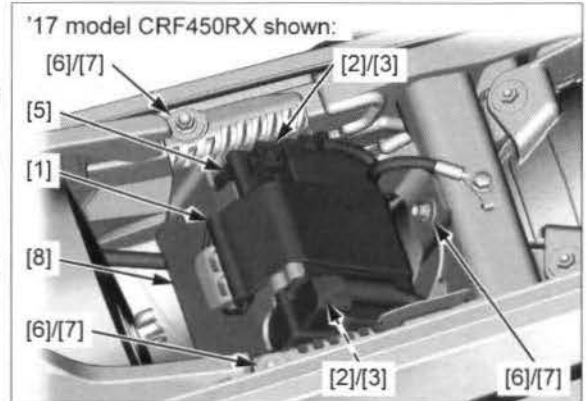
TORQUE:

Battery terminal bolt (After '17 model):

2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)

Battery box mounting bolt:

10 N·m (1.0 kgf·m, 7 lbf·ft)



VOLTAGE INSPECTION

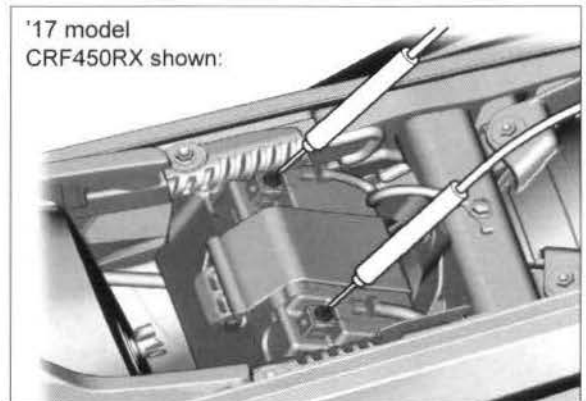
Remove the seat (page 2-3).

Measure the battery voltage using a commercially available digital multimeter.

VOLTAGE (20°C/68°F):

'17 model: Fully charged: 13.0 V minimum
Under charged: Below 12.3 V

After '17 model: Fully charged: 13.5 – 14.0 V
Under charged: Below 10.8 V



BATTERY TESTING

Remove the battery (page 19-9).

Refer to the instructions that are appropriate to the battery testing equipment available to you.

TOOL ('17 model only):

Battery tester Micro 404XL
(U.S.A. only)

BATTERY CHARGING (U.S.A. only)

Remove the battery (page 19-9).

Refer to the instructions that are appropriate to the battery charging equipment available to you.

TOOL:

'17 model (Lead-acid battery):

OptiMATE PRO-4	TMNTS53
Battery charger	(U.S.A. only)

After '17 model (Li-ion battery):

Battery charger	C1401B manufactured by ELIY Power Co., Ltd.
OptiMATE lithium 4s-5A battery charger	TMNTM291 (U.S.A. only)

CHARGING SYSTEM INSPECTION (Except '17 model CRF450R)

CURRENT LEAKAGE INSPECTION

Remove the seat (page 2-3).

Disconnect the negative (-) cable [1] from the battery (page 19-9).

Connect the ammeter (+) probe [2] to the negative (-) cable and ammeter (-) probe [3] to the battery (-) terminal [4].

Check for current leakage.

NOTE:

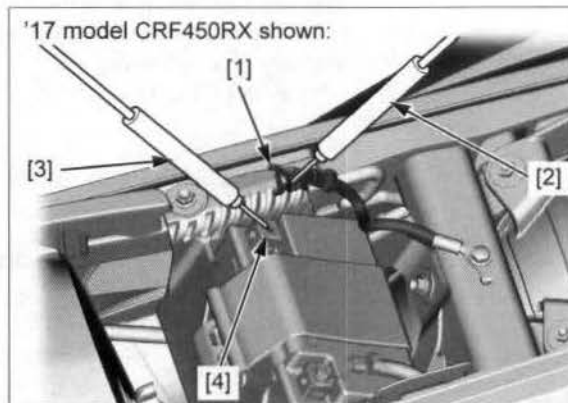
- When measuring current using a tester, set it to a high range, and then bring the range down to an appropriate level. Current flow higher than the range selected may blow the fuse in the tester.

STANDARD: No current leakage

If there is current leakage, a shorted circuit is likely. Locate the short by disconnecting connections one by one and measuring the current.

NOTE:

- Tighten the battery terminal bolt to the specified torque (page 19-9).



CHARGING VOLTAGE INSPECTION

Be sure the battery is in good condition before performing this test.

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

Remove the seat (page 2-3).

Connect the multimeter between the battery positive (+) terminal [1] and negative (-) terminal [2].

Start the engine.

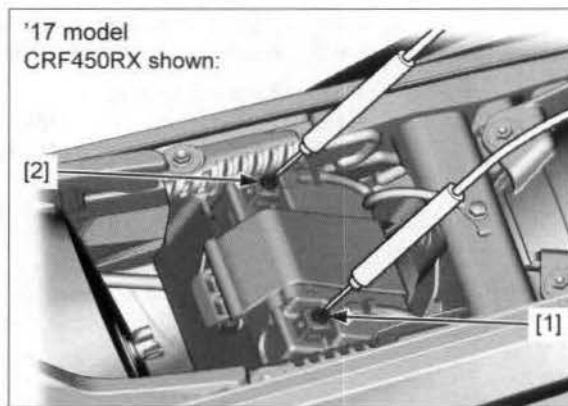
Measure the voltage on the multimeter when the engine runs at 5,000 rpm.

Standard:

Measured BV < Measured CV < 15.5 V

- BV = Battery Voltage
- CV = Charging Voltage

The charging voltage reading should be in the standard value.



STARTER/IGNITION RELAY INSPECTION ('17 model CRF450RX)

Refer to ELECTRIC STARTER (Except '17 model CRF450R) (page 6-13).

STARTER/MAIN RELAY INSPECTION (After '17 model)

Refer to ELECTRIC STARTER (Except '17 model CRF450R) (page 6-15).

REGULATOR/RECTIFIER

REMOVAL/INSTALLATION

Remove the ECM (page 4-25).

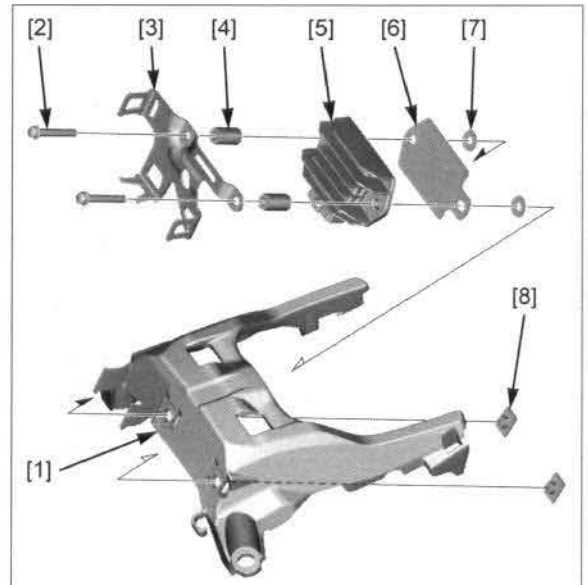
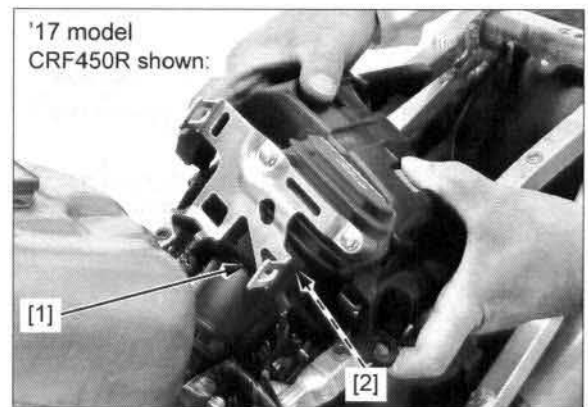
Replace the boot [1].

Disconnect the regulator/rectifier 6P connector [2].

Remove the following from the seat support base [1]:

- Bolts [2]
- Stay [3]
- Collars [4]
- Regulator/rectifier [5]
- Back plate [6]
- Washers [7]
- Nuts [8]

Installation is in the reverse order of removal.



SYSTEM INSPECTION

Check connectors for loose contact or corroded terminals.

Inspect the following:

- ECM power input line (page 4-26)
- Ground line (page 19-12)
- Alternator charging coil (page 19-13)
- Battery charging line
 - '17 model CRF450RX: (page 19-12)
 - After '17 model: (page 19-12)
- Starter/ignition relay ('17 model CRF450RX) (page 6-13)
- Starter/main relay (After '17 model) (page 6-15)

If all components of the charging system are normal and there are no loose connections at the regulator/rectifier connector, replace the regulator/rectifier with a known good one (page 19-11) and recheck.

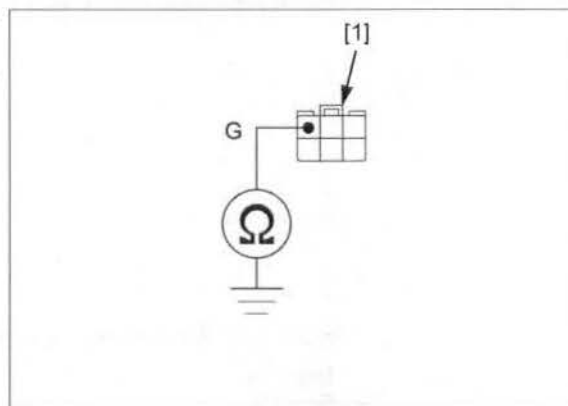
GROUND LINE INSPECTION

Disconnect the regulator/rectifier 6P connector (page 19-11).

Check for continuity between the wire harness side 6P connector [1] and ground.

CONNECTION: Green – Ground

There should be continuity at all times.



BATTERY CHARGING LINE INSPECTION ('17 model CRF450RX)

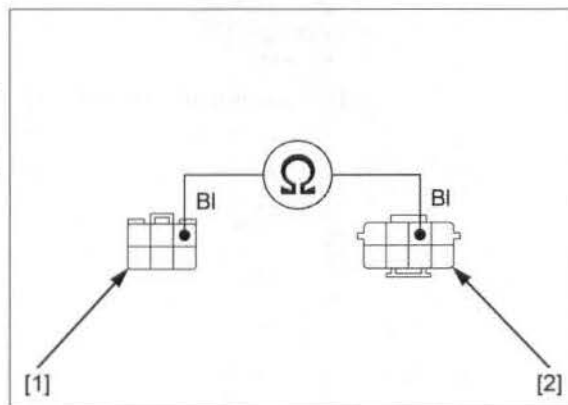
Disconnect the following:

- Regulator/rectifier 6P connector (page 19-11)
- Starter/ignition relay 8P (Gray) connector (page 6-12)

Measure the continuity between the wire harness side regulator/rectifier 6P [1] and starter/ignition relay 8P (Gray) [2] connector terminals.

CONNECTION: Black – Black

There should be continuity at all times.



BATTERY CHARGING LINE INSPECTION (After '17 model)

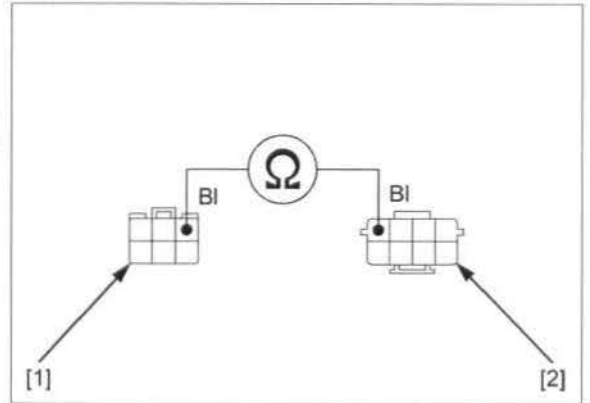
Disconnect the following:

- Regulator/rectifier 6P connector (page 19-11)
- Starter/main relay 8P (Gray) connector (page 6-15)

Measure the continuity between the wire harness side regulator/rectifier 6P [1] and starter/main relay 8P (Gray) [2] connector terminals.

CONNECTION: Black – Black

There should be continuity at all times.



ALTERNATOR CHARGING COIL

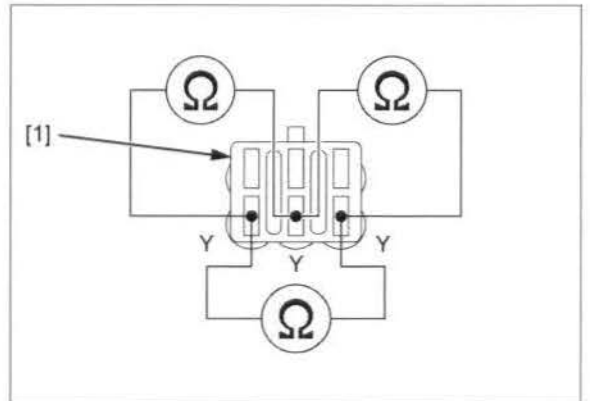
CHARGING COIL INSPECTION

Disconnect the alternator/CKP sensor 6P (Black) connector (page 13-4).

Measure the resistance between the stator side 6P (Black) connector [1] terminals.

CONNECTION: Yellow – Yellow

STANDARD: 0.1 – 1.0 Ω (20°C/68°F)



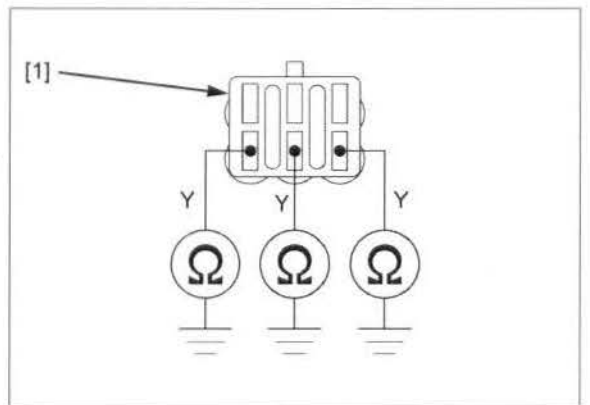
Check for continuity between the stator side 6P (Black) connector [1] terminals and ground.

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 13-9).



CONDENSER ('17 model)

REMOVAL/INSTALLATION

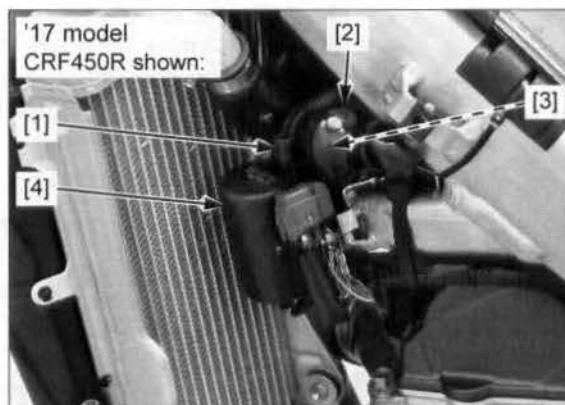
Remove the left radiator shroud (page 2-3).

Remove the wire band [1].

Release the boot [2], and disconnect the condenser 2P (Black) connector [3].

Remove the condenser [4] from the frame.

Installation is in the reverse order of removal.



INSPECTION

Connect the battery harness (page 4-7).

Disconnect the condenser 2P (Black) connector (page 19-14).

Turn the "ECM" selector switch ON.

Measure and record the voltage at the wire harness side 2P (Black) connector [1] terminals.

Connection: Black (+) – Green (–)

STANDARD: Battery voltage

If there is no voltage, check for open circuit in Black or Green wires.

If there is voltage, check the condenser as follows.

1. Turn the "ECM" selector switch OFF and connect the condenser 2P (Black) connector.
2. Turn the "ECM" selector switch ON for a few seconds and charge the condenser.
3. Turn the "ECM" selector switch OFF and discharge the condenser.
4. Disconnect the 2P (Black) connector and check the resistance between the condenser side terminals.

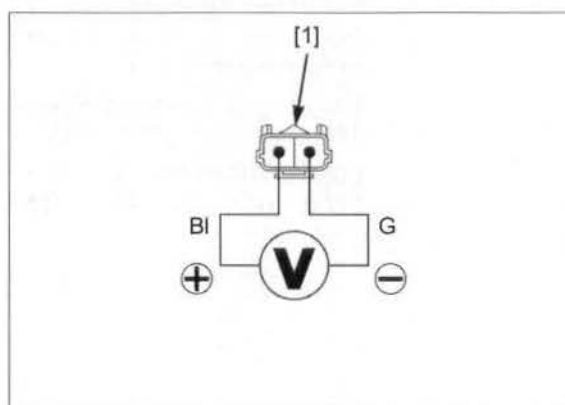
Select the kΩ range of the tester.

The condenser is normal if the resistance comes near 0 Ω once and eventually becomes ∞.

If the resistance stays at 0 Ω or does not change, replace the condenser.

NOTE:

- If the inspection is interrupted, connect the 2P (Black) connector and restart the procedure from the step 1.



SERVICE INFORMATION 20-2

COMPONENT LOCATION 20-2

ENGINE STOP/MODE SELECT
SWITCH 20-3

CLUTCH SWITCH
(Except '17 model CRF450R) 20-9

STARTER SWITCH
(Except '17 model CRF450R) 20-11

SWITCHES

SERVICE INFORMATION

GENERAL

- A continuity test can be made with the switches installed on the motorcycle.
- The following color codes are used throughout this section.

Bl = Black
R = Red

Bu = Blue
W = White

Br = Brown
Y = Yellow

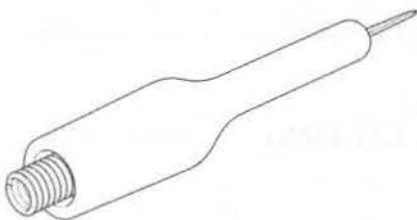
G = Green

Lg = Light green

O = Orange

TOOL

Test probe, 2 packs
07ZAJ-RDJA110



COMPONENT LOCATION

'17 model
CRF450RX shown:

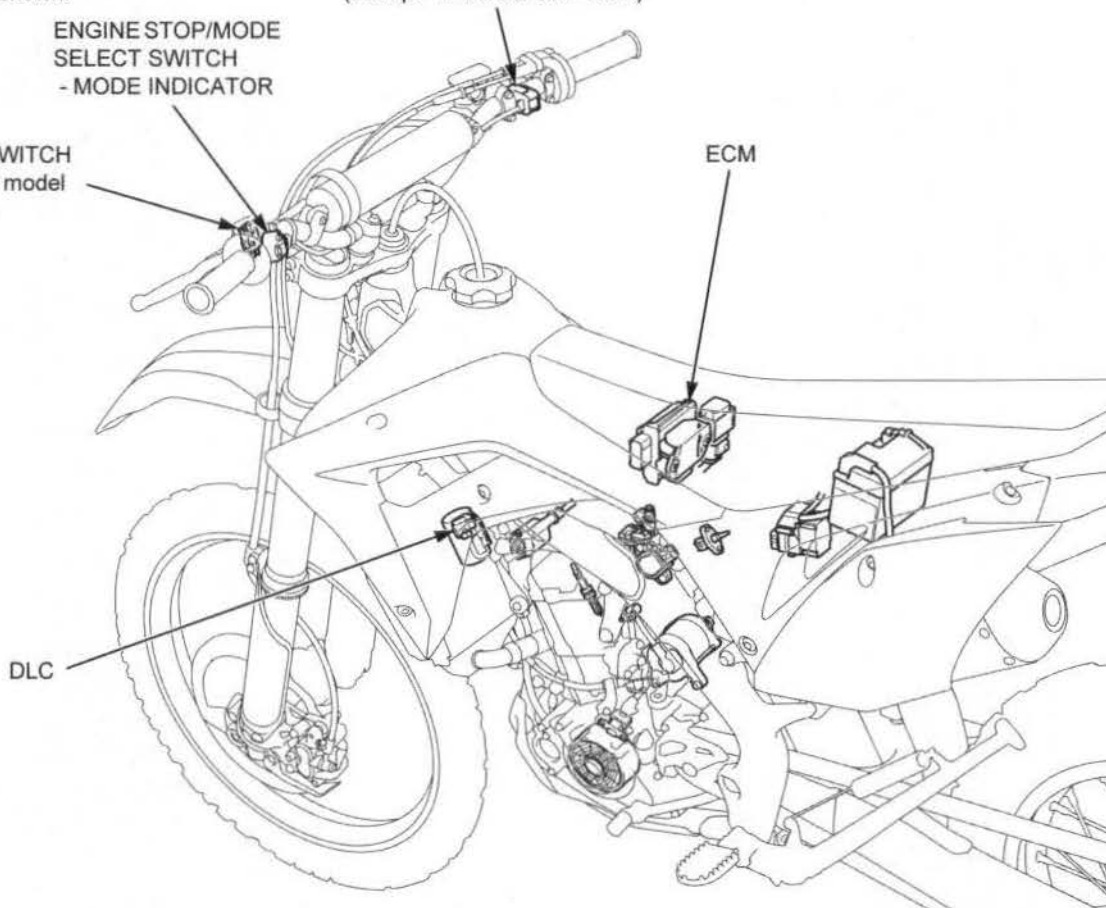
STARTER SWITCH
(Except '17 model CRF450R)

ENGINE STOP/MODE
SELECT SWITCH
- MODE INDICATOR

CLUTCH SWITCH
(Except '17 model
CRF450R)

ECM

DLC



ENGINE STOP/MODE SELECT SWITCH

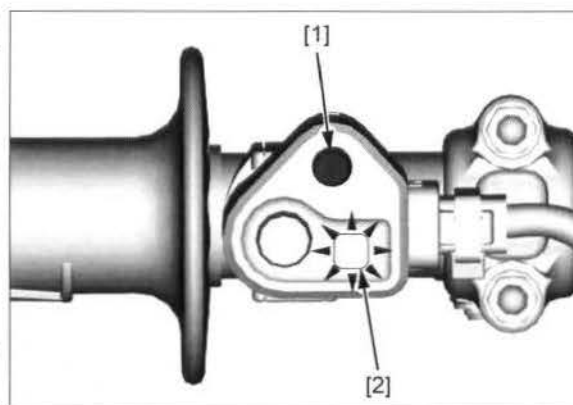
ENGINE MODE SELECT SWITCH/ INDICATOR

You can change the engine output characteristic depending on track conditions by using the engine mode select switch [1].

- Mode 1: Standard setting
- Mode 2: Smooth setting
 - Reduce throttle response from the standard setting
- Mode 3: Aggressive setting
 - Increase throttle response from the standard setting

NOTE:

- The mode indicator (Blue indicator) shares the indicator lamp [2] with the MIL (Orange indicator).
- If you can not change the engine mode by operating the engine mode switch, inspect the engine stop/mode select switch (page 20-8).
- For the MIL inspection (page 4-22)
- When reading out the DTC, you can not change the engine mode.
- You can change the engine mode under the condition of the current problem detected by ECM. However you can not change the engine mode only indicating the current mode when the ECM detects DTC 1-1, 1-2, 2-1, 8-1, or 8-2.
After selecting the engine mode, the MIL will indicate the current DTC again.
- An optional PGM-FI setting tool can change the ignition timing and amount of the fuel injection and save the setting data in Mode 2 or 3.



CURRENT MODE CONFIRMATION

Start the engine and let it idle.

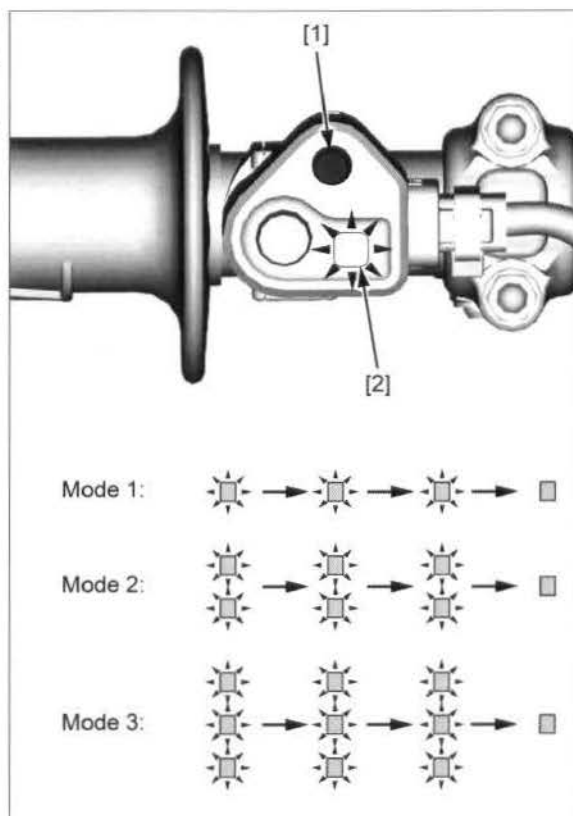
Push the engine mode select switch [1] when the throttle fully closed and the motorcycle stopped.

The mode indicator [2] indicates a selected mode by the number of times the indicator blinks.

- Mode 1: 1 blink and repeats it 3 times
- Mode 2: 2 blinks and repeats it 3 times
- Mode 3: 3 blinks and repeats it 3 times

NOTE:

- If the indicator does not blink with the engine mode select switch pushed, inspect the following:
 - Engine idle speed (page 3-17)
 - Switch circuit inspection (page 20-6)
 - Switch inspection (page 20-8)



MODE SELECTION

The engine idle speed must be within specification. Modes cannot be changed during fast idle.

Start the engine and let it idle.

Select the mode using the following procedure when the throttle fully closed and the motorcycle stopped:

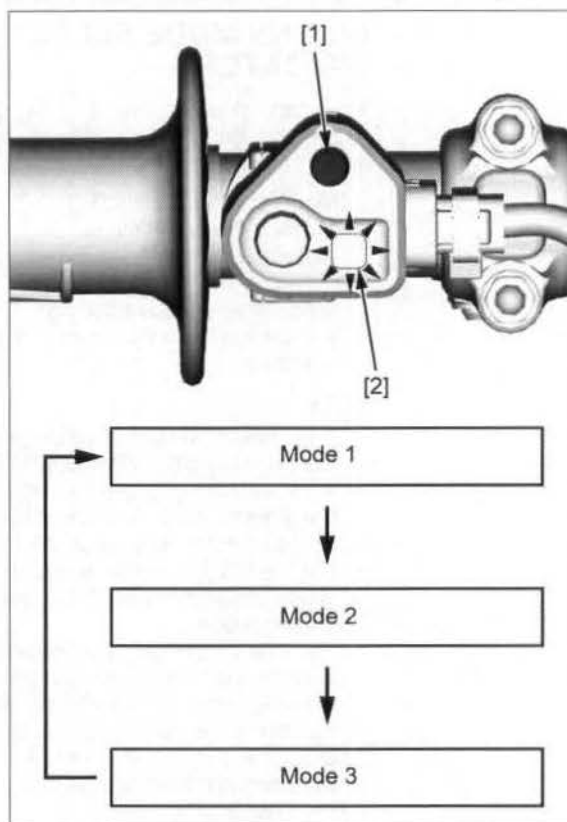
1. Push and hold the engine mode select switch [1] for 1 or more seconds.
2. Release the engine mode select switch.

The mode indicator [2] will indicate a selected mode by the number of times the indicator blinks (page 20-3).

3. Repeat steps 1. and 2. until the desired mode is indicated.

NOTE:

- If mode does not change, inspect the following:
 - Engine idle speed (page 3-17)
 - Switch circuit inspection (page 20-6)
 - Switch inspection (page 20-8)



ENGINE STOP/MODE SELECT SWITCH REMOVAL/INSTALLATION

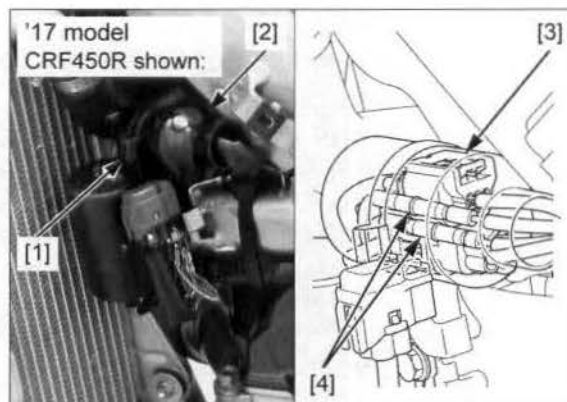
Remove the front number plate (page 2-4).

Remove the left radiator shroud (page 2-3).

Remove the wire band [1].

Release the boot [2] and disconnect engine mode select switch/indicator 6P (Black) connector [3].

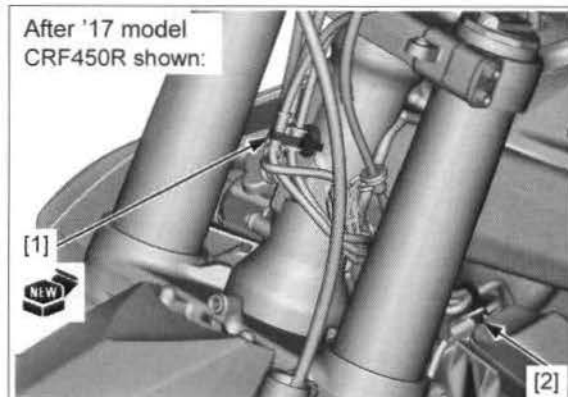
'17 model CRF450RX: Disconnect the clutch switch connectors (main wire harness side) [4].



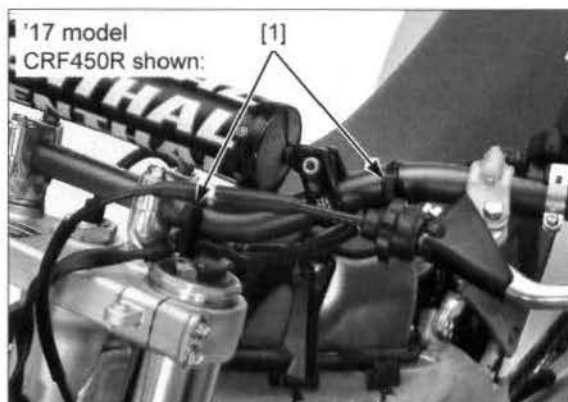
'17 model CRF450R: Remove the wire clips [1].



Except '17 model CRF450R: Remove the wire band A [1] and wire clip [2].



Remove the wire bands [1].



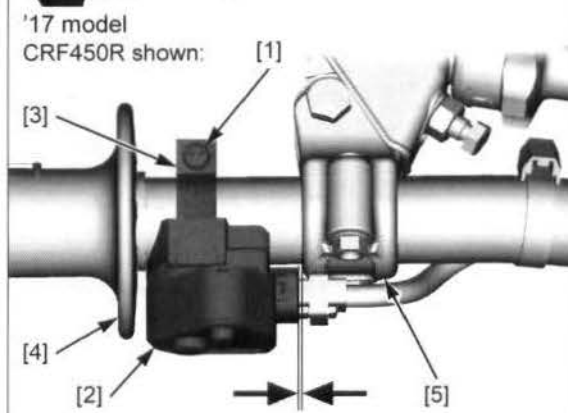
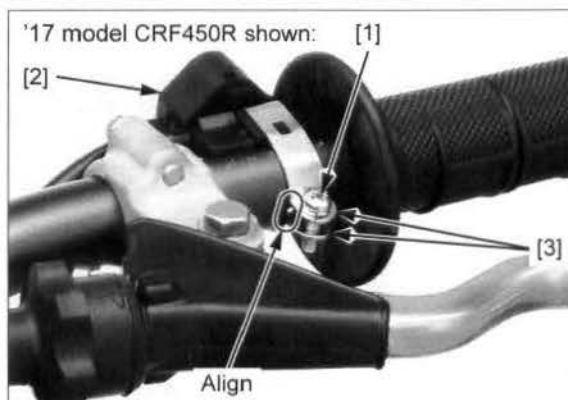
Remove the screw [1], engine stop/mode select switch [2], and holder [3].

'17 model CRF450RX: Disconnect the clutch switch connectors (clutch switch side) (page 20-9).

Installation is in the reverse order of removal.

NOTE:

- Align the holder ends with the paint mark on the handlebar as shown.
- Be careful not to deformation the left handlebar grip [4] when installing the engine stop/mode select switch.
- Check that the engine stop/mode select switch interfere with the holder [5].
- Replace the wire band A with a new one. (Except '17 model CRF450R)
- Route the wire properly (page 1-24).



TORQUE:

Engine stop/mode select switch mounting screw:
1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)

ENGINE STOP/MODE SELECT SWITCH CIRCUIT INSPECTION

NOTE:

- For MIL inspection (page 4-22)

ENGINE DOES NOT STOP BY PRESSING THE ENGINE STOP SWITCH

Disconnect the following connectors:

- ECM 33P (Black) connector (page 4-25)
- Engine stop/mode select switch 6P (Black) connector (page 20-4)

Check for continuity between the wire harness side 33P (Black) [1] and 6P (Black) [2] connectors.

Connection: Black/white – Black/white

TOOL:

Test probe, 2 packs

07ZAJ-RDJA110

There should be continuity.

If there is no continuity, check for an open circuit in the Black/white wire.

Check for continuity between the wire harness side 6P (Black) connector [1] and ground.

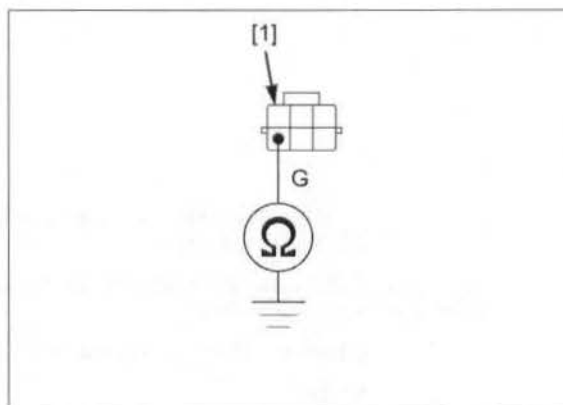
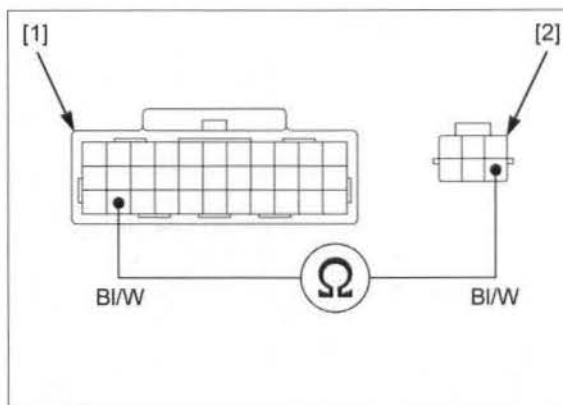
Connection: Green – Ground

There should be continuity.

If there is no continuity, check for an open circuit in the Green wire.

If the wire is OK, check the engine stop/mode select switch (page 20-8).

If the engine stop/mode select switch is OK, replace the ECM with a known good one (page 4-25) and recheck.



ENGINE IS STOPPED WITHOUT PRESSING THE ENGINE STOP SWITCH/ENGINE DOES NOT START

Disconnect the following connectors:

- ECM 33P (Black) connector (page 4-25)
- Engine stop/mode select switch 6P (Black) connector (page 20-4)

Check for continuity between the wire harness side 6P (Black) connector [1] and ground.

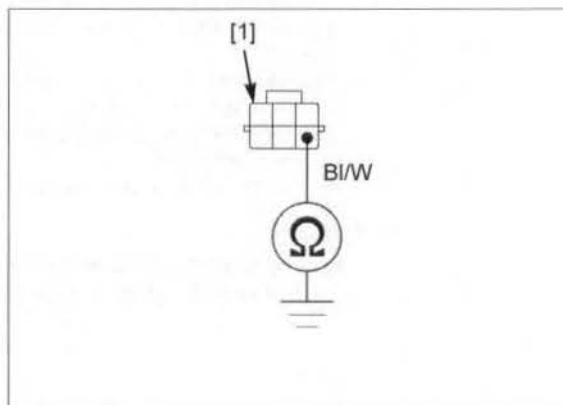
Connection: Black/white – Black/white

There should be no continuity.

If there is continuity, check for a short circuit in the Black/white wire.

If the wire is OK, check the engine stop/mode select switch (page 20-8).

If the engine stop/mode select switch is OK, replace the ECM with a known good one (page 4-25) and recheck.



ENGINE MODE DOSE NOT CHANGE BY PRESSING THE MODE SELECT SWITCH

Disconnect the following connectors:

- ECM 33P (Black) connector (page 4-25)
- Engine stop/mode select switch 6P (Black) connector (page 20-4)

Check for continuity between the wire harness side 33P (Black) [1] and 6P (Black) [2] connectors.

Connection: Light green – Light green

TOOL:

Test probe, 2 packs

07ZAJ-RDJA110

There should be continuity.

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

Check for continuity between the wire harness side 6P (Black) connector [1] and ground.

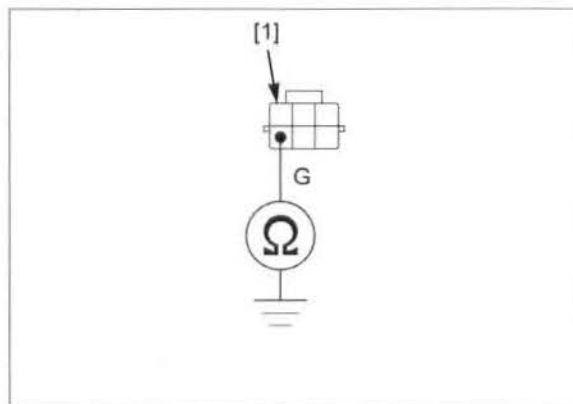
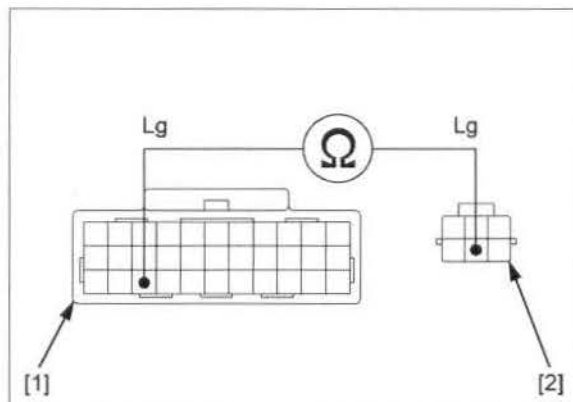
Connection: Green – Ground

There should be continuity.

If there is no continuity, check for an open circuit in the Green wire.

If the wire is OK, check the engine stop/mode select switch (page 20-8).

If the engine stop/mode select switch is OK, replace the ECM with a known good one (page 4-25) and recheck.

**MODE INDICATOR DOSE NOT GO OFF**

Disconnect the following connectors:

- ECM 33P (Black) connector (page 4-25)
- Engine stop/mode select switch 6P (Black) connector (page 20-4)

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

Connection: Blue – Ground

TOOL:

Test probe, 2 packs

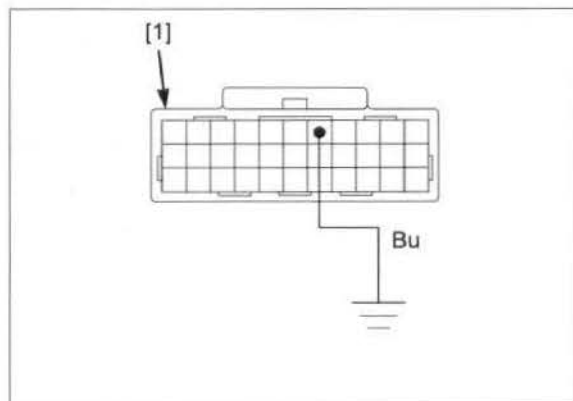
07ZAJ-RDJA110

There should be no continuity.

If there is continuity, check for a short circuit in the Blue wire.

If the wire is OK, check the engine stop/mode select switch (page 20-8).

If the engine stop/mode select switch is OK, replace the ECM with a known good one (page 4-25) and recheck.



MODE INDICATOR DOES NOT COME ON AT ALL

Disconnect the engine stop/mode select switch 6P (Black) connector (page 20-4).

Connect the 12 V battery (page 4-7).

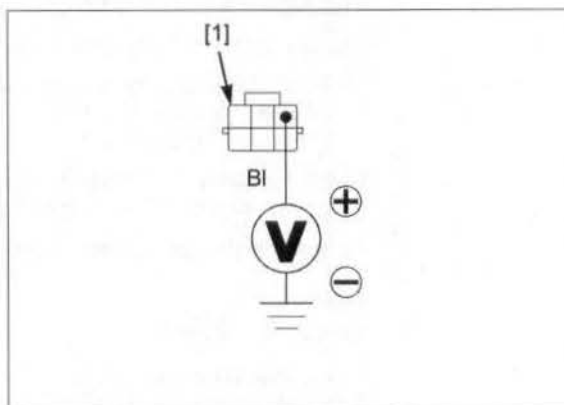
Turn the "ECM" selector switch ON.

Check for continuity between the wire harness side 6P (Black) connector [1] and ground.

Connection: Black (+) – Ground (–)

There should be continuity.

If there is no continuity, check for an open circuit in the Black wire.



Turn the "ECM" selector switch OFF.

Connect the engine stop/mode select switch 6P (Black) connector.

Disconnect the ECM 33P (Black) connector (page 4-25).

Ground the wire harness side 33P (Black) connector [1] with a jumper wire [2].

CONNECTION: Blue – Ground

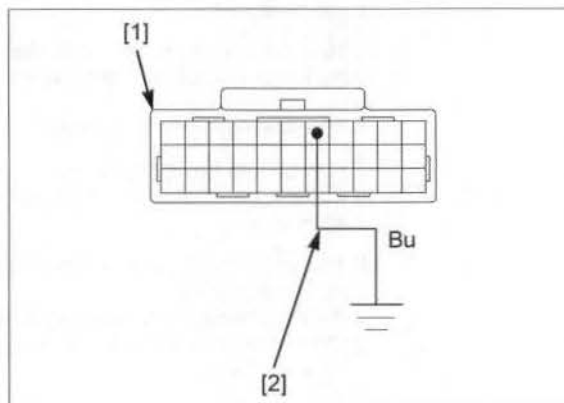
TOOL:

Test probe, 2 packs

07ZAJ-RDJA110

Turn the "ECM" selector switch ON.

- If the mode indicator comes on, replace the ECM with a known good one (page 4-25), and recheck.
 - If the mode indicator does not come on, check for an open circuit in the Blue wire between the engine stop/mode select switch and ECM.
- If the wire is OK, replace the engine stop/mode select switch (page 20-4).



ENGINE STOP/MODE SELECT SWITCH INSPECTION

Disconnect the engine stop/mode select switch 6P (Black) connector (page 20-4).

Check for continuity between the terminals of the switch connector [1] in each switch position.

CONNECTION:

Engine stop switch side:

Light green – Green

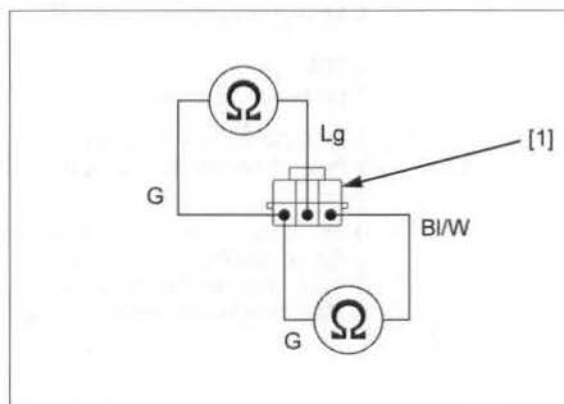
Engine mode select switch side:

Black/white – Green

There should be continuity with the switch pushed.

If the continuity is abnormal, check for an open circuit in the Light green, Black/white, or green wires.

If the wires are OK, replace the engine stop/mode select switch (page 20-4).

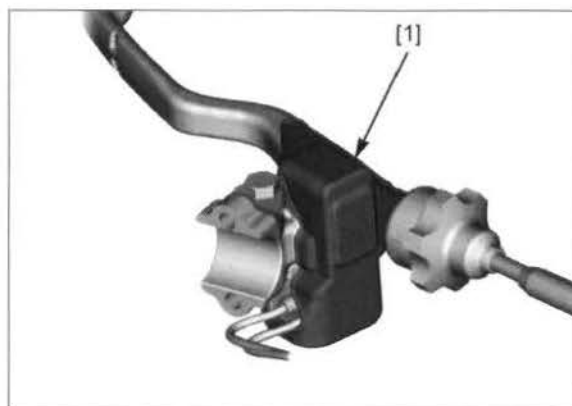


CLUTCH SWITCH (Except '17 model CRF450R)

REMOVAL/INSTALLATION ('17 model)

Remove the clutch lever bracket from the handlebar (page 16-31).

Remove the boot [1] from the clutch lever bracket.



Remove the screw [1], switch holder [2], and clutch switch [3].

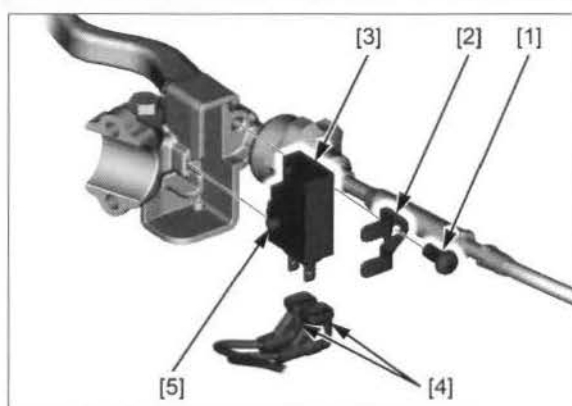
Disconnect the clutch switch connectors (clutch switch side) [4].

Installation is in the reverse order of removal.

NOTE:

- Install the clutch switch by aligning the switch boss [5] with the bracket groove.

Install the clutch lever bracket onto the handlebar (page 16-35).



REMOVAL/INSTALLATION (After '17 model)

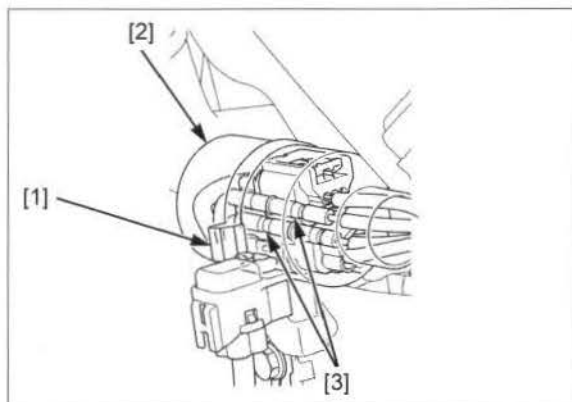
Remove the following:

- Front number plate (page 2-4)
- Left radiator shroud (page 2-3)
- Clutch lever (page 16-41)

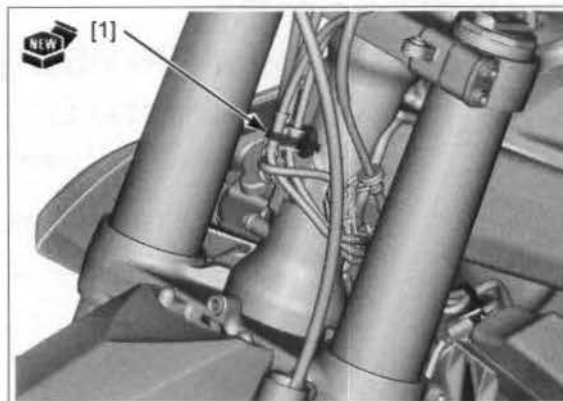
Remove the wire band [1].

Release the boot [2].

Disconnect the clutch switch connectors [3].



Remove the wire band A [1].

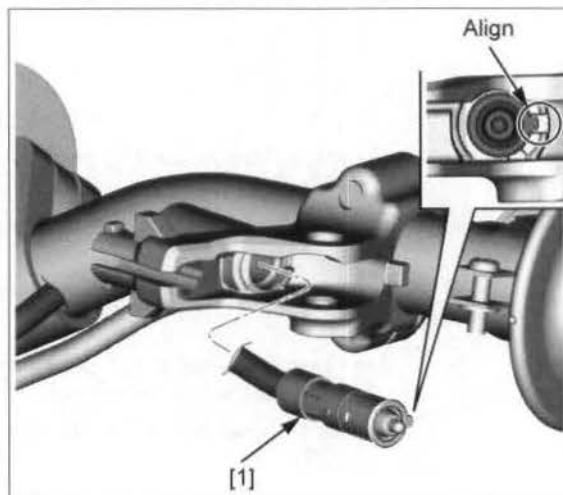


Remove the clutch switch [1].

Installation is in the reverse order of removal.

NOTE:

- Align the switch tab with the clutch lever bracket groove.
- Replace the wire band A with a new one.
- Route the wire harness properly (page 1-24).



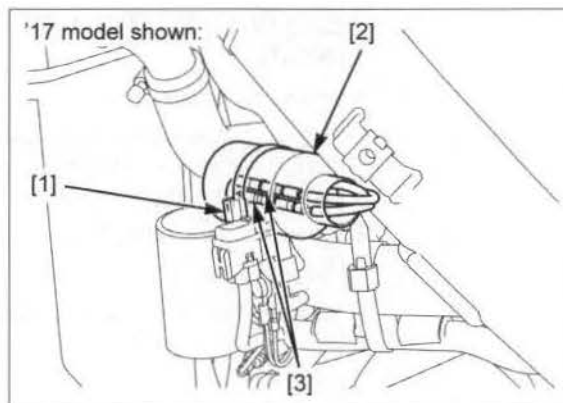
INSPECTION

Remove the left radiator shroud (page 2-3).

Remove the wire band [1].

Release the boot [2].

Disconnect the clutch switch connectors (main wire harness side) [3].



Check for continuity between the connectors [1] of the engine stop/mode select switch wire side.

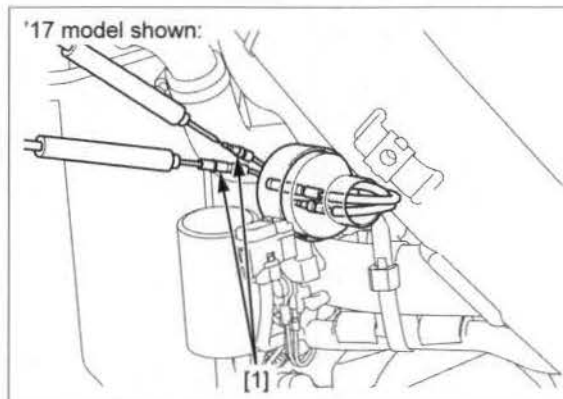
Connection: Black/red – Black/green

There should be continuity with the clutch lever squeezed, and no continuity with the clutch lever released.

If the continuity is abnormal, check for an open circuit in the Black/red and Black/green wires.

If the wires are OK, replace the clutch switch:

- '17 model CRF450RX: (page 20-9)
- After '17 model: (page 20-9)



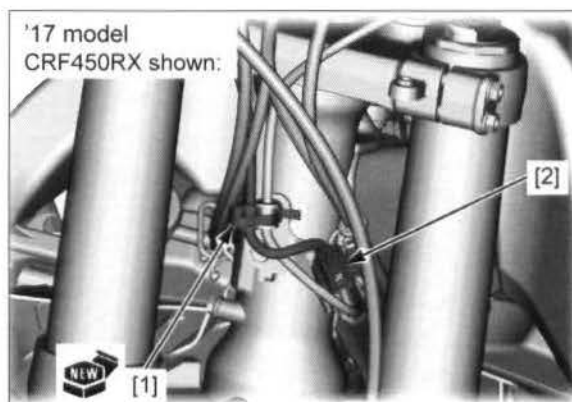
STARTER SWITCH (Except '17 model CRF450R)

REMOVAL/INSTALLATION

Remove the front number plate (page 2-4).

Remove the wire band A [1].

Disconnect the starter switch 2P (Black) connector [2].



Remove the wire band [1].

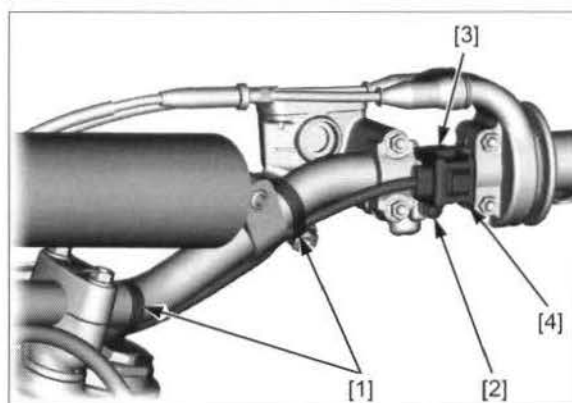
Remove the screw [2], holder [3], and starter switch [4].

Installation is in the reverse order of removal.

NOTE:

- Replace the wire band A with a new one.
- Route the wire properly (page 1-24).

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



INSPECTION

Disconnect the starter switch 2P (Black) connector (page 20-11).

Check for continuity between the starter switch connector [1] terminals.

CONNECTION:

'17 model: Red – Black/red

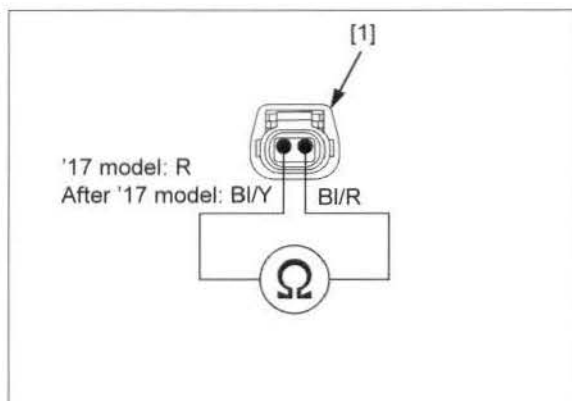
After '17 model: Black/yellow – Black/red

There should be continuity with the starter switch pushed.

If the continuity is abnormal, check for an open circuit in the following wires.

- '17 model: Red and Black/red wires
- After '17 model: Black/yellow and Black/red wires

If the wires are OK, replace the starter switch (page 20-11).

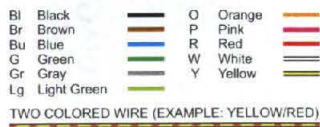


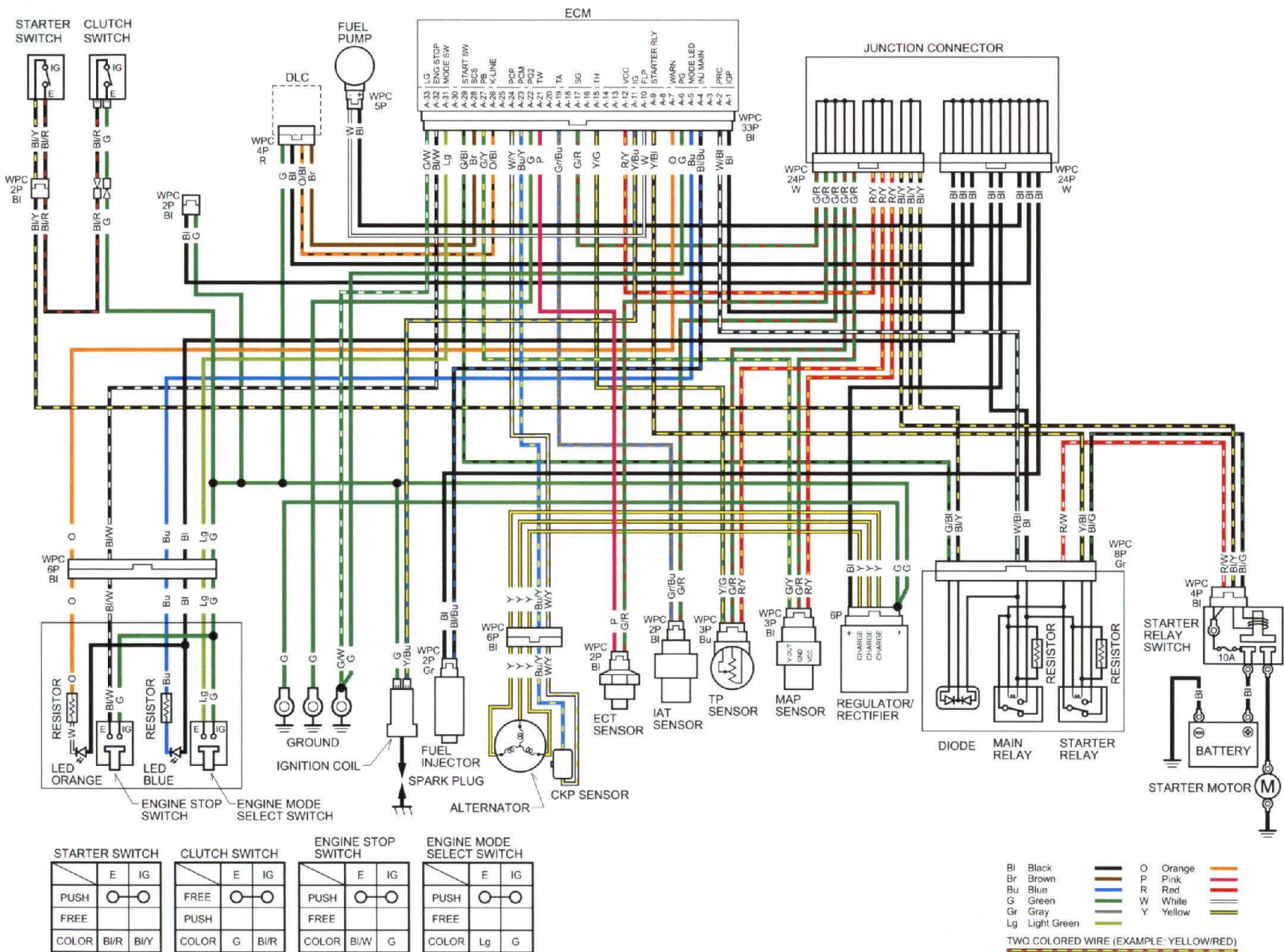
MEMO



WIRING DIAGRAMS	21-2
-----------------------	------

'17 model:





MEMO

ADDITIONAL ITEMS REQUIRING FREQUENT	
REPLACEMENT	3-5
AIR CLEANER HOUSING	7-23
AIR FILTER	3-9
ALTERNATOR CHARGING COIL	19-13
BALANCER DRIVEN GEAR/BALANCER SHAFT	14-6
BATTERY (Except '17 model CRF450R)	19-9
BODY PANEL LOCATIONS	2-2
BRAKE FLUID	3-23
BRAKE FLUID REPLACEMENT/AIR BLEEDING	18-6
BRAKE PADS WEAR	3-24
BRAKE PADS/DISC	18-9
BRAKE PEDAL	18-18
BRAKE SYSTEM	3-25
CABLE & HARNESS ROUTING	1-24
CAM CHAIN TENSIONER	11-4
CAMSHAFT	10-8
CHARGING SYSTEM INSPECTION (Except '17 model CRF450R)	19-10
CLUTCH	12-11
CLUTCH LEVER	16-41
CLUTCH SWITCH (Except '17 model CRF450R)	20-9
CLUTCH SYSTEM	3-26
COMPONENT LOCATION	
ALTERNATOR	13-3
BATTERY/CHARGING SYSTEM	19-6
CLUTCH/KICKSTARTER/STARTER CLUTCH/ GEARSHIFT LINKAGE	12-5
CRANKCASE/CRANKSHAFT/TRANSMISSION/ BALANCER	14-5
CYLINDER HEAD/VALVES	10-5
CYLINDER/PISTON/CAM CHAIN TENSIONER	11-3
ELECTRIC STARTER (Except '17 model CRF450R)	6-4
ENGINE REMOVAL/INSTALLATION	15-3
FRONT WHEEL/SUSPENSION/STEERING	16-5
FUEL SYSTEM	7-4
HYDRAULIC BRAKE	18-4
IGNITION SYSTEM	5-4
REAR WHEEL/SUSPENSION	17-5
SWITCHES	20-2
CONDENSER ('17 model)	19-14
CONTROL CABLES	3-27
COOLANT REPLACEMENT	9-5
COOLING SYSTEM	3-17
CRANKCASE	14-9
CRANKCASE BEARING/OIL SEAL REPLACEMENT	14-18
CRANKCASE BREATHER	3-10
CRANKSHAFT	14-17
CUSHION LINKAGE	17-27
CYLINDER COMPRESSION TEST	10-6
CYLINDER HEAD	10-15
CYLINDER HEAD COVER	10-6
CYLINDER/PISTON	11-6
DECOMPRESSOR SYSTEM	10-11
DRIVE CHAIN	3-18
DRIVE CHAIN GUIDE/DRIVE CHAIN GUIDE SLIDER	17-33
DRIVE CHAIN ROLLER	3-22
DRIVE CHAIN SLIDER	3-22
DRIVE SPROCKET COVER	2-5
DRIVE/DRIVEN SPROCKET	3-23
DTC INDEX	4-11
DTC TROUBLESHOOTING	4-12
ECM	4-25
ECT SENSOR	4-24
ENGINE GUARD	2-6
ENGINE IDLE SPEED	3-17

ENGINE INSTALLATION	15-6
ENGINE OIL/OIL FILTER	3-15
ENGINE REMOVAL	15-4
ENGINE STOP/MODE SELECT SWITCH	20-3
EXHAUST PIPE/MUFFLER	3-28
EXHAUST SYSTEM	2-9
FAST IDLE KNOB	7-29
FLYWHEEL	13-6
FORK	16-9
FRONT BRAKE CALIPER	18-15
FRONT FENDER	2-5
FRONT MASTER CYLINDER	18-11
FRONT NUMBER PLATE	2-4
FRONT WHEEL	16-6
FUEL INJECTOR	7-28
FUEL LINE	3-6
FUEL LINE REPLACEMENT	7-5
FUEL PUMP UNIT (CRF450R)	7-13
FUEL PUMP UNIT (CRF450RX)	7-18
FUEL TANK (CRF450R)	7-11
FUEL TANK (CRF450RX)	7-12
GEARSHIFT LINKAGE	12-26
HANDLEBAR	16-30
IAT SENSOR	4-25
IGNITION COIL	5-9
IGNITION SYSTEM INSPECTION	5-6
IGNITION TIMING	5-9
KICKSTARTER ('17 model)	12-19
LEFT CRANKCASE COVER	13-4
LUBRICATION & SEAL POINTS	1-21
LUBRICATION SYSTEM DIAGRAM	8-3
MAINTENANCE SCHEDULE	3-3
MAP SENSOR	4-24
MIL CIRCUIT INSPECTION	4-22
MODEL IDENTIFICATION	1-3
MUD GUARD	2-6
NUTS, BOLTS, FASTENERS	3-30
OIL FILTER SCREEN	8-8
OIL PUMP	8-4
OPTIONAL PARTS ('17 model)	1-53
OPTIONAL PARTS (After '17 model)	1-55
PGM-FI SYMPTOM TROUBLESHOOTING	4-10
PGM-FI SYSTEM DIAGRAM	4-4
PGM-FI SYSTEM LOCATION	4-3
PGM-FI TROUBLESHOOTING INFORMATION	4-6
PISTON JET	8-8
PRESSURE RELIEF VALVE	8-6
PRIMARY DRIVE GEAR ('17 model CRF450R)	14-7
RADIATOR	9-6
RADIATOR COOLANT	3-17
RADIATOR SHROUD	2-3
REAR BRAKE CALIPER	18-17
REAR FENDER	2-5
REAR FRAME	2-6
REAR MASTER CYLINDER	18-13
REAR WHEEL	17-6
REED VALVE	14-6
REGULATOR/RECTIFIER	19-11
RIGHT CRANKCASE COVER	12-8
ROCKER ARM	10-13
SEAT	2-3
SERVICE INFORMATION	
ALTERNATOR	13-2
BATTERY/CHARGING SYSTEM	19-2
CLUTCH/KICKSTARTER/STARTER CLUTCH/ GEARSHIFT LINKAGE	12-2
COOLING SYSTEM	9-2
CRANKCASE/CRANKSHAFT/TRANSMISSION/ BALANCER	14-2

INDEX

CYLINDER HEAD/VALVES	10-2	SYSTEM DIAGRAM	
CYLINDER/PISTON/CAM CHAIN TENSIONER	11-2	BATTERY/CHARGING SYSTEM	19-6
ELECTRIC STARTER		ELECTRIC STARTER	
(Except '17 model CRF450R)	6-2	(Except '17 model CRF450R)	6-5
ENGINE REMOVAL/INSTALLATION	15-2	IGNITION SYSTEM	5-4
FRAME/BODY PANELS/EXHAUST SYSTEM	2-2	SYSTEM FLOW PATTERN	9-4
FRONT WHEEL/SUSPENSION/STEERING	16-2	SYSTEM TESTING	9-5
FUEL SYSTEM	7-2	TECHNICAL FEATURES	1-57
HYDRAULIC BRAKE	18-2	THROTTLE BODY	7-24
IGNITION SYSTEM	5-2	THROTTLE OPERATION	3-8
LUBRICATION SYSTEM	8-2	TORQUE VALUES	1-12
MAINTENANCE	3-2	TRANSMISSION	14-12
PGM-FI SYSTEM	4-2	TROUBLESHOOTING	
REAR WHEEL/SUSPENSION	17-2	BATTERY/CHARGING SYSTEM	
SWITCHES	20-2	(Except '17 model CRF450R)	19-4
SERVICE RULES	1-2	CLUTCH/KICKSTARTER/STARTER CLUTCH/	
SHOCK ABSORBER	17-9	GEARSHIFT LINKAGE	12-4
SIDE COVER/AIR CLEANER HOUSING COVER	2-4	COOLING SYSTEM	9-3
SIDESTAND (CRF450RX)		CRANKCASE/CRANKSHAFT/TRANSMISSION/	
FRAME/BODY PANELS/EXHAUST SYSTEM	2-8	BALANCER	14-4
MAINTENANCE	3-31	CYLINDER HEAD/VALVES	10-4
SPARK PLUG	3-11	CYLINDER/PISTON/CAM CHAIN TENSIONER	11-2
SPECIFICATIONS	1-4	ELECTRIC STARTER	
STARTER CLUTCH (Except '17 model CRF450R)	12-23	(Except '17 model CRF450R)	6-3
STARTER MOTOR	6-7	FRAME/BODY PANELS/EXHAUST SYSTEM	2-2
STARTER RELAY SWITCH	6-10	FRONT WHEEL/SUSPENSION/STEERING	16-4
STARTER SWITCH (Except '17 model CRF450R)	20-11	FUEL SYSTEM	7-3
STARTER/IGNITION RELAY		HYDRAULIC BRAKE	18-3
('17 model CRF450RX)	6-12	IGNITION SYSTEM	5-3
STARTER/MAIN RELAY (After '17 model)	6-15	LUBRICATION SYSTEM	8-2
STATOR/CKP SENSOR	13-9	REAR WHEEL/SUSPENSION	17-4
STEERING HEAD BEARINGS	3-31	VALVE CLEARANCE	3-12
STEERING STEM	16-36	WATER PUMP	9-7
SUSPENSION	3-28	WHEELS/TIRES	3-30
SWINGARM	17-34	WIRING DIAGRAMS	21-2
SWINGARM/CUSHION LINKAGE	3-30		



MSV 16271

61MKE01

served