HOW TO USE THIS MANUAL

This service manual describes the service procedures for the TA200.

Follow the Maintenance Schedule (Section 3) recommendations to ensure that the vehicle 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.

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. Sections 4 through 18 describe parts of the motorcycle, grouped according to location.

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

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

If you don't know the source of the trouble, go to section 20 Troubleshooting.

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Honda Motor Co., Ltd.
SERVICE PUBLICATION OFFICE

CONTENTS

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SYMBOLS

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

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

IMPORTANT SAFETY NOTICE

⚠ WARNING ***Indicates a strong possibility of severe personal injury or death if instructions are not followed.***

CAUTION: ***Indicates a possibility of equipment damage if instructions are not followed.***

NOTE: Gives helpful information.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains some warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda, might be done or of the possibly hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda, must satisfy himself thoroughly that neither personal safety nor vehicle safety will be jeopardized by the service methods or tools selected.

1. GENERAL INFORMATION

GENERAL SAFETY

CARBON MONOXIDE
If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area.

⚠ WARNING

The exhaust contains poisonous carbon monoxide gas that can cause loss of consciousness and may lead to death.

Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

GASOLINE
Work in a well ventilated area. Keep cigarettes, flames or sparks away from the work area or where gasoline is stored.

⚠ WARNING

Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH OF CHILDREN.

HOT COMPONENTS

⚠ WARNING

Engine and exhaust system parts become very hot and remain hot for some time after the engine is run. Wear insulated gloves or wait until the engine and exhaust system have cooled before handling these parts.

USED ENGINE OIL

⚠ WARNING

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. KEEP OUT OF REACH OF CHILDREN.

BRAKE DUST
Never use an air hose or dry brush to clean the brake assemblies. Use OSHA-approved vacuum cleaner or alternate method approved by OSHA, designed to minimize the hazard caused by airborne asbestos fibers.

⚠ WARNING

Inhaled asbestos fibers have been found to cause respiratory disease and cancer.

BRAKE FLUID

CAUTION:

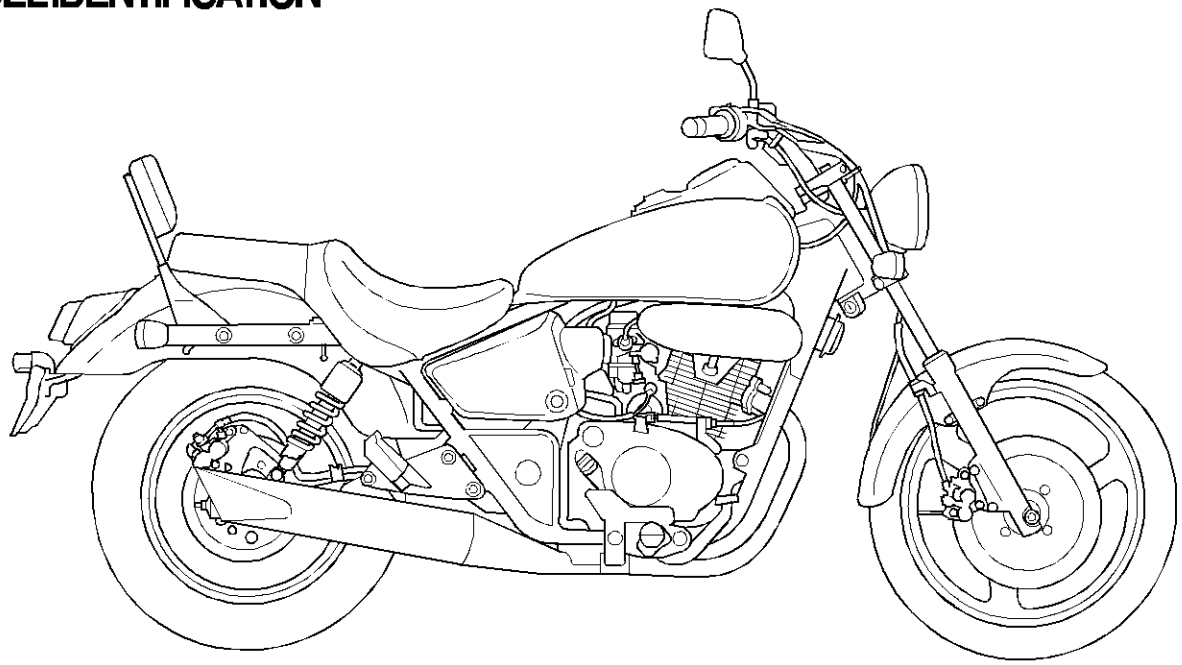
Spilling fluid on painted, plastic or rubber parts will damage them. Place a clean shop towel over these parts whenever the system is serviced. KEEP OUT OF REACH OF CHILDREN.

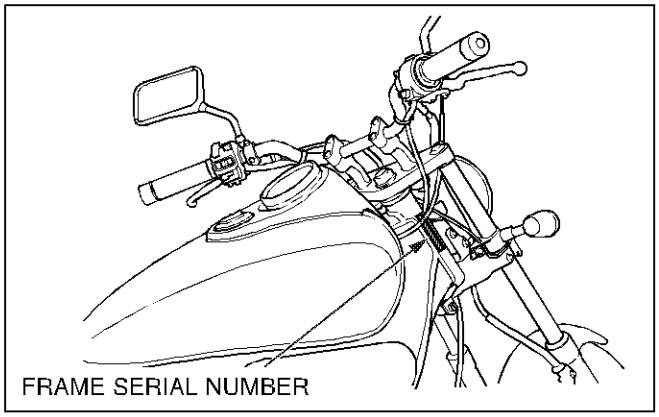
Right side only

SERVICE RULES

1. Use genuine Honda or Honda-recommended parts and lubricants or their equivalents. Parts that don't meet Honda's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the motorcycle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as show on pages 1-16 through 1-23, Cable and Harness Routing.

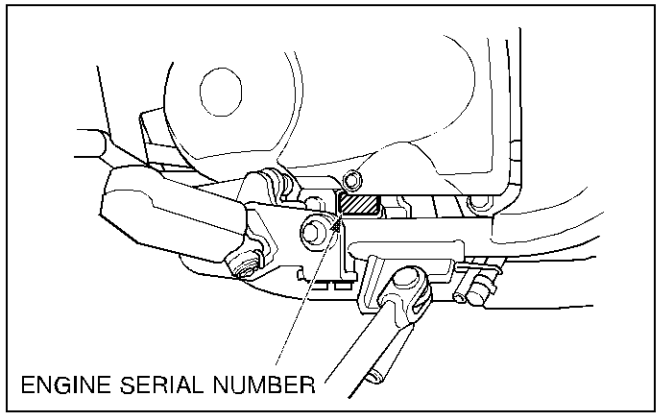
MODEL IDENTIFICATION





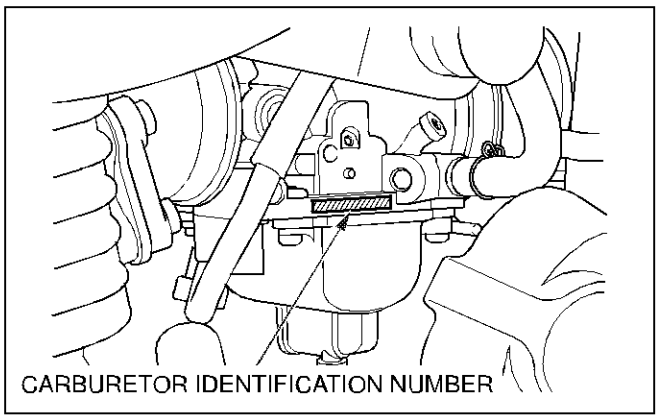
FRAME SERIAL NUMBER

The frame serial number is stamped on the right side of the steering head.



ENGINE SERIAL NUMBER

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



CARBURETOR IDENTIFICATION NUMBER

The carburetor identification number is on the right side of the carburetor body.

SPECIFICATIONS

GENERAL

ITEM		SPECIFICATIONS
DIMENSIONS	Overall length	2,260 mm (89.0 in)
	Overall width	732 mm (28.8 in)
	Overall height	1,067 mm (42.0 in)
	Wheelbase	1,506 mm (59.3 in)
	Seat height	700 mm (27.6 in)
	Footpeg height	281 mm (11.1 in)
	Ground clearance	148 mm (5.8 in)
	Dry weight	143 kg (315 lbs)
	Curb weight	154 kg (340 lbs)
FRAME	Frame type	Double crable
	Front suspension	Telescopic fork
	Front wheel travel	128 mm (5.0 in)
	Rear suspension	Swingarm
	Rear wheel travel	80 mm (3.1 in)
	Rear damper	Both side operation
	Front tire size	90/90-17 49P
	Rear tire size	130/90-15 M/C 66P
	Front tire brand	IRC NF52/TL
	Rear tire brand	IRC NR66/TL
	Front brake	Hydraulic single disc
	Rear brake	Hydraulic single disc
	Caster angle	31°
	Trail length	117 mm (4.6 in)
	Fuel tank capacity	11.2 liter (2.96 US gal, 2.46 Imp gal)
	Fuel tank reserve capacity	2.68 liter (0.708 US gal, 0.590 Imp gal)
ENGINE	Type	4-Stroke, SOHC
	Bore and stroke	63.5 x 62.2 mm (2.49 x 2.44 in)
	Displacement	196 cm^3 (12.0 cu-in)
	Compression ratio	9.0 : 1
	Valve train	2-valve single chain driven SOHC
	Intake valve opens — at 1 mm (0.04 in) lift	10° BTDC
	Intake valve closes — at 1 mm (0.04 in) lift	35° ABDC
	Exhaust valve opens — at 1 mm (0.04 in) lift	35° BBDC
	Exhaust valve closes — at 1 mm (0.04 in) lift	5° ATDC
	Lubrication system	Forced pressure and wet sump
	Oil pump type	Trochoid
	Cooling system	Air cooled
	Air filtration	Paper element
	Crankshaft type	Assembled type
	Engine dry weight	35 kg (77.1 lbs)

GENERAL (Cont'd)

ITEM			SPECIFICATIONS
CARBURETOR	Carburetor type Venturi diameter		CV (Constant velocity) type 27.3 mm (1.07 in) or equivalent
DRIVE TRAIN	Clutch system Clutch operation system Transmission Primary reduction Final reduction Gear ratio Gearshift pattern	 1st 2nd 3rd 4th 5th 6th 	Multi-plate, wet Cable operating Constant mesh, 6-speed 3.090 (68/22) 3.154 (41/13) 2.545 (28/11) 1.687 (27/16) 1.280 (32/25) 1.041 (25/24) 0.903 (28/31) 0.814 (22/27) Left foot operated return system 1-N-2-3-4-5-6
ELECTRICAL	Ignition system Starting system Charging system Regulator/rectifier Lighting system		Condenser Discharged Ignition (CDI) Electric starter motor Single phase output alternator SCR shorted/single phase, half wave rectification Battery

LUBRICATION SYSTEM

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	At draining	1.0 liter (1.1 US qt, 0.9 Imp qt)	———
	At disassembly	1.2 liter (1.3 US qt, 1.1 Imp qt)	———
Recommended engine oil		Honda 4-stroke oil or equivalent motor oil API service classification SE, SF or SG Viscosity: SAE 10W-30	———
Oil pump rotor	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.15 – 0.21 (0.006 – 0.008)	0.40 (0.016)
	Side clearance	0.03 – 0.12 (0.001 – 0.005)	0.15 (0.006)

FUEL SYSTEM

Unit: mm (in)

ITEM	SPECIFICATIONS
Carburetor identification number	VE3CA
Main jet	#132
Slow jet	#35
Pilot screw initial opening	2 1/8 turns out
Pilot screw final opening	1/4 turns out
Float level	18.5 mm (0.73 in)
Idle speed	1,400 ± 100 min^{-1}
PAIR control valve specified vacuum	290 mmHg (11.4 inHg)

CYLINDER HEAD/VALVES

Unit: mm (in)

ITEM				STANDARD	SERVICE LIMIT
Cylinder compression				1,177 kPa (12.0 kgf/cm^2, 171 psi) at 450 (rpm)	———
Cylinder head Warpage				———	0.5 (0.02)
Valve and valve guide	Valve clearance		IN	0.10 ± 0.02 (0.004 ± 0.001)	———
			EX	0.10 ± 0.02 (0.004 ± 0.001)	———
	Valve stem O.D.		IN	5.450 – 5.465 (0.2146 – 0.2152)	5.42 (0.213)
			EX	5.430 – 5.445 (0.2138 – 0.2144)	5.40 (0.213)
	Valve guide I.D.		IN	5.475 – 5.485 (0.2156 – 0.2159)	5.50 (0.217)
			EX	5.475 – 5.485 (0.2156 – 0.2159)	5.50 (0.217)
	Stem-to-guide clearance		IN	0.010 – 0.035 (0.0004 – 0.0014)	0.06 (0.002)
			EX	0.030 – 0.055 (0.0012 – 0.0022)	0.08 (0.003)
	Valve seat width		IN/EX	1.1 – 1.3 (0.0433 – 0.0512)	1.5 (0.0590)
Valve spring	Free length	Inner	IN/EX	39.2 (1.54)	38.0 (1.50)
		Outer	IN/EX	44.9 (1.77)	43.5 (1.71)
Rocker arm	Rocker arm I.D.		IN/EX	12.000 – 12.018 (0.4724 – 0.4731)	12.05 (0.474)
	Rocker arm shaft O.D.		IN/EX	11.966 – 11.984 (0.4711 – 0.4718)	11.93 (0.470)
	Rocker arm-to-shaft clearance		IN/EX	0.016 – 0.052 (0.0006 – 0.0020)	0.08 (0.003)
Camshaft	Cam lobe height		IN	31.372 – 31.612 (1.2351 – 1.2446)	31.1 (1.2244)
			EX	31.212 – 31.452 (1.2288 – 1.2383)	31.0 (1.2204)
	Camshaft runout			———	0.03 (0.0012)

CYLINDER/PISTON

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		63.500 – 63.510 (2.5000 – 25.003)	63.6 (2.50)
	Out of round		———	0.10 (0.004)
	Taper		———	0.10 (0.004)
	Warpage		———	0.10 (0.004)
Piston, piston ring and piston pin	Piston mark direction		"IN" mark facing toward the intake side	———
	Piston O.D.		63.47 – 63.49 (2.499 – 2.500) at 23.0 (0.91) from the bottom	63.42 (2.497)
	Piston pin hole I.D.		15.002 – 15.008 (0.5906 – 0.5910)	15.04 (0.592)
	Piston pin O.D.		14.994 – 15.000 (0.5903 – 0.5906)	14.96 (0.589)
	Connecting rod small end I.D.		15.010 – 15.028 (0.5909 – 0.5917)	15.06 (0.593)
	Cylinder-to-piston clearance		0.010 – 0.040 (0.0004 – 0.0016)	0.10 (0.004)
	Piston-to-piston pin clearance		0.002 – 0.014 (0.0001 – 0.0006)	0.02 (0.001)
	Connecting rod-to-piston pin clearance		0.016 – 0.034 (0.0006 – 0.0013)	0.10 (0.004)
	Piston ring-to-ring groove clearance	Top	0.010 – 0.045 (0.0004 – 0.0018)	0.09 (0.004)
		Second	0.015 – 0.045 (0.0006 – 0.0018)	0.09 (0.004)
	Piston ring end gap	Top	0.20 – 0.35 (0.008 – 0.014)	0.50 (0.014)
		Second	0.35 – 0.50 (0.014 – 0.020)	0.50 (0.014)
		Oil (side rail)	0.20 – 0.70 (0.008 – 0.028)	0.90 (0.035)
	Piston ring mark direction	Top/second	Marking facing up	———

CLUTCH/GEARSHIFT LINKAGE

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Clutch	Spring free length		37.9 (1.49)	34.7 (1.37)
	Disc thickness	A	2.92 – 3.08 (0.115 – 0.121)	2.6 (0.10)
		B	3.62 – 3.70 (0.143 – 0.146)	3.3 (0.13)
	Plate warpage		———	0.10 (0.004)
	Outer guide	O.D.	27.959 – 27.980 (1.1007 – 1.1016)	27.93 (1.099)
		I.D.	19.983 – 19.996 (0.7867 – 0.7872)	20.02 (0.788)
	Outer I.D.		28.000 – 28.013 (1.1024 – 1.1029)	28.04 (1.1039)
Mainshaft O.D at clutch outer guide			19.967 – 19.980 (0.7861 – 0.7866)	19.95 (0.7854)

CRANKSHAFT/TRANSMISSION

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod side clearance		0.05 – 0.30 (0.002 – 0.012)	0.5 (0.02)
	Connecting rod radial clearance		0 – 0.008 (0 – 0.0003)	0.05 (0.002)
	Runout		——	0.10 (0.004)
Transmission	Gear I.D.	M5, M6, C2	23.020 – 23.041 (0.9063 – 0.9071)	23.07 (0.908)
		C1	19.520 – 19.541 (0.7685 – 0.7693)	19.57 (0.770)
		C3, C4	22.020 – 22.041 (0.8669 – 0.8678)	22.07 (0.869)
	Bushing O.D.	M5, C2	22.979 – 23.000 (0.9047 – 0.9055)	22.93 (0.9028)
		M6	23.005 – 23.016 (0.9057 – 0.9061)	22.95 (0.9035)
		C1	19.479 – 19.500 (0.7669 – 0.7677)	19.43 (0.765)
	Bushing I.D.	M5, C2	20.000 – 20.021 (0.7874 – 0.7882)	20.05 (0.789)
		M6	20.020 – 20.041 (0.7882 – 0.7890)	20.07 (0.790)
		C1	16.516 – 16.534 (0.6502 – 0.6510)	16.56 (0.652)
	Mainshaft O.D.	M5	19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)
	Countershaft O.D.	C1	16.466 – 16.490 (0.6483 – 0.6492)	16.41 (0.646)
		C2	19.974 – 19.987 (0.7864 – 0.7869)	19.92 (0.784)
		C3	21.959 – 21.980 (0.8645 – 0.8654)	21.91 (0.8626)
	Gear-to-bushing clearance	M5, C1, C2	0.020 – 0.062 (0.0008 – 0.0024)	0.1 (0.004)
	Bushing-to-shaft clearance	M5	0.020 – 0.062 (0.0008 – 0.0024)	0.1 (0.004)
		C1	0.026 – 0.068 (0.0010 – 0.0027)	0.1 (0.004)
		C2	0.013 – 0.047 (0.0005 – 0.0019)	0.1 (0.004)
Shift fork	I.D.		12.000 – 12.018 (0.4724 – 0.4731)	12.05 (0.474)
	Claw thickness		4.93 – 5.00 (0.194 – 0.197)	4.50 (0.177)
	Shaft O.D.		11.976 – 11.994 (0.4715 – 0.4722)	11.96 (0.471)

FRONT WHEEL/SUSPENSION/STEERING

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		—	To the indicator
Cold tire pressure	Driver only	200 kPa (2.0 kgf/cm², 29 psi)	—
	Driver and passenger	200 kPa (2.0 kgf/cm², 29 psi)	—
Axle runout		—	0.20 (0.008)
Wheel runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Fork	Spring free length	392.4 (15.45)	384.6 (15.14)
	Tube runout	—	0.20 (0.008)
	Recommended fluid	Fork fluid	—
	Fluid level	186 (7.323)	—
	Fluid capacity	155 ± 2.5 cm³ (5.2 ± 0.08 US oz, 5.5 ± 0.09 Imp oz)	—
Steering head bearing pre-load		0.10 – 0.16 kg (0.220 – 0.353 lbf)	—

REAR WHEEL/SUSPENSION

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		—	To the indicator
Cold tire pressure	Driver only	200 kPa (2.0 kgf/cm², 29 psi)	—
	Driver and passenger	200 kPa (2.0 kgf/cm², 29 psi)	—
Axle runout		—	0.20 (0.008)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Drive chain	Size/link	520/116	—
	Slack	20 – 30 (0.8 – 1.2)	—

HYDRAULIC BRAKE

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Front	Specified brake fluid	DOT3 or 4	—
	Brake pad wear indicator	—	To groove
	Brake disc thickness	3.8 – 4.2 (0.15 – 0.17)	3.5 (0.14)
	Brake disc runout	—	0.30 (0.012)
	Master cylinder I.D.	11.000 – 11.043 (0.4331 – 0.4348)	11.06 (0.435)
	Master piston O.D.	10.957 – 10.984 (0.4314 – 0.4324)	10.95 (0.431)
	Caliper cylinder I.D.	25.400 – 25.450 (0.9999 – 1.0020)	25.46 (1.002)
	Caliper piston O.D.	25.335 – 25.368 (0.9974 – 0.9987)	25.30 (0.996)
Rear	Specified brake fluid	DOT3 or 4	—
	Brake pad wear indicator	—	To groove
	Brake disc thickness	3.8 – 4.2 (0.15 – 0.17)	3.5 (0.14)
	Brake disc runout	—	0.30 (0.012)
	Master cylinder I.D.	14.000 – 14.043 (0.5512 – 0.5529)	14.06 (0.554)
	Master piston O.D.	13.957 – 13.984 (0.5495 – 0.5506)	13.95 (0.549)
	Caliper cylinder I.D.	25.400 – 25.450 (0.9999 – 1.0020)	25.46 (1.002)
	Caliper piston O.D.	25.335 – 25.368 (0.9974 – 0.9987)	25.30 (0.996)

BATTERY/CHARGING SYSTEM

ITEM			SPECIFICATIONS
Battery	Capacity		12 V – 5 Ah
	Current leakage		0.1 mA max.
	Voltage (20°C/68°F)	Fully charged	Above "**UNDECIDED**"
		Needs charging	Below "**UNDECIDED**"
	Charging current	Normal	0.6 A/5 – 10 h
		Quick	3.0 A/0.5 h
Alternator	Capacity		130 W/5,000 min^{-1} (rpm)
	Charging coil resistance (20°C/68°F)		0.1 – 1.0 ý

IGNITION SYSTEM

ITEM		SPECIFICATIONS	
Spark plug		NGK	DENSO
	Standard	DPR8EA-9	X24EPR-U9
Ignition primary peak voltage		100 V minimum	
Exciter coil peak voltage		100 V minimum	
Ignition pulse generator peak voltage		0.7 V minimum	
Ignition timing ("F" mark)		10° BTDC at idle	

Unit: mm (in)

ELECTRIC STARTER

ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length	12 (0.5)	8.5 (0.3)

LIGHTS/METER/SWITCHES

ITEM		SPECIFICATIONS
Bulbs	Headlight (Hight/low beam)	12 V – 30/30 W
	Tail/brake light	12 V – 5/18 W
	Front turn signal light	12 V – 15 W x 2
	Rear turn signal light	12 V – 15 W x 2
	License light	12 V – 5 W
	Instrument light	12 V – 1.7 W x 2
	Turn signal indicator	12 V – 1.7 W
	High beam indicator	12 V – 1.7 W
	Neutral indicator	12 V – 1.7 W
Fuse	Main fuse	15 A

TORQUE VALUES

FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)	FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)
5 mm hex bolt and nut	5 (0.5, 3.6)	5 mm screw	4 (0.4, 2.9)
6 mm hex bolt and nut	10 (1.0, 7)	6 mm screw	9 (0.9, 6.5)
8 mm hex bolt and nut	22 (2.2, 16)	6 mm flange bolt and nut	12 (1.2, 9)
10 mm hex bolt and nut	34 (3.5 , 25)	8 mm flange bolt and nut	26 (2.7, 20)
12 mm hex bolt and nut	54 (5.5, 40)	10 mm flange bolt and nut	39 (4.0, 29)

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

NOTES: 1. Apply a locking agent to the threads.
2. Apply oil to the threads and seating surfaces.
3. Stake
4. U-nut.
5. ALOC bolt: replace with a new one.

ENGINE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
MAINTENANCE:				
Valve adjusting hole cap	2	36	15 (1.5, 11)	
Timing hole cap	1	14	6 (0.6, 4.3)	
Crankshaft hole cap	1	30	8 (0.8, 5.8)	
Oil filter rotor cover screw	1	5	3 (0.3, 2.2)	
Oil strainer screen cap	1	36	15 (1.5, 11)	
Valve adjusting lock nut	2	6	14 (1.4, 10)	NOTE 2
Spark plug	1	12	18 (1.8, 13)	
LUBRICATION SYSTEM:				
Oil pump cover screw	2	4	3 (0.3,2.2)	
Oil pump mounting screw	2	6	10 (1.0, 7)	
CYLINDER HEAD/VALVES:				
Cylinder head cap nut	4	8	27 (2.8, 20)	NOTE 2
Cylinder head socket bolt	1	8	10 (1.0, 7)	
Cam sprocket bolt	2	6	12 (1.2, 9)	
Cam chain tensioner lifter mounting bolt	2	6	12 (1.2, 9)	
Cam chain tensioner lifter plug	1	6	4 (0.4, 2.9)	
Cam chain tensioner slider bolt	1	8	10 (1.0, 7)	
CLUTCH/GEARSHIFT LINKAGE:				
Clutch lifter plate bolt	4	6	12 (1.2, 9)	
Clutch center lock nut	1	16	83 (8.5, 61)	NOTE 2, 3
Shift drum stoper arm bolt	1	6	12 (1.2, 9)	NOTE 1
Oil filter rotor lock nut	1	16	83 (8.5, 61)	NOTE 2
ALTERNATOR:				
Starter clutch socket bolt	6	6	16 (1.6, 12)	NOTE 1
Flywheel bolt	1	10	74 (7.5, 54)	NOTE 2
Ignition pulse generator socket bolt	2	5	5 (0.5, 3.6)	NOTE 1
CRANKSHAFT/TRANSMISSION/KICKSTARTER:				
Bearing set plate socket bolt	1	8	22 (2.2, 16)	

FRAME

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
FRAM/BODY PANELS/EXHAUST SYSTEM				
Fuel valve	1	18	26 (2.6, 19)	
Exhaust pipe joint nut	2	7	20 (2.0, 14)	
ENGINE REMOUAL/INSTALLATION				
Upper engine hanger bracket nut	3	8	26 (2.6, 19)	
Front engine honger bracket nut	2	10	76 (7.7, 56)	
Engine hanger bracket nut	1	8	26 (2.6, 19)	
Rear upper engine hanger bracket nut	1	10	76 (7.7, 56)	
Rear lower engine hanger bracket nut	1	10	76 (7.7, 56)	
FRONT WHEEL/SUSPENSION/STEERING:				
Steering stem nut	1	24	88 (9.0, 65)	page 12-29
Steering stem top thread	1	26	1 (0.1, 0.7)	page 12-28
Top bridge pinch bolt	2	8	23 (2.3, 17)	
Bottom bridge pinch bolt	2	8	26 (2.7, 20)	
Front brake disc bolt	4	8	42 (4.3, 31)	
Handlebar upper holder bolt	4	8	26 (2.7, 20)	
Front axle nut	1	14	59 (6.0, 43)	NOTE 4
Fork cap bolt	2	27	23 (2.3, 17)	
Fork socket bolt	2	8	20 (2.0, 14)	NOTE 1
REAR WHEEL/BRAKE/SUSPENSION:				
Rear axle nut	1	14	88 (9.0, 65)	NOTE 4
Driven sprocket nut	4	10	64 (6.5, 47)	NOTE 4
Rear shock absorber mount bolt (upper)	2	6	12 (1.2, 9)	
(lower)	2	10	34 (3.5, 25)	
Swingarm pivot nut	1	14	88 (9.0, 65)	NOTE 4
Rear brake disc bolt	6	8	42 (4.3, 31)	NOTE 1
Drive chain slider screw	2	6	9 (0.9, 6.5)	NOTE 1
HYDRAULIC BRAKE:				
Front caliper bracket bolt	2	8	30 (3.1, 22)	NOTE 1
Front caliper pad pin plug	2	10	3 (0.3, 2.2)	
Front caliper bleed valve	1	8	6 (0.6, 4.3)	
Front caliper pad pin	1	8	18 (1.8, 13)	
Front caliper bracket pin	1	10	18 (1.8, 13)	
Front caliper torque nut	1	8	23 (2.3, 17)	NOTE 1
Front reservior cover screw	2	4	2 (0.2, 1.4)	
Brake lever pivot bolt	1	6	6 (0.6, 4.3)	
Brake lever pivot nut	1	6	6 (0.6, 4.3)	
Front brake light switch screw	1	4	1 (0.1, 0.7)	
Rear reservior cover screw	2	4	2 (0.2, 1.4)	
Rear master cylinder hose joint screw	1	4	2 (0.2, 1.4)	
Rear master cylinder lower joint nut	1	8	18 (1.8, 13)	
Rear caliper pad pin plug	2	10	3 (0.3, 2.2)	
Rear caliper bleed valve	1	8	6 (0.6, 4.3)	
Rear caliper bracket bolt	2	8	26 (2.7, 20)	NOTE 1
Rear caliper pad pin	1	8	18 (1.8, 13)	
Rear caliper bracket pin	1	10	18 (1.8, 13)	
Rear caliper torque nut	1	8	23 (2.3, 17)	NOTE 1
Brake hose oil bolt	4	10	34 (3.5, 25)	
OTHER				
Side stand pivot nut	1	10	44 (4.5, 33)	

TOOLS

NOTES: 1. Equivalent commercially available.
2. Alternative tool.

DESCRIPTION	TOOL NUMBER	REMARKS	REF. SEC.
Valve wrench	07708 – 0030200		3
Valve adjusting screw wrench	07708 – 0030400		3
Carburetor float level gauge	07401 – 0010000		5
Valve guide driver	07742 – 0010100		7
Valve spring compresser	07757 – 0010000		7
Valve guide reamer	07984 – 0980001		7
Valve seat cutter			
Seat cutter, 33 mm (45° IN)	07780 – 0010800		7
Seat cutter, 35 mm (45° EX)	07780 – 0010400		7
Flat cutter, 33 mm (32° IN)	07780 – 0012900		7
Flat cutter, 30 mm (32° EX)	07780 – 0012200		7
Interior cutter 30 mm (60° IN/EX)	07780 – 0014000		7
Cutter holder, 5.5 mm	07781 – 0010101		7
Clutch center holder	07GMB – KT70101		9
Gear holder	07724 – 0010100		9
Lock nut wrench, 20 x 24 mm	07716 – 0020100		9
Extansion bar	07716 – 0020500		9
Flywheel holder	07725 – 0040000		10
Flywheel puller	07733 – 0020001		10
Bearing remover set 15 mm	07936 – KC10500		11
— Bearing remover shaft	07936 –KC10100		11
— Bearing remover head	07936 – KC10200		11
Remover weight	07741 – 0010201		11
Driver	07749 – 0010000		11, 12, 13
Attatchment, 22 x 24 mm	07746 – 0010800		11
Attatchment, 32 x 35 mm	07746 – 0010100		11
Attatchment, 42 x 47 mm	07746 – 0010300		11, 12, 13
Attatchment, 52 x 55 mm	07746 – 0010400		11
PILOT, 15 mm	07746 – 0040300		11, 12, 13
PILOT, 17 mm	07746 – 0040400		11
PILOT, 20 mm	07746 – 0040500		11
PILOT, 28 mm	07746 – 0041100		11
PILOT, 35 mm	07746 – 0040800		11
Installer, depth 27.12 mm	070MF – KPKT100		11
Installer, depth 27.4 mm	070MF – KPKT200		11
Attatchment, 37 x 40 mm	07746 – 0010200		12
Bearing remover head, 15 mm	07746 – 0050400		12, 13
Bearing remover shaft	07746 – 0050100		12, 13
Fork seal driver body	07747 – 0010100		12
Fork seal driver attatchment	07747 – 0010400		12
Steering stem socket	07916 – 3710101		12
Driver attatchment	07946 – 329000		12
Steering stem driver	07946 – 4300101		12
Snapring pliers	07914 – SA50001		14
Peak voltage adapter	07HGJ – 0020100		16

LUBRICATION & SEAL POINTS

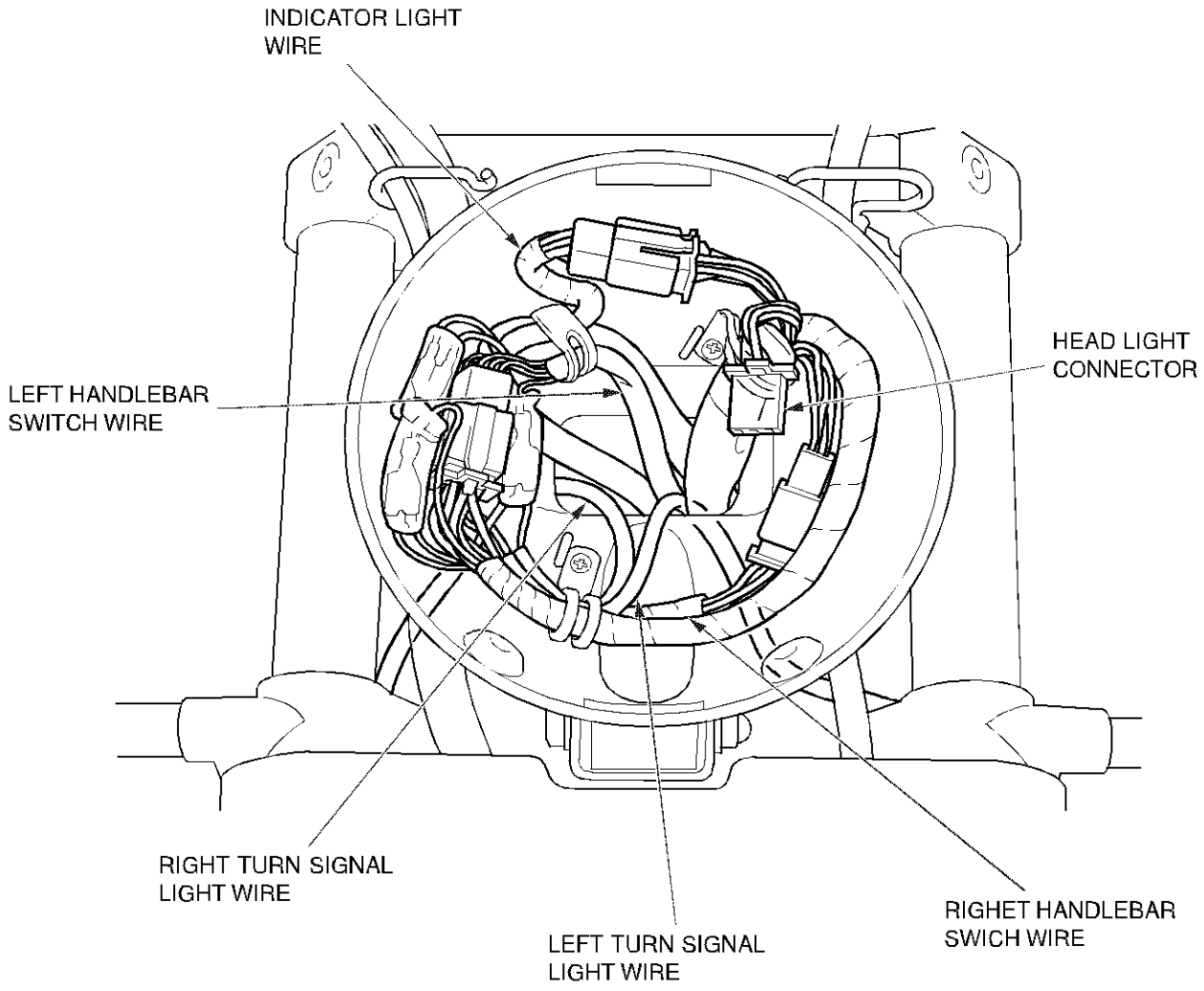
ENGINE

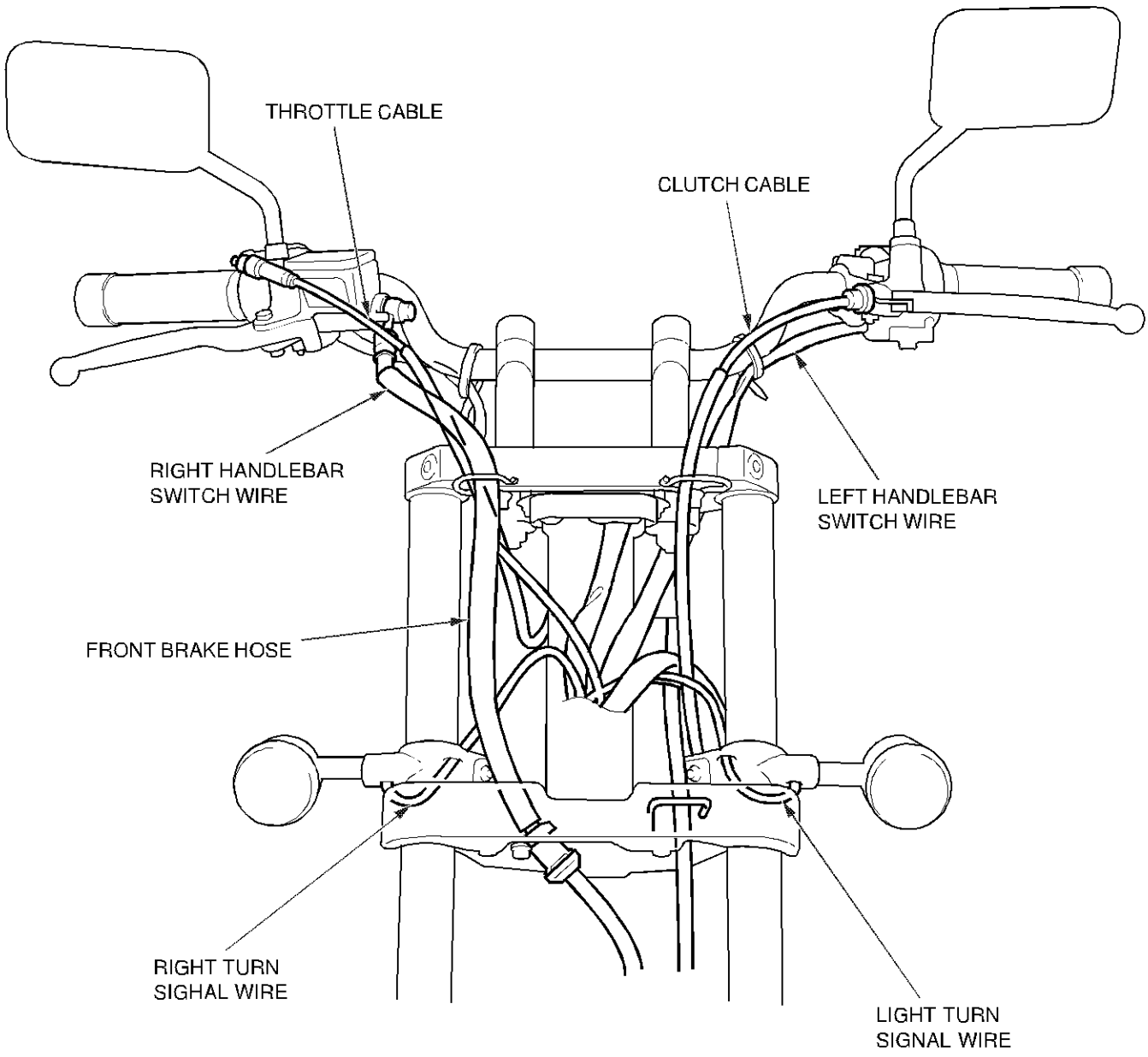
LOCATION	MATERIAL	REMARKS
Oil through sliding area Cylinder head bolt threads and seating surface Oil filter rotor lock nut threads and seating surface Clutch center lock nut Oil pump rotors Valve adjusting nut threads and seating surface Valve stem outer surface Reduction gear shaft whole surface Idle gear shaft Starter idle gear shaft whole surface Starter one-way clutch rolling surface Cam chain whole surface Alternater bolt thread porsion Each oil seal lip area Other rotating and sliding portion Crankshaft conrod bearing Clutch disc surface Clutch plate Each O-rings Each ball bearing and needle bearing Rocker arm shaft whole surface	Honda 4-stroke oil or equivalent	
Camshaft push plug whole area Piston pin whole surface Piston ring whole surface Transmission gear teeth and bushings Clutch outer guide whole surface Stater driven teeth	Molybdenum disulfide oil (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease)	
Ignition pulse generator socket bolt threads Alternater wire grommet Bearing set plate socket bolt Starter one-way clutch socket bolt Crankcase cut end Cylinder head cover surface of head side	Locking agent	
Alternater and crank shaft mattching surface	Degrease	

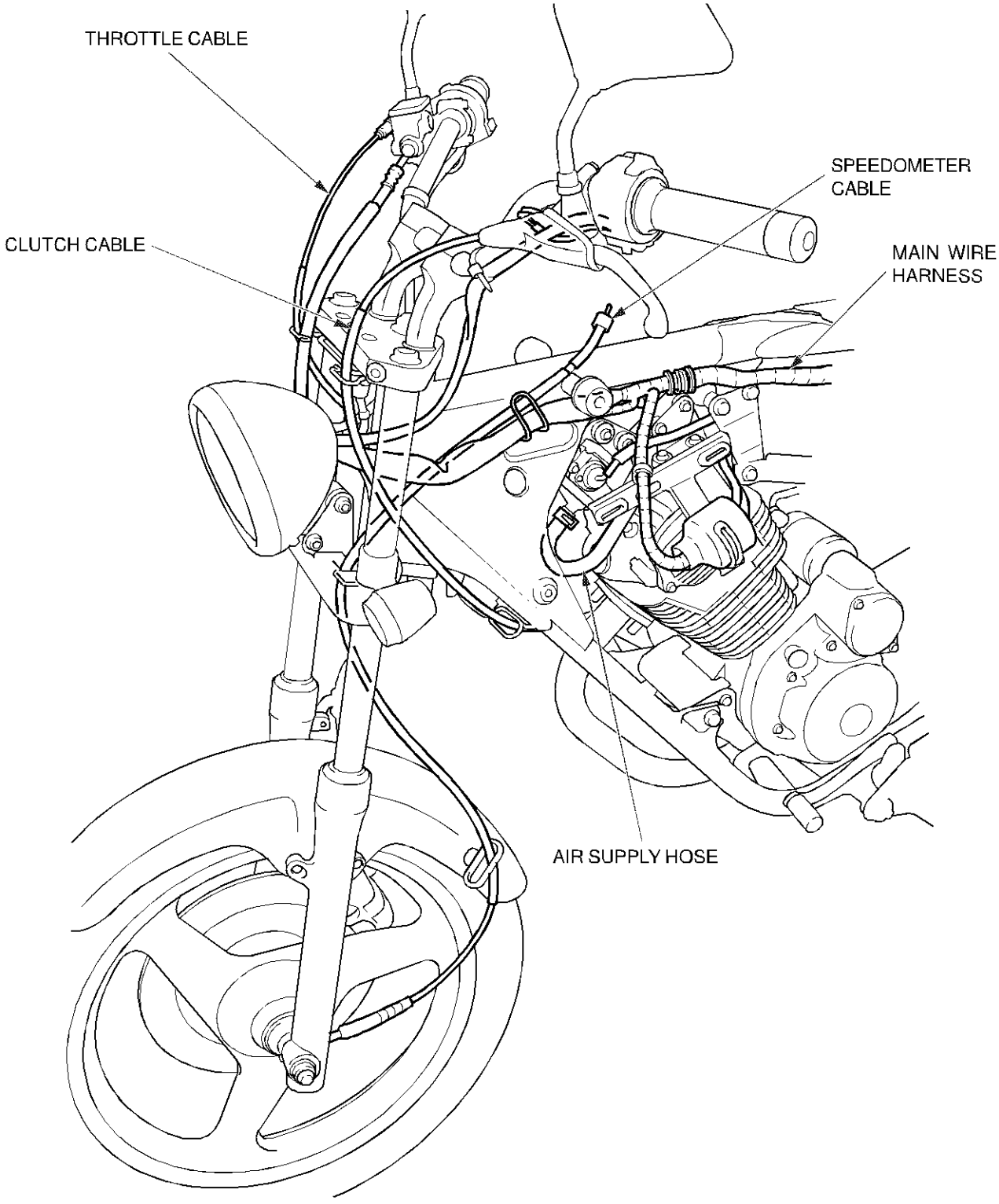
FRAME

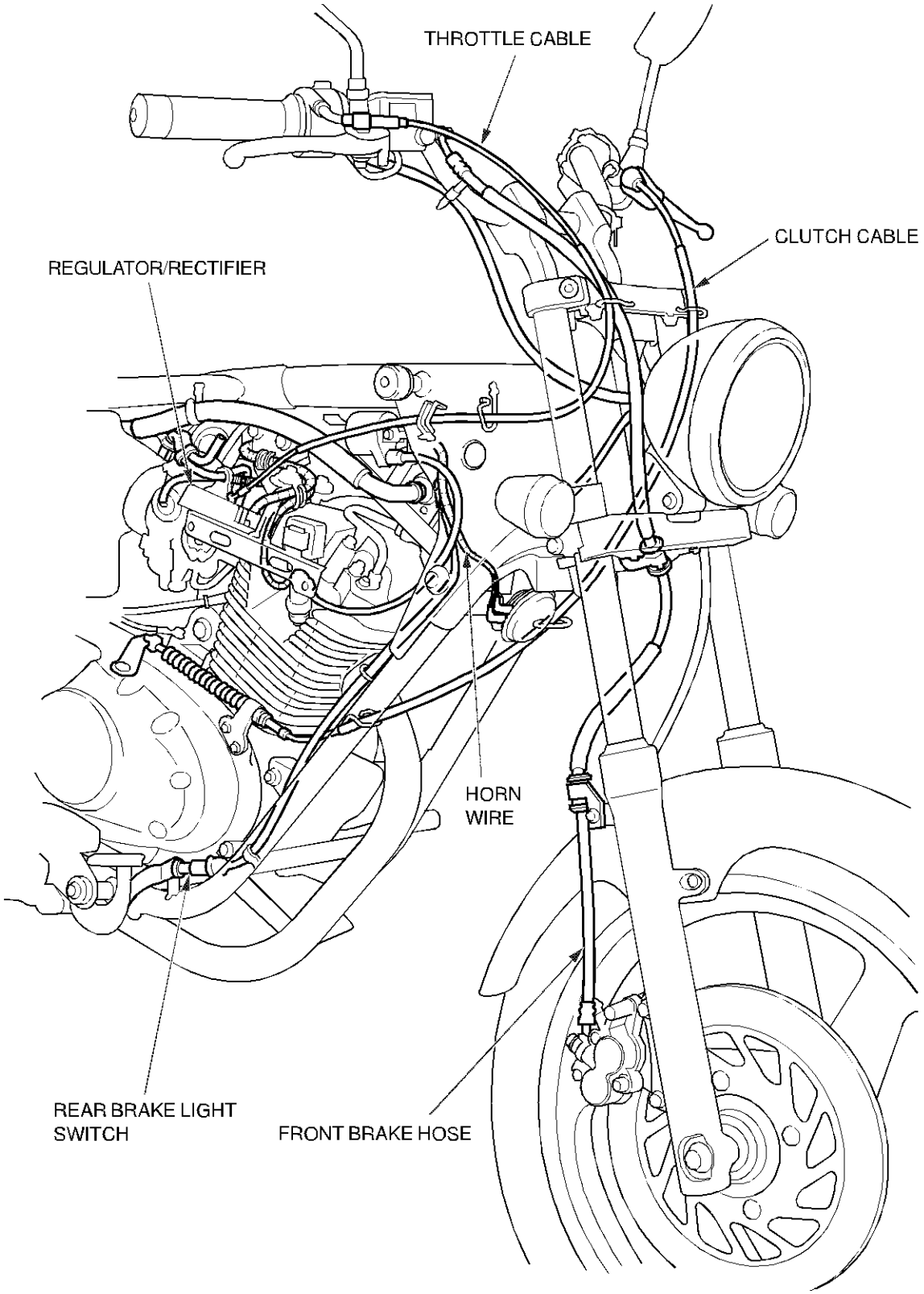
LOCATION	MATERIAL	REMARKS
Rear wheel oil seal lip Rear wheel hub O-ring Front wheel dust seal lip Speedometer gear box inside Speedometer gear teeth Speedometer gear inner surface Steering stem bearing race and cone race Chain rollar collar groove	Multi-purpose grease	
Front and rear caliper dust seal Rear brake caliper bracket pin and boot Rear brake master cylinder push rod Front brake caliper bracket pin and boot Brake lever and front master cylinder piston boot contacting area Brake lever pivot bolt	Silicone grease	
Rear wheel driven flange bolt Rear brake caliper torque nut Front brake caliper torque nut Front fork socket bolt Front brake disc bolt Rear brake disc bolt Front caliper bracket bolt Rear caliper bracket bolt	Locking agent	
Rear brake caliper piston sliding area Rear brake master cylinder cup Rear brake master cylinder piston sliding area Front brake caliper piston sliding area Front brake master cylinder cup Front brake master cylinder piston sliding area	Brake fluid	
Front fork inside Front fork oil seal	Fork fluid	

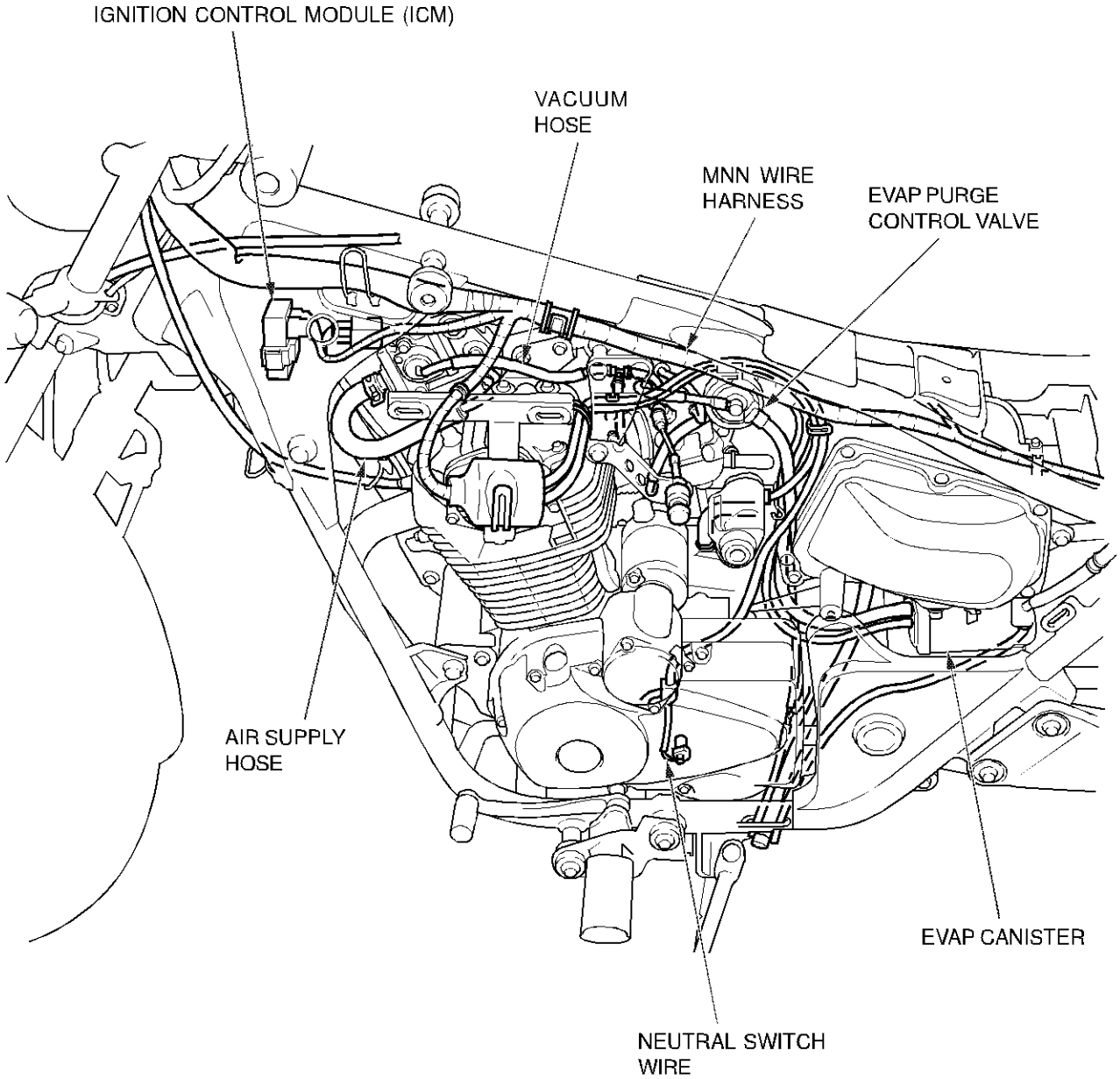
CABLE & HARNESS ROUTING

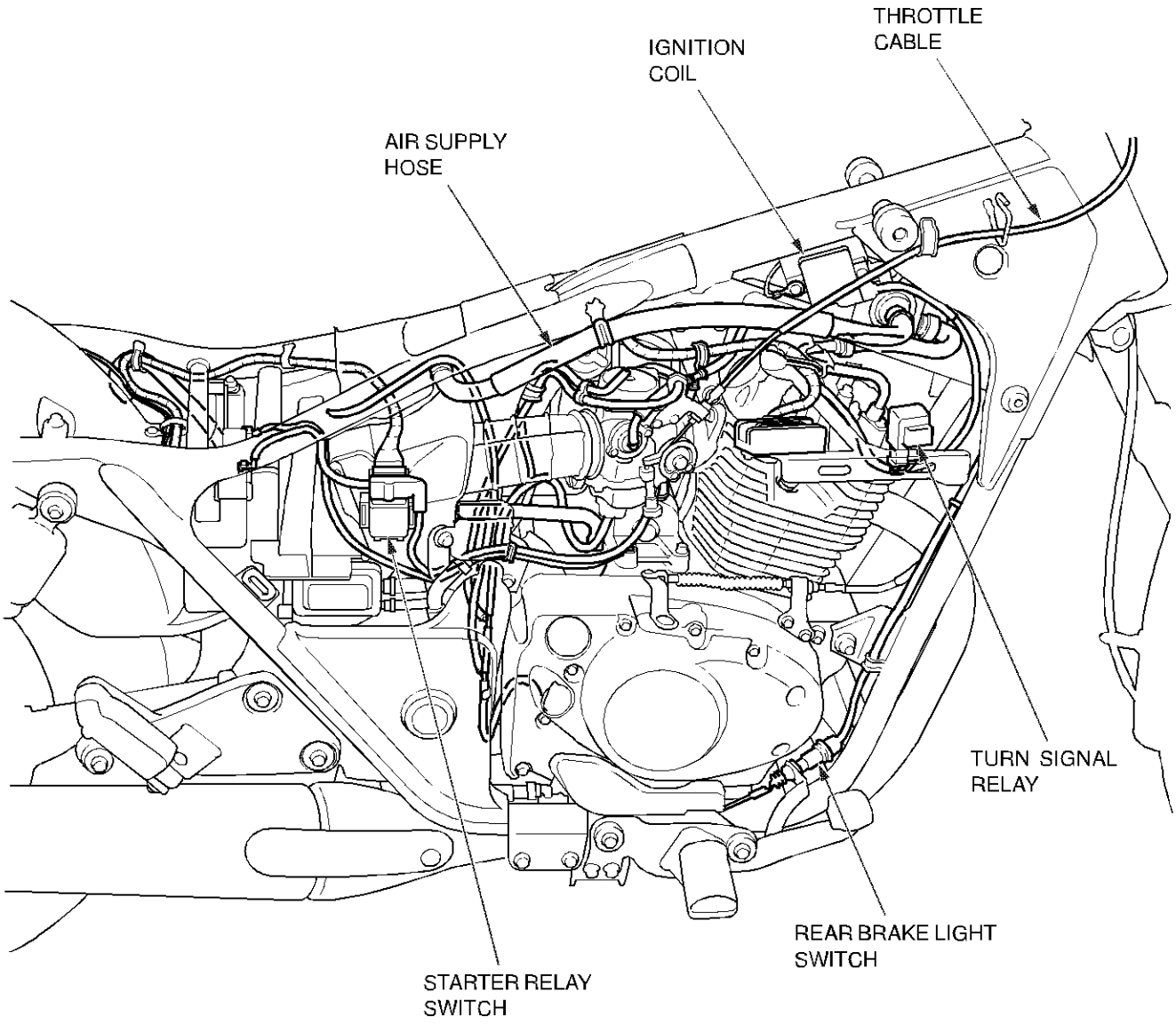


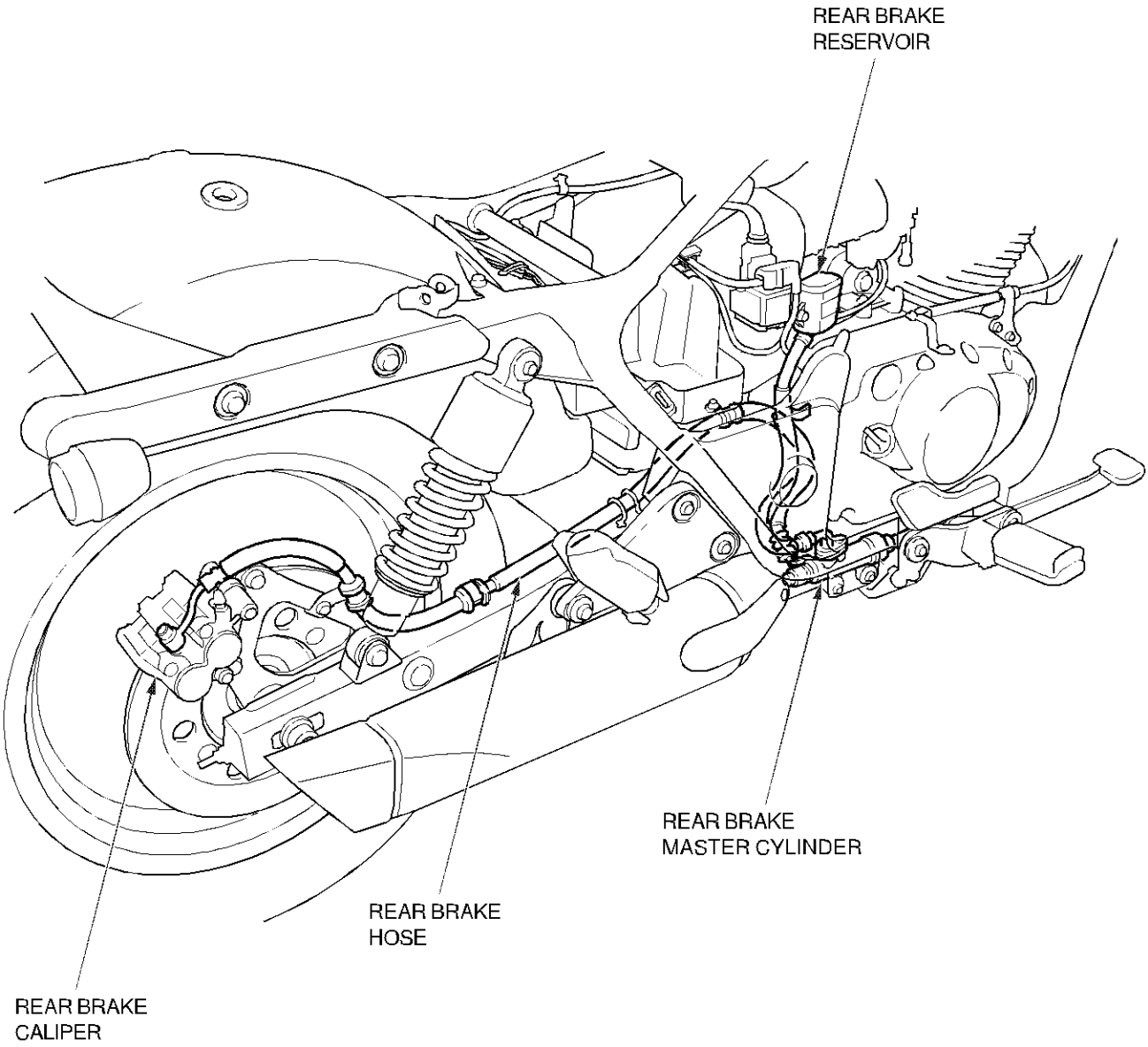

THROTTLE CABLE
CLUTCH CABLE
RIGHT HANDLEBAR
SWITCH WIRE
LEFT HANDLEBAR
SWITCH WIRE
FRONT BRAKE HOSE
RIGHT TURN
SIGHAL WIRE
LIGHT TURN
SIGNAL WIRE

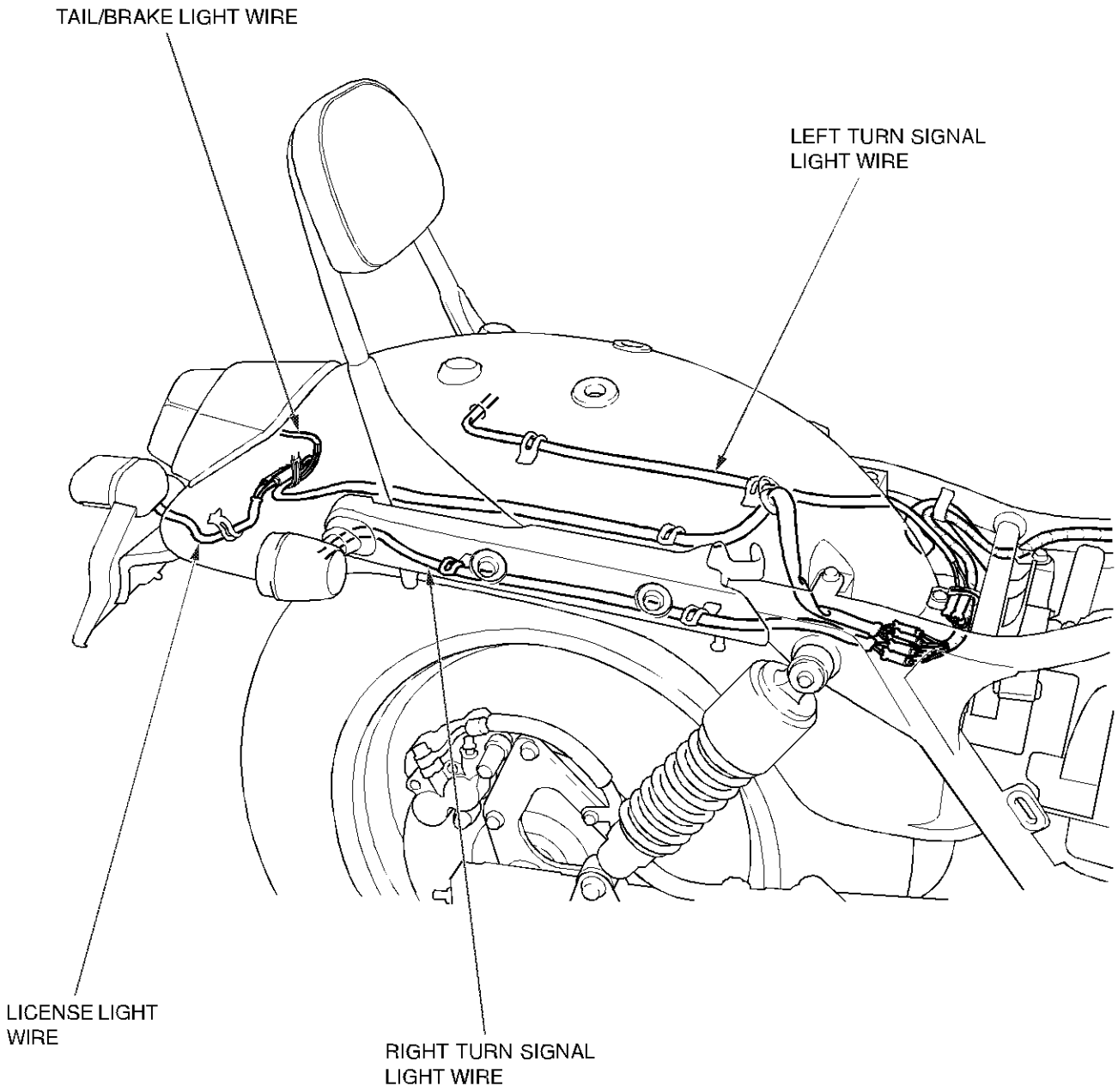

THROTTLE CABLE
SPEEDOMETER CABLE
CLUTCH CABLE
MAIN WIRE HARNESS
AIR SUPPLY HOSE


THROTTLE CABLE
CLUTCH CABLE
REGULATOR/RECTIFIER
HORN
WIRE
REAR BRAKE LIGHT
SWITCH
FRONT BRAKE HOSE

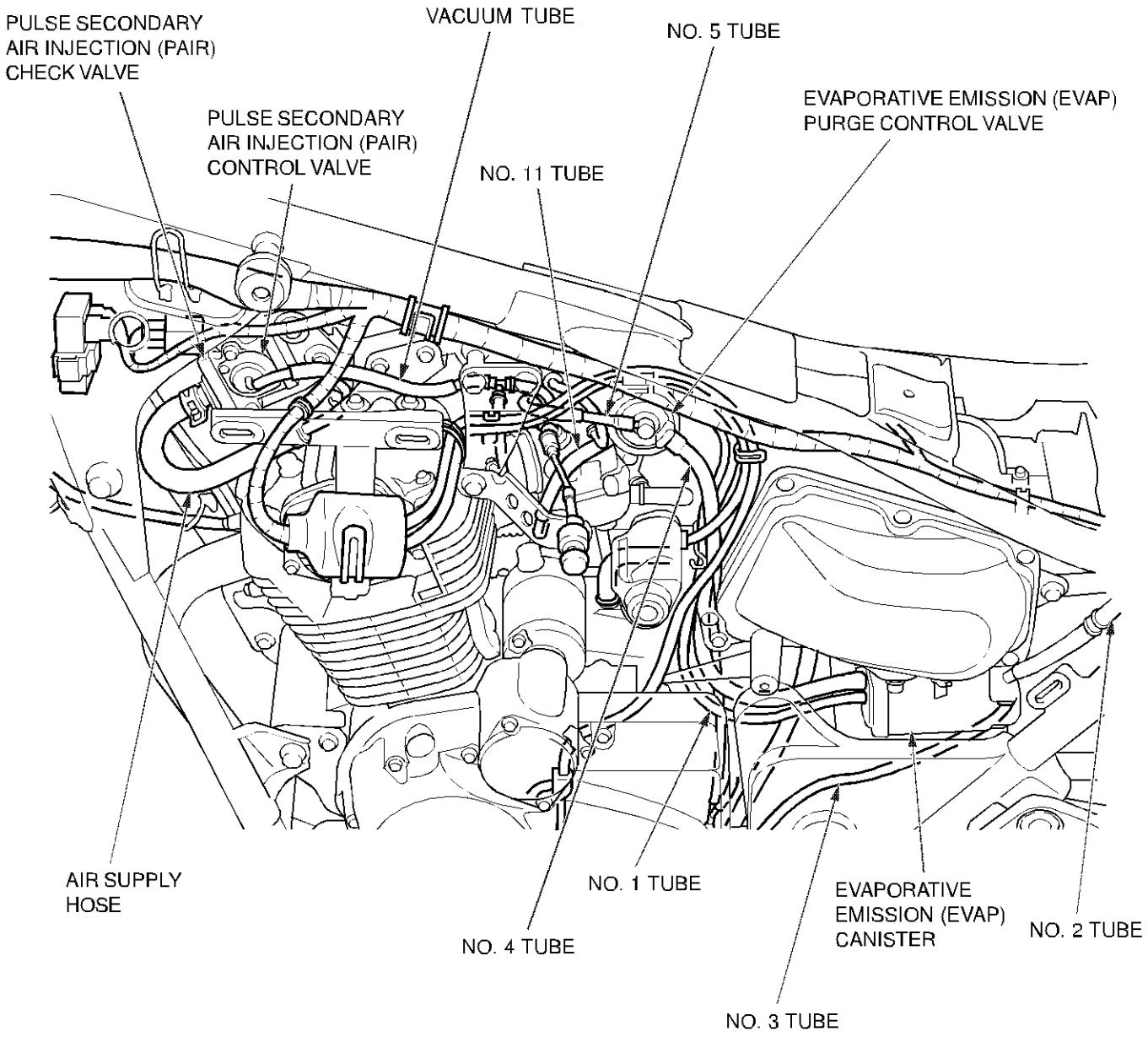

IGNITION CONTROL MODULE (ICM)
VACUUM HOSE
MNN WIRE HARNESS
EVAP PURGE CONTROL VALVE
AIR SUPPLY HOSE
EVAP CANISTER
NEUTRAL SWITCH WIRE

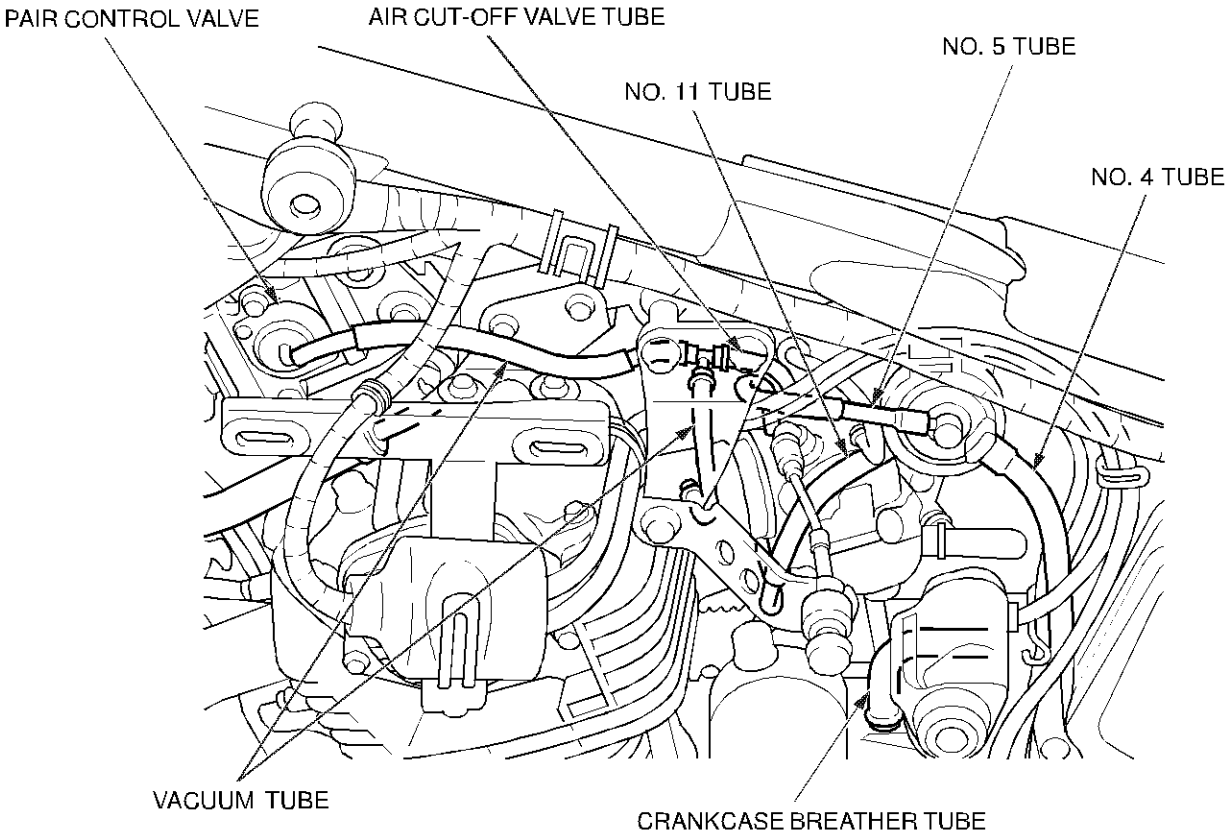

THROTTLE
CABLE
IGNITION
COIL
AIR SUPPLY
HOSE
TURN SIGNAL
RELAY
REAR BRAKE LIGHT
SWITCH
STARTER RELAY
SWITCH

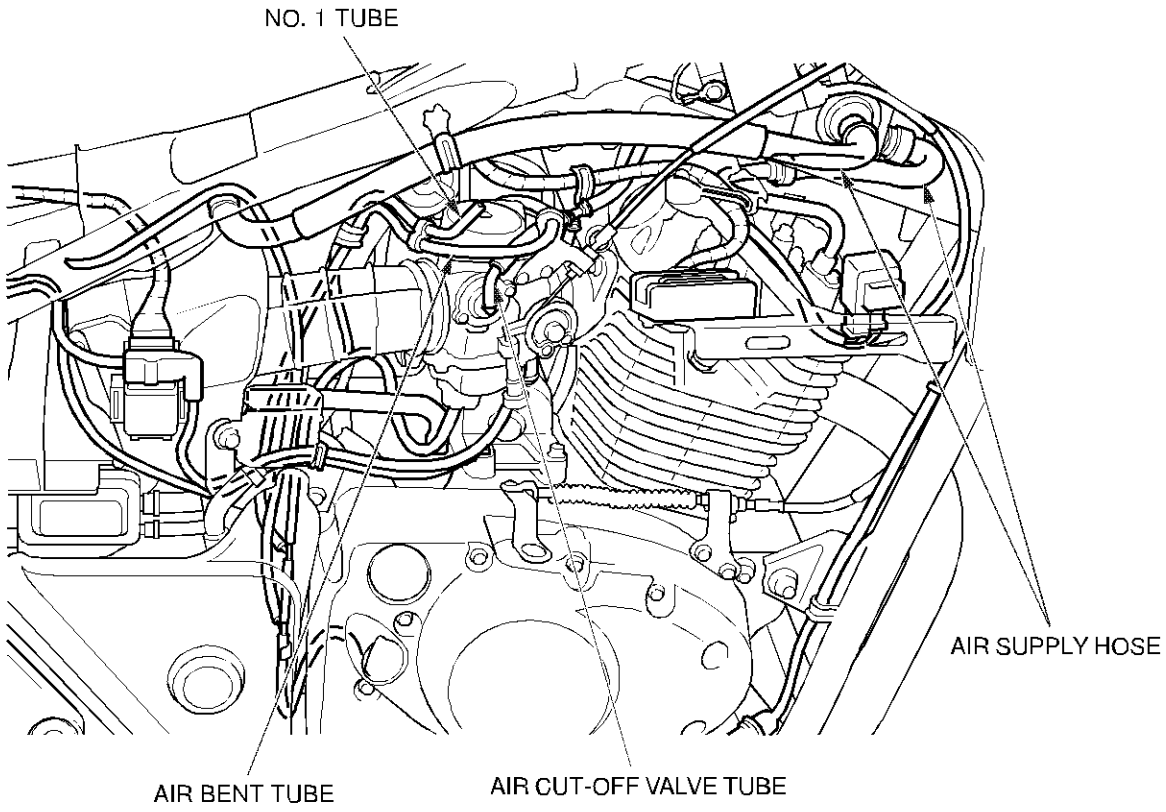

REAR BRAKE
RESERVOIR
REAR BRAKE
MASTER CYLINDER
REAR BRAKE
HOSE
REAR BRAKE
CALIPER


TAIL/BRAKE LIGHT WIRE
LEFT TURN SIGNAL LIGHT WIRE
LICENSE LIGHT WIRE
RIGHT TURN SIGNAL LIGHT WIRE

EMISSION CONTROL SYSTEM LOCATION




PAIR CONTROL VALVE
AIR CUT-OFF VALVE TUBE
NO. 5 TUBE
NO. 11 TUBE
NO. 4 TUBE
VACUUM TUBE
CRANKCASE BREATHER TUBE


NO. 1 TUBE
AIR SUPPLY HOSE
AIR BENT TUBE
AIR CUT-OFF VALVE TUBE

EMISSION CONTROL SYSTEMS

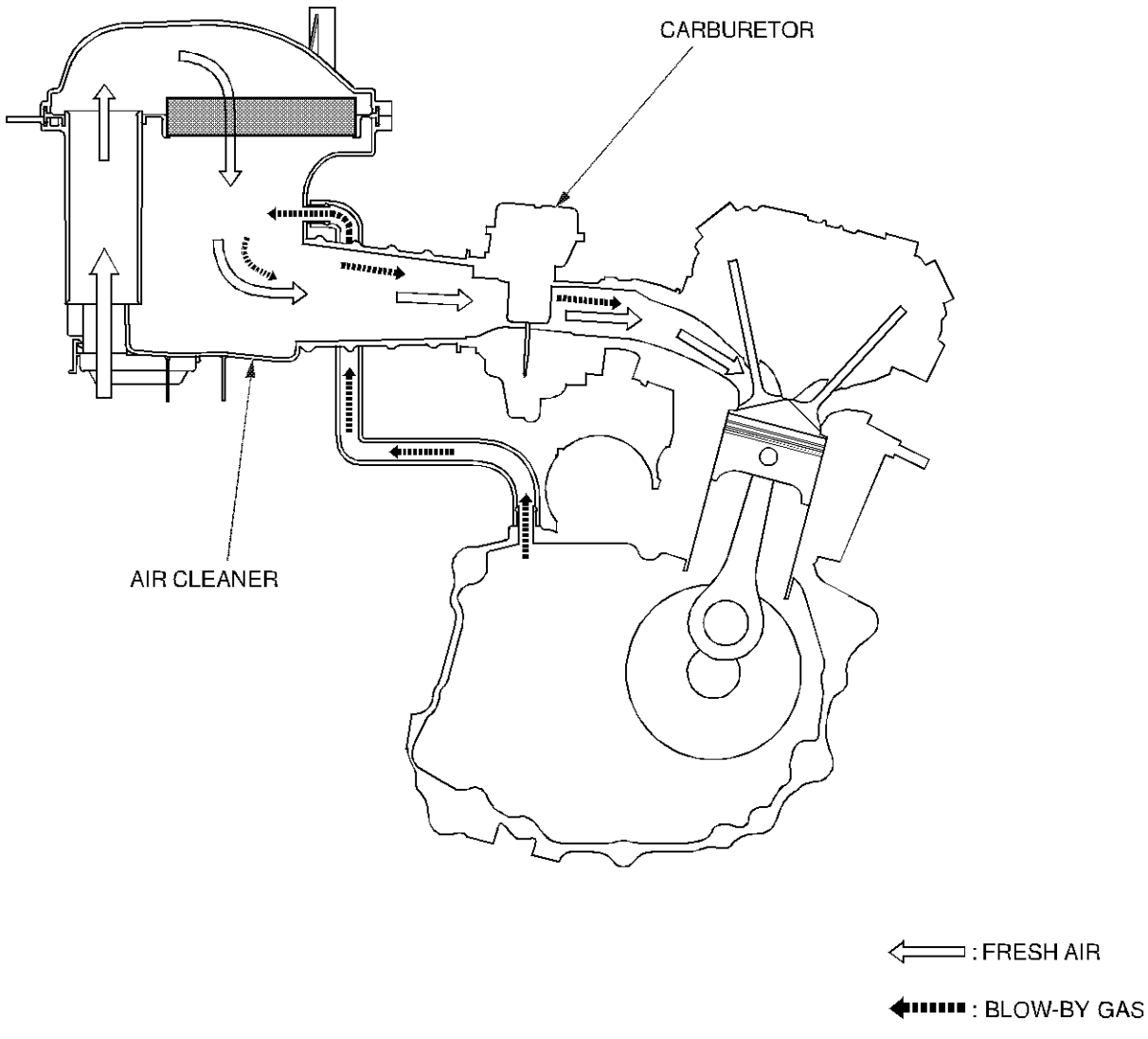
SOURCE OF EMISSIONS

The combustion process produces carbon monoxide and hydrocarbons. Controlling hydrocarbon emissions is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic.

Honda Moter Co., Ltd. utilizes lean carburetor settings as well as other systems, to reduce carbon monoxide and hydrocarbons.

CRANKCASE EMISSION CONTROL SYSTEM

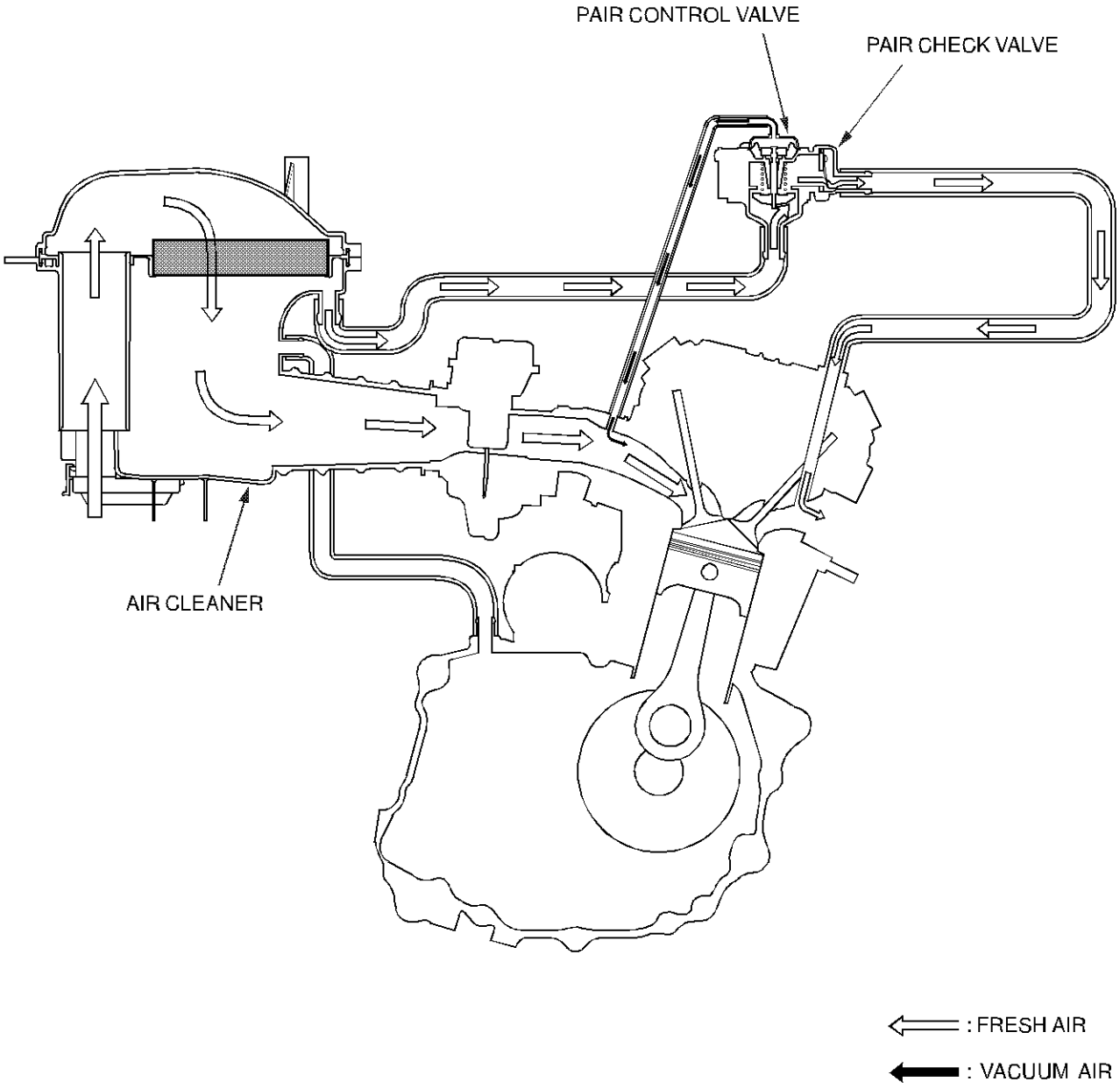
The engine is equipped with a closed crankcase system to prevent discharging crankcase emissions into the atmosphere. Blow-by gas is returned to the combustion chamber through the air cleaner and carburetor.



EXHAUST EMISSION CONTROL SYSTEM (PULSE SECONDARY AIR INJECTION SYSTEM)

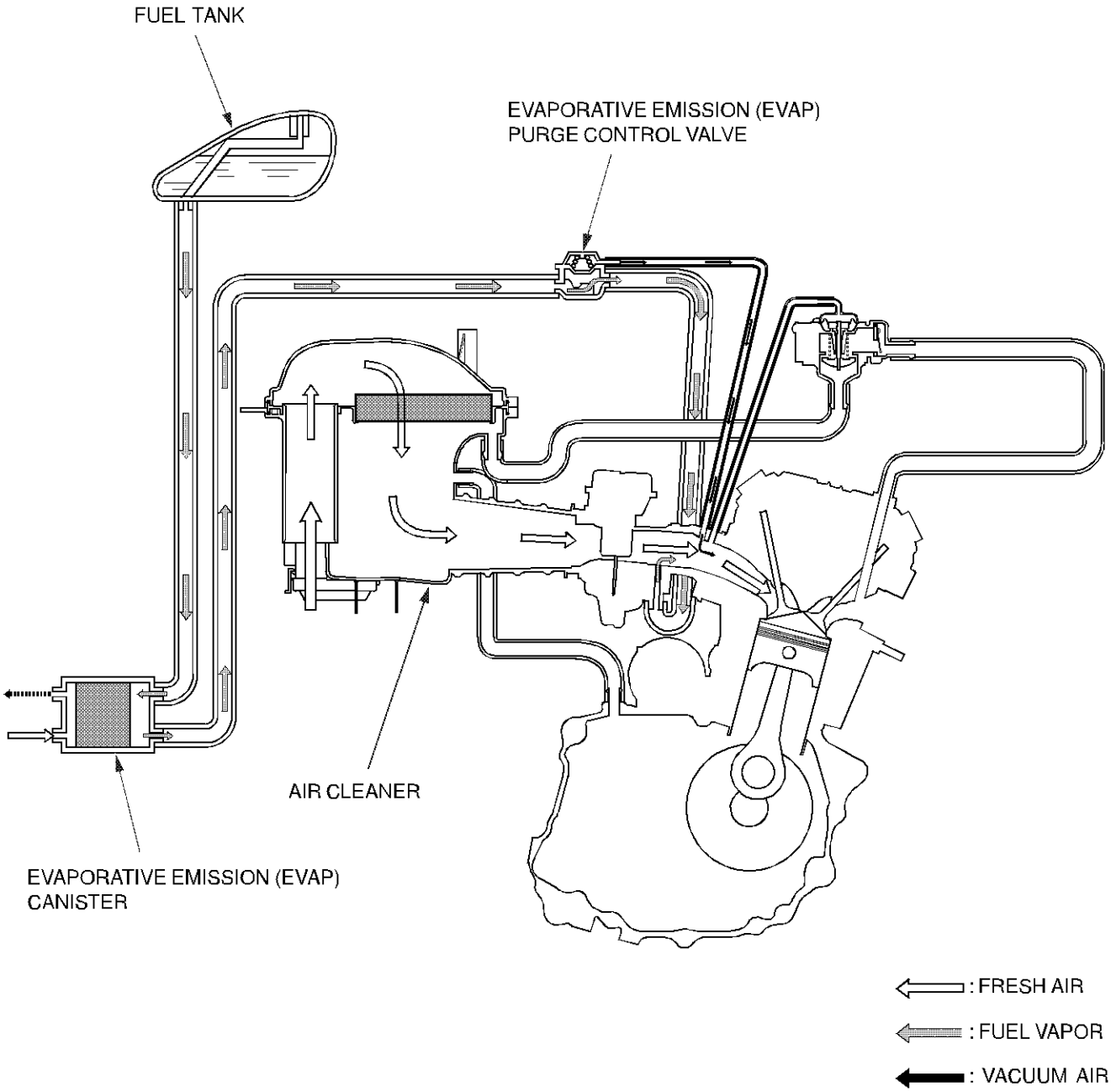
The exhaust emission control system consists of a secondary air injection system which introduces filtered air into the exhaust gases in the exhaust port. Fresh air is drawn into the exhaust port whenever there is a negative pressure pulse in the exhaust system. This charge of fresh air promotes burning of the unburned exhaust gases and changes a considerable amount of hydrocarbons and carbon monoxide into relatively harmless carbon dioxide and water vapor.
This model has the pulse secondary air injection (PAIR) control valve and PAIR check valve. PAIR check valve prevents reverse air flow through the system. The PAIR control valve reacts to high intake manifold vacuum and will cut off the supply of the fresh air during engine deceleration, thereby preventing afterburn in the exhaust system.

No adjustment to the pulse secondary air injection system should be made, although periodic inspection of the components is recommended.



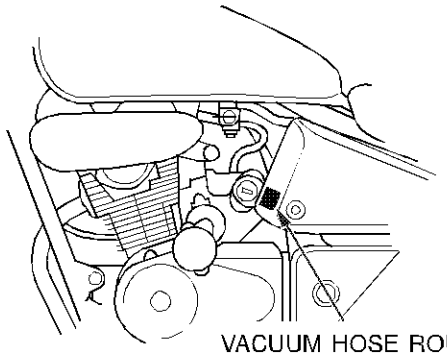
EVAPORATIVE EMISSION CONTROL SYSTEM

Fuel vapor from the fuel tank and carburetor is directed into the evaporative emission (EVAP) canister where it is absorbed and stored while the engine is stopped. When the engine is running and the evaporative emission (EVAP) purge control valve is open, fuel vapor in the EVAP canister is drawn into the engine through the carburetor.



EVAPORATIVE EMISSION CONTOROL SYSTEM INFORMATION LABELS

An Emission Information Label is located on the leftside cover as shown.
It gives basic tune-up specification.

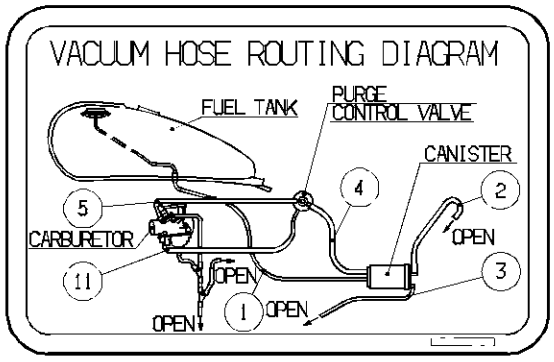


VACUUM HOSE ROUTING DIAGRAM LABEL

VACUUM HOSE ROUTING DIAGRAM LABEL

The Vacuum Hose Routing Diagram Label is on the leftside cover as shown.

Route the vacuum hoses as shown on this label.



2. FRAME/BODY PANELS/EXHAUST SYSTEM

SERVICE INFORMATION

GENERAL

⚠ WARNING

- ***Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where the gasoline is stored can cause a fire or explosion.***
- ***Engine and exhaust system parts become very hot and remain hot for some time after the engine is run. Wear insulated gloves or wait until the engine and exhaust system have cooled before handling these parts.***
- ***If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.***

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

TORQUE VALUES

Fuel valve	26 N·m (2.6 kgf·m, 19 lbf·ft)
Exhaust pipe joint nut	20 N·m (2.0 kgf·m, 14 lbf·ft)

TROUBLESHOOTING

Excessive exhaust noise
- Broken exhaust system
- Exhaust gas leak

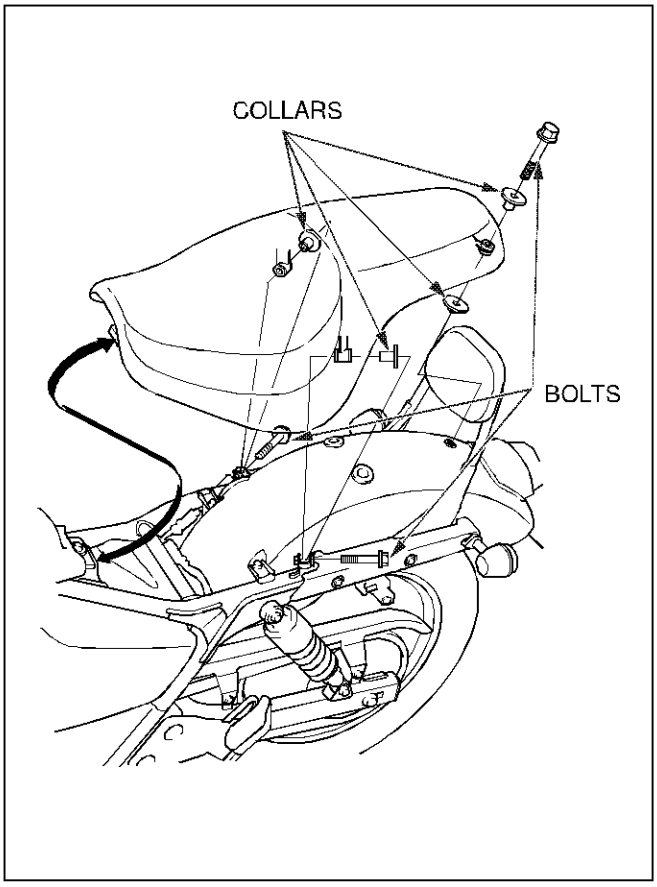
Poor performance
- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

SEAT

REMOVAL/INSTALLATION

Remove the seat mounting bolts and collars.
Slide and remove the seat to the back.

Install the seat by alinging the hook of the seat with the bracket on the frame and push the seat to the foward.



SIDECOVER

REMOVAL/INSTALLATION

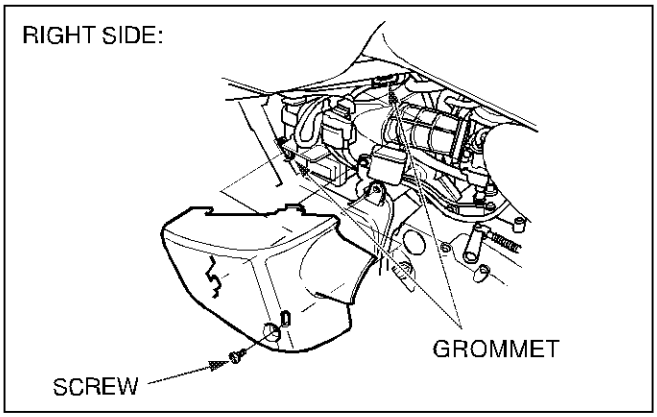
Remove the seat (see above).

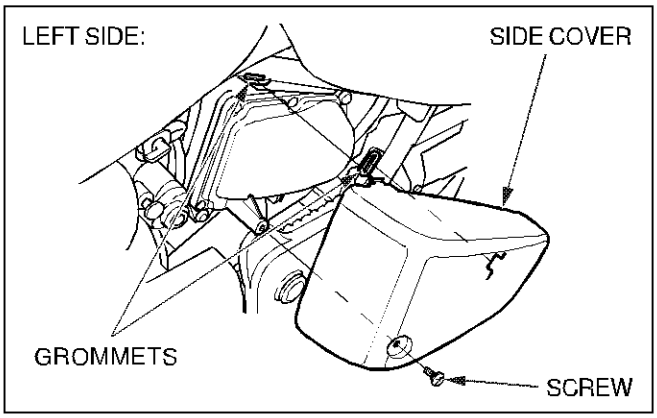
NOTE:

Be careful not to damage the side cover tab.

Remove the screw.
Remove the tabs from the grommets then remove the side cover.

Installation in the reverse order of removal.



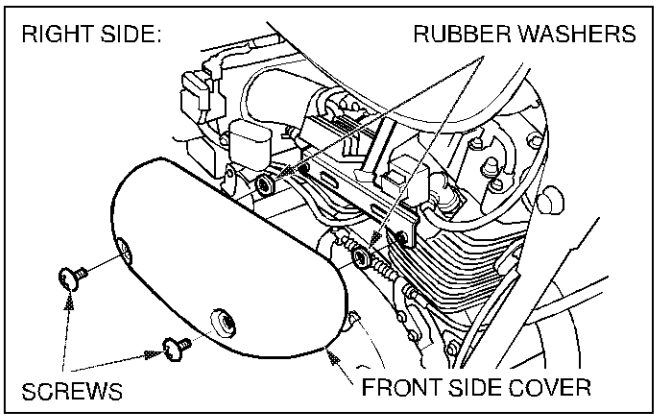


FRONT SIDE COVER

REMOVAL/INSTALLATION

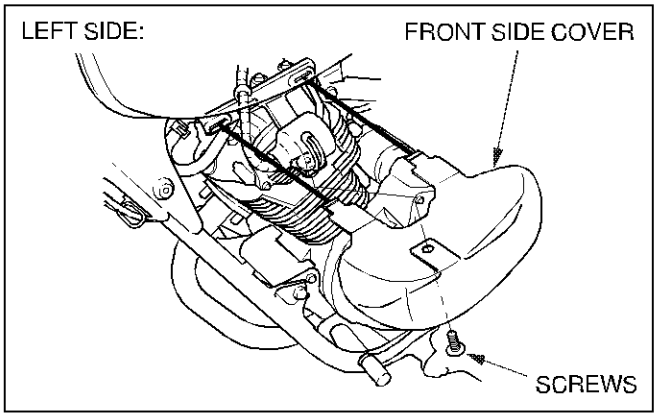
Remove the screws, rubber washers and right front side cover.

Installation is in the reverse order of removal.



Remove the screw and left front side cover.

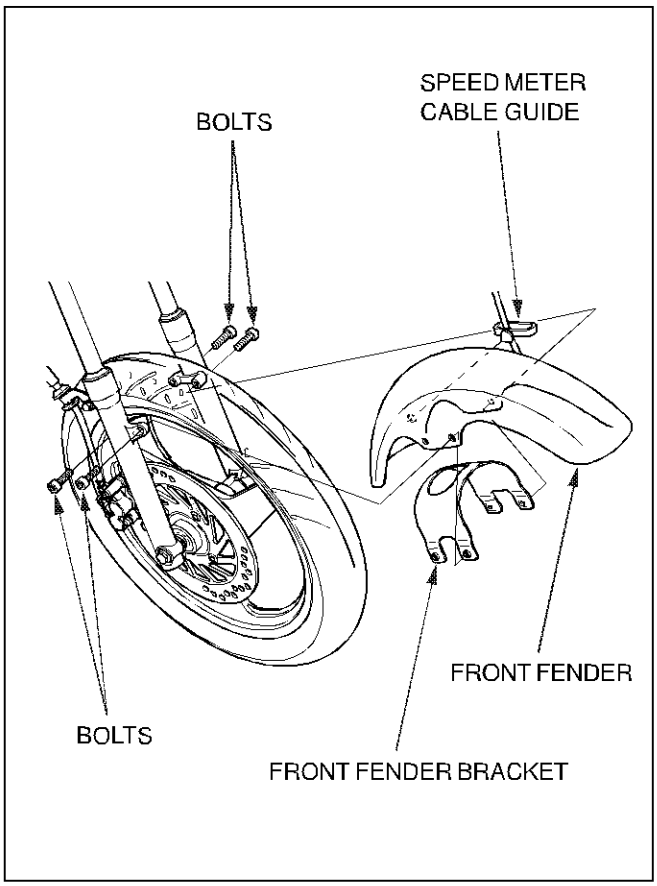
Installation is in the reverse order of removal.



FRONT FENDER

Remove the speed meter cable guide.
Remove the bolts.
Remove the front fender and front fender bracket.

Installation is in the reverse order of removal.



REARFENDER

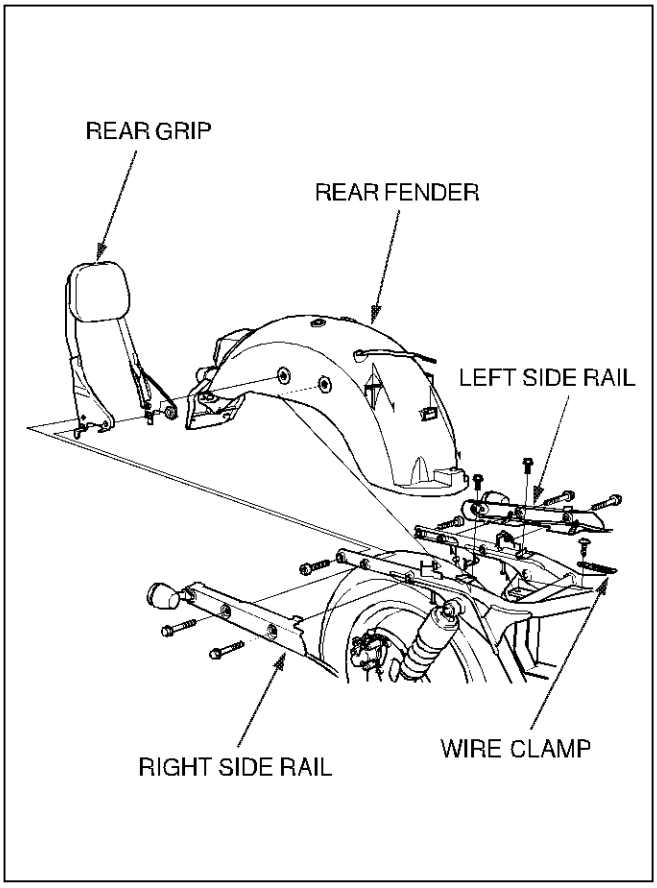
REMOVAL/INSTALLATION

NOTE:

Be careful not to pinch the wire harness between the rear fender and the frame.

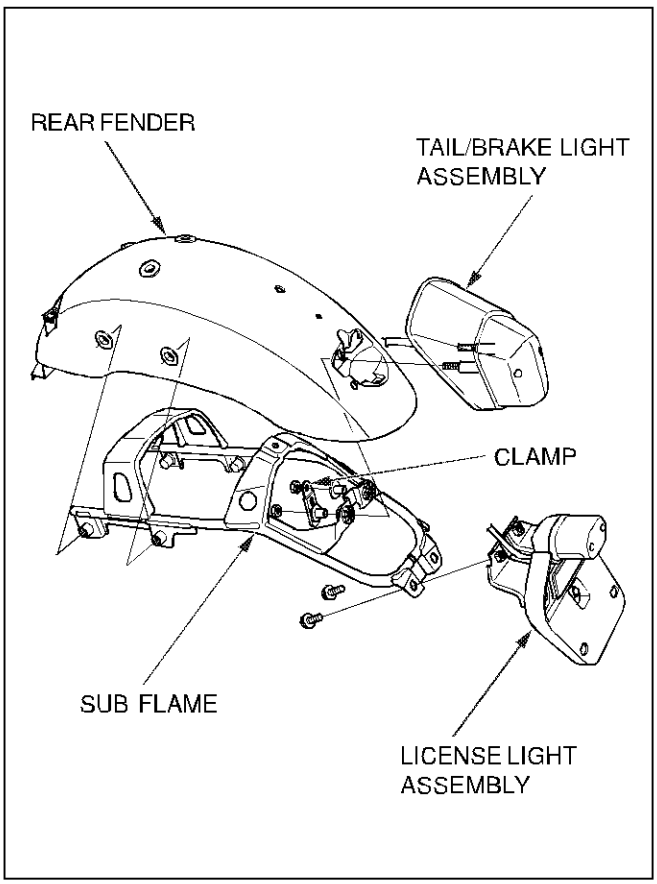
Remove the seat (page 2-2).

Disconnect the tail/brake light and license light connectors.
Remove the bolts, right and left side rails.
Remove the bolts and rear grip.
Remove the bolt, wire cramp and rear fender assembly from the frame.



Remove the nuts, collars, clamp and tail/brake light assembly from the rear fender.
Remove the rear fender from the sub-frame.
Remove the bolts and license light assembly from the sub-frame.

Installation is in the reverse order of removal.



FUEL TANK

REMOVAL/INSTALLATION

⚠ WARNING

Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where the gasoline is stored can cause a fire explosion.

NOTE:

Before disconnecting fuel tube, turn the fuel valve "OFF".

Remove the seat (page 2-2).
Remove the left front side cover (page 2-3).
Disconnect the fuel tube and air vent tube from the fuel tank.
Remove the fuel tank mounting bolt.

Lift up the rear side of the fuel tank and disconnect the speedometer cable and speedometer wire connector.

Rmove the fuel tank.

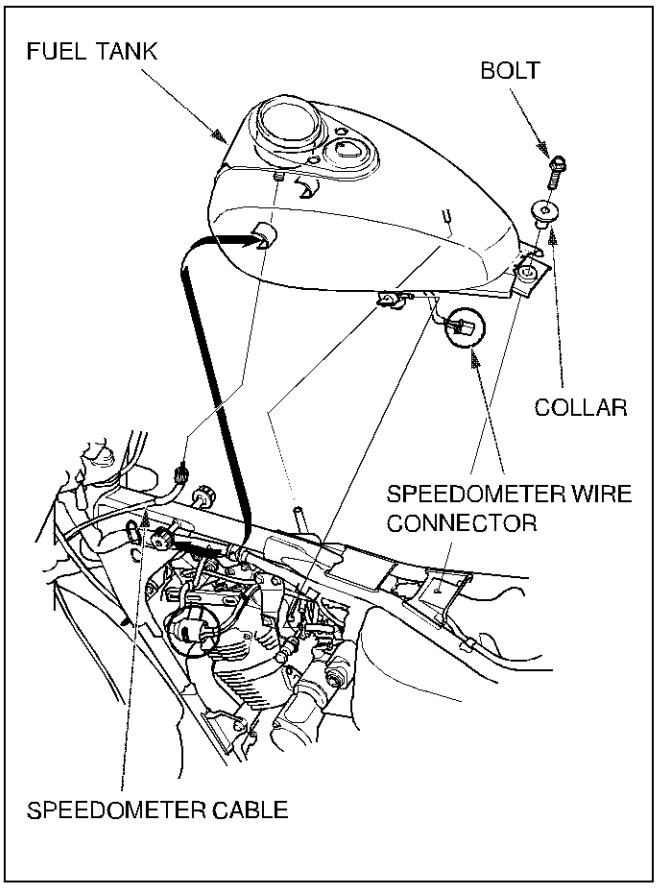
Installation is in the reverse order of removal.

NOTE:

Be careful not to pinch the wire harness between the fuel tank and frame.

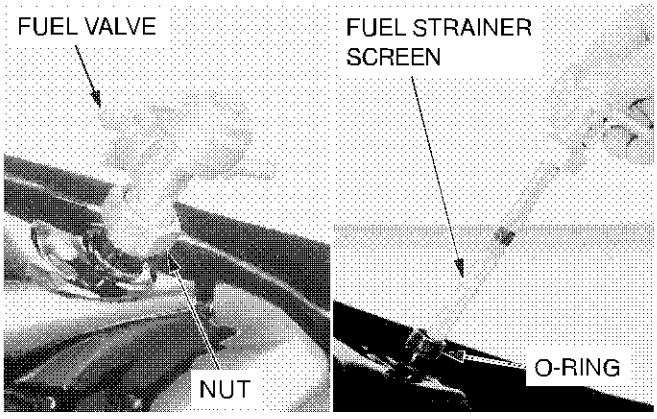
NOTE:

After installation, turn the fuel valve "ON" and check the fuel line for leakage.

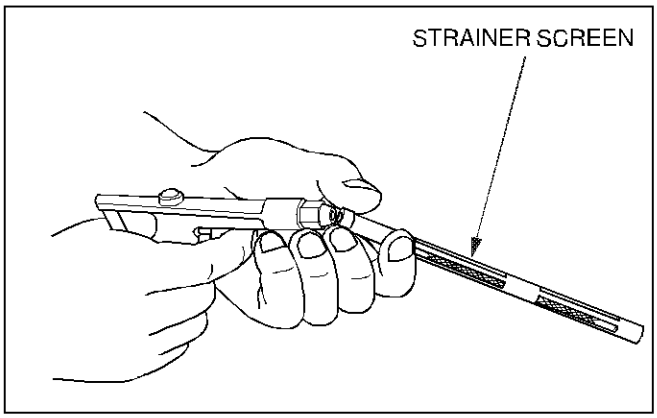


DISASSEMBLY/ASSEMBLY

Loosen the fuel valve nut and remove the fuel valve.
Remove the fuel strainer screen and O-ring.

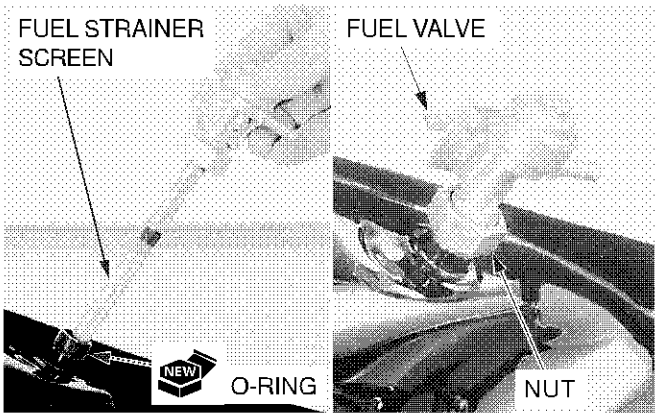


Clean the fuel strainer screen .



Install the new O-ring and fuel strainer screen to the fuel tank.
Install the fuel valve into the fuel tank.
Tighten the fuel valve to the specified torque.

TORQUE : 26 N·m (2.6 kgf·m, 19 lbf·ft)



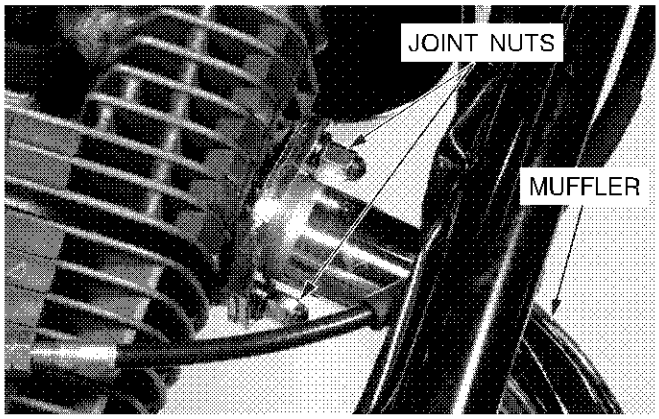
MUFFLER/EXHAUST PIPE

REMOVAL

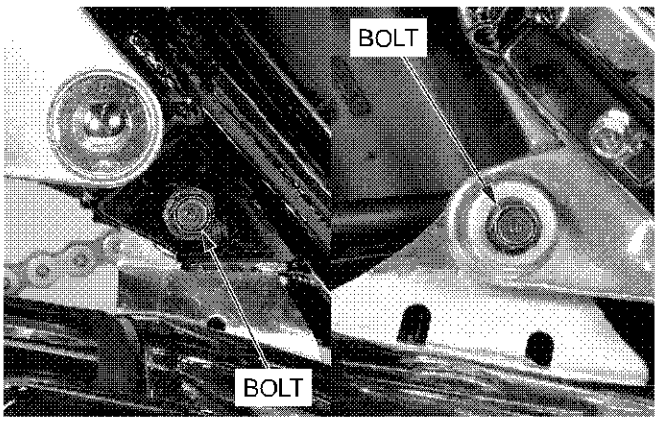
⚠ WARNING

Do not service the exhaust system while it is hot.

Loosen the exhaust pipe joint nuts.

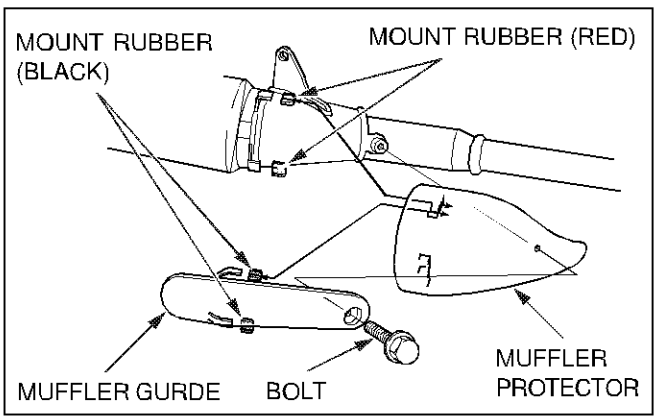


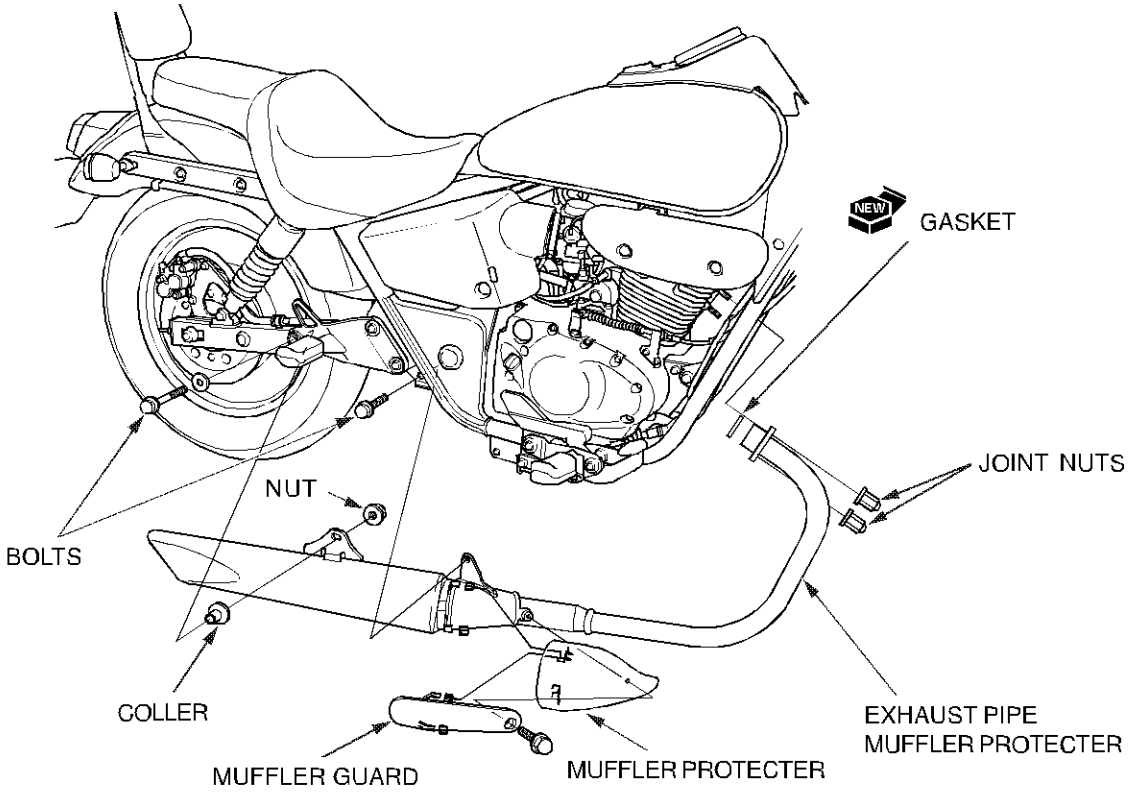
Remove the muffler mounting bolts and muffler.



NOTE:

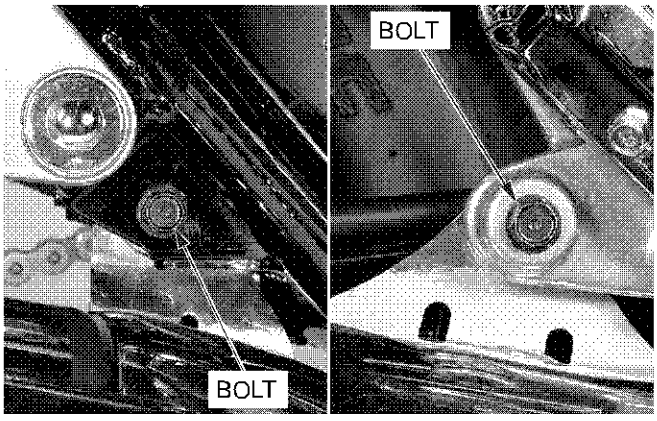
If you disassemble the muffler parts, be careful not to install the wrong mount rubber colors. Refer the illust.





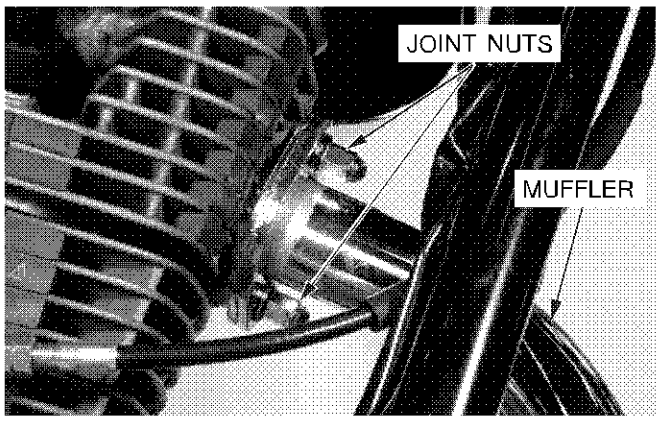
INSTALLATION

Install the new exhaust pipe gasket from cylinder head.
Install the muffler and tighten the mounting bolts securely.



Install the exhaust pipe joint nuts.
Tightn the joint nuts to specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 14 lbf·ft)



SERVICE INFORMATION

GENERAL

⚠ WARNING

If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

SPECIFICATIONS

ITEM		SPECIFICATIONS	
Throttle grip free play		2 – 6 mm (0.1 – 0.2 in)	
Spark plug		NGK	DENSO
		DPR8EA-9	X24EPR-U9
Spark plug gap		0.8 – 0.9 mm (0.031 – 0.035 in)	
Valve clearance	Intake	0.10 ± 0.02 mm (0.004 ± 0.001 in)	
	Exhaust	0.10 ± 0.02 mm (0.004 ± 0.001 in)	
Recommended engine oil		Honda 4-stroke oil or equivalent motor oil API service classification: SE, SF or SG Viscosity: SAE 10 W-30	
Engine oil capacity	At draining	1.0 liter (1.1 US qt, 0.9 Imp qt)	
	At disassembly	1.2 liter (1.3 US qt, 1.1 Imp qt)	
Engine idle speed		1,400 ± 100 min^{-1} (rpm)	

ITEM			SPECIFICATIONS
Drive chain slack			20 – 30 mm (0.8 – 1.2 in)
Recommended brake fluid			DOT 3 or DOT 4
Clutch lever free play			10 – 20 mm (0.4 – 0.8 in)
Cold tire pressure	Driver only	Front	200 kPa (2.0 kgf/cm², 29 psi)
		Rear	200 kPa (2.0 kgf/cm², 29 psi)
	Driver and passenger	Front	200 kPa (2.0 kgf/cm², 29 psi)
		Rear	200 kPa (2.0 kgf/cm², 29 psi)
Tire size		Front	90/90 – 17 49P
		Rear	130/90 – 15 M/C 66P
Tire brand		Front	IRC NF52/TL
		Rear	IRC NR66/TL
Minimum tread depth		Front	To the indicator
		Rear	To the indicator

TORQUE VALUES

Spark plug	18 N·m (1.8 kgf·m, 13 lbf·ft)	
Crankshaft hole cap	8 N·m (0.8 kgf·m, 5.8 lbf·ft)	Apply oil to the O-ring
Timing hole cap	6 N·m (0.6 kgf·m, 4.3 lbf·ft)	Apply oil to the O-ring
Valve adjusting hole cap	14 N·m (1.4 kgf·m, 10 lbf·ft)	Apply oil to the O-ring
Oil strainer screen cap	15 N·m (1.5 kgf·m, 11 lbf·ft)	
Oil filter rotor cover screw	3 N·m (0.3 kgf·m, 2.2 lbf·ft	
Rear axle nut	88 N·m (9.0 kgf·m, 65 lbf·ft)	U-nut

TOOL

valve adjusting screw wrench	07708 – 0030400
valve wrench	07708 – 0030200

MAINTENANCE SCHEDULE

Perform the Pre-ride inspection in the Owner's Manual at each scheduled maintenance period.
I: Inspect and Clean, Adjust, Lubricate or Replace if necessary.
C: Clean. R: Replace. A: Adjust. L: Lubricate.
The following items require some mechanical knowledge. Certain items (particularly those marked * and **) may require more technical information and tools. Consult their authorized Honda dealer.

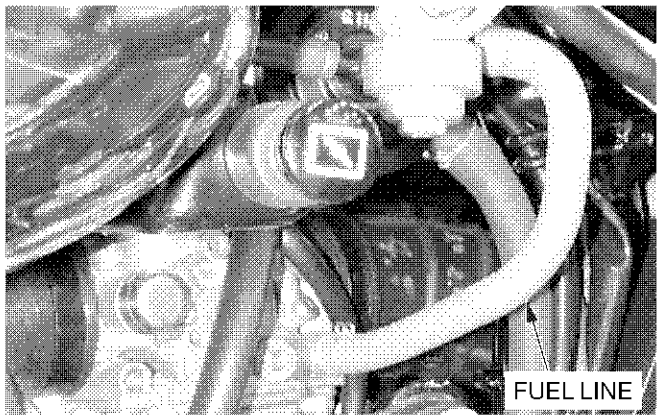
	ITEM / FREQUENCY	WHICHEVER COMES FIRST ⇩	X1,000 km	1	4	8	12	REFER TO PAGE
			X1,000 mi	0.6	2.5	5	7.5	
			MONTH		6	12	18	
*	FUEL LINE				I	I	I	3-4
*	FUEL STRAINER SCREEN				C	C	C	3-4
*	THROTTLE OPERATION				I	I	I	3-4
*	CARBRETOR CHOKE				I	I	I	3-6
	AIR CLEANER	NOTE 2			C	C	R	3-6
	CRANKCASE BREATHER	NOTE 3			C	C	C	3-7
	SPARK PLUG				I	R	I	3-7
*	VALVE CLEARANCE			I	I	I	I	3-8
	ENGINE OIL			R	R	R	R	3-10
	ENGINE OIL STRAINER SCREEN						C	3-11
* *	ENGINE OIL CENTRIFUGAL FILTER						C	3-12
*	ENGINE IDLE SPEED			I	I	I	I	3-13
*	SECONDARY AIR SUPPLY SYSTEM						I	3-13
*	EVAPORATIVE EMISSION CONTROL SYSTEM	NOTE 4					I	3-14
	DRIVE CHAIN			EVERY 1,000 Km (600 mi): I, L				3-15
	BRAKE FLUID	NOTE 5			I	I	I	3-16
	BRAKE PADS WEAR				I	I	I	3-17
	BRAKE SYSTEM			I	I	I	I	3-18
*	BRAKE LIGHT SWITCH				I	I	I	3-19
*	HEADLIGHT AIM				I	I	I	3-19
	CLUTCH SYSTEM			I	I	I	I	3-19
	SIDE STAND				I	I	I	3-20
*	SUSPENSION				I	I	I	3-20
*	NUTS, BOLTS, FASTENERS			I		I		3-21
* *	WHEELS/TIRES				I	I	I	3-22
* *	STEERING HEAD BEARINGS			I			I	3-23

* Should be serviced by authorized Honda dealer, unless the owner has proper tools and service data and is mechanically qualified.
* * In the interest of safety , we recommend these items be serviced only an authorized Honda dealer.

NOTES: 1. At higher odometer reading, repeat at the frequency interval established here.
2. Service more frequently when riding in unusually wet or dusty areas.
3. Service more frequently when riding in rain or at full throttle.
4. Replace every 3 years, or 24,000 km (16,000 mile). Replacement requires mechanical skill.
5. Replace every 2 years. Replacement requires mechanical skill.

FUEL LINE

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



FUEL STRAINER SCREEN

⚠ WARNING

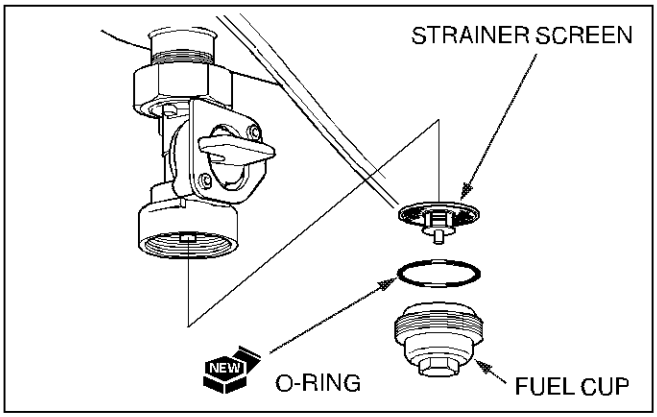
Gasoline is extremely flammable and is explosive under certain conditions. Perform this operation in a well ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the area or where gasoline is stored.

Turn the fuel valve OFF.
Remove the fuel cup, O-ring and strainer screen and drain the contents of the cup into a suitable container.

Wash the strainer screen and cup in clean non-flammable high flash point solvent.

Check the O-ring and replace the new one if necessary.
Install the strainer, new O-ring and fuel cup in the fuel valve body, make sure that the O-ring is in place.
Tighten the fuel cup.

Turn the fuel valve ON and be sure there are no fuel leaks.



THROTTLE OPERATION

Check for any deterioration or damage to the throttle cables. Check the throttle grip for smooth operation. Check that the throttle grip returns from the full open to the full closed position smoothly and automatically in all steering positions. If the throttle grip does not return properly, lubricate the throttle cable, overhaul and lubricate the throttle grip housing. For cable the lubrication: Disconnect the throttle cable at their upper end (page 12-4). Thoroughly lubricate the cable and their
pivot points with a commecrially available cable lubricant or a light weight oil.

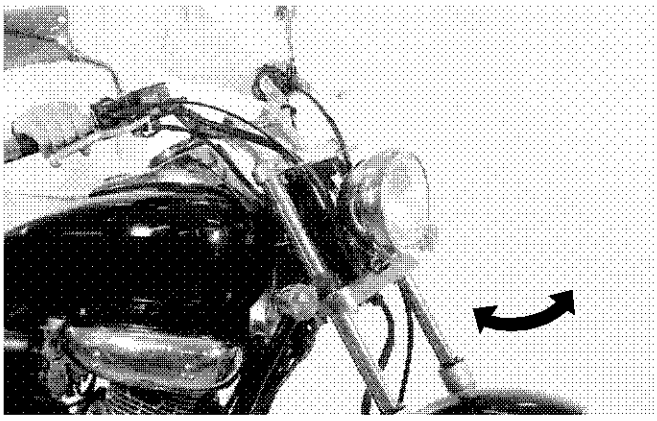
If the throttle grip still does not return properly, replace the

⚠ WARNING

Reusing a damaged or abnormally bent or kinked throttle cable can prevent proper throttle side operation and may lead to a loss of throttle control while riding.

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

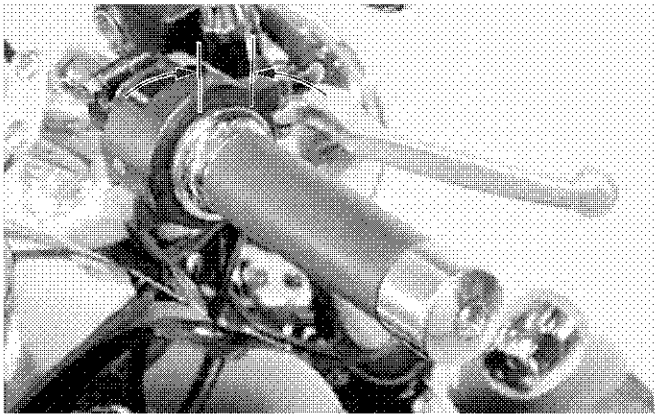
ENGINE IDLE SPEED: 1,400 ± 100 min^{-1} (rpm)



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

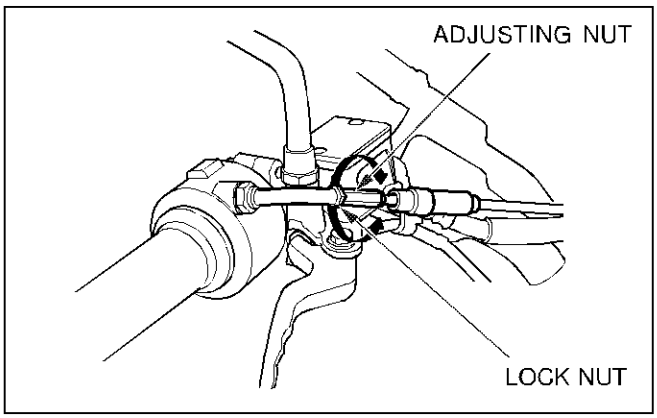
Measure the throttle grip free play at the throttle grip flange.

FREE PLAY: 2 – 6 mm (0.1 – 0.2 in)



Throttle grip free play can be adjusted at either end of the throttle cable. Minor adjustments are made with the upper adjuster.

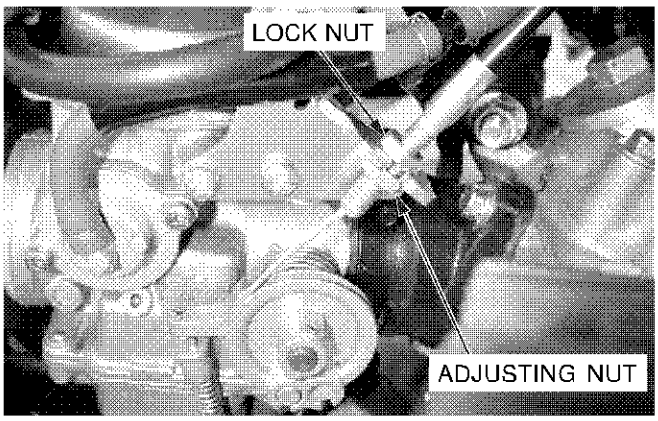
Loosen the lock nut and turn the adjuster to obtain the free play.
After the adjustment, tighten the lock nut securely and reposition the boot properly.



Major adjustments are made with the lower adjusters.

Loosen the lock nuts and turn the adjusting nut to obtain the free play.
Tighten the lock nuts after the adjustment has been made.

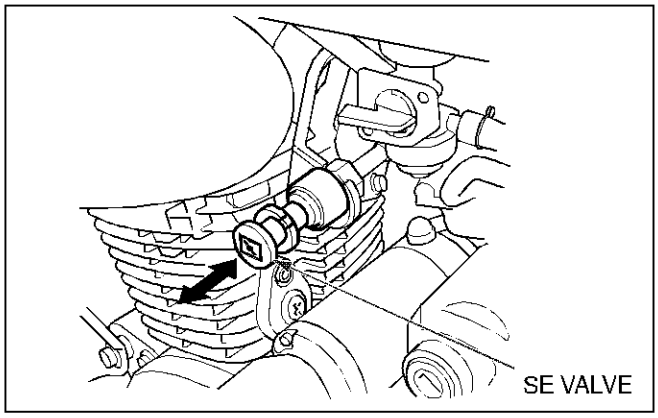
Recheck the free play.



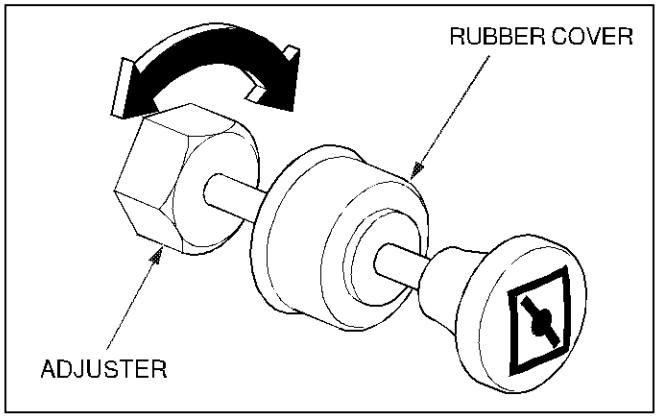
CARBURETOR CHOKE

STARTING ENRICHMENT (SE) VALVE

The starting enrichment system uses a fuel enriching circuit controlled by an starting enrichment (SE) valve. The SE valve opens the enriching circuit vir a cable when the SE valve knob is pulled.



Check for smooth operation of the choke knob.
Check for any deterioration or damage to the choke cable.
If the operation is not smooth, lubricate the choke cable and choke knob sliding surface with a commercially available cable lubricant or a light weight oil.



AIR CLEANER

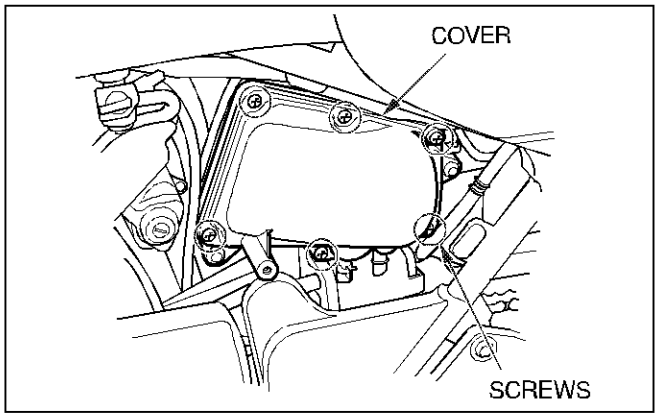
NOTE:

If the motorcycle is used in wet or dusty areas, more frequent inspections are required.

CAUTION:

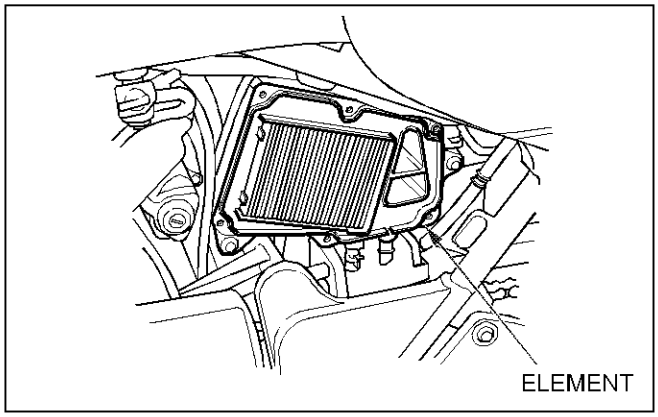
Be careful not to allow the foreign material into the air cleaner housing.

Remove the side cover (page 2-2).
Remove the screws and air cleaner housing cover.



Remove the air cleaner element.
Replace the element accordance with the maintenance schedule (page 3-3).
Also, clean the element using compressed air from the carburetor side, or replace it if necessary.

Install the removed parts in the reverse order of removal.



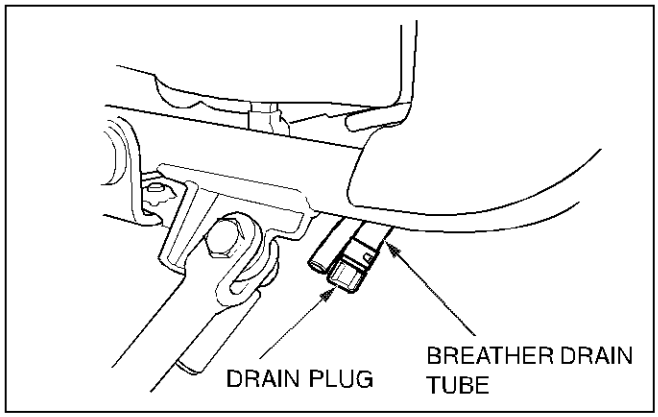
CRANKCASEBREATHER

NOTE:

Service more frequently when ridden in rain, at full throttle, or after the motorcycle is washed or over-turned. Service if the deposits level can be seen in the transparent section of the breather drain tube.

Remove the drain plug from the breather drain tube to empty any deposits.

Reinstall the drain plug.



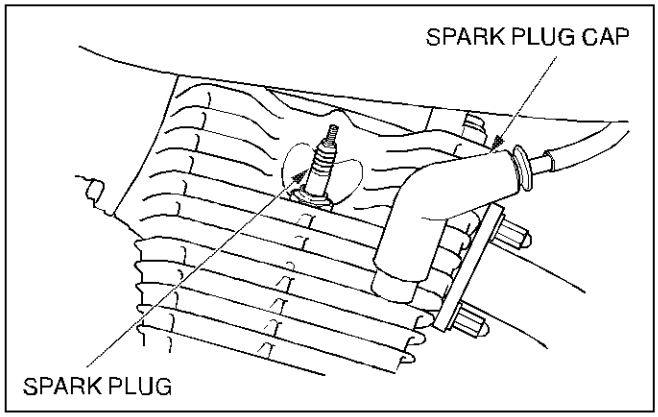
SPARKPLUG

Remove the side cover (page 2-2).
Disconnect the spark plug cap.

NOTE:

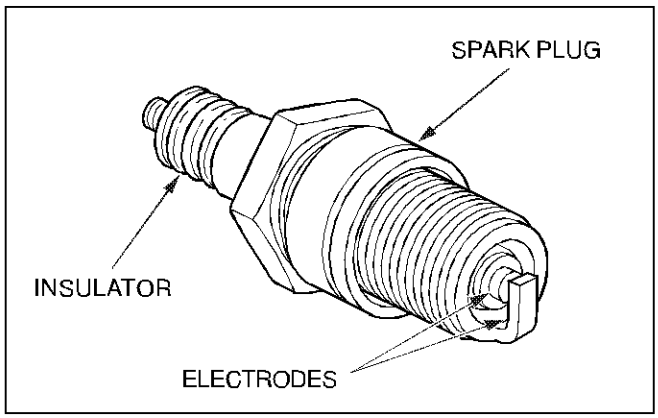
Clean around the spark plug bases with compressed air before removing, and be sure that no debris is allowed to enter the combustion chamber.

Remove the spark plug using the spark plug wrench or an equivalent.
Inspect or replace as described in the maintenance schedule (page 3-3).



INSPECTION

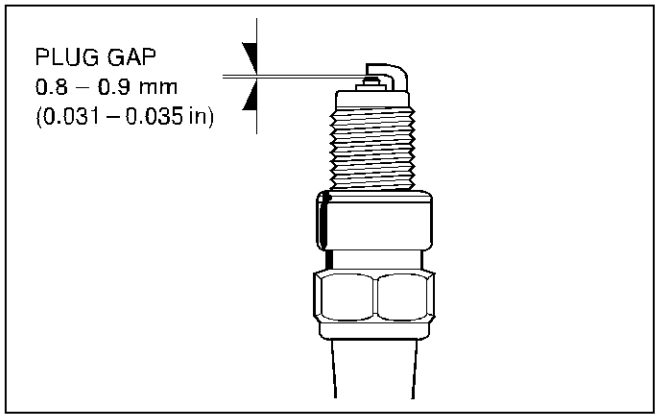
Check the following and replace if necessary (recommended spark plugs: page 3-1).
- Insulator for damage
- Electrodes for wear
- Burning condition, coloration;
  — dark to light brown indicates good condition.
  — excessive lightness indicates malfunctioning ignition system or learn mixture.
  — wet or black sooty deposit indicates over-rich mixture.



REUSING A SPARK PLUG

Clean the spark plug electrodes with a wire brush or spark plug cleaner.
Check the gap between the center and side electrodes with a wire-type feeler gauge. If necessary, adjust the gap by bending the side electrodes carefully.

SPARK PLUG GAP: 0.8 – 0.9 mm (0.031 – 0.035 in)

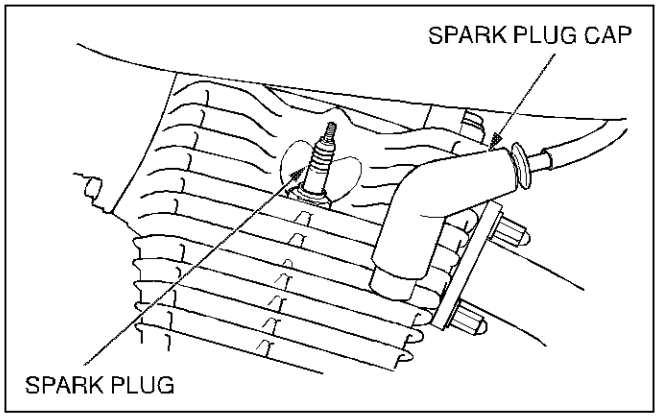


CAUTION:

To prevent damage to the cylinder head, hand tighten the spark plug before using a wrench to tighten to the specified torque.

Reinstall the spark plug in the cylinder head and hand tighten, then torque to specification.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)



REPLACING A SPARK PLUG

CAUTION:

Do not overtighten the spark plug.

Remove the spark plug (page 3-7).
Install and hand tighten the new spark plug, then tighten it about 1/2 of a turn after the sealing washer contacts the seat of the plug hole.

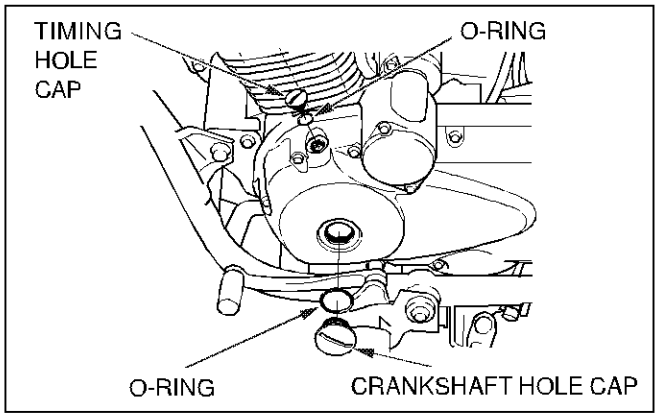
VALVECLEARANCE

INSPECTION

NOTE:

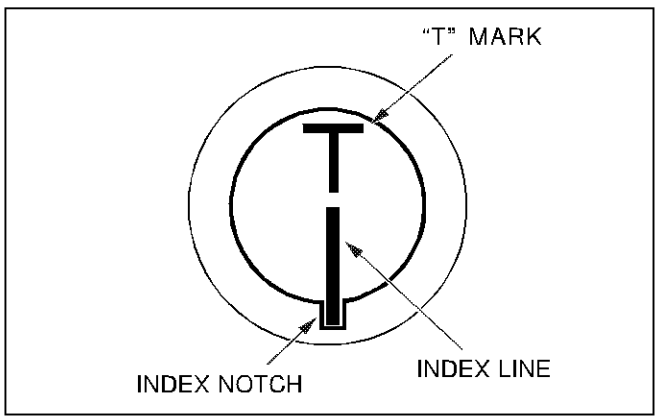
- Inspection and adjustment of the valve clearance can be done with engine in the frame.
- Inspect and adjust the valve clearance while the engine is cold (below 35°C/95°F).

Remove the following:
— fuel tank (page 2-5).



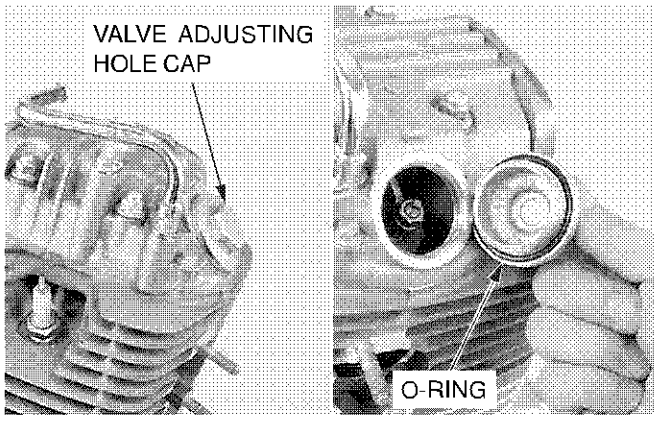
Remove the timing hole cap and crankshaft hole cap.
Remove the O-ring.

Rotate the flywheel counterclockwise to align the "T" mark with the index mark on the left crankcase cover index notch.



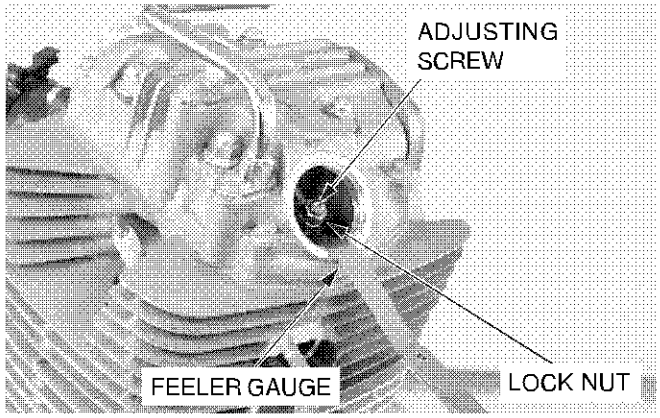
Make sure the piston is at TDC (Top Dead Cener) on the compression stroke.

Remove the valve adjuting hole caps.
Remove the O-rings.



Inspect the clearance of two valves by inserting a feeler gauge between the adjusting screw and the valve.

VALVE CLEARANCE:
IN: 0.10 ± 0.02 mm (0.004 ± 0.001 in)
EX: 0.10 ± 0.02 mm (0.004 ± 0.001 in)



ADJUSTMENT

Adjust by loosening the lock nut and turning the adjsting screw until there is a slight drag on the feeler gauge.

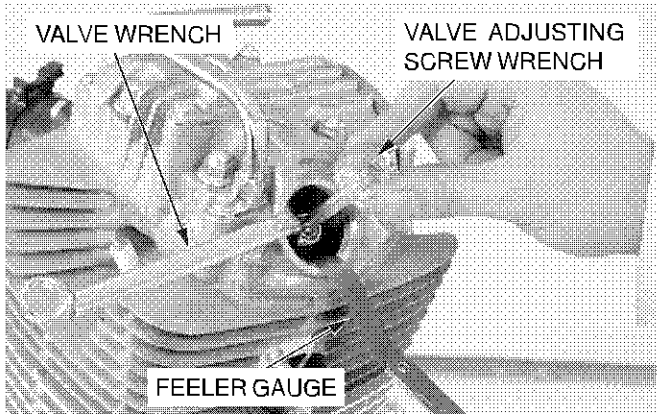
NOTE:

Apply oil to the lock nut threads.

Hold the adjusting screw and tighten the lock nut.

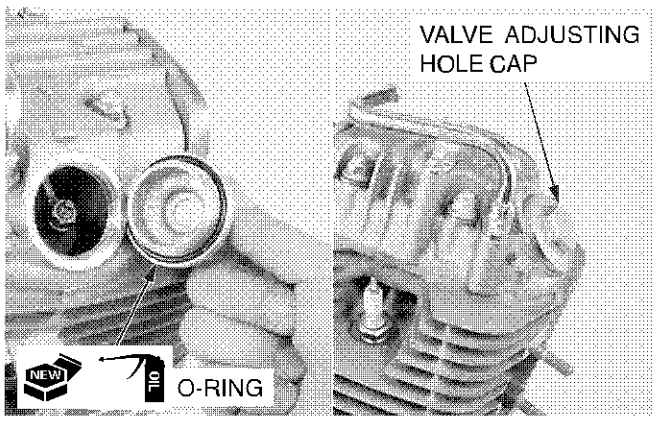
TORQUE: 14 N·m (1.4 kgf·m, 10 lbf·ft)

Install the cylinder head covers (page 7-16).



Apply oil to a new O-rings and install them into grooves in the valve adjuting hole caps.
Install the valve adjusting hole caps and tighten them.

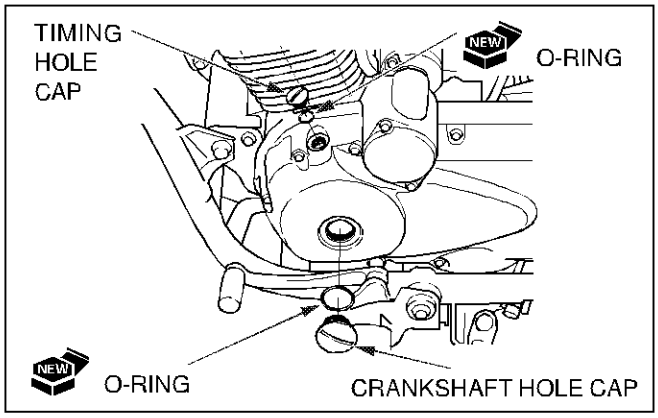
TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)



Check that O-rings are in good condition, and install the timing hole cap and crankshaft hole cap.

Tighten the timing hole cap and crankshaft hole cap.

TORQUE:
Timing hole cap 6 N·m (0.6 kgf·m, 4.3 lbf·ft)
Crankshaft hole cap 8 N·m (0.8 kgf·m, 5.8 lbf·ft)



ENGINE OIL

OIL LEVEL INSPECTION

⚠ WARNING

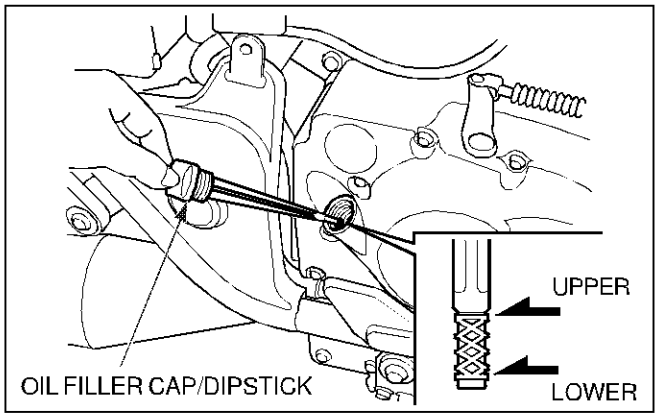
- ***If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.***
- ***Engine and exhaust system parts become very hot and remain hot for some time after the engine is run. Wear insulated gloves or wait until the engine and exhaust system have cooled before handling these parts.***

Support the motorcycle on its center stand on a level ground.

Remove the oil filler cap/dipstick and wipe it clean.
Reinstall the oil filler cap/dipstick, but do not screw it.

Remove the oil filler cap/dipstick and check the oil level.

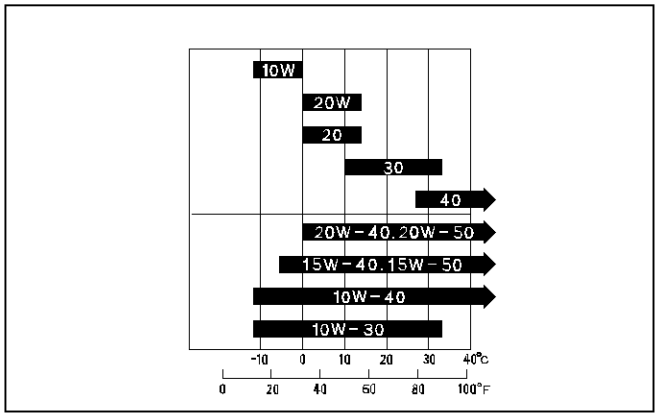
If the level is below the lower mark on the dipstick, fill the crankcase with recommended oil.



RECOMMENDED ENGINE OIL:
HONDA 4-stroke oil or equivalent motor oil
API service classification: SE, SF or SG
Viscosity: SAE 10W-30

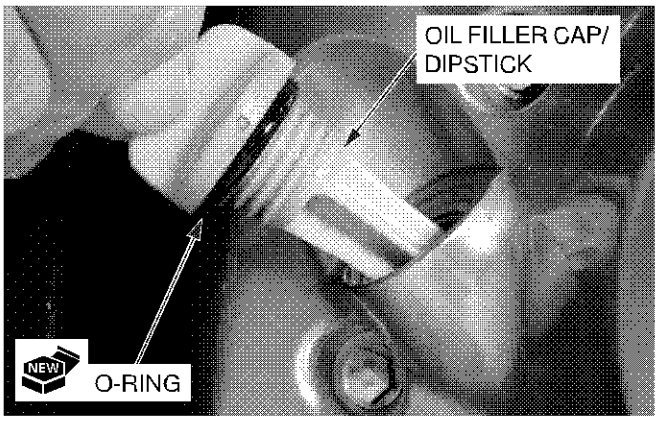
NOTE:

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



Reinstall the oil filler cap/dipstick.

Check the O-ring is in good condition, replace if necessary.



ENGINE OIL STRAINER SCREEN

ENGINE OIL CHANGE

⚠ WARNING

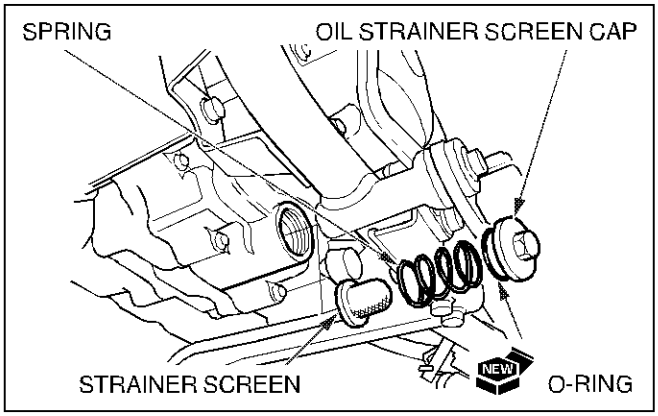
If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death. Run the engine in an open area or with an exhaust evacuation system in enclosed area.

Warm up the engine.

Stop the engine and place an oil drain pan under the engine to catch the oil, then remove the oil strainer screen cap. Remove the oil filler cap/dipstick.

⚠ WARNING

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. KEEP OUT OF REACH OF CHILDREN.



After draining the oil completely, check and clean the oil strainer screen.
Apply engine oil to new O-ring and install it.
Make sure that the strainer screen, spring and screen cap is in good condition, replace if necessary.

Install and tighten the screen cap.

TORQUE: 15 N·m (15 kgf·m, 11 lbf·ft)

Fill the crankcase with recommended engine oil.

OIL CAPACITY:
1.0 liter (1.1 US qt, 0.9 Imp qt) at draining
1.2 liter (1.3 US qt, 1.1 Imp qt) at disassembly

Install the oil filler cap/dipstick.

Start the engine and let it idle for 2 to 3 minutes.
Stop the engine and recheck the oil level (page 3-10).
Make sure there are no oil leaks.

ENGINE OIL CENTRIFUGAL FILTER

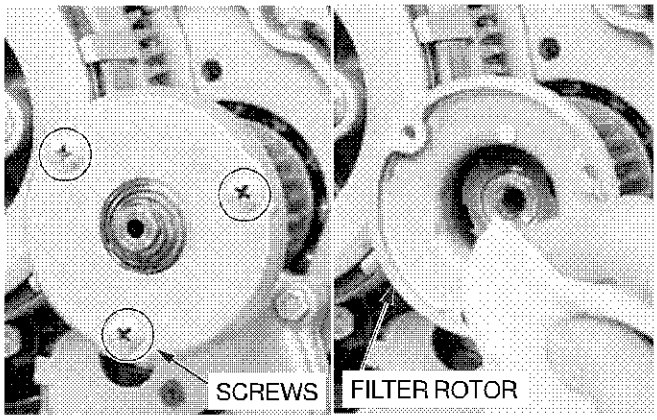
Remove the right crankcase cover (page 9-3).

Remove the screws and the oil filter rotor cover.

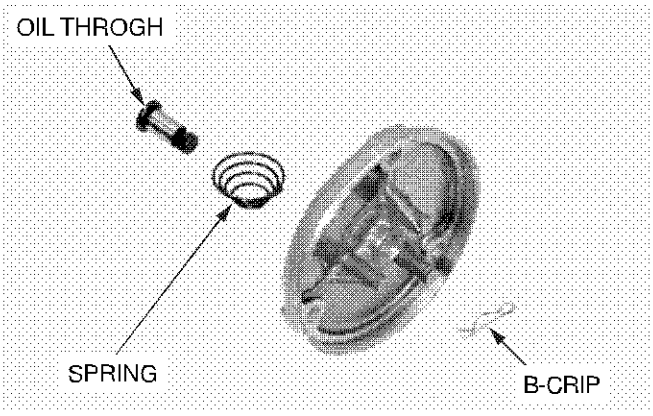
Clean the inside of the oil filter rotor
using a clean lint-free cloth.

CAUTION:

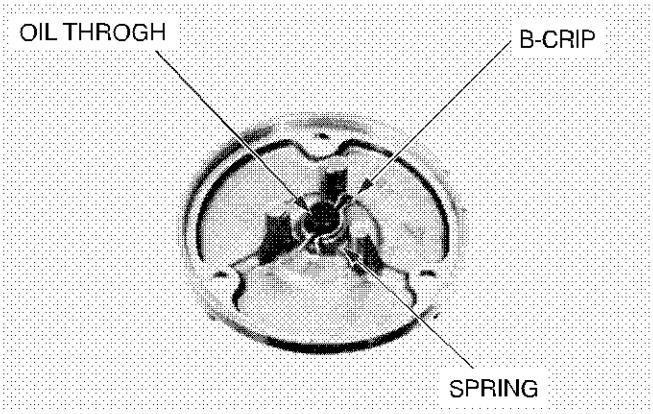
Do not allow dust or dirt to enter the crankshaft oil passage.
Do not use compressed air to clean the filter rotor.



Remove the B-crip and oil throgh and spring from the oil filter cover.
Compressed air to clean the oil throgh.
Clean the oil filter cover.



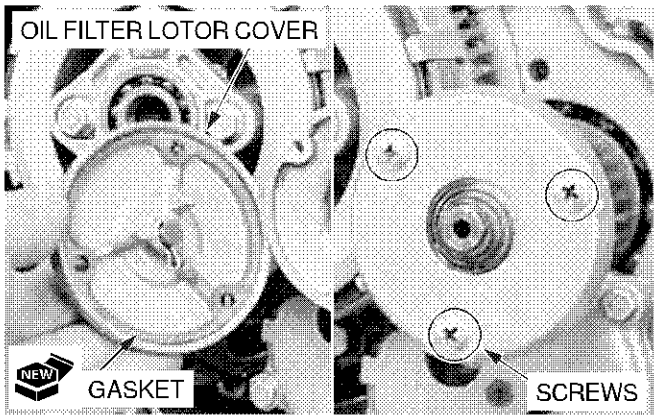
Install the spring, oil throgh and B-crip.



Install the oil filter rotor cover with a new gasket, aliging the screw holes in the cover and gasket.
Install and tighten the screw to the specified torque.

TORQUE: 3 N·m (0.3 kgf·m, 2.2 lbf·ft)

Install the right crankcase cover (page 9-15).



ENGINE IDLE SPEED

⚠ WARNING

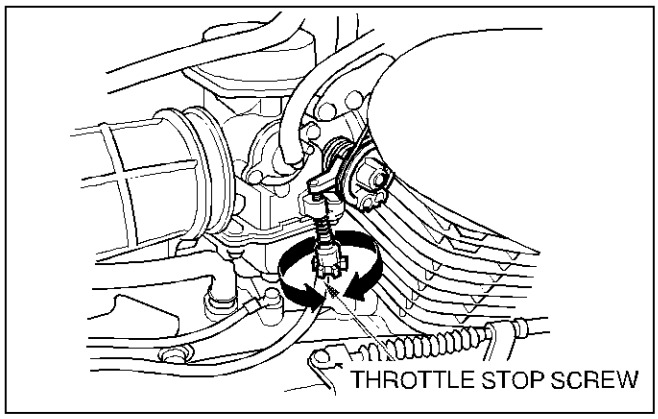
If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may causes loss of consciousness and lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

NOTE:

- Perform this maintenance with the engine at normal operating temperature and transmission in neutral. Place the motorcycle on a level surface.
- Engine must be warm for accurate adjustment. Ten minutes of stop-and-go riding is sufficient.

Warm up the engine and shift the transmission into neutral. Place the motorcycle on its side stand.
Check the idle speed and adjust by turning the throttle stop screw control knob if necessary.

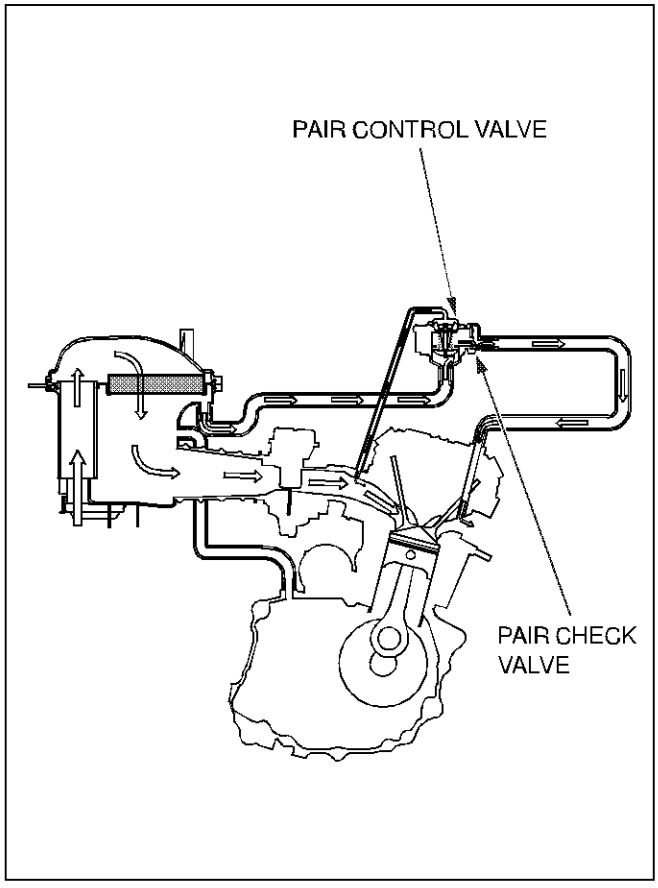
IDLE SPEED: 1,400 ± 100 min^{-1} (rpm)



SECONDARY AIR SUPPLY SYSTEM

NOTE:

The secondary air supply system introduces filtered air into exhaust gases in the exhaust port. The secondary air is drawn into the exhaust port whenever there is negative pressure pulse in the exhaust system. This charged secondary air promotes burning of the unburned exhaust gases and changes a considerable amount of hydrocarbons and carbon monoxide into relatively harmless carbon dioxide and water.



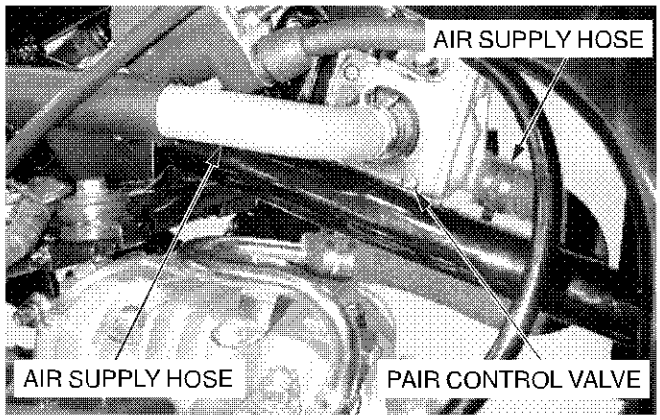
Remove the front side cover (page 2-3).
Remove the fuel tank (page 2-5).

Check the air supply hoses and pipes between the pulse secondary air injection (PAIR) control valve and exhaust port for deterioration, damage or loose connections. Make sure that the hoses are not cracked.

NOTE:

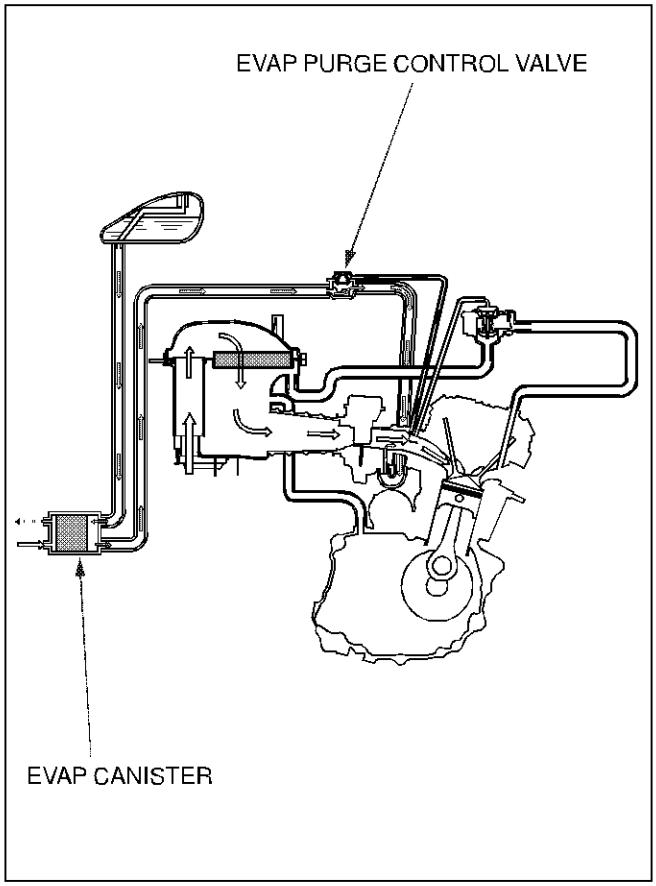
If the hoses show any signs of heat damage, inspect the PAIR check valves (page 5-18).

Check the air suction hose between the air cleaner housing and PAIR control valve for deterioration, damage or loose connections. Make sure that the hoses are not linked, pinched or cracked.
For PAIR control valve inspection, see page 5-18.



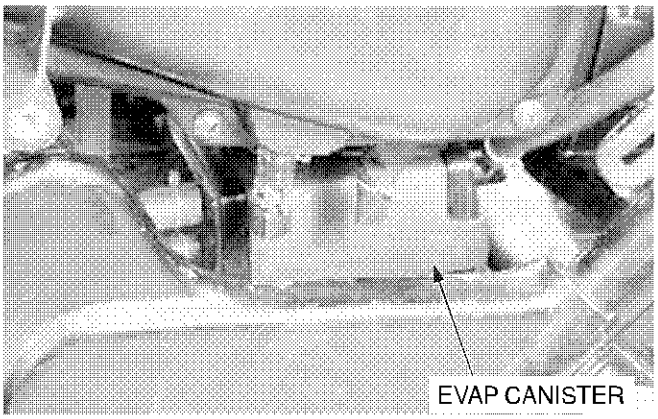
EVAPORATIVE EMISSION CONTROL SYSTEM

Check the tubes between the fuel tank. EVAPcanister, EVAP purge control valve and carburetor for deterioration, damage or loose connection.

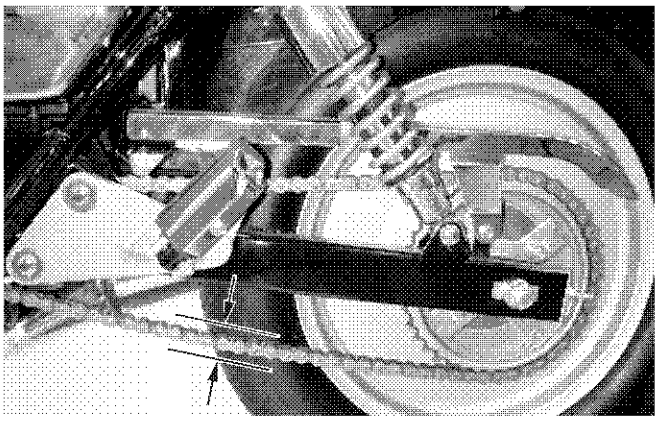


Check the EVAP canister for cracks or other damage.

Refor to the vacuum hose routing diadram lavel (page 1-29) and emission control system rocation (page 1-24) for tube connections.



DRIVE CHAIN



DRIVE CHAIN SLACK INSPECTION

⚠ WARNING

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

Turn off the engine, place the motorcycle on its center stand and shift the transmission into neutral. Check the slack in the drive chain lower run midway between the sprockets.

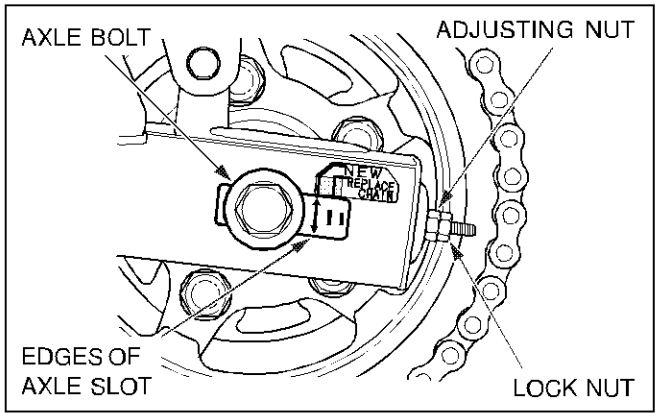
CHAIN SLACK: 20 – 30 mm (0.8 – 1.2 in)

CAUTION:

Excessive chain slack, 60 mm (2 3/8 in) or more, may damage the frame.

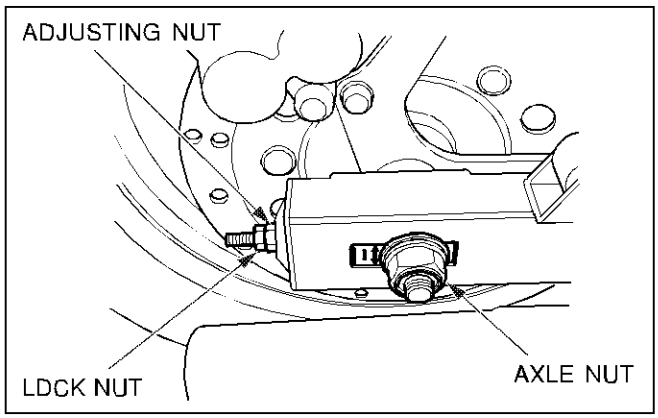
ADJUSTMENT

Loosen the rear axle nut.
Loosen the both lock nut.
Turn both adjusting nuts until the correct drive chain slack is obtained.
Make sure the index marks on the both adjusters are aligned with the rear edges of the axle slots in the swingarm.



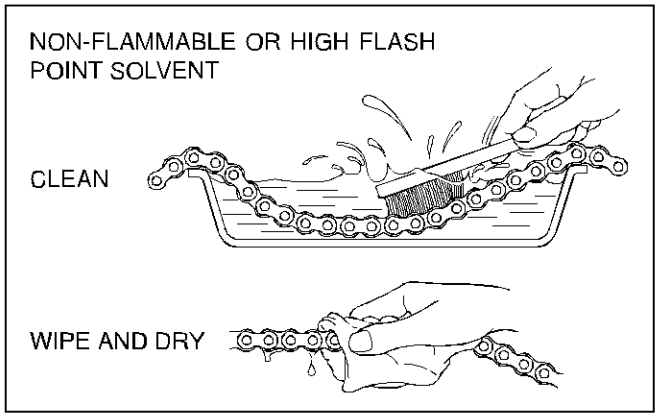
Tighten the rear axle nut to the specified torque.

TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)

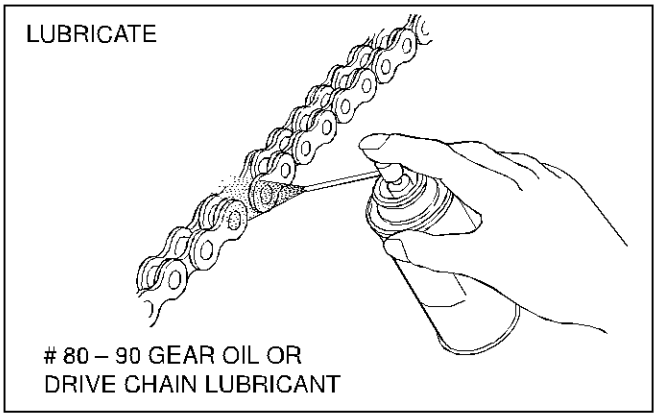


CLEANING AND LUBRICATION

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

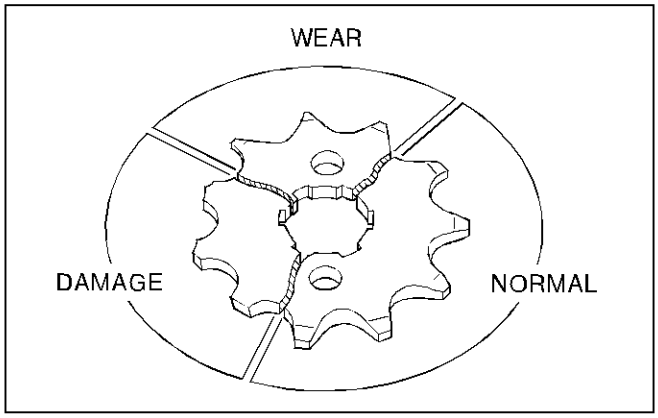


Lubricate the drive chain with # 80 – 90 gear oil or drive chain lubricant designed specifically for use with O-ring chains. Wipe off the excess oil or chain lubricant.



SPROCKETS INSPECTION

Inspect the drive and driven sprocket teeth for wear or damage, replace if necessary.
Never use a new drive chain on worn sprockets.
Both chain and sprockets must be in good condition, or the new replacement chain will wear rapidly.



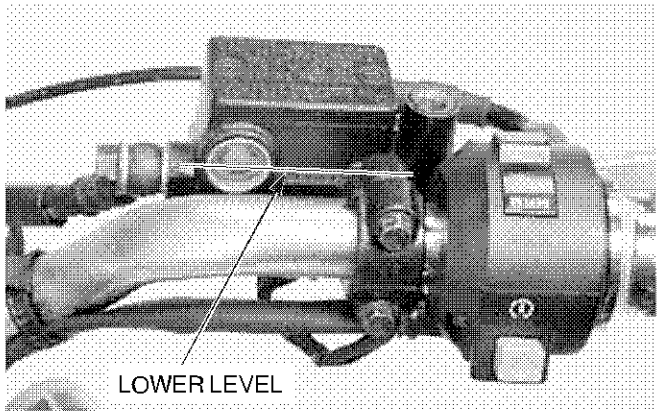
BRAKE FLUID

CAUTION:

- ***Do not remove the cover or cap unless the reservoir is level because fluid may spill out.***
- ***Do not mix different types of fluid, as they are not compatible with each other.***
- ***Do not allow foreign material to enter the system when filling the reservoir.***
- ***Avoid spilling fluid on painted, plastic or rubber parts. Place a rug over these parts whenever the system is serviced.***

NOTE:

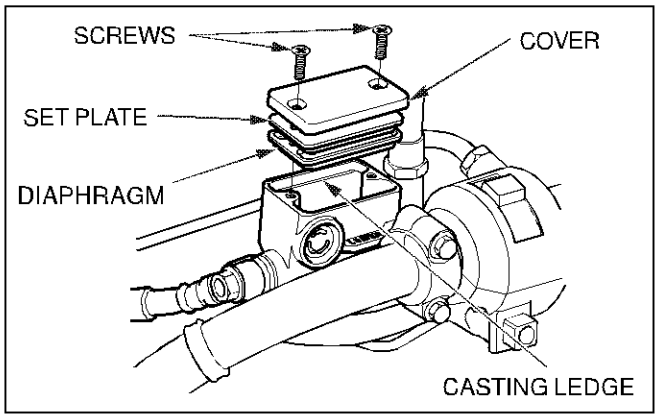
- When the fluid level is low, check the brake pads for wear (page: 3-17). A low fluid level may be due to wear of the brake pads. If the brake pads are worn, the caliper piston in pushed out, and this accounts for a low reservoir level. If the brake pads are not worn and the fluid level is low, check entire system for leaks (page 3-18).
- Do not remove the level float from the reservoir when filling with brake fluid.



FRONT BRAKE

Turn the handlebar so that the reservoir is level and check the front brake reservoir fluid level through the sight glass. If the level is near the lower level mark, remove the screws, cover, set plate, diaphragm and fill the reservoir with DOT 3 or 4 brake fluid from a sealed container to the casting ledge.

Refer to page 14-4 for brake fluid replacement/bleeding procedures.

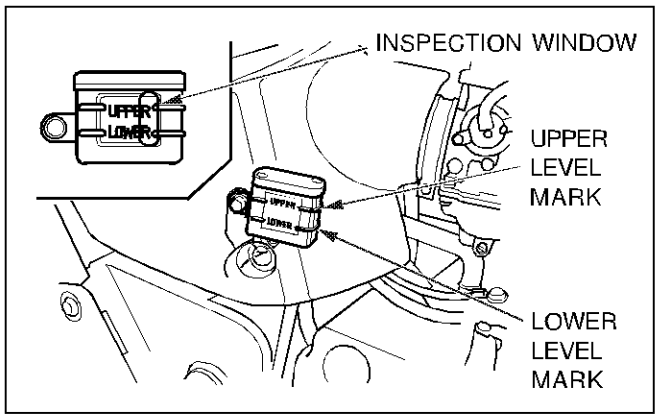


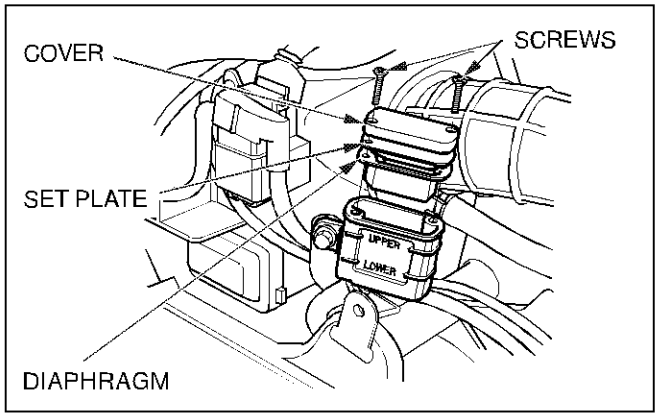
REAR BRAKE

Place the motorcycle on a level surface, and support it upright.
Check the rear brake fluid reservoir level from the right side cover inspection window.
If the level is near the lower level mark, remove the right side cover (page 2-2), screws, cover, set plate, diaphragm and fill the reservoir with DOT 3 or 4 brake fluid from a sealed container to the upper level mark.

Refer to page 14-4 for brake fluid replacement/bleeding procedures.

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



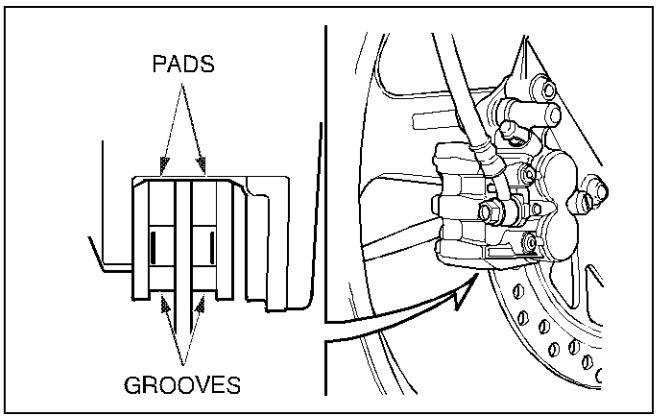


BRAKE PADS WEAR

FRONT BRAKE PADS

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

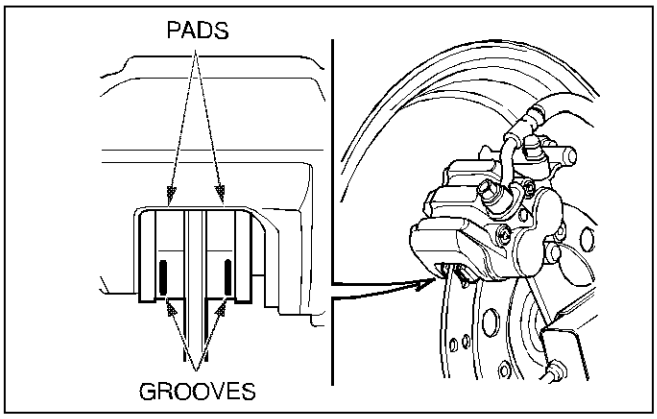
Refer to page 14-6 for brake pad replacement.



REAR BRAKE PADS

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

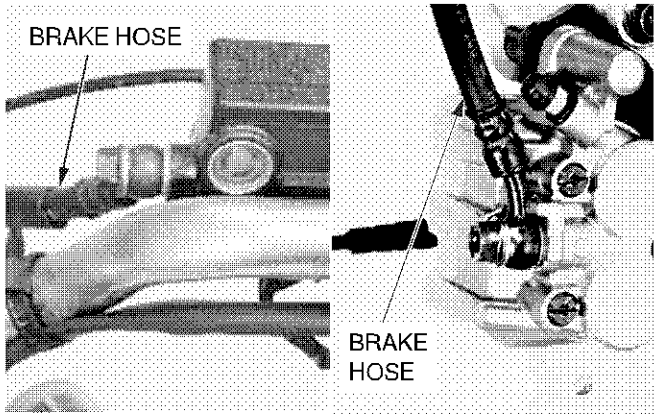
Refer to page 14-9 for brake pad replacement.



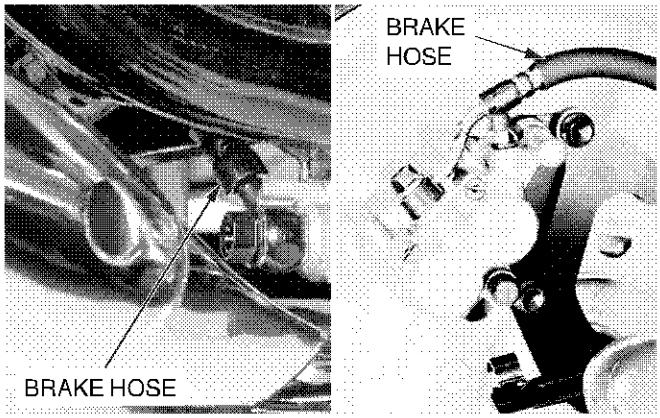
BRAKE SYSTEM

INSPECTION FOR AIR IN SYSTEM

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 air from the system (page 14-4).



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



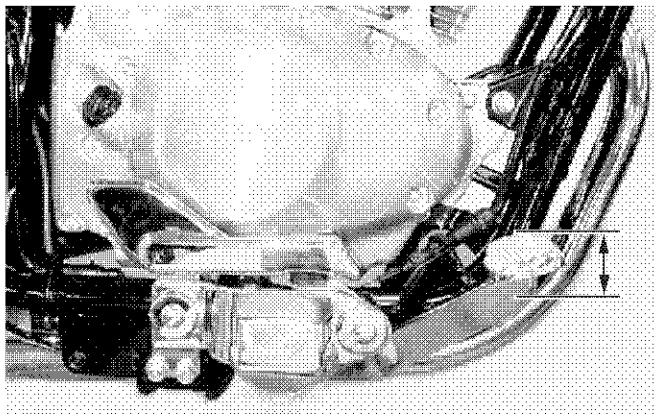
BRAKE PEDAL HEIGHT

Adjust the brake pedal to the desired height.
Loosen the lock nut and turn the push rod to obtain the pedal height.

Tighten the lock nut after adjustment has been made.

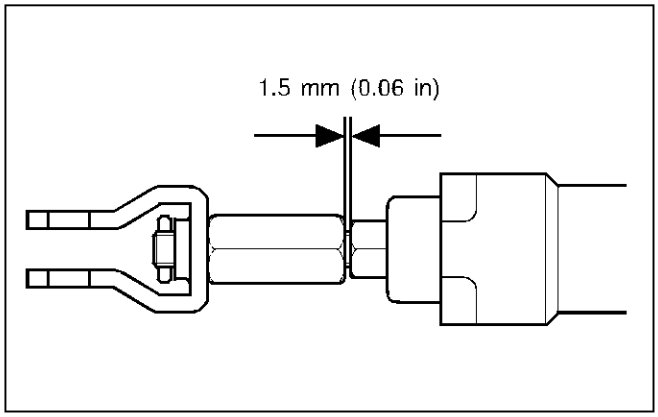
If adjusting the brake pedal to the lower position, make sure that the clearance between the lower end of the push rod and the brake pedal does not fall below 1.5 mm (0.06 in).

If adjusting to the higher position, do not allow the lower end of the push rod thread to enter into the brake pedal joint.



NOTE:

After adjusting the brake pedal free play, check the rear brake light switch operation and adjust if necessary.



BRAKE LIGHT SWITCH

CAUTION:

Allowing the switch body to turn during adjustment can break the wires in the switch.

NOTE:

- The brake light switch on the front brake lever cannot be adjusted. If the front brake light switch actuation and brake engagement are off, either replace the switch unit or the malfunctioning parts of the system.
- Make all rear brake light switch adjustments after the height adjustment and the brake pedal free play adjustments have been made.

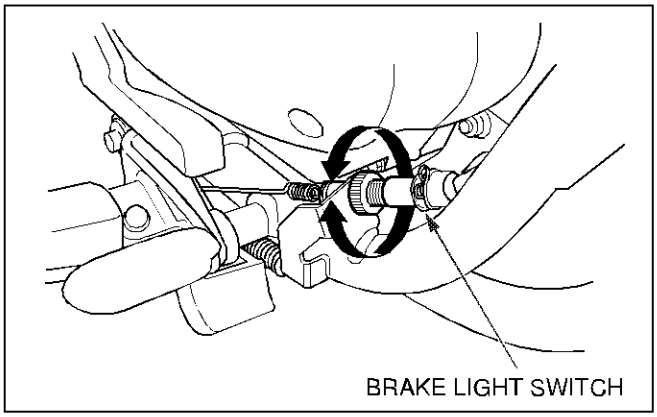
Check the brake light switch operation and adjustment by applying the brakes. Visually inspect for any damage and make sure the reflector plate is clean within the light.
Adjust the rear brake light switch so that the brake light comes on just prior to the brake actually being engaged. If the light fails to come on, adjust the switch so that the light comes on at the proper time.

Turn the adjusting nut on the brake light switch and not the switch body and wires to make switch actuation adjustments.

NOTE:

Be sure to hold the switch body firmly while turning the adjusting nut.

After adjustment, recheck to be sure the brake light comes on at the proper time.


BRAKE LIGHT SWITCH

HEADLIGHT AIM

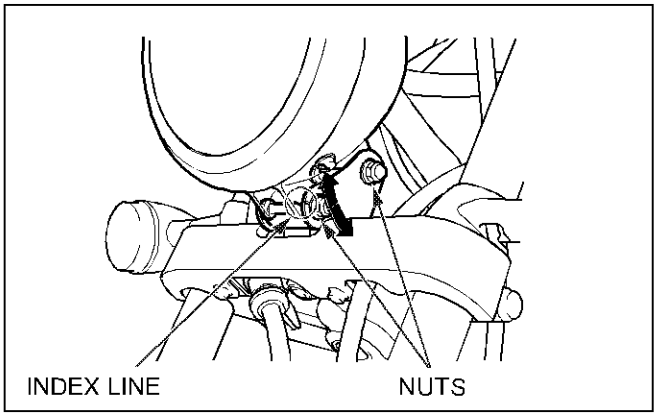
⚠ WARNING

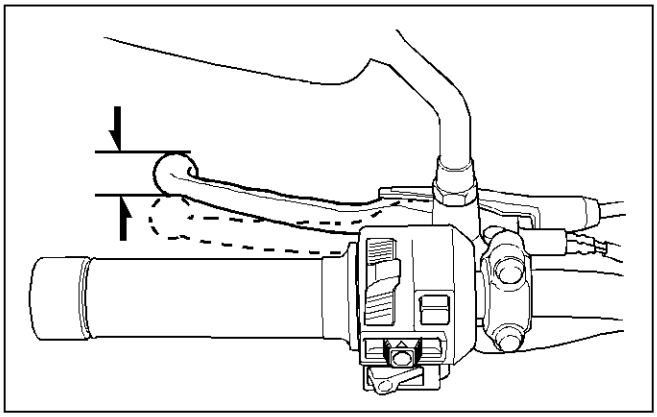
An improperly adjusted headlight may blind oncoming drivers, or it may fail to light the road for a safe distance.

NOTE:

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

Place the motorcycle on a level surface.
Adjust the headlight beam vertically by loosen the headlight mounting nuts and move the headlight case.
The headlight aim is correct if the index mark on the head light case align with the index mark on the headlight stay.


INDEX LINE NUTS



CLUTCH SYSTEM

Measure the clutch free play at the end of the clutch lever.

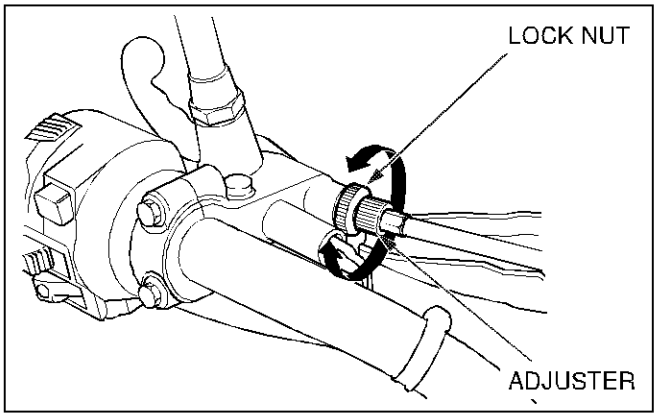
FREE PLAY: 10 – 20 mm (0.4 – 0.8 in)

Minor adjustment are made with the upper adjuster at the clutch lever.
Loosen the lock nut and turn the adjuster.

CAUTION:

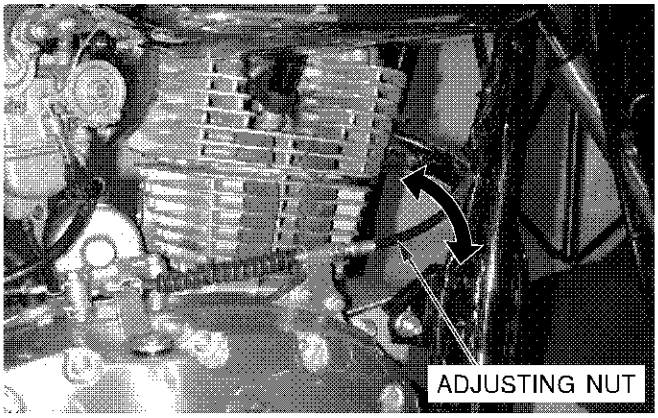
The adjuster may be damaged if it is positioned too far out, leaving minimal thread engagement.

If the adjuster is threaded out near its limit and the correct free play cannot be obtained, turn the adjuster all the way in and back out one turn.
Tighten the lock nut and make a major adjustment as described below.



Major adjustment is performed at the clutch arm.
Loosen the lock nut and turn the adjusting nut to adjust free play.
Hold the adjusting nut securely while tightening the lock nut.

If proper free play cannot be obtained, or the clutch slips during the test ride, disassemble and inspect the clutch (see section 9).

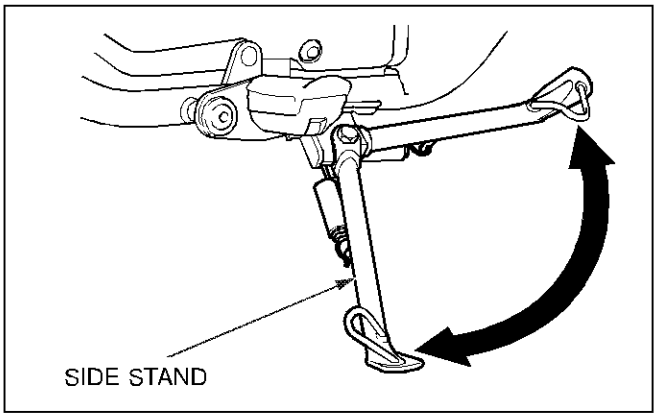


SIDE STAND

Support the motorcycle on a level surface.

Check the side stand spring for damage or loss of tension.
Check the side stand assembly for freedom of movement and lubricate the side stand pivot if necessary.

Make sure that the side stand is not bent.



SUSPENSION

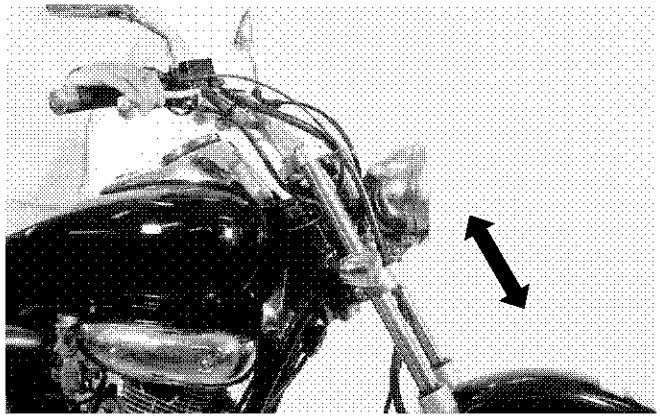
⚠ WARNING

Loose, worn or damaged suspension parts impair motorcycle stability and control. Repair or replace any damaged components before riding. Riding a motorcycle with faulty suspension increases your risk of an accident and possible injury.

FRONT SUSPENSION INSPECTION

Check the action of the forks by operating the front brakes and compressing the front suspension several times.
Check the entire assembly for signs of leaks, damage or loose fasteners.
Replace damaged components which cannot be repaired.
Tighten all nuts and bolts.

Refer to section 12 for fork service.



REAR SUSPENSION INSPECTION

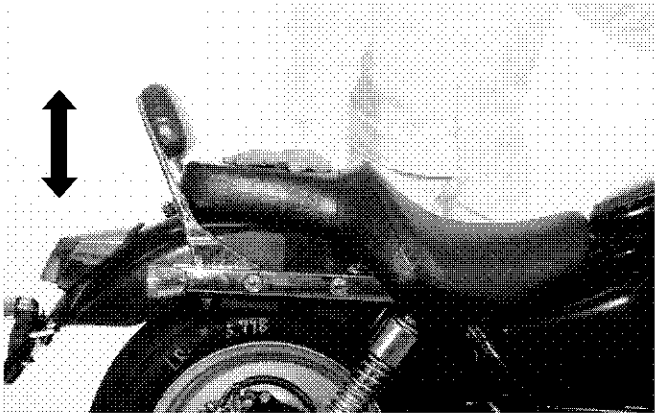
Support the motorcycle securely and raise the rear wheel off the ground.

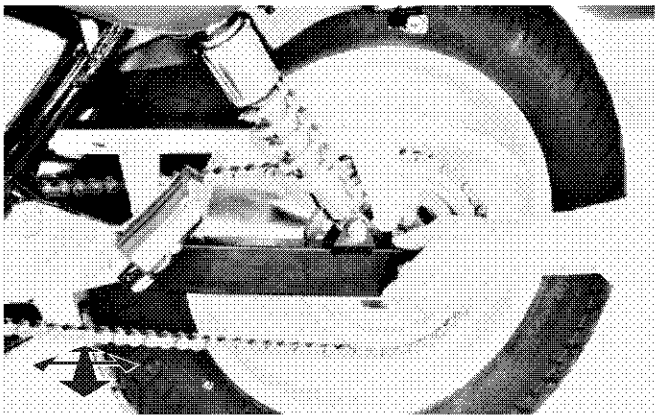
Hold the swingarm and move the rear wheel sideways with force to see if the wheel bearings are worn.

Check for worn swingarm bushings by grabbing the rear wheel and attempting to move the wheel side to side.
Replace the bushings if any looseness is noted.

Check the action of the shock absorbers by compressing them several times.
Check the entire shock absorber assembly for signs of leaks, damage or loose fasteners.
Replace damaged components which cannot be repaired.
Tighten all nuts and bolts.

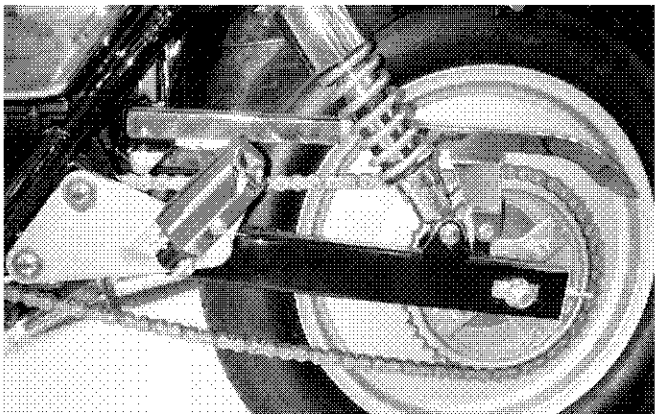
Refer to section 13 for shock absorber service.



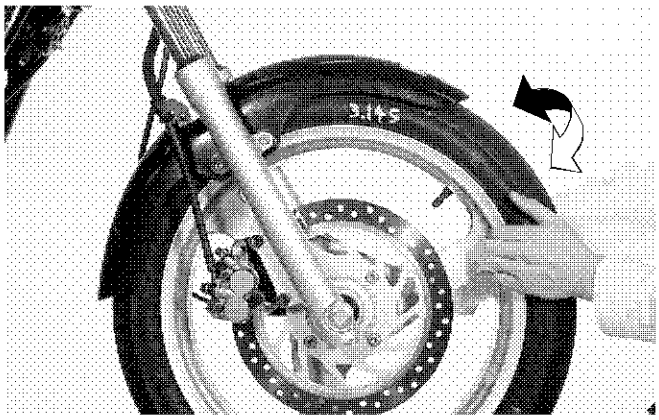


NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to their correct torque values (page 1-11).
Check that all cotter pins, safety clips, hose clamps and cable stays are in place and properly secured.



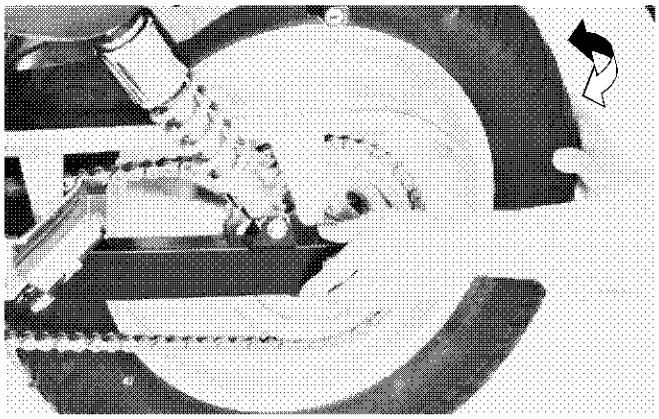
WHEELS/TIRES



Check for worn wheel bearing by grabbing the front and rear wheel, and attempting to move the wheel side to side.
Replace the bearings if any looseness is noted (Refer to section 12 or 13).

Making sure the fork is not allowed to move, raise the front wheel and check for play. Turn the wheel and check that it rotates smoothly with no usual noises.

If faults are found, inspect the wheel bearings.
Support the motorcycle securely and raise the rear wheel off the ground.
Check for play in either the wheel or the swingarm pivot. Turn the wheel and check that it rotates smoothly with no unusual noises.



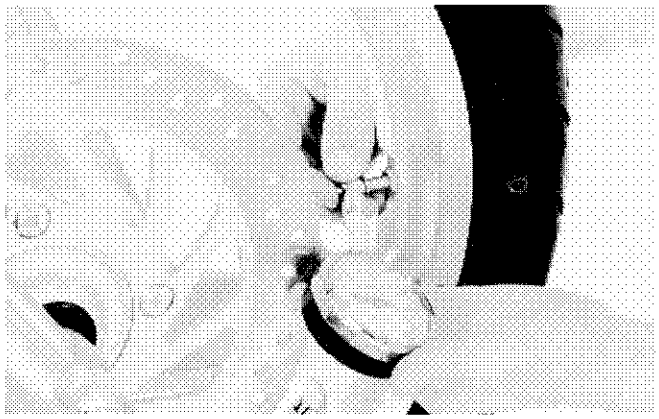
If abnormal conditions are suspected, check the rear wheel bearings.

NOTE:

As the swingarm pivot is included in this check, be sure to confirm the location of the play; i.e. from the wheel bearings or the swingarm pivot.

NOTE:

Tire pressure should be checked when the tires are COLD.



RECOMMENDED TIRE PRESSURE AND TIRE SIZE:

		FRONT	REAR
Tire pressure	Driver only	200 (2.0, 29)	200 (2.0, 29)
	Driver and passenger	200 (2.0, 29)	200 (2.0, 29)
Tire size		90/90–17 49P	130/90–15 M/C 66P
Tire bland	IRC	NF52/TL	NR66/TL

Check the tires for cuts, embedded nails, or other damage.
Check the front and rear wheels for trueness (refer to section 12 and 13).

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

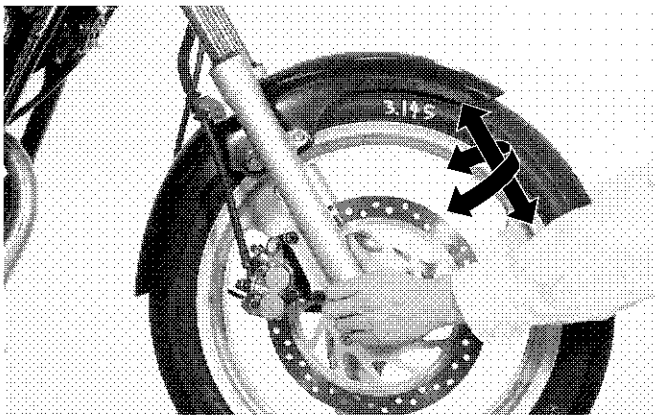
MINIMUM TREAD DEPTH:
FRONT: To indicator
REAR: To indicator

STEERING HEAD BEARINGS

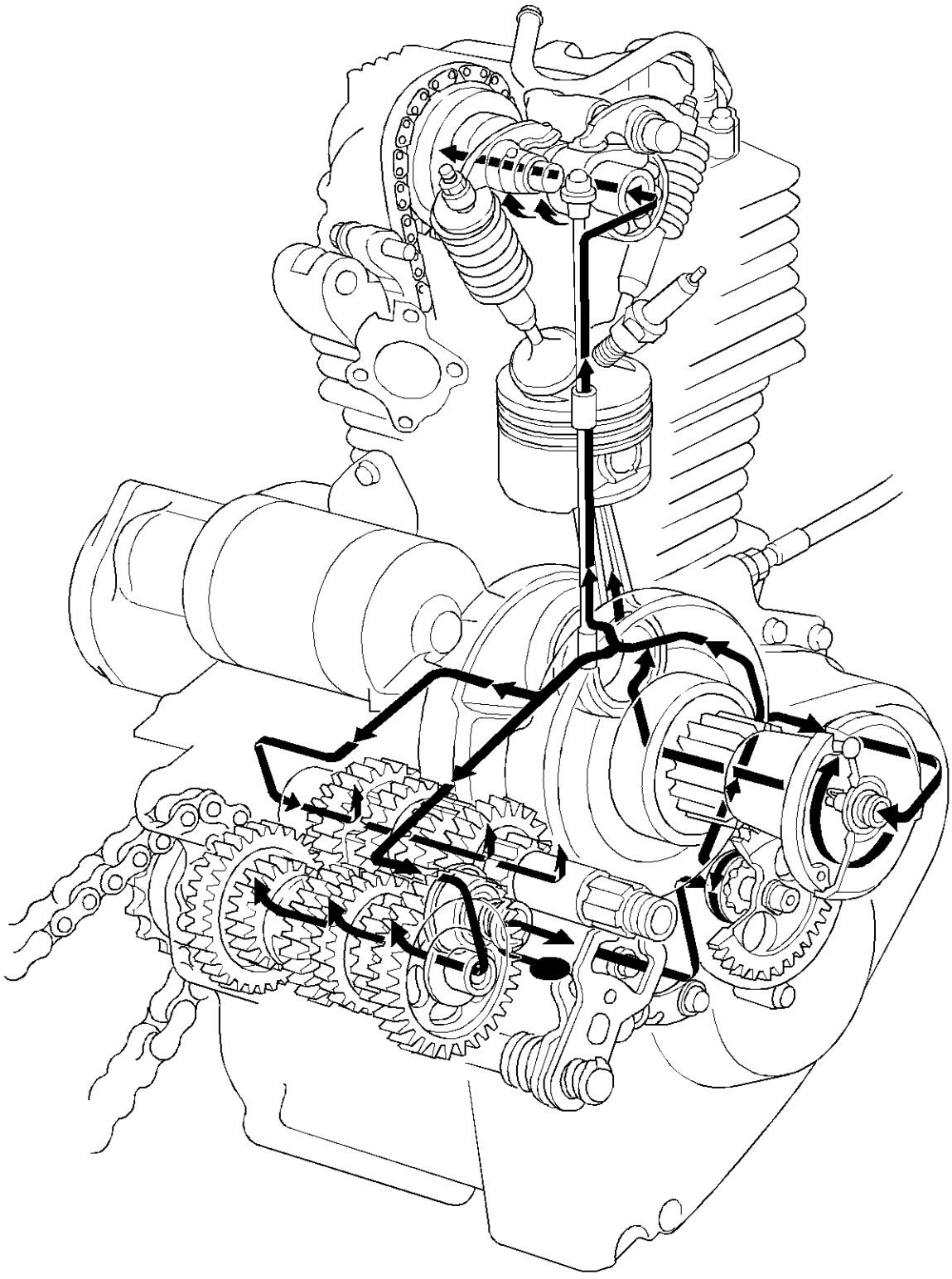
NOTE:

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

Support the motorcycle securely and raise the front wheel off the ground.
Check that the handlebar moves freely from side to side.
If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering head bearings (Section 12).



LUBRICATION SYSTEM DIAGRAM



4. LUBRICATION SYSTEM

SERVICE INFORMATION

GENERAL

⚠ WARNING

- ***If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death. Run the engine in an open area or with an exhaust evacuation system in enclosed area.***
- ***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. KEEP OUT OF REACH OF CHILDREN.***

- The oil pump can be serviced with the engine installed in the frame.
- The service procedures in this section must be performed with the engine oil drained.
- When removing and installing the oil pump, use care not to allow dust or dirt to enter the engine.
- If any portion of the oil pump is worn beyond the specified service limits, replace the oil pump as an assembly.
- After the oil pump has been installed, check that there are no oil leaks.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	At draining	1.0 liter (1.1 US qt, 0.9 Imp qt)	———
	At disassembly	1.2 liter (1.3 US qt, 1.1 Imp qt)	———
Recommended engine oil		HONDA 4-stroke oil or equivalent motor oil API service classification SE, SF or SG Viscosity: SAE 10W-30	———
Oil pump rotor	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.15 – 0.21 (0.006 – 0.008)	0.40 (0.016)
	Side clearance	0.03 – 0.12 (0.001 – 0.005)	0.15 (0.006)

TORQUE VALUES

Oil pump mounting screw	10 N·m (1.0 kgf·m, 7 lbf·ft)
Oil pump cover screw	3 N·m (0.3 kgf·m, 2.2 lbf·ft)

TROUBLESHOOTING

Engine oil level too low
- Normal oil consumption
- External oil leak
- Worn piston ring or incorrect piston ring installation
- Worn valve guide or seal

Oil contamination
- External oil leak
- Worn piston ring or incorrect piston ring installation
- Worn valve guide or seal
- Clogged oil strainer screen

Low oil pressure
- Oil pump worn or damaged
- Oil not change often enough
- Oil pump drive sprocket broken

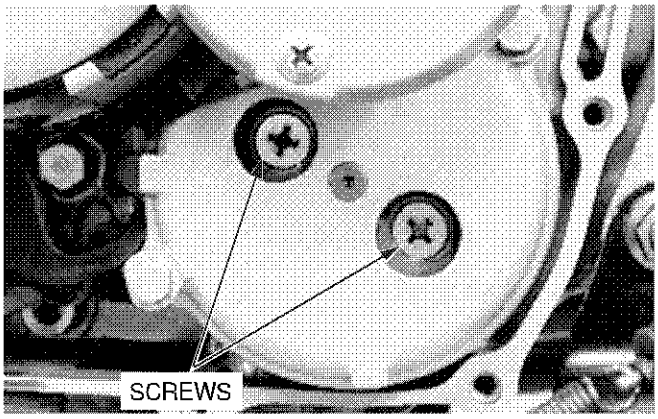
Right side only

OIL PUMP

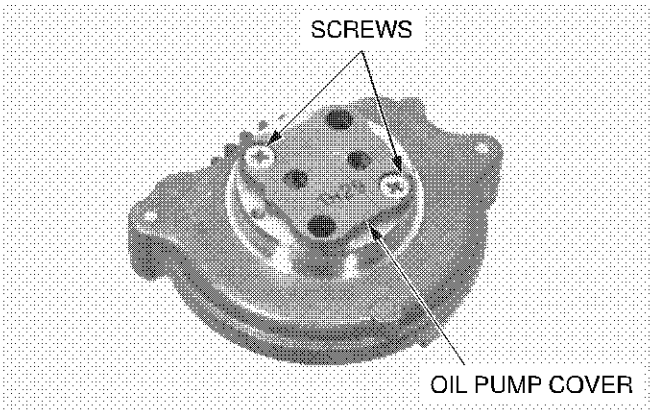
REMOVAL

Remove the right crankcase cover (page 9-3).
Remove the oil filter rotor (page 9-5).

Rotate the crankshaft clockwise until the pump mounting screws are accessible through the oil pump gear cover.
Remove the two screws and the oil pump.



Remove the screws and oil pump cover.



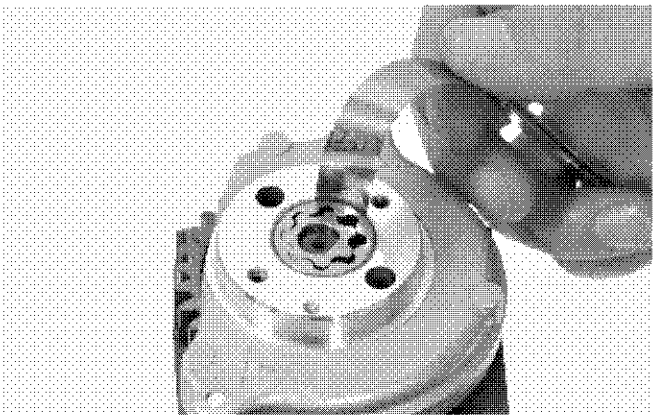
INSPECTION

NOTE:

- Measure at several places and use the largest reading to compare to the service limit.
- If any portion of the oil pump is worn beyond the specified service limits, replace the oil pump as an assembly.

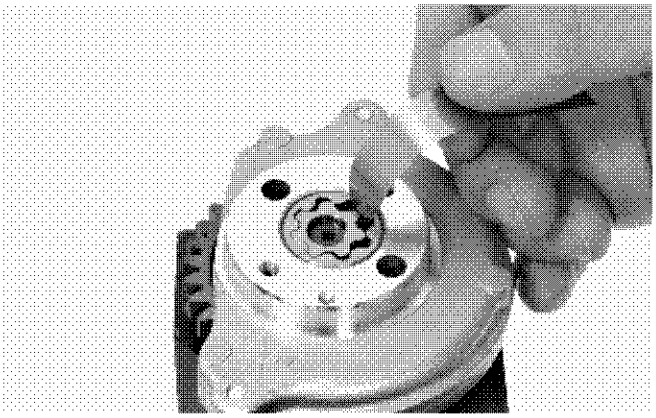
Measure the outer rotor-to-body clearance.

SERVICE LIMIT: 0.40 mm (0.016 in)



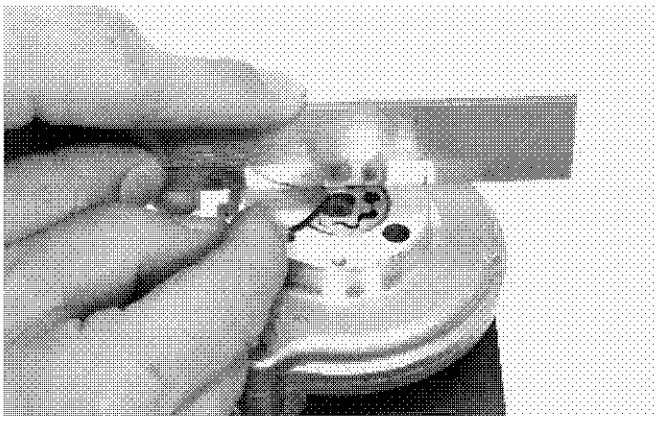
Measure the rotor tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)



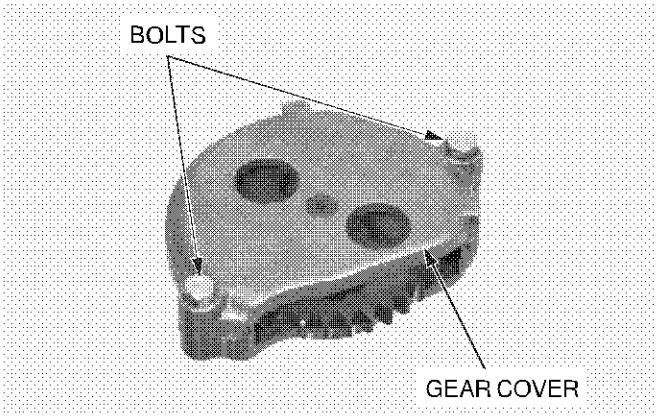
Measure the side clearance.

SERVICE LIMIT: 0.15 mm (0.006 in)

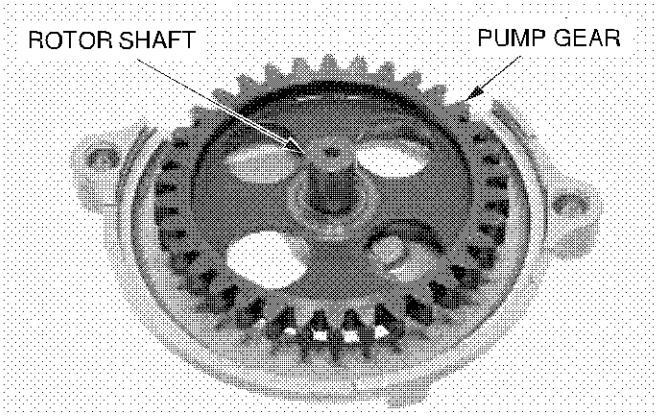


DISASSEMBLY

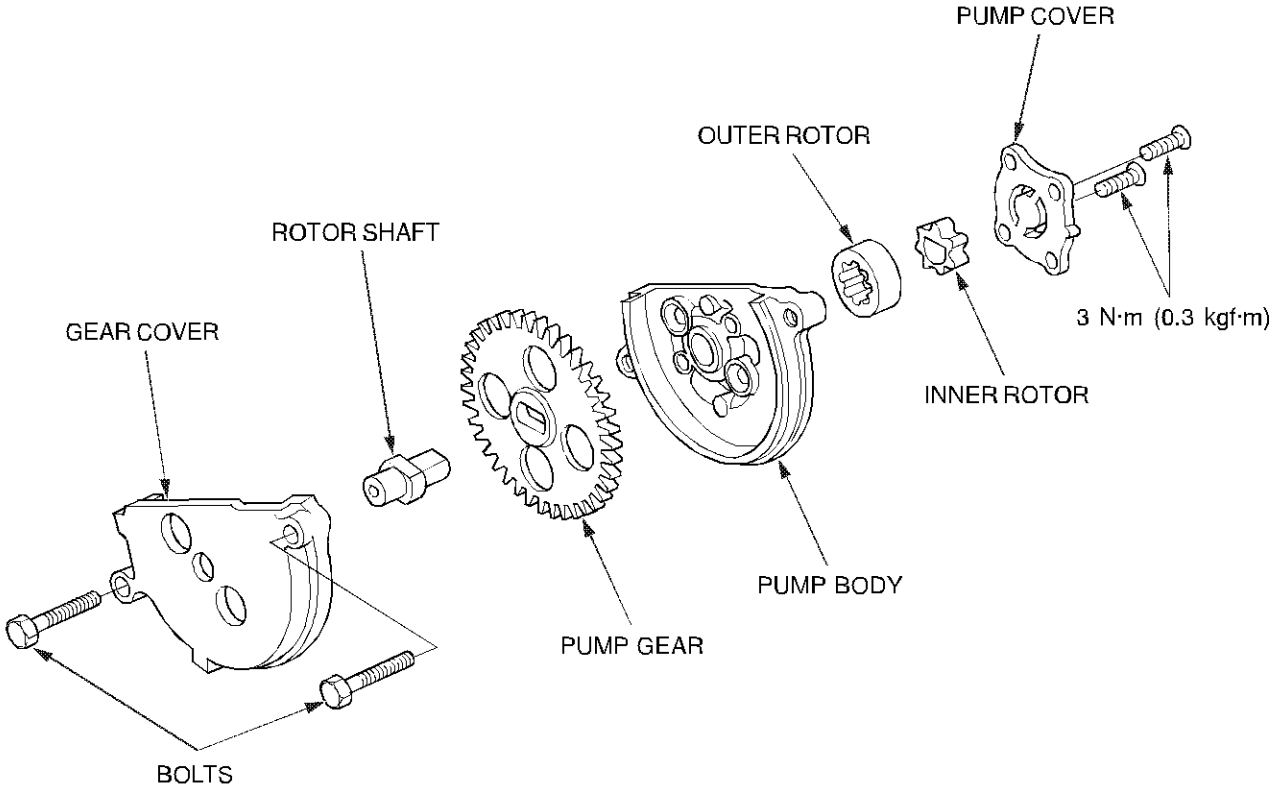
Remove the bolts and gear cover.



Remove the pump gear and rotor shaft.



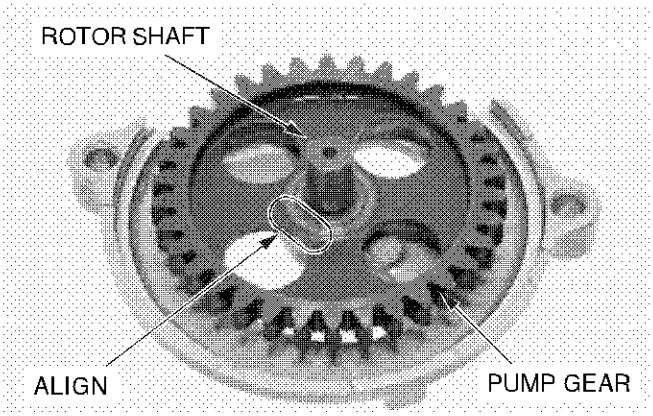
ASSEMBLY



Install the rotor shaft.
Install the pomp gear.
Align the pump gear and rotor shaft.

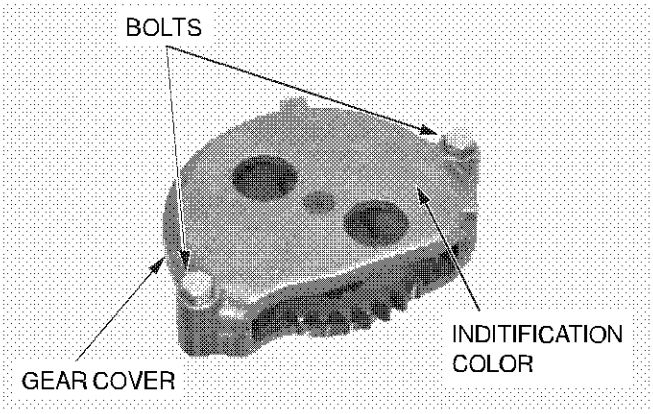
NOTE:

There is identification color in oil pump gear cover and primary drive gear.
Install the oil pump gear cover which have a same identification color with primary drive gear (page 4-5).

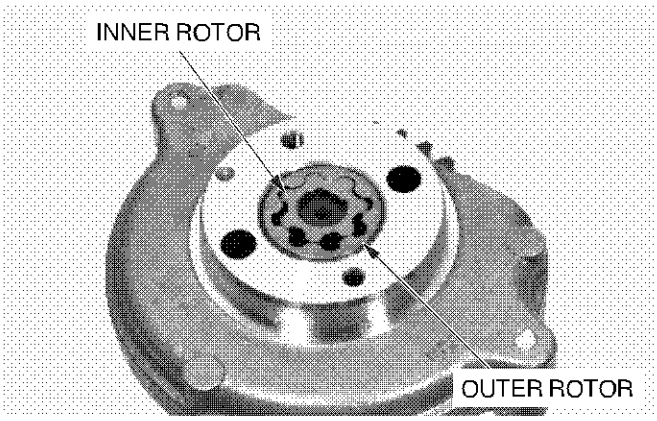


Install the gear cover.

Install and tighten the bolts securely.



Install the outer and inner rotors to the rotor shaft.



Fill the oil pump with engine oil.

Install the pump cover.

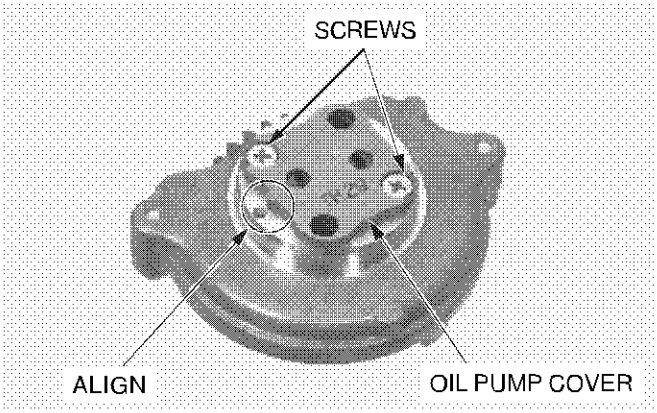
NOTE:

Align the boss of the pump cover and hole of the pump body.

Install and tighten the screws to the specified torque.

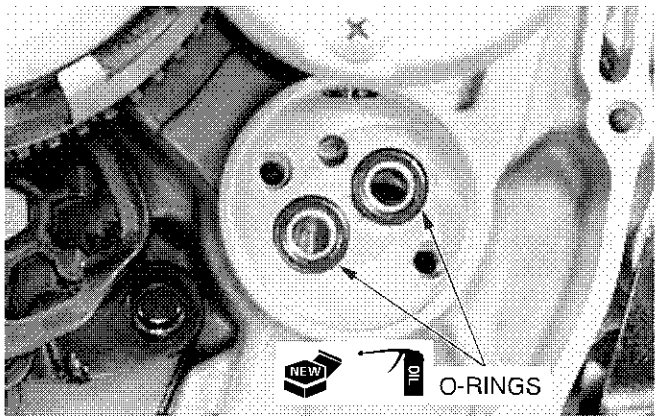
TORQUE: 3 N·m (0.3 kgf·m, 2.2 lbf·ft)

Check for smooth operation of the oil pump.



INSTALLATION

Apply engine oil to new O-rings and install into the crankcase.

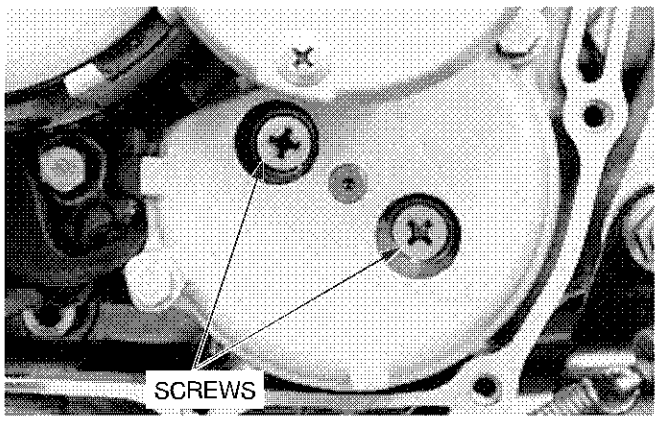


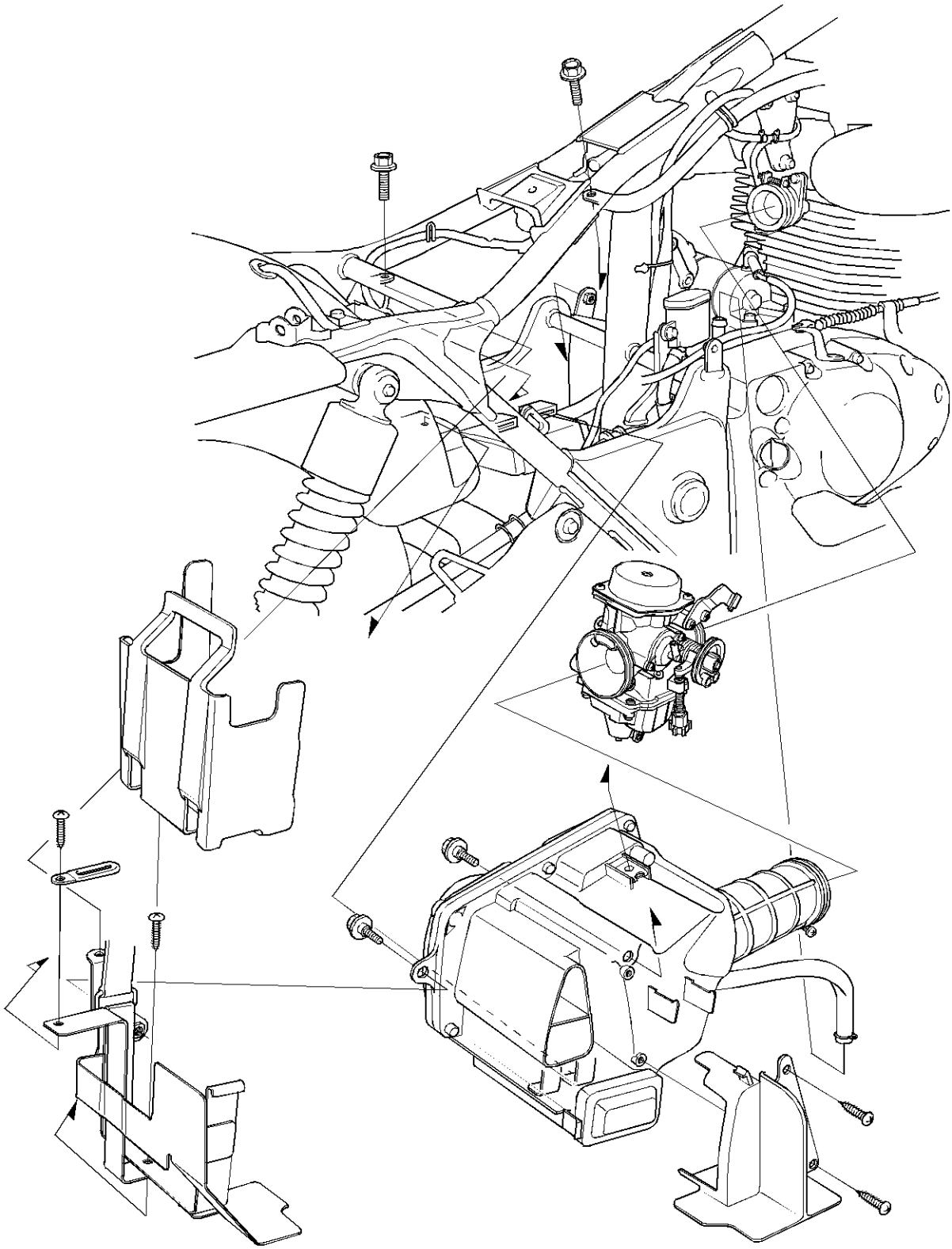
Install the oil pump and tighten the screws to the specified torque.

TORQUE: 1.0 N·m (1.0 kgf·m, 7 lbf·ft)

Install the engine oil filter rotor (page 9-12).

Install the right crankcase cover (page 9-15).





SERVICE INFORMATION

GENERAL

⚠ WARNING

- ***Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH OF CHILDREN.***
- ***If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.***
- ***Bending or twisting the control cable will impair smooth operation and could cause the cable to stick or bind, resulting in loss of vehicle control.***

- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where gasoline is stored can cause a fire or explosion.

CAUTION:

Be sure to remove the diaphragms before cleaning air and fuel passages with compressed air. The diaphragms might be damaged.

- For fuel tank removal and installation, see page 2-5.
- Before disassembling the carburetor, place an approved fuel container under the float chamber, loosen the drain screw and drain the carburetor.
- After removing the carburetor, cover the intake port of the cylinder head with shop towel to prevent any foreign material from dropping into the engine.
- When disassembling the fuel system parts, note the locations of the O-rings. Replace them with new ones on reassembly.
- The float chamber can be serviced with the carburetors combined.
- All hoses used in the evaporative emission control system are numbered for identification. When connectins one of these hoses, compare the hose number with the Vacuum Hose Routing Diagram Lebel, page 1-29.

SPECIFICATIONS

Unit: mm (in)

ITEM	SPECIFICATIONS
Carburetor identification number	VE3CA
Main jet	#132
Slow jet	#35
Pilot screw initial opening	2 1/8 turns out
Pilot screw final opening	1/4 turns out
Float level	18.5 mm (0.73 in)
Idle speed	1,400 ± 100 min^{-1}
Specified vacuum	290 mmHg (11.4 inHg)

TOOL

Carburetor float level gauge 07401 – 0010000

TROUBLESHOOTING

Engine Won't Start
- Too much fuel getting to the engine
  - — Air cleaner clogged
  - — Flooded carburetor
- Intake air leak
- Fuel contaminated/deteriorated
- No fuel to carburetor
  - — Fuel strainer clogged
  - — Fuel tube clogged
  - — Fuel valve stuck
  - — Float level misadjusted
  - — Fuel tank breather hole clogged

Lean Mixture
- Fuel jets clogged
- Float valve faulty
- Float level too low
- Fuel line restricted
- Carburetor air vent tube clogged
- Intake air leak
- Throttle valve faulty
- Vacuum piston faulty

Rich Mixture
- Float valve faulty
- Float level too high
- Air jets clogged
- Air cleaner contaminated
- Flooded carburetor

Engine Stalls, Hard To Start, Rough Idling
- Fuel line restricted
- Ignition malfunction
- Fuel mixture too lean/rich
- Fuel contaminated/deteriorated
- Intake air leak
- Idle speed misadjusted
- Float level misadjusted
- Fuel tank breather hole clogged
- Pilot screw misadjusted
- Slow circuit clogged
- Emission control system malfunction
  - — EVAP purge control valve
  - — Loose, disconnected or deteriorated hoses of the emission control system

Afterburn When Engine Braking Is Used
- Lean mixture in slow circuit
- Emission control system malfunction
  - — Pulse secondary air supply system faulty
  - — Loose, disconnected or deteriorated hoses of the emission control system

Afterburn Or Misfiring During Acceleration
- Ignition system faulty
- Fuel mixture too lean

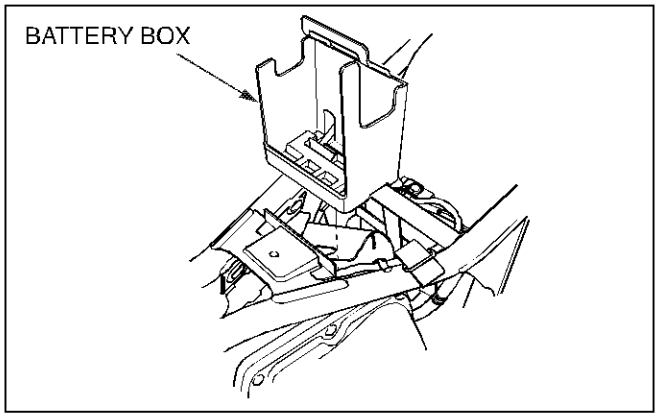
Poor Performance (Driveability) And Poor Fuel Economy
- Fuel system clogged
- Ignition malfunction
- Emission control system malfunction
  - — Loose, disconnected or deteriorated hoses of the emission control system

AIR CLEANER HOUSING

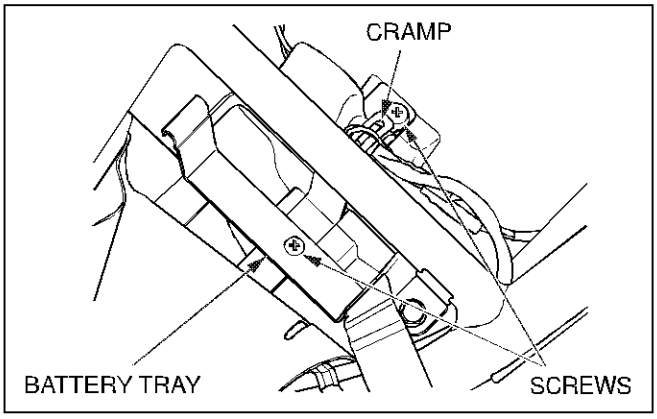
REMOVAL

Remove the folllowing:
— Seat (page 2-2).
— Side cover (page 2-2).
— battery (page 15-5)
— Starter relay (page 17-11)

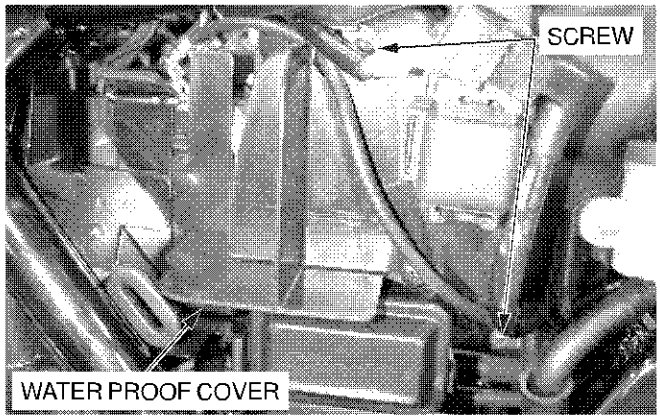
Remove the battery box.



Remove the screws, cramp and battery tray.

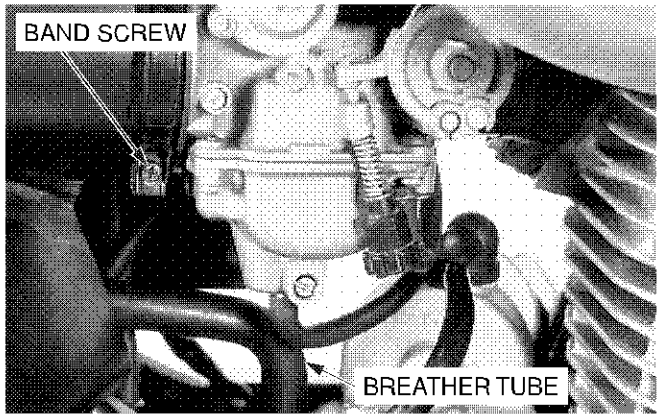


Remove the screws and water proof cover.

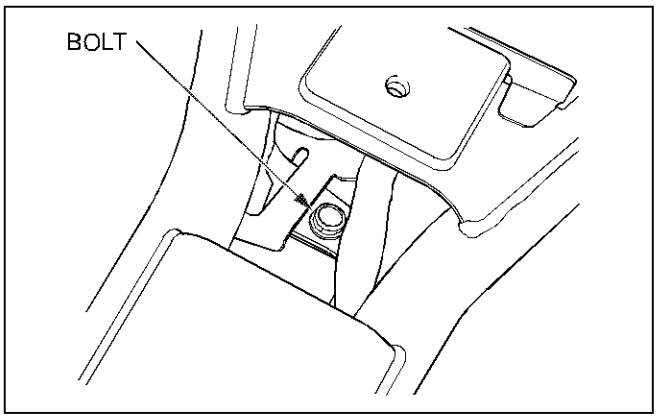


Loosen the air cleaner connecting tube screw.

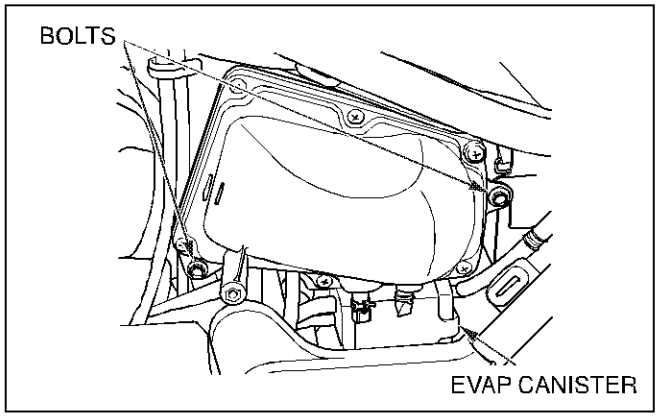
Disconnect the crankcase breather tube.



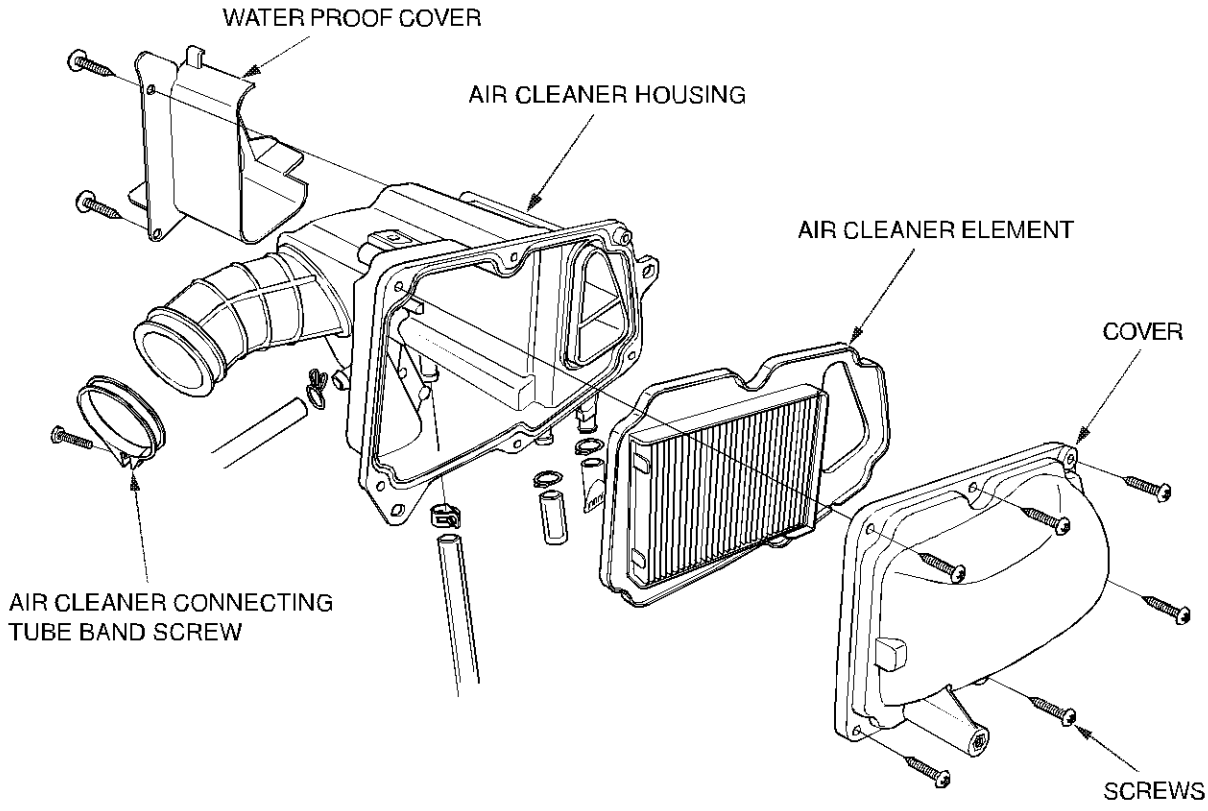
Remove the bolt from the air cleaner housing.



Remove the bolts.
Disconnect the connecting tube and remove the air cleaner housing.
Disconnect the EVAP canistter from air cleaner housing.

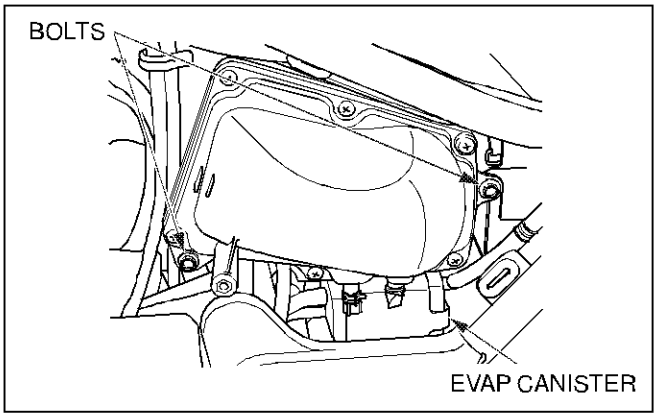


INSTALLATION

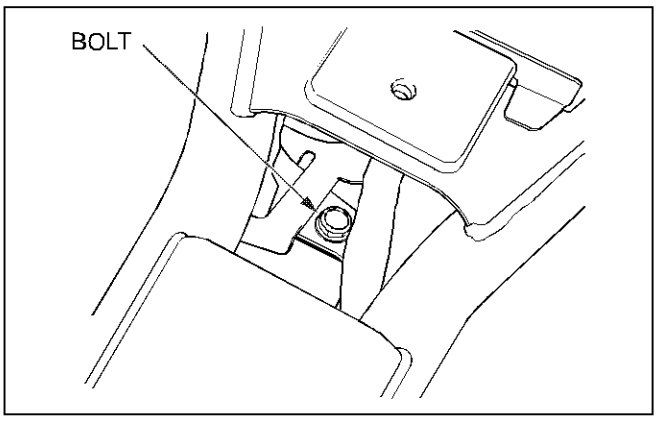


Install the air cleaner housing into the frame from the right side and connect the connecting tube to the carburetor.
Connect the EVAP canister.

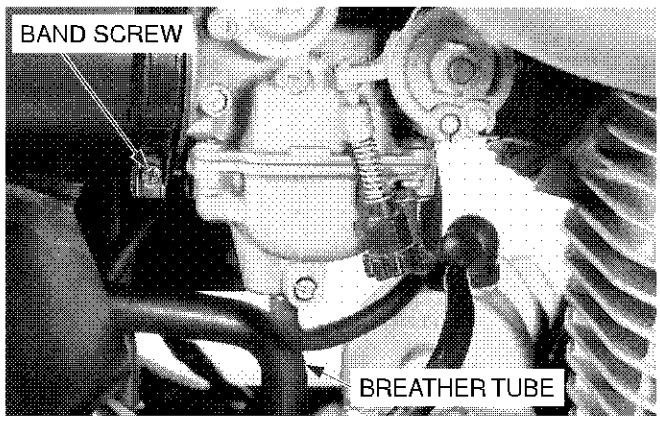
Install and tighten the bolts .



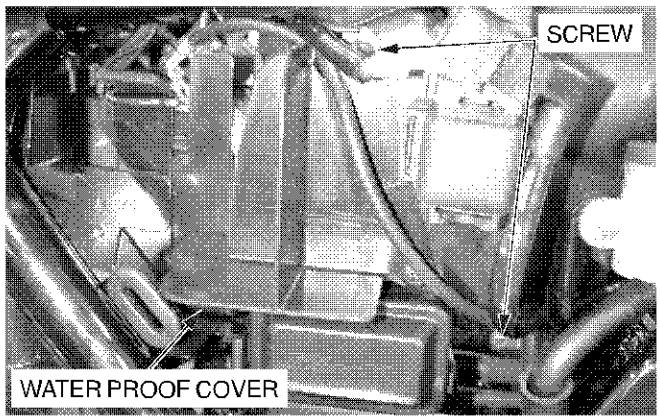
Install and tighten the bolt to the air cleaner housing.



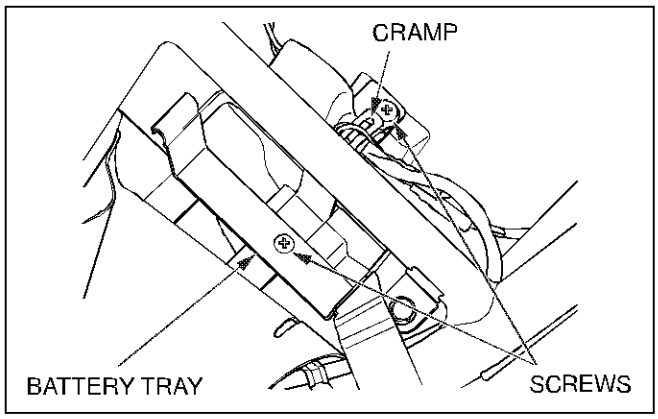
Tighten the connecting tube band screw.
Connect the crankcase breather tube.



Install the water proof cover and tighen the screws.

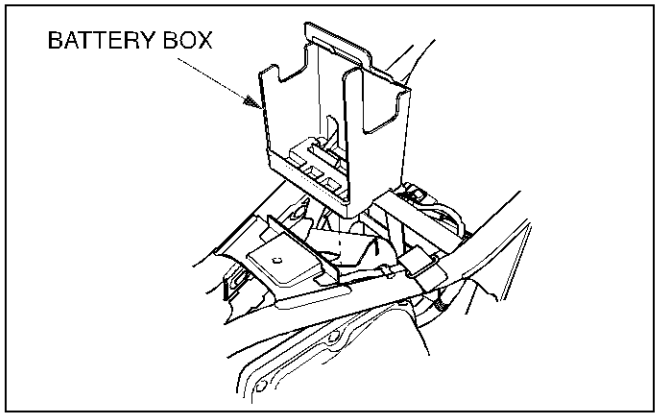


Install the battey tray.
Install the cramp, screws and tighen it.



Install the battery box.

Install the following:
— Battery (page 15-5)
— Starter relay (page 17-11)
— Side cover (page 2-2).
— Seat (page 2-2).

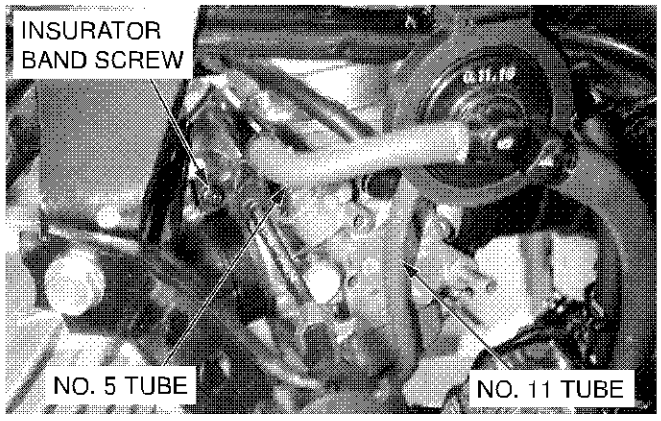


CARBURETORREMOVAL

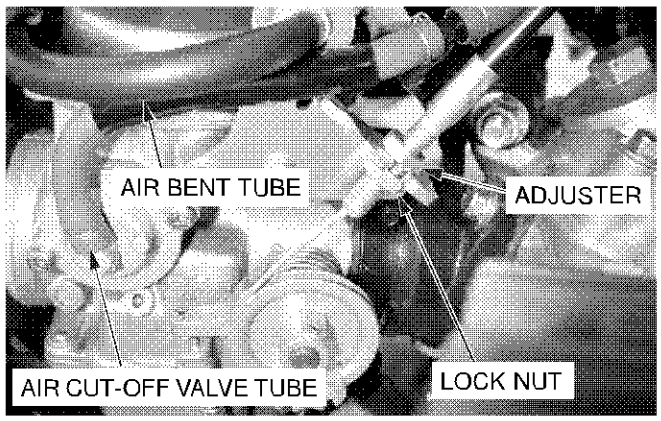
Remove the fuel tank (page 2-5).

Disconnect the NO.5 tube, NO.11 tube, fuel tube, air vent tube and drain tube.

Loosen the insurator band screw.
Loosen the connecting tube band screw (page 5-4).

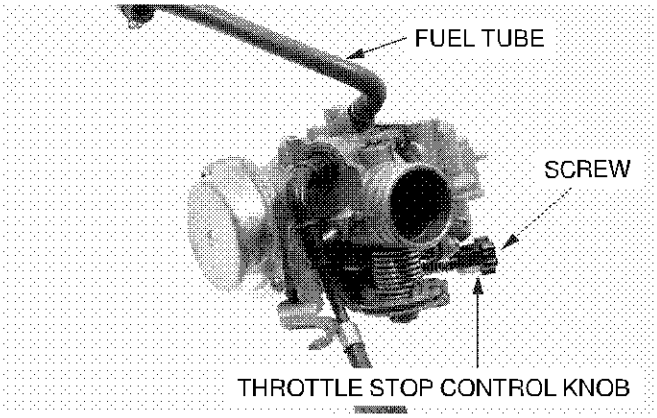


Disconnect the air cut-off valve tube, air vent tube and drain tube.
Loosen the throttle cable adjuster lock nuts and adjuster.
Disconnect the throttle cable from the throttle drum and remove the caburetor body.

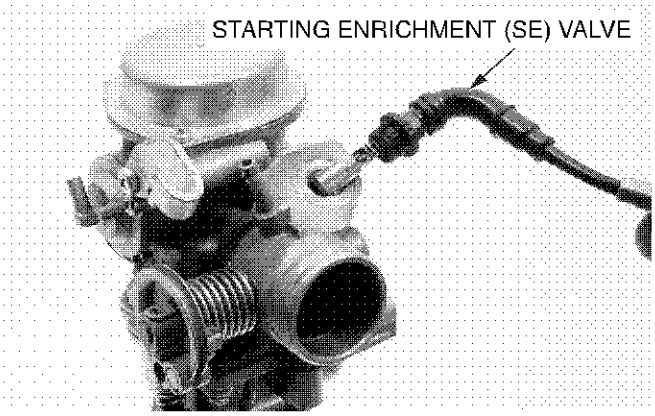


CARBURETOR DISASSEMBLY

Disconnect the fuel tube.
Remove the throttle stop control knob and screw.



Loosen the valve nut and remove the starting enrichment (SE) valve.

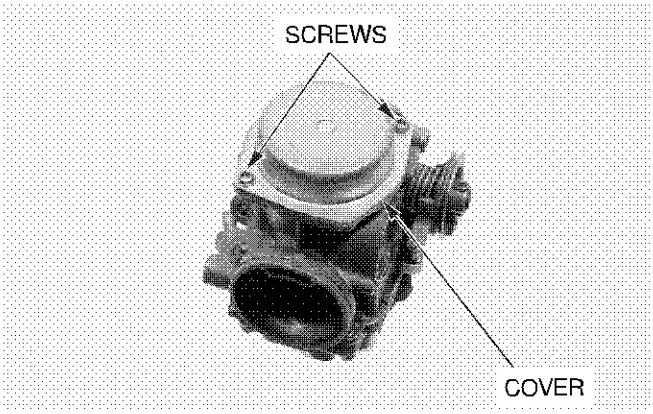


VACUUM CHAMBER

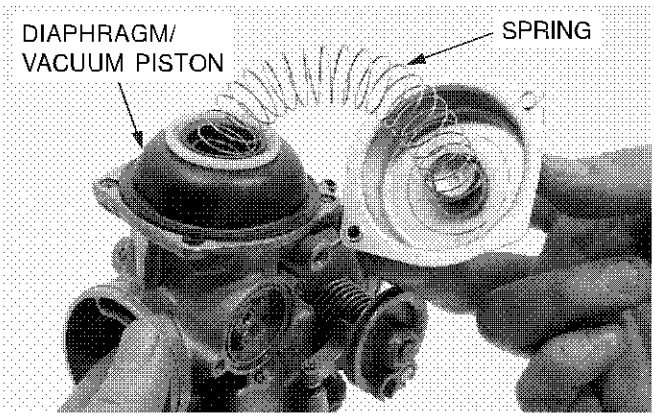
Remove the two screws and vacuum chamber cover.

NOTE:

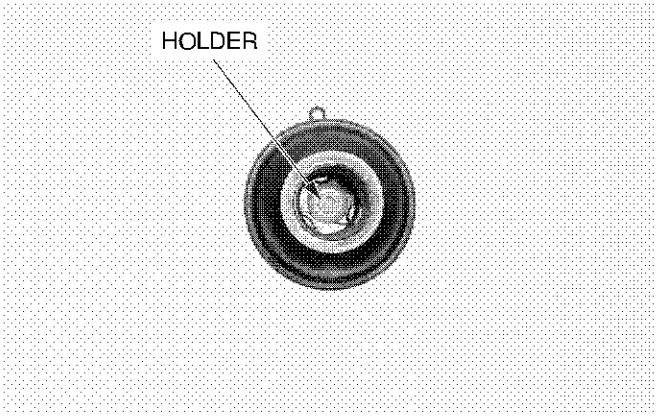
As the compression spring is very long, it will jump out of the carburetor when the cover is removed.



Remove the compression spring and diaphragm/vacuum piston from the carburetor body.



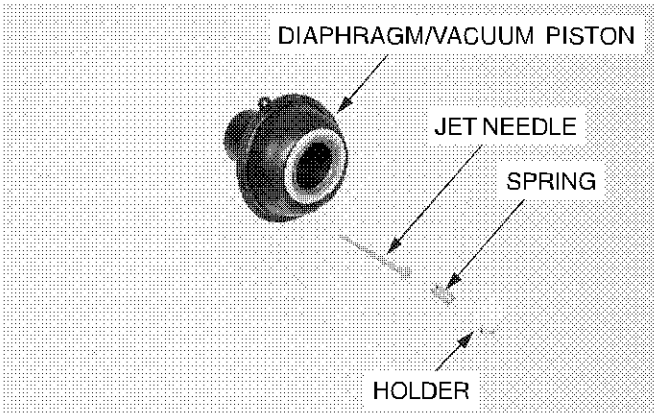
Turn the needle holder counterclockwise while pressing it in and remove the holder flanges from the piston grooves.
Remove the needle holder, spring and jet needle from the vacuum piston.



Check the following:
— jet needle for stepped wear
— vacuum piston for wear or damage
— diaphragm for pin holes, deterioration or damage

NOTE:

Air can leak out of the vacuum chamber if the diaphragm is damaged in any way, even if only a pin hole.

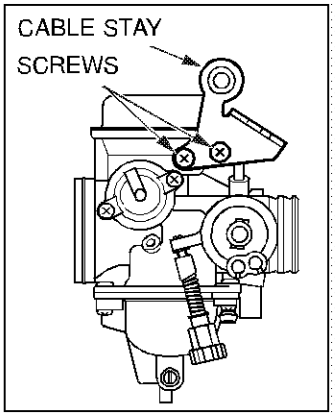


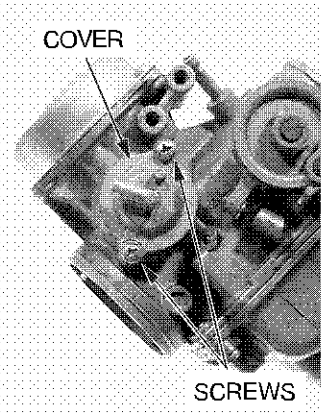
AIR CUT-OFF VALVE

Remove the two screws and clamp while holding the valve cover.
Remove the valve cover, spring and diaphragm.

NOTE:

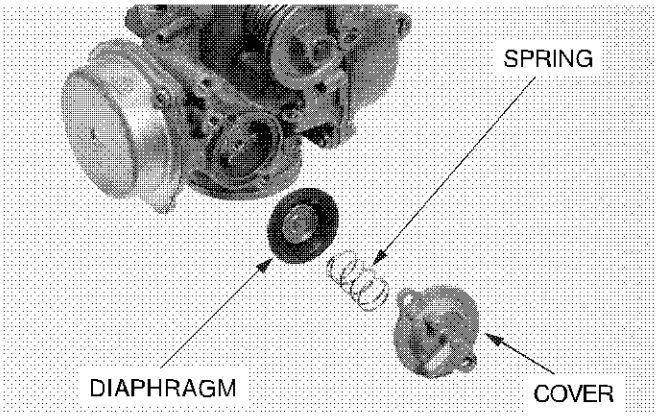
The air cut-off cover is under spring pressure.





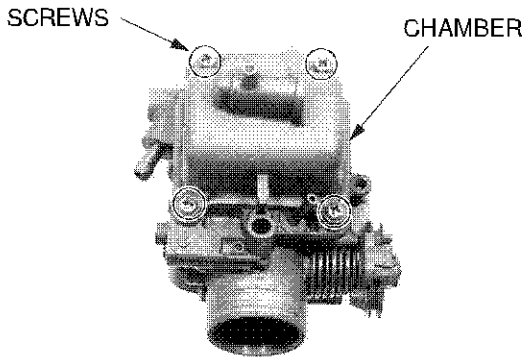
Remove the spring and air cut-off valve/diaphragm.

Check the following:
— diaphragm for pin holes, deterioration or damage
— spring for deterioration
— needle of diaphragm for wear
— air passages for clogging



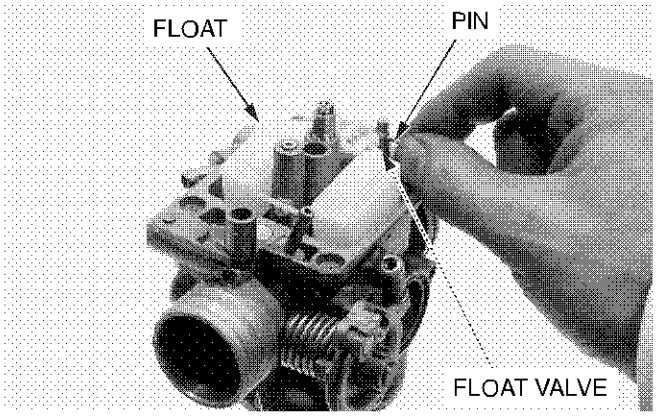
FLOAT CHAMBER

Remove the four screws and float chamber.

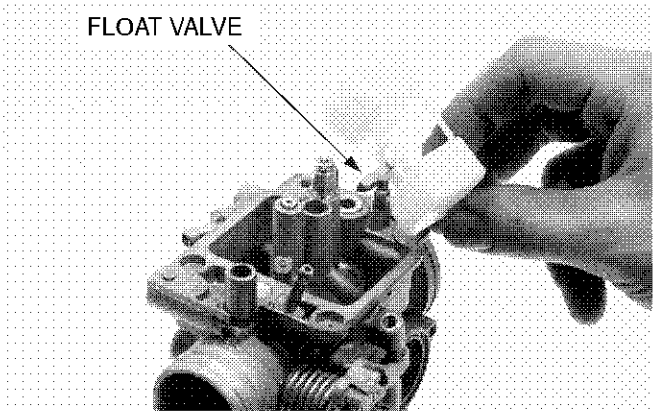


Remove the float pin, float and float valve.

Check the float for damage or fuel in the float.



Check the following:
— valve and valve seat for scoring, scratches, clogging or damage.
— tip of the float valve, where it contacts the valve seat, for stepped wear or contamination.
— operation of the float valve.



Remove the main jet, needle jet holder, needle jet and slow jet.

CAUTION:

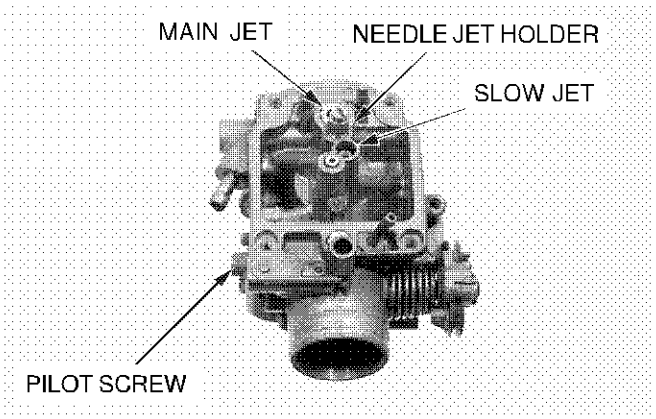
Handle the jets with care. They can easily be scored or scratched.

Turn the pilot screw in and carefully count the number of turns until it seats lightly. Make a note of this to use as a reference when reinstalling the pilot screw.

CAUTION:

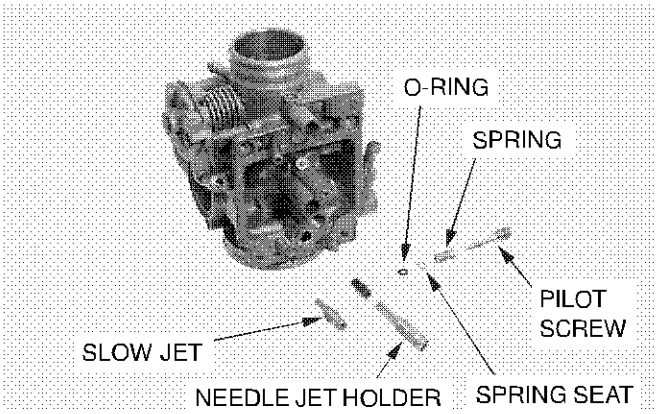
Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

Remove the pilot screw, spring, washer and O-ring.



Check each jet for wear or damage.
Check the pilot screw for wear or damage.

Clean the jets with cleaning solvent and blow open with compressed air.



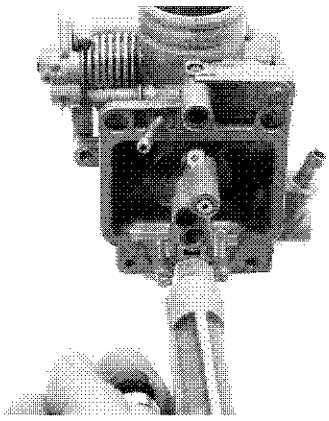
CARBURETOR CLEANING

Remove the following:
— diaphragm/vacuum piston
— main jet, needle jet holder, needle jet and slow jet
— pilot screw
— air cut-off valve

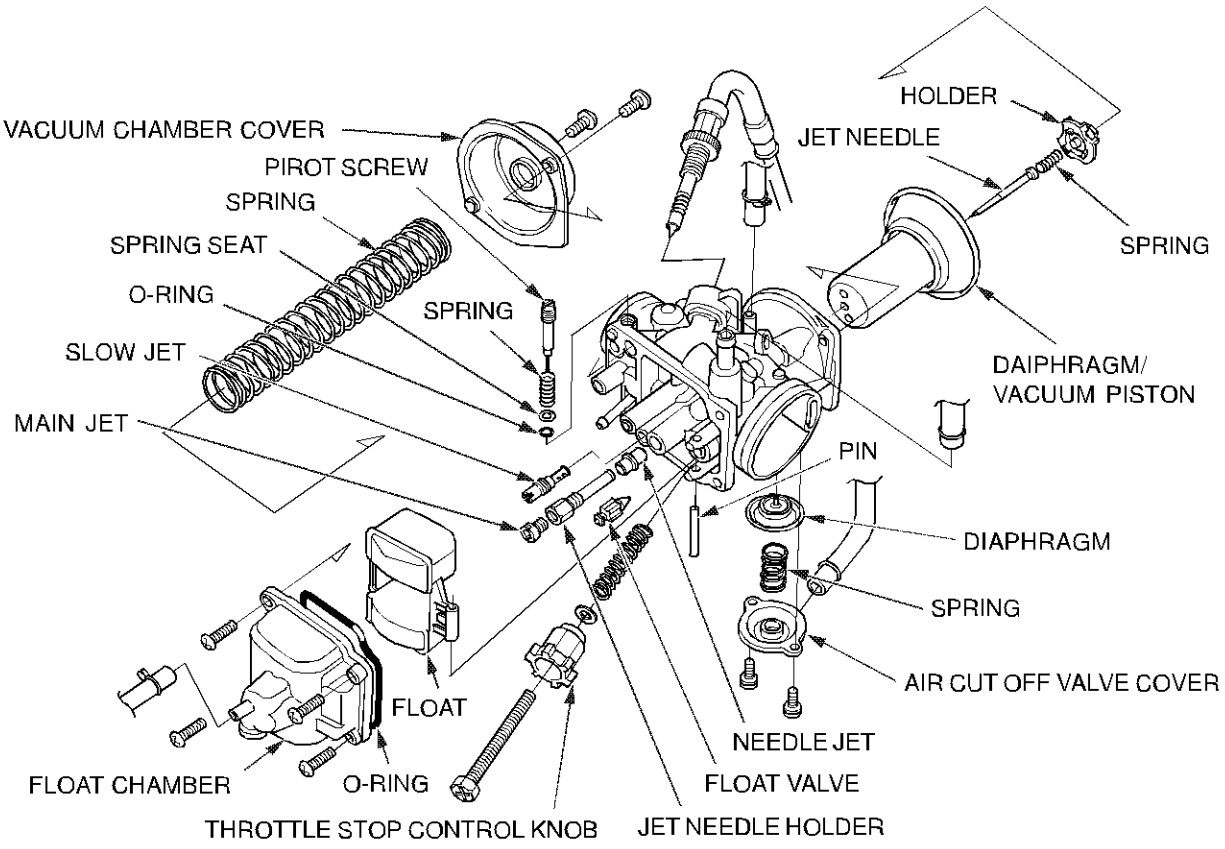
CAUTION:

Cleaning the air and fuel passages with a piece of wire will damage the carburetor body.

Blow open all air and fuel passages in the carburetor body with compressed air.



CARBURETOR ASSEMBLY



FLOAT CHAMBER

Install the pilot screw and return it to its original position as noted during removal.
Perform the pilot screw adjustment if new pilot screw is installed (page 5-16).

CAUTION:

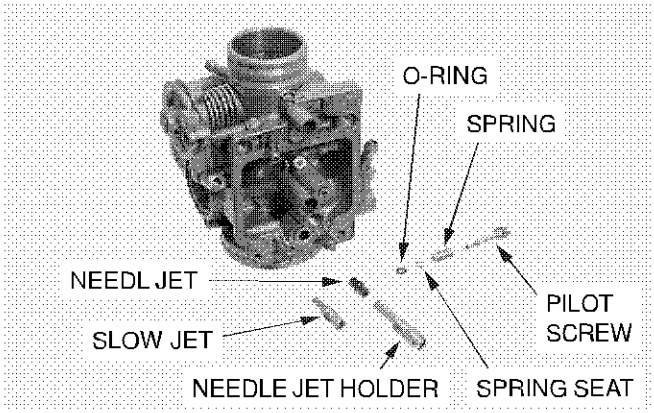
Damage to pilot screw seat will occur if the pilot screw is tightened against the seat.

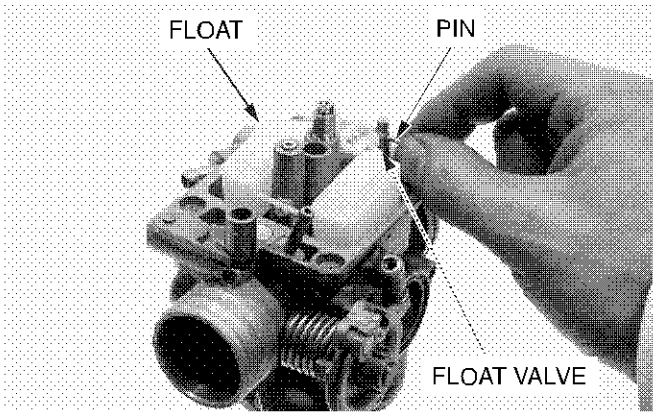
Install the needle jet, needle jet holder, main jet and slow jet.

CAUTION:

Handle the jets with care. They can easily be scored or scratched.

Hang the float valve onto the float arm lip.
Install the float valve, float and float pin.





FLOAT LEVEL INSPECTION

NOTE:

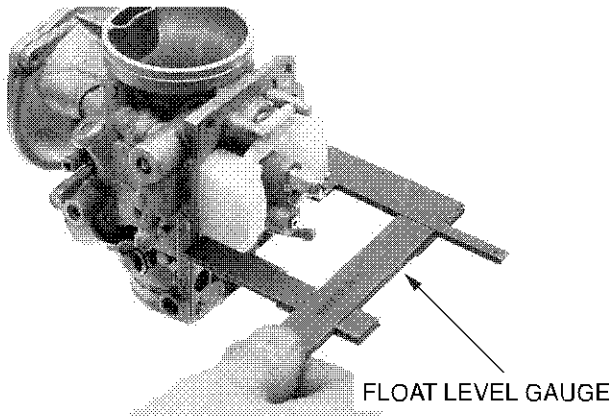
Set the float level gauge so that it is perpendicular to the float chamber face at the highest position of the float.

With the float valve seated and the float arm just touching the valve, measure the float level with the float level gauge.

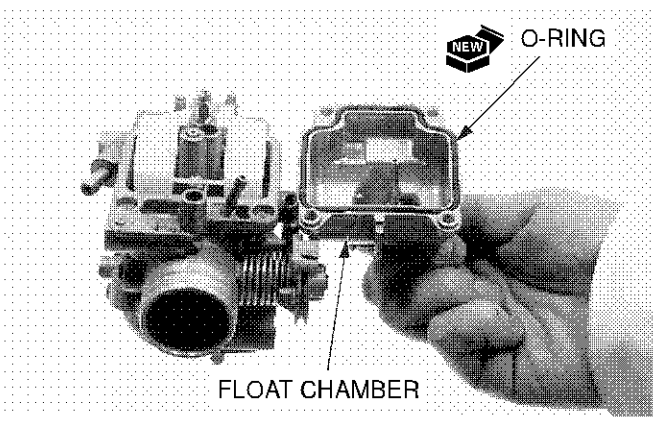
TOOL:
Carburetor float level gauge 07401 – 0010000

FLOAT LEVEL: 18.5 mm (0.73 in)

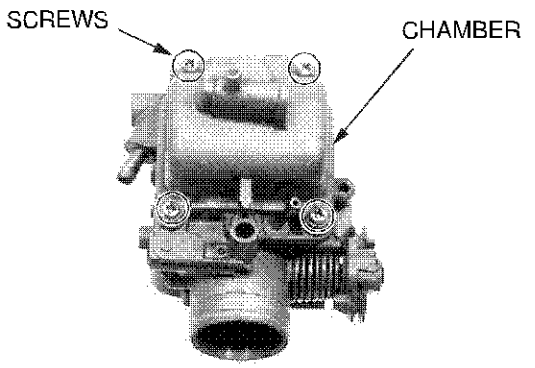
The float cannot be adjusted.
Replace the float assembly if the float level is out of specification.



Install a new O-ring into the groove in the float chamber.

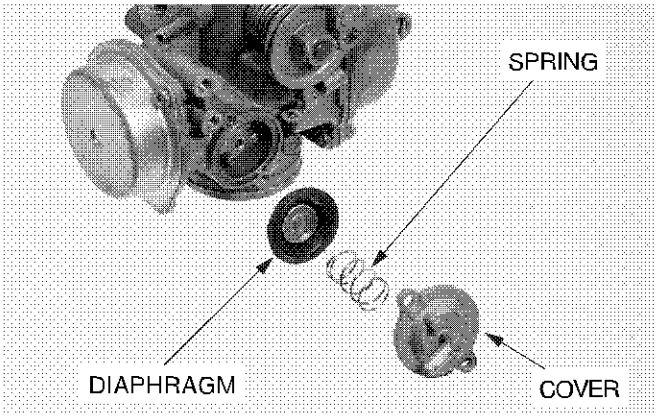


Install the float chamber and tighten the screws.

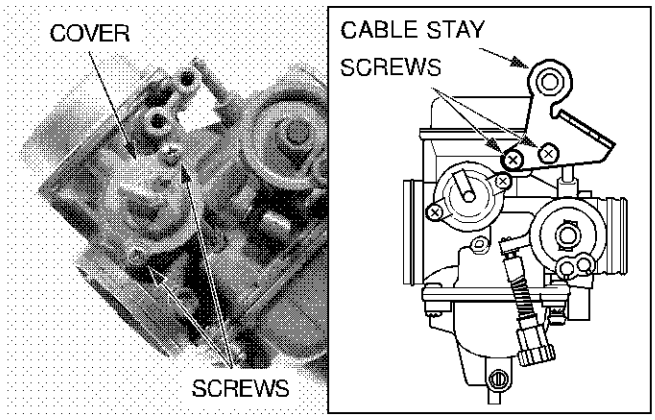


AIR CUT-OFF VALVE

Install the diaphragm and spring. Install and hold the valve cover, being careful not to pinch the diaphragm.

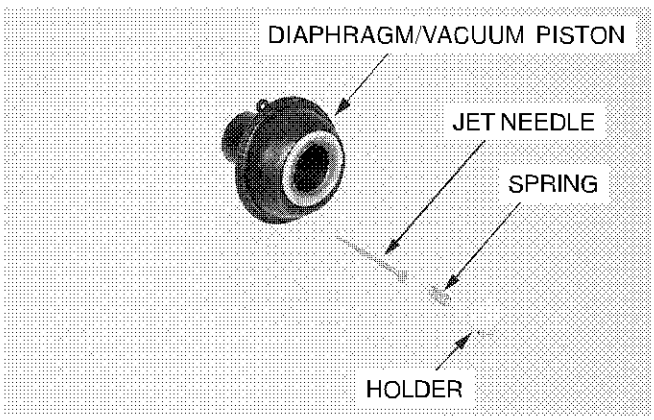


Set the in the position as shown and tighten the two screws.

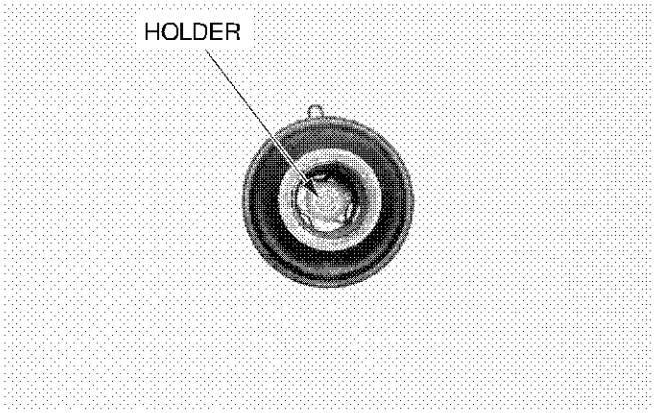


VACUUM CHAMBER

Install the jet needle into the vacuum piston.
Install the spring onto the needle holder and set the needle holder into the piston.



Turn the needle holder clockwise while pressing it until it locks. Holder flanges and piston grooves should be fitted after turning.

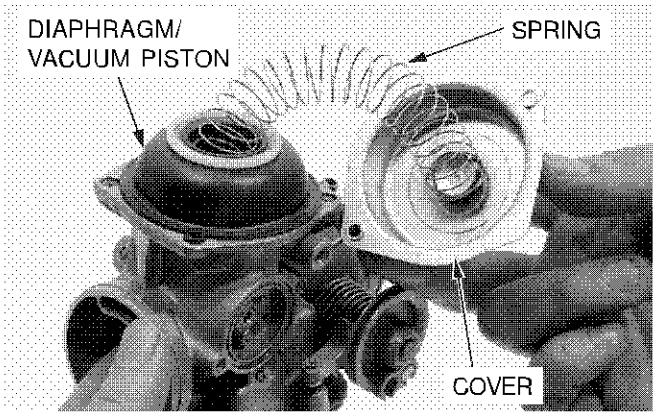


Install the diaphragm/vacuum piston into the carburetor body.

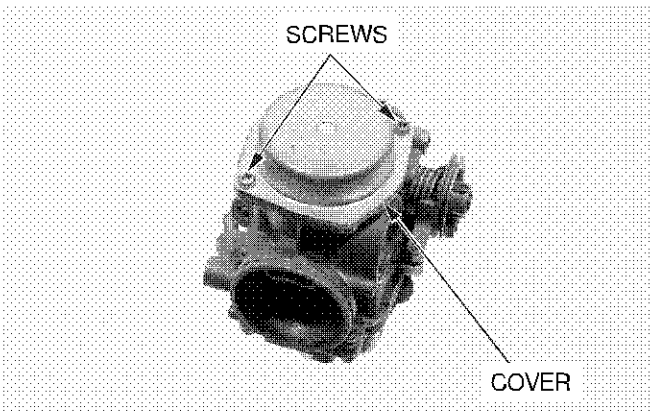
Life the bottom of the piston with your finger to set the diaphragm rib in the groove in the carburetor body, and install the spring and vacuum chamber cover.

CAUTION:

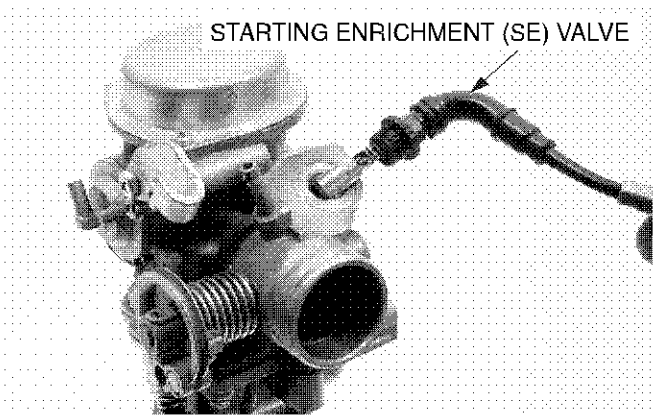
Be careful not to pinch the diaphragm under the chamber cover.



Install and tighten the four screws securely.

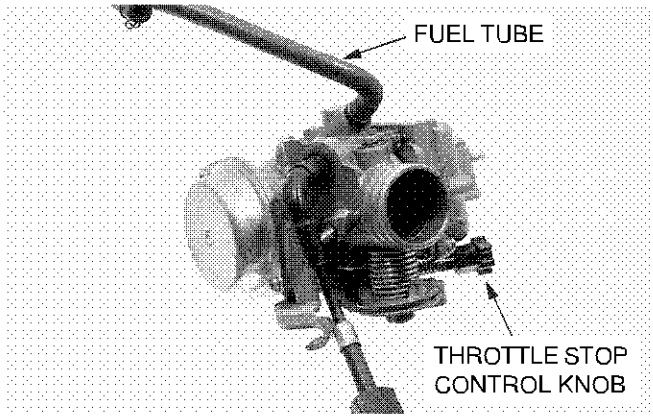


Install the starting enrichment (SE) valve and tighten the valve nut.



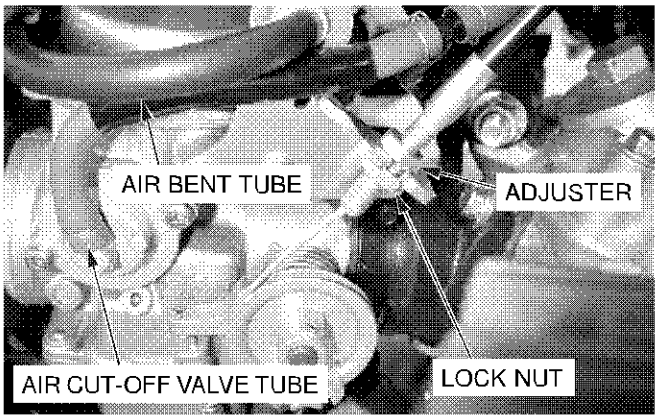
Install the throttle stop control knob.

Install the fuel tube.



CARBURETOR INSTALLATION

Connect the carburetor body to the insulator and connecting tube.
Install the throttle cable to the throttle drum.
Install the adjusters to the stay.
Connect the air cut-off valve, air vent tube and drain tube.

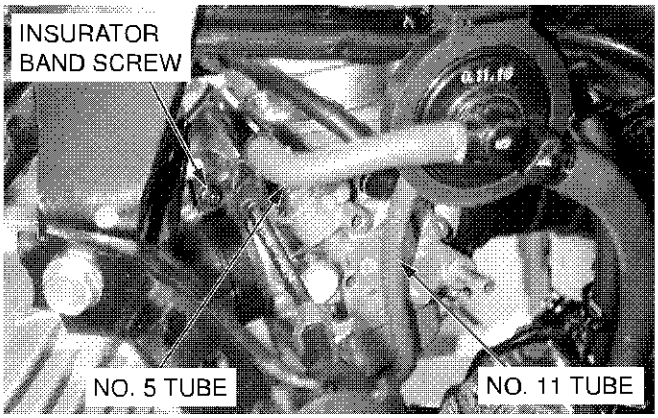


Tighten the insurator band screw and connecting tube band screw.

Connect the fuel tube, NO.5 and NO.11 tube and fuel tube.

Adjust the throttle grip free play (page 3-5)

Install the following:
— fuel tank (page 2-5).



STARTING ENRICHMENT (SE) VALVE

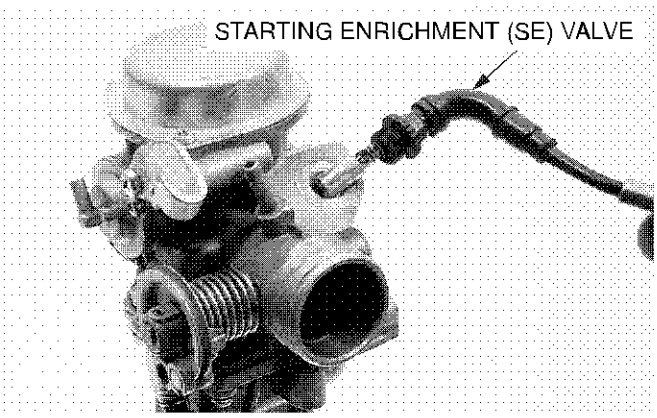
Remove the carburetor (page 5-7)

Loosen the valve nut and remove the starting enrichment (SE) valve.

Check the starting enrichment (SE) valve for scoring, scratches or wear.
Check the seat at the tip of the SE valve for stepped wear.
Replace the SE valve set if necessary.

Installation is reverse order of removal.

After the installation, check for the smooth operation of the SE valve knob (page 3-6).



PILOT SCREW ADJUSTMENT

IDLE DROP PROCEDURE

⚠ WARNING

- ***If the engine must be running some work, make sure the area is well-ventilated. Never run the engine in an enclosed area.***
- ***The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death.***

NOTE:

- The pilot screw is factory pre-set, Adjustment is not necessary unless the carburetor is overhauled or a new pilot screw is installed.
- Use a tachometer with graduations of 50 rpm or smaller that will accuratery indicate a 50 rpm change.

1. Turn the pilot screw with the pilot screw wrench clockwise until it seats lightly, and then back it out to the specification given. This is an intial setting prior to the final pilot screw adjustment.

CAUTION:

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

INITIAL OPENING: 2 1/8 turns out

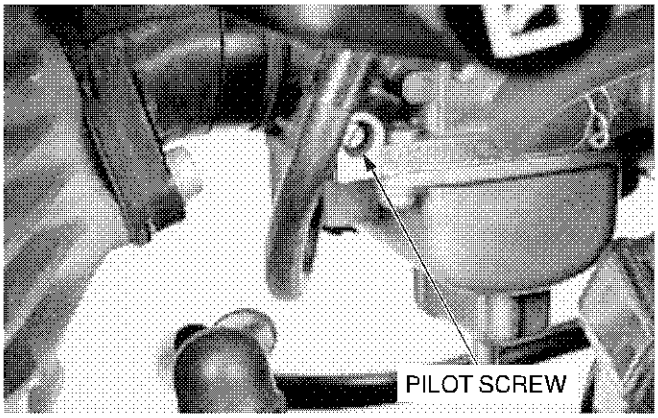
2. Warm the engine up to operating temperature. Stop and go riding for 10 minutes is sufficient.
3. Stop the engine and connect a tachometer according to the tachometer manufacturer's instructions.
4. Start the engine and adjust the idle speed with the throttle stop control knob.

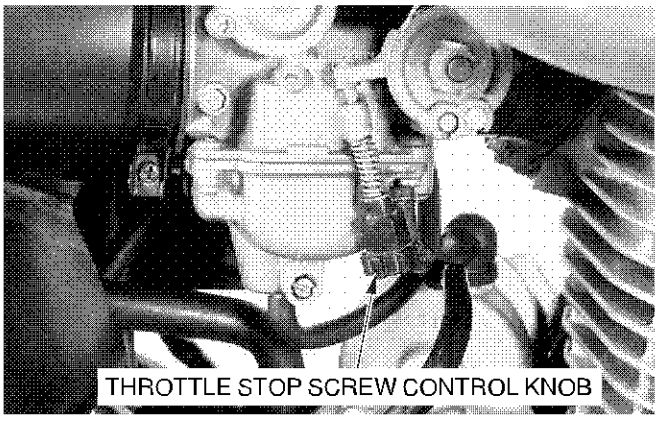
IDLE SPEED: 1,400 ± 100 min^{-1} (rpm)

5. Turn the pilot screw in or out slowly to obtain the highest engine speed.
6. Lightly open the throttle 2 or 3 times, then adjust the idle speed with the throttle stop screw.
7. Turn the pilot screw in until the engine speed drops by 50 min^{-1} (rpm)

FINAL OPENING: 1/4 turns out

8. Readjust the idle speed with the throttle stop screw.



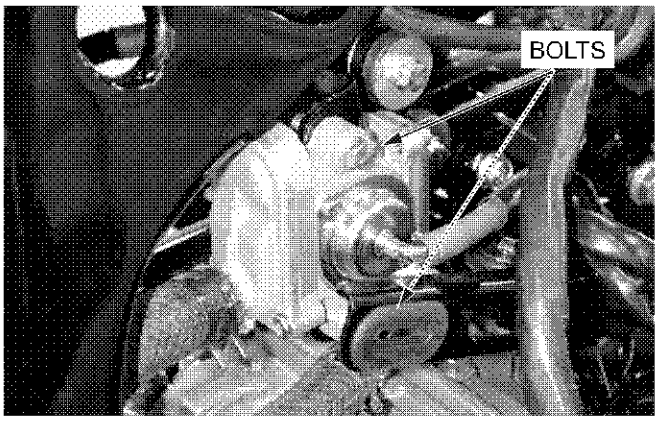


SECONDARY AIR SUPPLY SYSTEM

PAIR CONTROL VALVE REMOVAL/ INSTALLATION

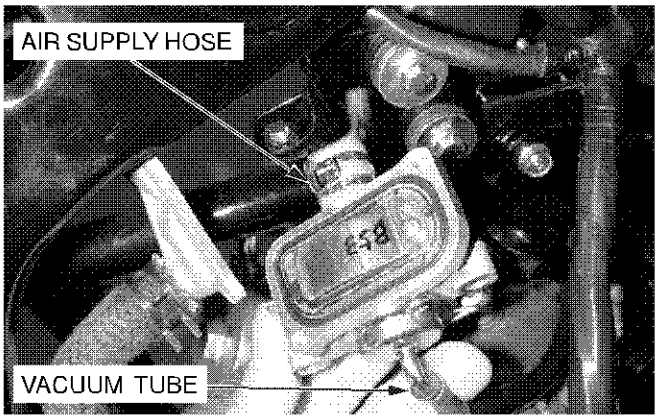
Remove the following:
— Font side cover (page 2-3)
— Fuel tank (page 2-5)

Remove the PAIR control mount bolts.



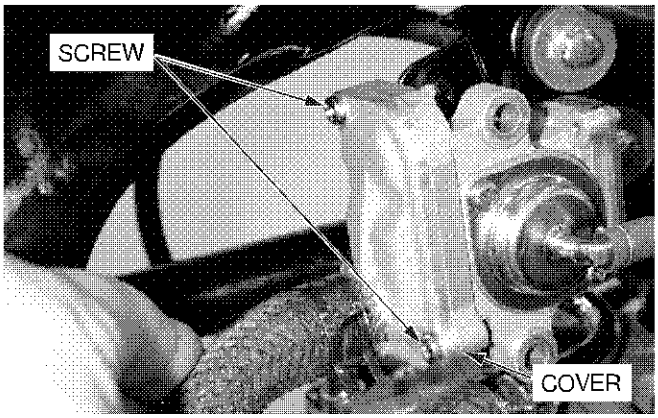
Remove the PAIR check valve cover (see below).
Disconnect the air supply hose and vacuum tube from the PAIR control valve.

Installation is in the revase order of removal.



PAIR CHOCK VALVE REMOVAL/ INSTALLATION

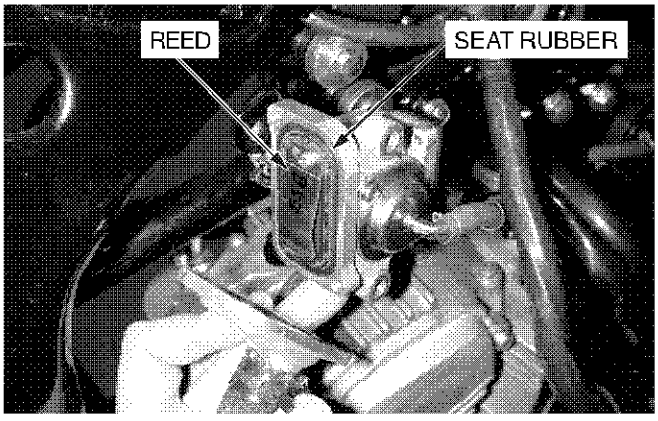
Remeve the PAIR cntrol valve (see avobe).
Remove the bolts, pulse secondary air injection (PAIR) check valve cover from the PAIR control valve body.



Check the reed for damage or fatigue.
Replace the PAIR check valve if the seat rubber is cracked, deteriorated or damaged, or if there is clearance between the reed and seat.

Install the PAIR check valve and cover.

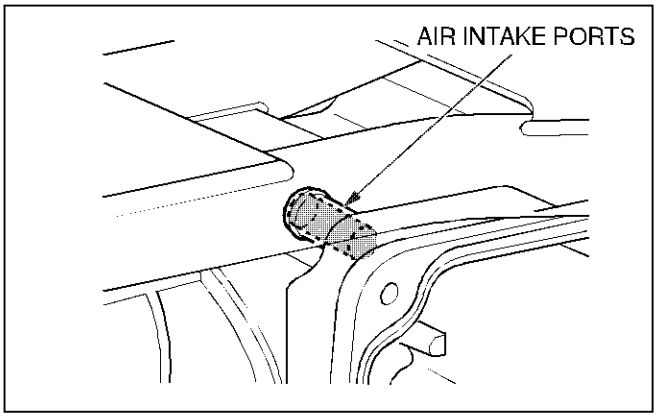
Install and tighten the bolts securely.



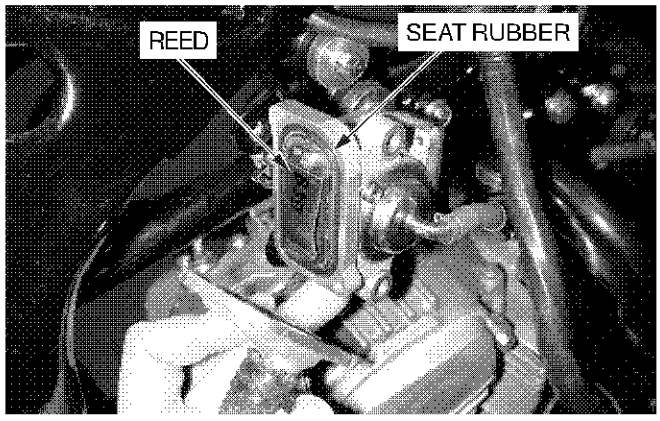
SYSTEM INSPECTION

Start the engine and warm it up to normal operating temperature.
Remove the air cleaner element (page 3-6).

Check that the secondary air intake ports are clean and free of carbon deposits.



Remove the PAIR check valve cover (page 5-17).
Check the PAIR check valve if the port is corbon fouled.



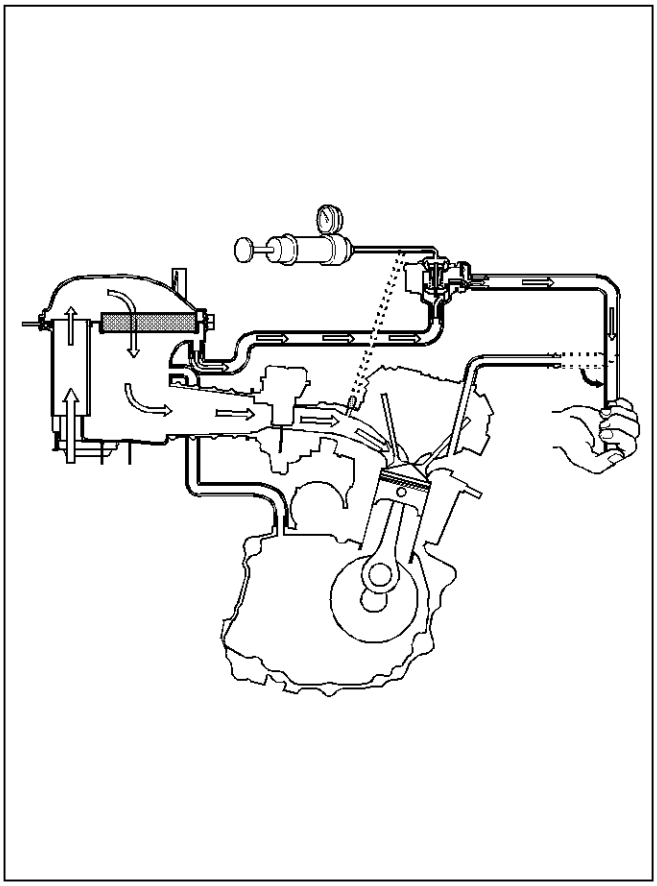
Disconnect the PAIR control valve vacuum tube.
Connect a vacuum pump to the PAIR control valve vacuum tube.

Start the engine and open the throttle slightly to be certain that air is sucked in through the air supply hose.
If the air is not drawn in, check the supply hoses for clogging.

With the engine running, gradually apply vacuum to the PAIR control vale vacuum tube.
Check that the air supply hose stops drawing air, and that the vacuum does not bleed.

SPECIFIED VACUUM: 290 mmHg (11.4 in Hg)

If the air drawn in, or if the specified vacuum is not maintained, install a new PAIR control valve.
If afterburn occurs on deceleration, even when the secondary air supply system is normal, check the air cut-off valve.

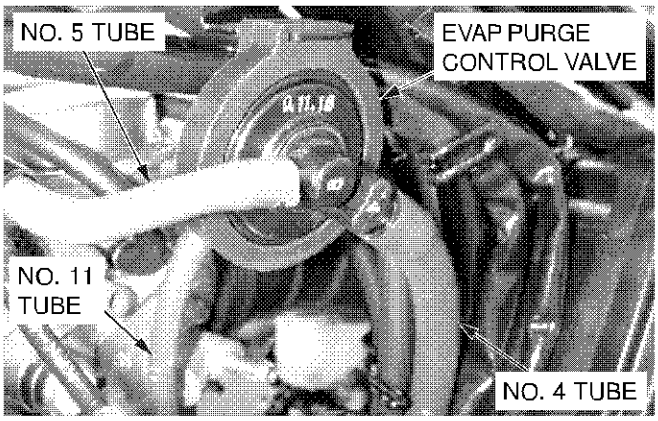


EVAPRORATIVE EMISSION CONTROL SYSTEM

EVAPORATIVE (EVAP) PURG CONTROL VALVE REMOVAL/INSTALLATION

Remove the left side cover (page 2-2)
Disconnect the NO.4 tube, NO.5 tube and NO.11 tube.
Remove the EVAP page control valve.

Installation is in the reverse order of removal.

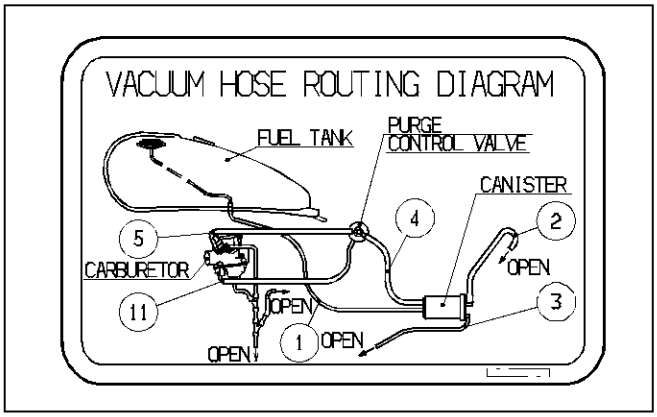


INSPECTION

NOTE:

The EVAP purge control valve should be inspected if not restart is difficult.

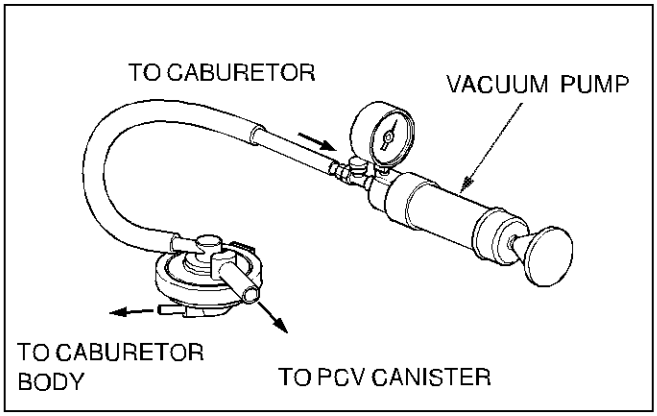
Check all fuel tank, EVAP purge control valve, and EVAP canister hoses to be sure they are not kinked and are securely connected.
Replace any hose that shows signs of damage or deteior-ation.



Connect a vacuum pump to the 8 mm (0.31 in) I.D. hose that goes to the carburetor, Apply the specified vacuum to the EVAP purge control valve.

SPECIFIED VACUUM: 30 mm (1.2 in) Hg

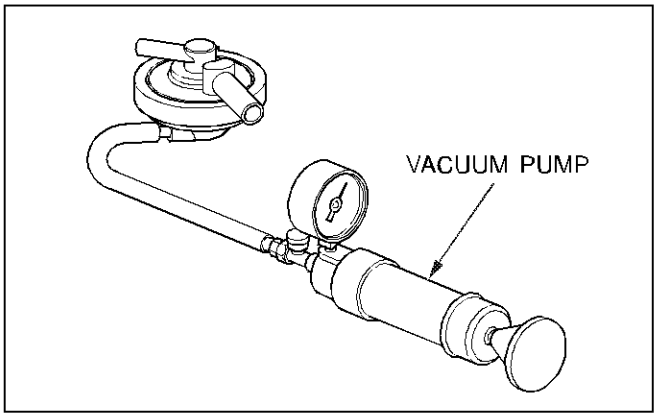
The specified vacuum should be maintained.
Replace the EVAP purge control valve if vacuum is not maintained.



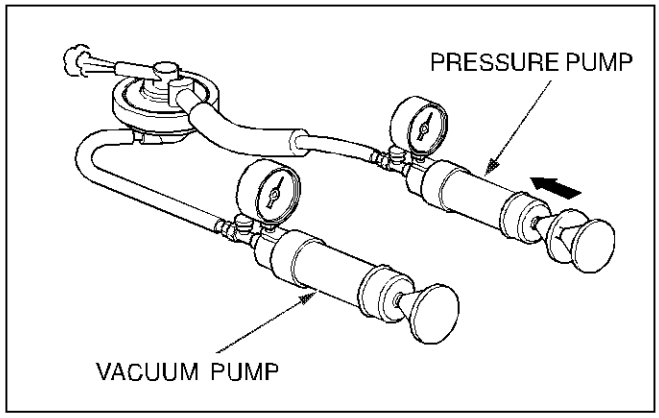
Remove the vacuum pump and connect it to the vacuum hose that goes to the carburetor body.
Apply the specified vacuum to the EVAP purge control valve.

SPECIFIED VACUUM: 250 mm (9.8 in) Hg

The specified vacuum should be maintained.
Replace the EVAP purge contol valve if vacuum is not maintained.



Connect a pressure pump to the 8 mm (0.31 in) I.D. hose that goes to the evaporative emission canister. While applying the specified vacuum to the EVAP purge control valve hose that goes to the carburetor body, pump air through the evaporative emimssion canister hose. Air should flow through the EVAP purge control valve and out the hose that goes to the carburetor body.
Replace the EVAP purge control valve if air does not flow out.



CAUTION:

To prevent damage to the EVAP purge control valve, do not use high air pressure sources, Use a hand operated air pump only.

Remove the pumps, install the EVAP purge contorol valve on its mount, route and reconnect the hose according to the routing label.

CANISTER

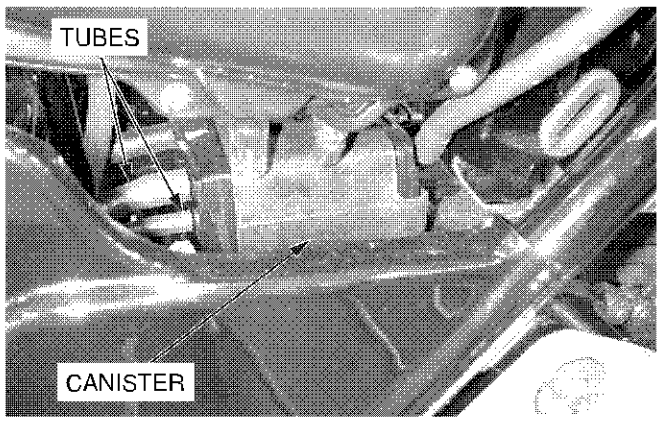
REMOVAL/INSTALLATION

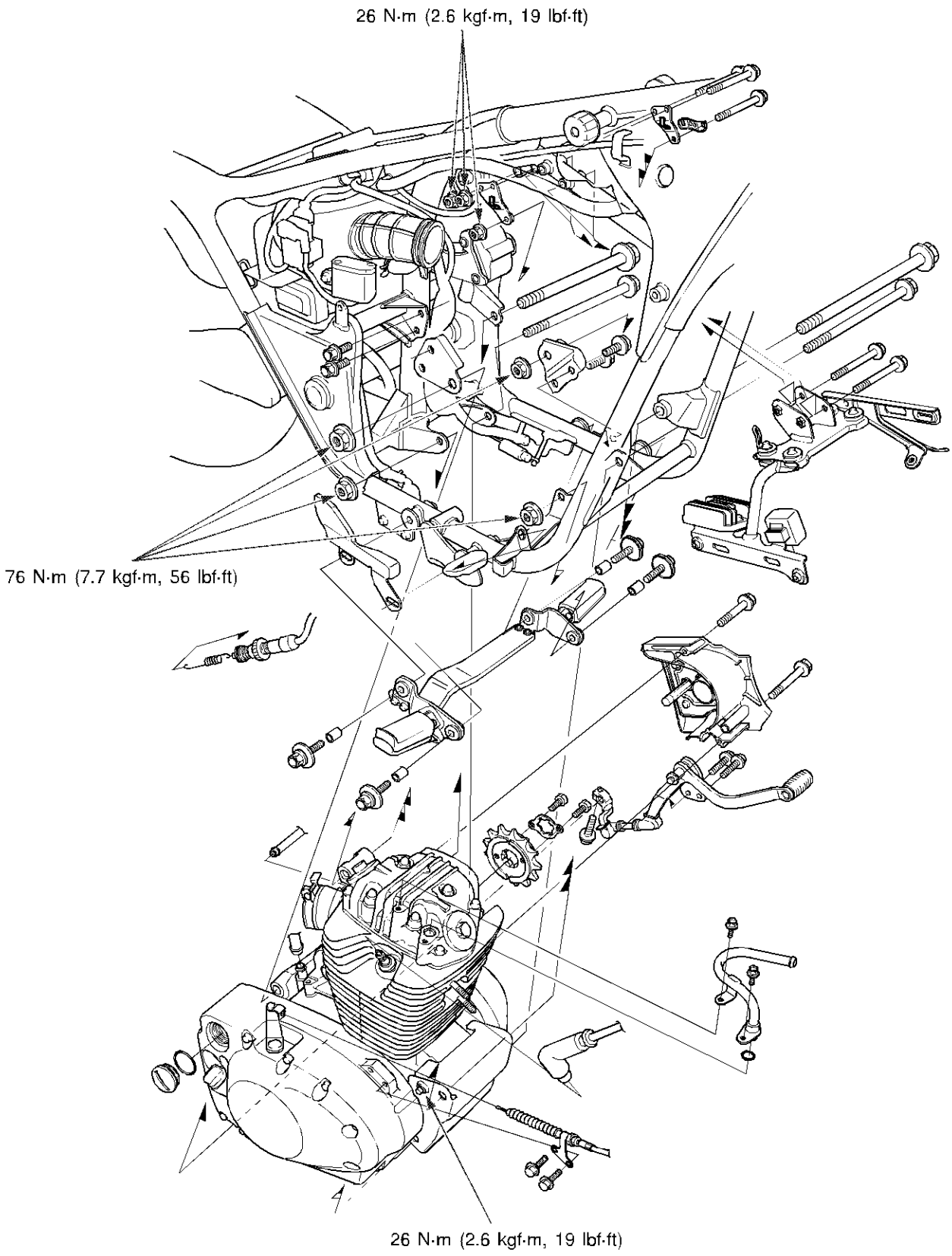
Remove the fuel tank (page 2-5)

Disconnect the tubes from the canister.
Remove the air cleaner housing (page 5-5).

Pull out the canister from the air cleaner.
Remove the canister mount rubber from the canister.

Installation is in the reverse order of removal.




26 N·m (2.6 kgf·m, 19 lbf·ft)
76 N·m (7.7 kgf·m, 56 lbf·ft)
26 N·m (2.6 kgf·m, 19 lbf·ft)

6. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION

GENERAL

- A hoist or equivalent is required to support the motorcycle when removing and installing the engine.
- A floor jack or other adjustable support is required to support and maneuver the engine.
- When removing/installing the engine, tape the frame around the engine beforehand for fame protection.
- The following components can be serviced with the engine installed in the frame.
  — Oil pump (section 4)
  — Carburetor (section 5)
  — Clutch/gearshift linkage (section 9)
  — Alternator (section 10)
  — Ignition pulse generator (section 16)
  — Starter motor (section 17)

- The following components require engine removal for service.
  — Camsproket, camshaft (section7)
  — Cylinder head (section 7)
  — Cylinder (section 8)
  — Cranksaft/transmisson (section 11)

  The following components must be removed before removing the engine.
  — Front side cover (section 2)
  — Exhaust pipe/muffler (section 2)
  — Spark plug (section 3)
  — Carburetor (section 5)
  — Crankcase breather tube (section 5)
  — Clutch cable (section 9)
  — Alternator/Neutral switch connector (section 10)
  — Exciter coil line connector (section 16)
  — Pulse generator connector (section 16)
  — Starter motor wire (section 17)

- After engine installation, adjust the following.
  — Clutch cable (page 3-19)
  — Rear brake light swtich (page 3-19)
  — Drive chain (page 3-15)
  — Throttle cable (page 3-4)
  — Engine oil level (page 3-10)

SPECIFICATIONS

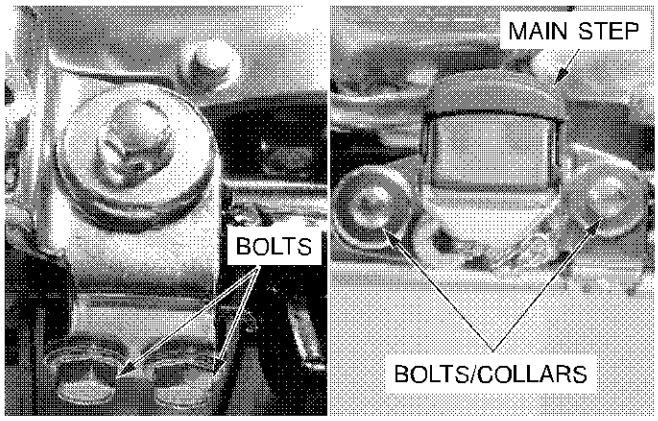
ITEM	SPECIFICATIONS
Engine dry weight	35 kg (77.1 lbs)
Engine oil capacity at disassembly	1.2 liter (1.3 US qt, 1.1 Imp qt)

TORQUE VALUES

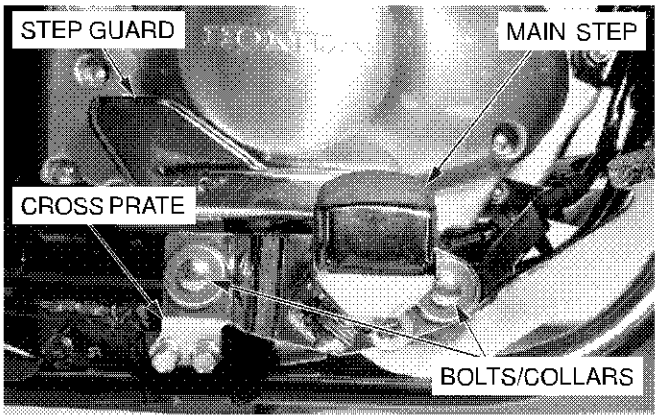
Upper engine hanger bracket bolt/nut	26 N·m (2.6 kgf·m, 19 lbf·ft)
Front engine hanger bracket bolts/nuts	76 N·m (7.7 kgf·m, 56 lbf·ft)
Engine hanger bracket bolt/nut	26 N·m (2.6 kgf·m, 19 lbf·ft)
Rear upper engine hanger bracket bolt/nut	76 N·m (7.7 kgf·m, 56 lbf·ft)
Rear lower engine hanger bracket bolt/nut	76 N·m (7.7 kgf·m, 56 lbf·ft)

MAIN STEP REMOVAL

Remove the left cross prate bolts, left main step mounting bolts/collar and left main stap.

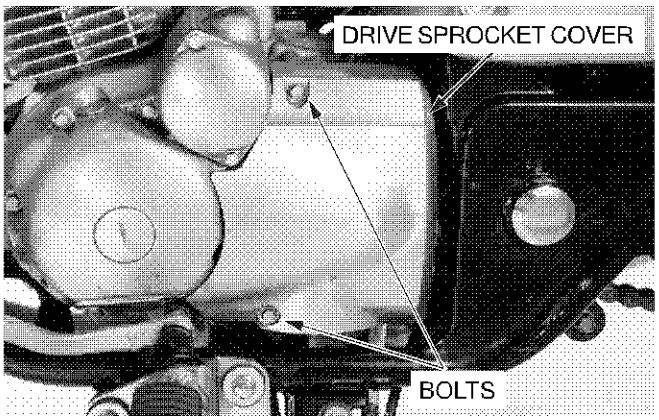


Remove the right main step mounting bolts/collar and step guard.
Remove the main step and cross prate from the right side.

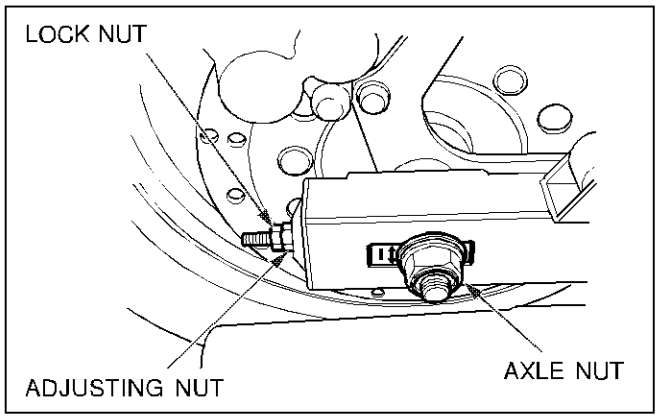


DRIVE SPROCKET REMOVAL

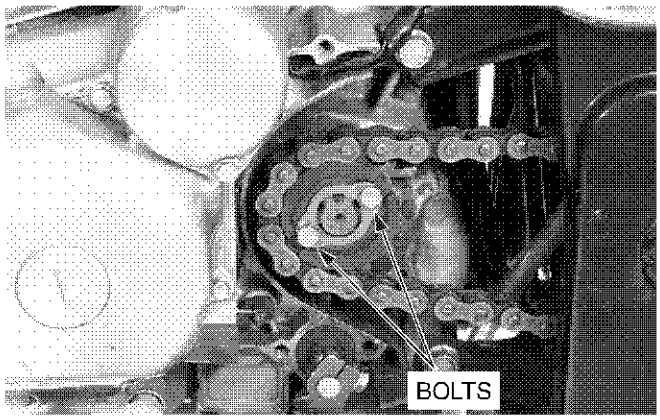
Remove the two bolts and drive sprocket cover.



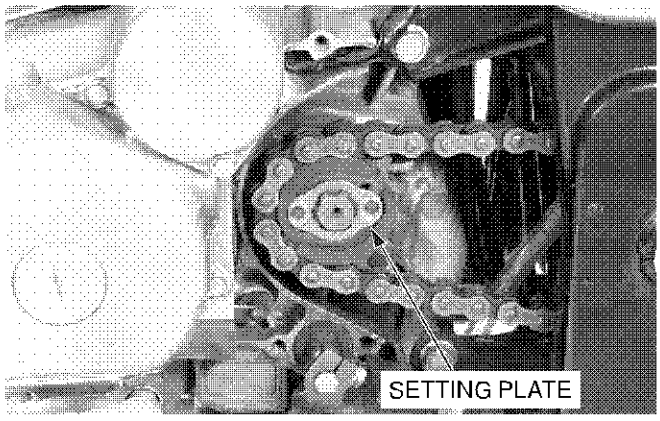
Loosen the rear axle nut, drive chain adjusting lock nut and adjusting nut.
Push the rear wheel forward and make a drive chain slack fully.



Remove the drive sprocket setting plate bolts.



Align the driver sprockt setting plate and tooth countershaft tooth, then remove the setting plate and drive sprocket.



ENGINE REMOVAL/INSTALLATION

REMOVAL

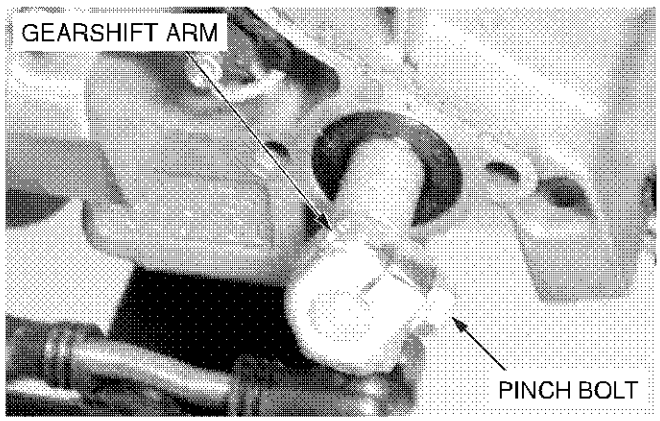
NOTE:

Refer to page 6-1 for the parts which must be removed before removing the engine.

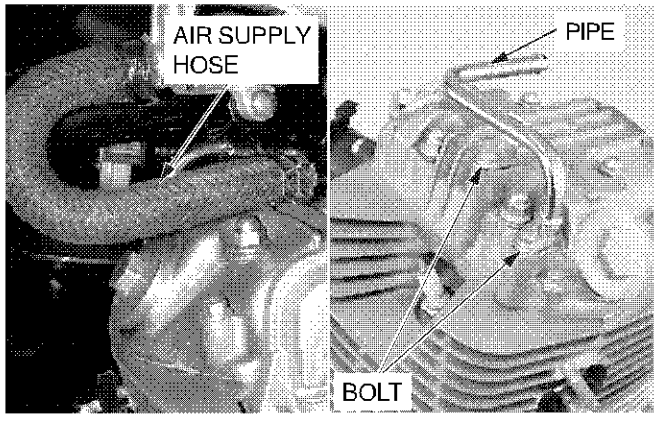
Remove the gearshift arm pinch bolt and gearshift arm.
Place a jack or other adjustable support under the engine.

NOTE:

The jack height must be continually adjusted to relieve stress for ease bolt removal.

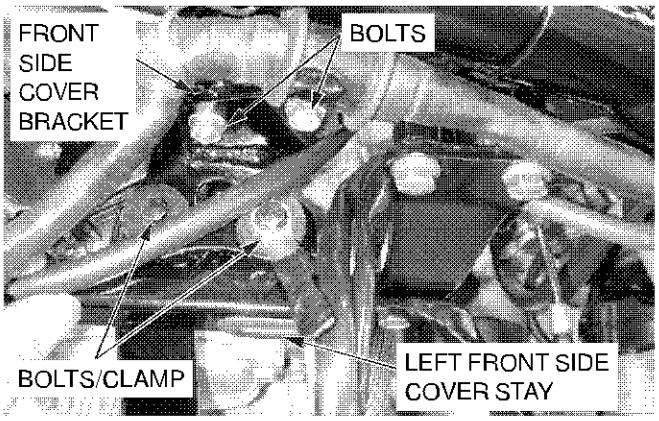


disconnect the air supply hose.
Remove the bolts, air supply pipe and O-ring from the cylinder head.

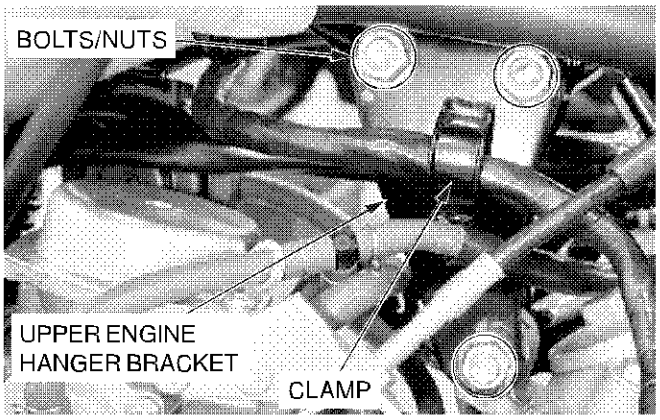


Remove the bolts/clamp and left front side cover stay.

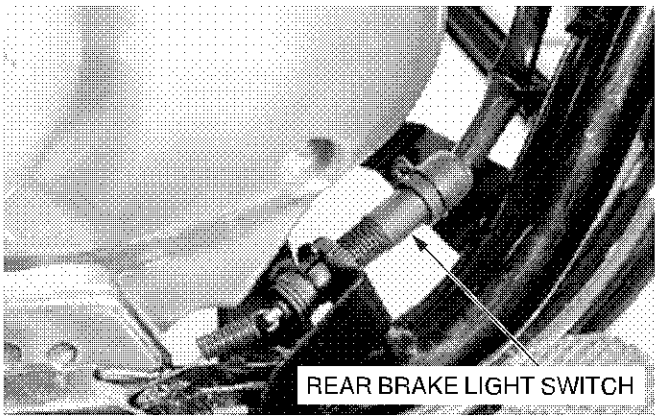
Remove the bolts from the front side cover bracket.
Remove the front side cover bracket from the right side.



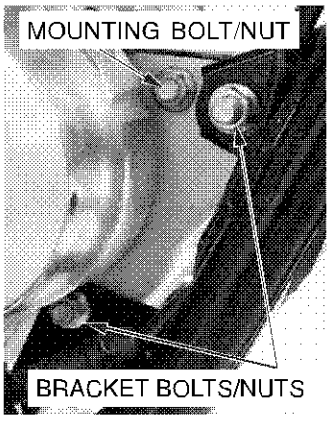
Disconnect the wire harness from the clamp.
Remove the bolts/nuts and upper engine hanger bracket.

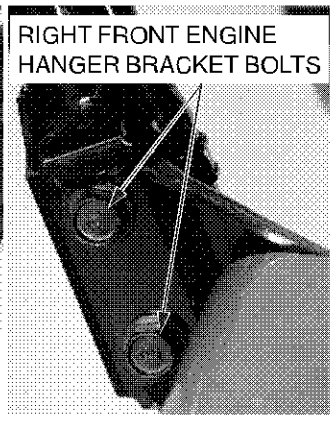


Disconnect the rear brake light switch connector (page 18-11).
Remove the brake light switch.

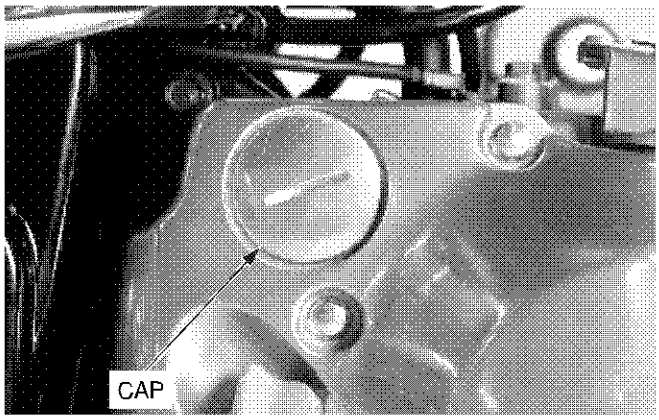


Remove the following:
– Front engine hanger bracket bolts/nuts.
– Engine hanger bracket and mounting bolt/nut.
– Right front engine hanger bracket and bolts.

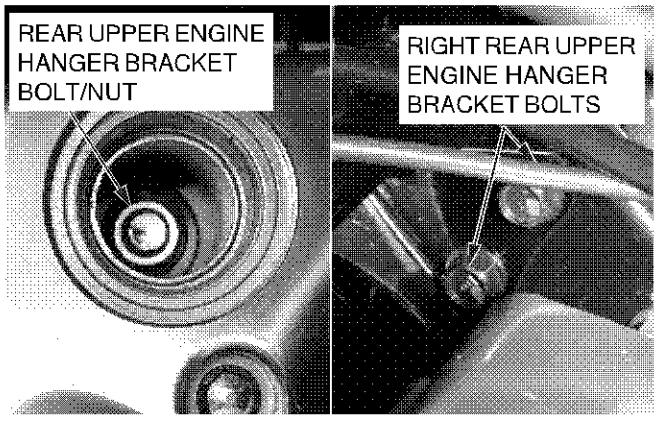




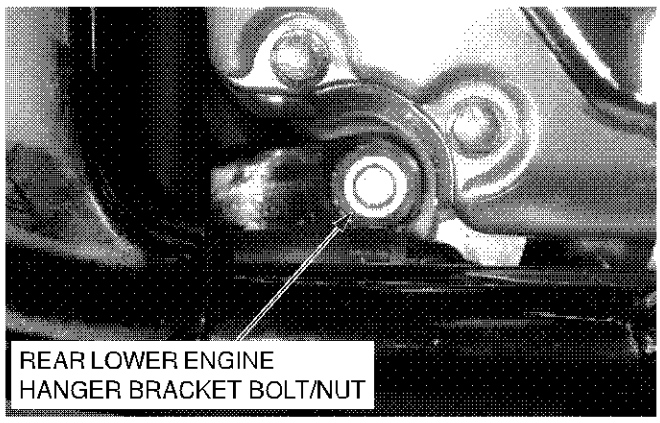
Remove the cap.



Remove the rear upper engine hanger bracker bolt/nut.
Remove the bolts and right rear upper engine hanger bracket.



Remove the rear lower engine bracket bolt/nut.
Remove the engine from the right side.

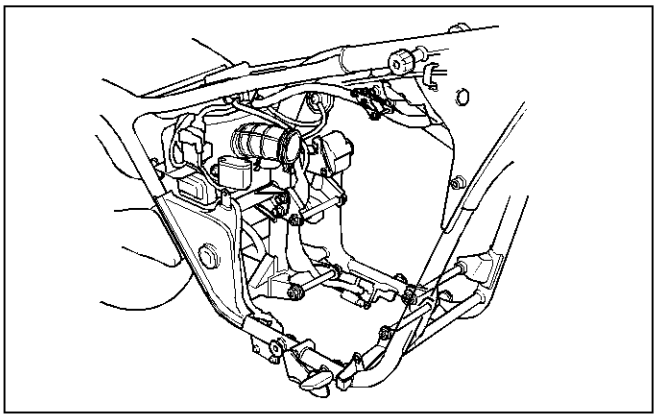


INSTALLATION

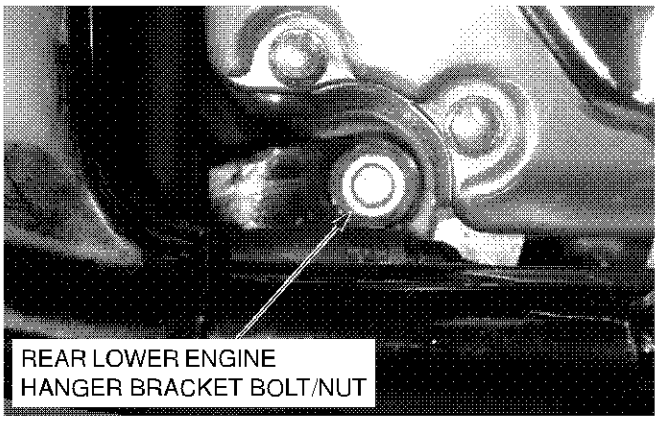
NOTE:

- Place the jack or other adjustable support under the engine.
- The jack height must be continually adjusted to relieve stress for ease bolt installation.

Note the direction of the hanger bolts, nuts and bracket.

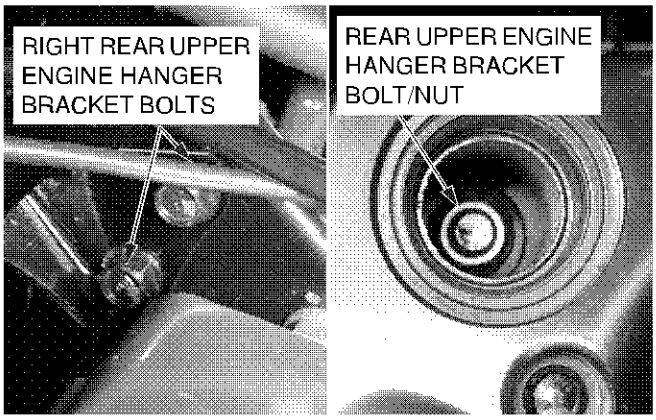


Place the engine in the frame.
Loosely install the rear lower engine hanger bracket bolt/nut.



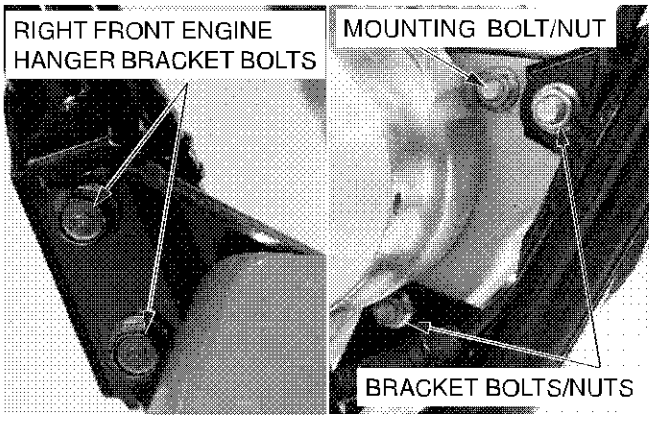
Install the right rear upper engine hanger bracket and tighten the bolts securely.

loosely install the rear upper engine hanger bracket bolt/nut.

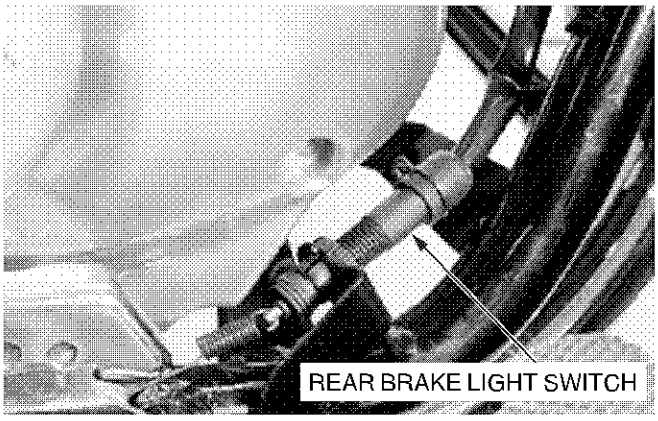


Install the right front engine hanger bracket and tighten the bolts securely.

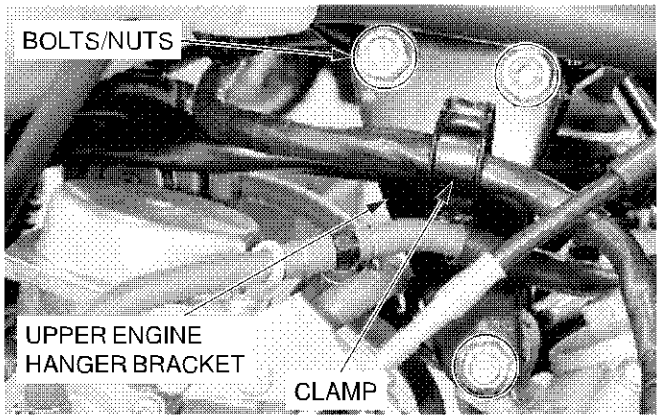
Install the engine hanger bracket.
Loosely install the engine hanger bracket bolt/nut and front engine hanger bracket bolts/nuts.



Install the rear brake light switch to the frame.
Connect the rear brake light switch connector (page 18-11).



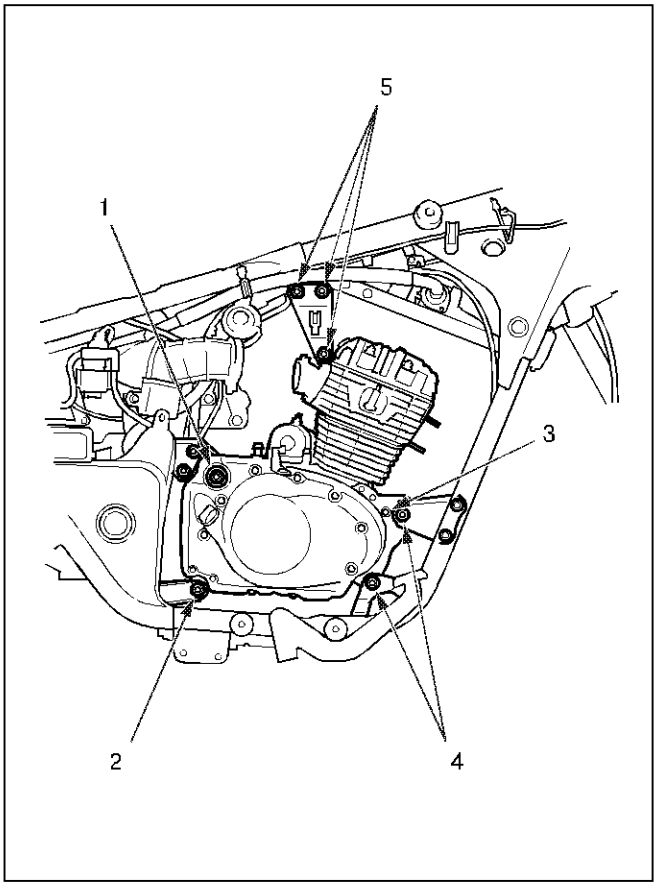
Loosely install the upper engine hanger bracket bolts/nuts.
Connect the wire harness to the clamp.



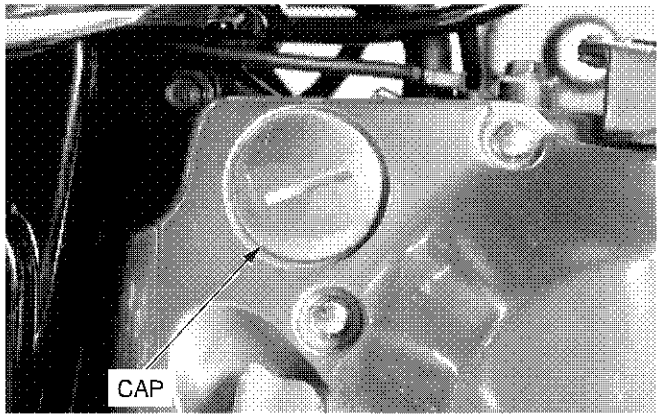
Tighten the all bolts and nuts to the specified torque.

TORQUE:

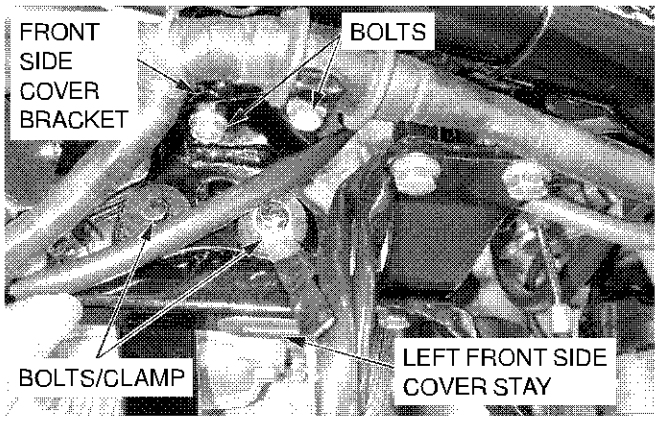
1. Rear upper engine hanger bracket bolt/nut:
76 N·m (7.7 kgf·m, 56 lbf·ft)
2. Rear lower engine hanger bracket bolt/nut:
76 N·m (7.7 kgf·m, 56 lbf·ft)
3. Engine hanger bracket bolts/nuts:
26 N·m (2.6 kgf·m, 19 lbf·ft)
4. Front engine hanger bracket bolt/nut:
76 N·m (7.7 kgf·m, 56 lbf·ft)
5. Upper engine hanger bracket bolts/nuts:
26 N·m (2.6 kgf·m, 19 lbf·ft)



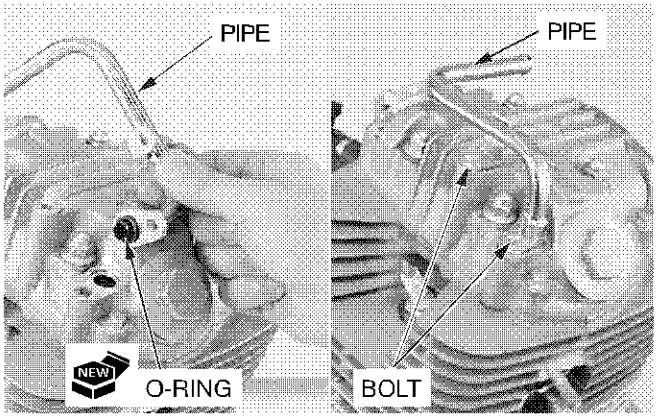
Install the cap.



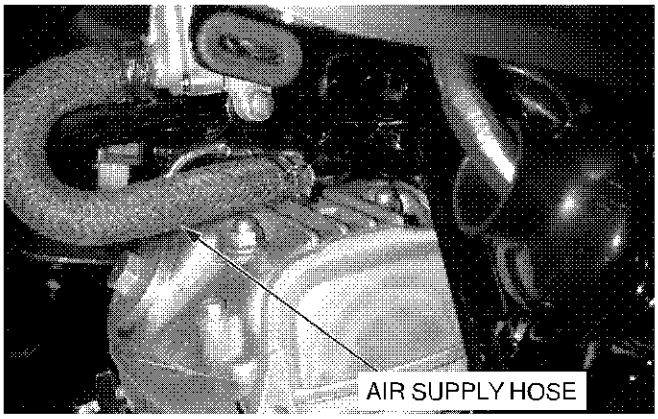
Install the front side cover bracket and tighten the bolts securely.
Install the front side cover stay, clamp and tighten the bolt securely.



Cort a new O-ring with engine oil and install the air injection pipe.
Install the air supply pipe to cylinder head cover.



Connect the air supply hose to the air injection pipe.

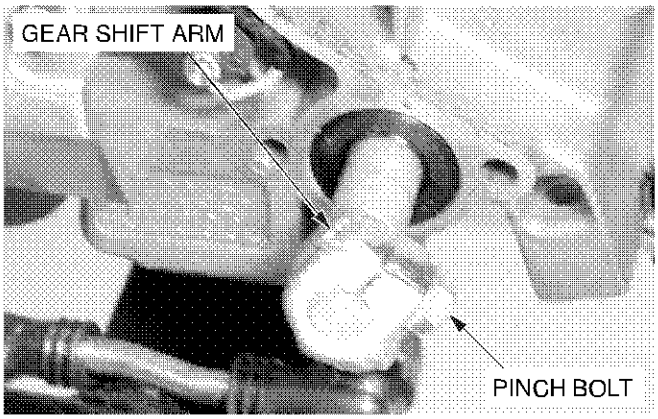


Install and tighten the gearshift arm pinch bolt securely.

NOTE:

Install the removed parts (page 6-1).

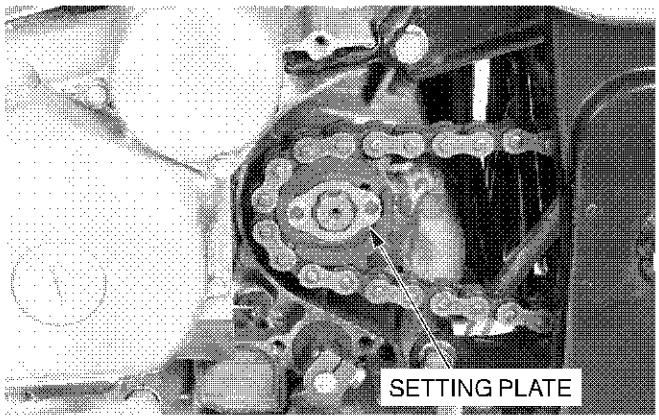
After adjust the following:
— Rear brake light swtich (page 3-19)
— Clutch cable (page 3-19)
— Throttle cable (page 3-4)
— Engine oil level (page 3-10)



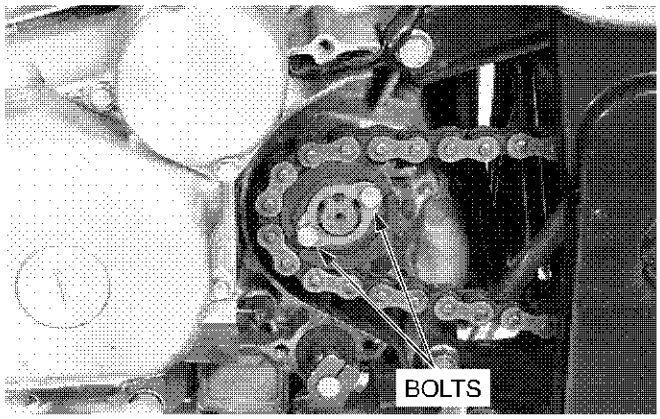
DRIVE SPROCKET INSTALLATION

Install the drive sprocket to the countershaft.
Install the drive chain onto the drive sprocket.

Install the setting plate as shown.

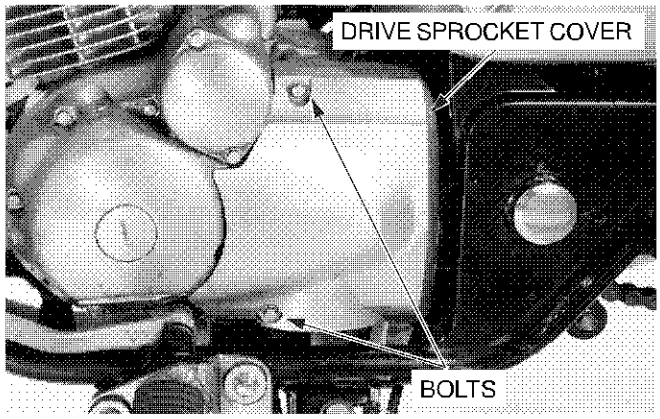


Install and tighten the drive sprocket setting plate bolts securely.



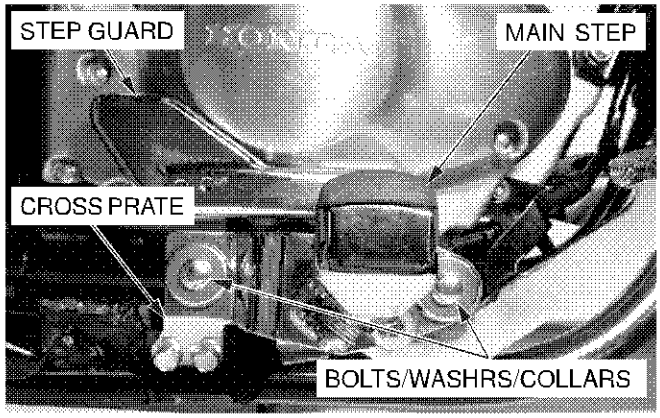
Install the drive sprocket cover.
Tighten the cover bolts securely.

Adjust the drive chain slack (page 3-15).

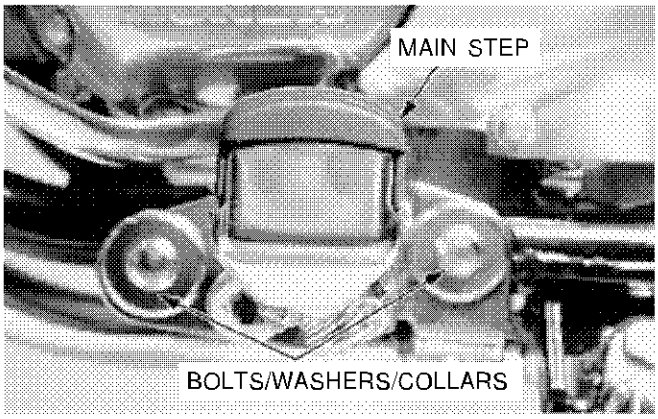


MAIN STEP INSTALLATION

Install the cross plate, step gurd and main step from the right side.
Install the main step collars, washers and temporarily tighten the mounting bolts.



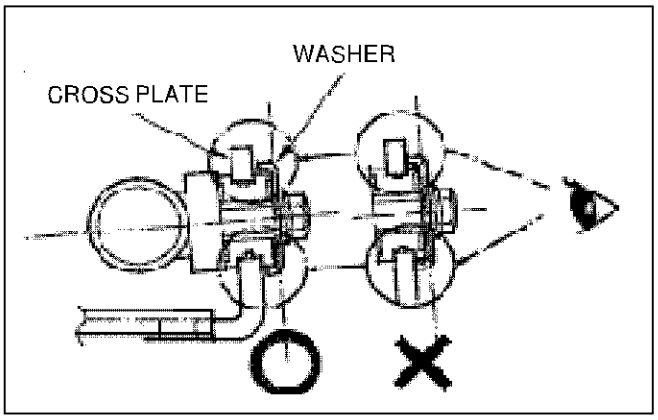
Install the left main step.
Install the collars, washers and temporarily tighten the main step mounting bolts.



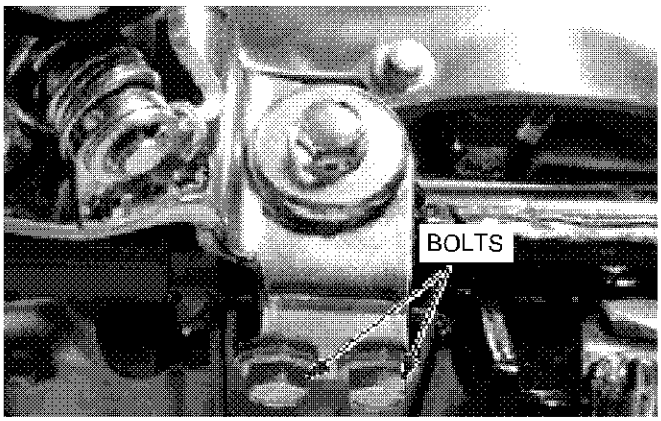
NOTE:

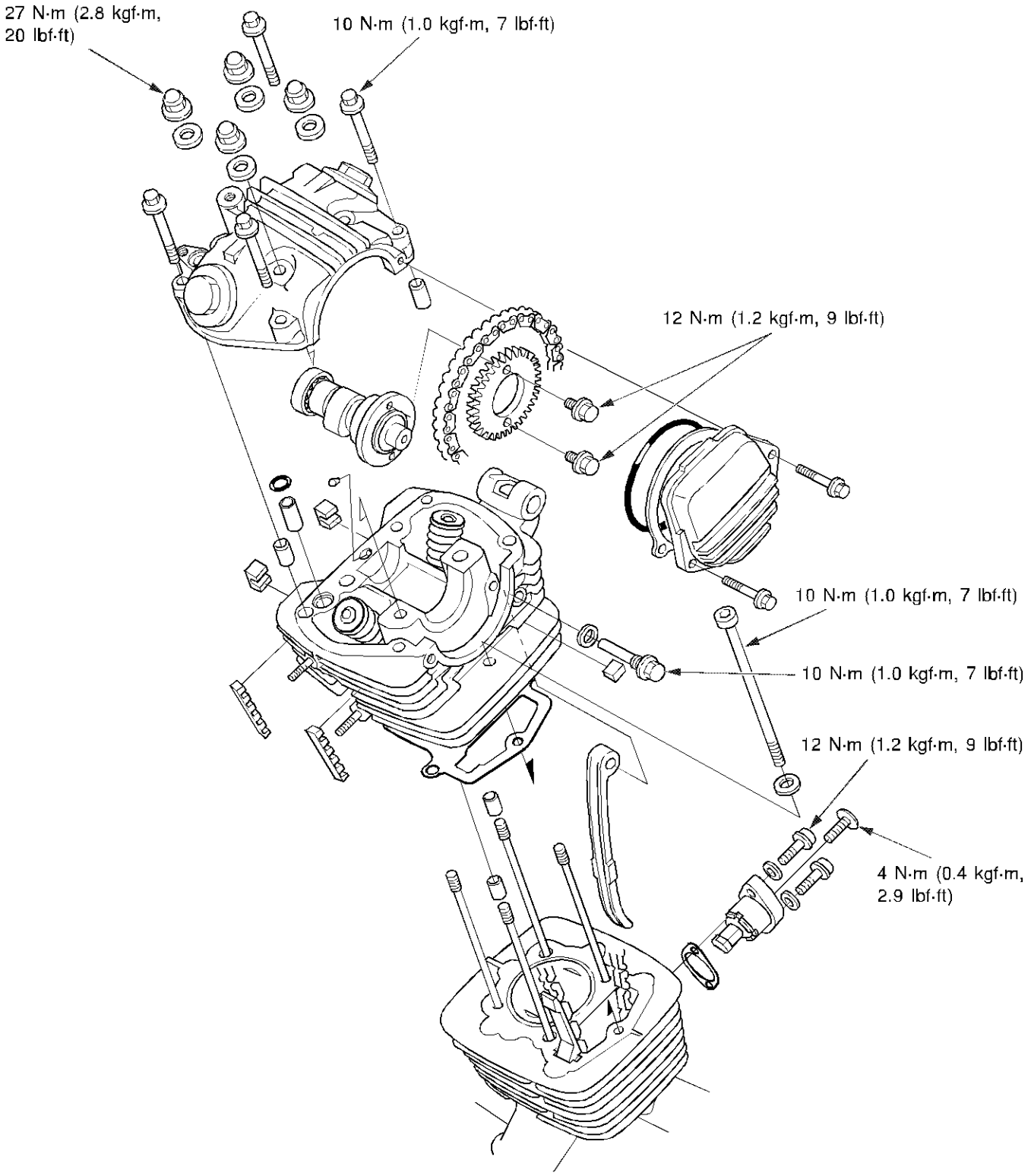
Secure the gap between the washer and the cross plate.

Tighten the main step mounting bolts securely.



Install and tighten the cross plate bolts securely.




27 N·m (2.8 kgf·m, 20 lbf·ft)
10 N·m (1.0 kgf·m, 7 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
10 N·m (1.0 kgf·m, 7 lbf·ft)
10 N·m (1.0 kgf·m, 7 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)
4 N·m (0.4 kgf·m, 2.9 lbf·ft)

7. CYLINDER HEAD/VALVES

SERVICE INFORMATION

GENERAL

- This section covers cylinder head, valves, camshaft and rocker arm maintenance.
- The engine must be removed to service the cylinder head, valves and rocker arms.
- Camshaft lubrication oil is fed to the cylinder head through an oil control orifice in the crankcase.
- Be sure that this orifice is not clogged and that new O-rings and dowel pins are in place before installing the cylinder head.
- The camshaft can be serviced with the engine installed in the frame.

ITEM				STANDARD	SERVICE LIMIT
Cylinder compression				1,177 kPa (12.0 kgf/cm², 171 psi) at 450 (rpm)	———
Cylinder head Warpage				———	0.5 (0.02)
Valve and valve guide	Valve clearance		IN	0.10 ± 0.02 (0.004 ± 0.001)	———
			EX	0.10 ± 0.02 (0.004 ± 0.001)	———
	Valve stem O.D.		IN	5.450 – 5.465 (0.2146 – 0.2152)	5.42 (0.213)
			EX	5.430 – 5.445 (0.2138 – 0.2144)	5.40 (0.213)
	Valve guide I.D.		IN	5.475 – 5.485 (0.2156 – 0.2159)	5.50 (0.217)
			EX	5.475 – 5.485 (0.2156 – 0.2159)	5.50 (0.217)
	Stem-to-guide clearance		IN	0.010 – 0.035 (0.0004 – 0.0014)	0.06 (0.002)
			EX	0.030 – 0.055 (0.0012 – 0.0022)	0.08 (0.003)
	Valve seat width		IN/EX	1.1 – 1.3 (0.0433 – 0.0512)	1.5 (0.0590)
Valve spring	Free length	Inner	IN/EX	39.2 (1.54)	38.0 (1.50)
		Outer	IN/EX	44.9 (1.77)	43.5 (1.71)
Rocker arm	Rocker arm I.D.		IN/EX	12.000 – 12.018 (0.4724 – 0.4731)	12.05 (0.474)
	Rocker arm shaft O.D.		IN/EX	11.966 – 11.984 (0.4711 – 0.4718)	11.93 (0.470)
	Rocker arm-to-shaft clearance		IN/EX	0.016 – 0.052 (0.0006 – 0.0020)	0.08 (0.003)
Camshaft	Cam lobe height		IN	31.372 – 31.612 (1.2351 – 1.2446)	31.1 (1.2244)
			EX	31.212 – 31.452 (1.2288 – 1.2383)	31.0 (1.2204)
	Camshaft runout			———	0.03 (0.0012)

TORQUE VALUES

Cylinder head cover cap nut	27 N·m (2.8 kgf·m, 20 lbf·ft)	Apply oil to the threads and seating surface.
Cylinder head cover bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	
Cam sprocket	12 N·m (1.2 kgf·m, 9 lbf·ft)	
Cam chain tensioner lifter mounting bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)	
Cam chain tensioner lifter plug	4 N·m (0.4 kgf·m, 2.9 lbf·ft)	

TOOLS

Valve guide reamer	07984 – 0980001
Valve spring compressor	07757 – 0010000
Valve guide driver, 5.5 mm	07742 – 0010100
Seat cutter, 33 mm (45° IN)	07780 – 0010800
Seat cutter, 35 mm (45° EX)	07780 – 0010400
Flat cutter, 33 mm (32° IN)	07780 – 0012900
Flat cutter, 30 mm (32° EX)	07780 – 0012200
Interior cutter, 30 mm (60° IN/EX)	07780 – 0014000
Valve seat cutter holder, 5.5 mm	07781 – 0010101

TROUBLESHOOTING

Engine top-end problems usually affect engine performance. These can be diagnosed by a compression test, or by tracing top-end noises with a sounding rod or stethoscope.

Compression too low, hard starting or poor performance at low speed.
- Valves
  - — Incorrect valve clearance
  - — Burned or bent valve
  - — Incorrect valve timing
  - — Broken valve spring
  - — Uneven valve seating
- Cylinder head
  - — Leaking or damaged cylinder head gasket
  - — Warped or cracked cylinder head
  - — Loose spark plug
- Faulty cylinder or piston (section 8)

Compression too high
- Excessive carbon built-up on piston or combustion chamber

Excessive smoke
- Worn valve stem or valve guide
- Damaged stem seal
- Faulty cylinder or piston (section 8)

Excessive noise
- Incorrect valve clearance
- Sticking valve or broken valve spring
- Worn or damaged camshaft
- Worn or damaged rocker arm and/or shaft
- Worn of damaged cam sprocket teeth
- Loose or worn cam chain
- Worn or damaged cam chain tensioner
- Loose spark plug
- Faulty connecting rod, crankshaft or transmission (section 11)

Rough idle
- Low cylinder compression

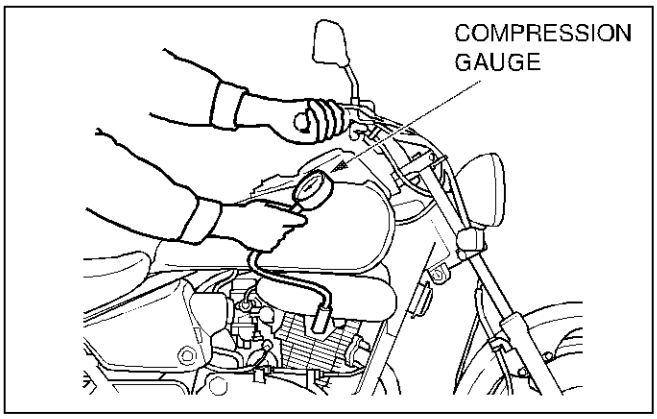
CYLINDER COMPRESSION

⚠ WARNING

If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area.

Warm up the engine to normal operating temperature.

Stop the engine, disconnect the spark plug cap and remove the spark plug.



Install the compression gauge attachment in a spark plug hole.

Connect the compression gauge to the attachment.
Open the throttle all the way and crank the engine with the starter motor.

NOTE:

Crank the engine until the gauge reading stops rising.
The maximum reading is usually reached within 4 – 7 seconds.

STANDARD: 1,177 kPa (12.0 kgf/cm², 171 psi) at 450 min⁻¹ (rpm)

If compression is high, it indicates that carbon deposits have accumulated on the combustion chamber and/or the piston crown.

If compression is low, pour 3 – 5 cc (0.1 – 0.2 oz) of clean engine oil into the cylinder through the spark plug hole and recheck the compression.

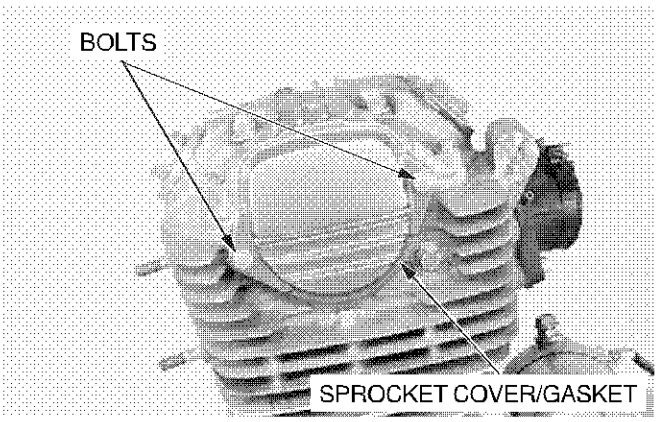
If the compression increases from the previous value, check the cylinder, piston and piston rings.
- Leaking cylinder head gasket
- Worn piston ring
- Worn cylinder and piston

If the compression is the same as the previous value, check the values for leakage.

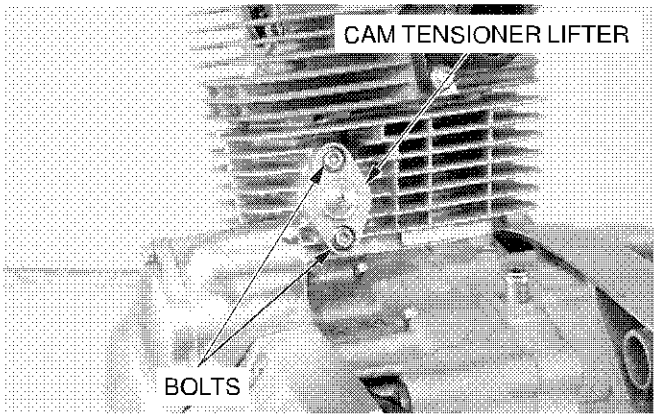
CYLINDER HEAD COVER/CAM SHAFT REMOVAL

Remove the engine (page 6-4).

Remove the bolts and cam sprocket cover and gasket.



Remove the starter (page 17-4).
Remove the bolts, cam chain tensioner lifter and gasket.

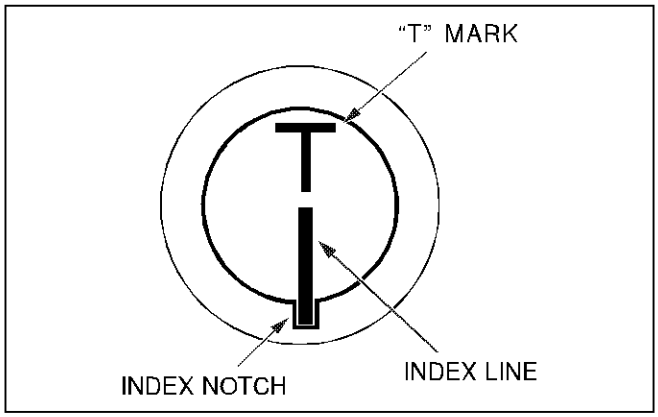


CAUTION:

Do not rotate the crankshaft clockwise to prevent the functioning of the one-way decompressor system.

Remove the timing hole cap and crankshaft hole cap (page 3-8).

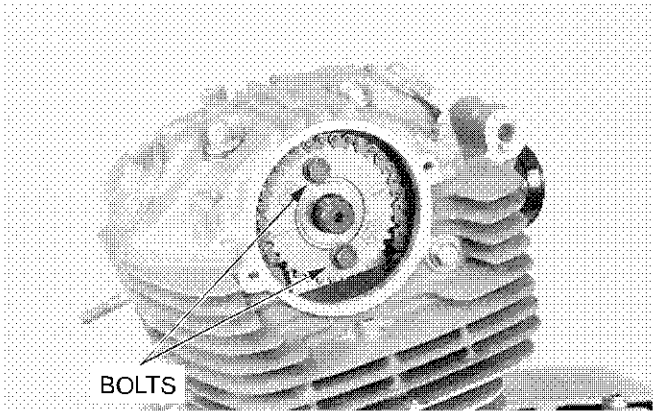
Rotate the crankshaft counterclockwise to align the "T" mark and index line on the flywheel with the index notch of the timing hole in the crankcase cover.
If the piston is not at T.D.C. on the commpression stroke, rotate the crankshaft 360 degrees countercrockwise and recheck.



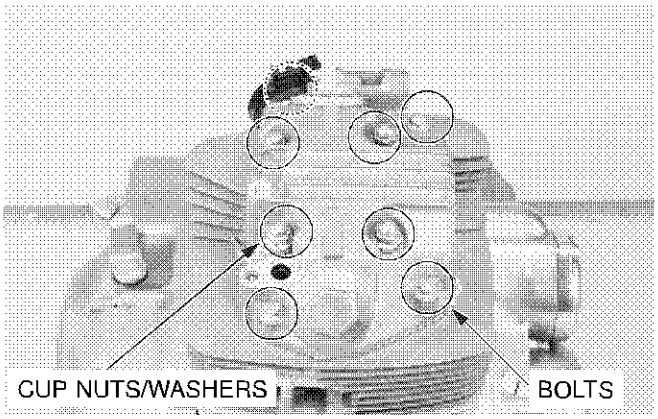
NOTE:

Be careful not to let the sprocket bolts fall into the crankcase.

Remove the cam sprocket bolts.

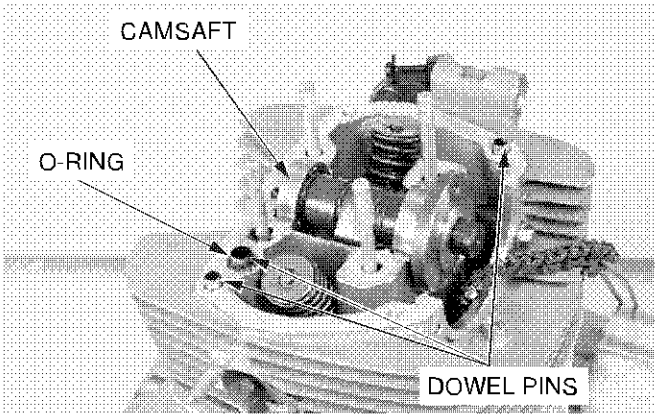


Remove the cylinder head cover bolts.
Remove the cap nuts/washers.
Remove the cylinder head cover.



Attach a piece of wire to the cam chain to prevent it from falling into the crankcase.
Lift the camshaft and remove it.
Remove the sprocket from the cam chain.

Remove the dowel pins and O-ring.



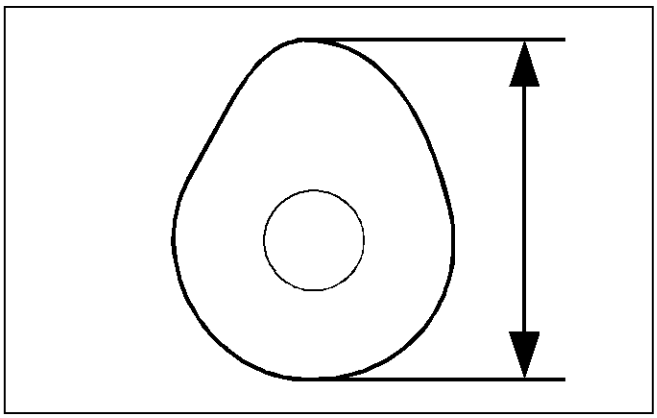
CAMSHAFT INSPECTION

Camshaft Bearing
Turn the outer race of each bearing with your finger.
The bearings should turn smoothly and quietly. Also check that the bearing inner race fits tightly on the camshaft.

Cam Lobe Height

Measure the height of each cam lobe.

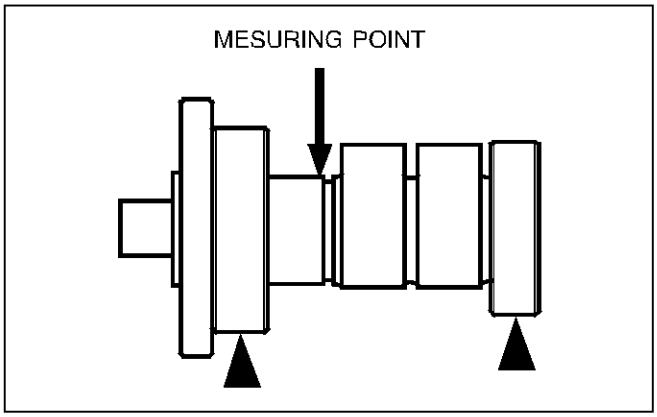
SERVICE LIMIT: IN: 31.1 mm (1.2244 in)
EX: 31.0 mm (1.2204 in)



If the cam lobe is damaged or excessively worn, inspect the oil passages and rocker arms for wear or damage.

Camshaft Runout
Support both ends of the camshaft with V-blocks and check the camshaft runout with a dial indicator.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.03 mm (0.0012 in)

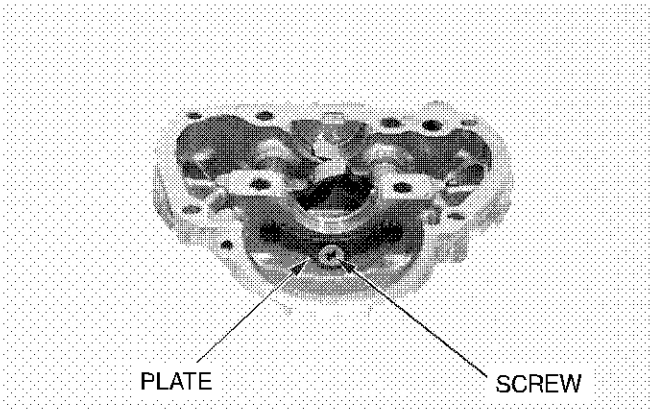


CYLINDER HEAD COVER DISASSEMBLY

Remove the screw and the rocker arm shaft setting plate.

Remove the screw in to the threaded hole in the rocker arm shaft and pull the shaft out of the cylinder head cover.
Remove the rocker arm .
Remove the other rocker arm shaft and rocker arm.

Clean off any sealant material from the cylinder head mounting surface.



INSPECTION

Check the rocker arms and shafts for wear or damage.
If the rocker arm slipper surface is worn or damaged, check the camshaft cam lobe and oil passages.

Measure each rocker arm shaft O.D.

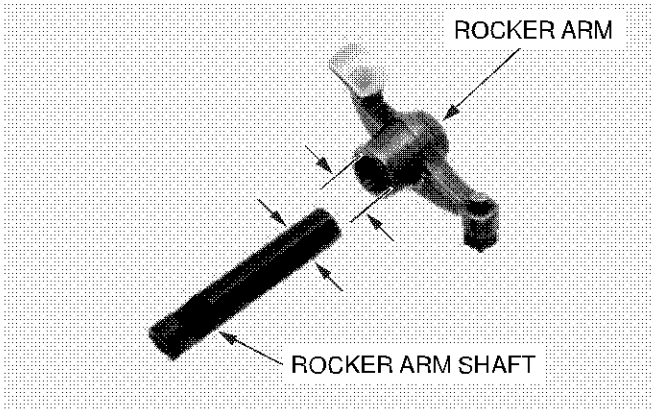
SERVICE LIMITS: 11.93 mm (0.470 in)

Measure each rocker arm I.D.

SERVICE LIMITS: 12.05 mm (0.474 in)

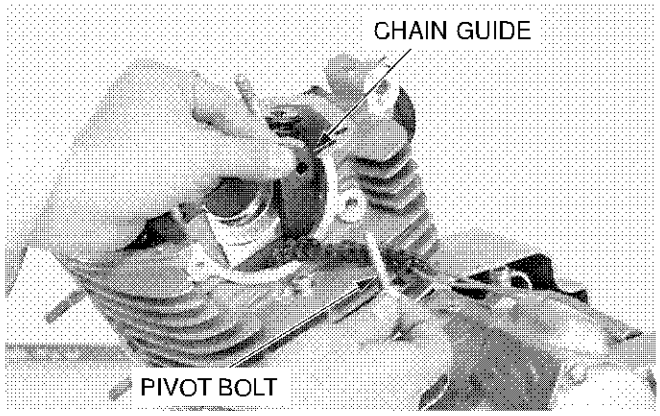
Subtract each rocker arm shaft O.D. from the corresponding rocker arm I.D. to obtain the rocker arm-to-shaft clearance.

SERVICE LIMIT: 0.08 mm (0.003 in)



CYLINDER HEAD REMOVAL

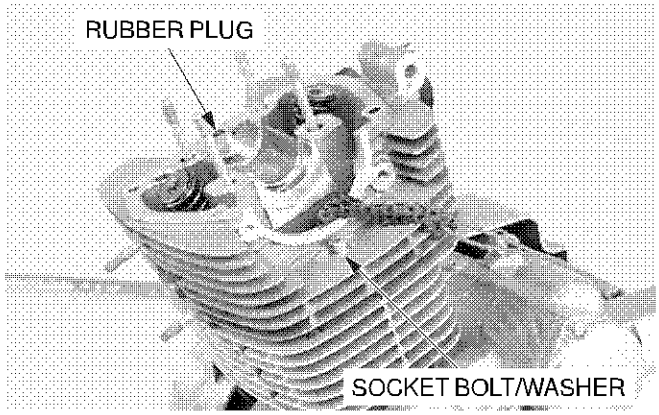
Remove the Camshaft (page 7-4).
Remove the cam tansioner slider pivot bolt and cam chain guide.
Check the cam chain guide for excessive wear or damage.



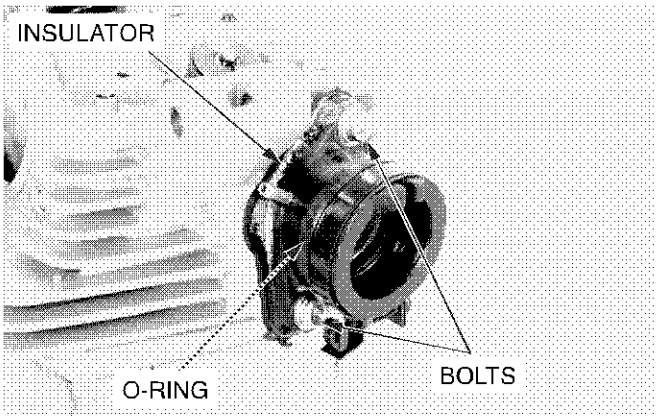
Remove the rubber plug; do not the lose it.

Remove the cylinder head socket bolt and the washer, being careful not to drop them into the crankcase.

Remove the cylinder head.
Be careful not to damage the mating surface.

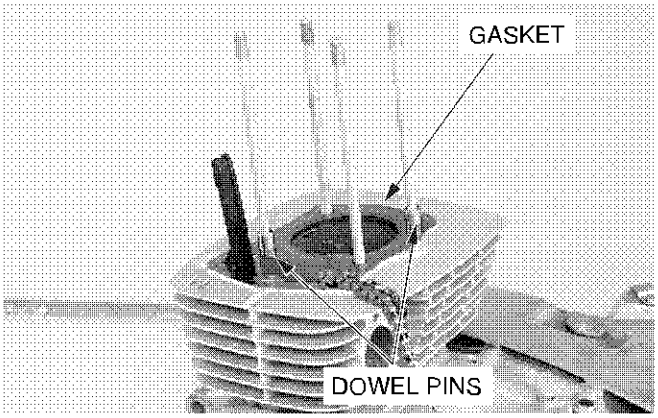


Remove the bolts, carburetor insulator and O-ring.



CYLINDER HEAD DISASSEMBLY

Remove the gasket and dowel pins from the cylinder.



Remove the valve spring cotters, retainers, springs and valve using the special tool as shown.

TOOL:
Valve spring compressor **07757 – 0010000**

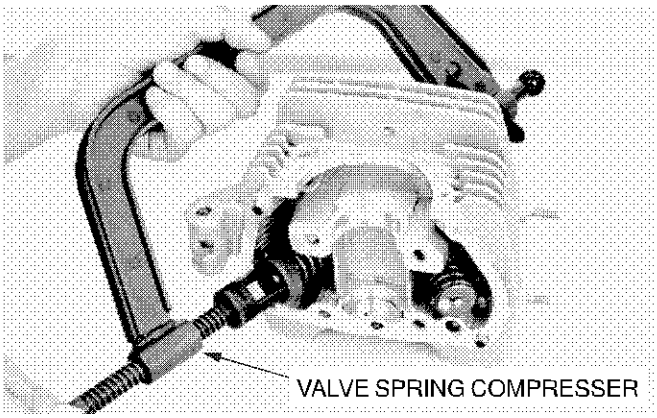
CAUTION:

To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.

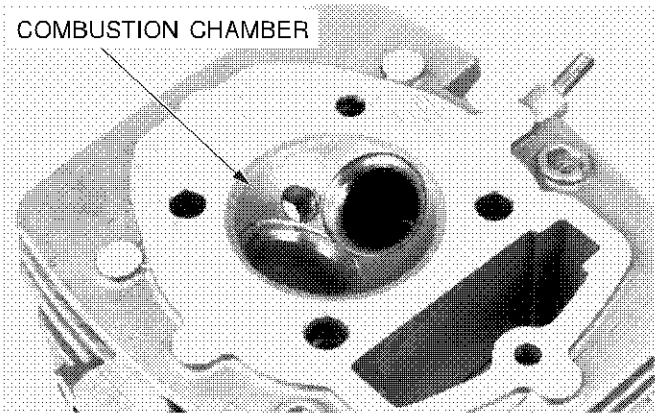
Remove the valve stem seals and valve spring seats.

NOTE:

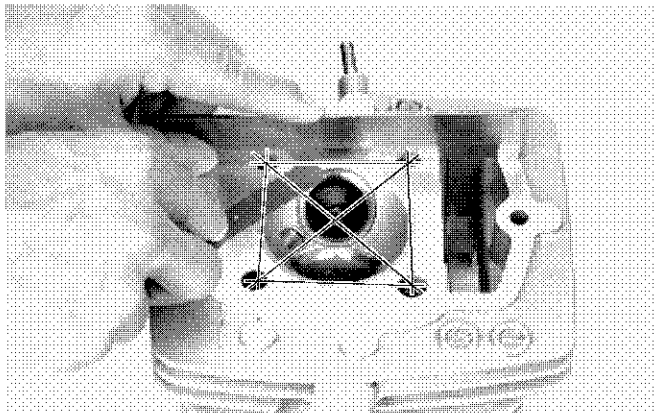
Mark all parts during disassembly, so they can be placed back in their original locations.



Remove carbon deposits from the combustion chamber. Check the spark plug hole and valve areas for cracks.



CYLINDER HEAD INSPECTION



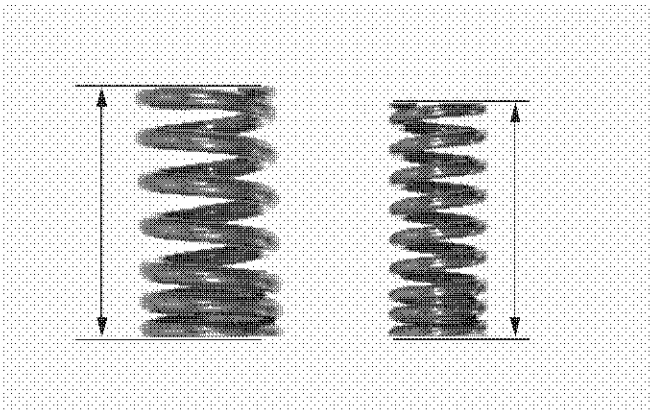
CYLINDER HEAD

Check the cylinder head for warpage with a straight edge and feeler gauge.

SERVICE LIMIT: 0.10 mm (0.004 in)

NOTE:

Avoid damaging the gasket surface.

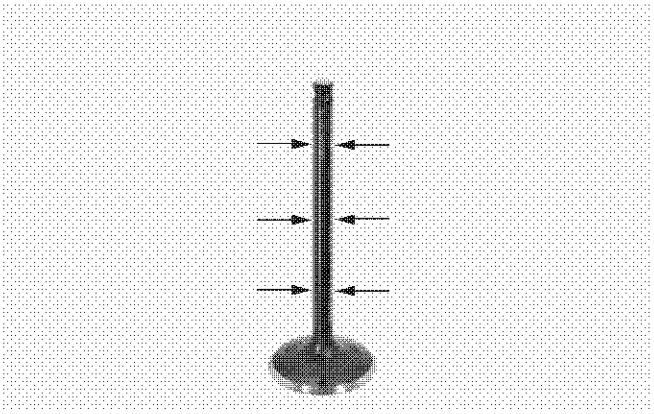


VALVE SPRING

Measure the free length of the inner and outer valve springs.

SERVICE LIMITS: mm
Inner: 38.0 mm (1.50 in)
Outer: 43.5 mm (1.71 in)

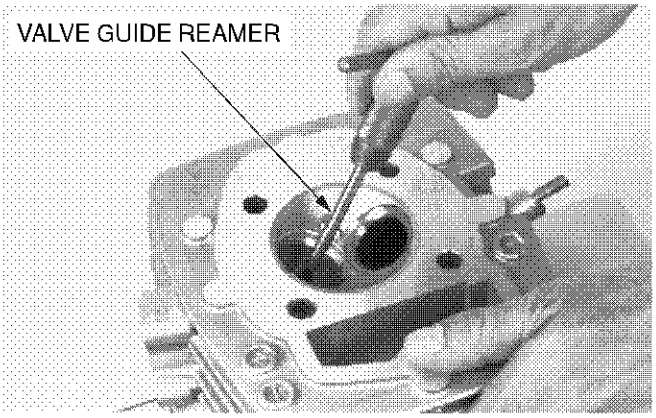
Replace the springs if they are shorter than the service limits.



VALVE/VALVE GUIDE

Inspect each valve for bending, burning or abnormal stem wear.
Check valve movement in the guide, measure and record each valve stem O.D.

SERVICE LIMITS:
IN: 5.42 mm (0.213 in)
EX: 5.40 mm (0.213 in)



Ream the guides to remove any carbon deposits before checking clearances.
Insert the reamer from the rocker arm side of the head and always rotate the reamer clockwise.

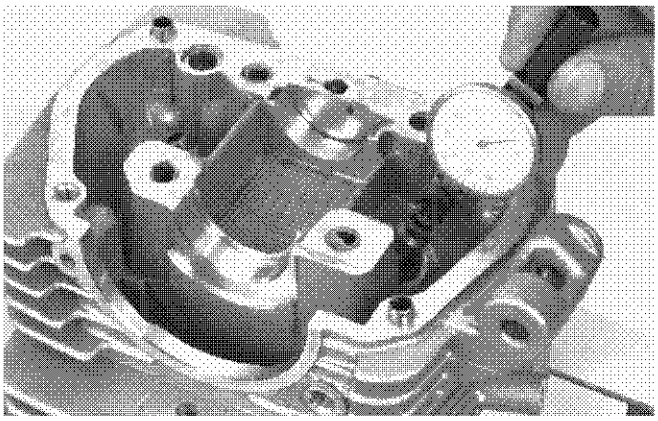
TOOL:
Valve guide reamer, 5.5 mm **07742 – 0010100**

Measure and record each valve guide I.D.

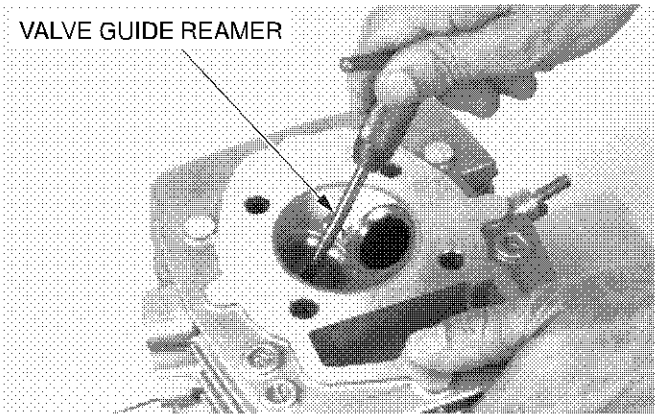
SERVICE LIMIT: IN/EX: 5.50 mm (0.217 in)

Subtract each valve stem O.D. from the corresponding guide I.D. to obtain the stem-to-guide clearance.

SERVICE LIMITS:
IN: 0.06 mm (0.002 in)
EX: 0.08 mm (0.003 in)



If the stem-to-guide clearance exceeds the service limits, determine if a new guide with standard dimensions would bring the clearance within tolerance. If so, replace any guides as necessary and ream to fit.



NOTE:

Reface the valve seats whenever the valve guides are replaced (page 7-11).

If the stem-to-guide clearance exceeds the service limits with new guides also, replace the valves and guides.

VALVE GUIDE REPLACEMENT

Chill the valve guides in the freezer section of a refrigerator for about an hour.

⚠ WARNING

Wear insulated gloves to avoid burns when handling the heated cylinder head.

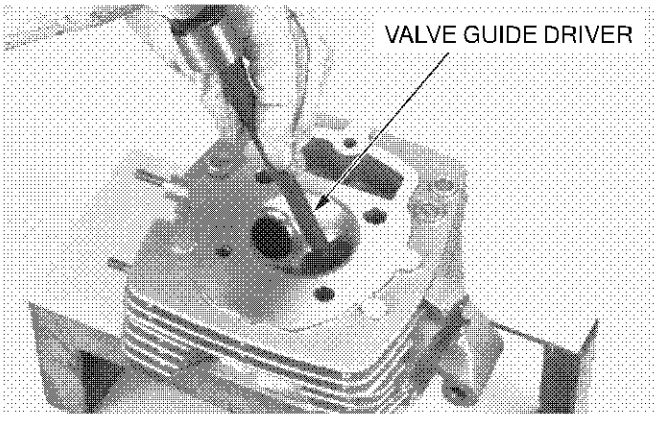
Heat the cylinder head to 130°C – 140°C (275°F – 290°F) with a hot plate or oven. Do not heat the cylinder head beyond 150°C (300°F). Use temperature indicator sticks, available from welding supply stores, to be sure the cylinder head is heated to the proper temperature.

CAUTION:

- ***Using a torch to heat the cylinder head may cause warping.***
- ***Be careful not to damage the mating surface.***

Support the cylinder head and drive the valve guides and O-rings out of the cylinder head from the combustion chamber side.

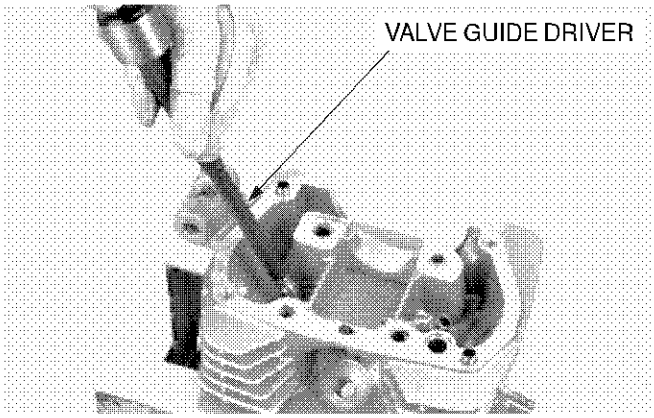
TOOL:
Valve guide driver, 5.5 mm 07742 – 0010100



Apply engine oil to the new O-rings and install the O-rings to the new guides.
Drive new guides in the cylinder head from the camshaft side while the cylinder head is still heated.

TOOL:
Valve guide driver, 5.5 mm 07742 – 0010100

Let the cylinder head cool to room temperature.

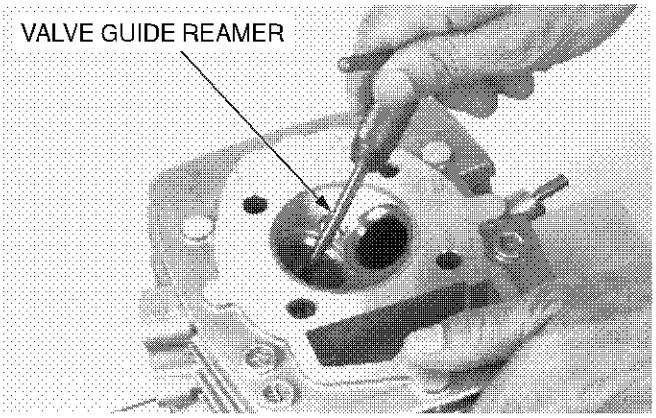


Ream the new valve guides.

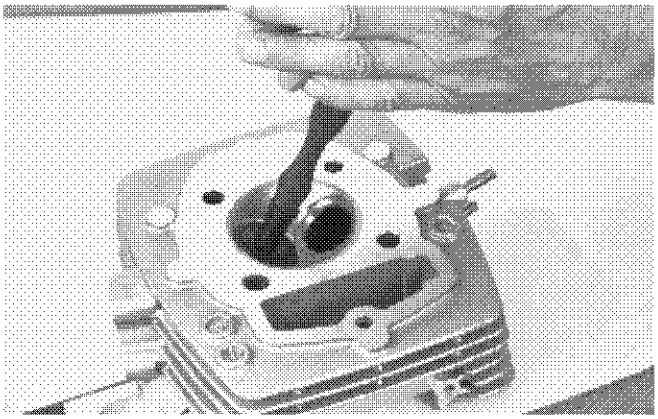
TOOL:
Valve guide reamer, 5.485 mm 07984 – 0980001

NOTE:

- Take care not to tilt or lean the reamer in the guide while reaming. Otherwise, the valve is installed slanted, that causes oil leaks from the stem seal and improper valve seat contact and results in the valve seat refacing not able to be performed.
- Insert the reamer from the combustion chamber side of the head and always rotate the reamer clockwise.
- Use cutting oil on the reamer during this operation.



Clean the cylinder head thoroughly to remove any metal particles after reaming and reface the valve seat.



VALVE SEAT INSPECTION/REFACING

INSPECTION

Clean all intake and exhaust valves thoroughly to remove carbon deposits.

Apply a light coating of Prussian Blue to each valve face.
Tap the valve against the valve seat several times using a hand-lapping tool, without rotating the valve, to make a clear pattern.

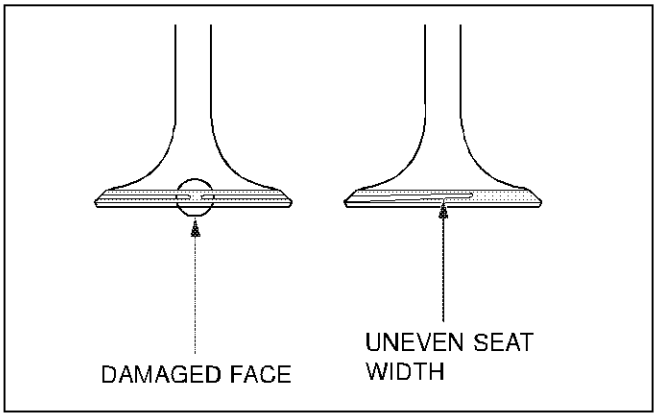
Remove the valve and inspect the valve seat face.

NOTE:

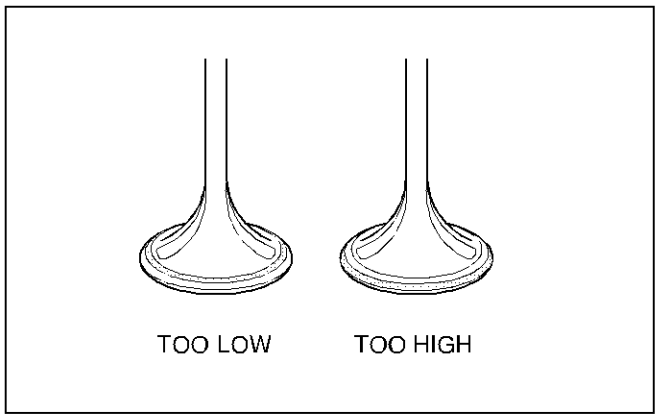
The valve cannot be ground. If the valve face is burned or badly worn or if it contacts the seat unevenly, replace the valve.

Inspect the valve seat face for:

- Uneven seat width:
  — Bent or collapsed valve stem;
  Replace the valve and reface the valve seat
- Damaged face:
  — Replace the valve and reface the valve seat



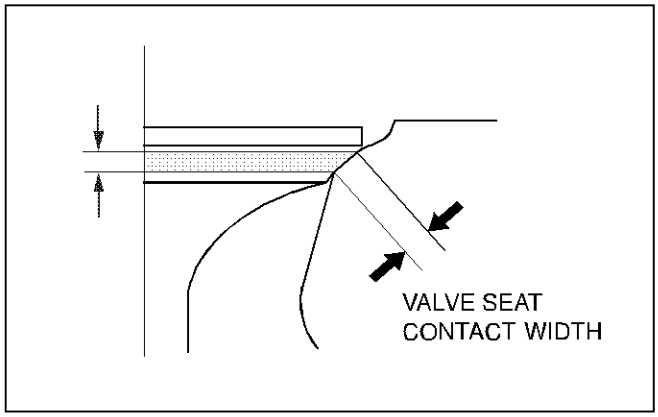
Contact area (too high or too low area):
— reface the valve seat



Inspect the width of valve seat.
The valve seat contact should be within the specified width and even all around the circumference.

STANDARD: 1.1 – 1.3 mm (0.043 – 0.0512 in)
SERVICE LIMIT: 1.5 mm (0.0590 in)

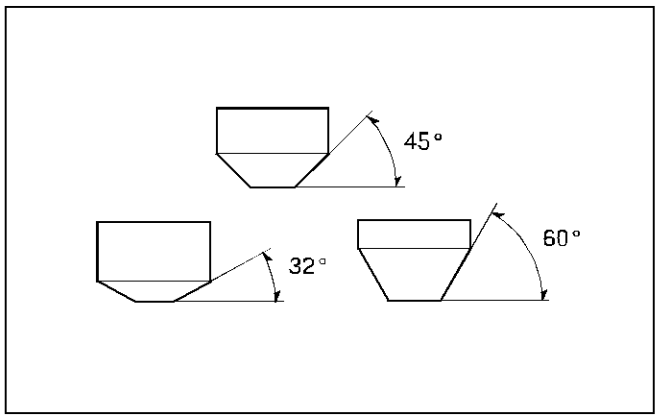
If the valve seat width is not within specification, reface the valve seat (page 7-11).



VALVE SEAT REFACING

NOTE:

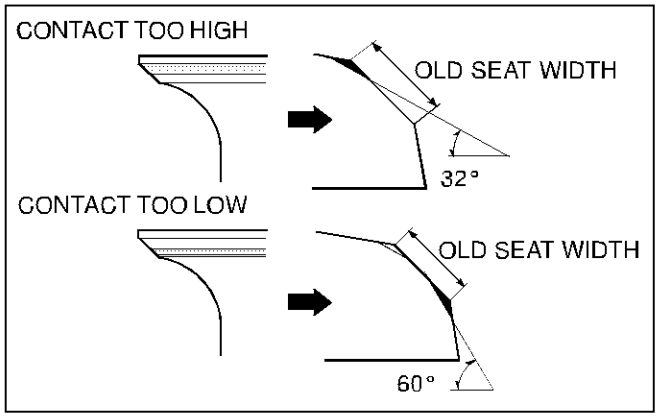
- Follow the refacer manufacturer's operating instructions.
- Be careful not to grind the seat more than necessary.



VALVE SEAT REFACING

NOTE:

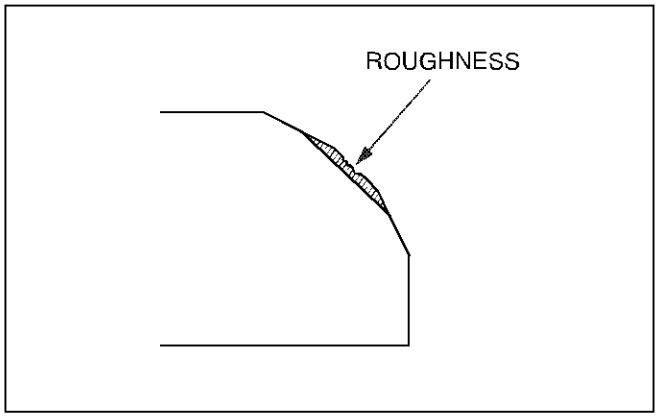
- Follow the refacer manufacturer's operating instructions.
- Be careful not to grind the seat more than necessary.



Using a 45° cutter, remove any roughness or irregularities from the seat.

TOOLS:

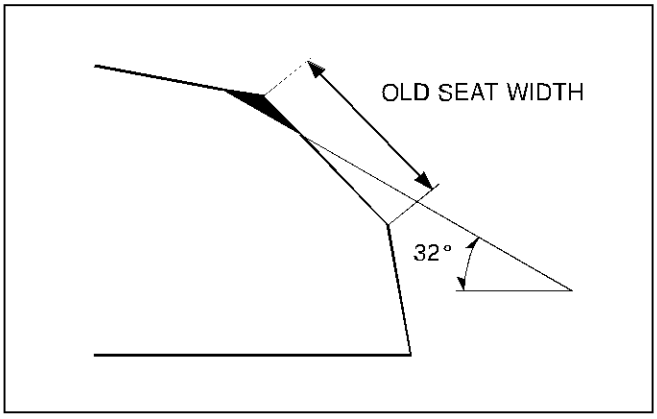
Valve seat cutter, 33 mm (45° IN)	**07780 – 0010800**
Valve seat cutter, 35 mm (45° EX)	**07780 – 0010400**
Valve seat cutter holder, 5.5 mm	**07781 – 0010101**



Using a 32° cutter, remove 1/4 of the existing valve seat material.

TOOLS:

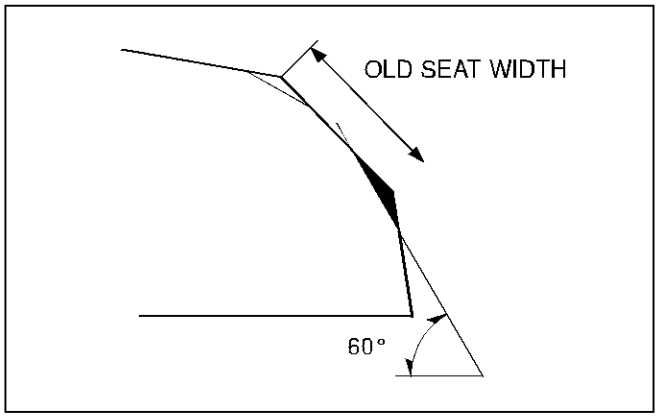
Valve seat cutter, 33 mm (32° IN)	**07780 – 0012900**
Valve seat cutter, 30 mm (32° EX)	**07780 – 0012200**
Valve seat cutter holder, 5.5 mm	**07781 – 0010101**



Using a 60° cutter, remove 1/4 of the existing valve seat material.

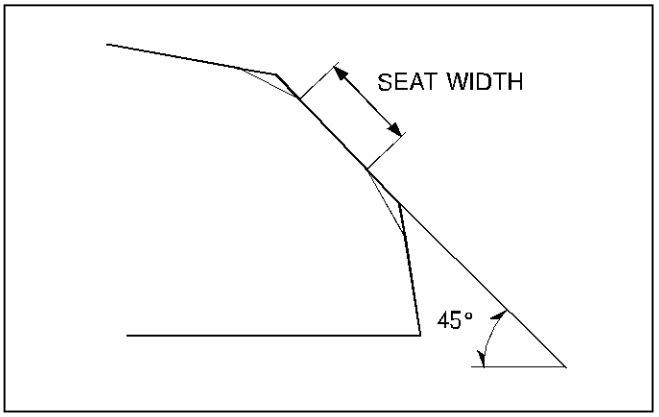
TOOLS:

Interior cutter, 30 mm (60° IN/EX)	**07780 – 0014000**
Valve seat cutter holder, 5.5 mm	**07781 – 0010101**



Using a 45° cutter, cut the seat to the proper width.

Make sure that all pitting and irregularities are removed.

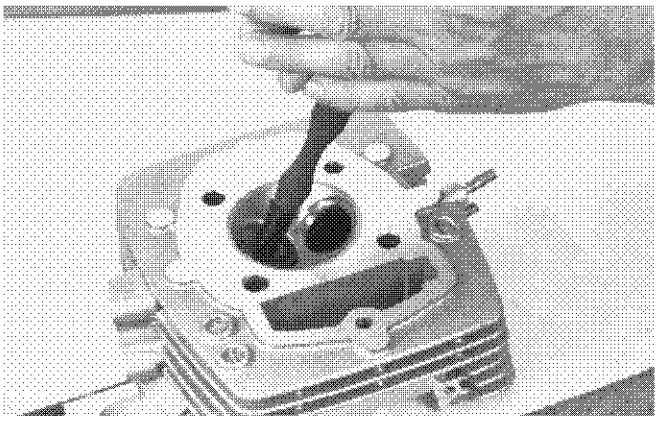


After cutting the seat, apply lapping compound to the valve face, and lap the valve using light pressure.

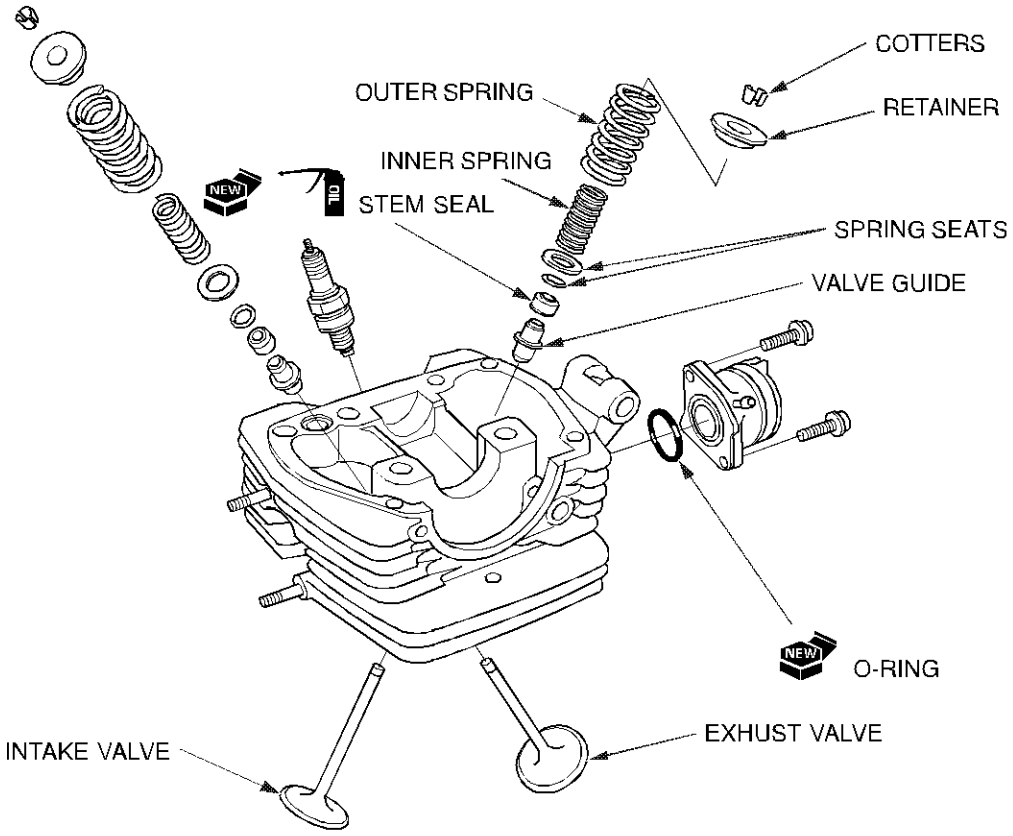
CAUTION:

- ***Excessive lapping pressure may deform or damage the seat.***
- ***Change the angle of lapping tool frequently to prevent uneven seat wear.***
- ***Lapping compound can cause damage if it enters between the valve stem and guide.***

After lapping, wash any residual compound off the cylinder head and valve and recheck the seat contact.



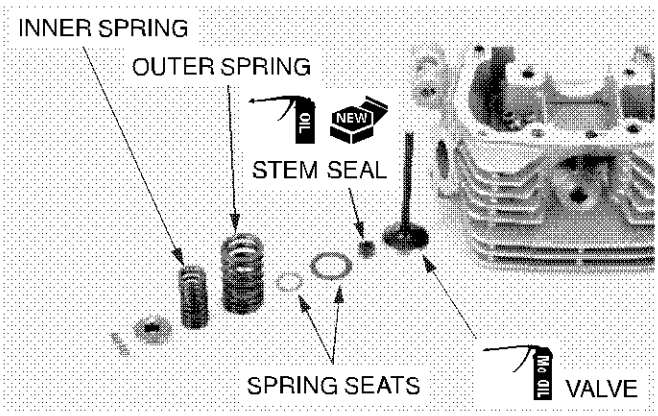
CYLINDER HEAD ASSEMBLY



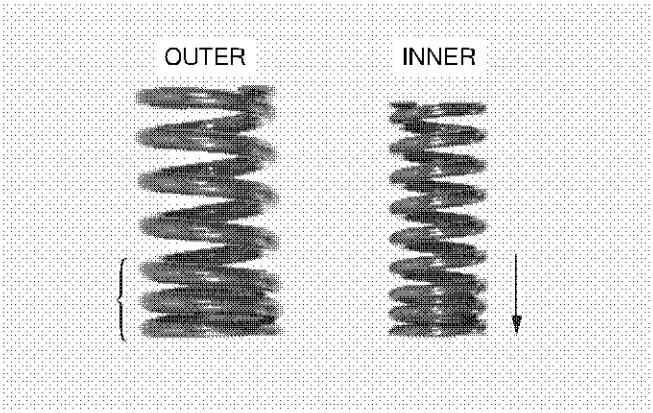
Clean the cylinder head assembly with solvent and blow through all oil passages with compressed air.

Install the valve spring seats.
Install the new stem seals.

Lubricate the valve stems with engine oil and insert the valve into the valve guide.
To avoid damage to the stem seal, turn the valve slowly when inserting.



Install the valve springs and retainers. The springs tightly wound coils should face toward the combustion chamber.

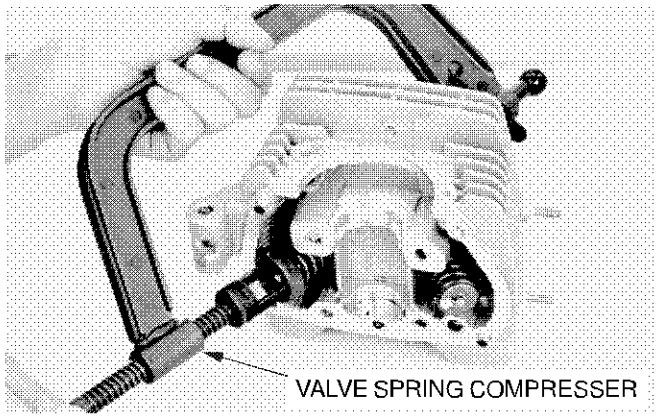


Install the valve cotters using the special tool as shown.

TOOL:
Valve spring compressor **07757 – 0010000**

CAUTION:

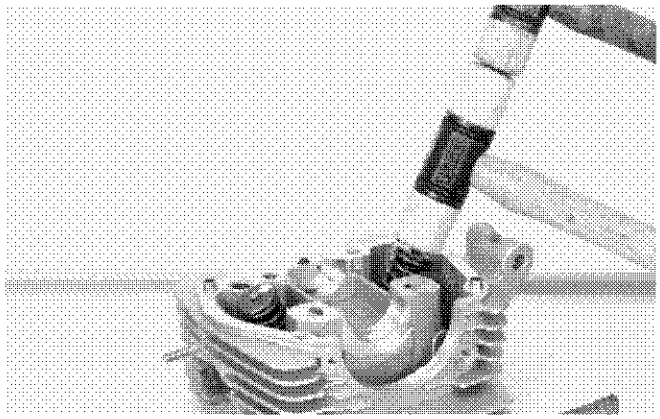
To prevent loss of tension, do not compress the valve spring more than necessary.



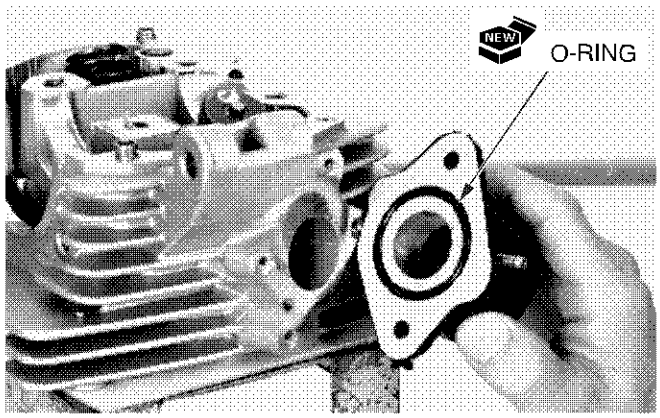
Tap the valve stems gently with two plastic hammers as shown to seat the cotters firmly.

CAUTION:

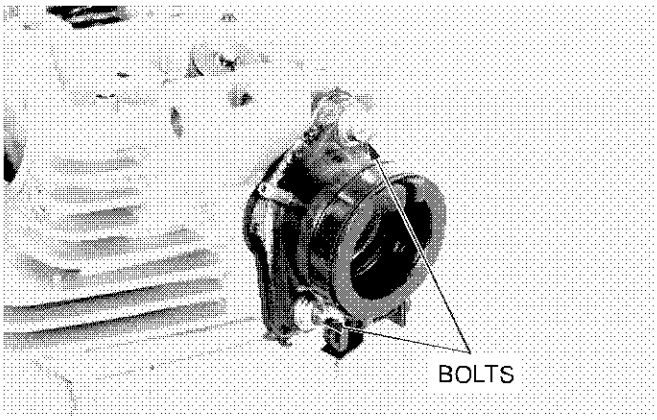
Support the cylinder head above the work bench surface to prevent possible valve damage.



Coat a new O-ring with oil and install it into the groove in the insulator.
Install the insulator tightening the bolts securely.

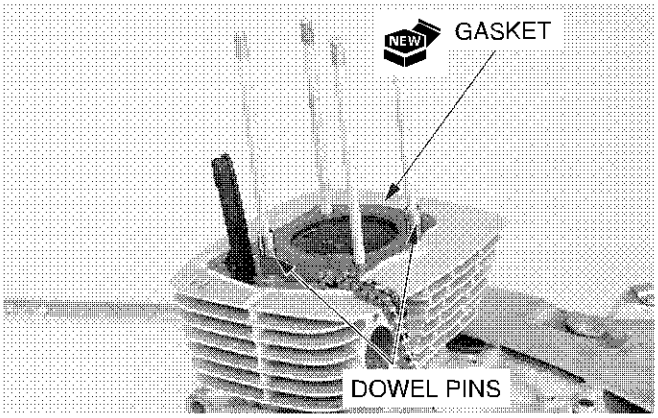


Install the insulator tightening the bolts securely.



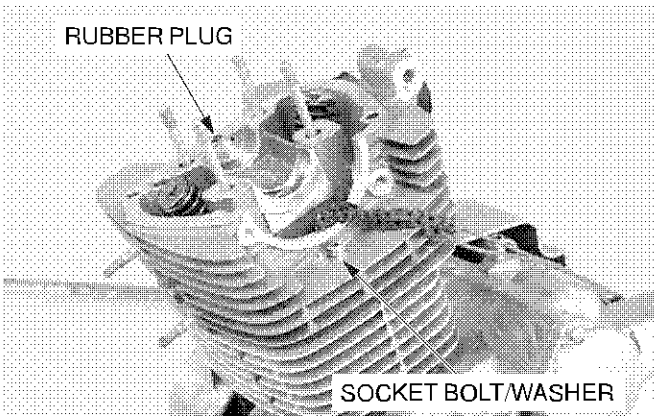
CYLINDER HEAD INSTALLATION

Clean any gasket material from the cylinder mating surfaces.
Install the dowel pins and new gasket.

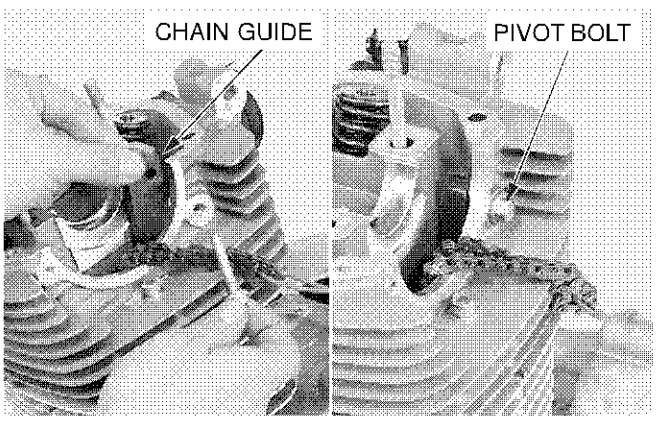


Install the cylinder head.
Install the cylinder head socket bolt and washer.
Tighten the cylinder head socket bolt securely.

Install the rubber plug.



Install the cam chain tainsioner slider pivit bolt and cam chain guide.
Tighten the cam tainsioner slider pivit bolt securely.



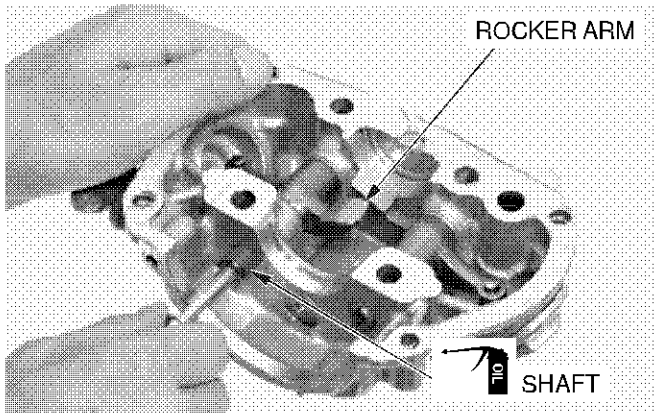
CYLINDER HEAD COVER/CAMSHAFT INSTALLATION

CYLINDER HEAD COVER ASSEMBLY

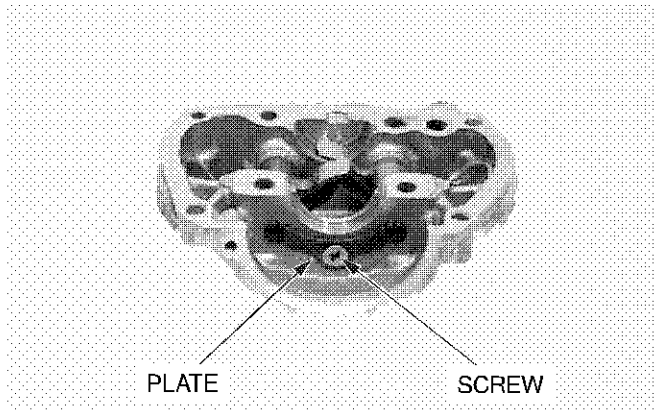
Clean the threads of each rocker arm shaft thoroughly.

Apply engine oil to the rocker arms and shafts sliding surfaces.

Install the rocker arms and shafts in the cylinder head cover.

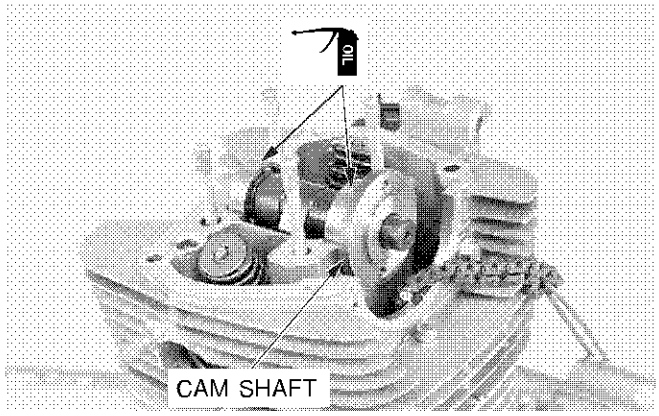


Install the rocker arm shaft plate with the rocker arm shaft reliefs on the inside.
Tighten the setting screw securely.



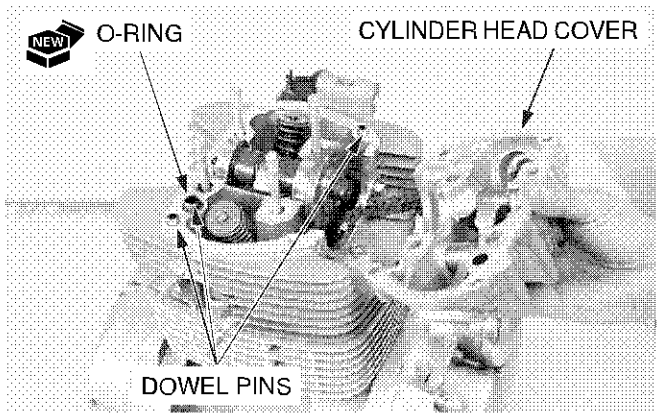
INSTALLATION

Lubricate the camshaft bearings with engine oil.
Install the bearing on the cylinder head.



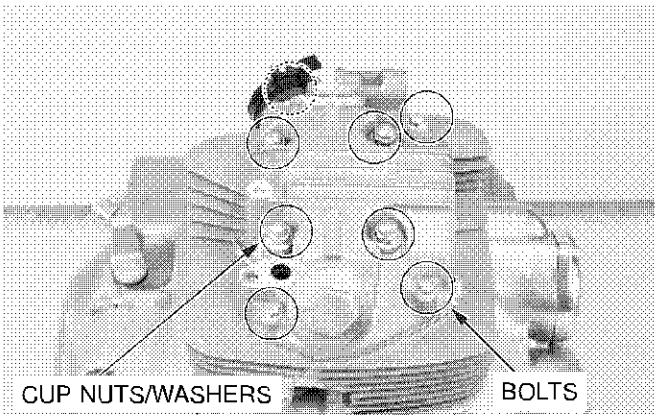
Install the dowel pins.
Coat a new O-ring with oil and install it.

Install the cylinder head caver to the cylinder head.

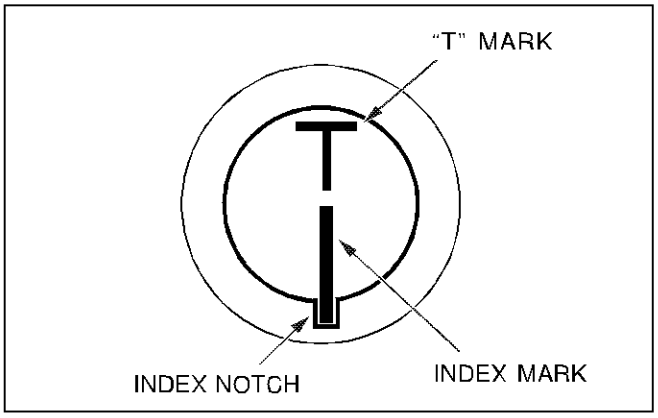


Install the new sealing washers and the cylinder head cover cap nuts .
Install the cylinder head cover bolts.
Tighten the cap nuts and bolts in a crisscross pattern in 2 or 3 step.

TORQUE :
Cylinder head cover cap nut : 27N·m (2.8 kgf·m, 20 lbf·ft)
Cylinder head cover socket bolt : 12N·m (1.2 kgf·m, 9 lbf·ft)

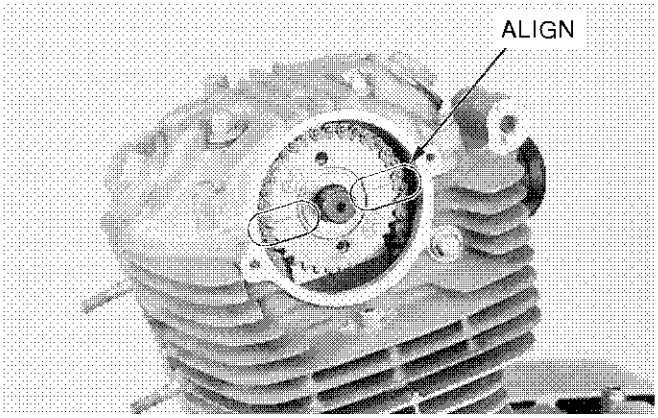


Align the "T" mark and index line on the flywheel with the index notch on the left crankcase cover by turning the crankshaft counterclockwise.



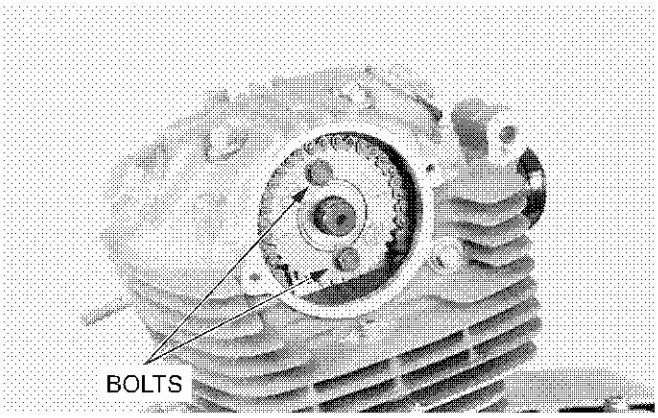
Install the cam sprocket with its timing mark facing out.
Install the cam chain on to the cam sprocket.

Align the timing mark on the cam sprocket with the mating surface of the head and cover, without rotating the crankshaft.



Install the tighten the cam sprocket bolts to specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Remove the tensioner lifter plug.

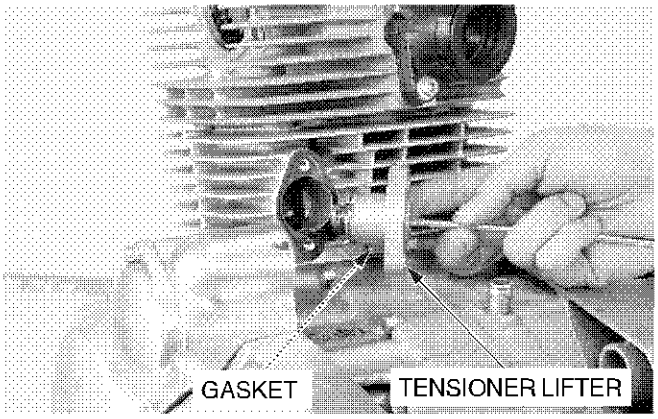
Check the lifter operation:
— The tensioner shaft should not go into the body when it is pushed.
— When it is turned clockwise with a screwdriver, the tensioner shaft should be pulled into the body. The shaft spring out of the body as soon as the screwdriver is released.

Install the new gasket on the tensioner lifter.

Turn the tensioner shaft clockwise with a small screw driver to retract the tensioner fully.
Install the tensioner onto the cylinder while holding it in the fully retracted position.

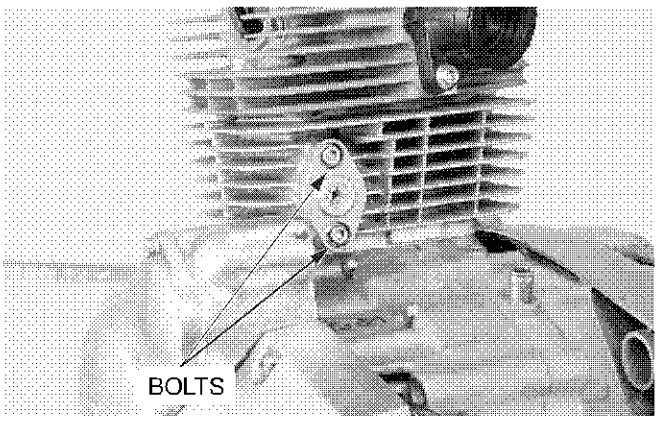
NOTE:

The tensioner is pushed out by the spring force then the tensioner shaft is released.



Remove the screw driver from the tensioner lifter.
Install and tighten the tensioner lifter mounting bolts to specified torque.

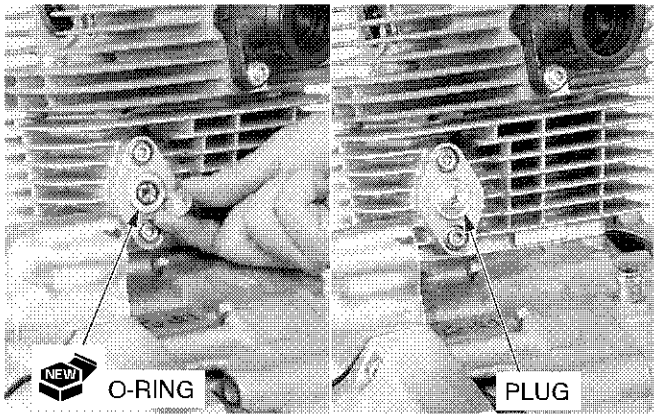
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Install the plug with a new O-ring and tighten it.

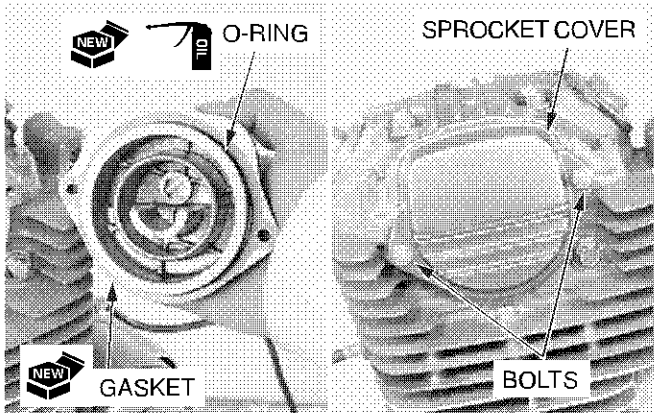
TORQUE: 4 N·m (0.4 kgf·m, 2.9 lbf·ft)

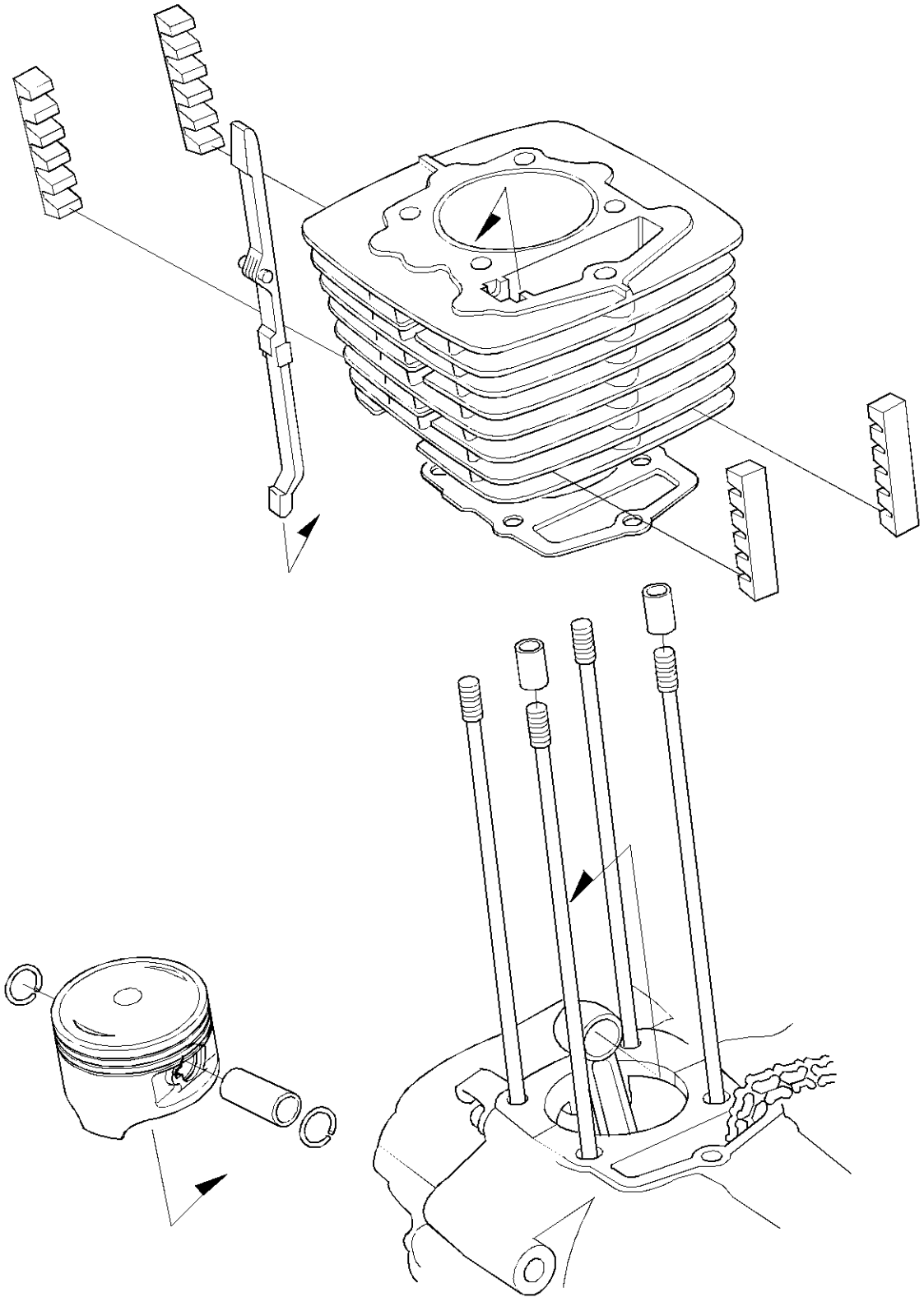
Make sure that the index lines align with the upper surface of the cylinder head when the T mark is aligned with the index notch on the crankcase cover again (see page7-17).



Install the new gasket to cam sprocket cover.
Apply engine oil to a new O-ring and install it to the cam sprocket cover.

Install the cam sprocket cover to the cylinder head.
Install and tighten the bolts to cam sprocket cover.





SERVICE INFORMATION

GENERAL

- The engine must be removed to service the cylinder and piston.
- Take care not to damage the cylinder wall and piston.
- Be careful not to damage the mating surfaces by using the screw driver when removing the cylinder.
- When removing the piston, clean carbon and sludge from the top of the cylinder.
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original locations.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		63.500 – 63.510 (2.5000 – 25.003)	63.6 (2.50)
	Out of round		——	0.10 (0.004)
	Taper		——	0.10 (0.004)
	Warpage		——	0.10 (0.004)
Piston, piston ring and piston pin	Piston mark direction		"IN" mark facing toward the intake side	——
	Piston O.D.		63.47 – 63.49 (2.499 – 2.500) at 23.0 (0.91) from the bottom	63.42 (2.497)
	Piston pin hole I.D.		15.002 – 15.008 (0.5906 – 0.5910)	15.04 (0.592)
	Piston pin O.D.		14.994 – 15.000 (0.5903 – 0.5906)	14.96 (0.589)
	Connecting rod small end I.D.		15.010 – 15.028 (0.5909 – 0.5917)	15.06 (0.593)
	Cylinder-to-piston clearance		0.010 – 0.040 (0.0004 – 0.0016)	0.10 (0.004)
	Piston-to-piston pin clearance		0.002 – 0.014 (0.0001 – 0.0006)	0.02 (0.001)
	Connecting rod-to-piston pin clearance		0.016 – 0.034 (0.0006 – 0.0013)	0.10 (0.004)
	Piston ring-to-ring groove clearance	Top	0.010 – 0.045 (0.0004 – 0.0018)	0.09 (0.004)
		Second	0.015 – 0.045 (0.0006 – 0.0018)	0.09 (0.004)
	Piston ring end gap	Top	0.20 – 0.35 (0.008 – 0.014)	0.50 (0.014)
		Second	0.35 – 0.50 (0.014 – 0.020)	0.50 (0.014)
		Oil (side rail)	0.20 – 0.70 (0.008 – 0.028)	0.90 (0.035)
	Piston ring mark direction	Top/second	Marking facing up	——

TROUBLESHOOTING

Compression too low, hard starting or poor performance at low speed
- Leaking cylinder head gasket
- Worn, stuck or broken piston ring
- Worn or damaged cylinder and piston

Compression too high, overheating or knocking
- Excessive carbon built-up on piston or combustion chamber.

Excessive smoke
- Worn cylinder, piston or piston rings
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall

Abnormal noise (piston)
- Worn piston pin or piston pin hole
- Worn cylinder, piston or piston ring
- Worn connecting rod small end

CYLINDER REMOVAL

Remove the cylinder head (section 7).

Remove the cylinder. Do not strike the cylinder too hard and do not damage the mating surface by using a screw driver when removing it.

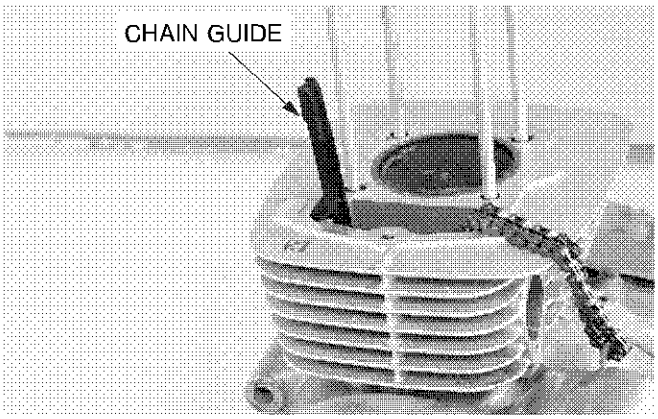
Clean the top of the cylinder thoroughly.

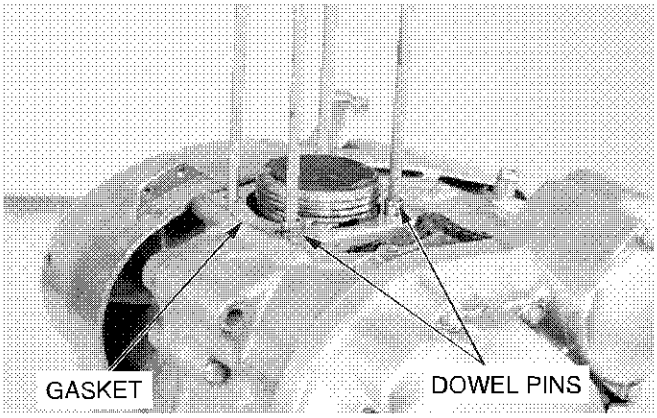
CAUTION:

Avoid damaging the gasket surfaces.

Remove the cam chain guide.

Remove the dowel pins and gasket.





INSPECTION

Inspect the cylinder wall for scratches and wear.
Measure and record the cylinder I.D. at three levels in both the X and Y axes. Take the maximum reading to determine the cylinder wear.

SERVICE LIMIT: 63.6 mm (2.50 in)

Calculate the cylinder for out of round at the three levels in an X and Y axis. Take the maximum reading to determine the out of round.

SERVICE LIMIT: 0.10 mm (0.004 in)

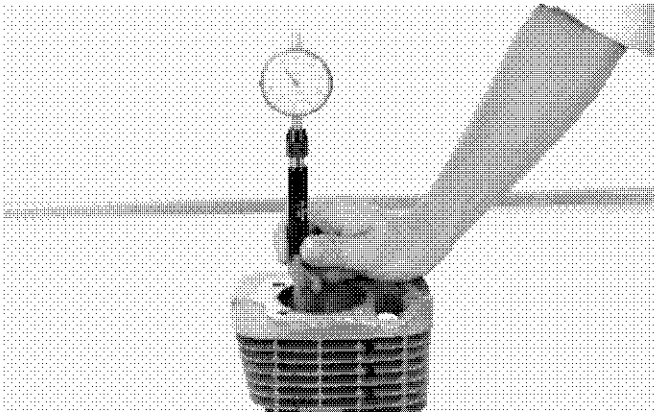
Calculate the cylinder for taper at three levels in an X and Y axis. Take the maximum reading to determine the taper.

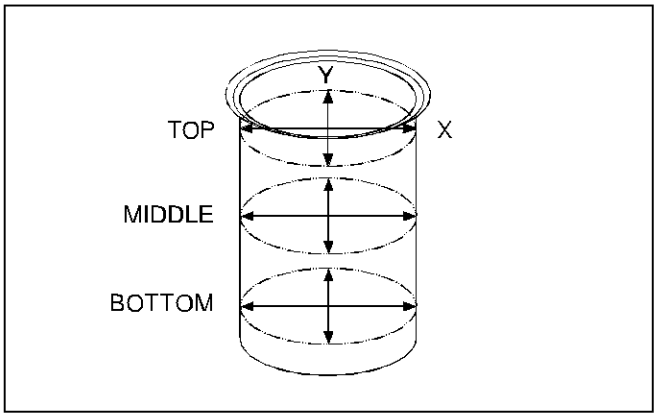
SERVICE LIMIT: 0.10 mm (0.004 in)

The cylinder must be rebored and an oversize piston fitted if the service limits are exceeded.

The following oversize pistons are available:
0.25 mm (0.010 in), 0.50 mm (0.020 in).

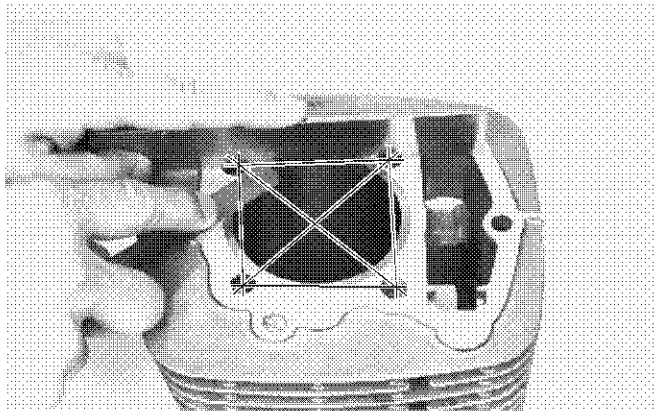
The cylinder must be rebored so that the clearance for an oversize piston is 0.020 – 0.060 mm (0.0008 – 0.0024 in).





Check the cylinder for warpage by placing a straight edge and a feeler gauge across the studs and bolt holes as shown.

SERVICE LIMIT: 0.10 mm (0.004 in)



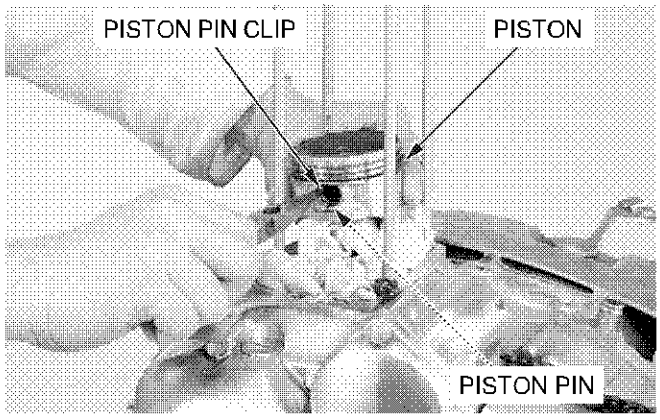
PISTON REMOVAL

NOTE:

Place a clean shop towel over the crankcase to prevent the possibility of the clip falling into the crankcase.

Remove the piston pin clip using the pair of pliers.

Remove the piston pin out and remove the piston.

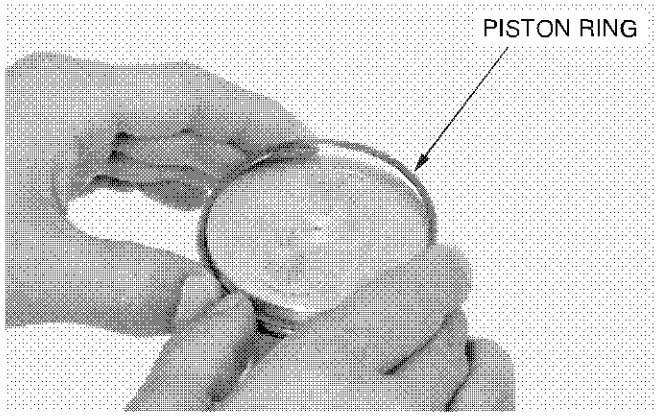


Inspect the piston rings for movement by pressing the rings. The rings should be able to move in its groove without catching.

Spread each piston ring and remove it by lifting it up at a point just opposite the gap.

CAUTION:

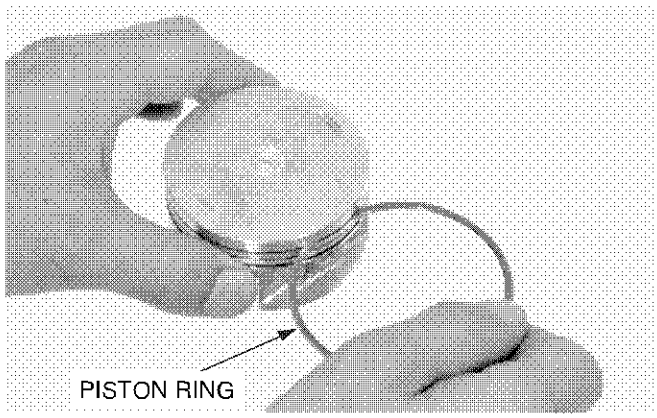
- ***Do not damage the piston ring by spreading the ends too far.***
- ***Be careful not to damage the piston when the piston ring removal.***



Clean carbon deposits from the piston.

NOTE:

Clean carbon deposits from the piston ring grooves with a ring that will be discarded. Never use a wire brush; it will scratch the grooves.

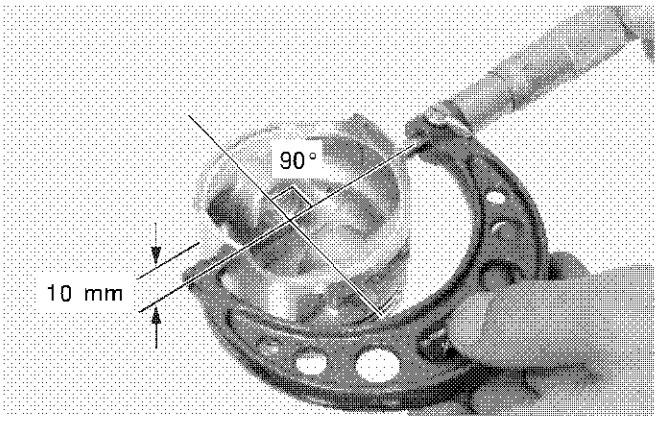


INSPECTION

Inspect the piston for cracks or other damage.
Inspect the ring grooves for excessive wear and carbon build-up.
Measure each piston O.D..

NOTE:

Take measurements 23 mm (0.91 in) from the bottom, and 90° to the piston pin hole.



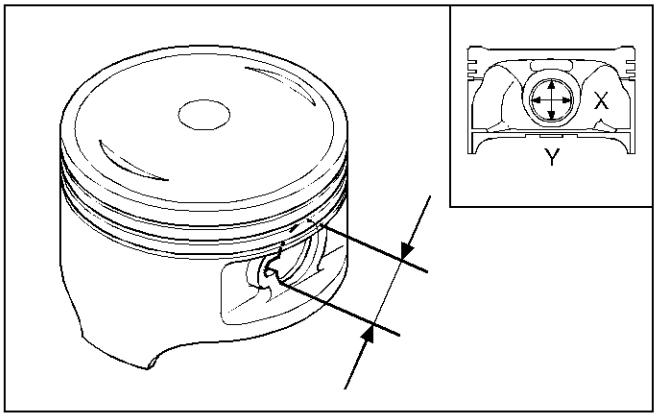
SERVICE LIMIT: 63.42 mm (2.497 in)

Calculate the cylinder-to-piston clearance. Take the maximum reading to determine the clearance (Cylinder I.D.: page 8-4).

SERVICE LIMIT: 0.10 mm (0.004 in)

Measure each piston pin hole I.D. in an X and Y axis.
Take the maximum reading to determine I.D..

SERVICE LIMIT: 15.04 mm (0.592 in)

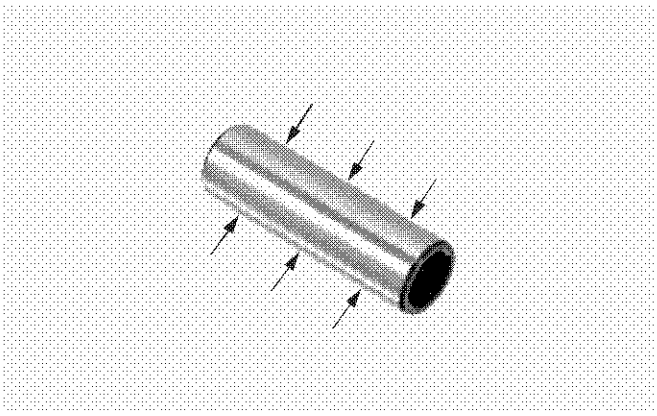


Measure the piston pin O.D. at three points.

SERVICE LIMIT: 14.96 mm (0.589 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.02 mm (0.001 in)

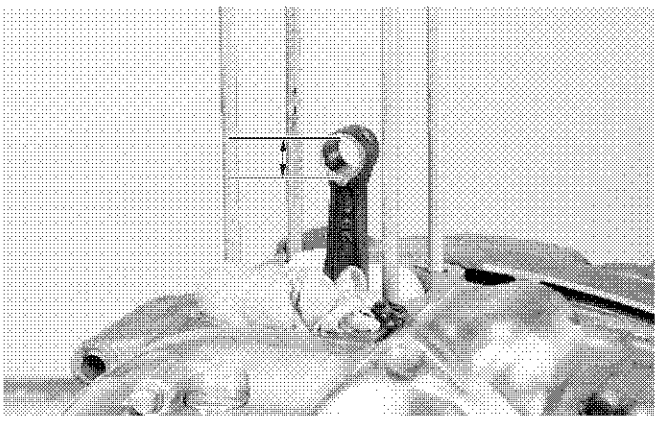


Measure the connecting rod small end I.D..

SERVICE LIMIT: 15.06 mm (0.593 in)

Calculate the connecting rod small end-to-piston pin clearance

SERVICE LIMIT: 0.10 mm (0.004 in)



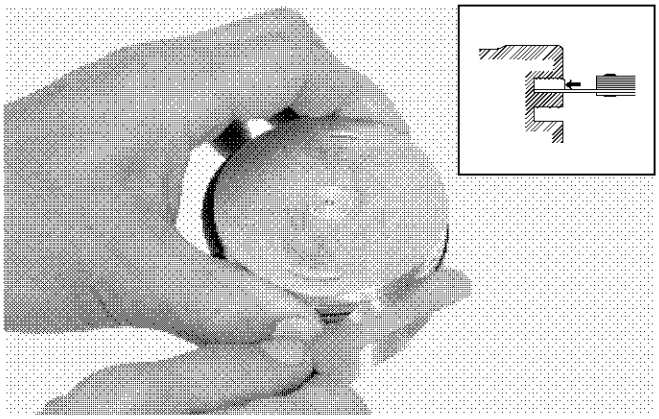
NOTE:

Always replace the piston rings as a set.

Inspect the piston ring, and replace them if they are worn.

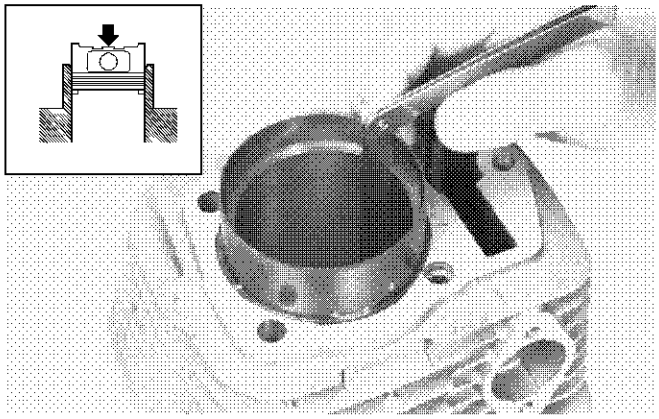
Reinstall the piston rings (page 8-7) into the piston grooves.

Push in the ring until the outer surface of the piston ring is nearly flush with the piston and measure the clearance using a feeler gauge.



SERVICE LIMIT:
Top: 0.09 mm (0.004 in)
Second: 0.09 mm (0.004 in)

Using a piston, push the ring securely into the cylinder and measure the end gap using a feeler gauge.

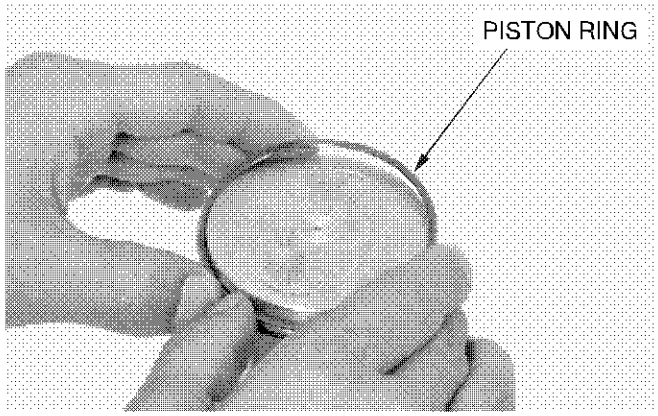


SERVICE LIMIT:
Top: 0.50 mm (0.014 in)
Second: 0.50 mm (0.014 in)
Oil: 0.90 mm (0.035 in)

PISTON INSTALLATION

NOTE:

The rear piston service uses the same procedure as the front piston.



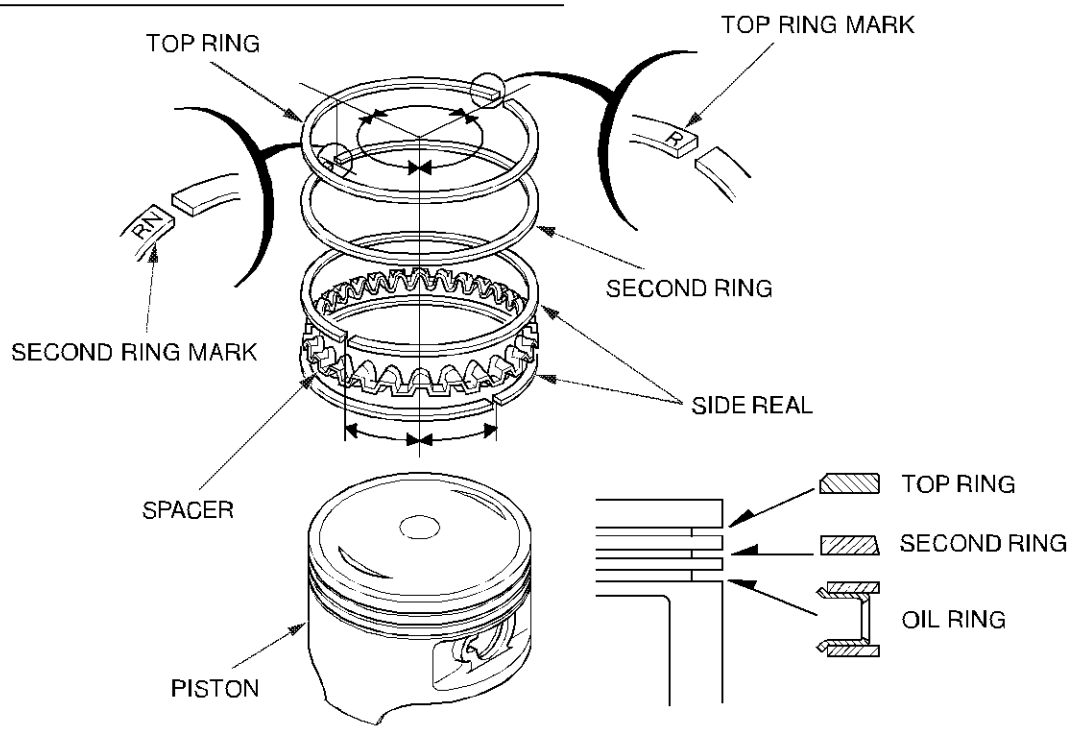
Clean the piston heads, ring lands and skirts.
Carefully install the piston rings onto the piston with their markings facing up.

CAUTION:

- ***Do not damage the piston ring by spreading the ends too far.***
- ***Be careful not to damage the piston when the piston ring installation.***

NOTE:

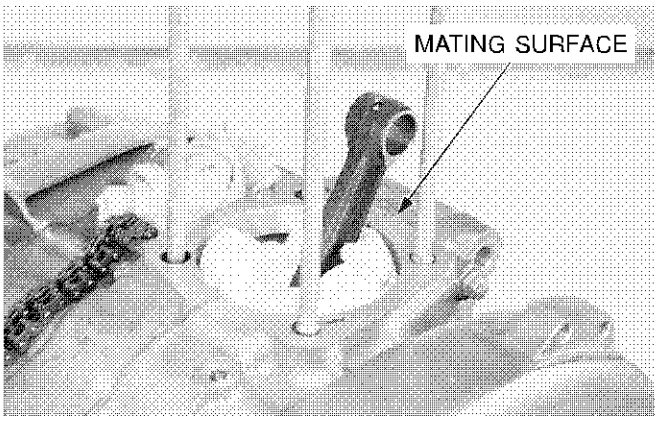
- Do not confuse the top and second rings.
- After installing the rings they should rotate freely, without sticking.
- Space the ring end gaps 120 degrees apart.



NOTE:

When cleaning the cylinder mating surface, place a shop towel over the cylinder opening to prevent dust or dirt enter the engine.

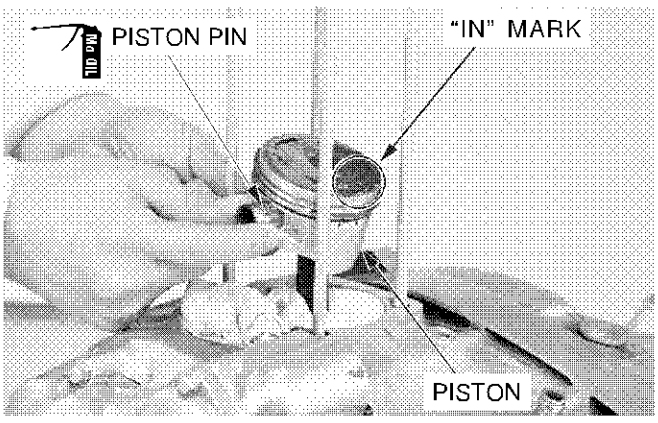
Clean any gasket material from the cylinder mating surface of the crankcase.



NOTE:

Place a shop towel over the crankcase opening to prevent piston pin clips from falling into the crankcase.

Apply molybdenum solution to the piston pin outer surfaces.
Apply engine oil to the connecting rod small end and piston pin hole.
Install the piston with its "IN" mark facing the intake side.
Install the piston pin.



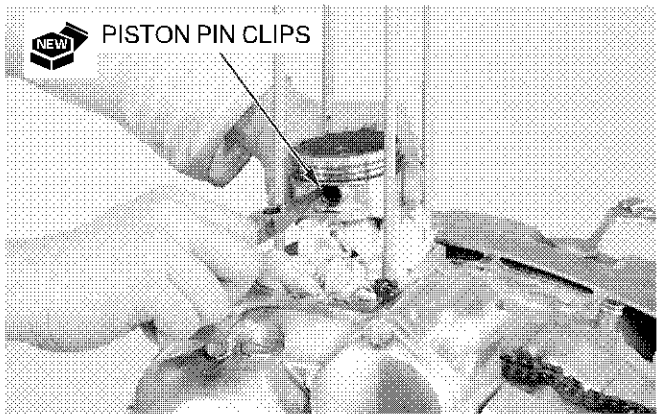
Install the new piston pin clips.

CAUTION:

Always use new piston pin clips. Reinstalling used piston pin clips may lead to serious engine damage.

NOTE:

- Set the piston pin clip in the groove properly.
- Do not align the clip's end gap with the piston cut-out.

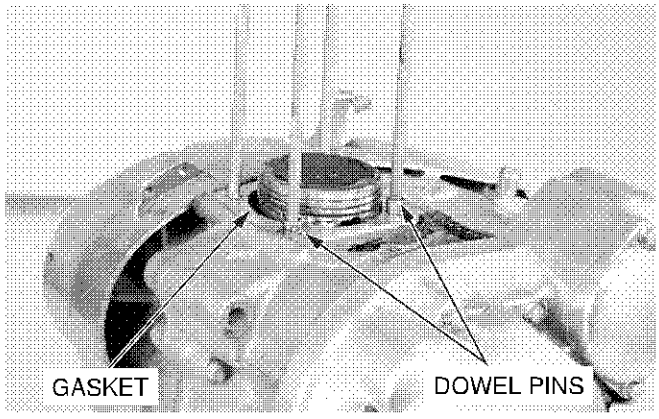


CYLINDER INSTALLATION

NOTE:

- When cleaning the cylinder mating surface, place a shop towel over the cylinder opening to prevent dust or dirt enter the engine
- Do not reuse the gasket, replace with new one.

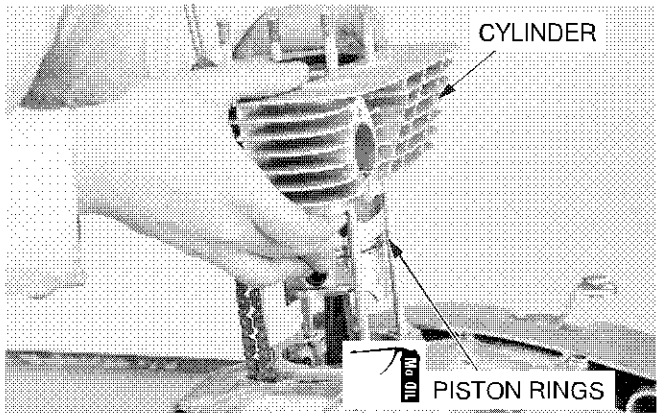
Install the dowel pins and new gasket.



CAUTION:

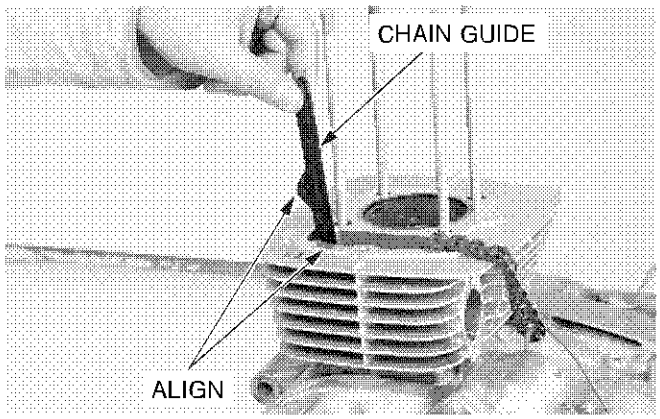
Be careful not to damage the piston rings and cylinder wall.

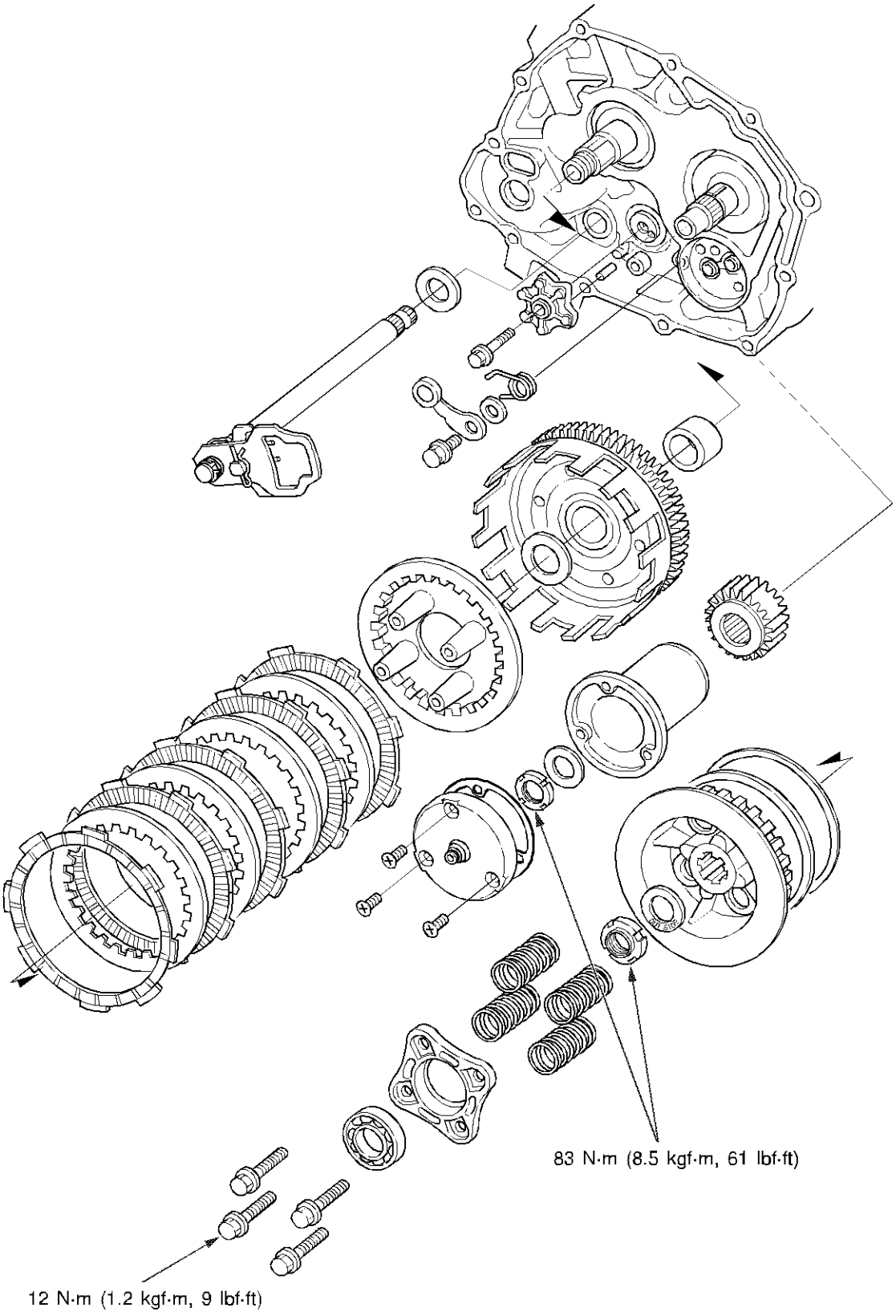
Route the cam chain through the cylinder and install the cylinder over the piston while compressing the piston rings with your fingers.



Insert the cam chain guide into cylinder and crankcase and install it by aligning the its bosses with the grooves in the cylinder securely.

Install the cylinder head (Section 7).




83 N·m (8.5 kgf·m, 61 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)

9. CLUTCH/GEARSHIFT LINKAGE

SERVICE INFORMATION

GENERAL

- This section covers service of the clutch and gearshift linkage. All service can be done with the engine installed in the frame.
- Transmission oil viscosity and level have an effect on clutch disengagement. When the clutch does not disengage or the motorcycle creeps with clutch disengaged, inspect the transmission oil level before servicing the clutch system.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Clutch	Spring free length		37.9 (1.49)	34.7 (1.37)
	Disc thickness	A	2.92 – 3.08 (0.115 – 0.121)	2.6 (0.10)
		B	3.62 – 3.70 (0.143 – 0.146)	3.3 (0.13)
	Plate warpage		——	0.10 (0.004)
	Outer guide	O.D.	27.959 – 27.980 (1.1007 – 1.1016)	27.93 (1.099)
		I.D.	19.983 – 19.996 (0.7867 – 0.7872)	20.02 (0.788)
	Outer I.D.		28.000 – 28.013 (1.1024 – 1.1029)	28.04 (1.1039)
Mainshaft O.D at clutch outer guide			19.967 – 19.980 (0.7861 – 0.7866)	19.95 (0.7854)

TORQUE VALUES

Clutch lifter plate bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Clutch center lock nut	83 N·m (8.5 kgf·m, 61 lbf·ft)
Shift drum stopper arm bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Oil filter rotor lock nut	83 N·m (8.5 kgf·m, 61 lbf·ft)

TOOLS

Lock nut wrench, 20 x 24 mm	07716 – 0020100
Gear holder	07724 – 0010100
Extension bar	07716 – 0020500
Clutch center holder	07GMB – KT70101

TROUBLESHOOTING

Faulty clutch operation can usually be corrected by adjusting the clutch system.

Clutch slips when accelerating
- Incorrect clutch adjustment
- Worn clutch disc
- Weak clutch springs
- Faulty clutch weight

Motorcycle creeps with clutch disengaged
- Incorrect clutch adjustment
- Clutch plate warped
- Faulty clutch lifter
- Faulty clutch weight

Hard to shift
- Damaged gearshift spindle
- Damaged stopper plate and pin
- Loose stopper plate bolt
- Incorrect clutch adjustment

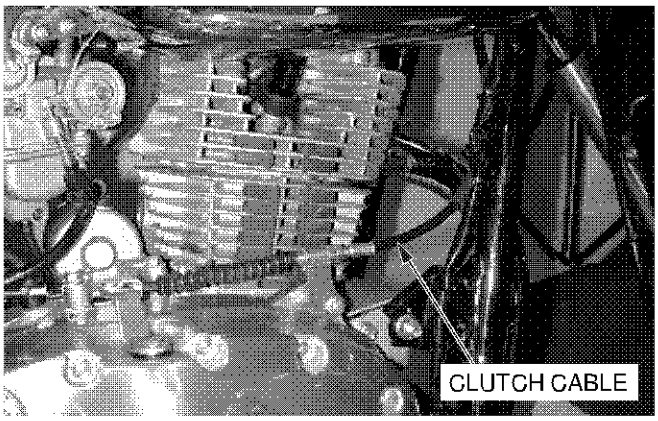
Transmission jumps out of gear
- Damaged stopper arm
- Damaged stopper plate
- Loose stopper plate bolt

Gearshift pedal will not return
- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

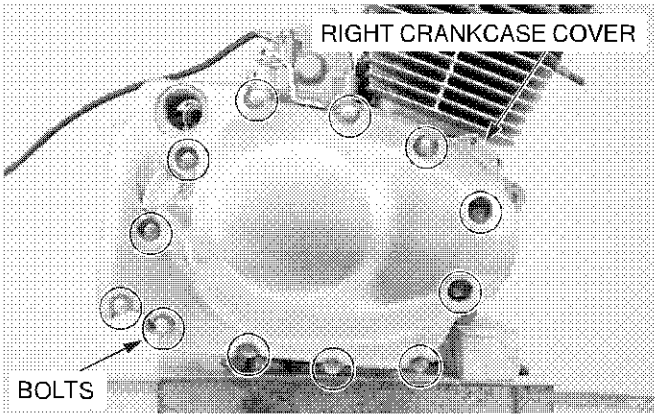
RIGHT CRANKCASE COVER REMOVAL

Drain the engine oil (page 3-10).
Remove the main step (page 6-3).

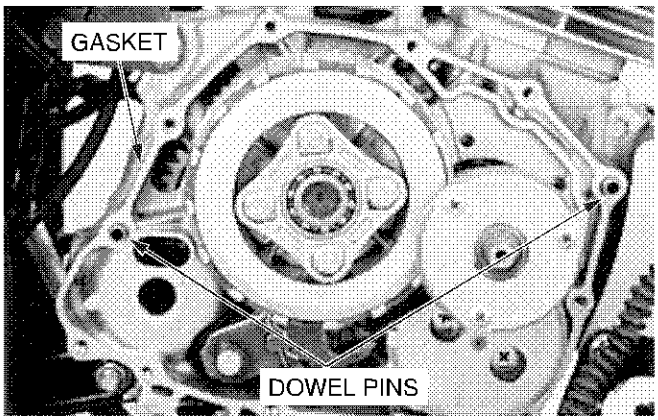
Disconnect the clutch cable from the clutch lifter arm.



Remove the right crankcase cover and bolts.

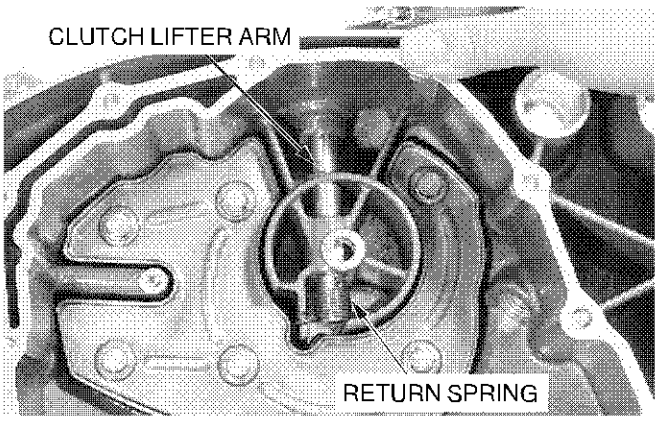


Remove the gasket and dowel pins.



DISASSEMBLY

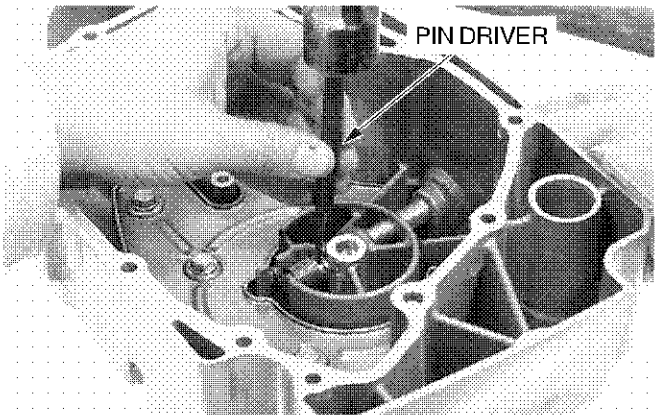
Unhook the return spring from the clutch lifter arm.



Record the amount of projection and direction of the spring pin as against lifter arm ahaft.

Drive in the spring pin to the same height as the outside diameter of lifter arm shaft using a commercially available 3 mm pin driver.

Remove the lifter arm and spring.



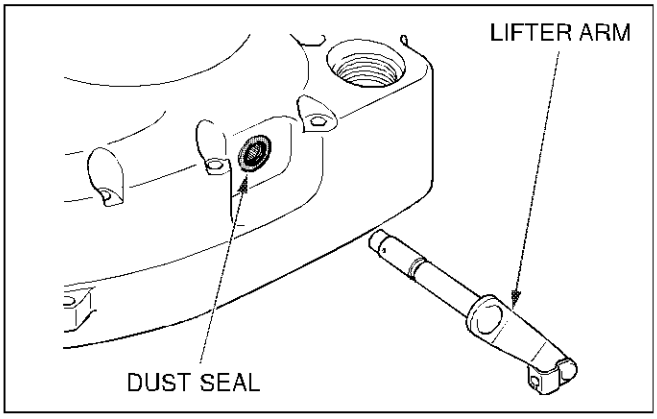
INSPECTION

Check the dust seal fatigue or damage.
Replace these parts if necessary.

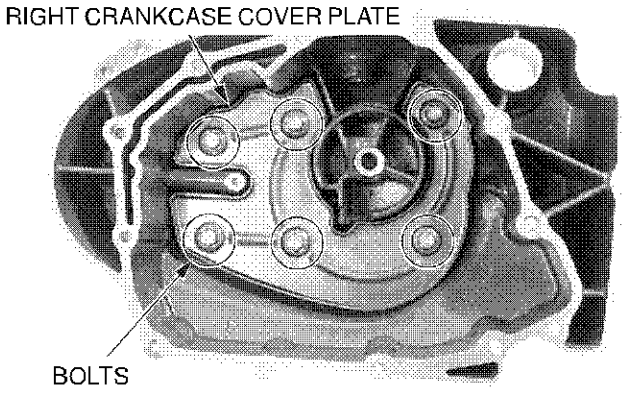
NOTE:

If the dust seal replacement is required, press the dust seal to the case surface.

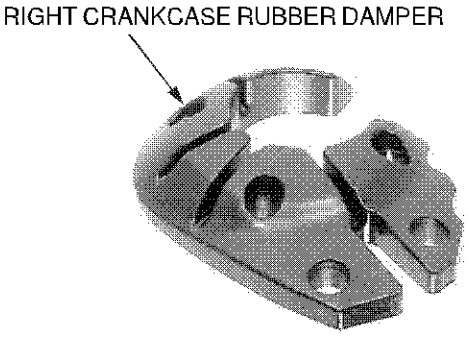
Check the clutch lifter arm for damage or bending.
Check the spring for fatigue or damage.
Replace these parts if necessary.



Remove the right crankcase cover plate and bolts.



Remove the right crankcase rubber camper from the right crankcase cover.



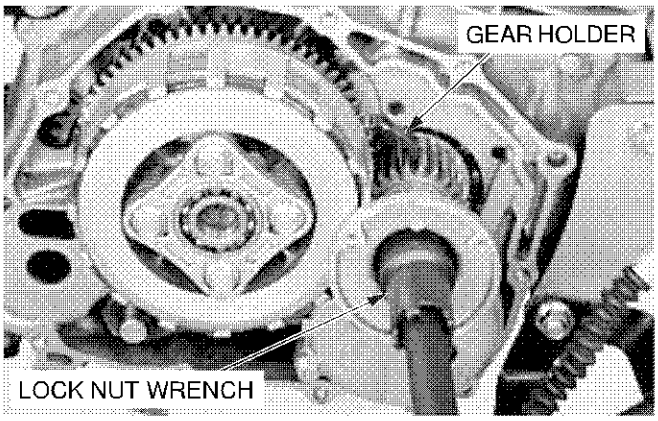
CLUTCH

REMOVAL

Remove the oil pump (page 4-3).
Remove the oil filter rotor cover (page 3-12).

Hold the primary drive gear and clutch outer gear with the gear holder.

TOOL:
Gear holder **07724 – 0010100**

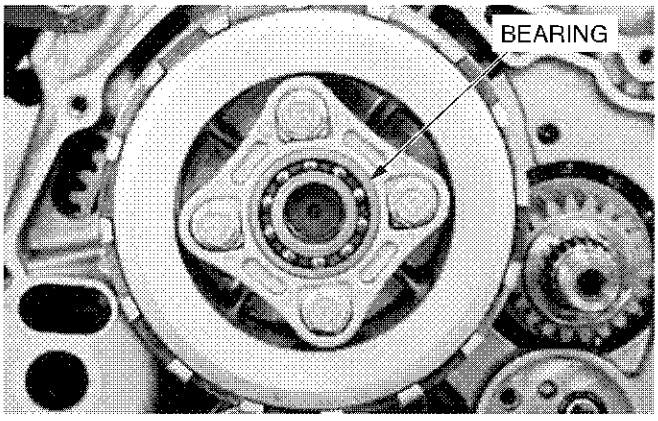


Remove the lock nut, washer and oil filter rotor.

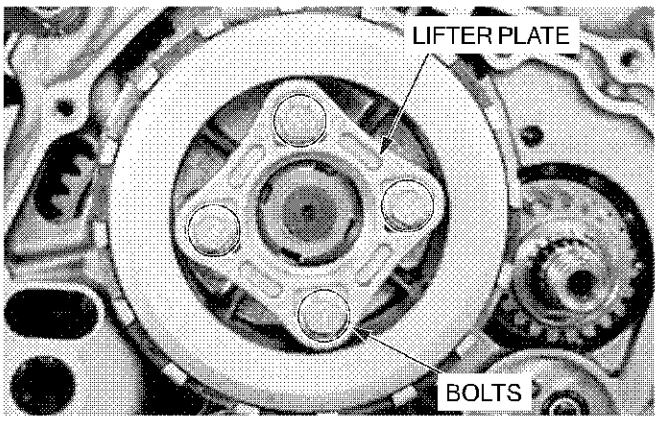
TOOL:
Lock nut wrench, 20 x 24 mm **07716 – 0020100**

Remove the gear holder.

Remove the bearing from the lifter plate.



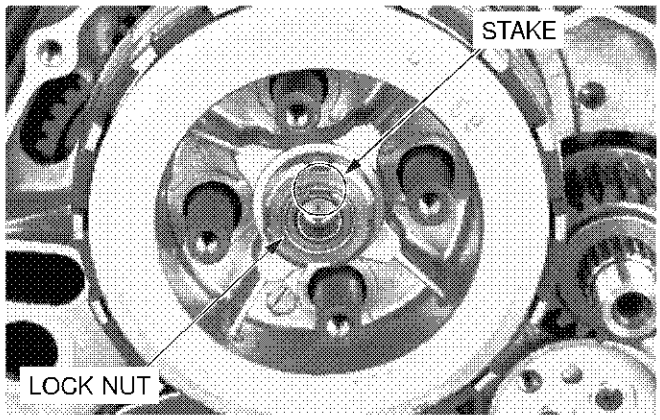
Loosen the clutch lifter plate bolts in a crisscross pattern in 2 or 3 steps.
Remove the lifter plate bolts, lifter plate and clutch springs.



Untake the clutch center lock nut.

CAUTION:

Be careful not to damage the mainshaft threads.

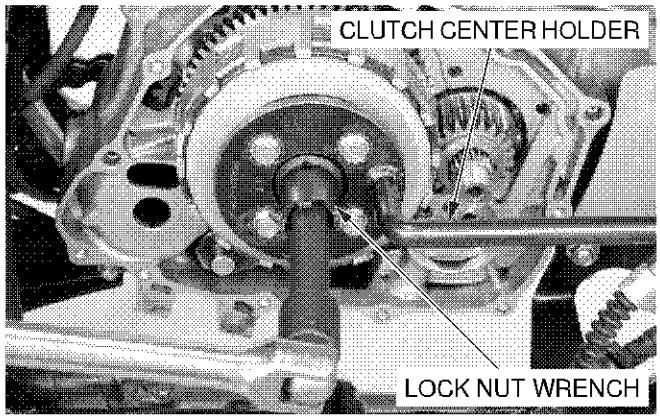


Hold the pressure plate with the clutch center holder and temporarily tighten the lifter plate bolts.
Remove the clutch center lock nut and washer.

TOOL:

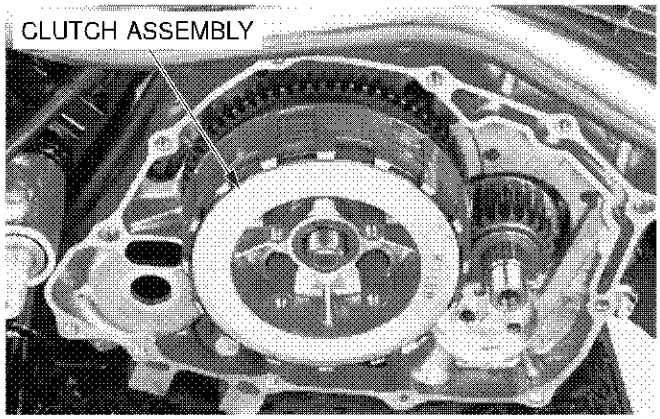
Clutch center holder	**07GMB – KT70101**
Lock nut wrench, 20 x 24 mm	**07716 – 0020100**

Remove the lifter plate bolts.

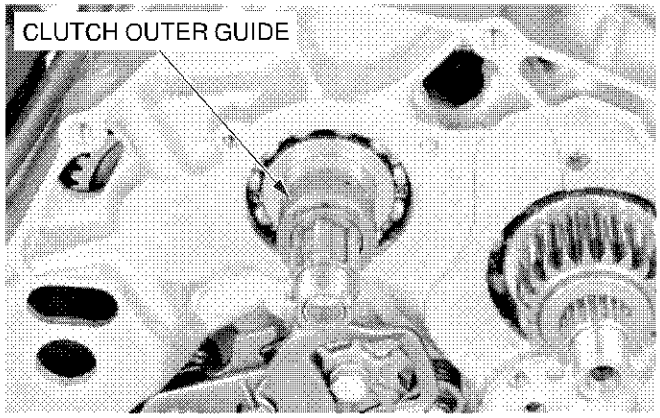


DISASSEMBLY

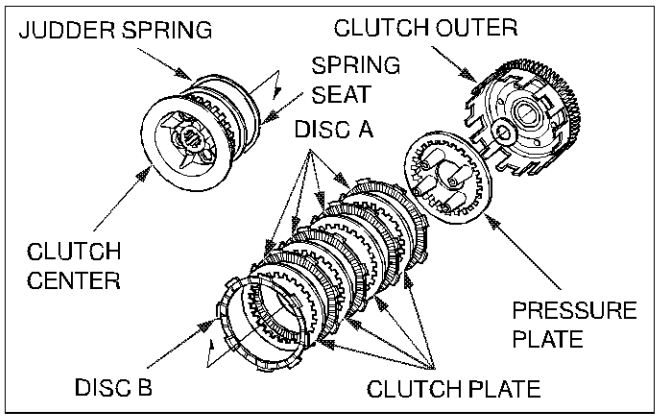
Remove the clutch assembly.



Remove the clutch outer guide and washer from mainshaft.



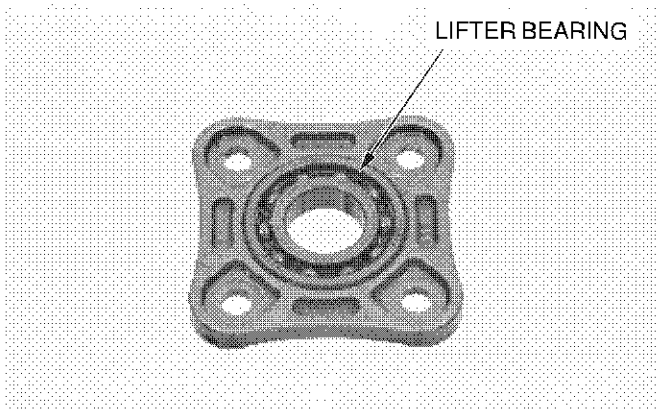
Remove the clutch center, judder spring, spring seat, clutch discs A, clutch disc B, clutch plates, spline washer, pressure plate.



INSPECTION

Clutch lifter bearing

Turn the inner rece of the lifter braring with your finger.
The bearing should turn smoothly and freely without excessive play.
If necessary replace the bearing.

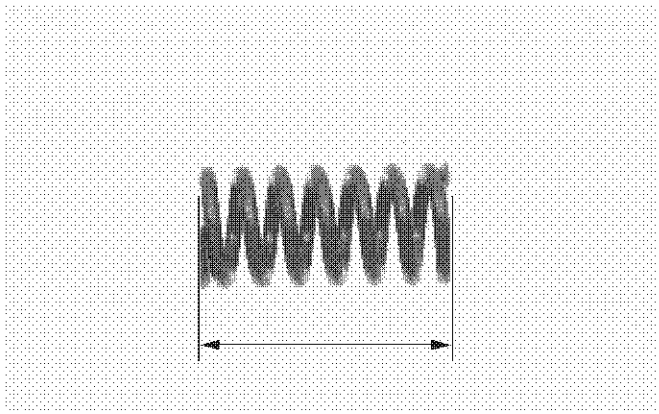


Clutch spring

Check the clutch spring for fatigue or other damage.

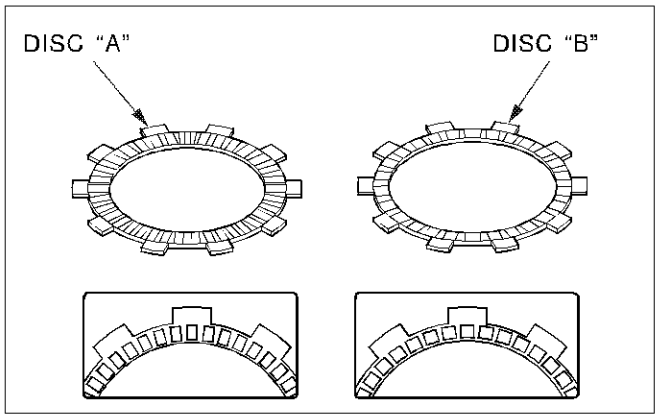
Measure the clutch spring free length.

SERVICE LIMIT: 34.7 mm (1.37 in)



Clutch disc

Check the clutch discs for signs of scoring or discoloration.

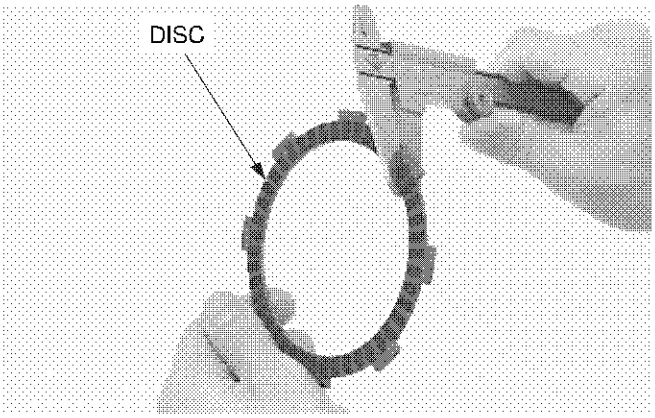


Measure the thickness of the discs.

SERVICE LIMITS: Disc A 2.6 mm (0.10 in)
Disc B 3.3 mm (0.13 in)

NOTE:

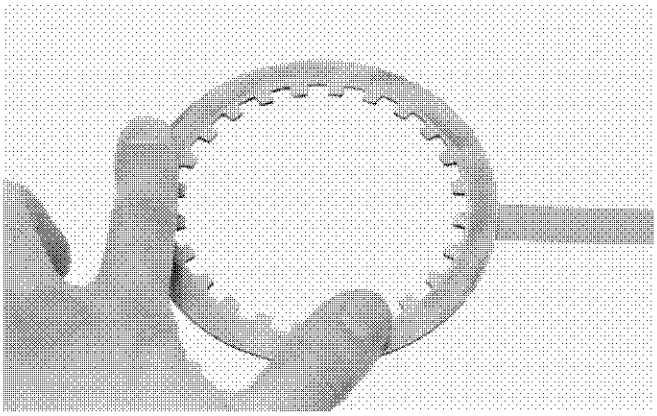
Replace the discs and plates as a set.



Clutch plate

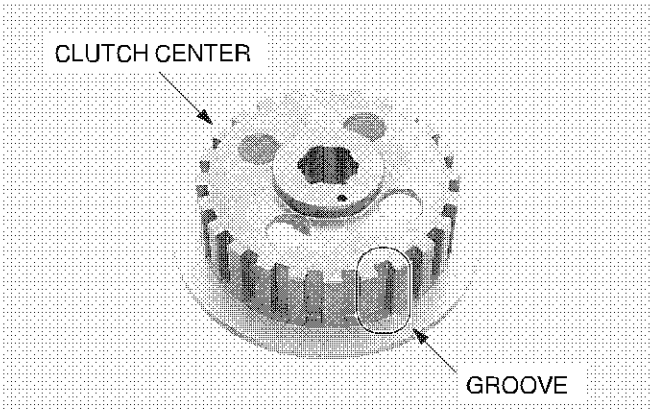
Check the plate for excessive warpage or discoloration.
Check the plate warpage on a surface using a feeler gauge.

SERVICE LIMIT: 0.10 mm (0.004 in)



Clutch center

Check the grooves of the clutch center for damage or wear caused by the clutch plates.
Replace if necessary.



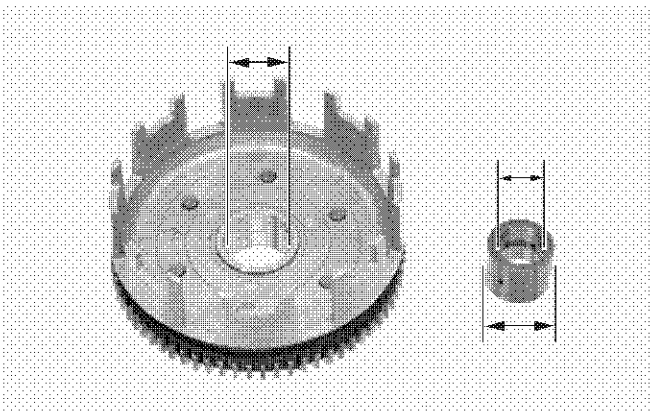
Clutch outer

Check the clutch outer for nicks, indentations or abnormal wear made by the clutch discs.
Check the serrated teeth of the primary driven gear for wear or damage.

Clutch outer guide

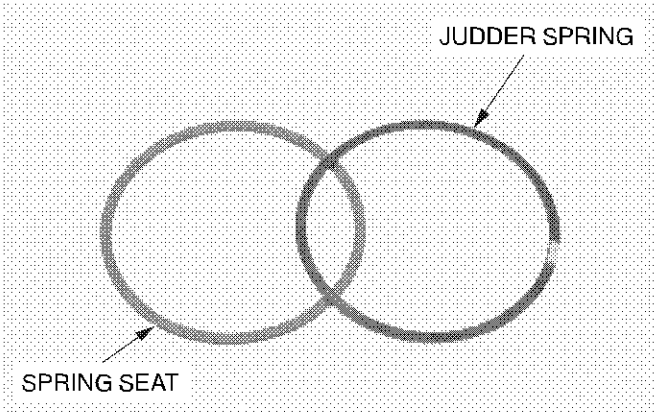
Measure the clutch outer guide.

SERVICE LIMIT: I.D.: 20.02 mm (0.788 in)
O.D.: 27.93 mm (1.099 in)



Judder spring, spring seat

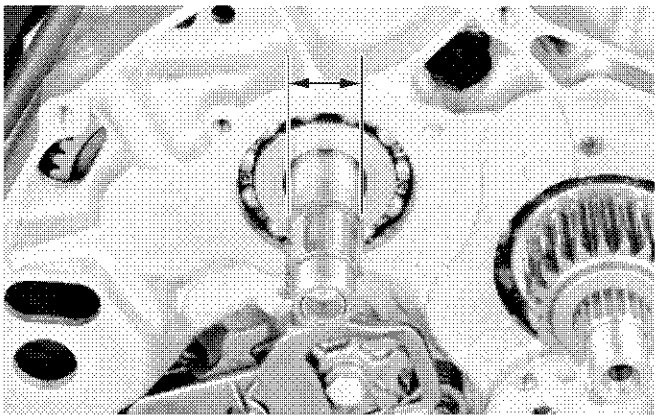
Check the judder spring and spring seat for distortion, wear or damage.



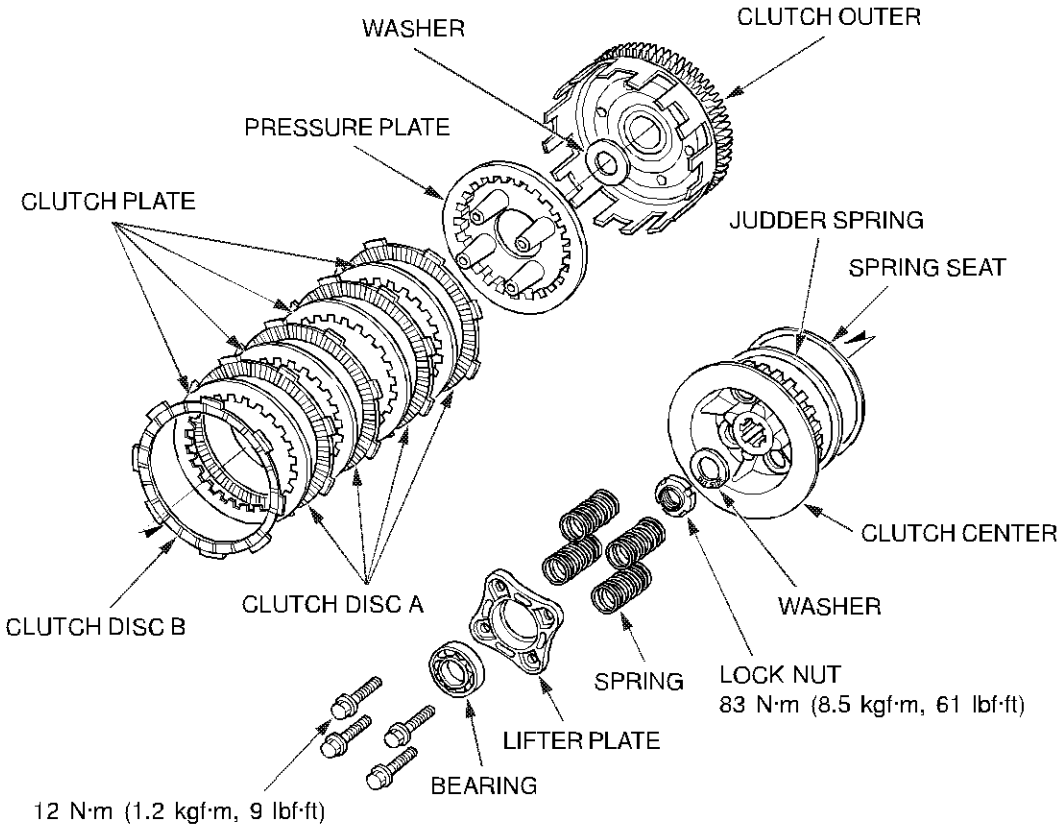
Mainshaft

Measure the mainshaft O.D. at the clutch outer guide.

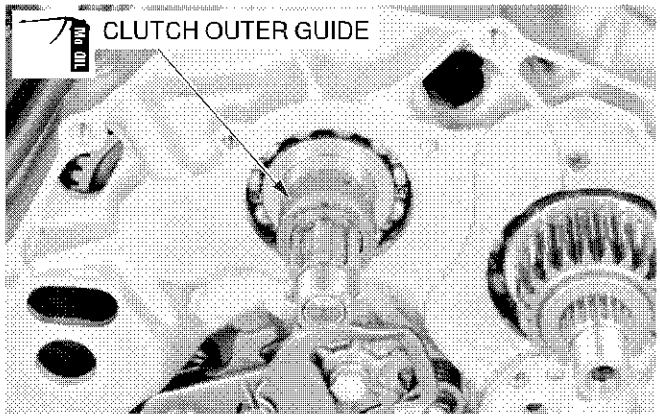
SERVICE LIMIT: 19.95 mm (0.7854 in)



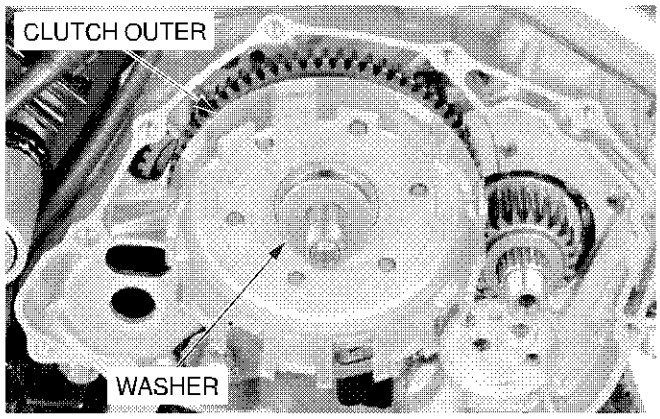
ASSEMBLY



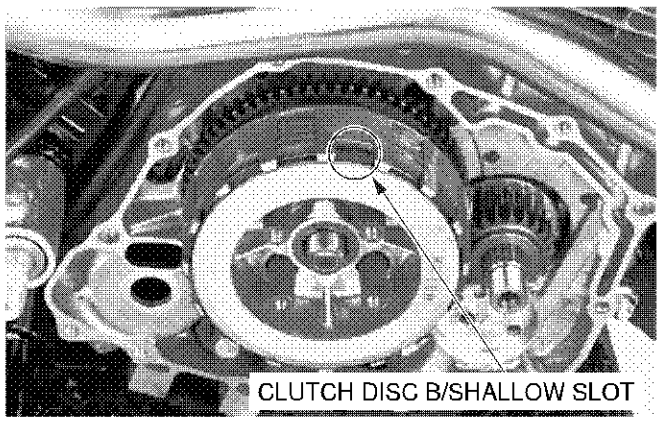
Apply engine oil to the clutch outer guide and install it to the mainshaft.



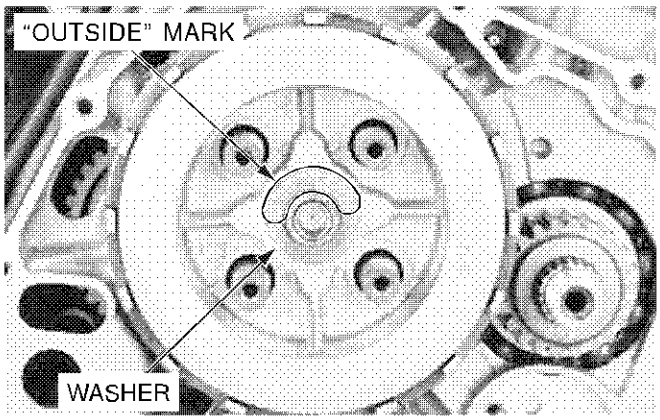
Install the clutch outer and washer.



Install the pressuer plate, Coat the discs and clutch plates with recommended engine oil.
Install the clutch disc A, clutch plates and align the shallow slot of the clutch outer and clutch disc B.
Install the judder spring, spring seat and clutch center.



Install the new washer with its "OUT SIDE" mark facing out.



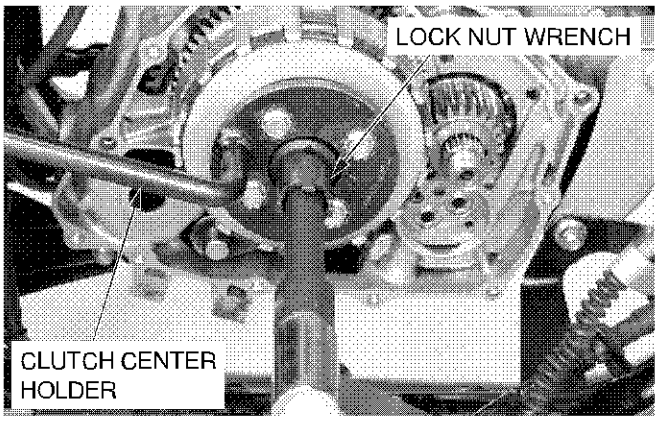
Apply oil to the new clutch center lock nut threads and Install it.
Hold the pressure plate with the clutch center holder and temporarily tighten the lifter plate bolts.
Tighten the clutch center lock nut to the specified torque.

TORQUE: 83 N·m (8.5 kgf·m, 61 lbf·ft)

TOOL:

Clutch center holder	**07GMB – KT70101**
Lock nut wrench, 20 x 24 mm	**07716 – 0020100**

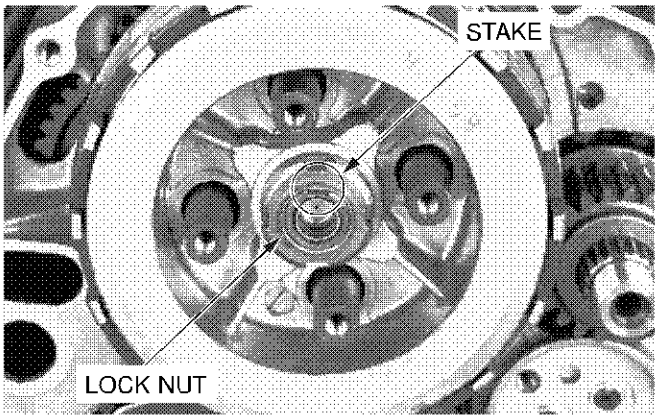
Remove the lifter plate bolts.



Stake the lock nut into the mainshaft groove.

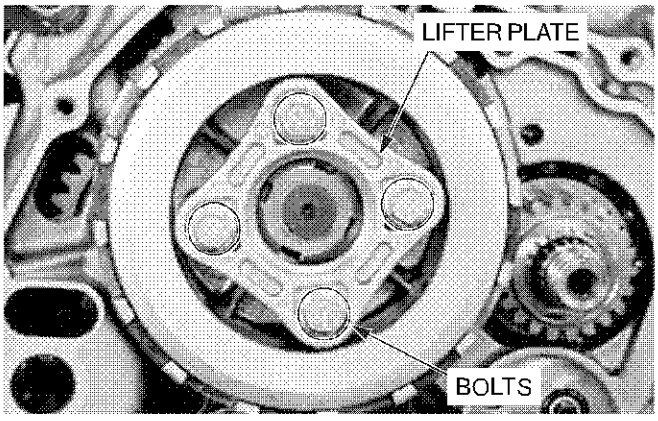
CAUTION:

Be careful not to damage the mainshaft threads.

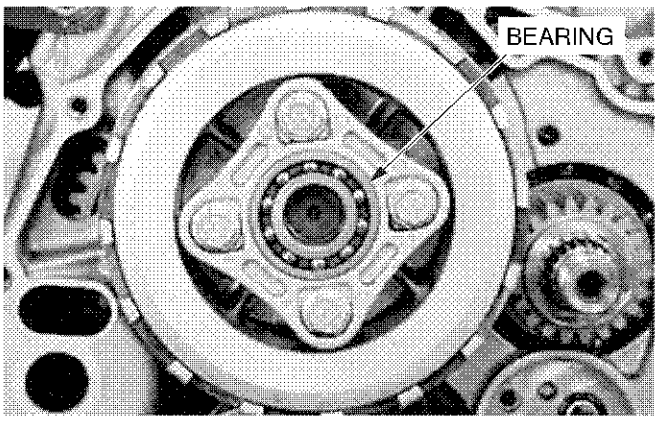


Install the clutch springs and clutch lifter plate.
Install and temporarily tighten the lifter plate bolts in a crisscross paturn in 2 or 3 steps.
Tighten the lifter plate bolts to specified torque.

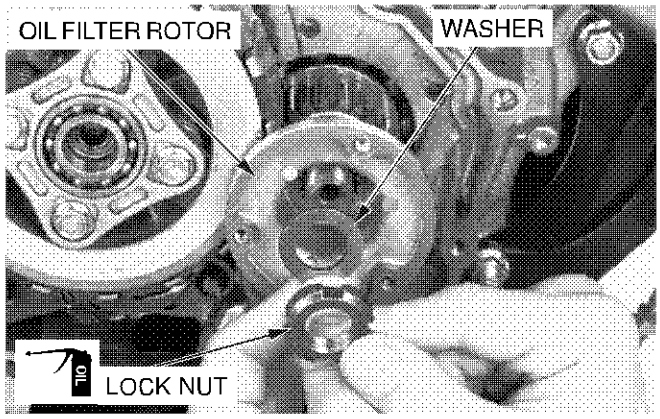
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Install the bearing into the clutch lifter plate.



Install the oil filter rotor onto the crankshaft.
Install the washer.
Apply oil to the lock nut threads.
Install the lock nut with the chamfered side facing inside.



Lock the primary drive and clutch outer gears with the gear holder.

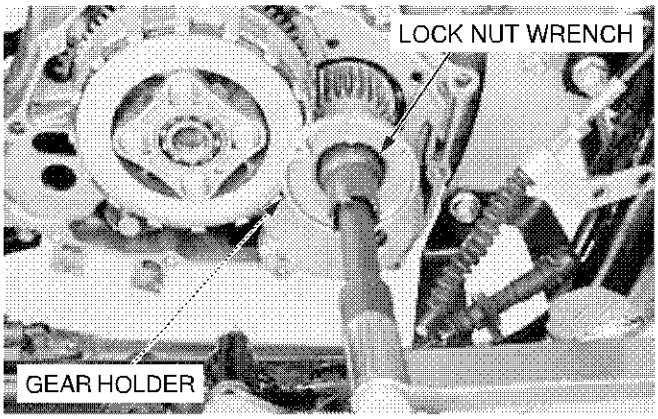
TOOL:
Gear holder **07724 – 0010100**

Tighten the lock nut.

TORQUE: 83 N·m (8.5 kgf·m, 61 lbf·ft)

TOOL:
Lock nut wrench, 20 x 24 mm **07716 – 0020100**

Remove the gear holder.



PRIMARY DRIVE GEAR

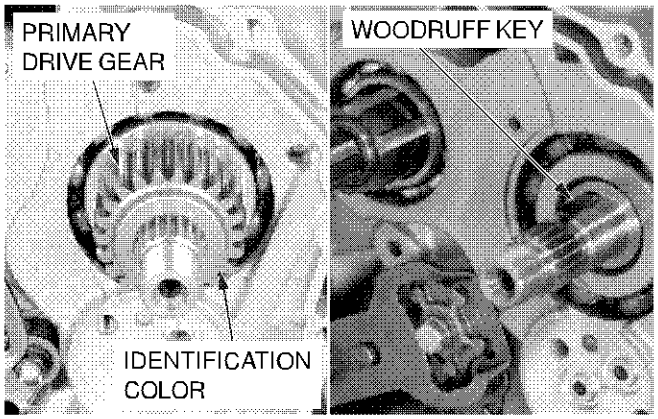
REMOVAL/INSTALLATION

Remove the clutch (page 9-7).
Remove the primary drive gear from the crankshaft.
Remove the woodruff key.

Installation is in the reverse order of removal.

NOTE:

There is identification color in primary drive gear and oil pump gear cover.
Install the primary drive gear which have a same identification color with oil pump gear cover.

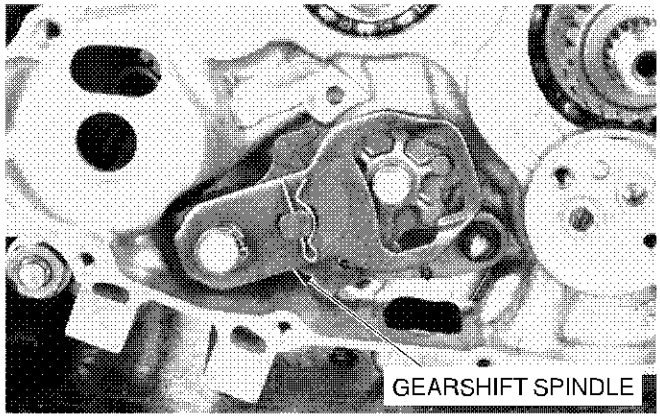


GEARSHIFT LINKAGE

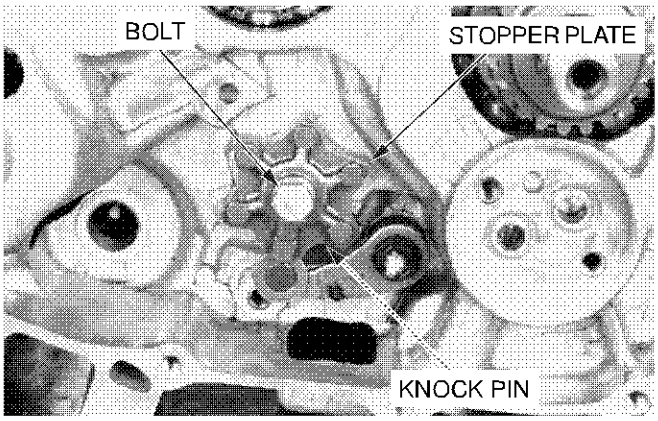
REMOVAL

Remove the following:
— Gear shift pedal (page 6-4)
— Ciutch (page 9-3)

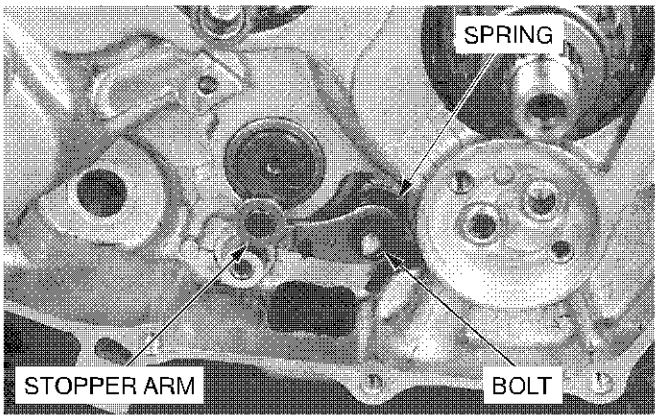
Remove the gearsift spindle.



Remove the bolt, gearshift drum stopper plate and, knock pin.

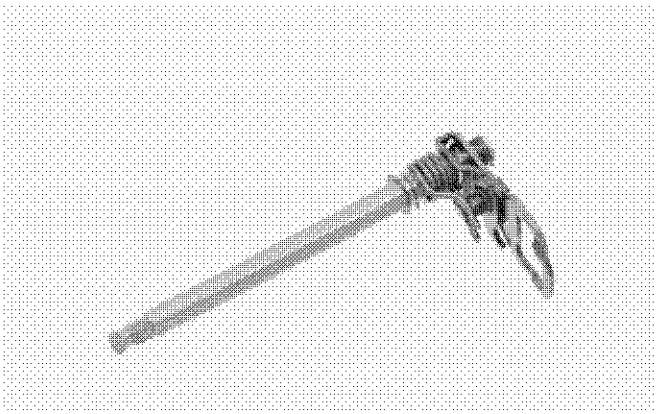


Remove the bolt, gearshift stopper arm, washer, return spring.



INSPECTION

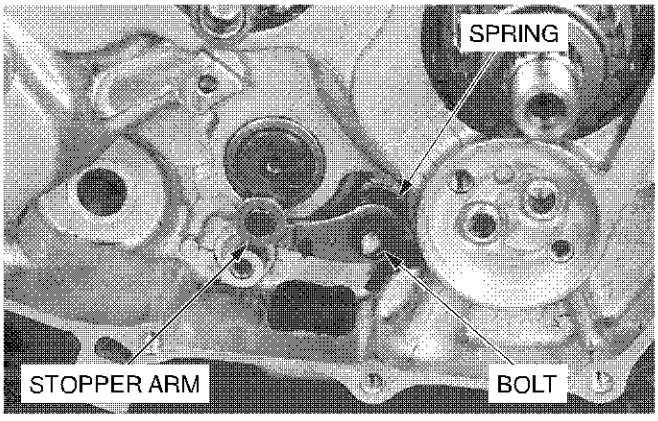
Inspect the return spring for damage and inspect the gearshaft spindle for wear or damage.



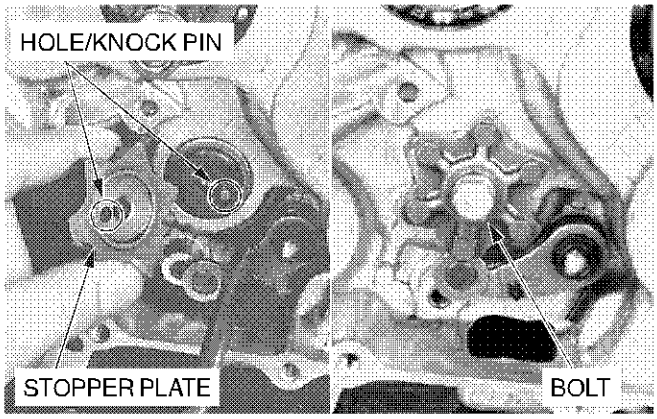
INSTALLATION

Install the return spring, washer, gearshift stopper arm and tighten the bolt to specified torque.

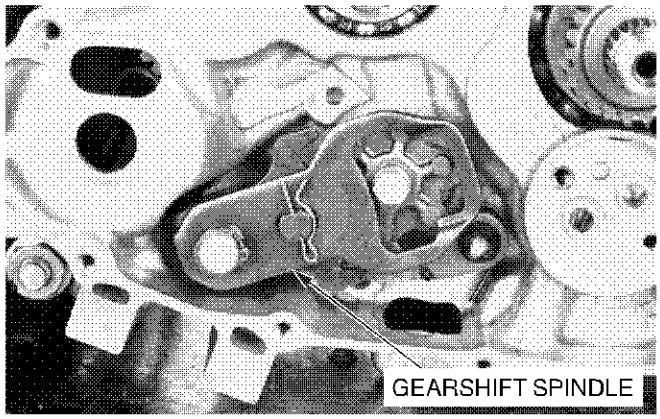
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Install the knock pin.
Hold the gearshift stopper arm with the screwdriver, and Align the hole of gear shift drum stoper plate and knock pin.
Install and tighten the bolt securely.



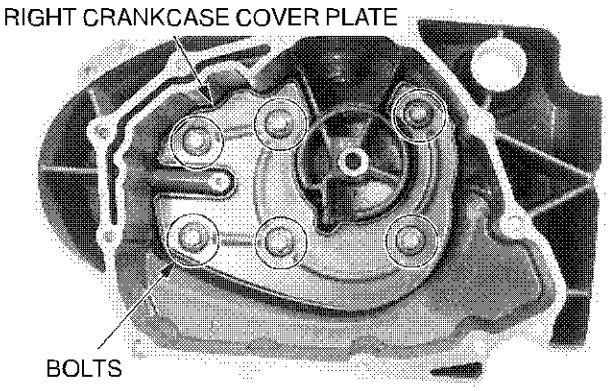
Install the washer onto the gearshaft spindle .
Install the gearshift spindle with the spindle return spring attached to the lug on the crankcase securely.



RIGHT CRANKCASE CAVER INSTALLATION

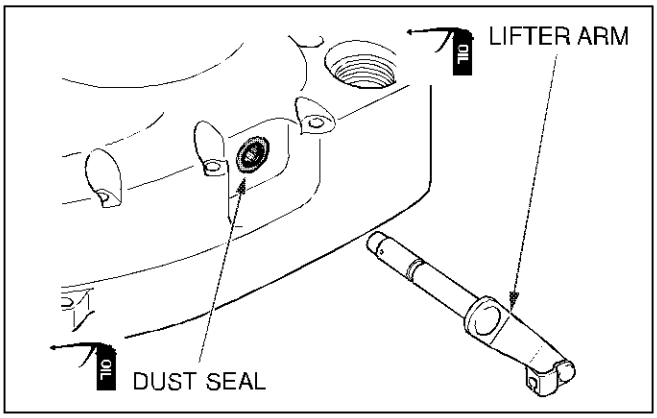
ASSEMBLY

Install the right crankcase rubber damper.
Install the right crankcase cover plate and Tighten the bolts.

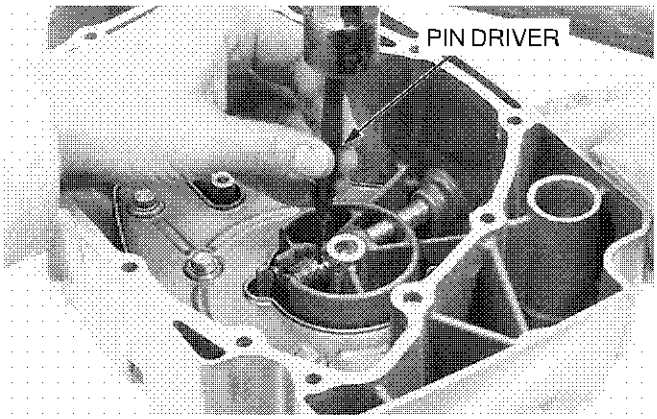


Apply engine oil to the clutch lifter arm and dust seal lip.

Apply engine oil to the clutch lifter arm sliding surfaces and slit.
Install the clutch lifter arm.

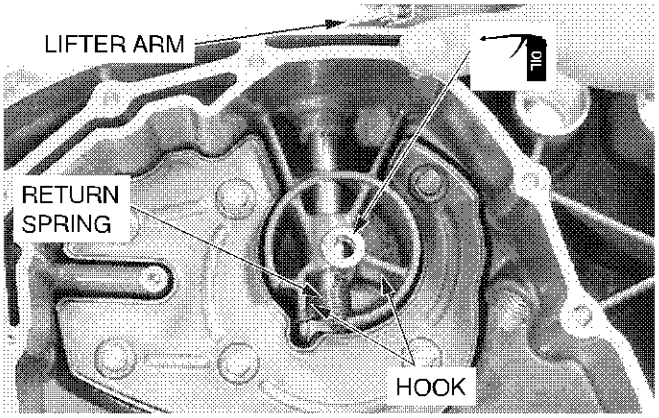


From the opposite side, drive out the spring pin by the same amount as recorded by using a 3 mm pin driver commercially available in market.



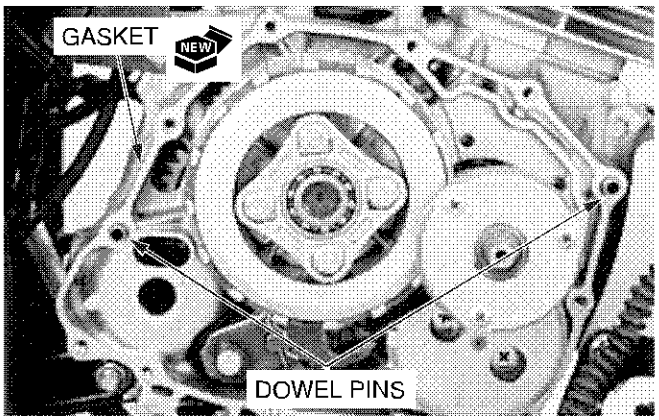
Apply engine oil to the clutch lifter piece hole.
Aligning the piece end with the groove in the clutch lifer arm.

Install the return spring.
Hook the spring end in the cover lab securely, and turn the shaft.

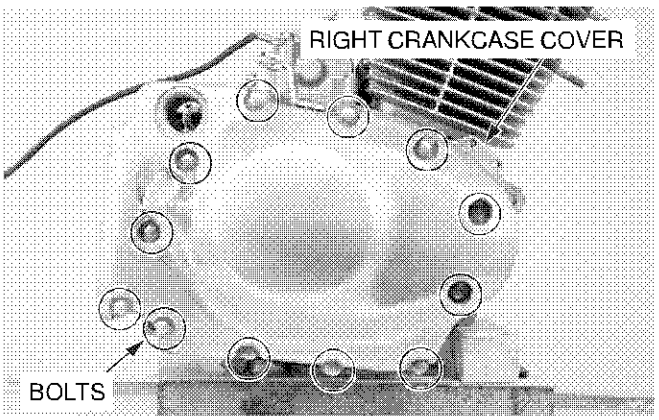


INSTALLATION

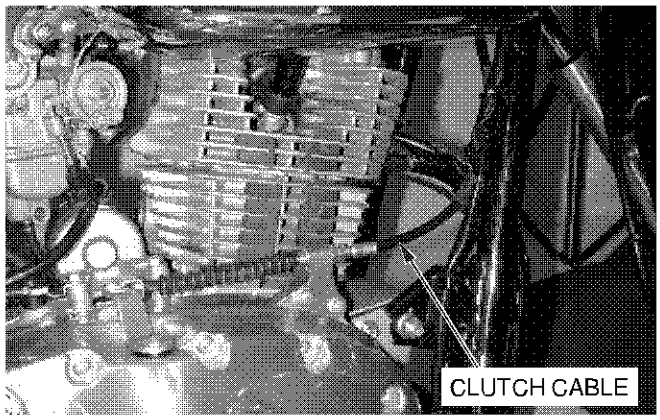
Install the dowel pins and new gasket.

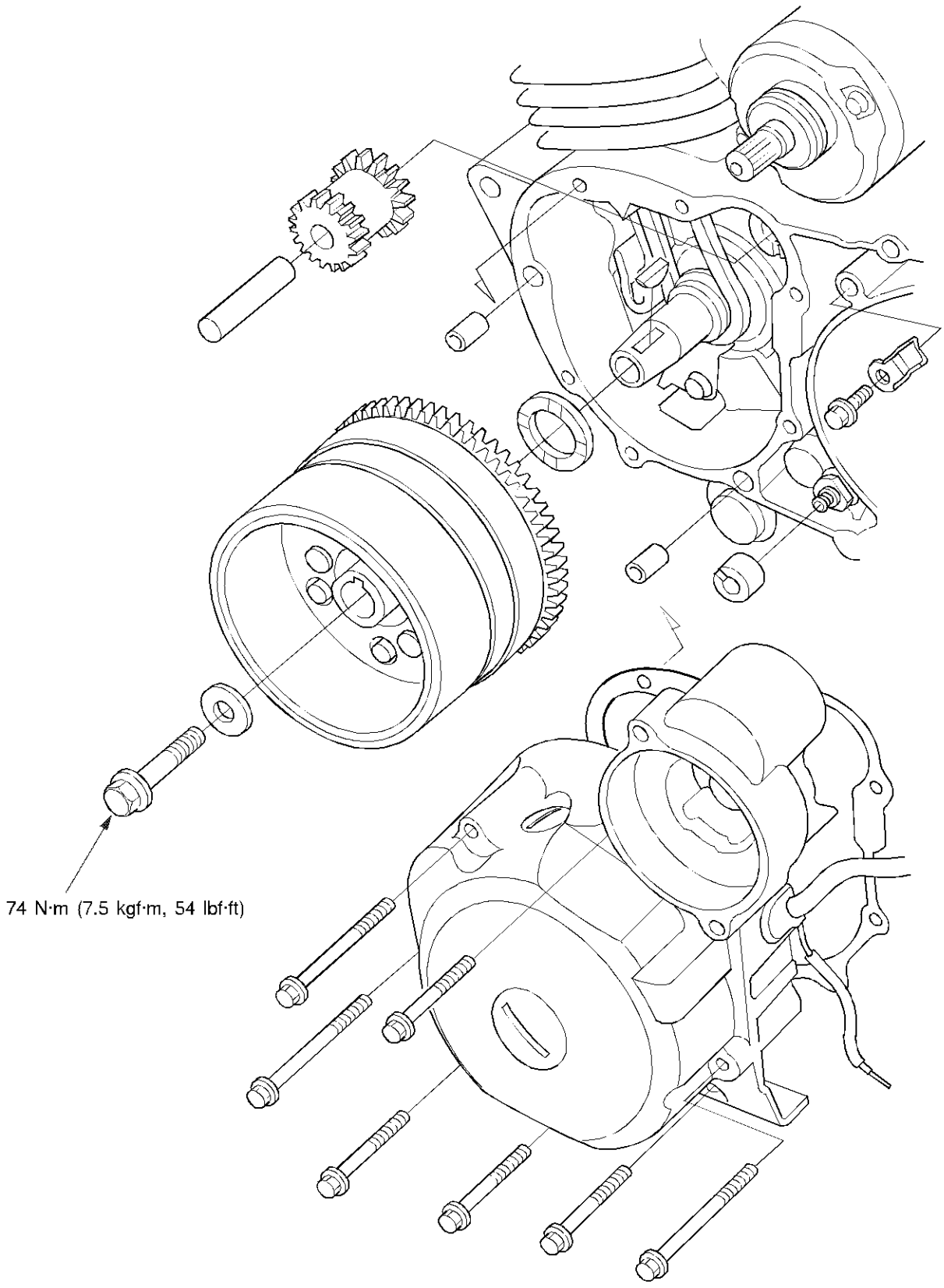


Install the right crankcase cover.
Install and tighten the right crankcase cover bolts in a crisscross pattern in several steps.



Install the clutch cable.
Perform the clutch adjustment (page 3-19).
Install the main step (page 6-10).
Fill the engine oil (page 3-11).




74 N·m (7.5 kgf·m, 54 lbf·ft)

10. ALTERNATOR/STARTER CLUTCH

SERVICE INFORMATION

GENERAL

- This section covers service of the alternator and flywheel. All service can be done with the engine installed in the frame.
- For alternator inspection and troubleshooting, refer to section 15.

TORQUE VALUES

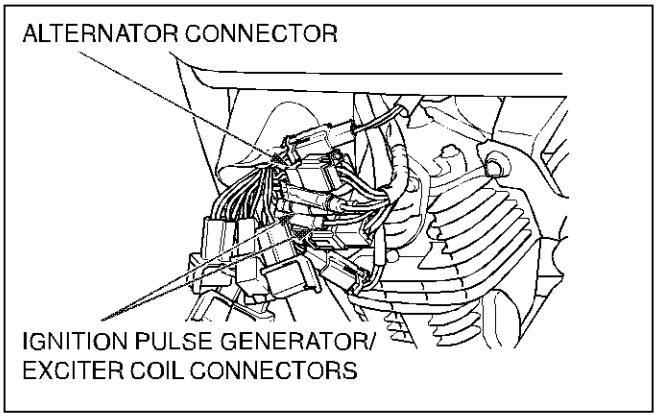
Flywheel bolt	74 N·m (7.5 kgf·m, 54 lbf·ft)
Starter clutch socket bolt	16 N·m (1.6 kgf·m, 12 lbf·ft)
Ignition pulse generator socket bolt	5 N·m (0.5 kgf·m, 3.6 lbf·ft)

TOOLS

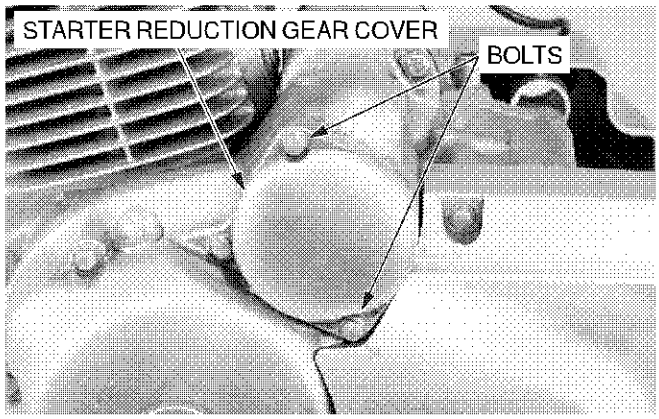
Flywheel holder	07725 – 0040000
Flywheel puller	07733 – 0020001

LEFT CRANKCASE COVER REMOVAL

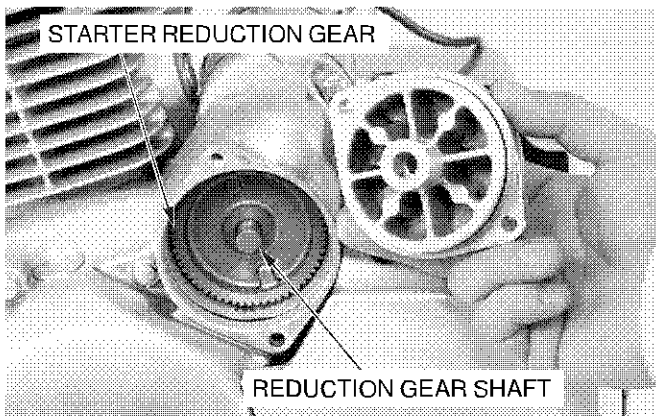
Disconnect the 4P alternator connector, ignition pulse generator connector and exciter coil connector.



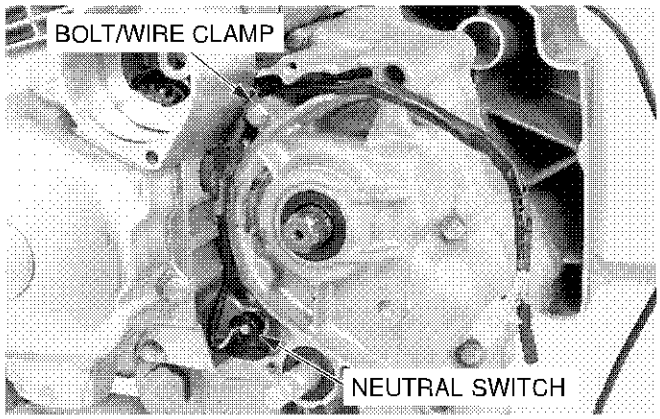
Remove the bolts and starter reduction gear cover.



Remove the reduction gear shaft and starter reduction gear.



Remove the drive sprocket cover (page 6-3).
Remove the neutral switch cord from the switch.
Remove the bolt and alternator wire clamp.



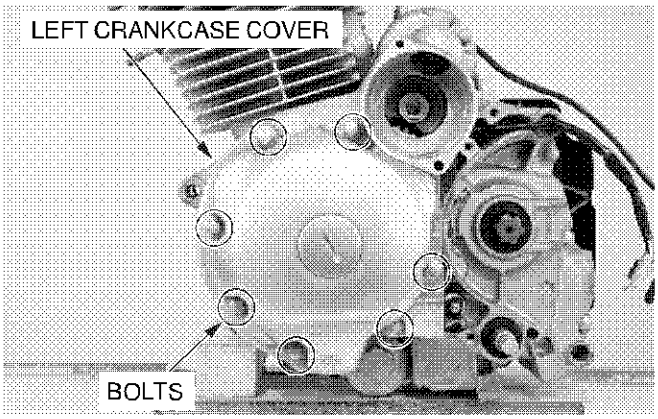
Remove the left crankcase cover bolts and cover.

NOTE:

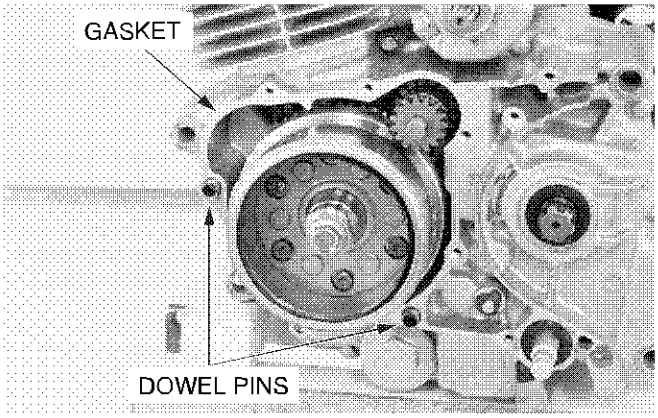
Loosen the left crankcase cover bolts in a crisscross pattern in several steps.

CAUTION:

The left crankcase cover (stater) is magnetically attached to the flywheel, be careful to remove.



Remove the dowel pins and gasket.

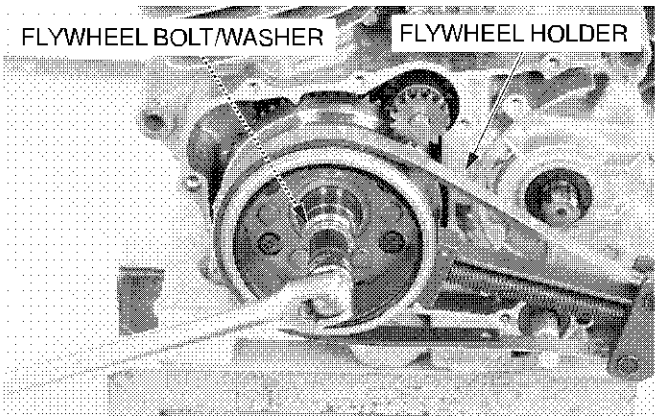


FLYWHEEL

REMOVAL

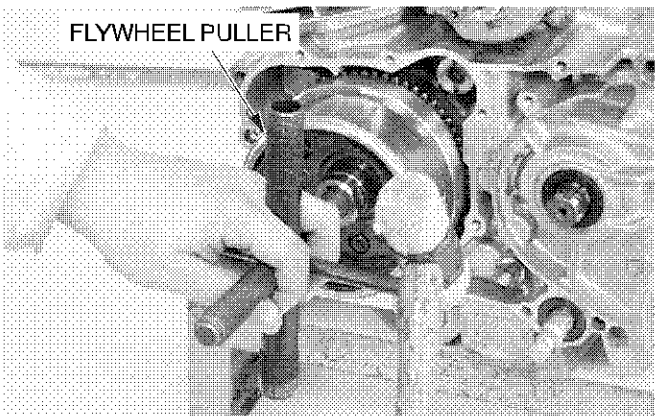
Hold the flywheel with the flywheel holder and remove the flywheel bolt and washer.

TOOL:
Flywheel holder **07725 – 0040000**



Remove the flywheel using the flywheel puller.

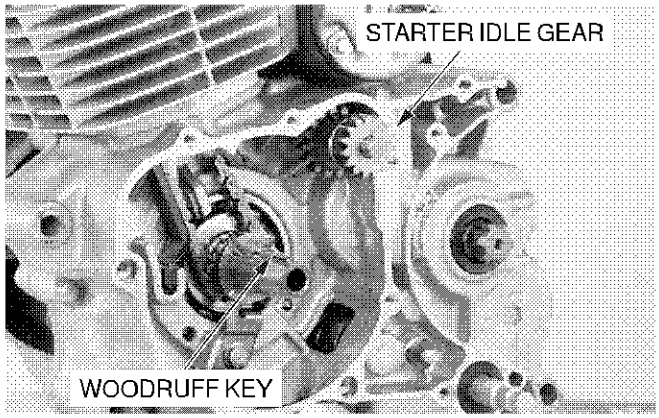
TOOL:
Flywheel puller **07733 – 0020001**



Remove the starter idle gear.
Remove the woodruff key.

NOTE:

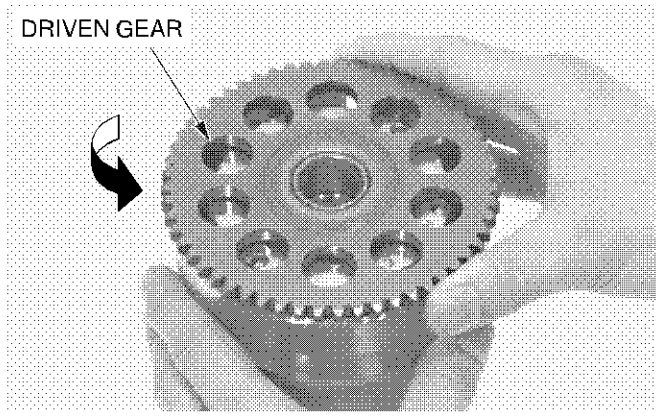
When remove the woodruff key, be careful not to damage the key groove and crankshaft.



DISASSEMBLY

Check that the driven gear turns smoothly in one direction and locks up in the other direction.

Remove the starter driven gear from the flywheel while turning the driven gear counterclockwise.

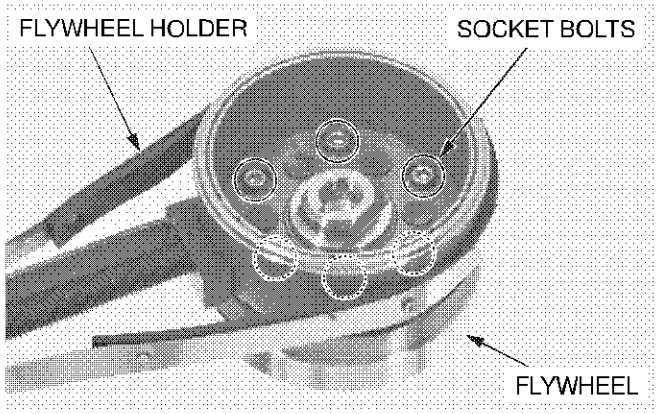


Remove the starter clutch socket bolts while holding the flywheel with a flywheel holder.

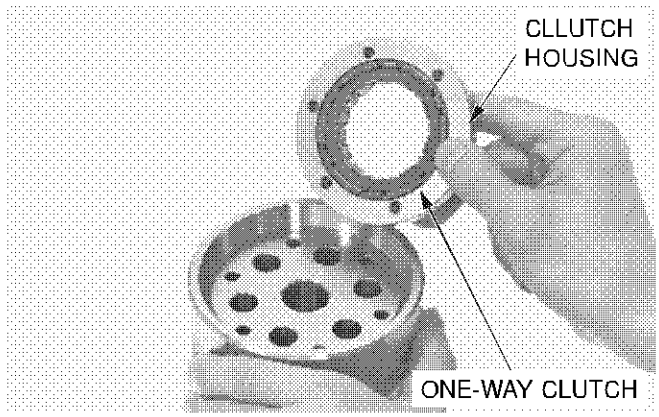
TOOL:
Flywheel holder **07725 – 0040000**

NOTE:

Do not remove the clutch housing and one-way clutch unless they are necessary to inspect them.



Remove the clutch housing and one-way clutch from the flywheel.



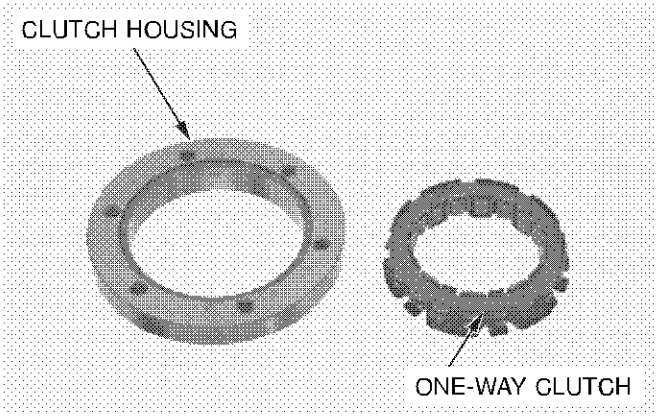
STARTER CLUTCH INSPECTION

ONE-WAY CLUTCH
Check the one-way clutch sprag for abnormal wear, damage or irregular movement.

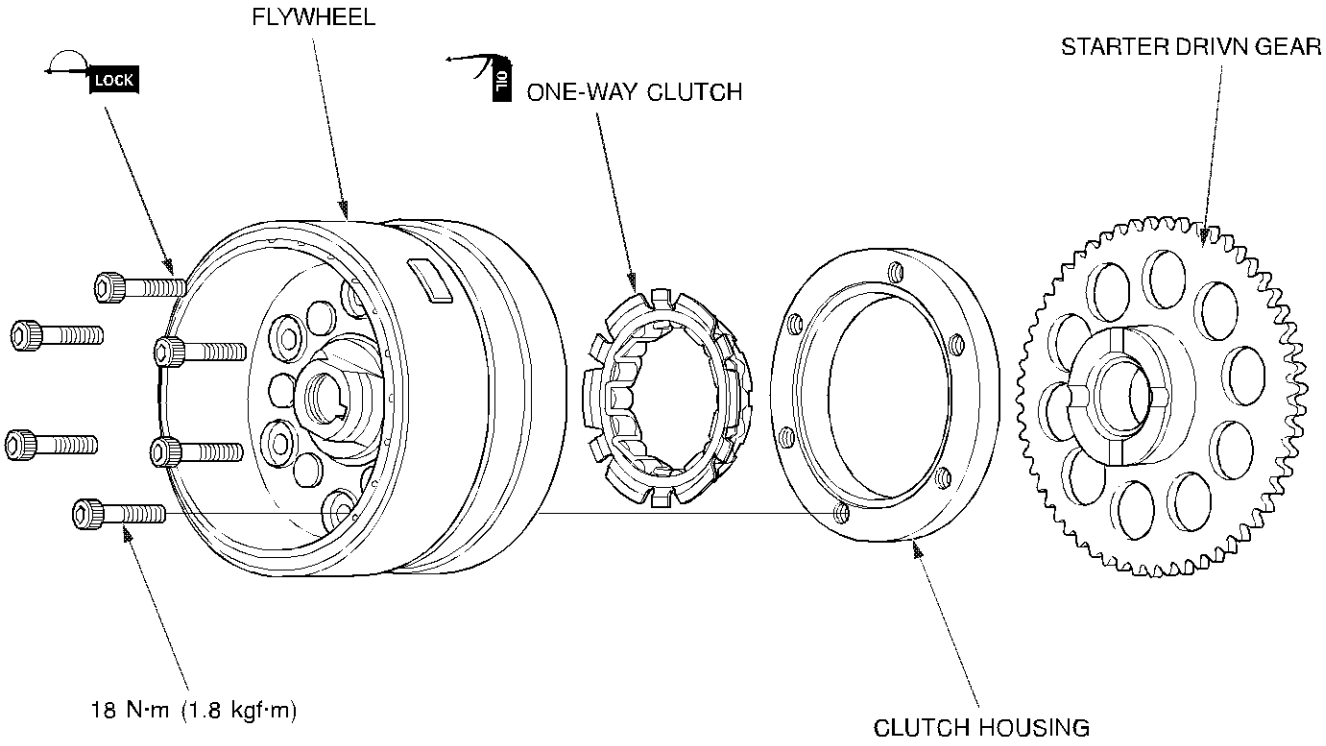
CLUTCH HOUSING
Check the clutch inner contact surface of the housing for damage.

NOTE:

If removed the spring from the one-way clutch groove, replace the one-way clutch assembly (clutch and spring) with a new one.



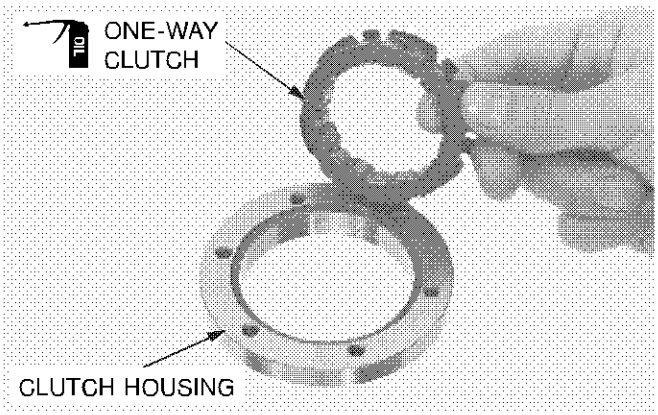
ASSEMBLY



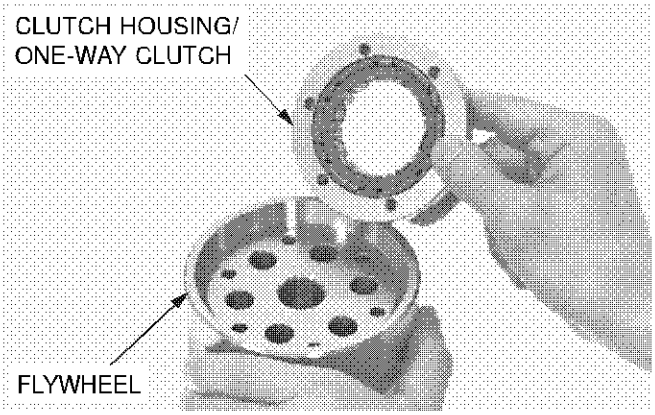
Clean the one-way clutch and apply engine oil to the sprag. Install the one-way clutch into the clutch housing with its flange side facing flywheel.

NOTE:

If removed the spring from the one-way clutch groove, replace the one-way clutch assembly (clutch and spring) with a new one.



Install the clutch housing/one-way clutch to the flywheel.

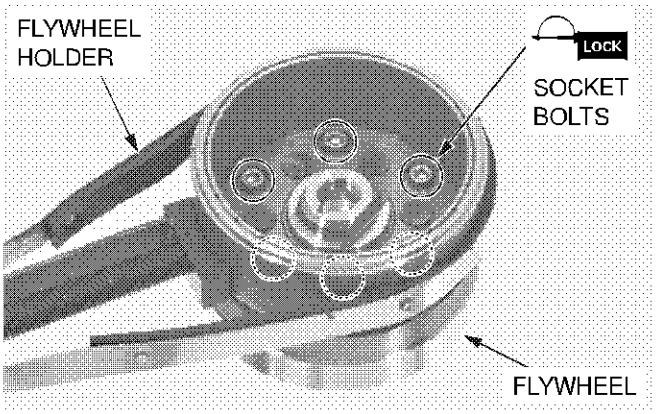


Hold the flywheel using the flywheel holder.

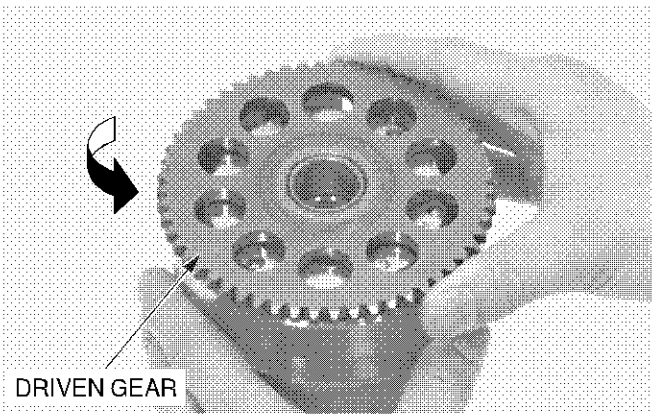
TOOL:
Flywheel holder **07725 – 0040000**

Clean and apply a locking agent to the starter clutch socket bolt threads.
Install and tighten the starter clutch socket bolts to the specified torque.

TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)



Install the starter driven gear to the flywheel while turning the driven gear counterclockwise.

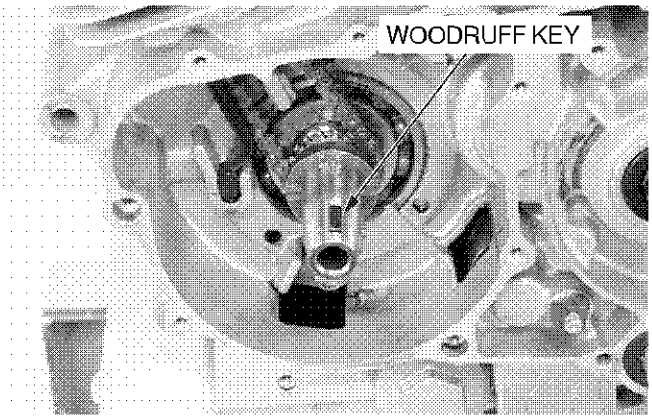


INSTALLATION

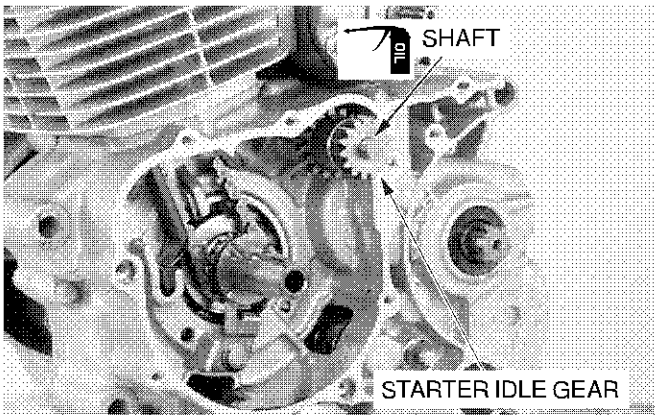
Install the woodruff key onto the crankshaft.

NOTE:

When install the woodruff key, be careful not to damage the key goove and crankshaft.



Apply oil to the starter idle gear shaft.
Install the starter idle gear and shaft.

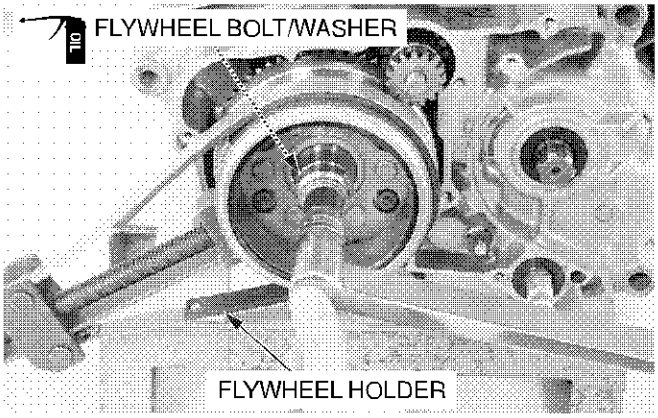


Install the flywheel by align the woodruff key on the crankshaft with flywheel keyway.

Apply oil to the flyfheel threads and seating surface.
Install the washer and bolt.
Hold the flywheel with the flywheel holder, tighten the bolt to the specified torque.

TORQUE: 74 N·m (7.5 kgf·m, 54 lbf·ft)

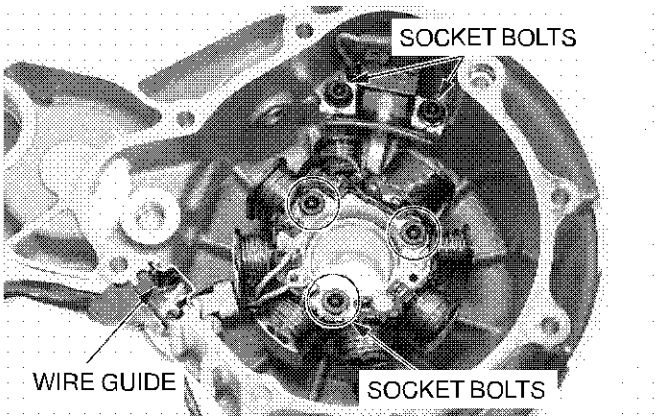
TOOL:
Flywheel holder **07725 – 0040000**



STATOR

REMOVAL

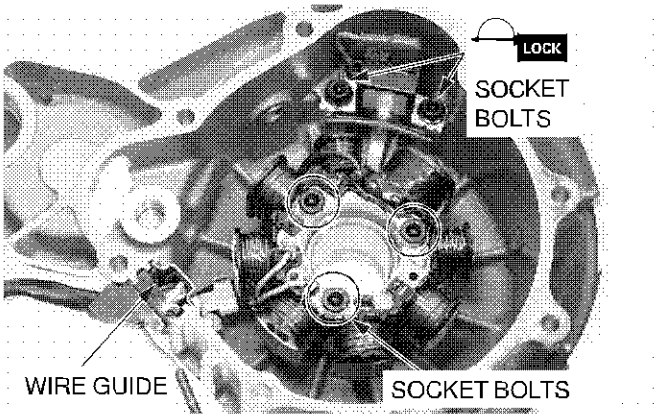
Remove the left crankcase cover (page 10-2).
Remove the socket bolts.
Remove the three socket bolts, stater wire guide, stator and ignition pulse generator from the left crankcase.



INSTALLATION

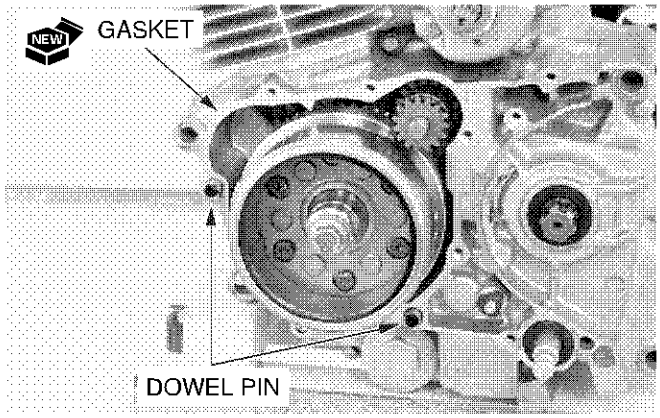
Install the stator, code guide and tighten the bolts.
Apply a locking agent to the socket bolt threads.
Install the ignition pulse generator and tighten the socket bolts to the specified torque.

TORQUE: 5 N·m (0.5 kgf·m, 3.6 lbf·ft)

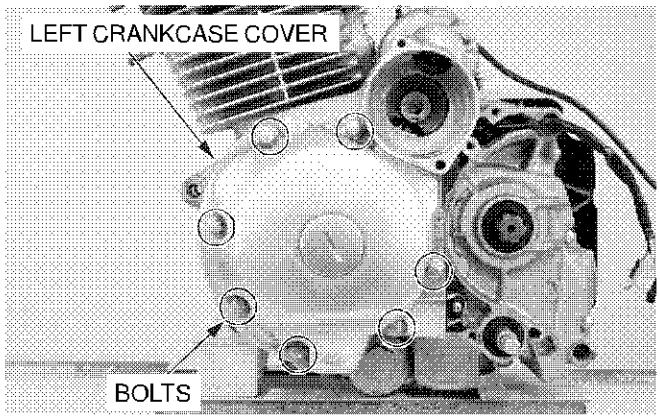


LEFT CRANKCASE COVER INSTALLATION

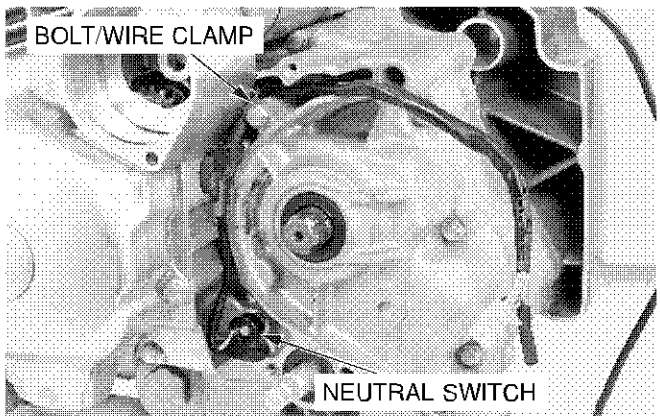
Install the new gasket and dowel pins.



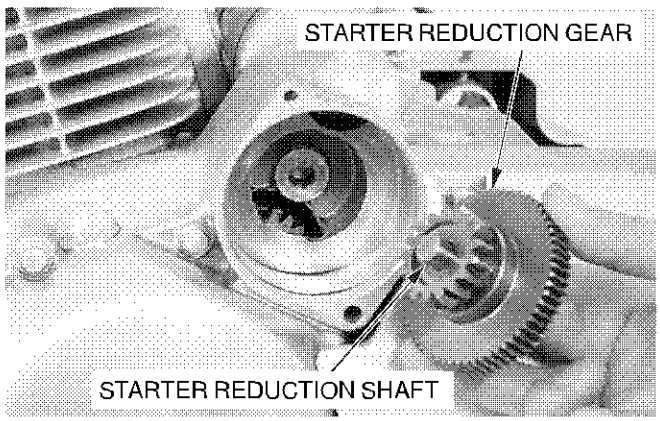
Install the left crankcase cover and tighten the bolts securely.



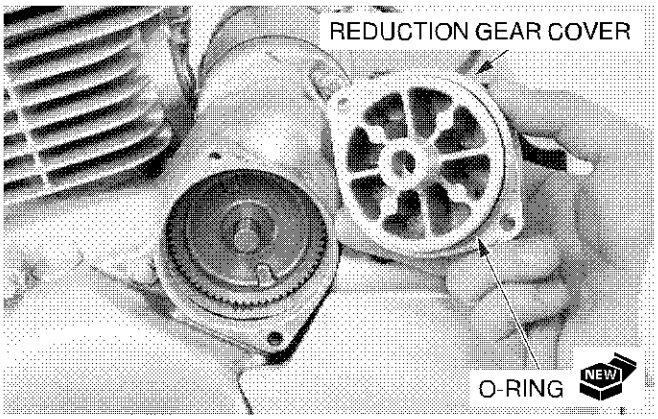
Connect the neutral switch.
Install the alternator wire clamp and tighten the bolt.



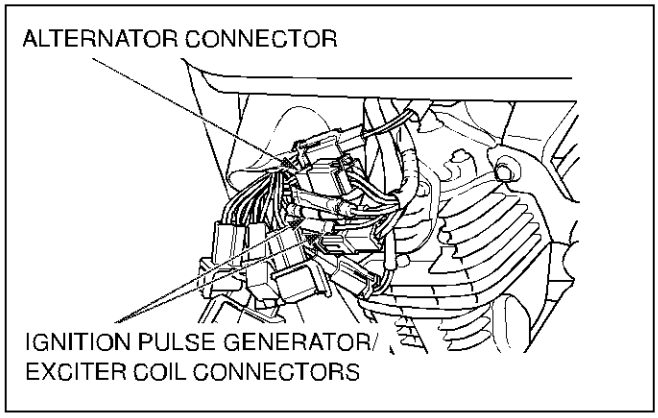
Install the drive sprocket cover (page 6-10).
Install the starter reduction gear and starter reduction shaft.

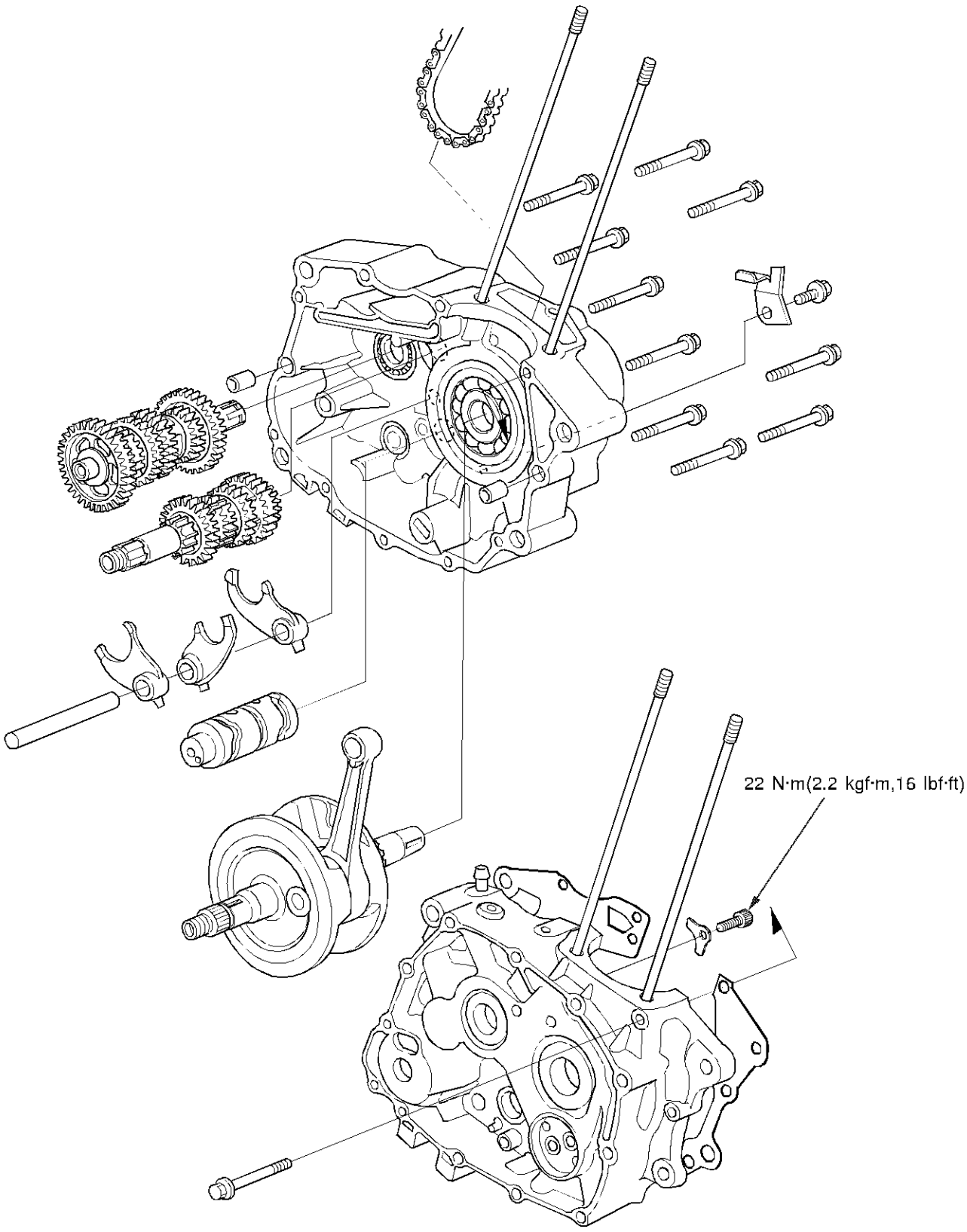


Install the reduction gear cover with a new O-ring.



Connect the 4P alternator connector, ignition pulse generator connector and exciter coil connector.




22 N·m(2.2 kgf·m,16 lbf·ft)

11. CRANKSHAFT/TRANSMISSION

SERVICE INFORMATION

GENERAL

- The crankcase must be separated to service the crankshaft and transmission.
- The following parts must be removed before separating the crankcase.
  — Alternator (Section 10)
  — Clutch/gearshift linkage (Section 9)
  — Cylinder head (Section 7)
  — Cylinder/piston (Section 8)
  — Oil pump (Section 4)

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod side clearance		0.05 – 0.30 (0.002 – 0.012)	0.5 (0.02)
	Connecting rod radial clearance		0 – 0.008 (0 – 0.0003)	0.05 (0.002)
	Runout		———	0.10 (0.004)
Transmission	Gear I.D.	M5, M6, C2	23.020 – 23.041 (0.9063 – 0.9071)	23.07 (0.908)
		C1	19.520 – 19.541 (0.7685 – 0.7693)	19.57 (0.770)
		C3, C4	22.020 – 22.041 (0.8669 – 0.8678)	22.07 (0.869)
	Bushing O.D.	M5, C2	22.979 – 23.000 (0.9047 – 0.9055)	22.93 (0.9028)
		M6	23.005 – 23.016 (0.9057 – 0.9061)	22.95 (0.9035)
		C1	19.479 – 19.500 (0.7669 – 0.7677)	19.43 (0.765)
	Bushing I.D.	M5, C2	20.000 – 20.021 (0.7874 – 0.7882)	20.05 (0.789)
		M6	20.020 – 20.041 (0.7882 – 0.7890)	20.07 (0.790)
		C1	16.516 – 16.534 (0.6502 – 0.6510)	16.56 (0.652)
	Mainshaft O.D.	M5	19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)
	Countershaft O.D.	C1	16.466 – 16.490 (0.6483 – 0.6492)	16.41 (0.646)
		C2	19.974 – 19.987 (0.7864 – 0.7869)	19.92 (0.784)
		C3	21.959 – 21.980 (0.8645 – 0.8654)	21.91 (0.8626)
	Gear-to-bushing clearance	M5, C1, C2	0.020 – 0.062 (0.0008 – 0.0024)	0.1 (0.004)
	Bushing-to-shaft clearance	M5	0.020 – 0.062 (0.0008 – 0.0024)	0.1 (0.004)
		C1	0.026 – 0.068 (0.0010 – 0.0027)	0.1 (0.004)
		C2	0.013 – 0.047 (0.0005 – 0.0019)	0.1 (0.004)
Shift fork	I.D.		12.000 – 12.018 (0.4724 – 0.4731)	12.05 (0.474)
	Claw thickness		4.93 – 5.00 (0.194 – 0.197)	4.50 (0.177)
	Shaft O.D.		11.976 – 11.994 (0.4715 – 0.4722)	11.96 (0.471)

Right side only

TORQUE VALUES

Bearing set plate socket bolt	22 N·m (2.2 kgf·m, 16 lbf·ft)

TOOLS

Bearing remover set, 15 mm	07936 – KC10500
— Bearing remover shaft	07936 – KC10100
— Bearing remover head	07936 – KC10200
Remover weight	07741 – 0010201
Attachment, 22 x 24 mm	07746 – 0010800
Attachment, 32 x 35 mm	07746 – 0010100
Attachment, 42 x 47 mm	07746 – 0010300
Attachment, 52 x 55 mm	07746 – 0010400
Driver	07749 – 0010000
Pilot, 15 mm	07746 – 0040300
Pilot, 17 mm	07746 – 0040400
Pilot, 20 mm	07746 – 0040500
Pilot, 28 mm	07746 – 0041100
Pilot, 35 mm	07746 – 0040800
Installer dipth 27.12 mm	070MF – KPKT100
Installer dipth 27.4 mm	070MF – KPKT200

TROUBLESHOOTING

Hard to shift
- Incorrect clutch adjustment
- Damaged shift drum cam groove
- Bent shift fork
- Bent shift fork shaft

Transmission jumps out of gear
- Worn gear engagement dogs or slots
- Damaged or bent shift fork
- Bent shift fork shaft
- Damaged shift drum stopper arm
- Broken shift linkage return spring
- Damaged shift drum grooves

Excessive noise
- Worn connecting rod big end bearing
- Bent connecting rod
- Worn crankshaft main journal bearing

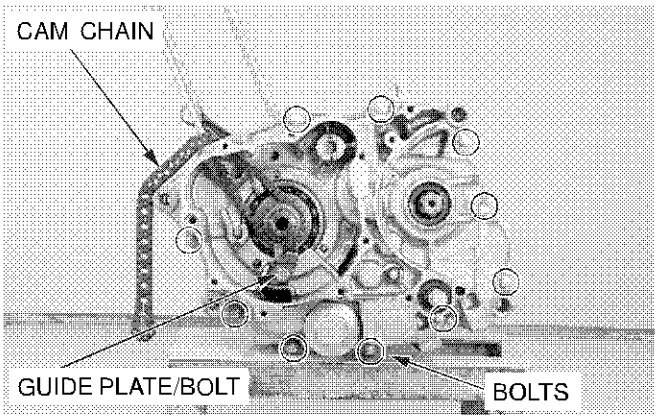
CRANKCASE SEPARATION

NOTE:

Refer to Service Information (page 11-1) for removal of necessary parts before separating the crankcase.

Remove the bolt and cam chain guide plate.
Remove the cam chain.

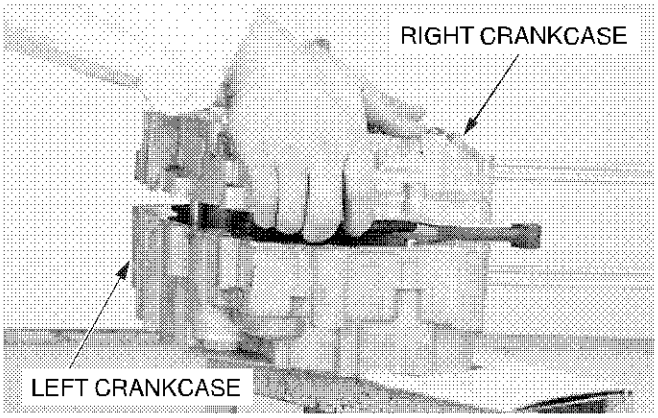
Remove the left crankcase bolts.



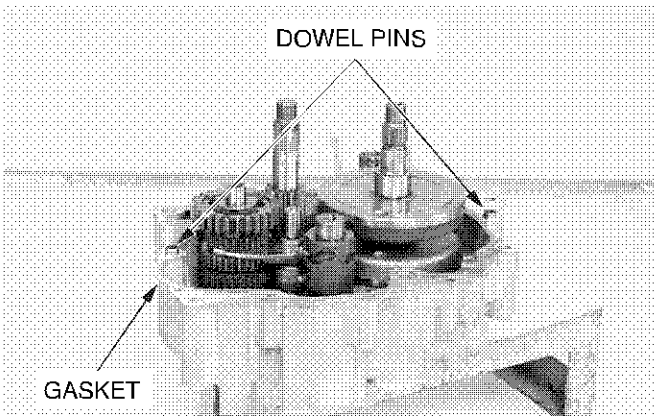
Place the right crankcase down; separate the left and right crankcase halves.

CAUTION:

Do not pry the crankcase halves apart with a screw-driver.

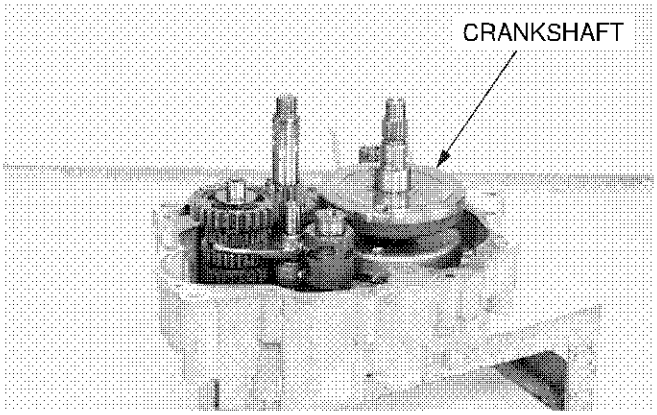


Remove the gasket and dowel pins.



CRANKSHAFT

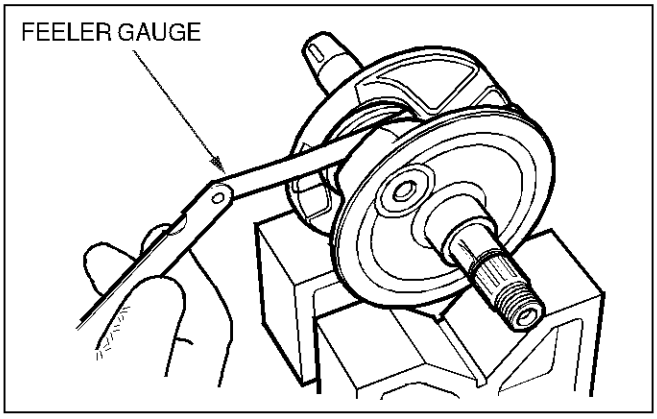
Remove the crankshaft from the crankcase.



INSPECTION

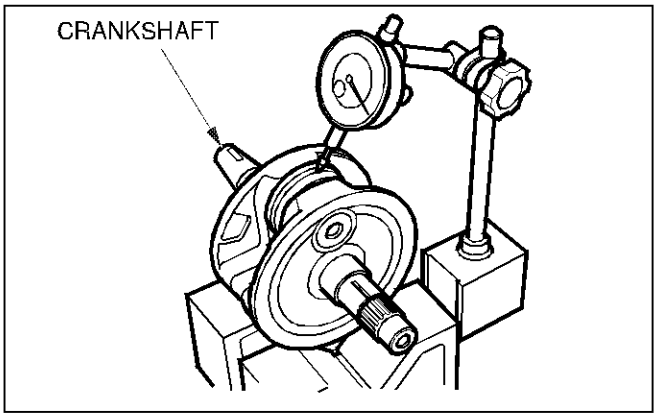
Measure the side clearance at the connecting rod big end with a feeler gauge.

SERVICE LIMIT: 0.5 mm (0.02 in)



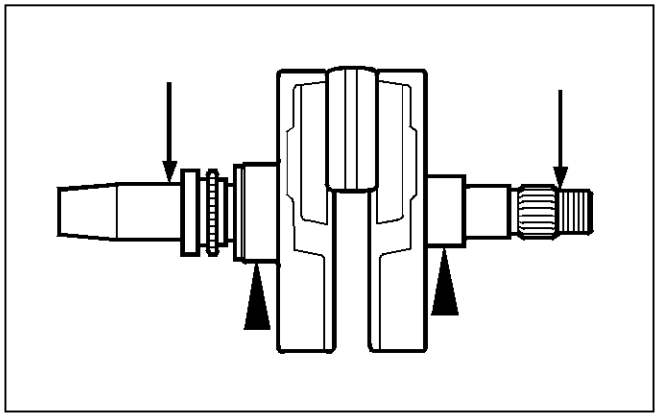
Measure the radial clearance of the connecting rod big end.

SERVICE LIMIT: 0.05 mm (0.002 in)



Place the crankshaft on a stand or V-blocks and measure the runout using a dial indicator.

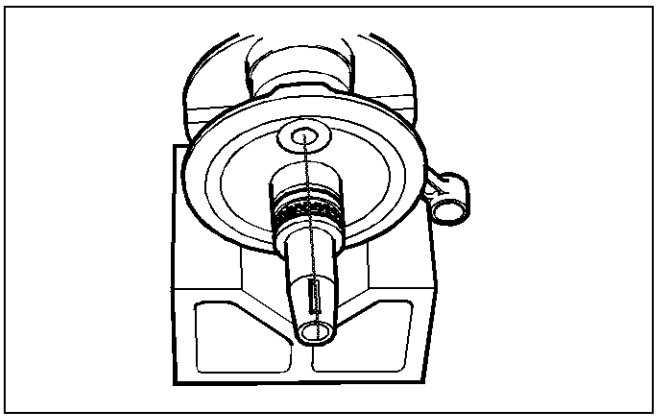
SERVICE LIMIT: 0.10 mm (0.004 in)



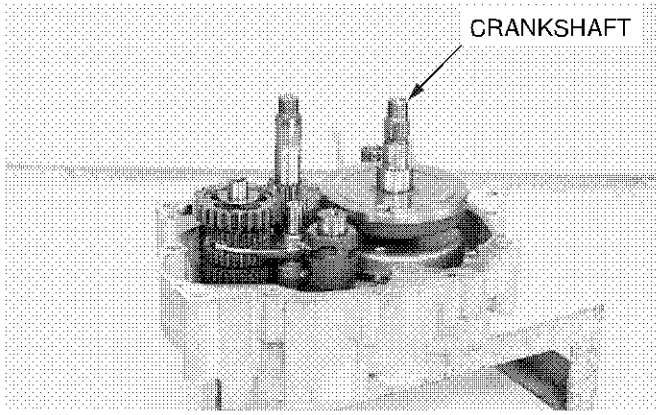
TIMING SPROCKET INSTALLATION

Check the timing sprocket for wear or damage.

If you replacing the timing sprocket, align the center of the gear teeth with the center of woodruff key groove as shown.



Install the crankshaft into the right crankcase.

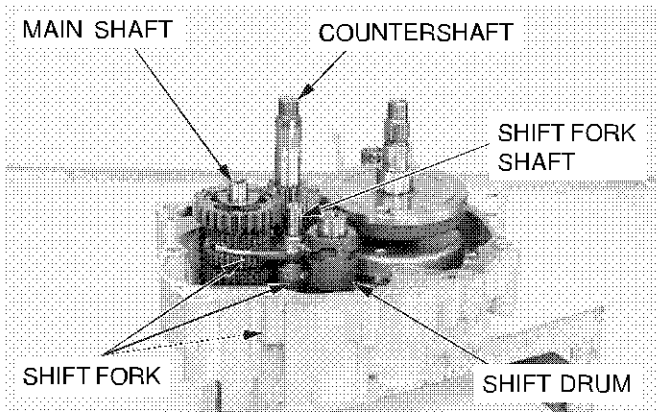


TRANSMISSION

DISASSEMBLY

Remove the shift fork shaft.
Remove the shift drum.
Remove the shift forks.
Remove the mainshaft and countershaft as an assembly from the crankcase.

Disassemble the mainshaft and countershaft.



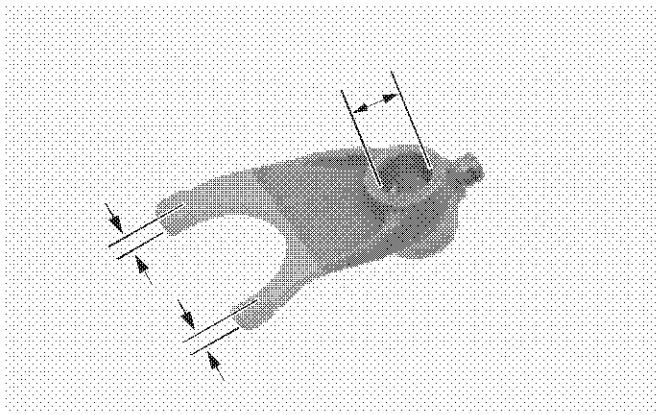
INSPECTION

Check the shift fork for any wear, bending or damage.
Measure the shift fork I.D.

SERVICE LIMIT: 12.05 mm (0.474 in)

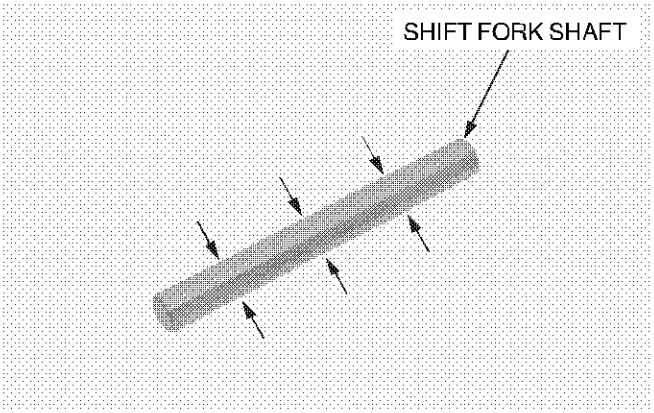
Measure the shift fork claw thickness.

SERVICE LIMIT: 4.50 mm (0.177 in)

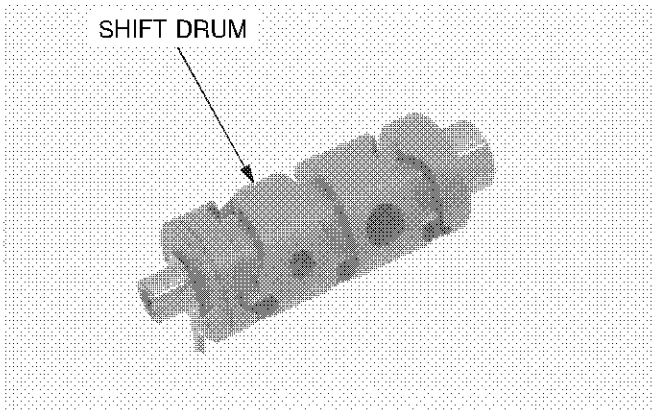


Check the shift fork shaft for bend, worn or damage.
Measure the shift fork shaft O.D.

SERVICE LIMIT: 11.96 mm (0.471 in)



Inspect the shift drum grooves.
Replace the shift drum if the grooves are damaged or excessively worn.



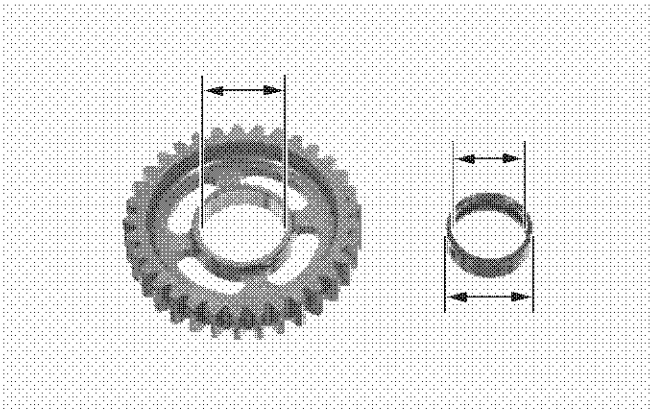
TRANSMISSION INSPECTION

Check the gear dogs, dog holes and teeth for abnormal wear or lack of lubrication.
Measure the I.D. of each gear.

SERVICE LIMITS:
M5, M6, C2: 23.08 mm (0.909 in)
C1: 19.57 mm (0.770 in)
C3, C4: 22.07 mm (0.869 in)

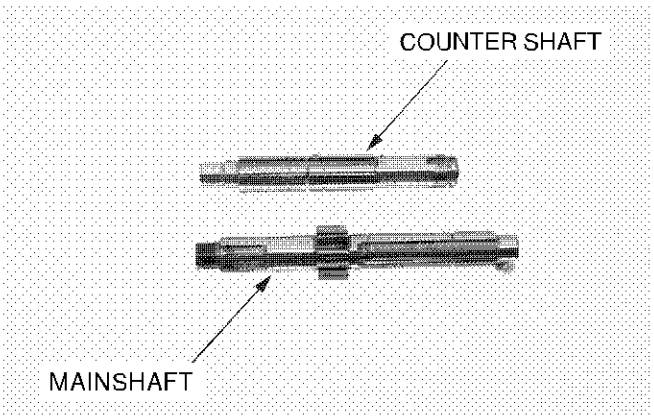
Measure the O.D. and I.D. of gear bushing.

SERVICE LIMITS:
M5, C2, O.D.: 22.93 mm (0.9028 in)
M6, O.D.: 22.95 mm (0.9035 in)
C1, O.D.: 19.43 mm (0.765 in)
M5, C2, I.D.: 20.05 mm (0.789 in)
M6, I.D.: 20.07 mm (0.790 in)
C1, I.D.: 16.56 mm (0.652 in)

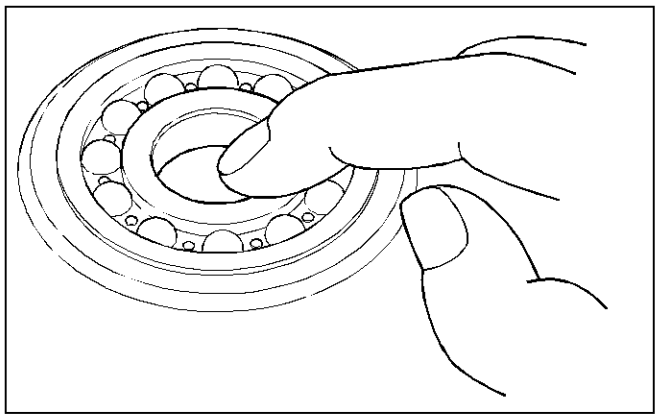


Measure the O.D. of the mainshaft and countershaft.

SERVICE LIMITS:
At M5 gear: 19.91 mm (0.784 in)
At C1 gear: 16.41 mm (0.646 in)
At C2 gear: 19.92 mm (0.784 in)
At C3 gear: 21.91 mm (0.8626 in)



BEARING REPLACEMENT

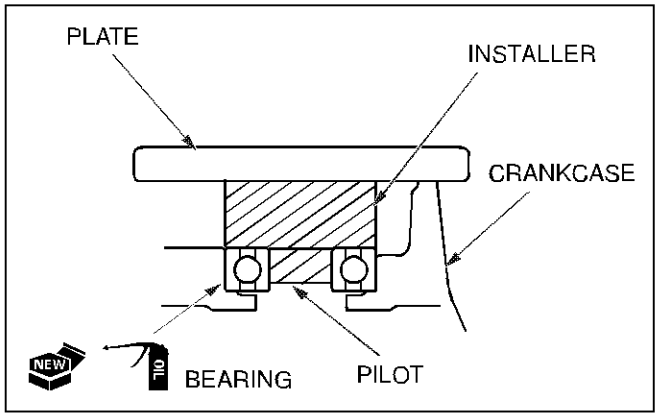


BEARING INSPECTION

Turn the inner race of each bearing with your finger.
The bearing should turn smoothly and quietly.
Also check that the bearing outer race has not been spinning in the crankcase.

Replace the crankshaft if the races do not turn smoothly and quietly, or if they have been spinning in the crankcase.

CRANKSHAFT BEARING



Remove the bearings from crankcase halves.

Clean the crankcase mating surface throughly, be careful not to damage the mating surface.

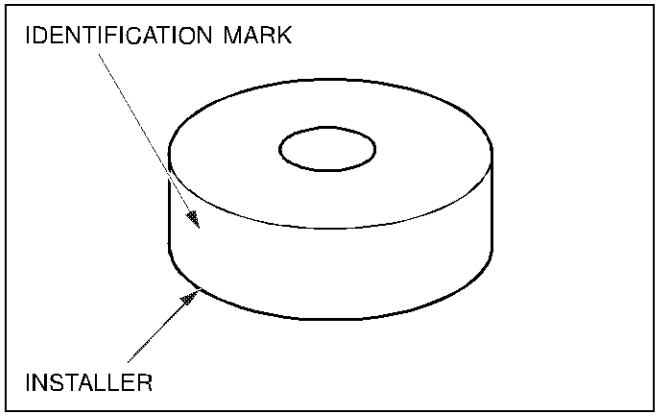
Apply engine oil to the new crankshaft bearing and place it on the crankcase.

Set the installer (special tool) into the inner race of the bearing.

Place the plate (special tool) over the installer (special tool). Align the center of the installer (special tool) when setting on to the bearing.

NOTE:

Installer (special tool) has an identification mark.



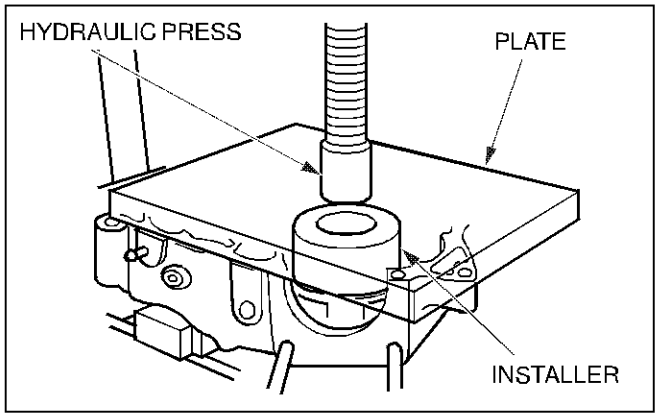
TOOLS:
Right side:
Installer, depth 27.4 **070MF – KPKT100**
Pilot 35 mm

Left side:
Installer, depth 27.12 **070MF – KPKT200**
Pilot 28 mm

Press the center of the plate (special tool) using a hydraulic press until the plate (special tool) touch with the crankcase surface.

CAUTION:

- ***Press the plate (special tool) slowly.***
- ***Do not damage the crankcase and bearing.***

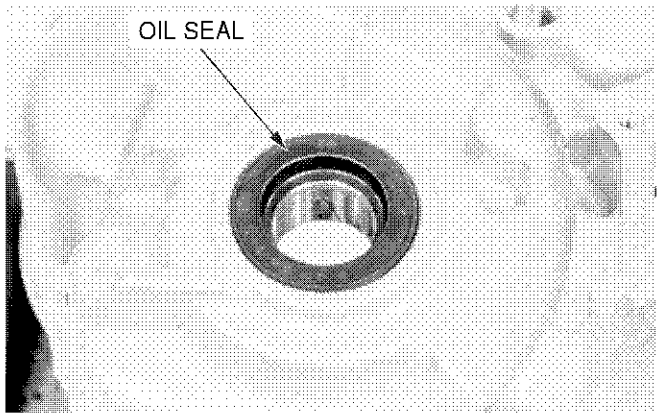


After the installation, check for the distance between the crankshaft bearing surface (Connecting rod side) and upper surface of the crankcase.

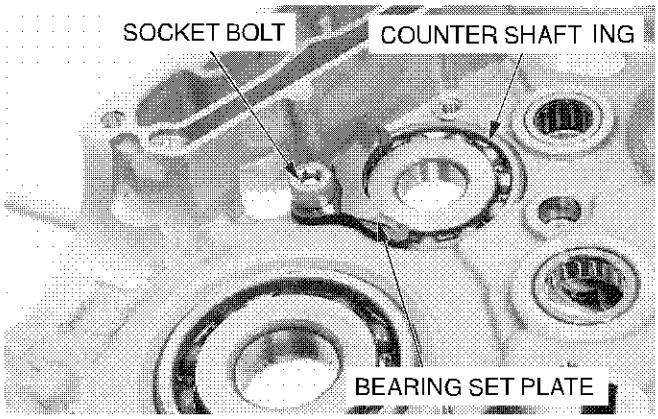
Right side: 27.40 – 27.45 mm (1.079 – 1.081 in)
Left side: 27.12 – 27.17 mm (1.068 – 1.070 in)

TRANSMISSION BEARING REPLACEMENT

Remove the countershaft oil seal.



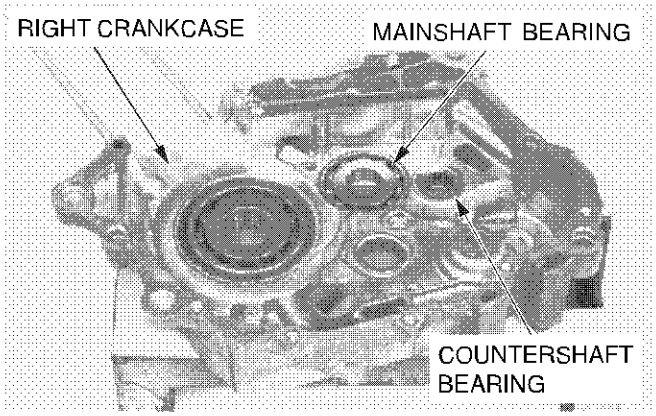
Remove the socket bolt and bearing set plate.



Remove the crankshaft bearing from the right crankcase. Remove the countershaft needle bearing from the right crankcase using special tools.

TOOLS:

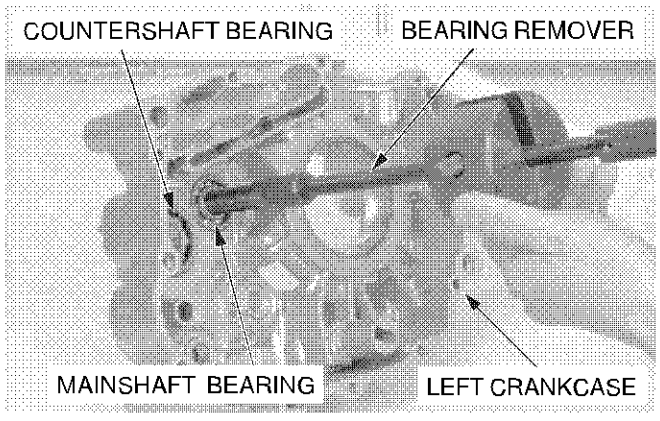
Bearing remover set, 15 mm	**07936 – KC10100**
— Bearing remover shaft	**07936 – KC10100**
— Bearing remover head	**07936 – KC10200**
Remover weight	**07741 – 0010201**



Remove the countershaft bearing from the left crankcase. Remove the mainshaft bearing from left crankcase using special tools.

TOOLS:

Bearing remover set, 15 mm	**07936 – KC10200**
— Bearing remover shaft	**07936 – KC10100**
— Bearing remover head	**07936 – KC10200**
Remover weight	**07741 – 0010201**



Install the new bearing using the following tools.

Right crankcase mainshaft bearing:

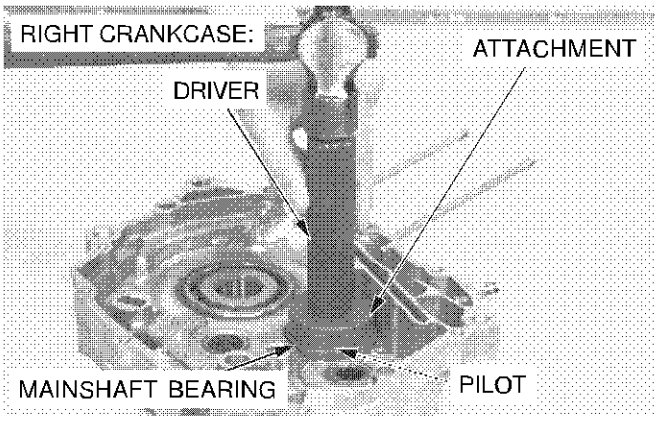
Driver	**07749 – 0010000**
Attachment, 52 x 55 mm	**07746 – 0010400**
Pilot, 17 mm	**07746 – 0040400**

Right crankcase countershaft needle bearing:

Driver	**07749 – 0010000**
Attachment, 28 x 30 mm	**07746 – 0010800**
Pilot, 15 mm	**07746 – 0040300**

Right crankcase crankshaft bearing:

Driver	**07749 – 0010000**
Pilot, 28 mm	**07746 – 0041100**



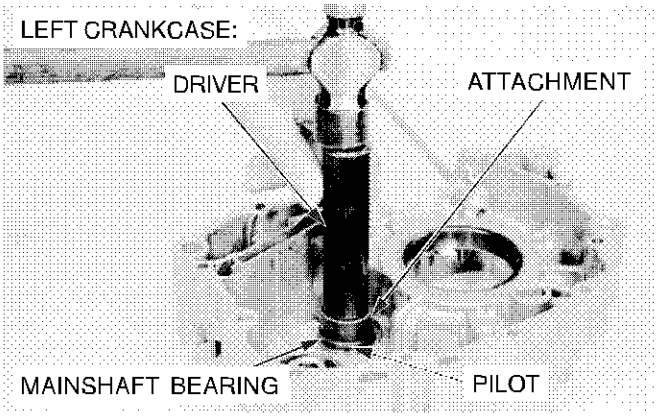
Left crankcase mainshaft bearing:

Driver	**07749 – 0010000**
Attachment, 32 x 35 mm	**07746 – 0010100**
Pilot, 15 mm	**07746 – 0040300**

Left crankcase countershaft bearing:

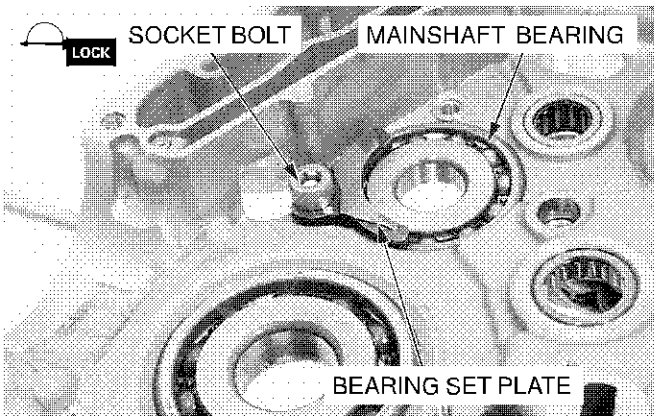
Driver	**07749 – 0010000**
Attachment, 42 x 47 mm	**07746 – 0010300**
Pilot, 20 mm	**07746 – 0040500**

Apply grease to the new countershaft oil seal lips and install it on the left crankcase.



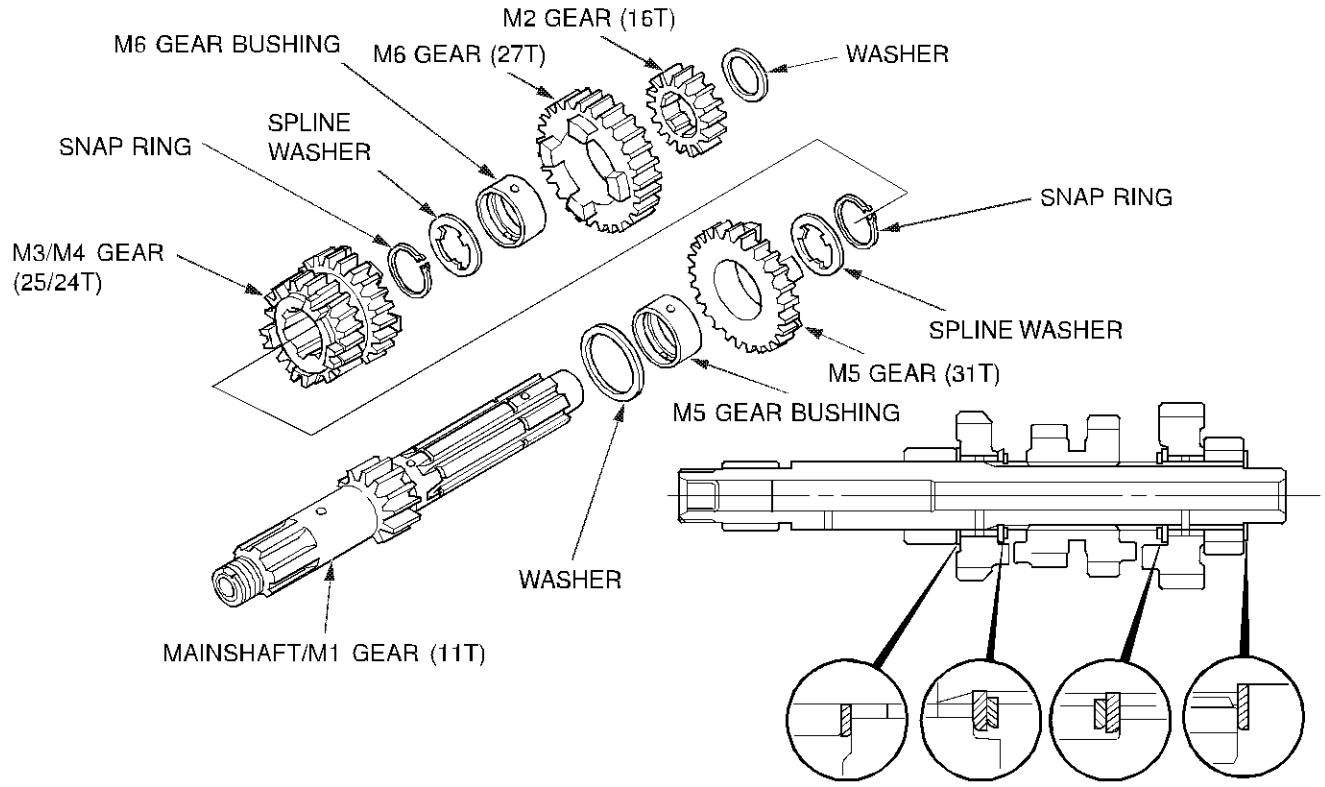
Set the bearing set plate.
Apply locking agent to the bolt and tighten the bearing set plate socket bolt to specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

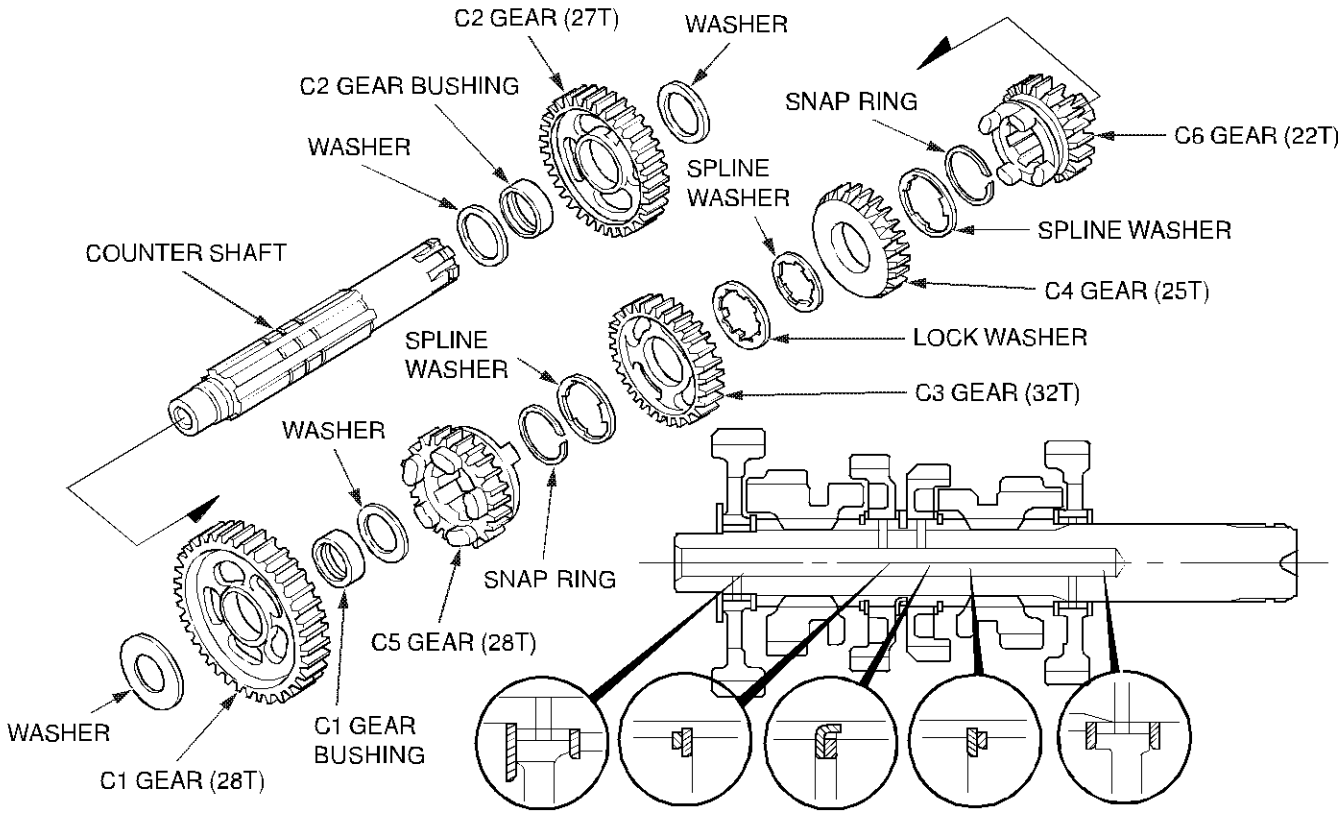


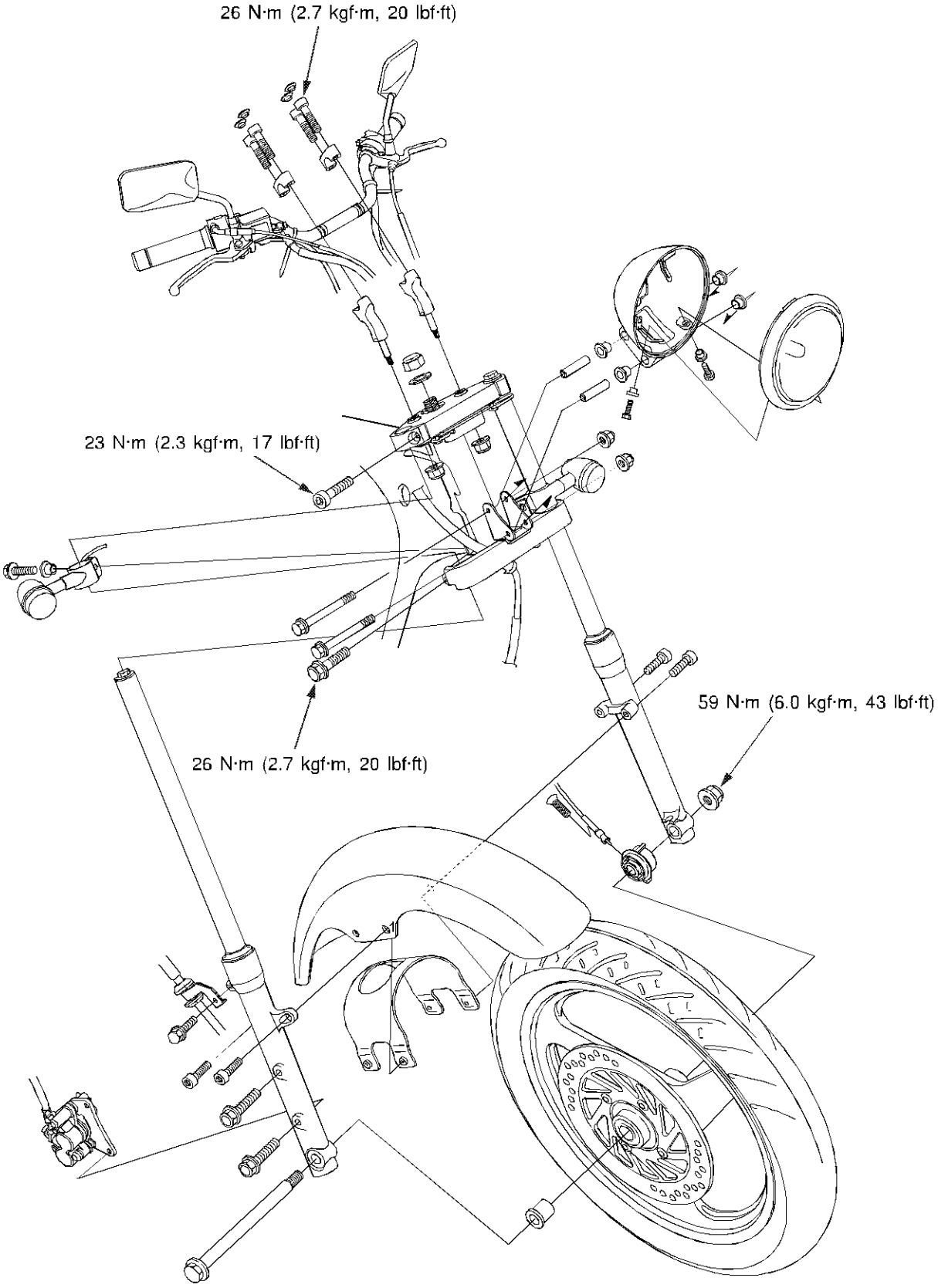
ASSEMBLY

MAINSHAFT



COUNTERSHAFT




26 N·m (2.7 kgf·m, 20 lbf·ft)
23 N·m (2.3 kgf·m, 17 lbf·ft)
59 N·m (6.0 kgf·m, 43 lbf·ft)
26 N·m (2.7 kgf·m, 20 lbf·ft)

12. FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION

GENERAL

⚠ WARNING

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 securely with a jack or other support.
- Refer to section 14 for brake system information.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		—	To the indicator
Cold tire pressure	Driver only	200 kPa (2.0 kgf/cm², 29 psi)	—
	Driver and passenger	200 kPa (2.0 kgf/cm², 29 psi)	—
Axle runout		—	0.20 (0.008)
Wheel runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Fork	Spring free length	392.4 (15.45)	384.6 (15.14)
	Tube runout	—	0.20 (0.008)
	Recommended fluid	Fork fluid	—
	Fluid level	186 (7.323)	—
	Fluid capacity	155 ± 2.5 cm³ (5.2 ± 0.08 US oz, 5.5 ± 0.09 Imp oz)	—
Steering head bearing pre-load		0.10 – 0.16 kg (0.220 – 0.353 lbf)	—

TORQUE VALUES

Fork cap bolt	23 N·m (2.3 kgf·m, 17 lbf·ft)	
Fork socket bolt	20 N·m (2.0 kgf·m, 14 lbf·ft)	Apply a locking agent to the threads
Handlebar upper holder bolt	26 N·m (2.7 kgf·m, 20 lbf·ft)	
Steering stem nut	88 N·m (9.0 kgf·m, 65 lbf·ft)	
Top bridge pinch bolt	23 N·m (2.3 kgf·m, 17 lbf·ft)	
Bottom bridge pinch bolt	26 N·m (2.7 kgf·m, 20 lbf·ft)	
Front axle nut	59 N·m (6.0 kgf·m, 43 lbf·ft)	
Front brake disc bolt	42 N·m (4.3 kgf·m, 31 lbf·ft)	Apply a locking agent to the threads

TOOLS

Bearing remover head, 15 mm	07746 – 0050400
Bearing remover shaft	07746 – 0050100
Driver	07749 – 0010000
Attachment, 37 x 40 mm	07746 – 0010200
Attachment, 42 x 47 mm	07746 – 0010300
Pilot, 15 mm	07746 – 0040300
Fork seal driver body	07747 – 0010100
Fork seal driver attachment	07747 – 0010400
Steering stem socket	07916 – 3710101
Driver attachment	07946 – 3290000
Steering stem driver	07946 – 4300101
Attachment, 42 x 47 mm	07746 – 0010300

TROUBLESHOOTING

Hard steering
- Steering head bearing adjusting nut too tight
- Faulty steering head bearing
- Insufficient tire pressure
- Faulty tire

Steers to one side or does not track straight
- Bent fork
- Bent front axle
- Wheel installed incorrectly
- Faulty steering head bearing
- Bent frame
- Worn wheel bearings
- Worn swingarm pivot components
- Weak front shock absorber

Front wheel wobbling
- Bent rim
- Worm front wheel bearings
- Faulty tire
- Unbalanced tire and wheel

Wheel turns hard
- Faulty wheel bearings
- Faulty speedometer gear
- Bent front axle

Soft suspension
- Weak springs
- Low fork fluid level
- Low tire pressure

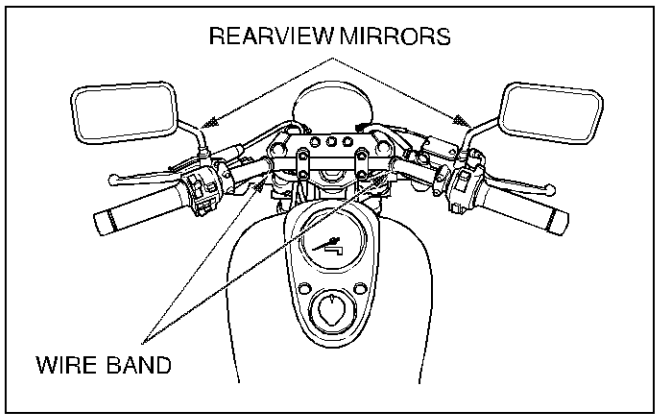
Hard suspension
- Incorrect fork fluid viscosity
- Bent fork tubes
- Clogged fluid passage

Suspension noisy
- Low fork fluid level
- Loose fork fasteners
- Lack of grease in speedometer gear

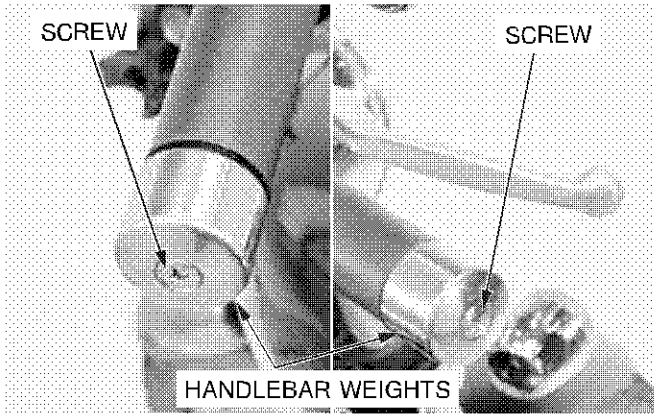
HANDLEBAR

REMOVAL

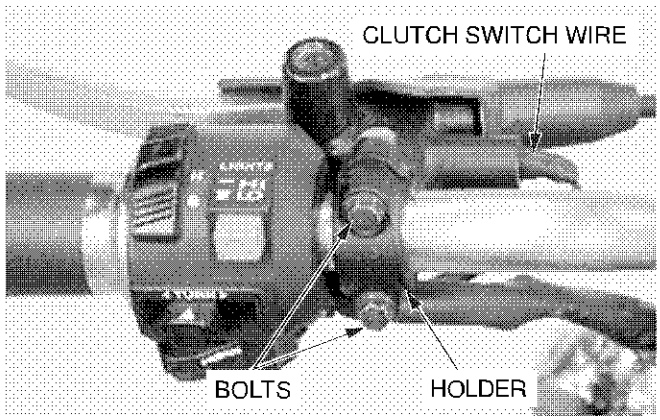
Remove the wire bands.
Remove the rearview mirrors.



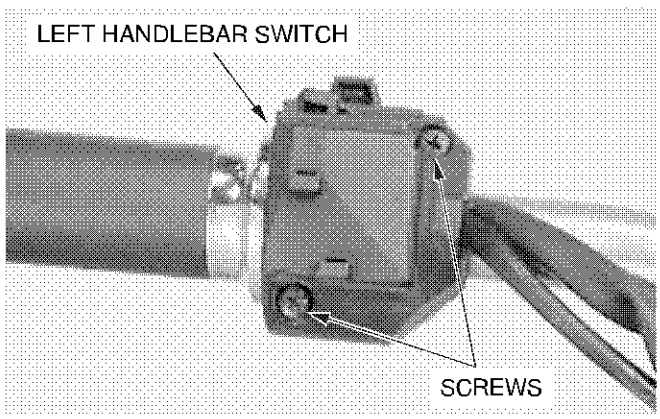
Remove the screws and both handlebar weights.



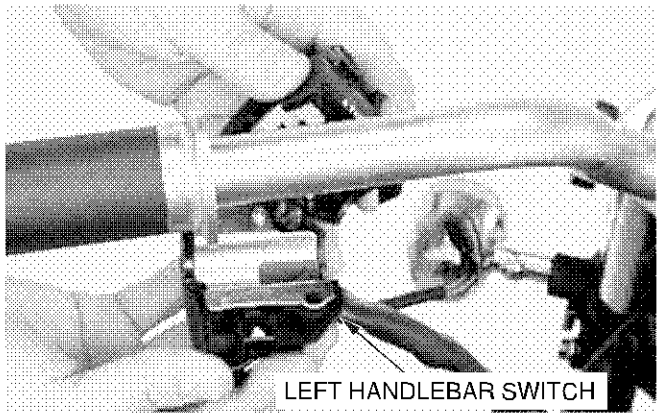
Disconnect the clutch switch wires from the switch.
Remove the clutch lever holder bolts, holder and clutch lever assembly.



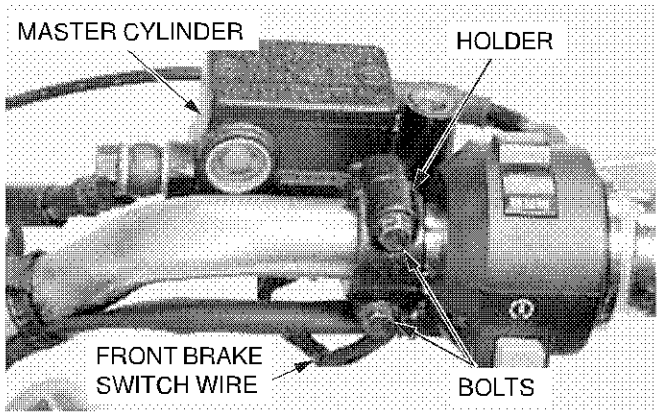
Remove the left handlebar switch screws.



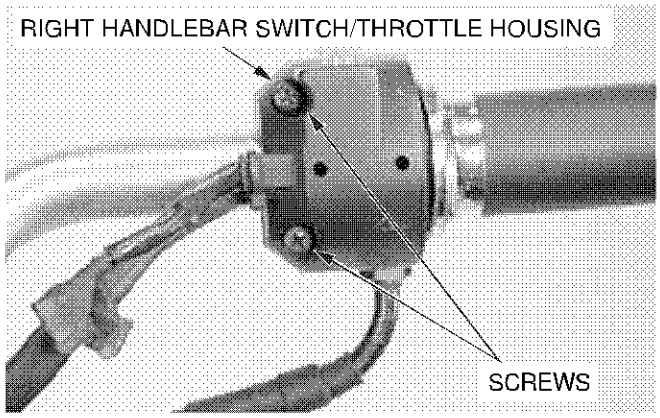
Remove the left handlebar switch.



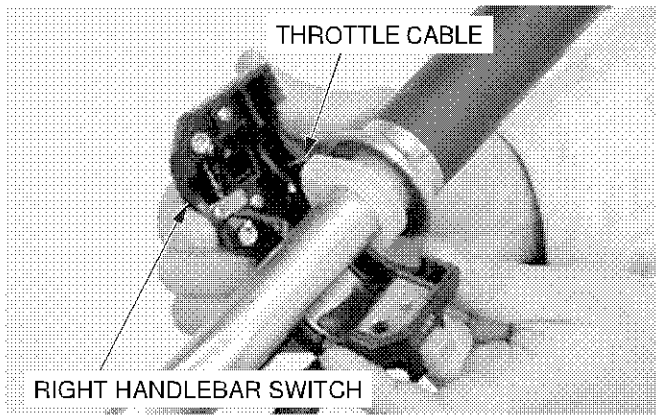
Disconnect the front brake switch wires from the switch. Remove the master cylinder holder bolts, holder and master cylinder assembly.



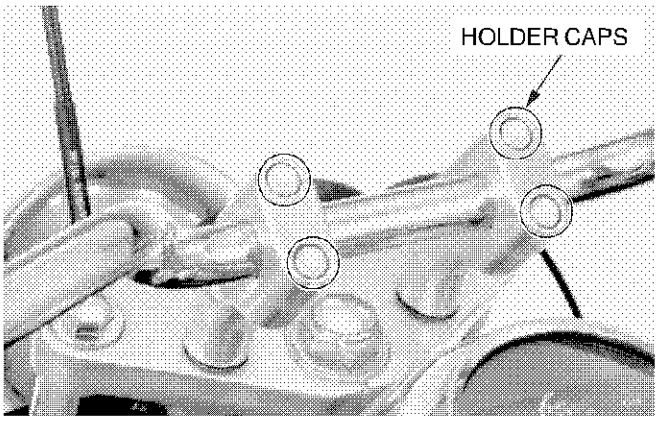
Remove the right handlebar switch/throttle housing screws.



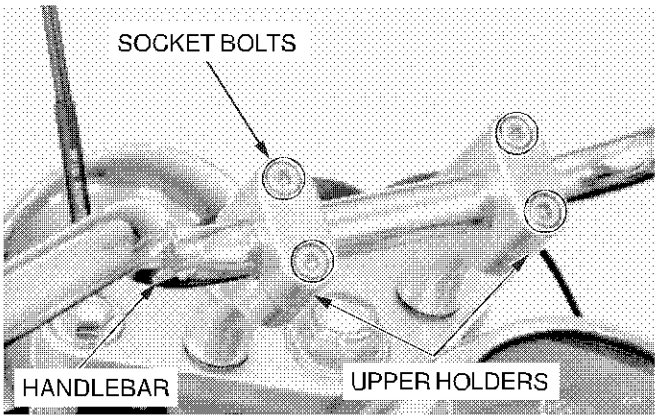
Disconnect the throttle cables from the throttle pipe and remove the right handlebar switch/throttle housing.



Remove the holder caps.

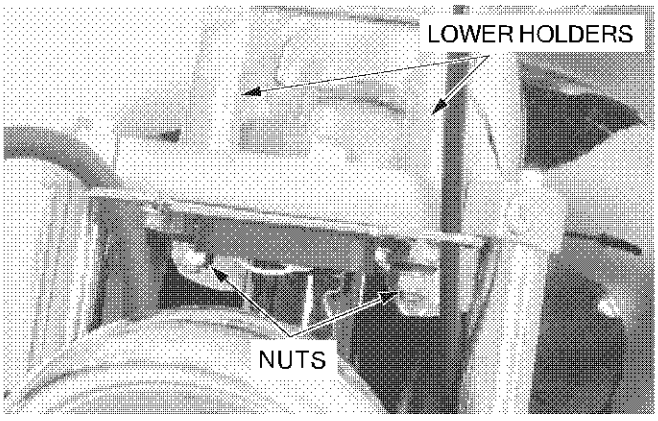


Remove the socket bolts, holders and handlebar.



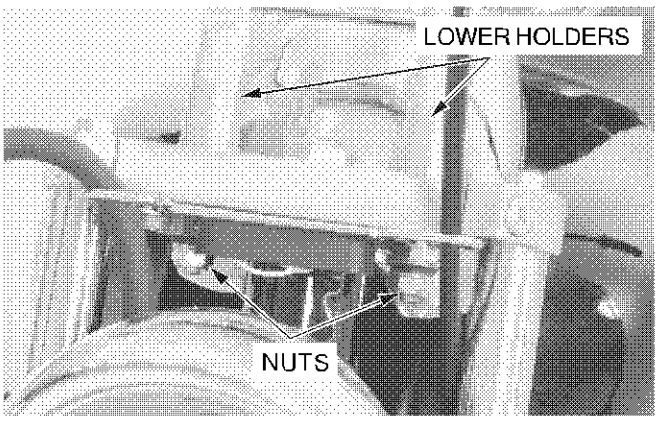
NOTE:

- If the handlebar lower holders will be removed, loosen the lower holder nuts before removing the upper holders.
- Do not remove the lower holder nuts yet.



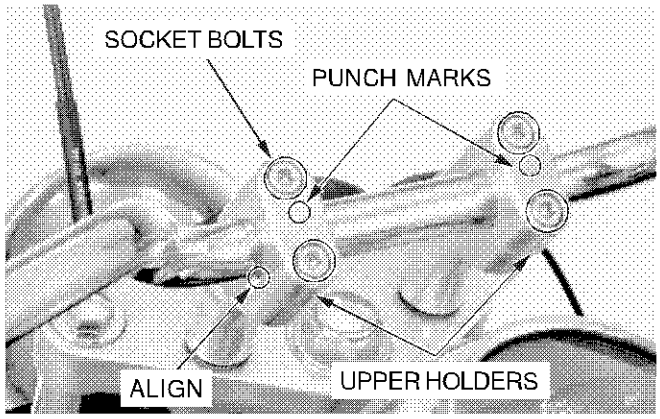
INSTALLATION

If the handlebar lower holders removed, tighten the lower holder nuts.

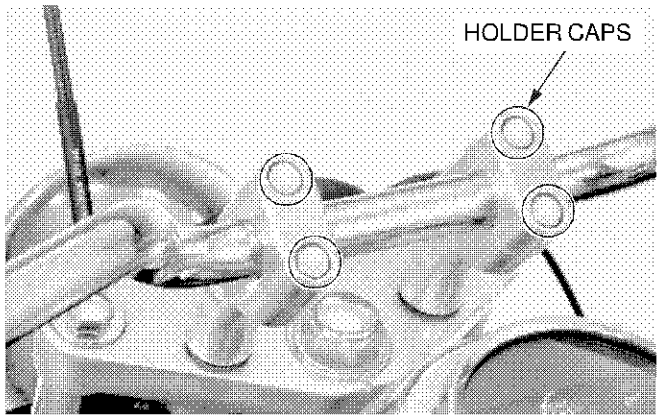


Install the upper holders on the handlebar with their punch marks forward.
Install the upper holders and temporarily tighten the socket bolts.

Align the punch mark on the handlebar with the top of the lower holders.
Tighten the front bolts first, then tighten the rear bolts.



Install the holder caps.

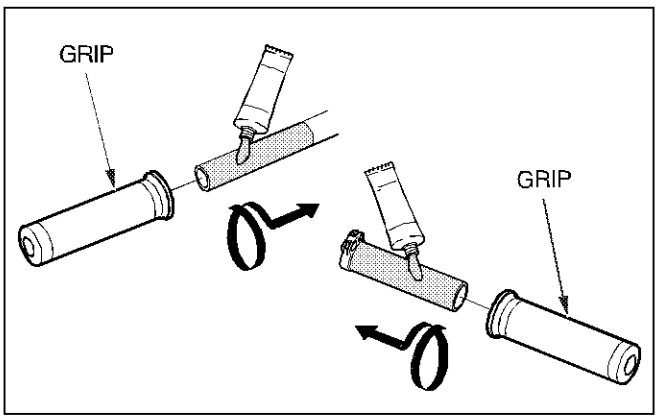


Apply Honda Bond A or its equivalent to the inside of the grip and to the clean surfaces of the left handlebar and throttle grip.

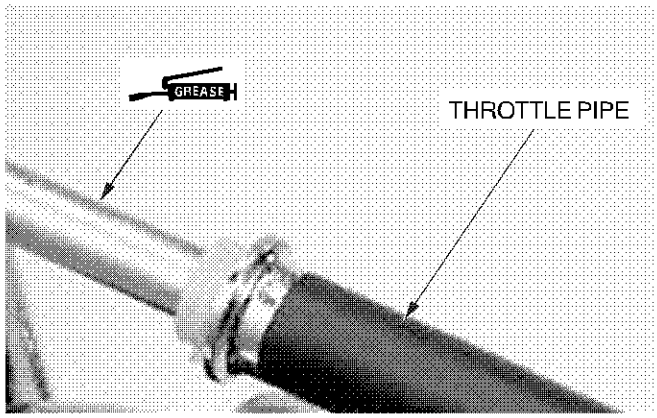
Wait 3 – 5 minutes and install the grip.
Rotate the grip for even application of the adhesive.

NOTE:

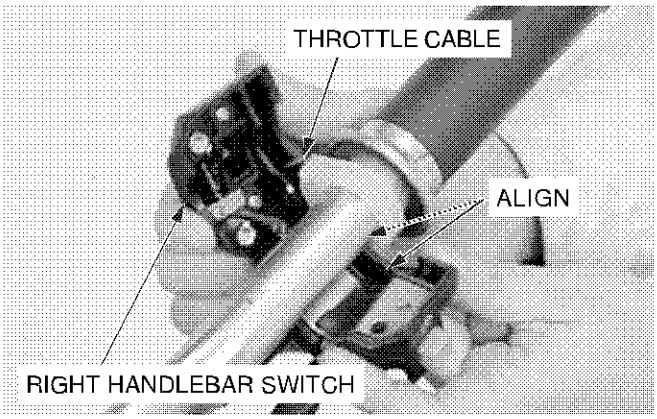
Allow the adhesive to dry for an hour before using.



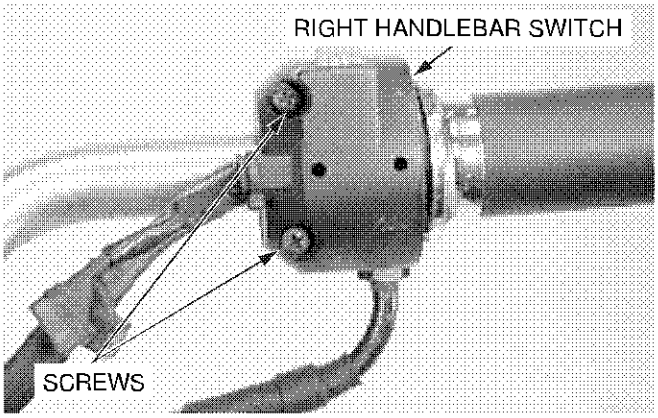
Apply grease to the sliding surface of the throttle pipe.
Install the throttle pipe on the right handlebar.



Connect the throttle cables to the throttle grip flange.
Install the right handlebar switch/throttle housing aligning its locating pin with the hole in the handlebar.

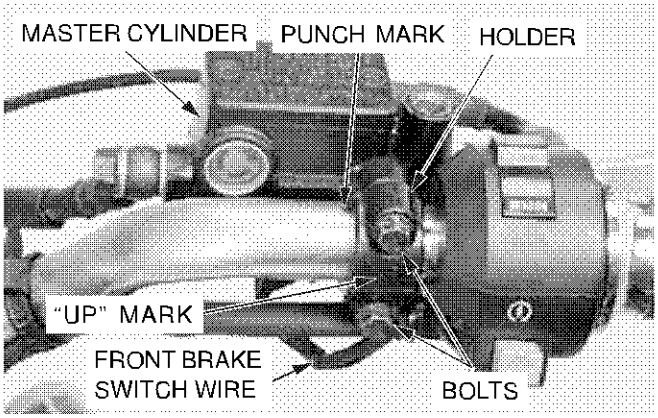


Tighten the forward screw first, then the rear screw.

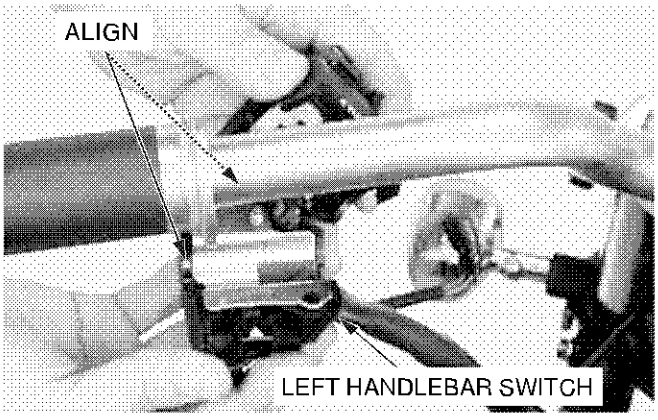


Install the master cylinder aligning the end of the master cylinder with the punch mark on the handlebar.
Install the master cylinder holder with the "UP" mark facing up.
Tighten the upper bolt first, then the lower bolt.

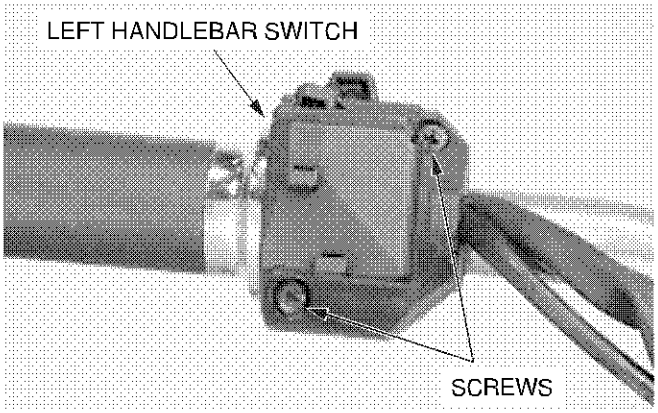
Connect the front brake switch wires.



Install the left handlebar switch housing aligning its locating pin with the hole in the handlebar.

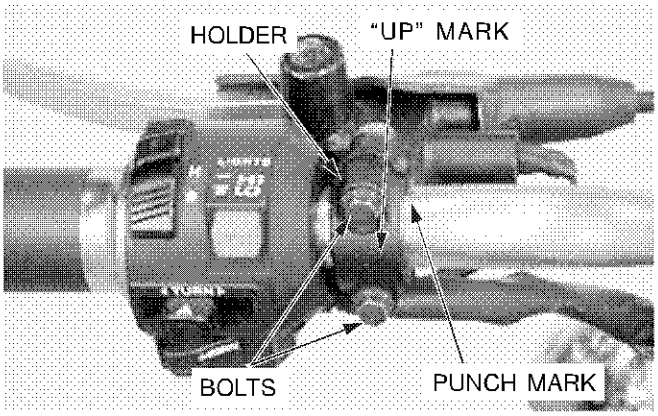


Tighten the forward screw first, then the rear screw.

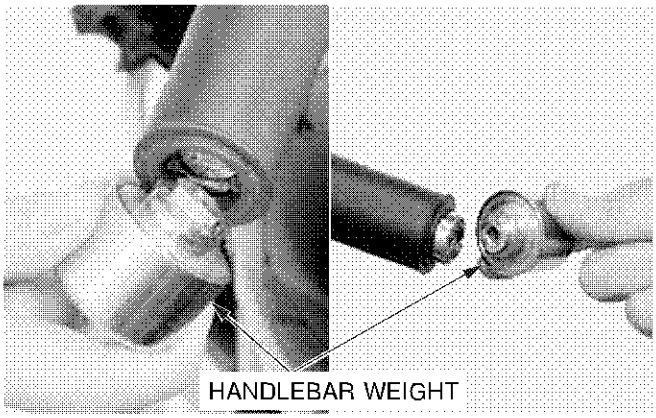


Install the clutch lever assembly aligning the end of the lever holder with the punch mark on the handlebar.
Install the clutch lever holder with the "UP" mark facing up.
Tighten the upper bolt first, then the lower bolt.

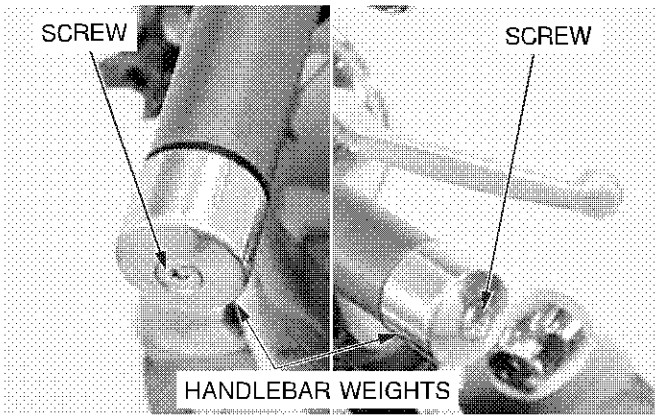
Connect the clutch switch wires.



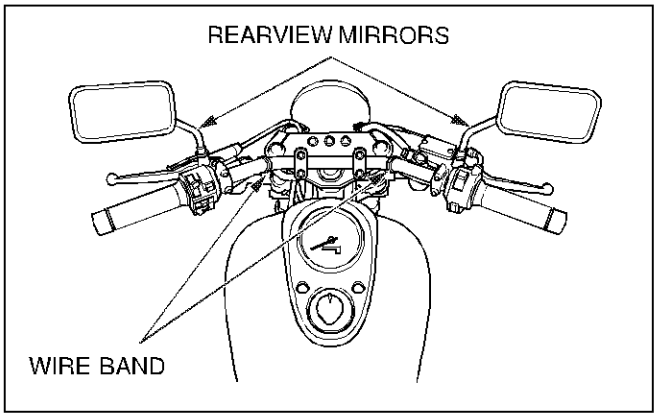
Install the both handlebar weight on to the inner weight, aligning the bosses and grooves each other.



Install the weight screw and tighten it while holding the weight.



Install the wire bands.
Install the rearview mirrors.

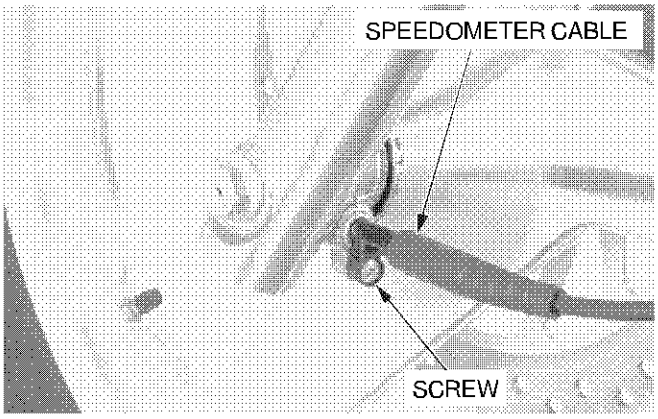


FRONT WHEEL

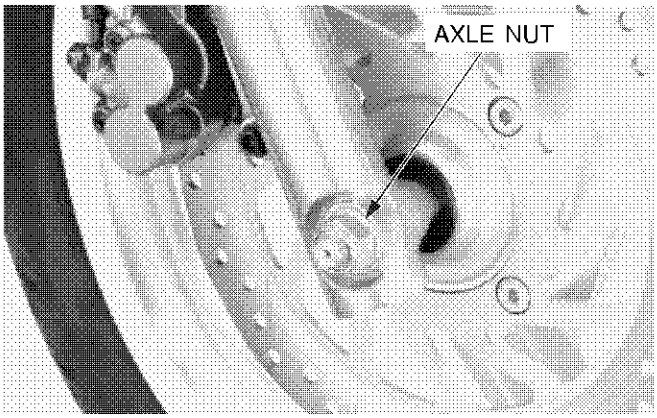
REMOVAL

Support the motorcycle securely using a hoist or equivalent.

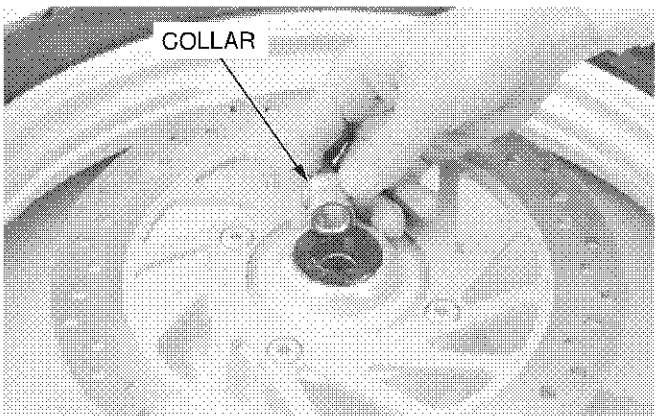
Remove the speedometer cable setting screw and disconnect the cable.



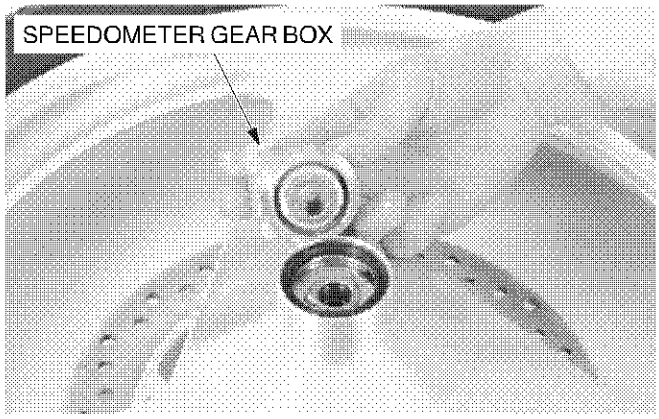
Remove the axle bolt/nut and the front wheel.



Remove the side collar from the right wheel hub.



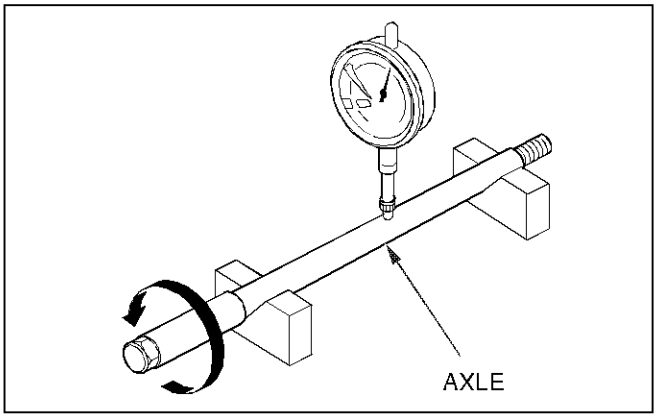
Remove the speedometer gear box from the left wheel hub.



INSPECTION

Set the axle in V-blocks and measure the runout.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.20 mm (0.008 in)



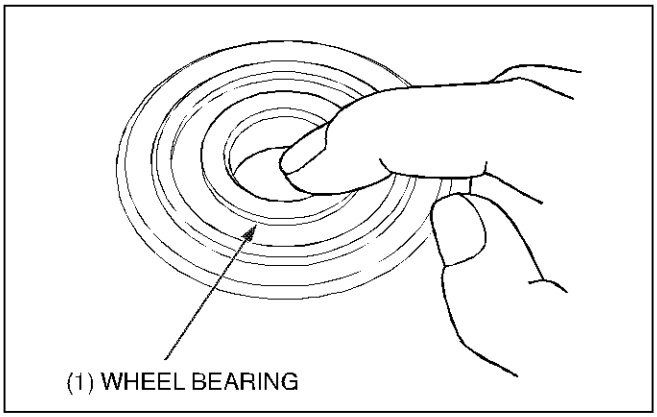
Turn the inner race of each bearing with your finger.
The bearings should turn smoothly and quietly.
Also check that the bearing outer race fits tightly in the hub.

Remove and discard the bearings if they do not turn smoothly, quietly, or if they fit loosely in the hub.

NOTE:

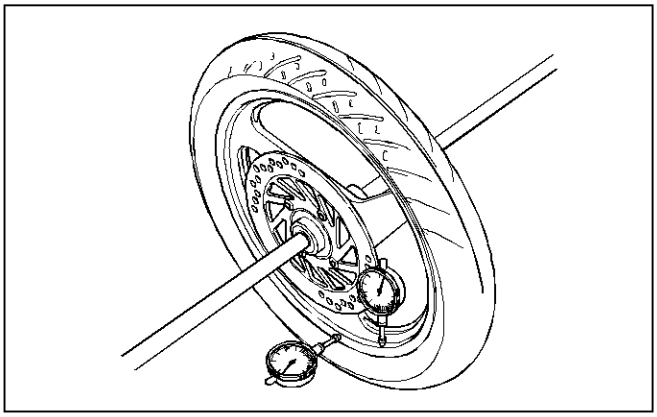
Replace the bearings in pairs.

Pack new bearings with grease and install them into the hub using the special tools (page 12-13).



Check the rim runout by placing the wheel in a turning stand.
Spin the wheel by hand, and read the runout using a dial indicator.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT:
Radial: 2.0 mm (0.08 in)
Axial: 2.0 mm (0.08 in)



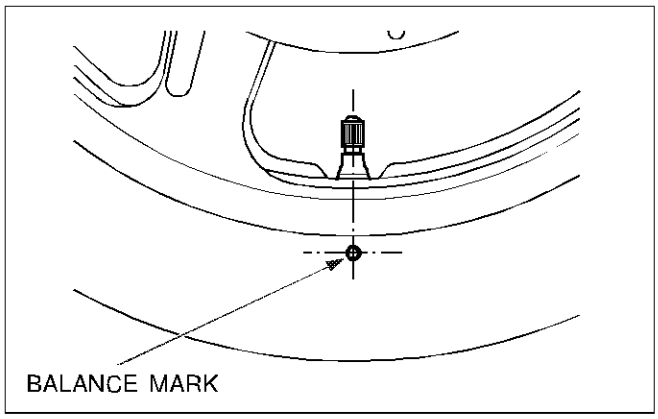
Wheel balance

CAUTION:

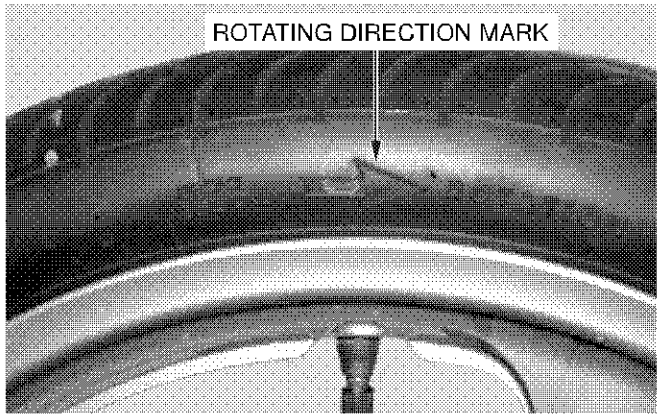
Wheel balance directly affects the stability, handling and over all safety of the motorcycle.
Always check balance when the tire has been removed from the rim.

NOTE:

For optimum balance, the tire balance mark (a paint dot on the side wall) must be located next to the valve stem. Remount the tire if necessary.

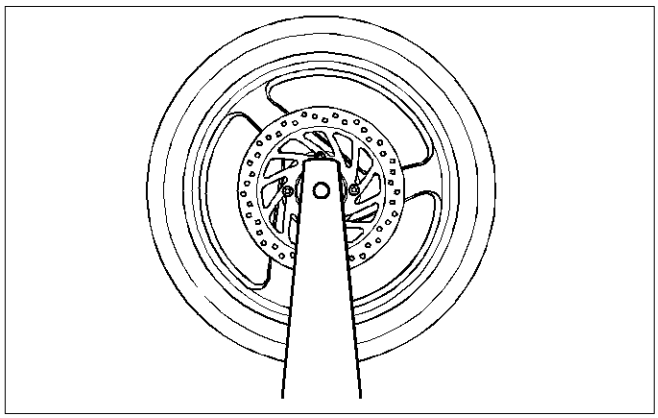


Check the rotating direction mark on the tire.



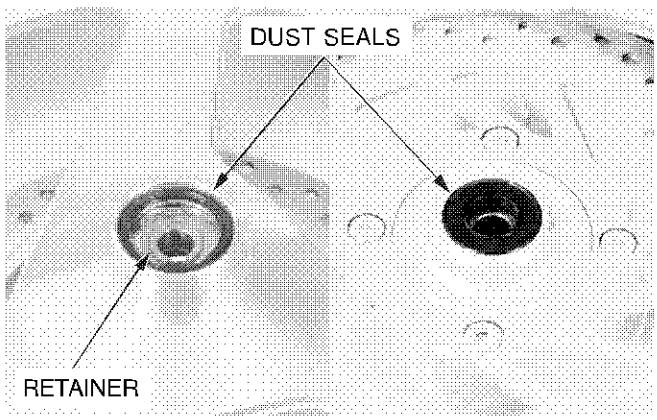
Remove the dust seals from the wheel.
Mount the wheel, tire and brake discs assembly in an inspection stand.
Spin the wheel, allow it to stop, and mark the lowest (heaviest) point of the wheel with a chalk.
Do this two or three times to verify the heaviest area.
If the wheel is balanced, it will not stop consistently in the same position.

To balance the wheel, install wheel weights on the highest side of the rim, the side opposite the chalk marks. Adjust enough weight so the wheel will no longer stop in the same position when it is spun.
Do not add more that 60 grams to the wheel.



DISASSEMBLY

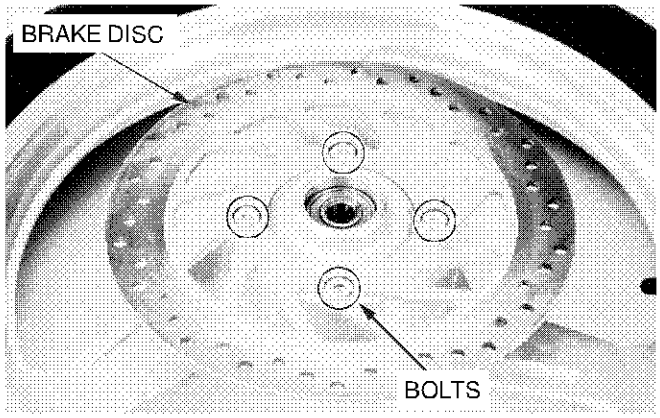
Remove the dust seals and retainer.



Remove the mounting bolts and brake disc.

NOTE:

Check for disc warpage; see page 14-11.

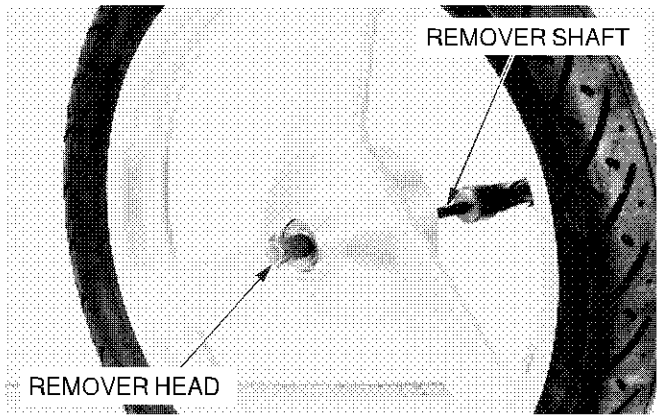


WHEEL BEARING REPLACEMENT

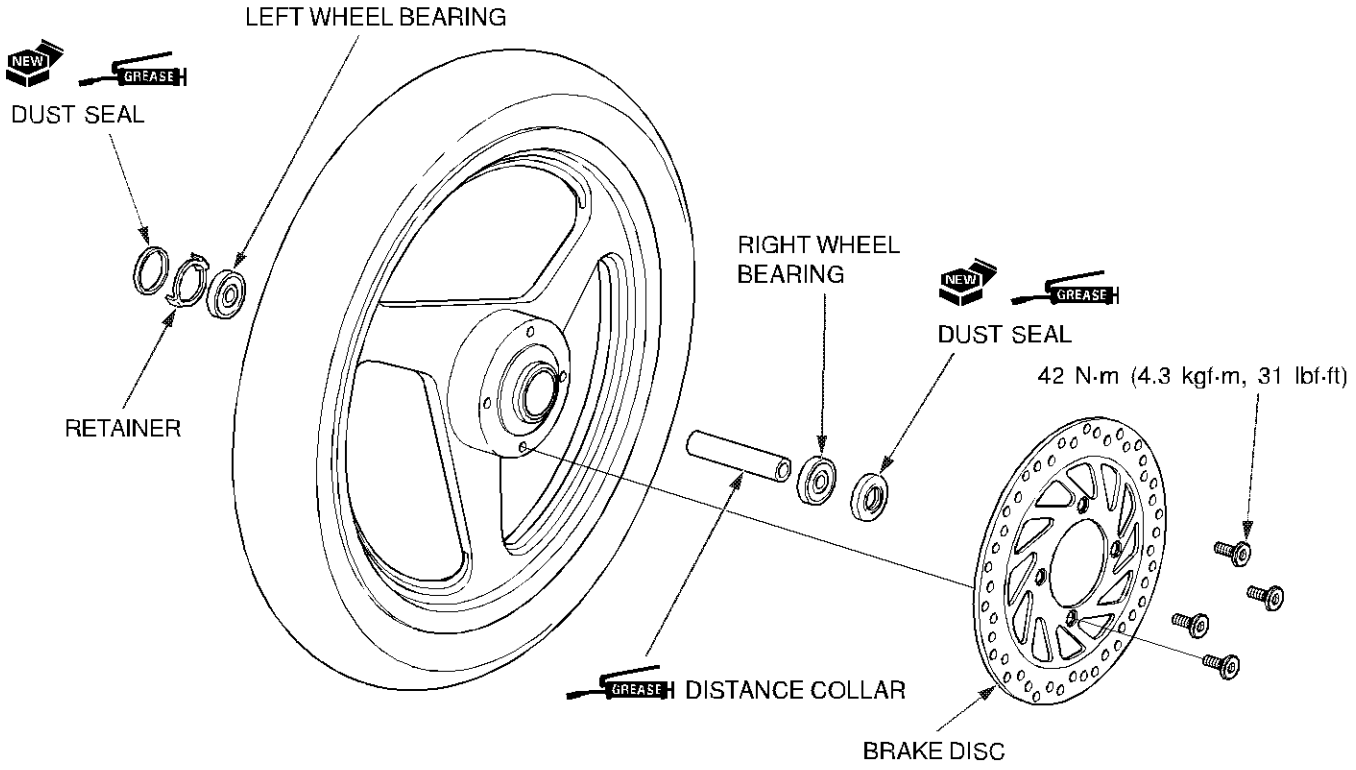
Install the bearing remover head into the bearing.
From the opposite side install the bearing remover shaft and drive the bearing out of the wheel hub.
Remove the distance collar and drive out the other bearing.

TOOLS:

Bearing remover head, 17 mm	**07746 – 0050500**
Bearing remover shaft	**07746 – 0050100**



ASSEMBLY

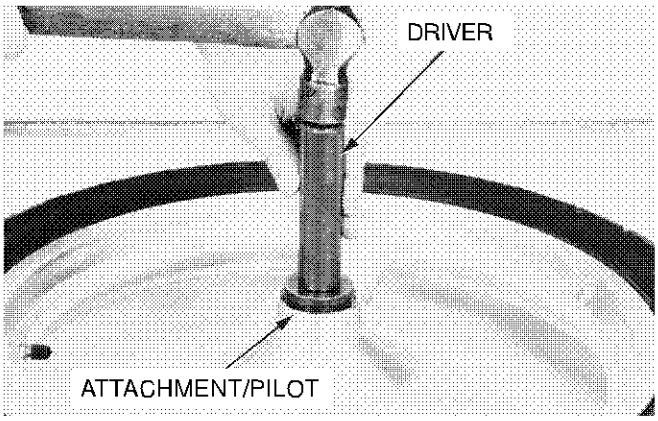


Pack all bearing cavities with grease.

Drive in a new left bearing squarely with its sealed side facing out.

TOOLS:

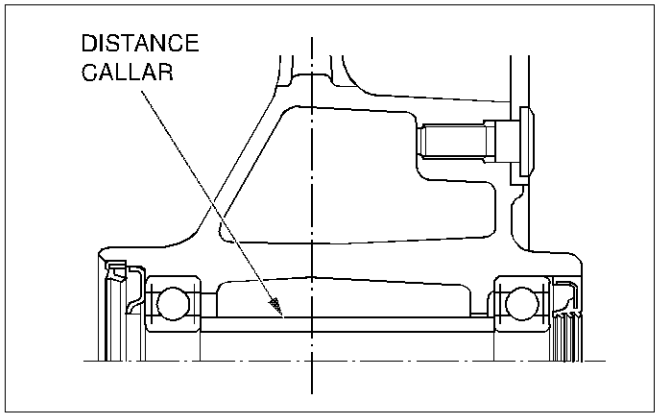
Driver	**07749 – 0010000**
Attachment, 42 x 47 mm	**07746 – 0010300**
Pilot, 15 mm	**07746 – 0040300**



Install the distance collar, then drive in the right side bearing with its sealed side facing out.

TOOLS:

Driver	**07749 – 0010000**
Attachment, 42 x 47 mm	**07746 – 0010300**
Pilot, 15 mm	**07746 – 0040300**



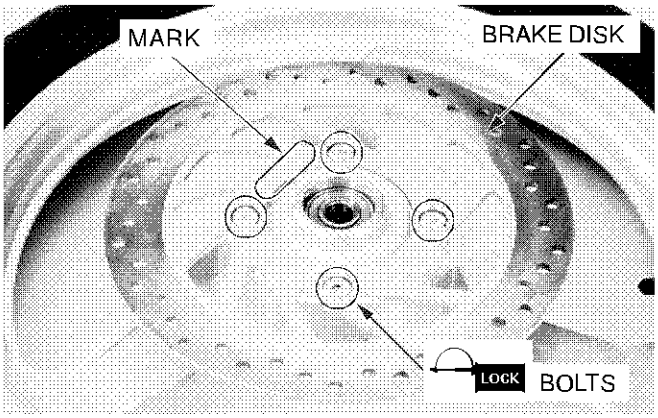
⚠ WARNING

Do not get grease on the brake discs or stopping power will be reduced.

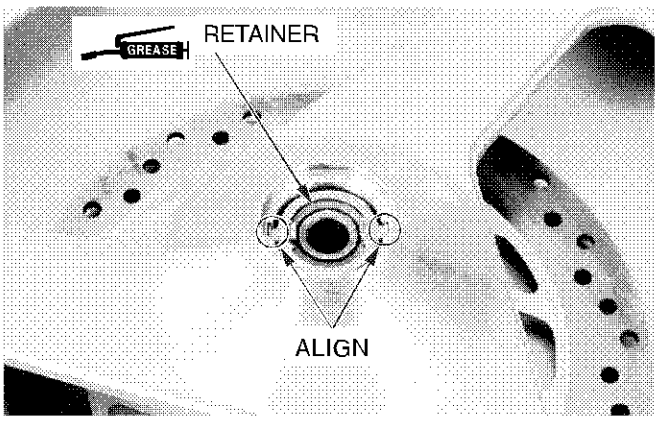
Apply a locking agent to the brake disc bolts.

Install the brake disc with the marked side facing out. Install and tighten the new mounting bolts to the specified torque.

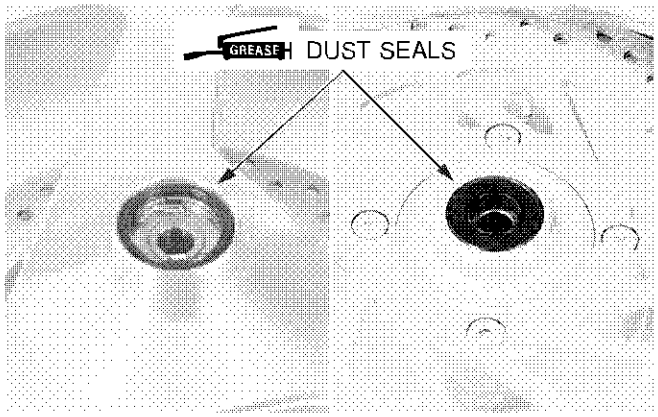
TORQUE: 42 N·m (4.3 kgf·m, 31 lbf·ft)



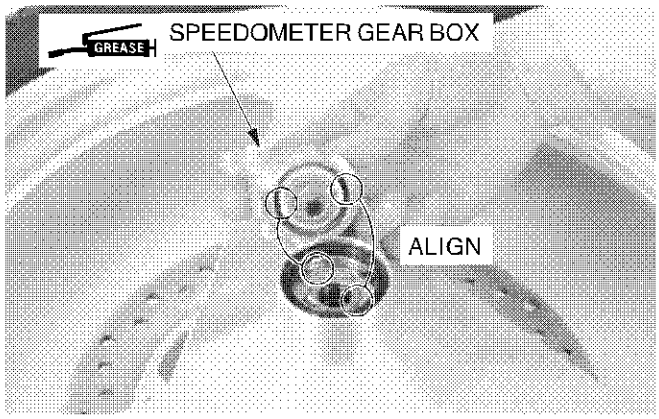
Apply grease to the speedometer gear retainer, and install it into the left side hub aligning its tabs with the slots in the hub.



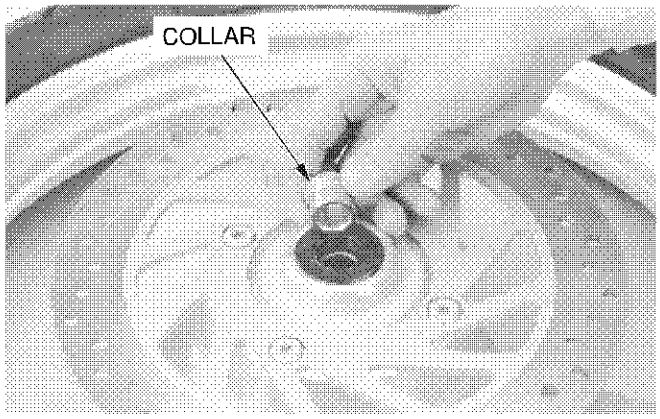
Apply grease to the new dust seal lips, then install it into the wheel hub.



Fill the speedometer gear box with grease.
Install the speedometer gear box in the wheel hub aligning the tangs of the retainer with the slots in the speedometer gear box.



Install the right side collar.



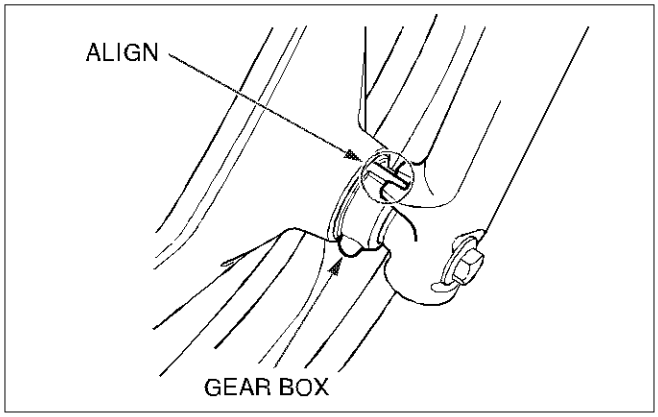
INSTALLATION

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.
Install the front axle.
Position the lug on the speedometer gear box against the back of the stopper on the left fork leg.

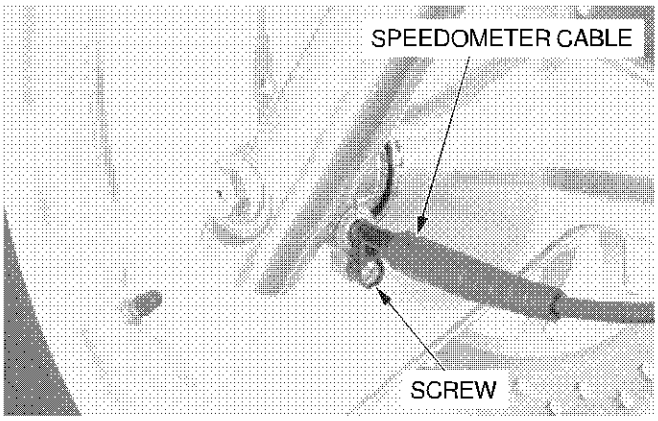
Apply thin layer of grease to the front axle surface.
Install the front axle.

Hold the axle and tighten the axle nut to the specified torque.

TORQUE: 59 N·m (6.0 kgf·m, 43 lbf·ft)



Connect the speedometer cable and tighten the screw securely.

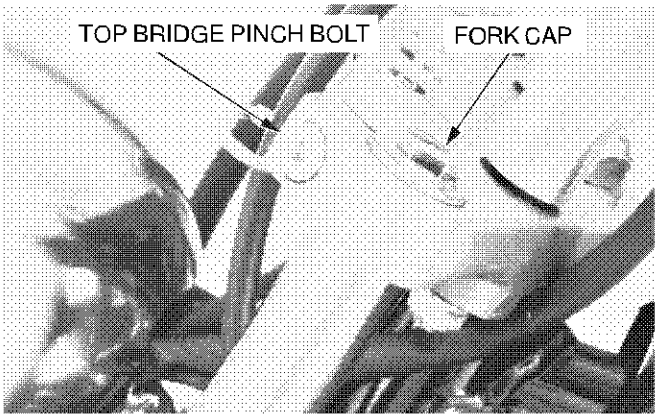


FORK

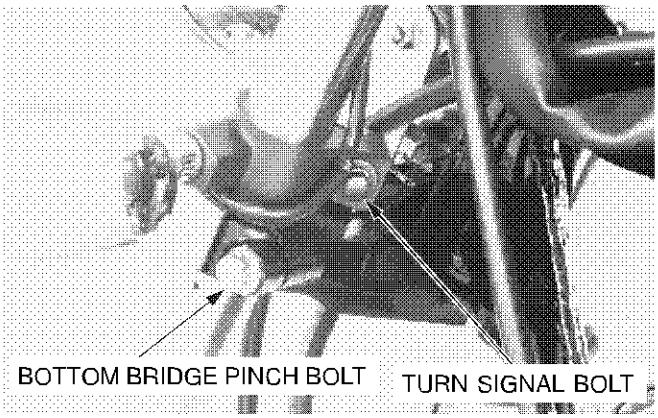
REMOVAL

Remove the following:
— Front wheel (page 12-9)
— Front brake caliper bracket bolts (page 14-7)
— Front fender (page 2-3)

Loosen the fork cap bolts but do not remove yet.
Loosen the top bridge pinch bolts.



Loosen the front turn signal light pinch bolt.
Loosen the bottom bridge pinch bolts while holding the fork.
Remove the fork from the steering stem.

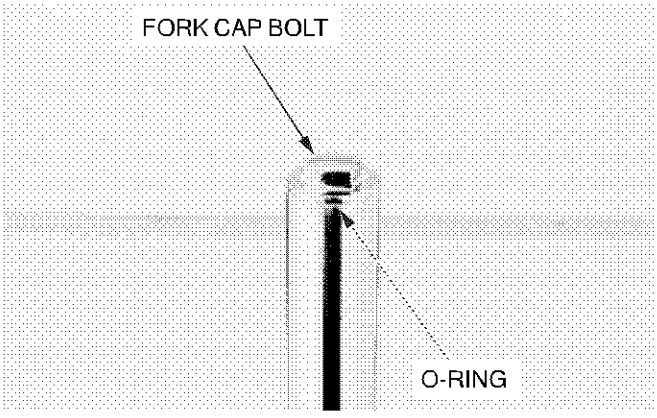


DISASSEMBLY

Remove the fork cap bolt and O-ring from the fork tube.

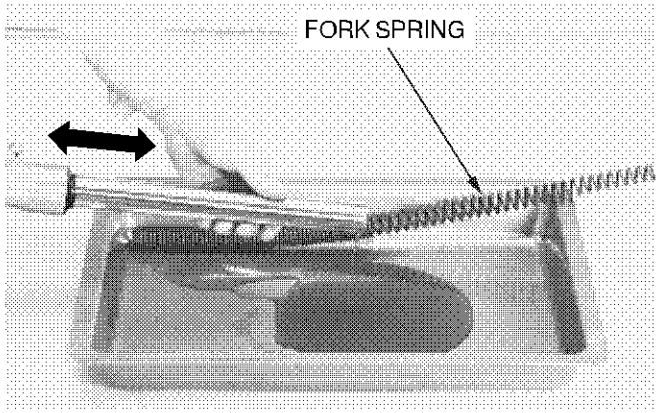
⚠ WARNING

The fork cap is under spring pressure. Use care when removing it and wear eye and face protection.



Remove the fork spring.

Pour out the fork fluid by pumping the fork tube several times.



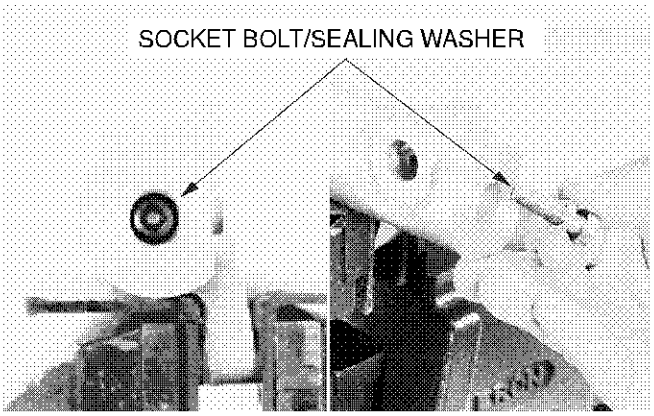
CAUTION:

Do not over tighten the fork slider.

Hold the fork slider in a vise with a piece of wood or soft jaws to avoid damage.

Loosen and remove the fork socket bolt and sealing washer from the fork slider.

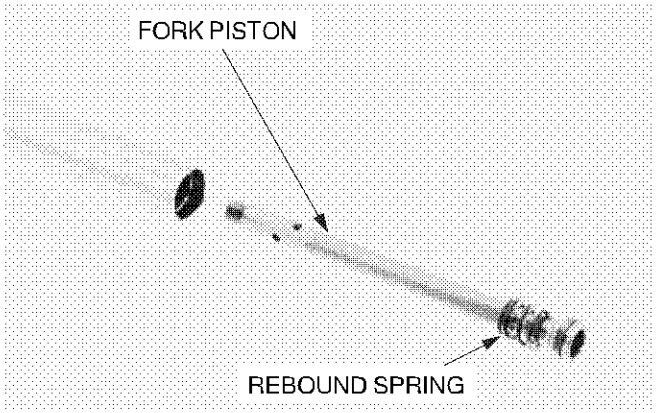
If the fork piston turns with the socket bolt, temporarily install the fork spring, washer, spring seat and fork cap bolt.



Remove the fork piston and rebound spring from the fork tube.

NOTE:

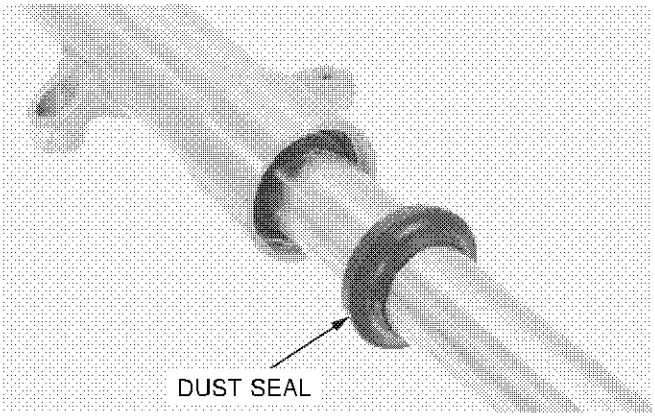
Do not remove the fork piston ring, unless it is necessary to replace with a new one.



Remove the dust seal from the fork slider.

CAUTION:

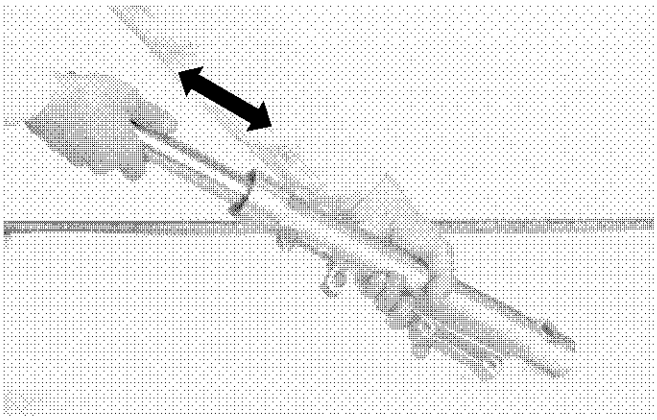
Do not scratch the fork tube sliding surface.



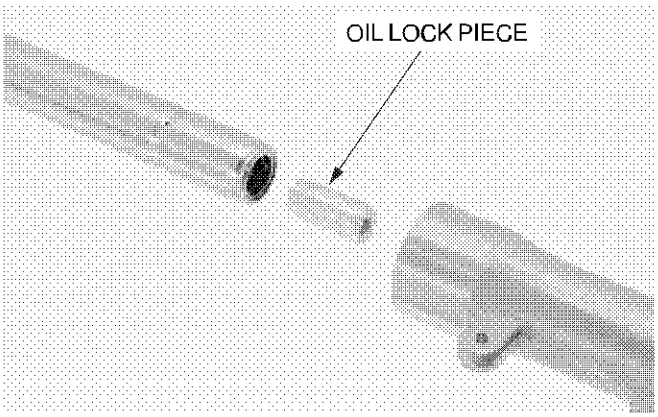
NOTE:

Check that the fork tube moves smoothly in the fork slider. If does not, check the fork tube for bending or damage, and bushings for wear or damage.

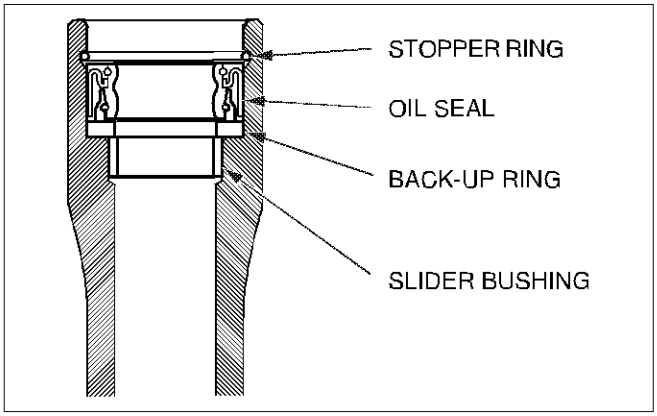
Using quick successive motions, pull the fork tube out of the fork slider.



Remove the oil lock piece from the fork slider.



Remove the stopper ring, oil seal, back-up ring and slider bushing from the fork slider.

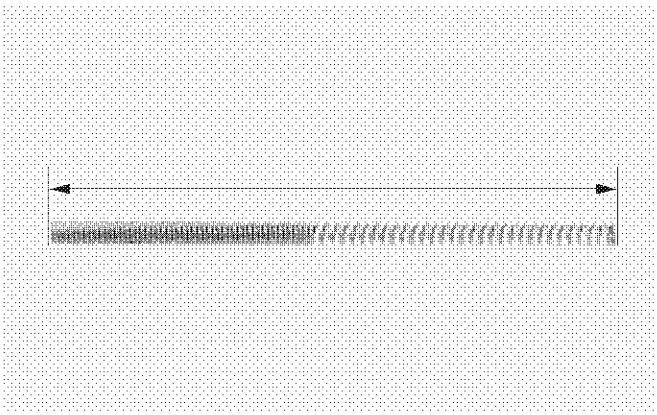


INSPECTION

FORK SPRING

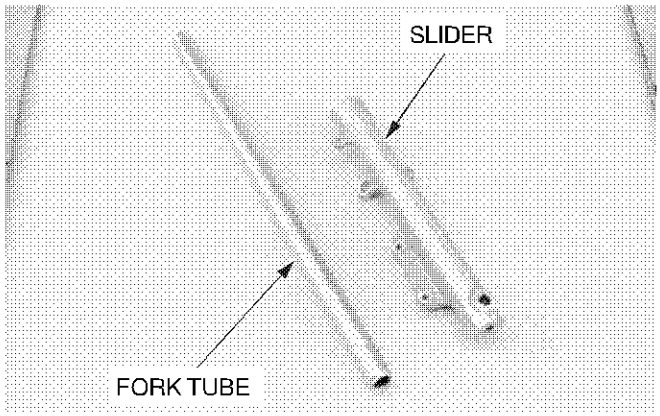
Measure the fork spring free length by placing the spring on a flat surface.

SERVICE LIMIT: 392.4 mm (15.45 in)



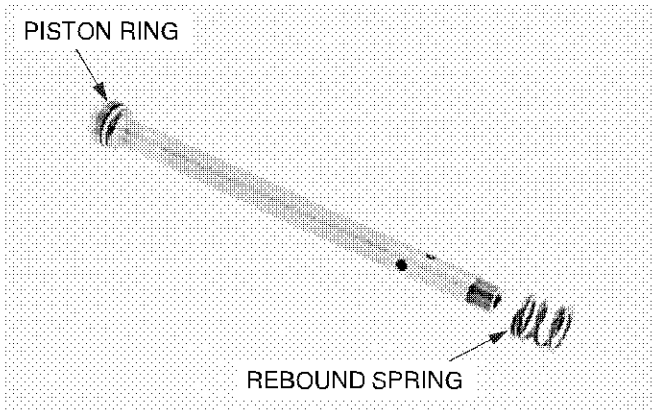
FORK TUBE/SLIDER/FORK PISTON

Check the fork tube, slider and fork piston for score marks, and excessive or abnormal wear.



Check the fork piston ring for wear or damage.
Check the rebound spring for fatigue or damage.

Replace the component if necessary.



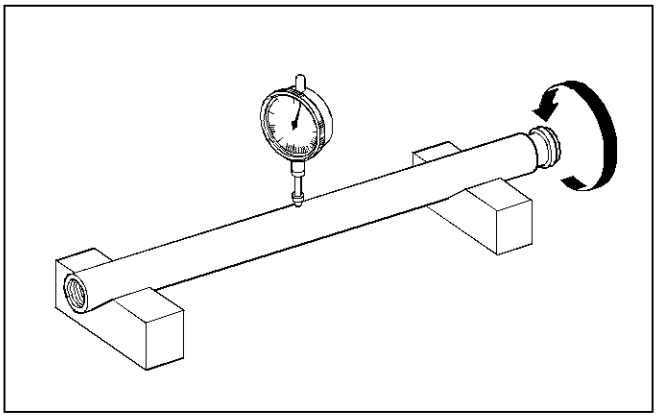
Set the fork tube in V-blocks and measure the fork tube runout rotating it with a dial indicator.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.20 mm (0.008 in)

Replace if the service limit is exceeded, or there are scratches or nicks that will allow fork oil to leak past the seals.

NOTE:

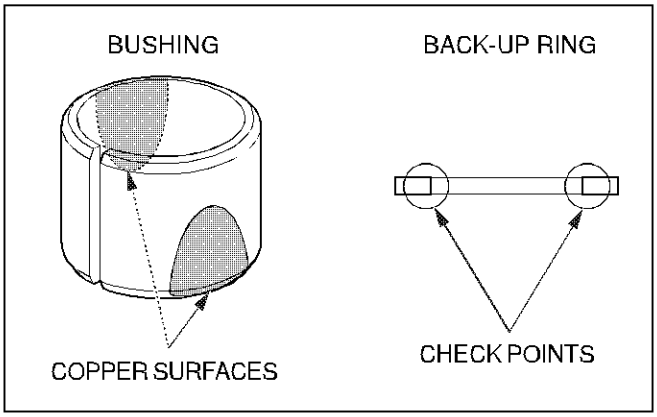
Do not reuse the fork tube if it cannot be perfectly straightened with minimal effort.



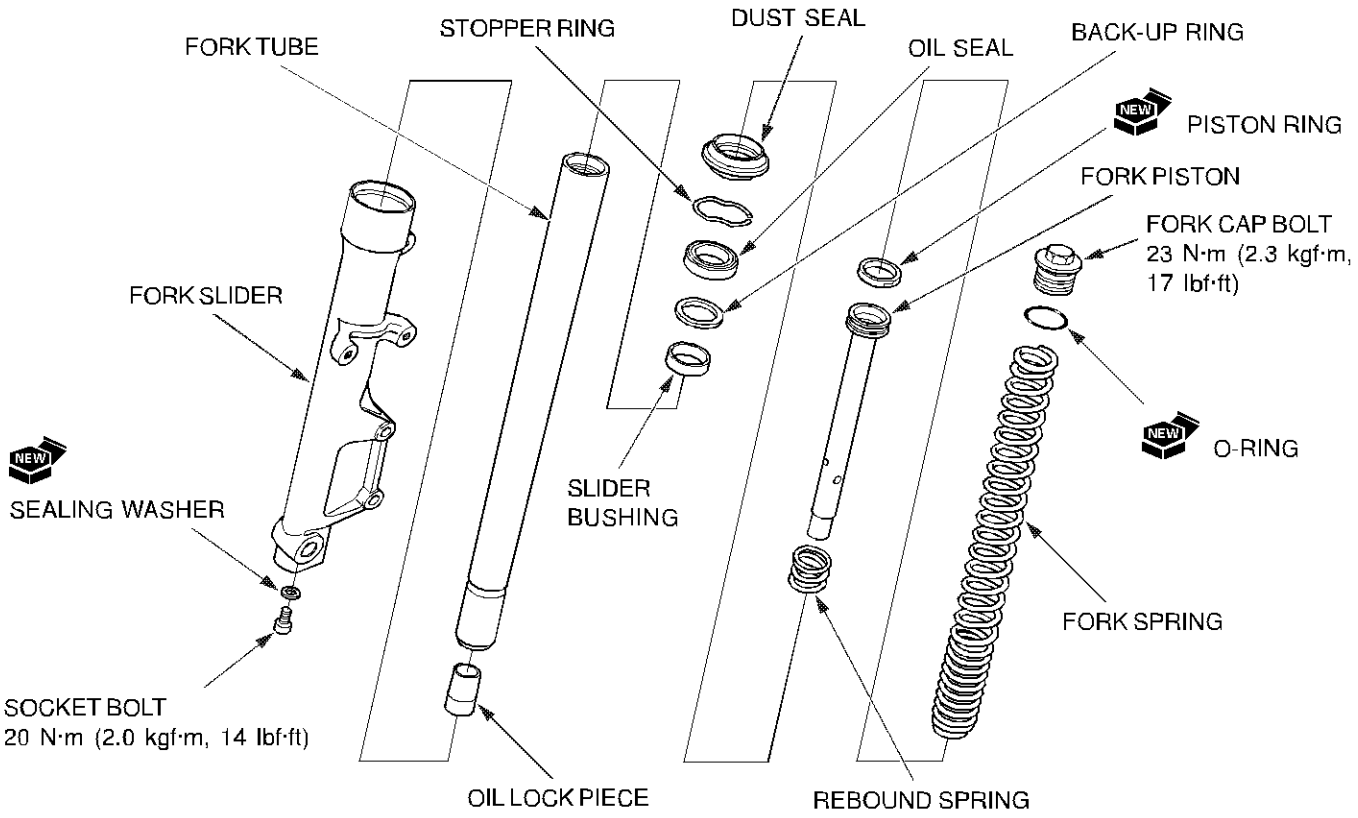
BUSHING

Visually inspect the slider bushings.
Replace the bushings if there is excessive scoring or scratching, or if the teflon is worn so that the copper surface appears on more 3/4 of the entire surface.

Check the back-up ring: replace it if there is any distortion at the point shown.



ASSEMBLY

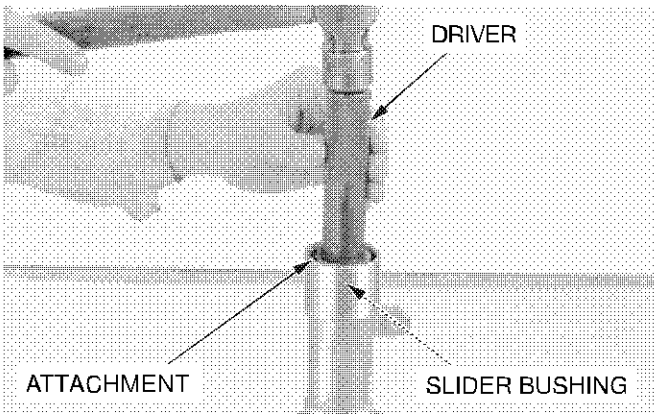


Install the slider bushing into the fork slider using the special tools.

TOOLS:

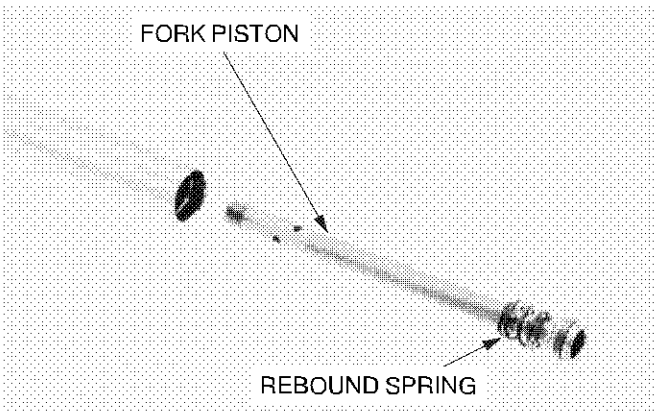
Driver	**07749 – 0010000**
Attachment, 37 x 40 mm	**07746 – 0010200**

Install the back up ring.

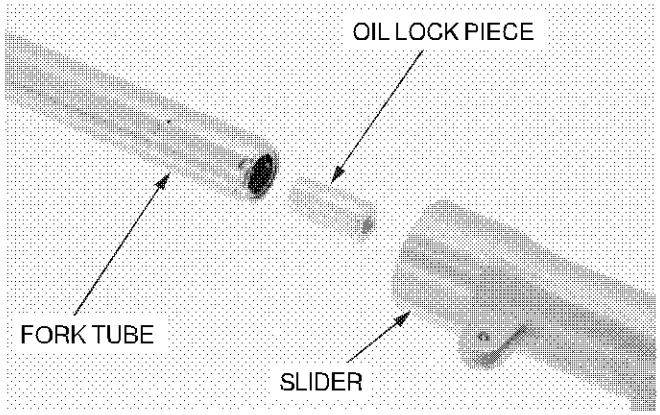


Install the rebound spring to the fork piston.

Install the fork piston into the fork tube.



Install the oil lock piece onto the fork piston end.
Install the fork tube into the fork slider.



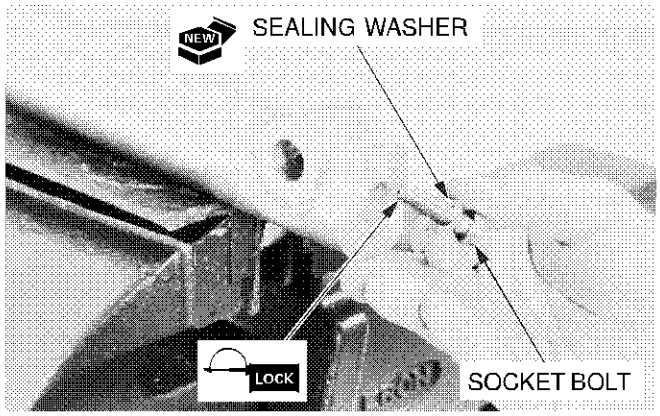
CAUTION:

Do not overtighten fork slider.

Hold the fork slider in a vise with a piece of wood or soft jaws to avoid damage.
Replace the sealing washer with a new one.
Clean and apply a locking agent to the fork socket bolt threads and install the fork socket bolt with the new sealing washer into the fork piston.

Tighten the fork socket bolt to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 14 lbf·ft)

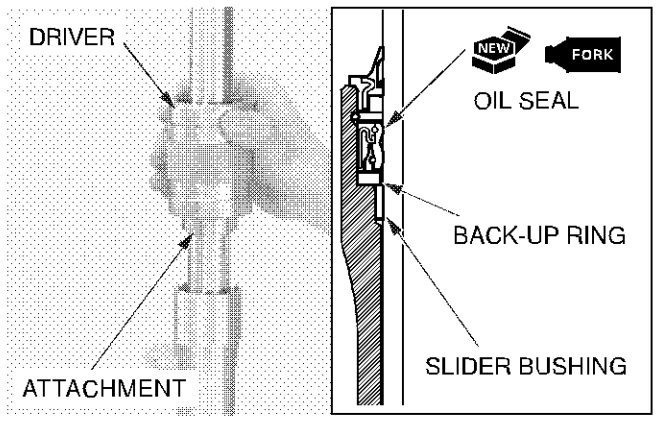


If the fork piston turns with the socket bolt, temporarily install the fork spring, washer, spring spacer and fork cap.

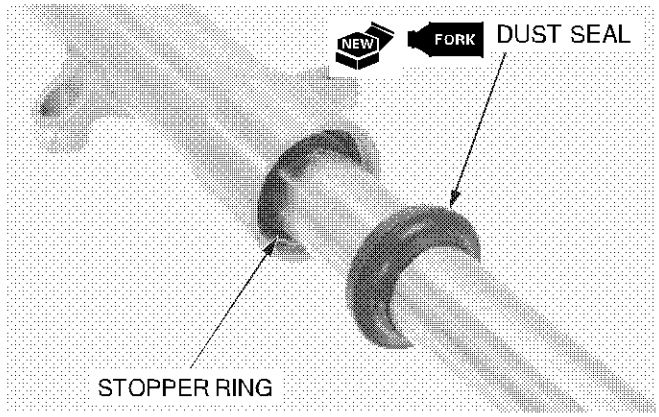
Drive in the new oil seal into the fork tube until the stop ring groove is visible, using the special tool.

TOOLS:

Fork seal driver body	**07747 – 0010100**
Fork seal driver atachment	**07747 – 0010400**



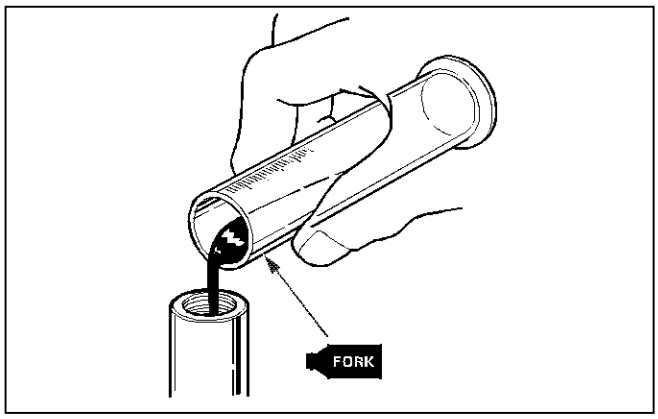
Install the stopper ring into the groove in the fork slider.
Apply fork oil to the lip a new dust seal and install the dust seal.



Pour the specified amount of recommended fork fluid into the fork tube.

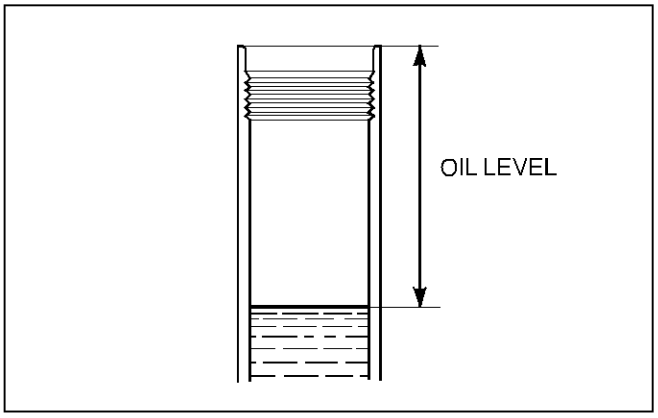
FORK FLUID CAPACITY:
155 ± 2.5 cm³ (5.2 ± 0.08 US oz, 5.5 ± 0.09 Imp oz)

Pump the fork tube several times to remove trapped air from the lower portion of the fork tube.

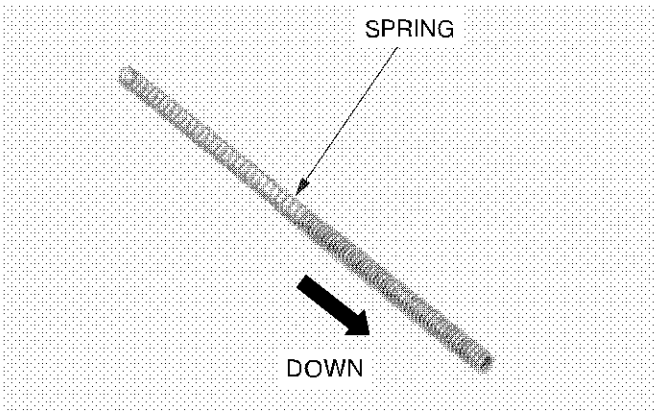


Compress the fork leg fully and measure the oil level from the top of the fork tube.

FORK OIL LEVEL: 186 mm (7.323 in)



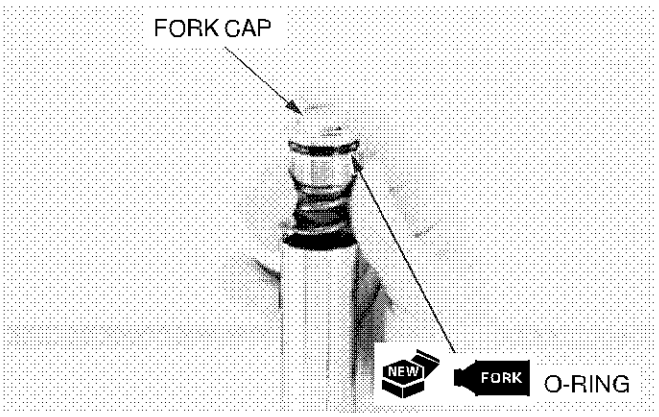
Wipe oil off the spring thoroughly using a clean cloth.
Install the fork spring with the tapered end facing down.



Insatll a new O-ring onto the fork bolt and install it loosely.

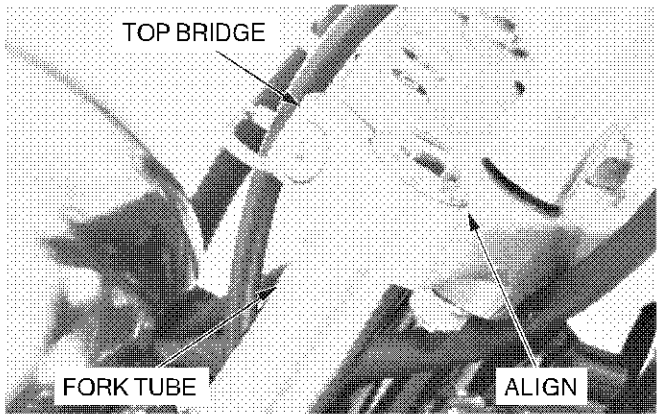
NOTE:

Install the fork bolt but do not tighten yet.



INSTALLATION

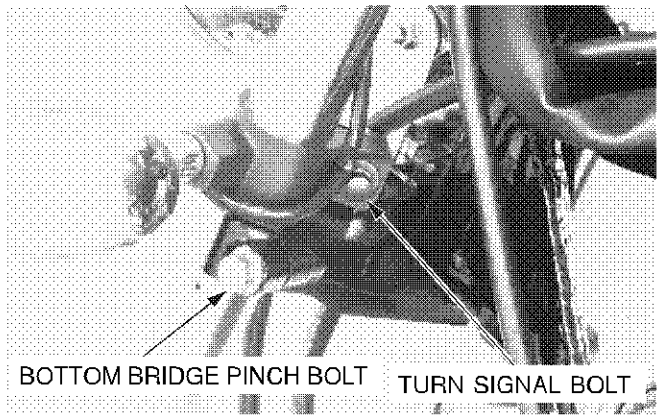
Install the fork tube into the steering stem and top bridge. Align the top end of the fork tube with the upper surface of the top bridge as shown.



Tighten the bottom bridge pinch bolts.

TORQUE: 26 N·m (2.7 kgf·m, 20 lbf·ft)

Tighten the front turn signal pinch bolt securely.



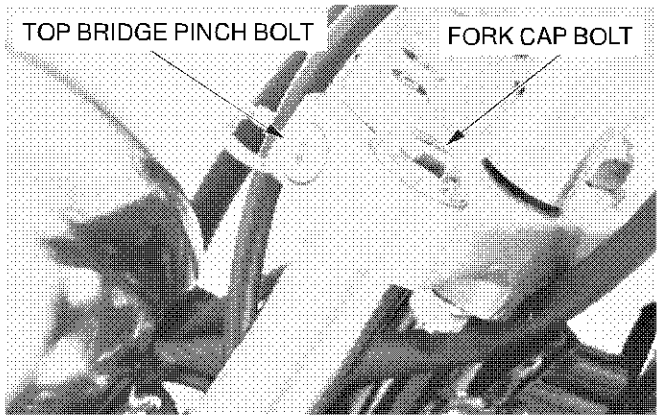
Tighten the top bridge pinch bolts to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Tighten the fork cap bolt to the specified torque if it was removed.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Install the following:
— Front fender (page 2-3)
— Front brake caliper (page 14-8)
— Front wheel (page 12-14)

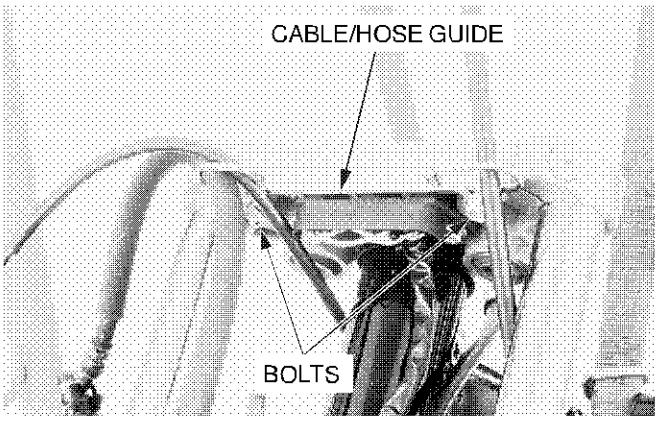


STEERING STEM

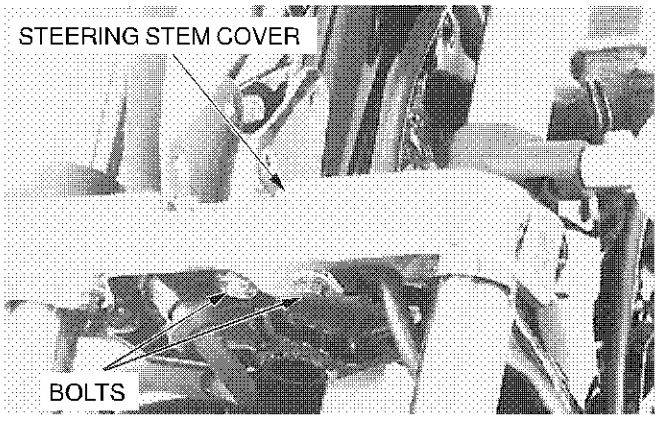
REMOVAL

Remove the following:
— front fork (page 12-15)
— handlebar (page 12-3)
— headlight case (page 18-5)

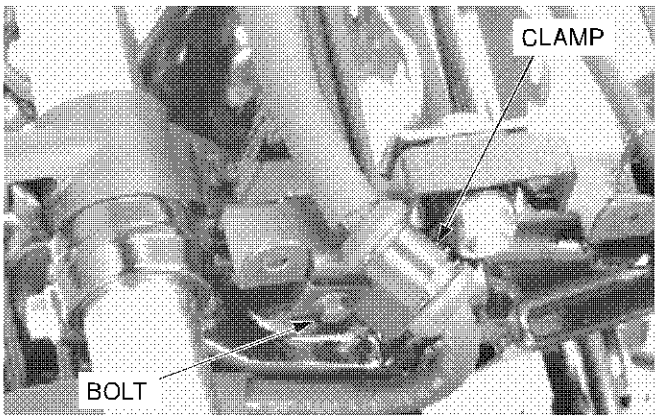
Remove the bolts and cable/hose from the top bridge.



Remove the bolts and steering stem cover.

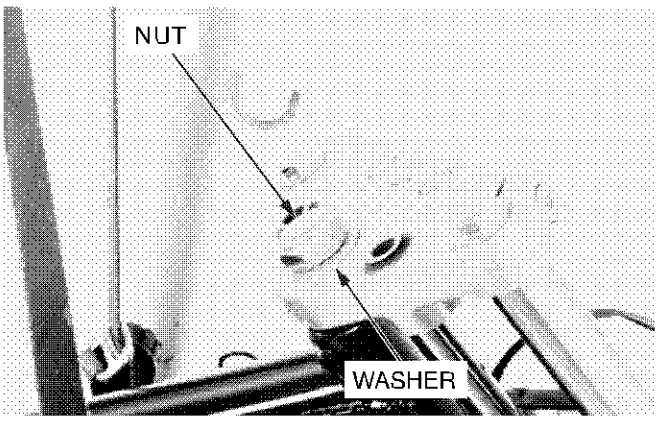


Remove the bolt and brake hose clamp from the steering stem.

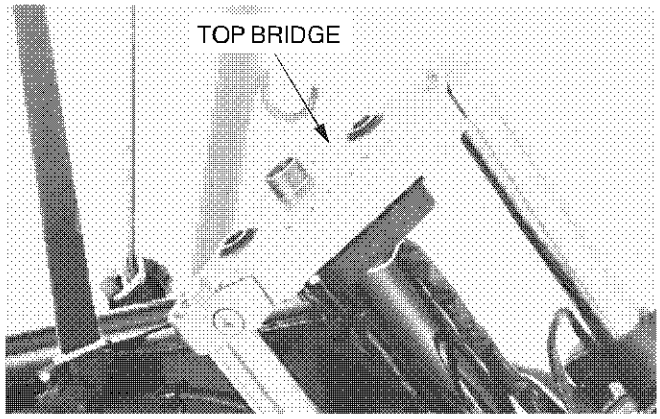


Remove the stem nut and washer.

TOOLS:
Steering stem socket **07916 – 3710101**

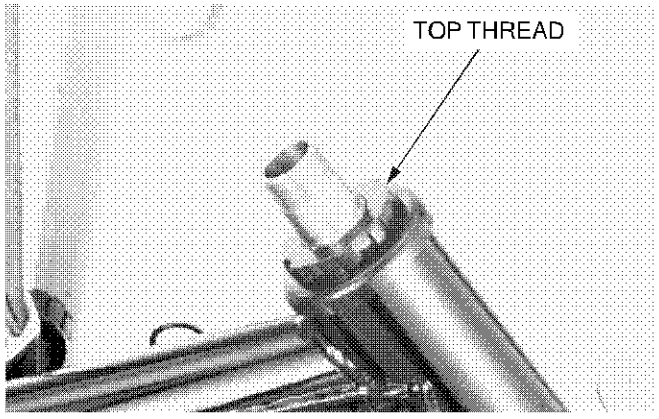


Remove the top bridge.



Remove the steering top thread using the special tool.

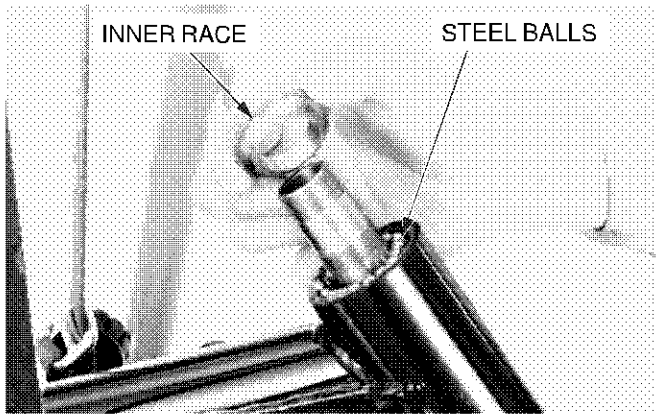
TOOL:
Steering stem socket **07916 – 3710101**



Hold the steering stem and remove the upper bearing inner race and upper bearing steel balls (18).

NOTE:

Do not loose the steei balls.

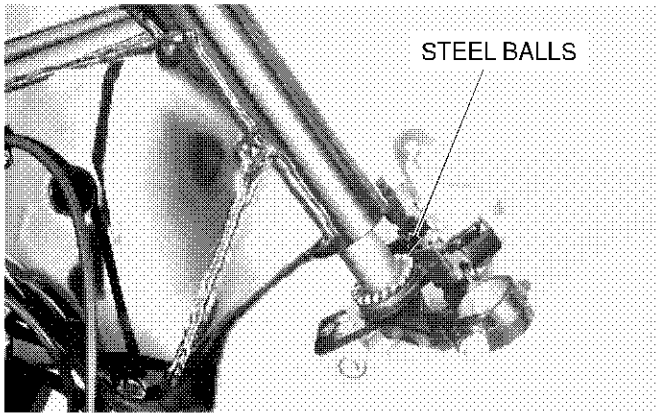


Remove the steering stem and lower bearing steel balls (18).

NOTE:

Do not loose the steei balls.

Check the lower bearing steel balls, inner and outer races for wear or damage.

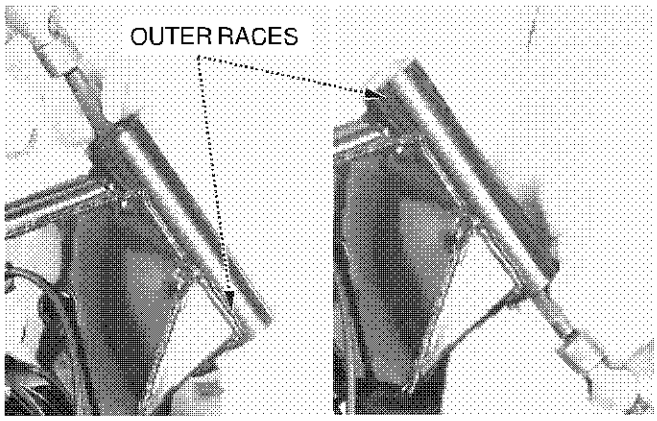


STEERING BEARING RACE REPLACEMENT

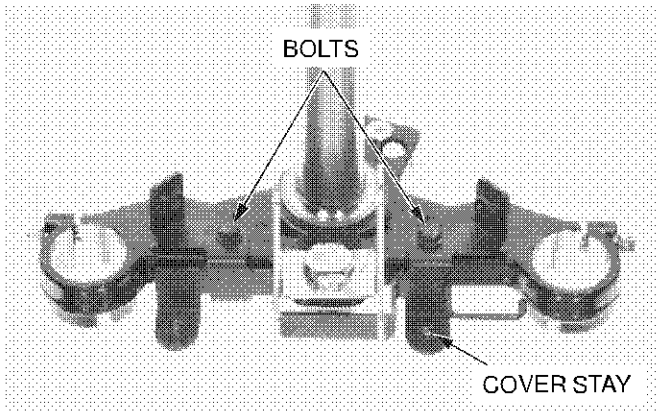
NOTE:

Always replace the bearings and races as a set.

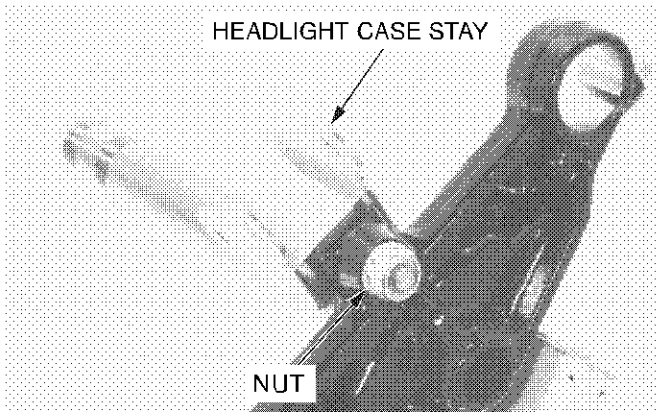
Remove the upper and lower bearing outer race.



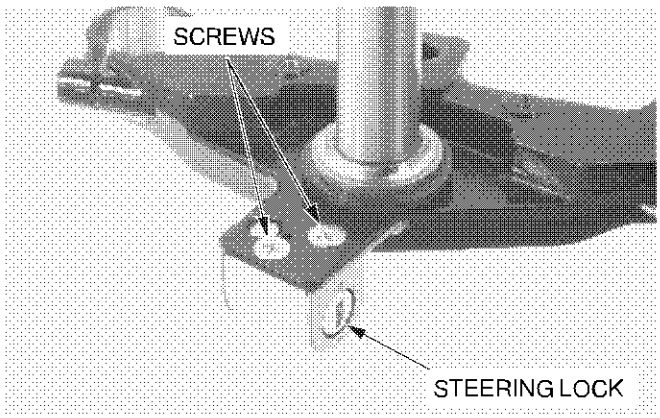
Remove the bolts and steering cover stay.



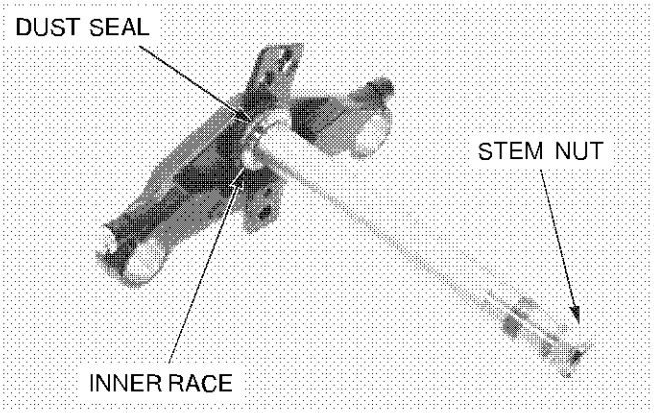
Remove the nut and headlight case stay.



Remove the screws and steering lock.

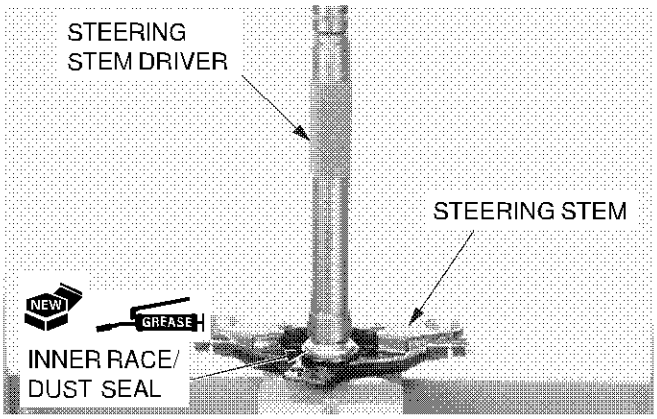


Install the steering stem nut onto the stem to prevent the threads from being damaged when removing the lower bearing inner race from the stem.
Remove the lower bearing inner rece with a chisel or equivalent tool, being careful not to damage the stem.

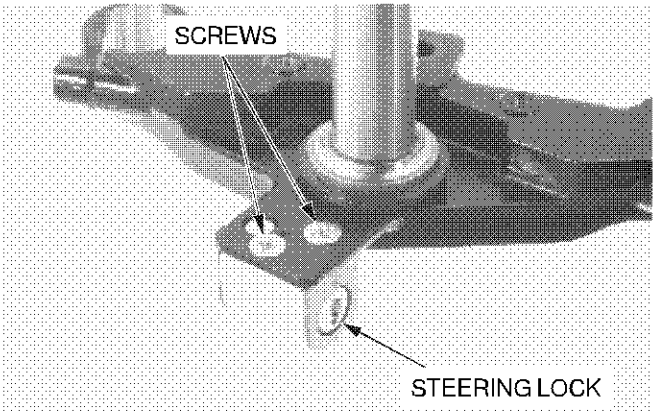


Install the washer onto the steering stem.
Apply grease to new dust seal lips and install it over the steering stem.
Install a new lower bearing inner race using a special tool and a hydraulic press.

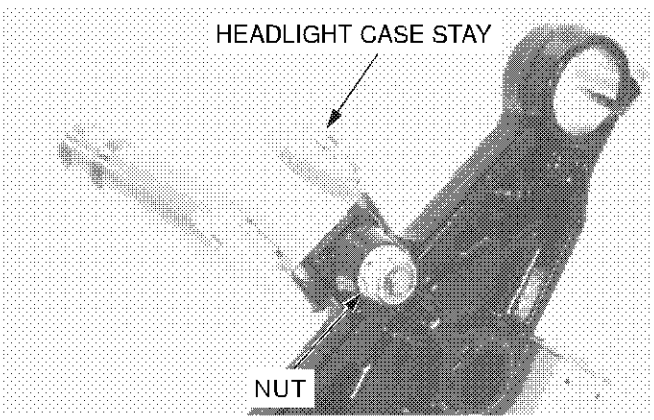
TOOL:
Steering stem driver **07946 – 4300101**



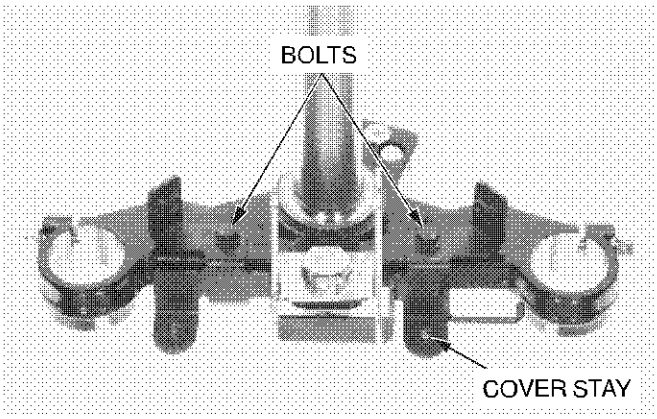
Install the steering lock and screws.
Tighten the screws securely.



Install the headlight case stay and nut.
Tighten the nut securely.



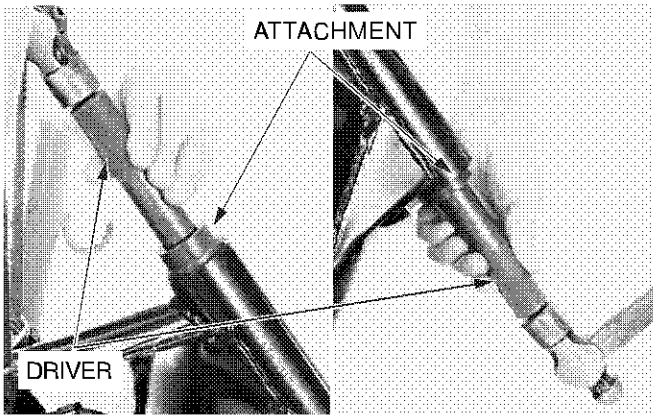
Install the steering cover stay and bolts.
Tighten the bolts securely.



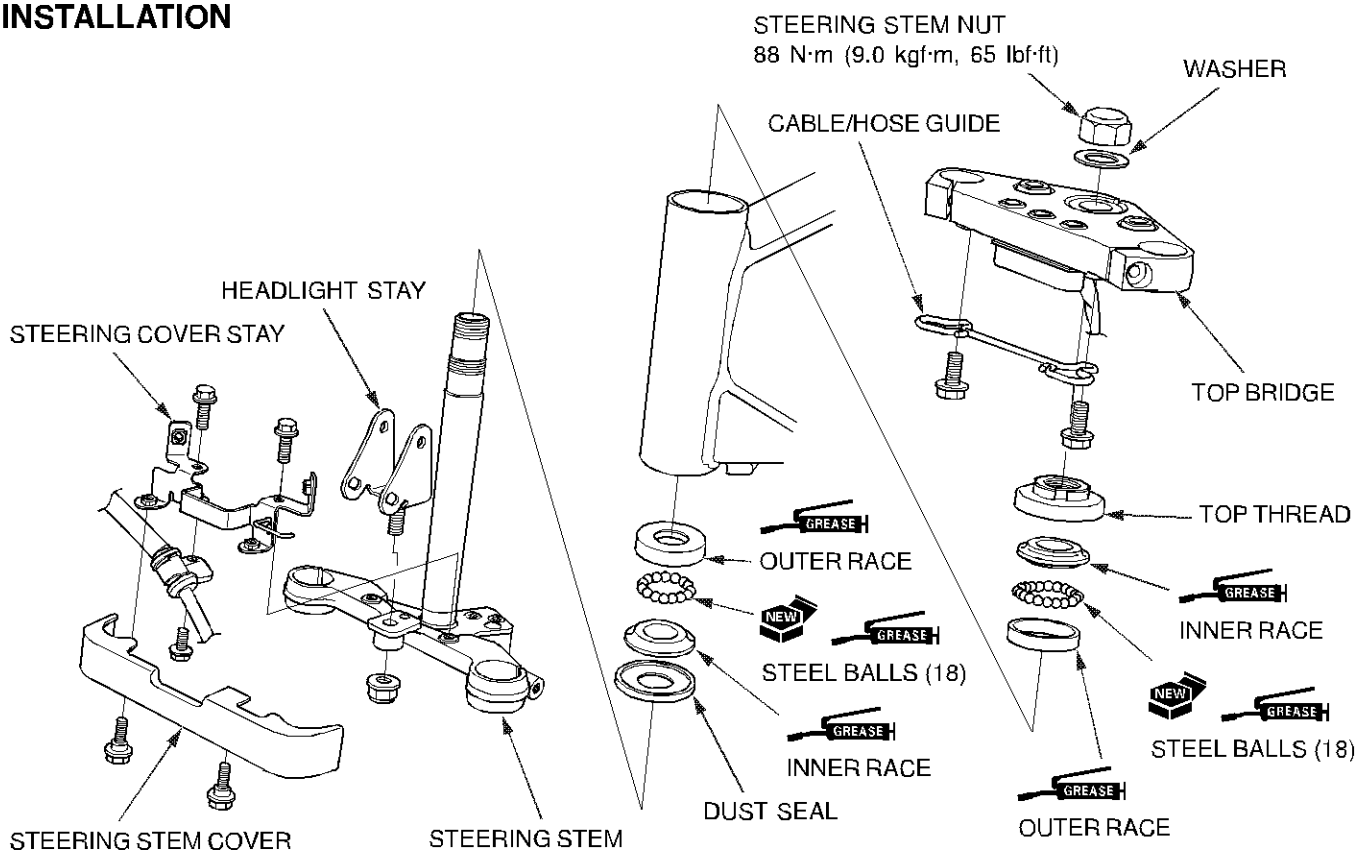
Drive the new upper and lower bearing outer race into the head pipe using the following tools.

TOOLS:

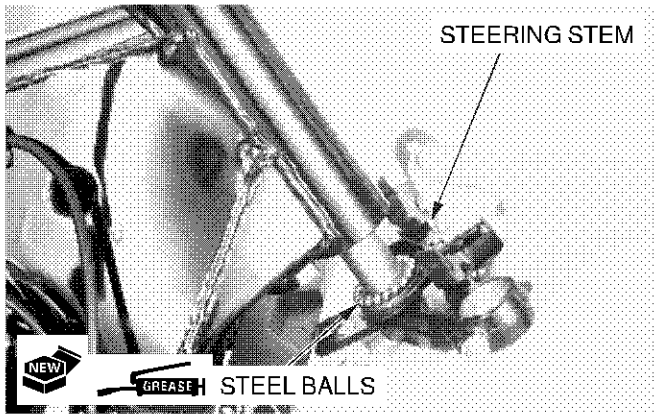
Driver	**07749 – 0010000**
Driver attachment	**07946 – 3290000**



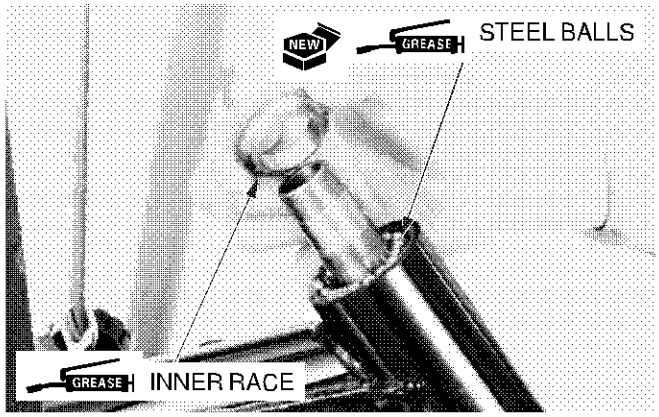
INSTALLATION



Apply grease to the new lower bearing steel balls (18).
Install the steel balls onto the steering stem.
Install the steering stem into the head pipe.



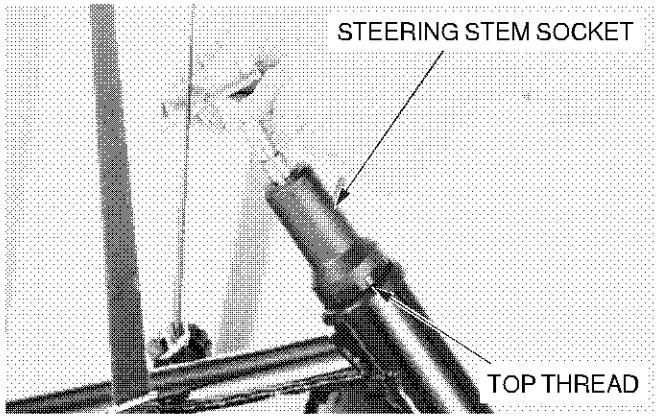
Apply grease to the new upper bearing steel balls (18).
Install the upper bearing steel balls and upper bearing inner race.



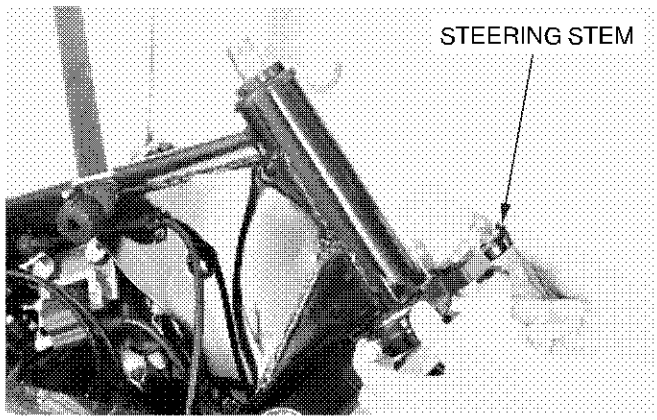
Install the steering top thread and thghten it to the specified torque.

TOOL:
Steering stem socket **07916 – 3710101**

TORQUE: 1 N·m (0.1 kgf·m, 0.7 lbf·ft)



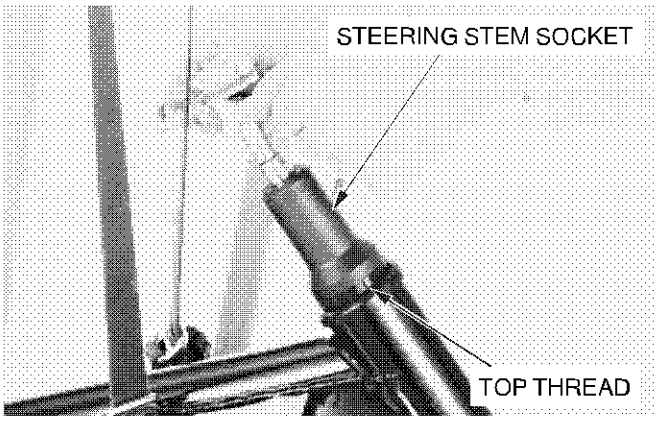
Move the steering stem right and left, lock-to-lock, five times to seat the bearings.
Make sure that the steering stem moves smoothly, without play or binding.



Loosen the steering top thread.
Retighten the top thread to the specified torque.

TOOL:
Steering stem socket 07916 – 3710101

TORQUE: 1 N·m (0.1 kgf·m, 0.7 lbf·ft)



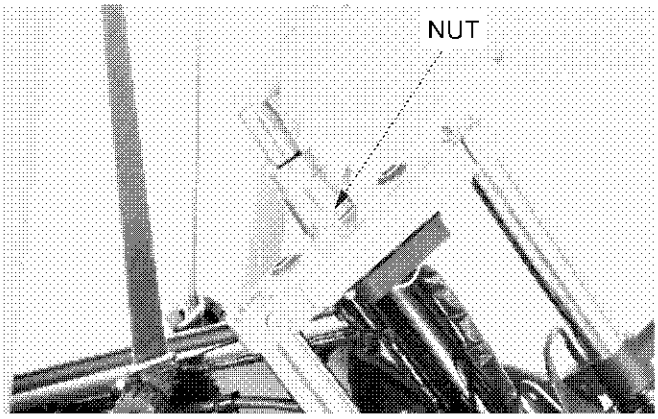
Install the top bridge, washer and steering stem nut.

Temporarily install the front forks.

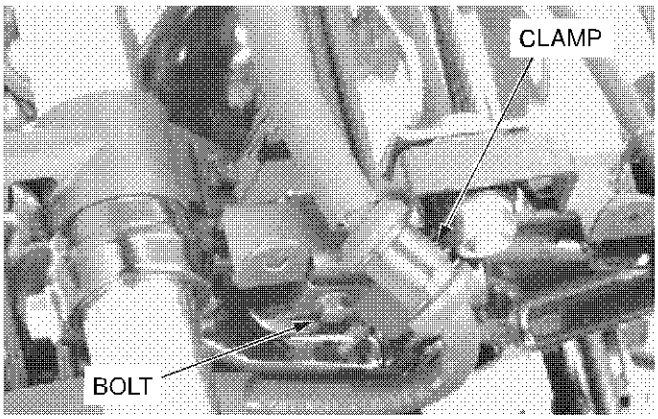
Tighten the steering stem nut to the specified torque.

TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)

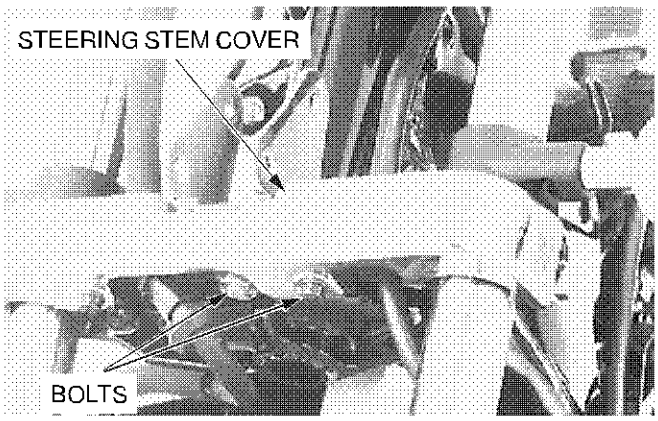
Make sure that the steering stem moves smoothly, without play or binding.



Install the brake hose clamp and bolt.
Tighten the bolt securely.

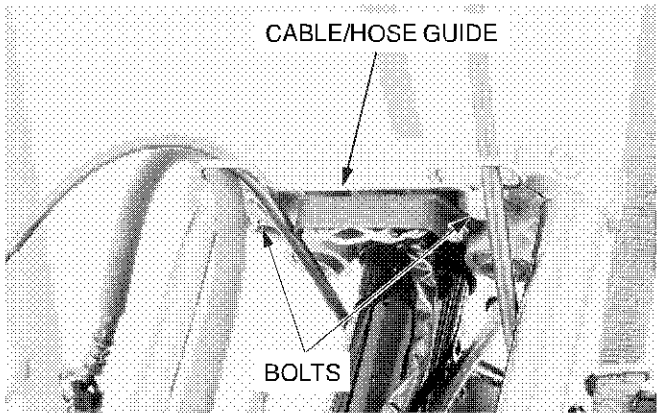


Install the steering stem cover and bolt.
Tighten the bolt securely.



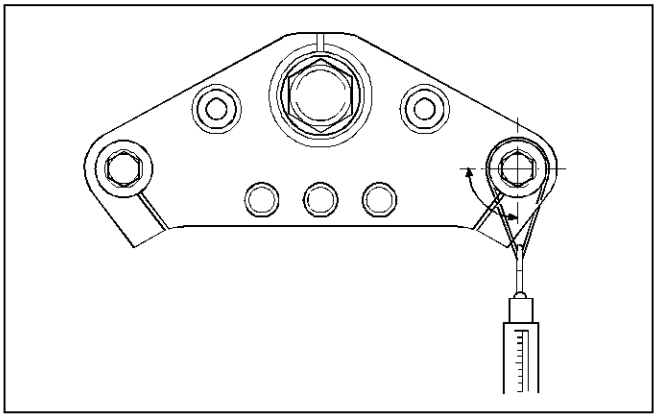
Install the cable/hose guide and bolts.
Tighten the bolts securely.

Install the following:
— Headlight case (page 18-5)
— Handlebar (page 12-3)
— Front fork (page 12-15)



STEERING BEARING PRELOAD

Raise the front wheel off the ground.
Position the steering stem to the straight ahead position.
Hook a spring scale to the fork tube between the fork top and bottom bridges.
Make sure that there is no cable or wire harness interference.
Pull the spring scale keeping the scale at a right angle to the steering stem.

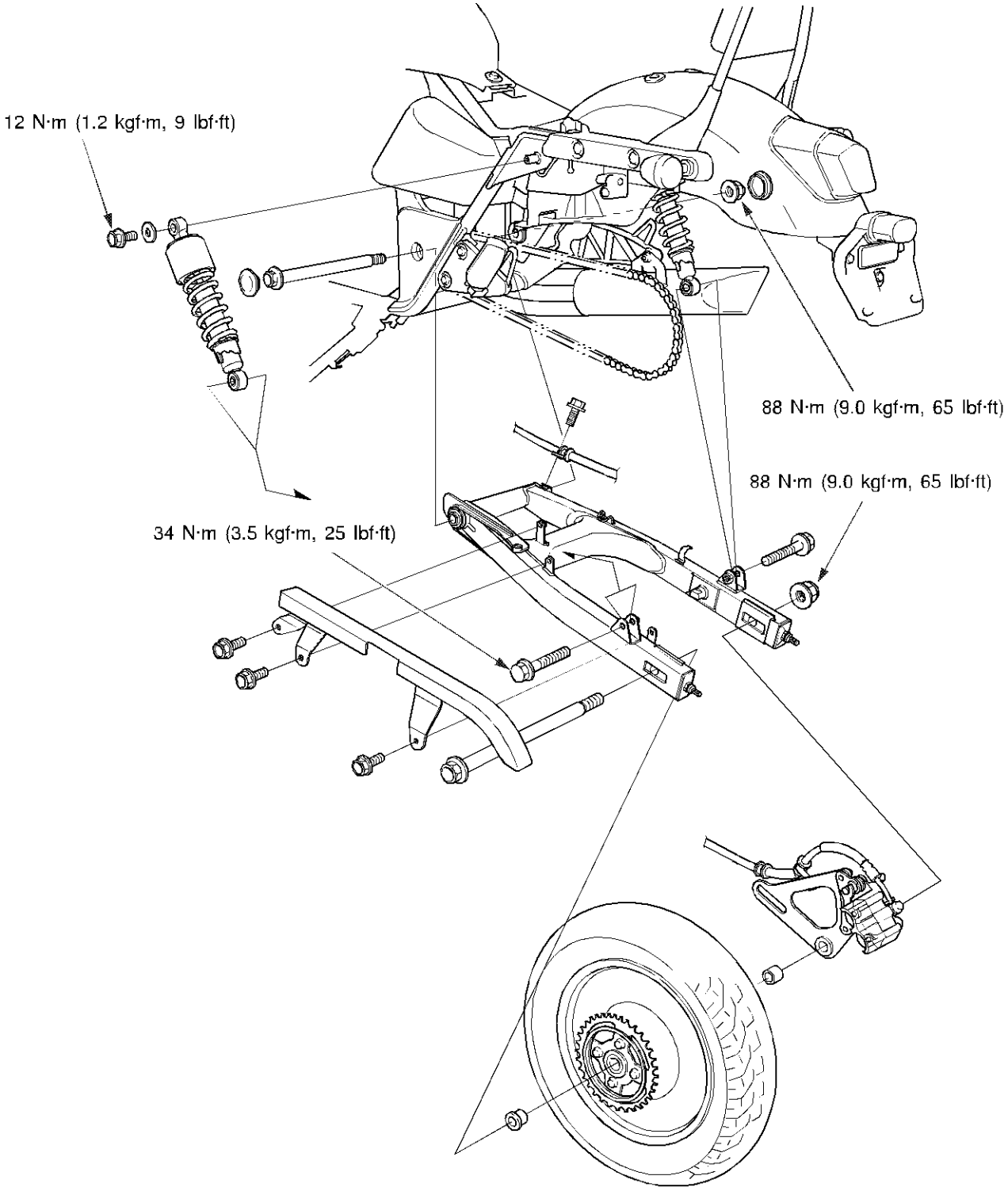


Read the scale at the point where the steering stem just starts to move.

STEERING BEARING PRELOAD:
1.0 – 1.6 kgf (0.220 – 0.353 lbf)

If the readings do not fall within the limits, resdjust the steering top thread.

Install the removed parts in the reverse order of removal.


12 N·m (1.2 kgf·m, 9 lbf·ft)
88 N·m (9.0 kgf·m, 65 lbf·ft)
88 N·m (9.0 kgf·m, 65 lbf·ft)
34 N·m (3.5 kgf·m, 25 lbf·ft)

13. REAR WHEEL/SUSPENSION

SERVICE INFORMATION

GENERAL

⚠ WARNING

- ***A contaminated brake disc or pad reduces stopping power, Discard contaminated pads and clean contaminated disc with a high quality brake degreasing agent.***
- ***Wheel balance directly affects the stability, handling and overall safety of the motorcycle. Carefully check balance before reinstalling the wheel.***

CAUTION:

To avoid damaging the rim when using the tire lever, always use rim protectors.

- When servicing the rear wheel, swingarm or shock absorber, support the motorcycle securely with a using a hoist or equivalent.
- Use only genuine Honda replacement bolts and nuts for all suspension pivot and mounting points.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		—	To the indicator
Cold tire pressure	Driver only	200 kPa (2.0 kgf/cm², 29 psi)	—
	Driver and passenger	200 kPa (2.0 kgf/cm², 29 psi)	—
Axle runout		—	0.20 (0.008)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Drive chain	Size/link	520/116	—
	Slack	20 – 30 (0.8 – 1.2)	—

TORQUE VALUES

Rear axle nut	88 N·m (9.0 kgf·m, 65 lbf·ft)	U-nut
Driven sprocket nut	64 N·m (6.5 kgf·m, 47 lbf·ft)	U-nut
Rear brake disc bolt	42 N·m (4.3 kgf·m, 31 lbf·ft)	Apply locking agent to the threads
Shock absorber upper mounting bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)	
Shock absorber lower mounting nut	34 N·m (3.5 kgf·m, 25 lbf·ft)	
Swingarm pivot nut	88 N·m (9.0 kgf·m, 65 lbf·ft)	U-nut
Drive chain slider screw	9 N·m (0.9 kgf·m, 65 lbf·ft)	

Right side only

TOOLS

Bearing remover head, 12 mm	07746 – 0050300
Bearing remover shaft	07746 – 0050100
Driver	07749 – 0010000
Attachment, 37 x 40 mm	07746 – 0010200
Pilot, 17 mm	07746 – 0040400
Pilot, 12 mm	07746 – 0040200

TROUBLESHOOTING

Wobble or vibration in motorcycle
- Bent rim
- Loose or bent spokes
- Damaged tire
- Axle not tightened properly
- Chain adjusters not adjusted equally

Soft suspension
- Weak spring
- Oil leakage from damper unit
- Improper shock absorber spring preload
- Tire pressure too low

Hard suspension
- Improper shock absorber spring preload
- Bent damper rod
- Bent frame or swing arm
- Tire pressure too high

Suspension noise
- Faulty damper
- Loose fasteners

Steers to one side or does not treck straight
- Rent rear axle
- Axle alignment/chain adjustment not equal both sides

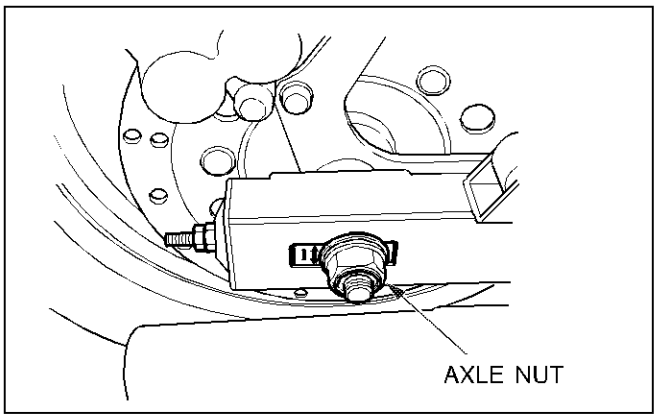
REAR WHEEL

REMOVAL

Support the motorcycle securely using a hoist or equivalent.

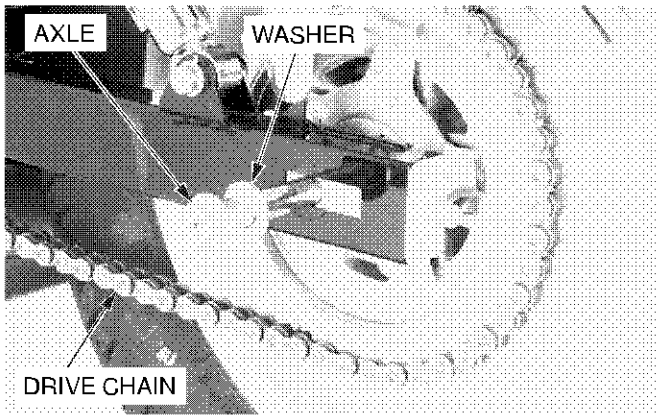
Loosen the drive chain adjusting nuts and lock nuts (page 3-15).

Loosen the rear axle nut.



Push the rear wheel forward.
Derail the drive chain.

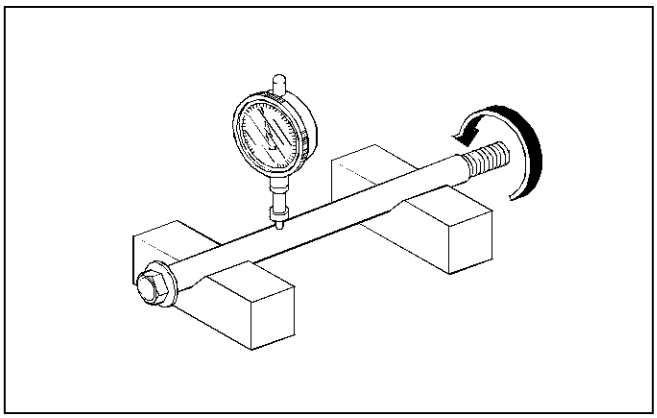
Remove the axle nut.
Remove the rear axle from the left side.
Remove the rear wheel.



INSPECTION

Axle
Place the axle in V-blocks and measure the runout.
Actual runout is 1/2 the total indicator reading.

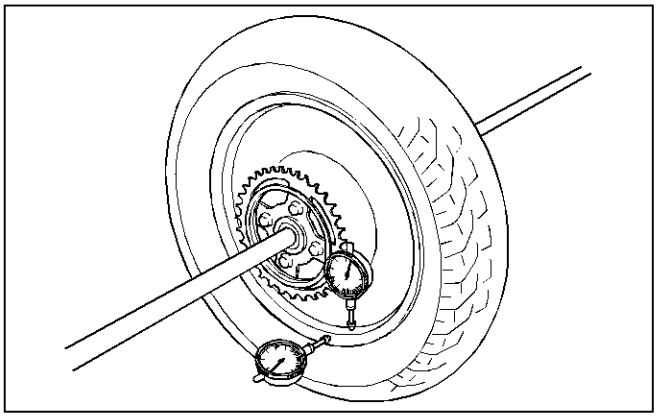
SERVICE LIMIT: 0.20 mm (0.008 in)



Wheel rim runout

Check the rim runout by placing the wheel in a turning stand.
Spin the wheel slowly and read the runout using a dial indicator.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMITS: Radial: 2.0 mm (0.08 in)
Axial: 2.0 mm (0.08 in)

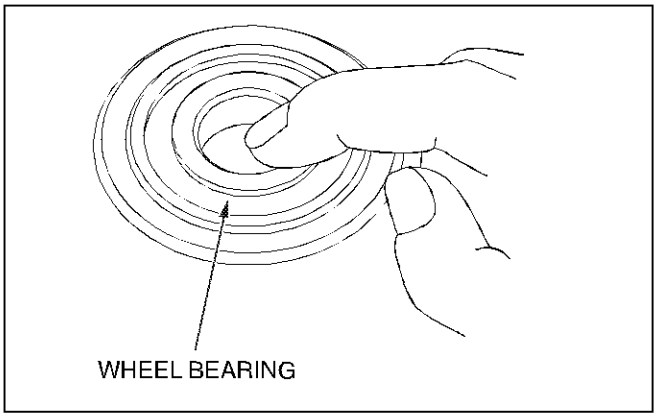


Wheel bearing
Turn the inner race of each bearing with your finger. Bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

Remove and discard the bearings if the races do not turn smoothly and quietly, or if they fit loosely in the hub.

NOTE:

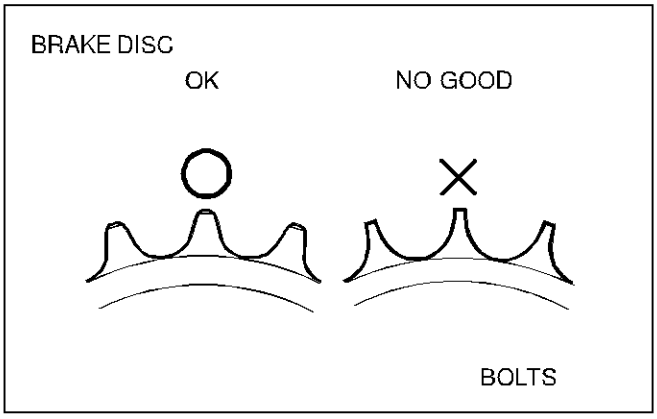
Replace the wheel bearings in pairs.



Driven sprocket
Check the condition of the final driven sprocket teeth. Replace the sprocket if worn or damaged.

NOTE:

- If the final driven sprocket requires replacement, inspect the drive chain and drive sprocket.
- Never install a new drive chain on a worn sprocket or a worn chain on new sprockets. Both chain and sprocket must be in good condition or the replacement chain or sprocket will wear rapidly.



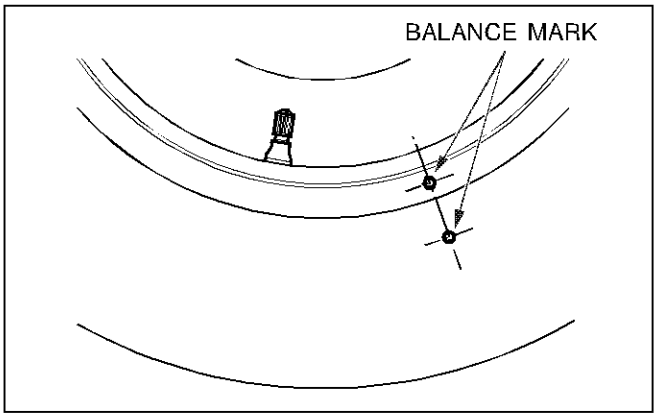
Wheel balance

CAUTION:

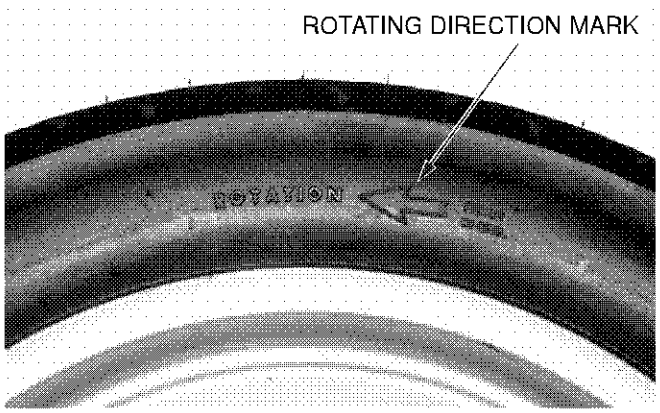
Wheel balance directly affects the stability, handling and over all safety of the motorcycle.
Always check balance when the tire has been removed from the rim.

NOTE:

For optimum balance, the tire balance mark (a paint dot on the side wall) must be aligned wheel side and tire side. Re-mount the tire if necessary.

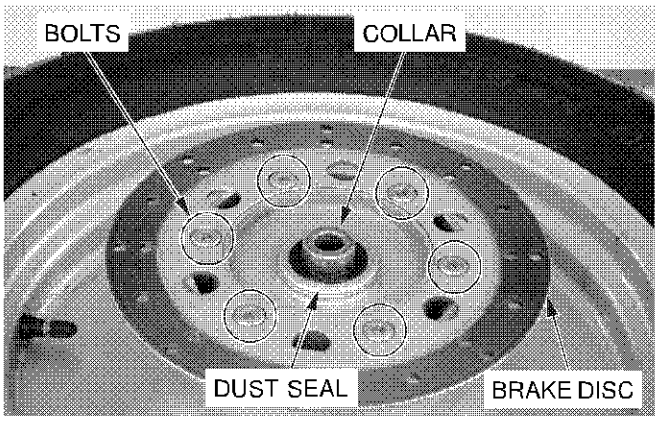


Check the rotating direction mark on the tire.

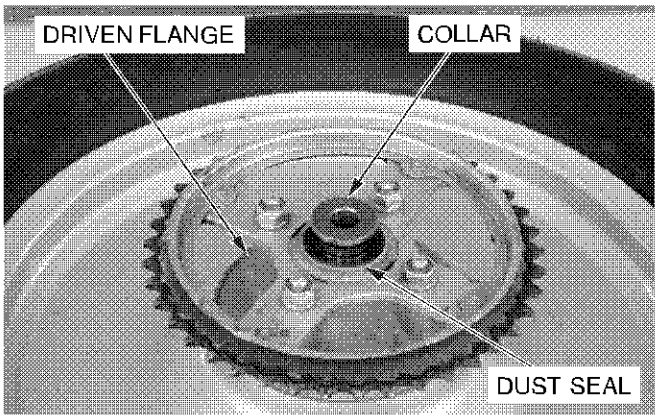


DISASSEMBLY

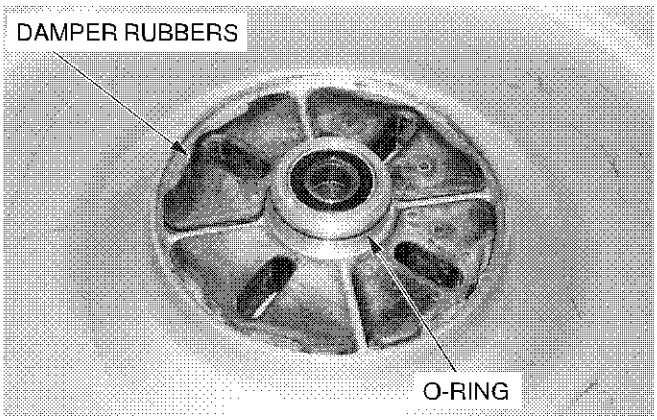
Remove the collar and dust seal.
Remove the bolts and brake disc.



Remove the collar and dust seal.
Remove the driven flange from the left wheel hub.

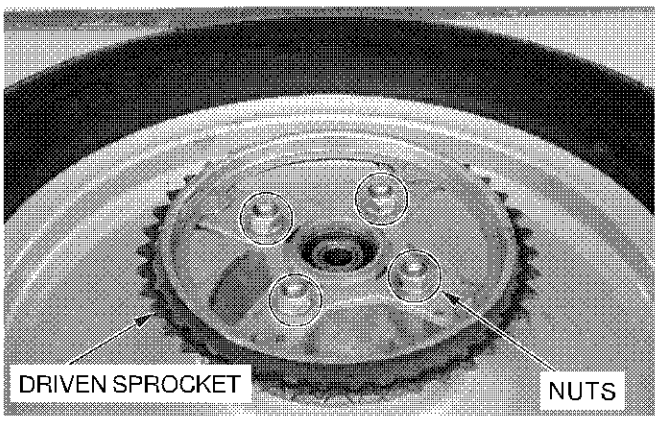


Remove the damper rubbers and O-ring.

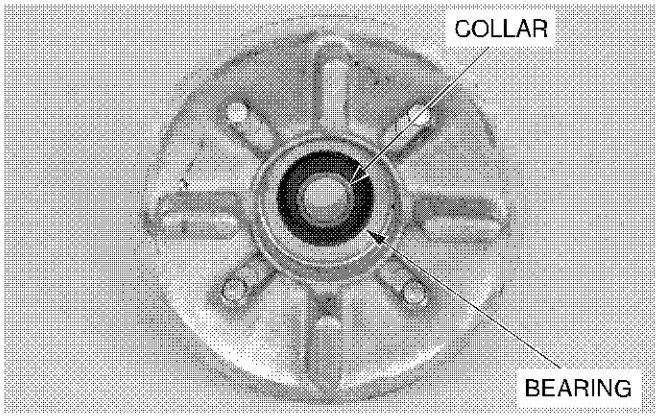


Driven flange bearing removal

Loosly install the driven flange from the left wheel hub.
Remove the driven sprocket nuts befor removing from the wheel hub.
Remove the driven sprocket and driven frange.



Remove the driven flange bearing and collar.

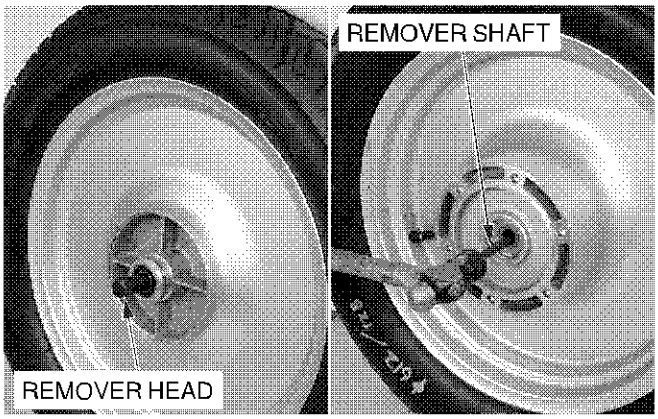


WHEEL BEARING REMOVAL

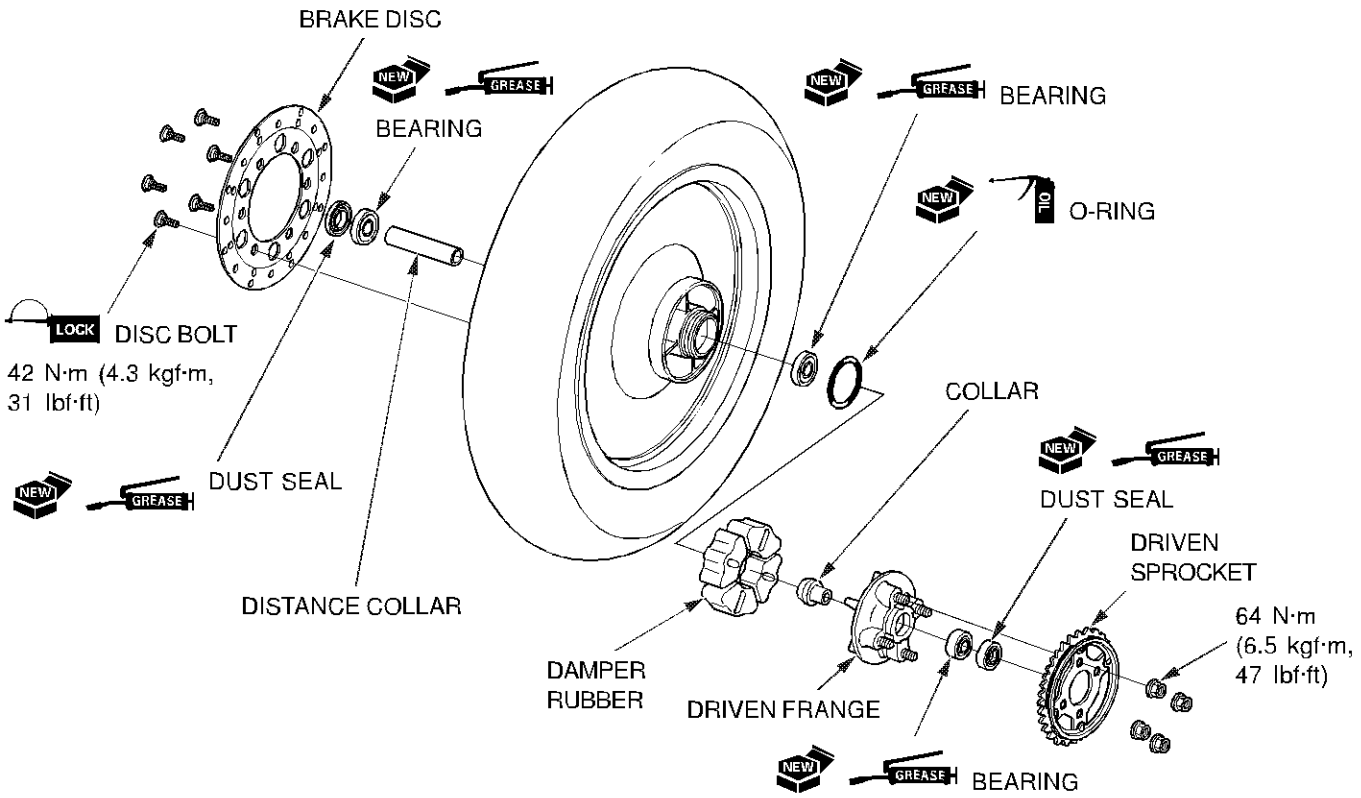
Install the bearing remover head into the bearing.
From the opposite side install the bearing remover shaft and drive the bearing out of the wheel hub.

TOOLS:
Bearing remover head, 12 mm 07746 – 0050300
Bearing remover shaft 07746 – 0050100

Remove the distance collar and drive out the other bearing.



ASSEMBLY



WHEEL BEARING INSTALLATION

Pack all bearing cavities with grease.

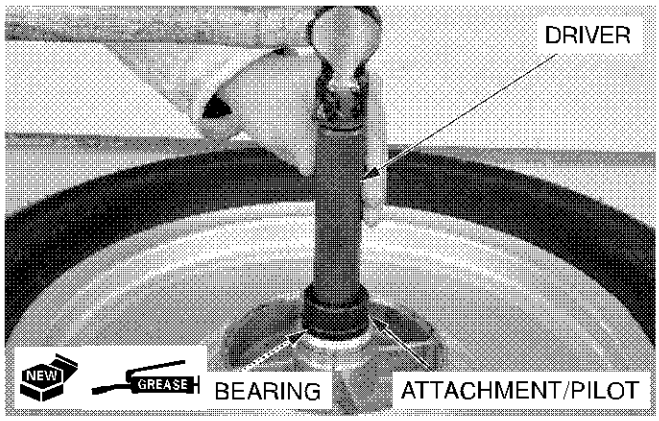
CAUTION:

Never install an old bearing has been removed, the bearing must be replaced with a new one.

Drive a new left bearing squarely with its sealed side facing out.

TOOLS:

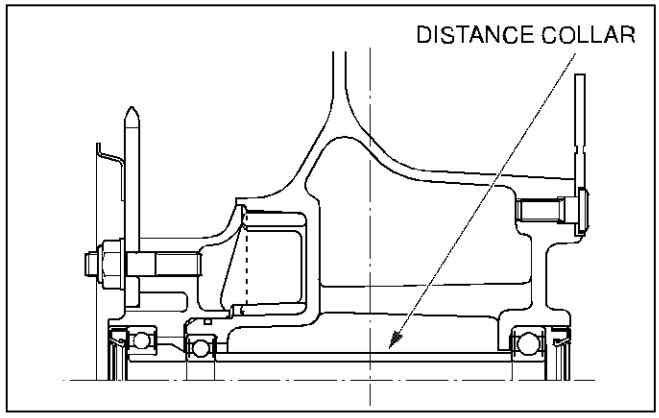
Driver	**07749 – 0010000**
Attachment, 37 x 40 mm	**07746 – 0010200**
Pilot, 12 mm	**07746 – 0040200**



Install the distance collar, then drive in the right side bearing with its sealed side facing out.

TOOLS:

Driver	**07749 – 0010000**
Attachment, 37 x 40 mm	**07746 – 0010200**
Pilot, 12 mm	**07746 – 0040200**

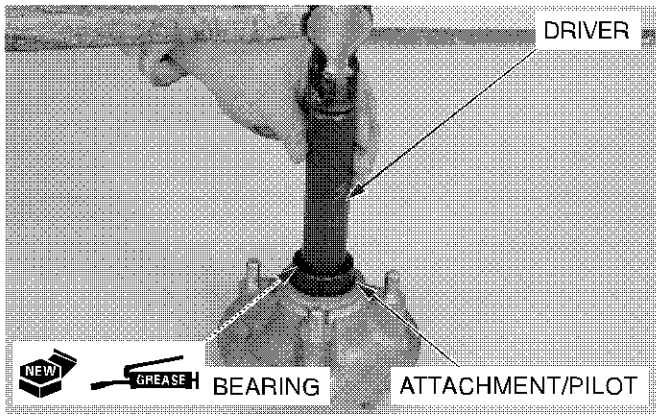


DRIVEN FLANGE INSTALLATION

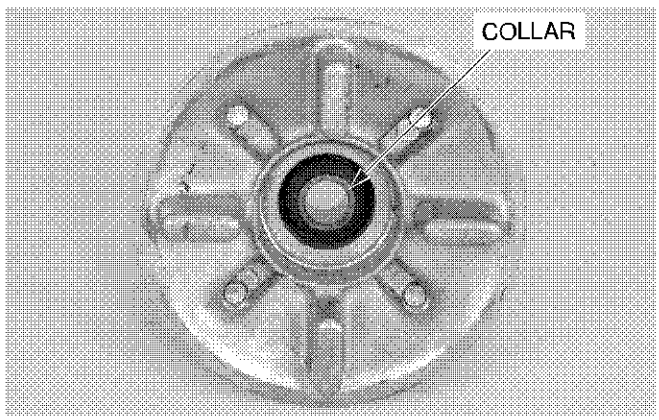
Drive the driven flange bearing into the driven flange using the special tools.

TOOLS:

Driver	**07749 – 0010000**
Attachment, 37 x 40 mm	**07746 – 0010200**
Pilot, 17 mm	**07746 – 0040400**



Install the driven flange collar.

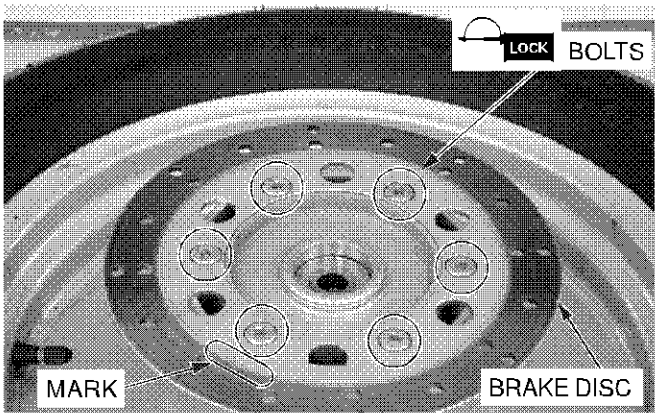


Apply locking agent to the brake disc bolt threads.

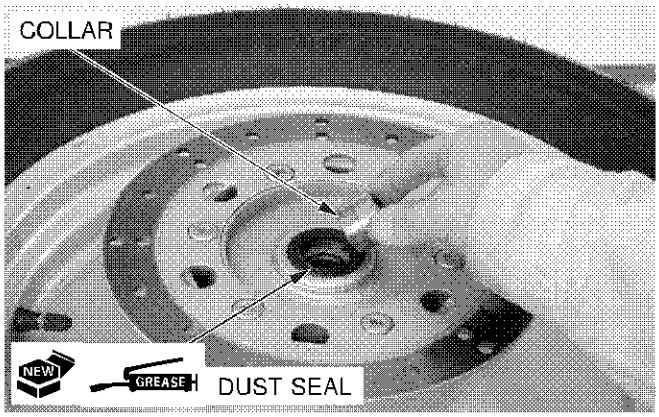
Install the rear brake disc with the stamped mark "MIN. TH 3.5MM" facing outside and install the brake disc bolts.

Tighten the brake disc bolts to the specified torque.

TORQUE: 42 N·m (4.3 kgf·m, 31 lbf·ft)



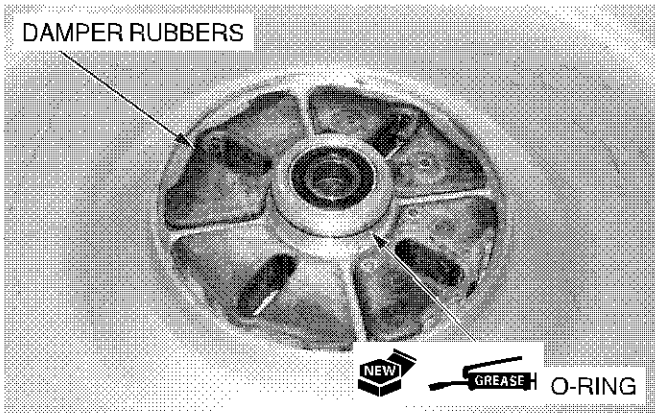
Install a new dust seal and apply grease to the dust seal lip.
Install the right side collar.



⚠ WARNING

Do not get grease on the brake disc or stopping power will be reduced.

Apply grease to the new O-ring.
Install the wheel damper rubbers and O-ring into the wheel hub.



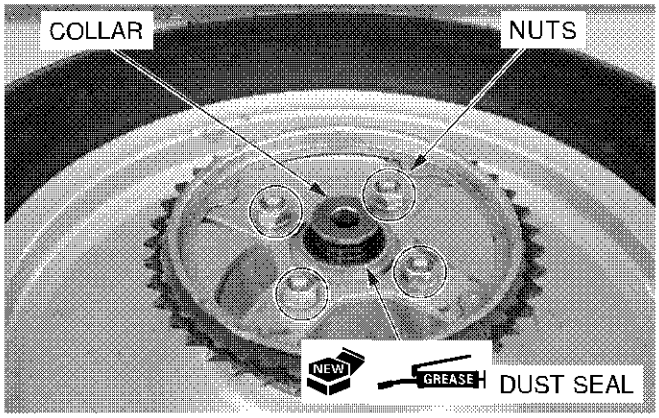
Install the driven flange into the left wheel hub.

Install the driven sprocket and tighten the nuts.

TORQUE: 64 N·m (6.5 kgf·m, 47 lbf·ft)

Apply grease to the new dust seal lips, then install it in to the driven flange.

Install the collar.

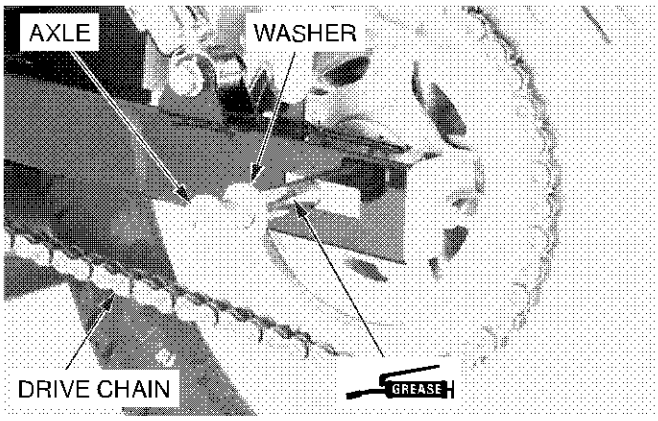


INSTALLATION

Install the drive chain adjusters into the swingarm.
Place the rear wheel into the frame.

Insert the rear axle through the right drive chain adjuster, left side collar, rear wheel, right side collar and right chain adjuster.

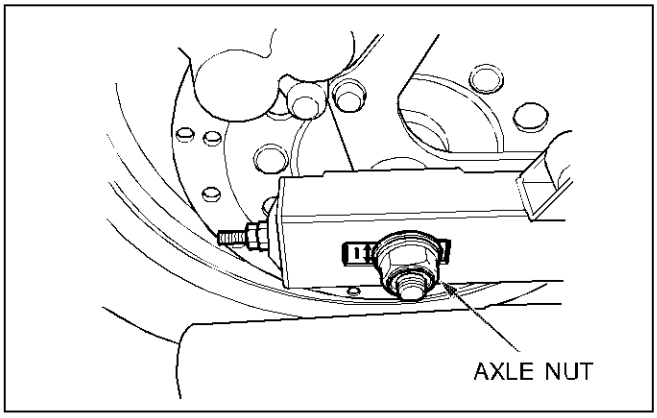
Install the drive chain onto the driven sprocket.



Install and tighten the rear axle nut to specified torque.

TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)

Adjust the drive chain slack (page 3-15).

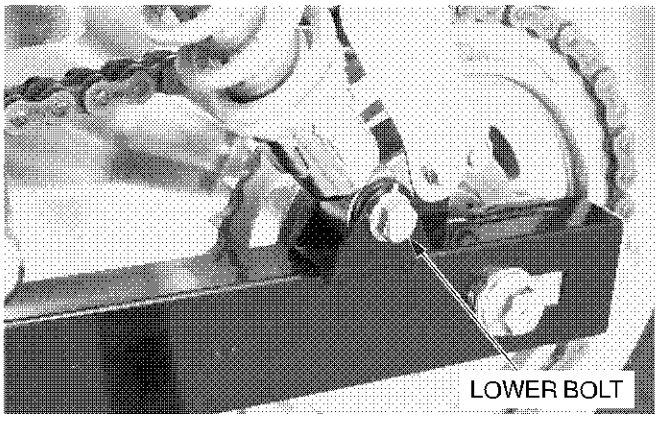


SHOCK ABSORBER

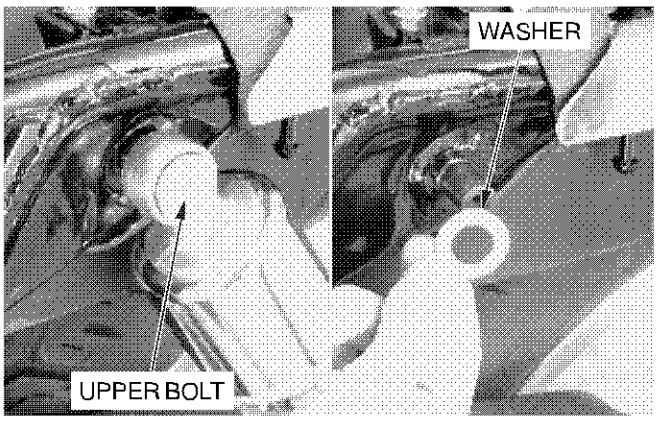
REMOVAL

Remove the seat (page 2-2).

Support the motorcycle securely using a hoist or equivalent.
Remove the shock absorber lower mount bolt and nut.



Remove the shock absorber upper mount bolt and washer.

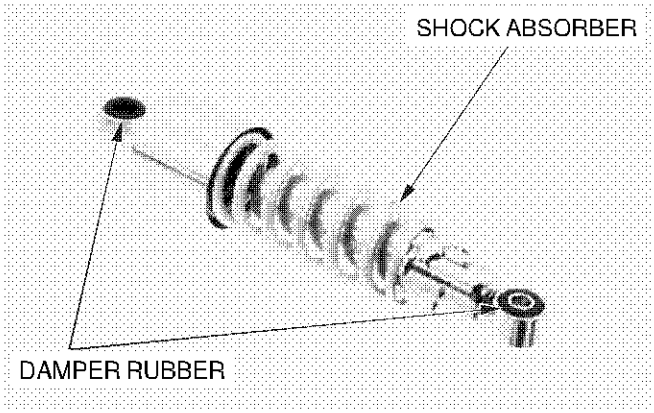


INSPECTION

Visually inspect the shock absorber for damage.
Check the following:
— Damper unit for deformation or oil leaks
— Upper and lower damper bushing for wear or damage

CAUTION:

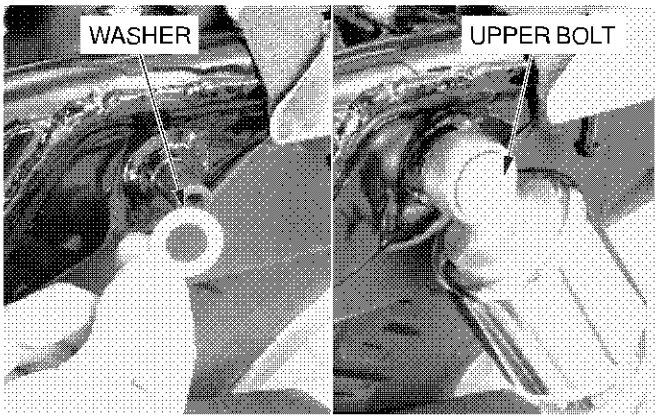
- ***Do not disassemble the shock absorber.***
- ***Replace the shock absorber if any component is damaged.***



INSTALLATION

Install the shock absorber to the frame.
Install and tighten the shock absorber upper mount bolt to the specified torque.

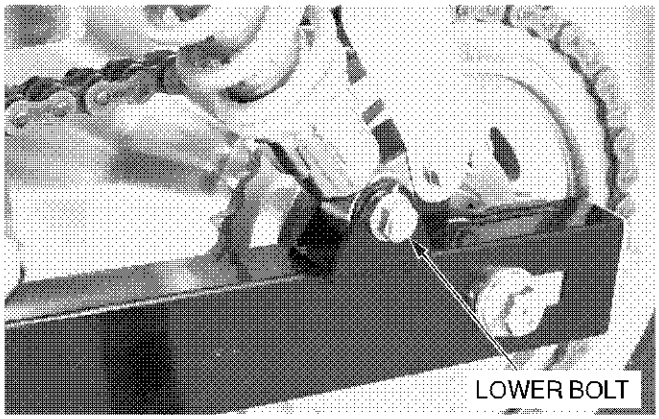
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Install and tighten the shock absorber lower mount nut to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Check the operation of the shock absorber (page 3-20).



SWINGARM

REMOVAL

Remove the rear wheel (page 13-3).

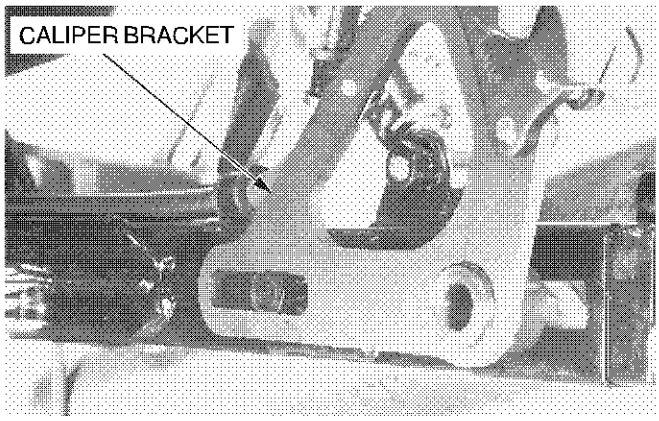
Remove the rear brake caliper brecket from the swingarm.

CAUTION:

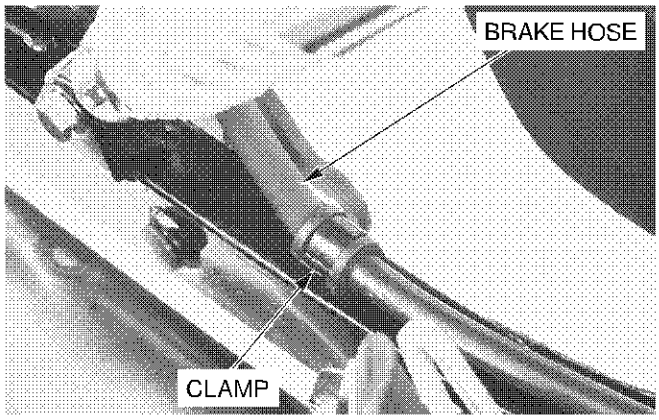
Do not suspend the brake caliper from the brake hose. Do not twist the brake hose.

NOTE:

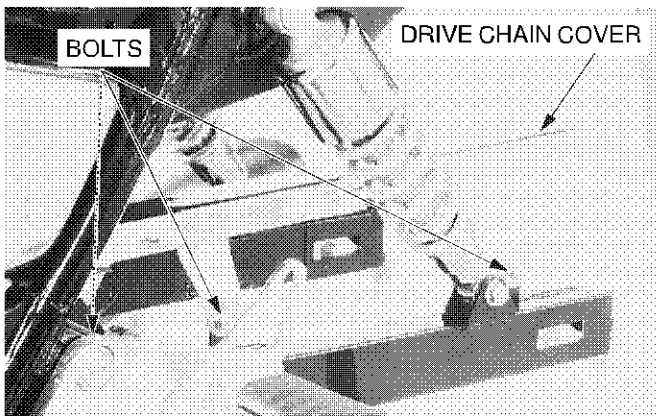
Do not operate the brake pedal after removing the caliper and rear wheel. To do so will cause difficulty in fitting the brake disc between the brake pads.



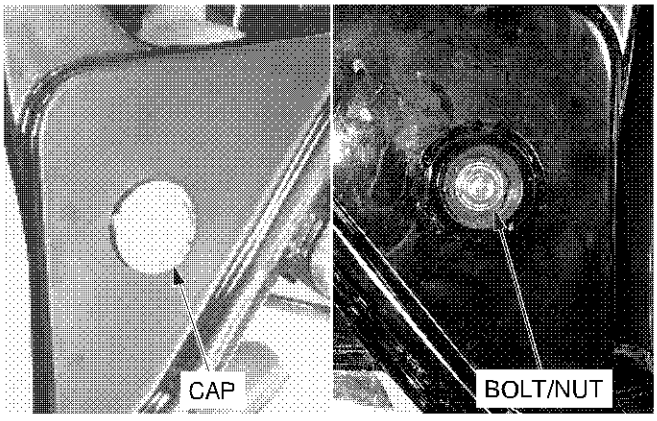
Remove the rear brake hose from the clamp.



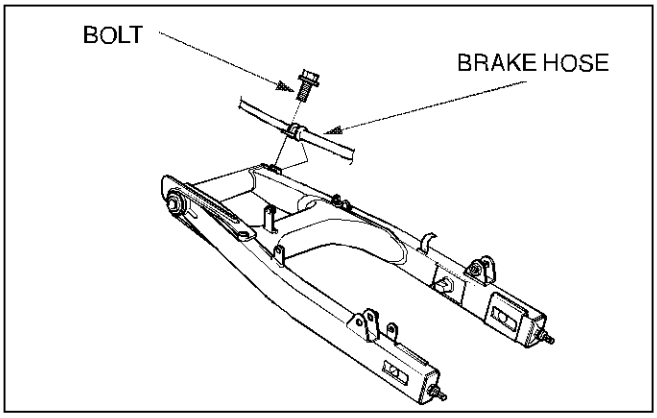
Remove the bolts and drive chain cover.
Remove the shock absorber lower mounting bolt (page 13-9).



Remove the swingarm pivot caps.
Remove the swingarm pivot bolt/nut and move to rearward.



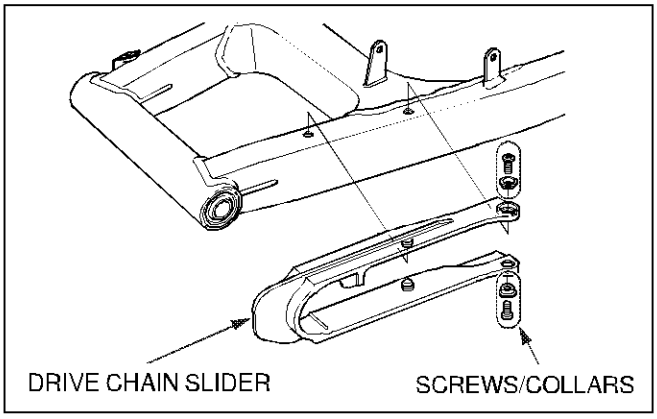
Remove the bolt and brake hose clamp.
Remove the swingarm.



DISASSEMBLY

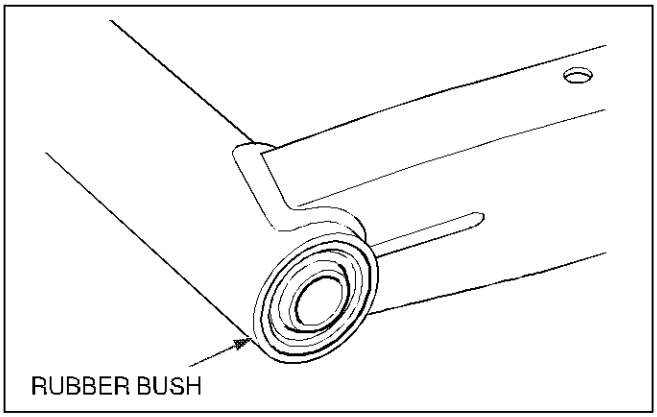
Remove the screws and collars.

Remove the tabs on the drive chain slider from the holes on the swingarm.
Remove the drive chain slider.

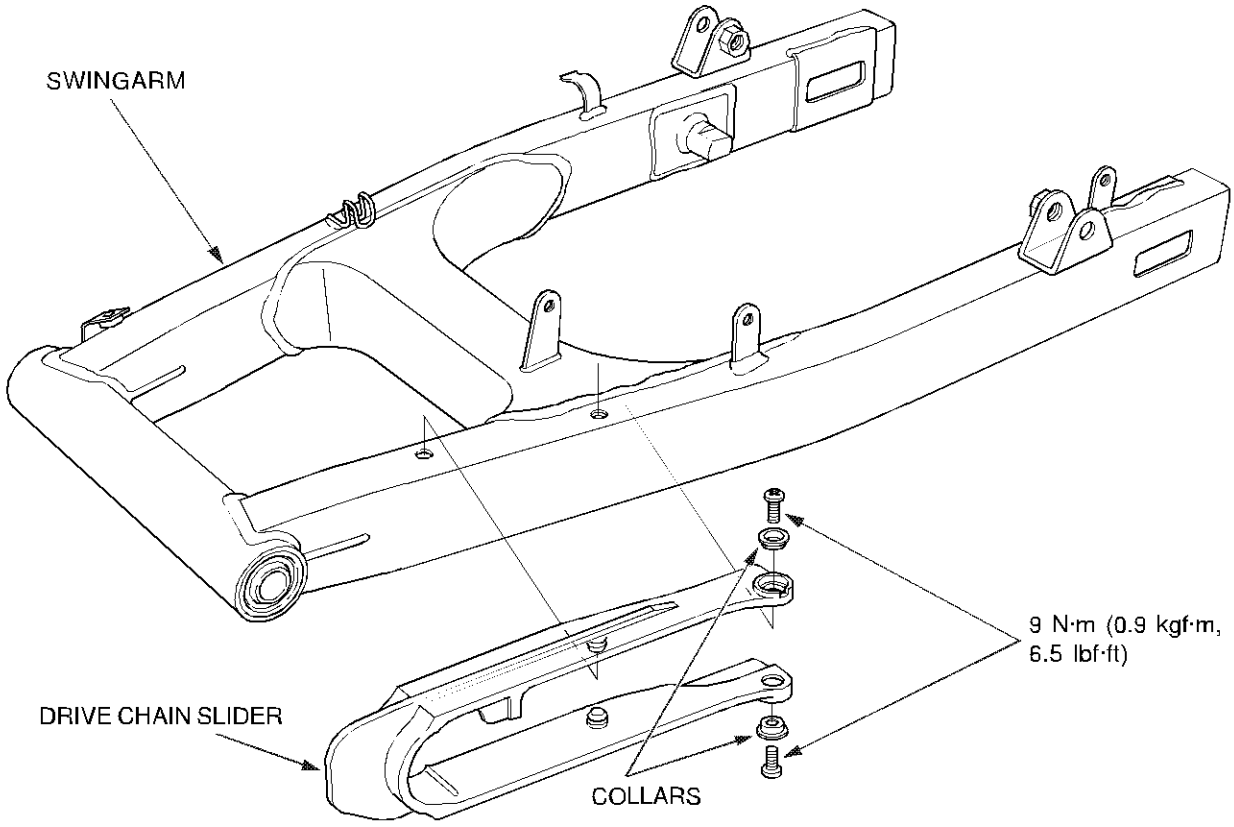


INSPECTION

Check the rubber bush for wear or damage and replace if necessary.



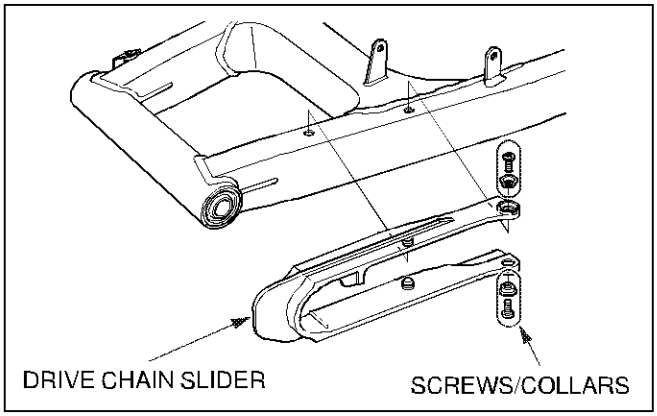
ASSEMBLY



Install the tabs on the chain slider to the holes on the swingarm.

Install the collars to the drive chain slider.
Apply a locking agent to the drive chain slider screws.
Tighten the screws to the specified torque.

TORQUE: 9 N·m (0.9 kgf·m, 6.5 lbf·ft)

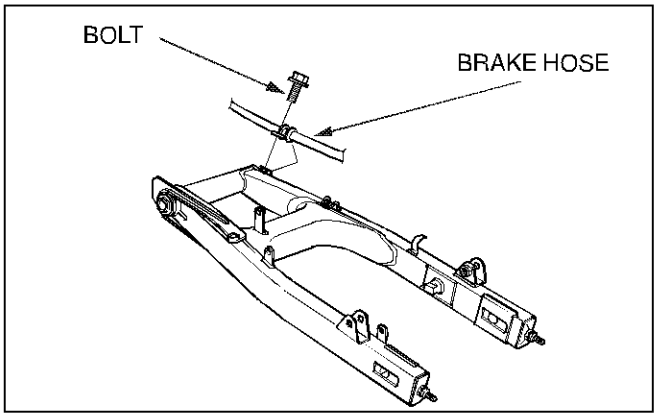


INSTALLATION

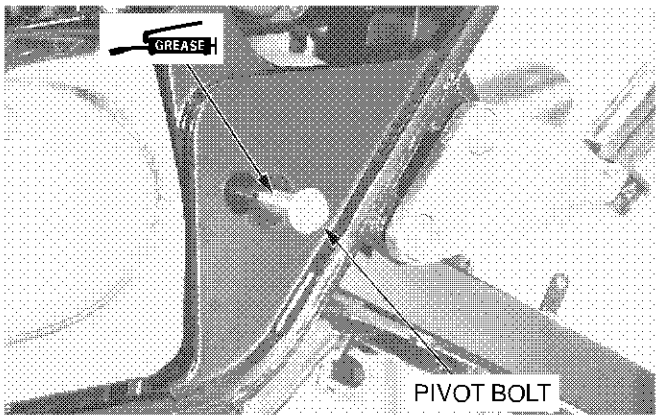
NOTE:

Route the tubes and wires properly (page 1-22).

Install the swingarm.
Install the brake hose clamp to the swingarm.
Tighten the securely.



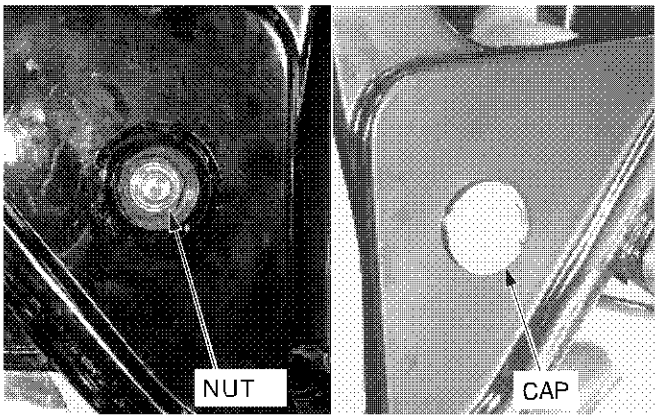
Apply thin coat of grease to the swingarm pivot bolt.
Install the swingarm pivot bolt.



Install and tighten the swingarm pivot nut to the specified torque.

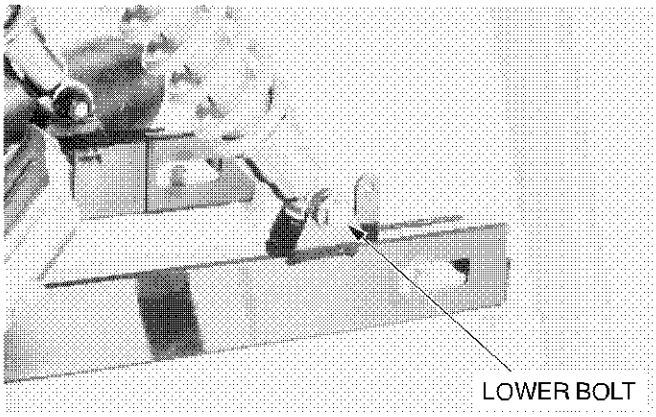
TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)

Install the swingarm pivot caps.

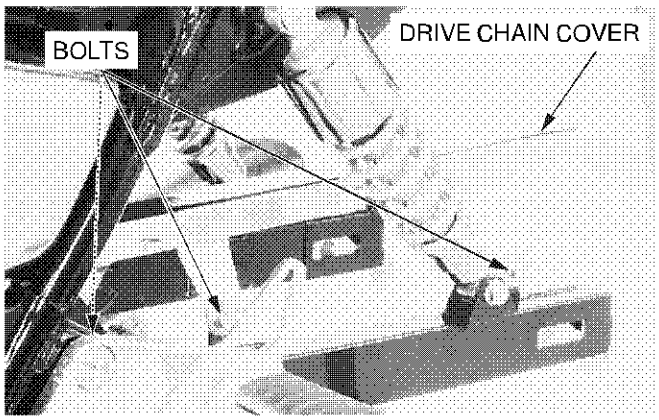


Install the shock absorber lower mounting bolt.
Tighten the lower mounting bolt to the specified torque.

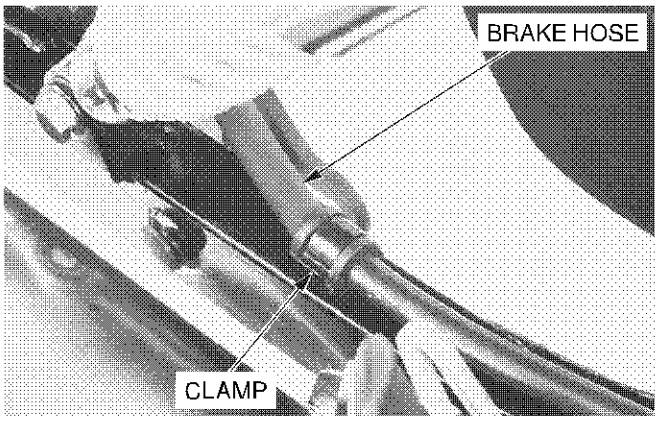
TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)



Install the drive chain cover aligning the slit on the cover with the tab on the swingarm.
Install and tighten the bolts securely.

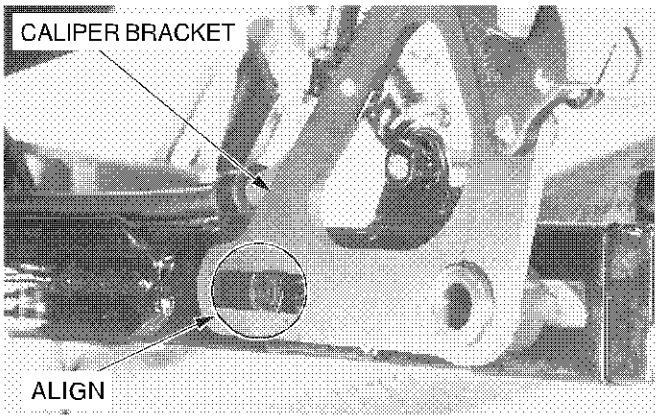


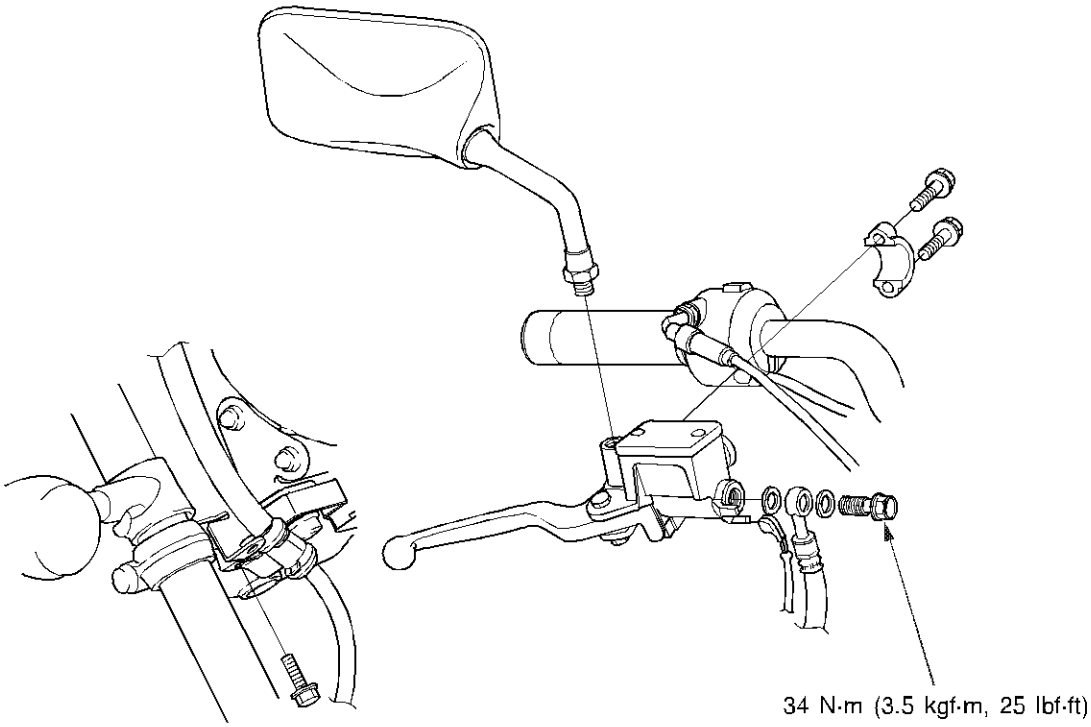
nstall the brake hose to the clamp.

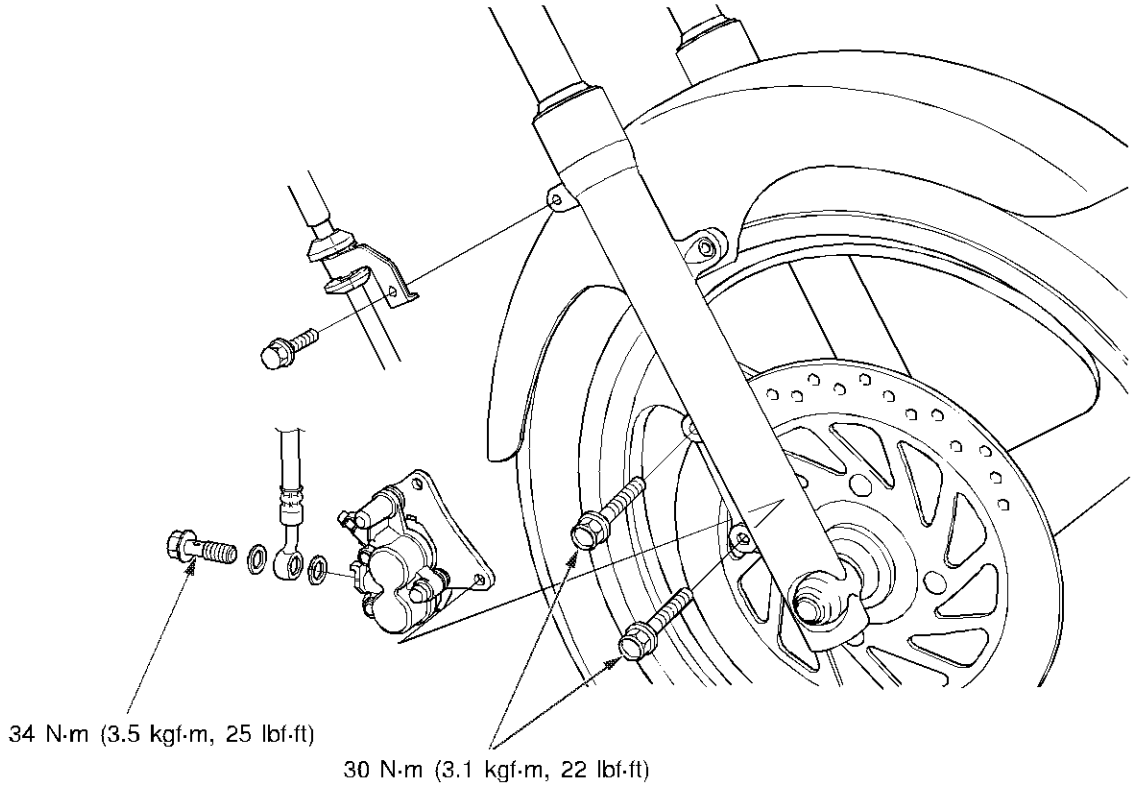


Install the rear brake caliper bracket aligning the slit on the bracket with the boss on the swingarm.

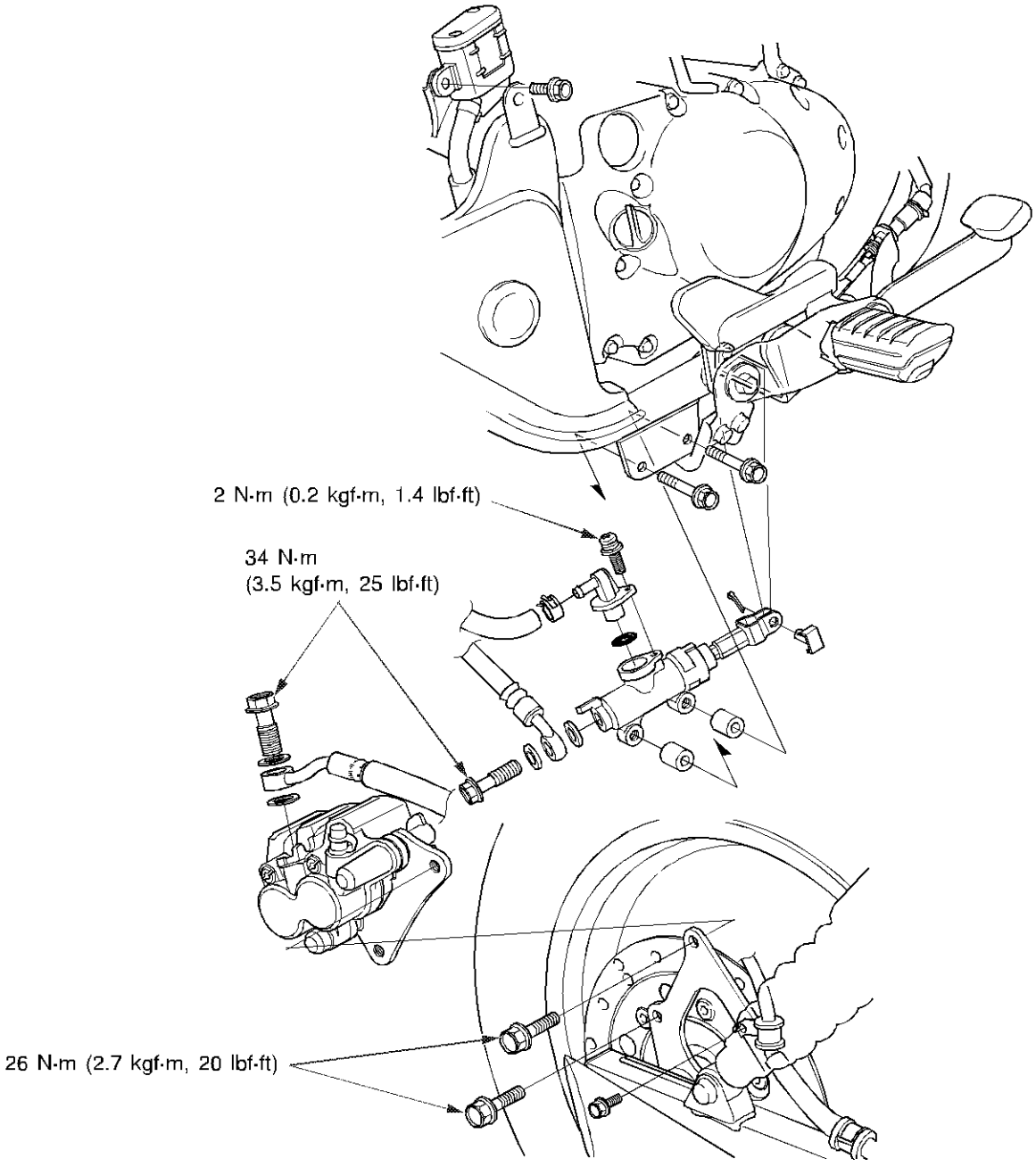
Install the rear wheel (page 13-9).




34 N·m (3.5 kgf·m, 25 lbf·ft)


34 N·m (3.5 kgf·m, 25 lbf·ft)
30 N·m (3.1 kgf·m, 22 lbf·ft)

14. HYDRAULIC BRAKE



SERVICE INFORMATION

GENERAL

⚠ WARNING

A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean contaminated disc with a high quality brake degreasing agent.

CAUTION:

- ***Support the brake caliper with a piece of wire so that it does not hang from the brake hose. Do not twist the brake hose.***
- ***Reusing drained fluids can impair braking efficiency.***
- ***Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag or shop towel over these parts whenever the system is serviced.***

- Never allow contaminants (dirt, water, etc.) to get into an open reservoir.
- Always use fresh DOT 3 or 4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid as they may not be compatible.
- Spilled brake fluid will severally damage instrument lenses and painted surfaces. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cap: make sure the from reservoir is horizontal first.
- Do not reuse the sealing washers. Replace with new ones.
- Once the hydraulic system has been operated, or if the brake feels spongy, the system must be bled.
- Always check brake operation before riding the motorcycle.
- Always replace the brake pads is pairs to ensure even disc pressure.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Front	Specified brake fluid	DOT3 or 4	——
	Brake pad wear indicator	——	To groove
	Brake disc thickness	3.8 – 4.2 (0.15 – 0.17)	3.5 (0.14)
	Brake disc runout	——	0.30 (0.012)
	Master cylinder I.D.	11.000 – 11.043 (0.4331 – 0.4348)	11.06 (0.435)
	Master piston O.D.	10.957 – 10.984 (0.4314 – 0.4324)	10.95 (0.431)
	Caliper cylinder I.D.	25.400 – 25.450 (0.9999 – 1.0020)	25.46 (1.002)
	Caliper piston O.D.	25.335 – 25.368 (0.9974 – 0.9987)	25.30 (0.996)
Rear	Specified brake fluid	DOT3 or 4	——
	Brake pad wear indicator	——	To groove
	Brake disc thickness	3.8 – 4.2 (0.15 – 0.17)	3.5 (0.14)
	Brake disc runout	——	0.30 (0.012)
	Master cylinder I.D.	14.000 – 14.043 (0.5512 – 0.5529)	14.06 (0.554)
	Master piston O.D.	13.957 – 13.984 (0.5495 – 0.5506)	13.95 (0.549)
	Caliper cylinder I.D.	25.400 – 25.450 (0.9999 – 1.0020)	25.46 (1.002)
	Caliper piston O.D.	25.335 – 25.368 (0.9974 – 0.9987)	25.30 (0.996)

TORQUE VALUES

Front caliper bracket bolt	30 N·m (3.1 kgf·m, 22 lbf·ft)	Apply a locking agent to the threads.
Front caliper pad pin plug	3 N·m (0.3 kgf·m, 2.2 lbf·ft)	
Front caliper bleed valve	6 N·m (0.6 kgf·m, 4.3 lbf·ft)	
Front caliper pad pin	18 N·m (1.8 kgf·m, 13 lbf·ft)	
Front caliper bracket pin	18 N·m (1.8 kgf·m, 13 lbf·ft)	
Front caliper torque nut	23 N·m (2.3 kgf·m, 17 lbf·ft)	Apply a locking agent to the threads.
Front reservoir cover screw	2 N·m (0.2 kgf·m, 1.4 lbf·ft)	
Brake lever pivot bolt	6 N·m (0.6 kgf·m, 4.3 lbf·ft)	
Brake lever pivot nut	6 N·m (0.6 kgf·m, 4.3 lbf·ft)	
Front brake light switch screw	1 N·m (0.1 kgf·m, 0.7 lbf·ft)	
Rear reservoir cover screw	2 N·m (0.2 kgf·m, 1.4 lbf·ft)	
Rear master cylinder hose joint screw	2 N·m (0.2 kgf·m, 1.4 lbf·ft)	
Rear master cylinder lower joint nut	18 N·m (1.8 kgf·m, 13 lbf·ft)	
Rear caliper pad pin plug	3 N·m (0.3 kgf·m, 2.2 lbf·ft)	
Rear caliper bleed valve	6 N·m (0.6 kgf·m, 4.3 lbf·ft)	
Rear caliper bracket bolt	26 N·m (2.7 kgf·m, 20 lbf·ft)	ALOC bolt replace with a new one.
Rear caliper pad pin	18 N·m (1.8 kgf·m, 13 lbf·ft)	
Rear caliper bracket pin	18 N·m (1.8 kgf·m, 13 lbf·ft)	
Rear caliper torque nut	23 N·m (2.3 kgf·m, 17 lbf·ft)	Apply a locking agent to the threads.
Brake hose oil bolt	34 N·m (3.5 kgf·m, 25 lbf·ft)	

TOOLS

Snap ring pliers	07914 – SA50001

TROUBLESHOOTING

BRAKE LEVER/PEDAL SOFT OR SPONGY
- Air in the hydraulic system
- Leaking hydraulic system
- Contaminated brake disc/pad
- Worn caliper piston seal
- Worn master cylinder piston cup
- Worn brake pad/disc
- Contaminated caliper
- Caliper not sliding properly
- Worn brake pad/disc
- Low 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 not sliding properly
- Clogged/restricted fluid passage
- Worn caliper piston seal
- Sticking/worn master cylinder piston
- Bent brake lever/pedal

BRAKE DRAGS
- Contaminated brake disc/pad
- Warped/deformed brake disc
- Caliper not sliding properly
- Misaligned wheel

BRAKE FLUID REPLACEMENT/AIR BLEEDING

⚠ WARNING

A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean contaminated disc with a high quality brake degreasing agent.

CAUTION:

- ***Do not allow foreign material to enter the system when filling the reservoir.***
- ***Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag or shop towel over these parts whenever the system is serviced.***
- ***Use only DOT 3 or 4 brake fluid from a sealed container.***
- ***Do not mix different types of fluid. They are not compatible***

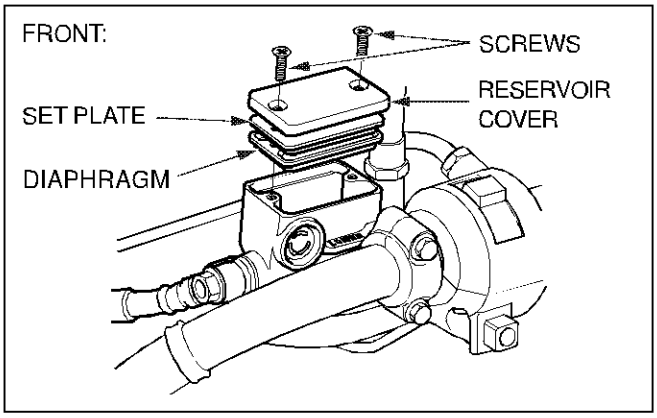
BRAKE FLUID DRAINING

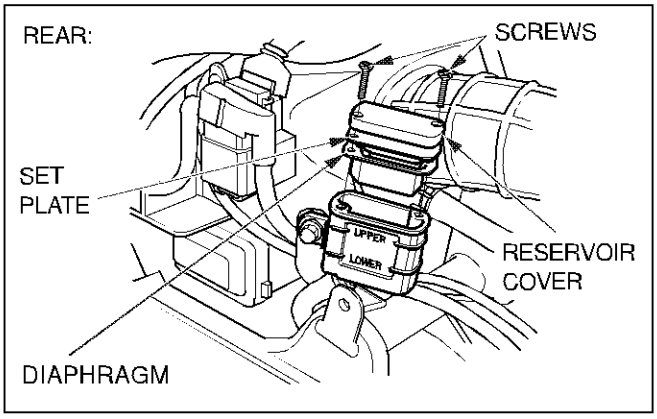
For the front brake, turn the handlebar to the left until the reservoir is level. Remove the screws, reservoir cover, set plate and diaphragm.

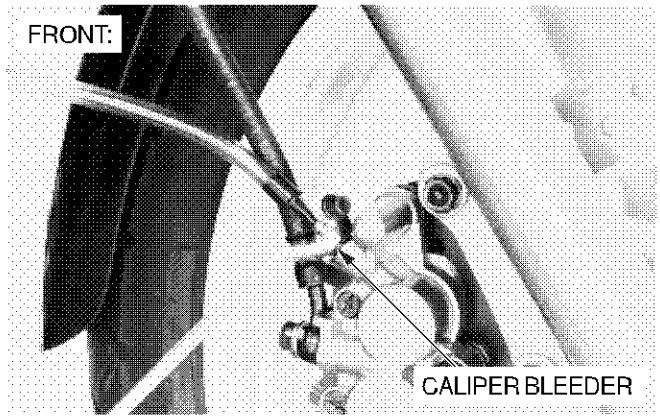
For the rear brake, remove the right side cover (page 2-2).

Remove the screws, reservoir cover, set plate and diaphragm.

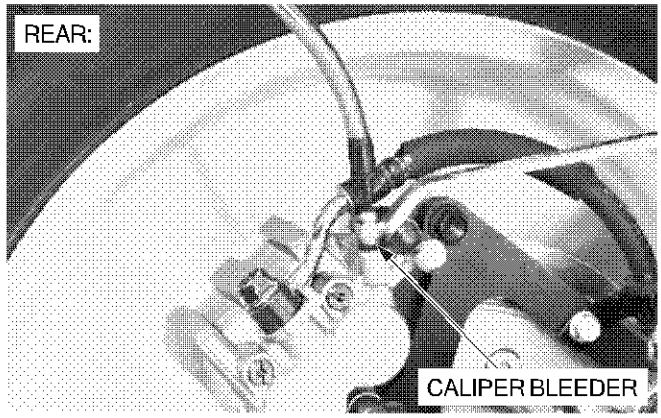
Connect the bleed tube to the caliper bleeder.





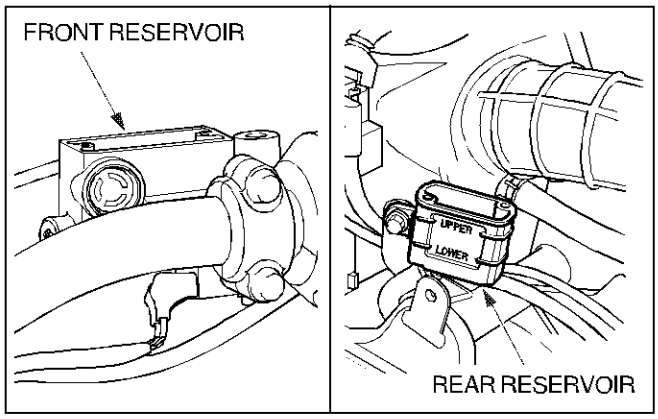


Loosen the bleed valve and pump the brake lever or pedal until no more fluid flows out of the caliper bleeder.



BRAKE FLUID FILLING/AIR BLEEDING

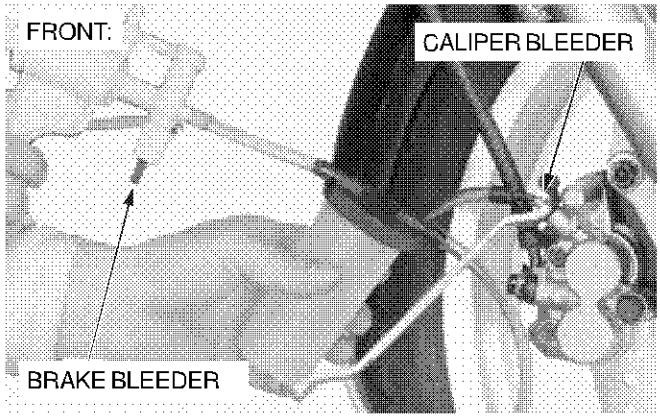
Close the caliper bleeder.
Fill the reservoir with DOT 3 or 4 brake fluid from a sealed container.



Connect a commercially available brake bleeder to the caliper bleeder.
Pump the brake bleeder and loosen the caliper bleeder.
Add brake fluid when the fluid level in the reservoir is low.

NOTE:

- Check the fluid level often while bleeding the brake to prevent air from being pumped into the system.
- When using a brake bleeding tool, follow the manufacture's operating instructions.

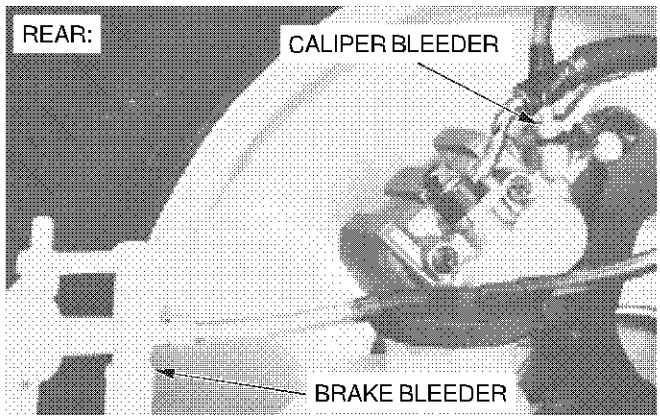


Repeat the above procedures until air bubbles do not appear in the plastic hose.

NOTE:

If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Close the caliper bleeder and operate the brake lever or pedal.

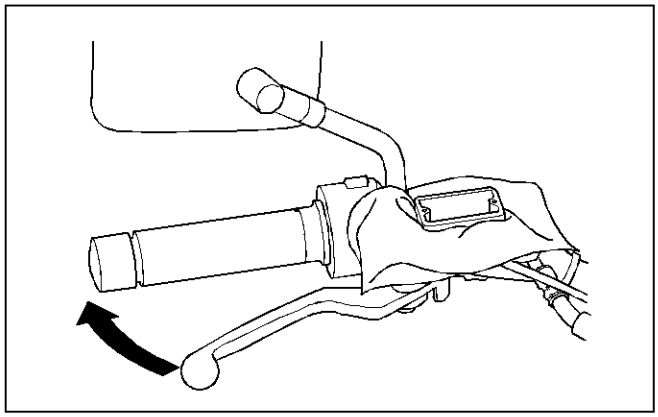


If a brake bleeder is not available, use the following procedure:
Pump up the system pressure with the brake lever or pedal until lever or pedal resistance is felt.

Connect a bleed hose to the caliper bleeder and bleed the system as follows:
1. Squeeze the brake lever or depress the brake pedal. Open the bleed valve 1/2 turn and close it.

NOTE:

Do not release the brake lever until the bleed valve has been closed.

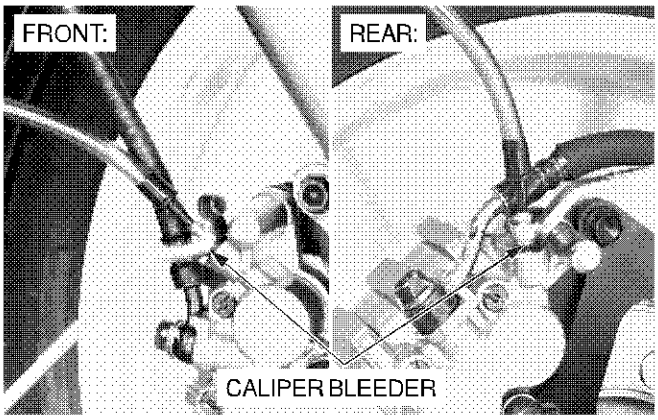


2. Release the brake lever slowly and wait several seconds after it stops moving.

Repeat steps 1 and 2 until air bubbles do not appear in the caliper bleeder.

Tighten the caliper bleeder.

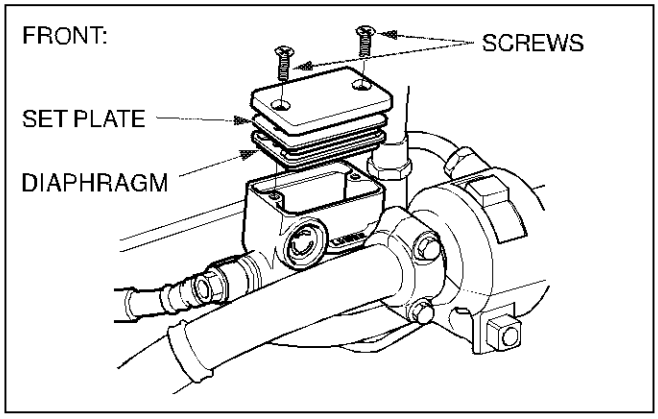
TORQUE: 6 N·m (0.6 kgf-m, 4.3 lbf-ft)



Fill the reservoir to the upper level mark with DOT 3 or 4 brake fluid from a sealed container.

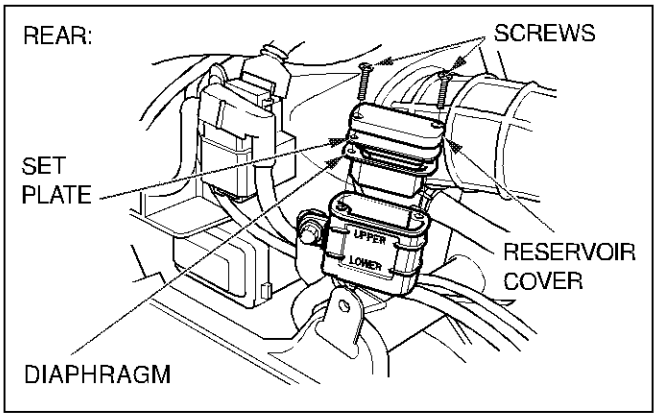
For front brake, install the diaphragm, set plate and reservoir cover. Tighten the screws to the specified torque.

TORQUE: 2 N·m (0.2 kgf-m, 1.4 lbf-ft)



For rear brake, install the diaphragm, set plate and reservoir cover. Tighten the screws to the specified torque.

TORQUE: 2 N·m (0.2 kgf-m, 1.4 lbf-ft)



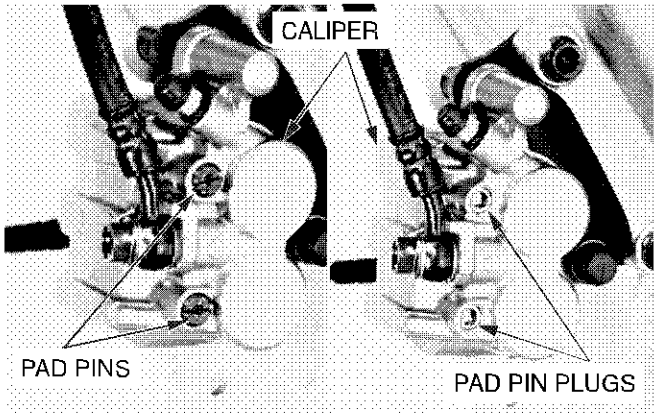
BRAKE PAD/DISC

FRONT BRAKE PAD REPLACEMENT

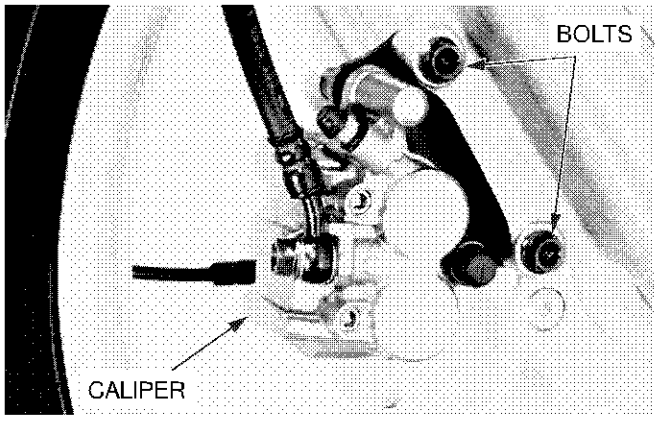
NOTE:

Always replace the brake pads in pairs to ensure even disc pressure.

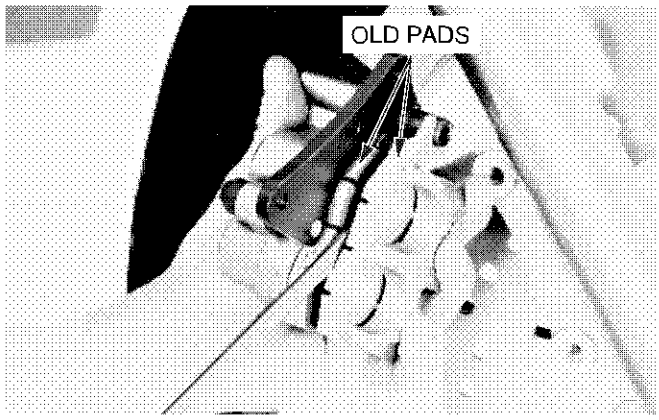
Remove the pad pin plugs and loosen the pad pins.



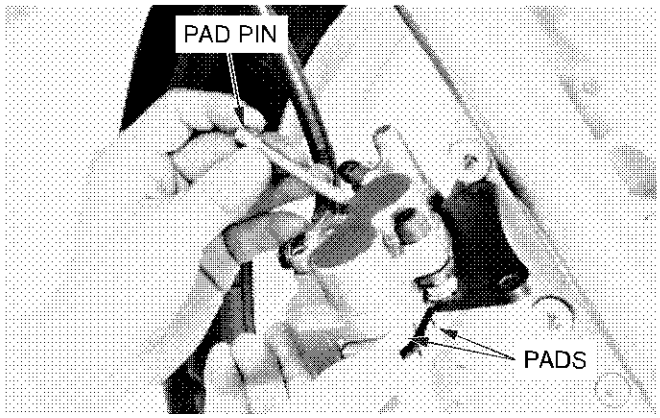
Remove the front brake caliper bracket bolts.



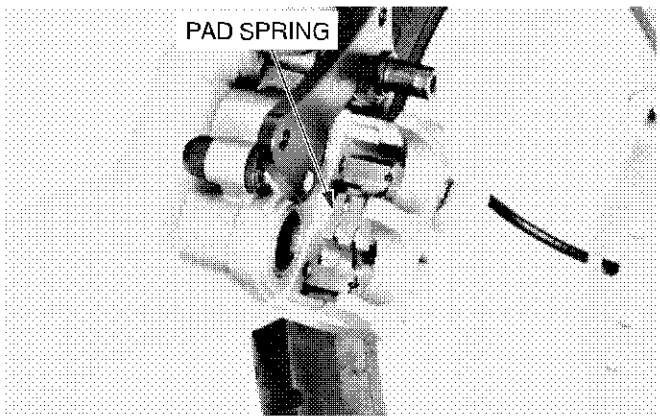
Pry one old pad against the caliper with a screwdriver to push the pistons into the caliper.



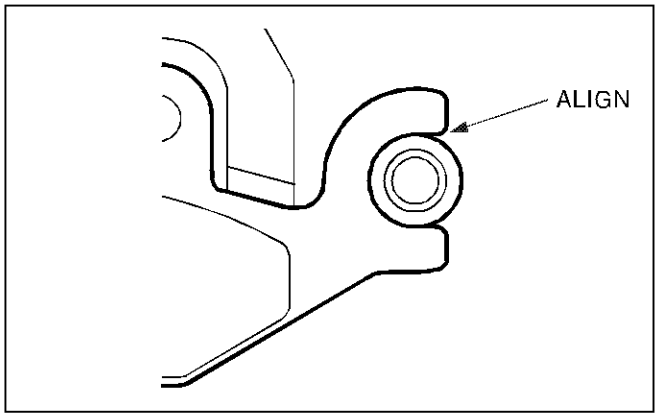
Remove the pad pins and the brake pads.



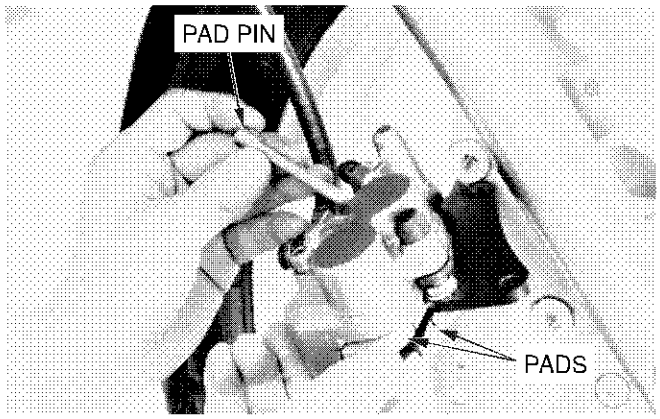
Clean the inside of the caliper especially around the caliper piston.
Make sure that the pad springs is installed in position.



Install new pads so that their ends rest on the pad retainer on the bracket properly.

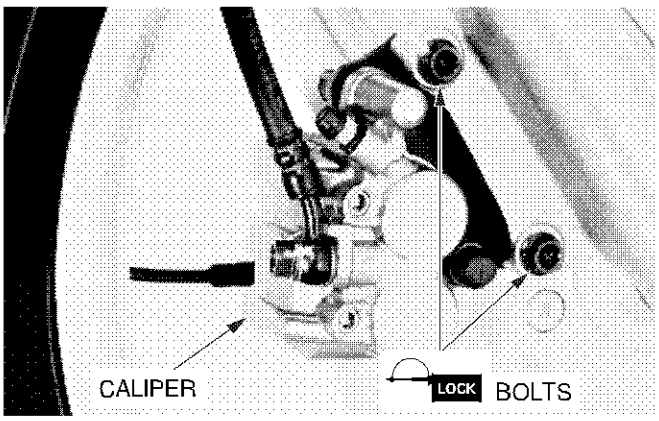


Install the pad pins by pushing the pads against the pad spring to align the pad pin holes in the pads and caliper.



Install the front brake caliper to the front fork.
Clean and apply a locking agent to the front caliper bracket bolt threads.
Install and tighten the front caliper bracket bolts to the specified torque.

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)



Tighten the pad pins to the specified torque.

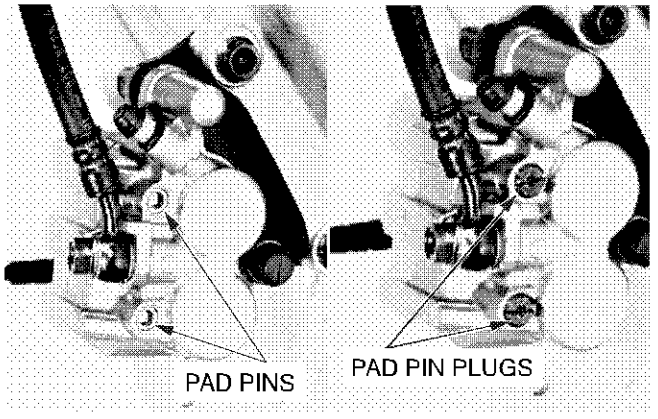
TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Install and tighten the pad pin plugs to the specified torque.

TORQUE: 3 N·m (0.3 kgf·m, 2.2 lbf·ft)

⚠ WARNING

After replacement, operate the brake lever to seat the caliper pistons against the pads.



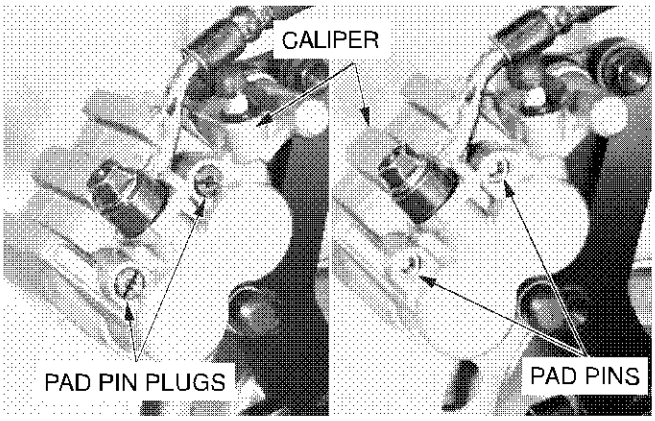
REAR BRAKE PAD REPLACEMENT

NOTE:

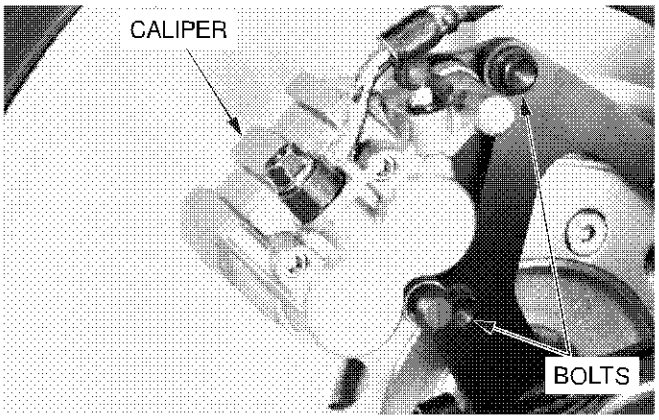
Always replace the brake pads in pairs to ensure even disc pressure.

Push the caliper pistons all the way in by pushing the caliper body inward to provide clearance for the new pads.

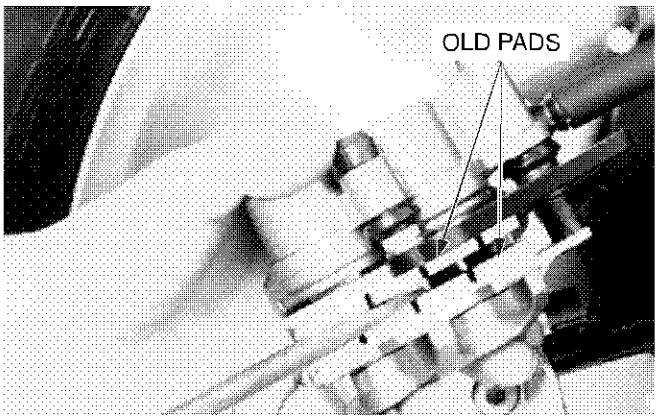
Remove the pad pin plug and loosen the pad pin.



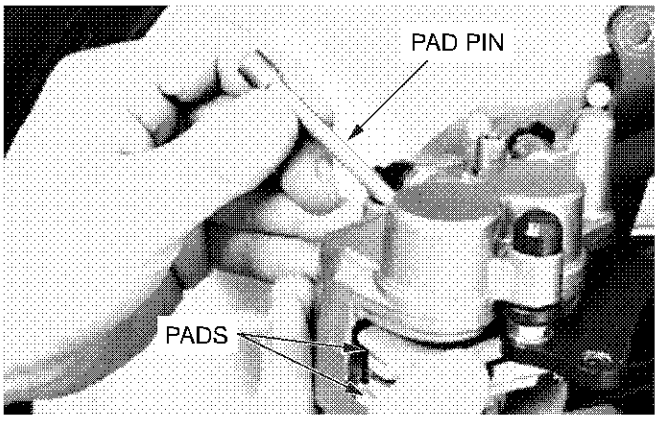
Remove the rear caliper holder bolts and the rear caliper.



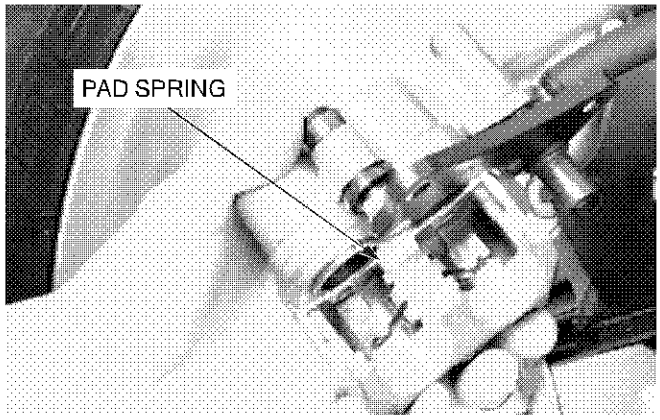
Pry one old pad against the caliper with a screwdriver to push the pistons into the caliper.



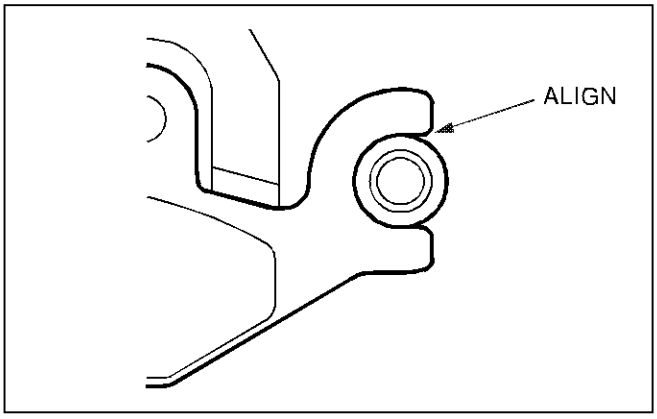
Remove the pad pins and the brake pads.



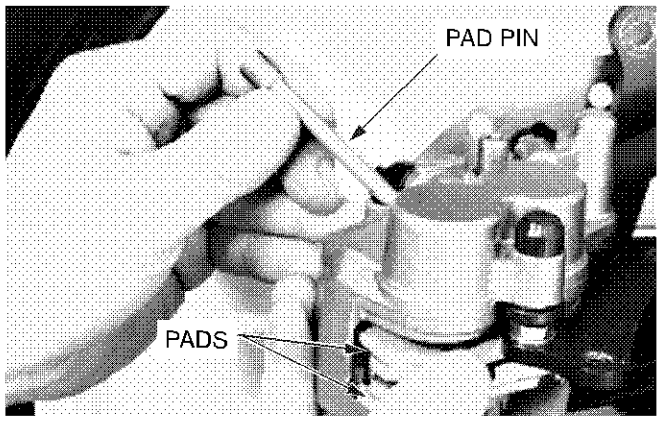
Clean the inside of the caliper especially around the caliper piston.
Make sure that the pad springs is installed in position.



Install new pads so that their ends rest on the pad retainer on the bracket properly.

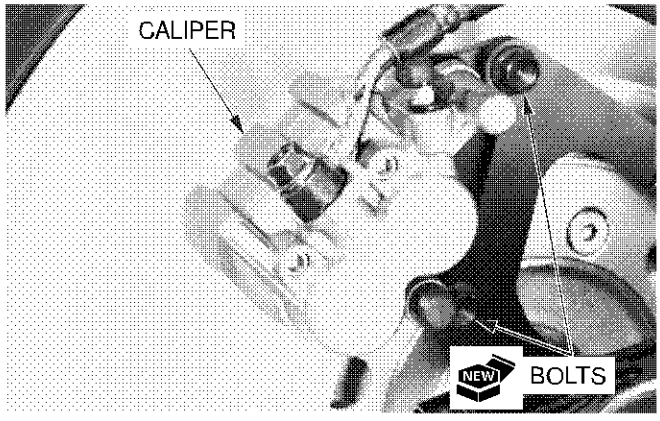


Install the pad pins by pushing the pads against the pad spring to align the pad pin holes in the pads and caliper.



Install the rear caliper.
Install and tighten the new rear caliper holder bolts to the specified torque.

TORQUE: 26 N·m (2.7 kgf·m, 20 lbf·ft)



Tighten the pad pin to the specified torque.

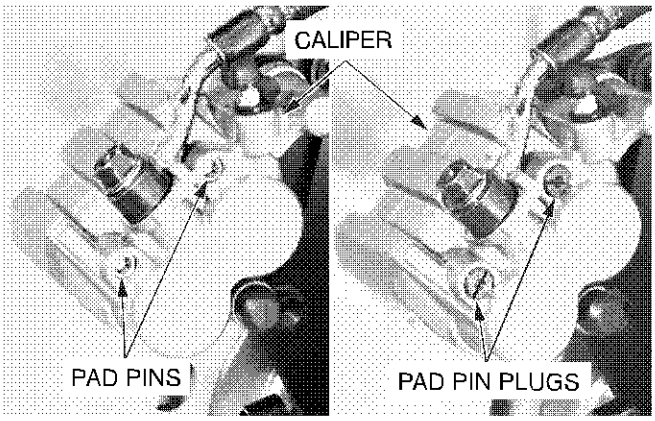
TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Install and tighten the pad pin plug to the specified torque.

TORQUE: 3 N·m (0.3 kgf·m, 2.2 lbf·ft)

⚠ WARNING

After replacement, operate the brake lever to seat the caliper pistons against the pads.



BRAKE DISC INSPECTION

Visually inspect the disc for damage or cracks.

Measure the brake disc thickness at several points.

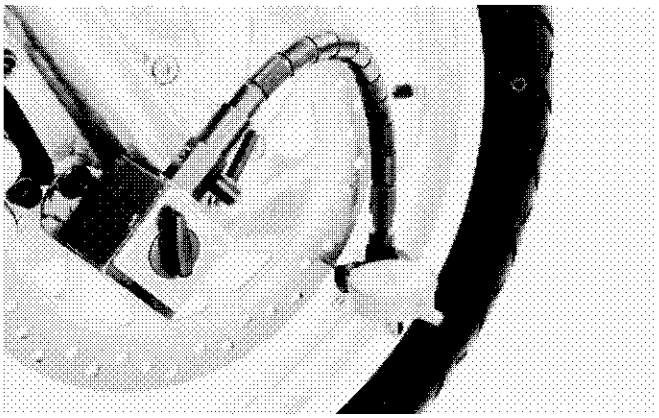
SERVICE LIMITS:
Front: 3.5 mm (0.14 in)
Rear: 3.5 mm (0.14 in)

Replace the brake disc if the smallest measurement is less than the service limits.

Check the brake disc for warpage.

SERVICE LIMIT: 0.30 mm (0.012 in)

Check the wheel bearings for excessive play, if the warpage exceeds the service limit.
Replace the brake disc if the wheel bearings are normal.



FRONT MASTER CYLINDER

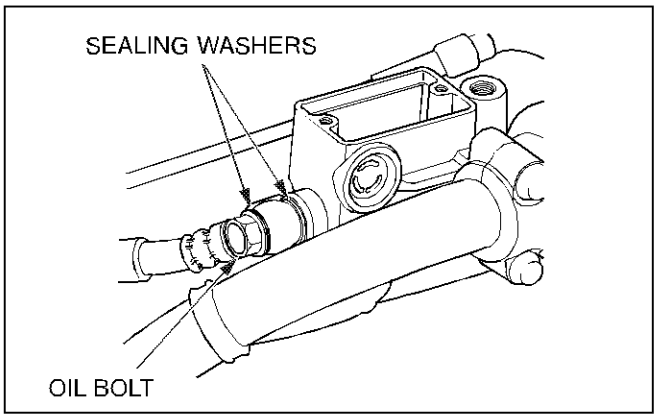
CAUTION:

- ***Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag or shop towel over these parts whenever the system is serviced.***
- ***When removing the oil hose, cover the end of the hose to prevent contamination.***

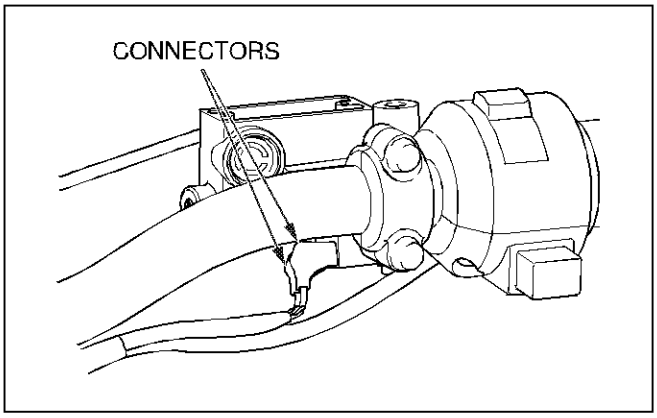
REMOVAL

Drain the brake fluid (page 14-4).

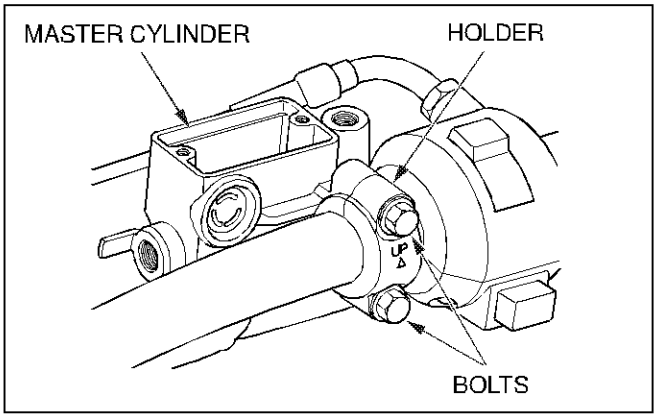
Remove the brake oil bolt and sealing washers.



Disconnect the brake light switch connectors.

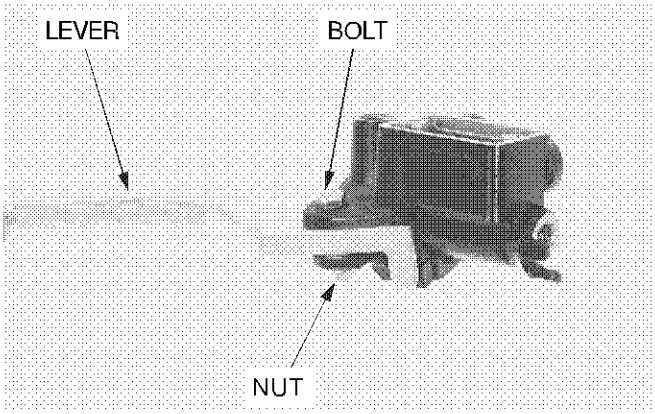


Remove the front master cylinder holder bolts, holder and master cylinder.

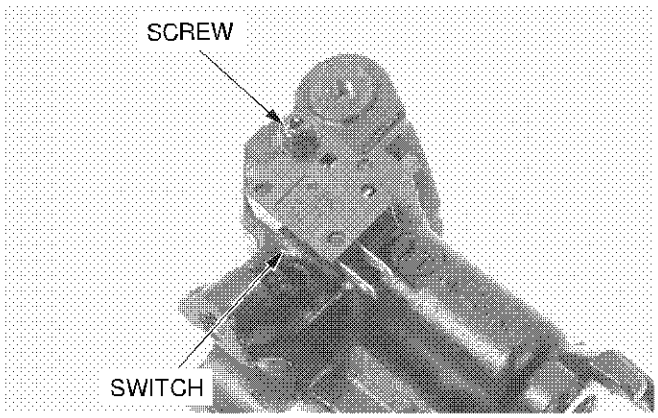


DISASSEMBLY

Remove the brake lever pivot nut and bolt.
Remove the brake lever.



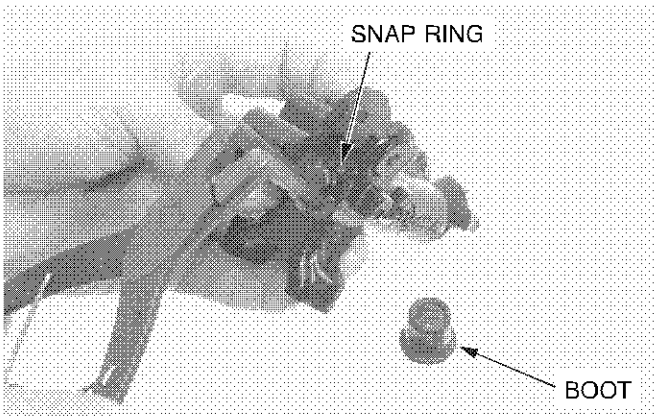
Remove the screw and brake light switch.



Remove the boot from the master cylinder and master piston.

Remove the snap ring.

TOOL:
Snap ring pliers **07914 – SA50001**

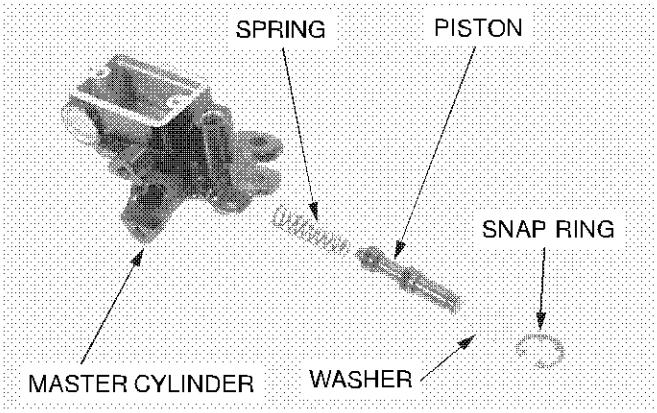


Remove the master piston and spring from the master cylinder.

Clean the master cylinder, reservoir and master piston with clean brake fluid.

NOTE:

- Replace the master piston, spring, cups and snap ring as a set whenever they are disassembled.
- Be sure that each part is free from the dust or dirt before reassembly.
- Never allow contaminants (dirt, water, etc.) to get into an open reservoir.

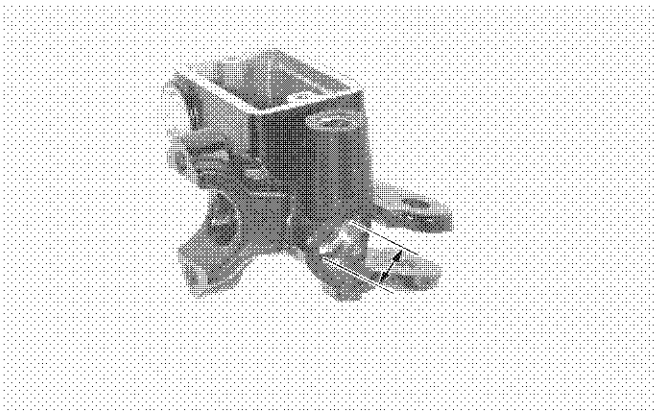


INSPECTION

Check the piston cups for wear, deterioration or damage.
Check the master cylinder and piston for scoring, scratches or damage.

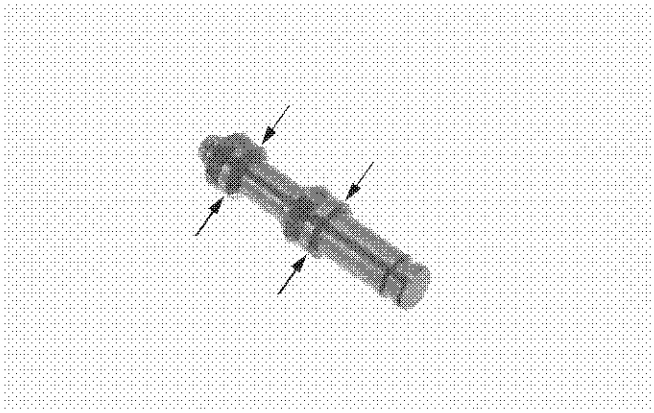
Measure the master cylinder I.D..

SERVICE LIMIT: 11.06 mm (0.435 in)

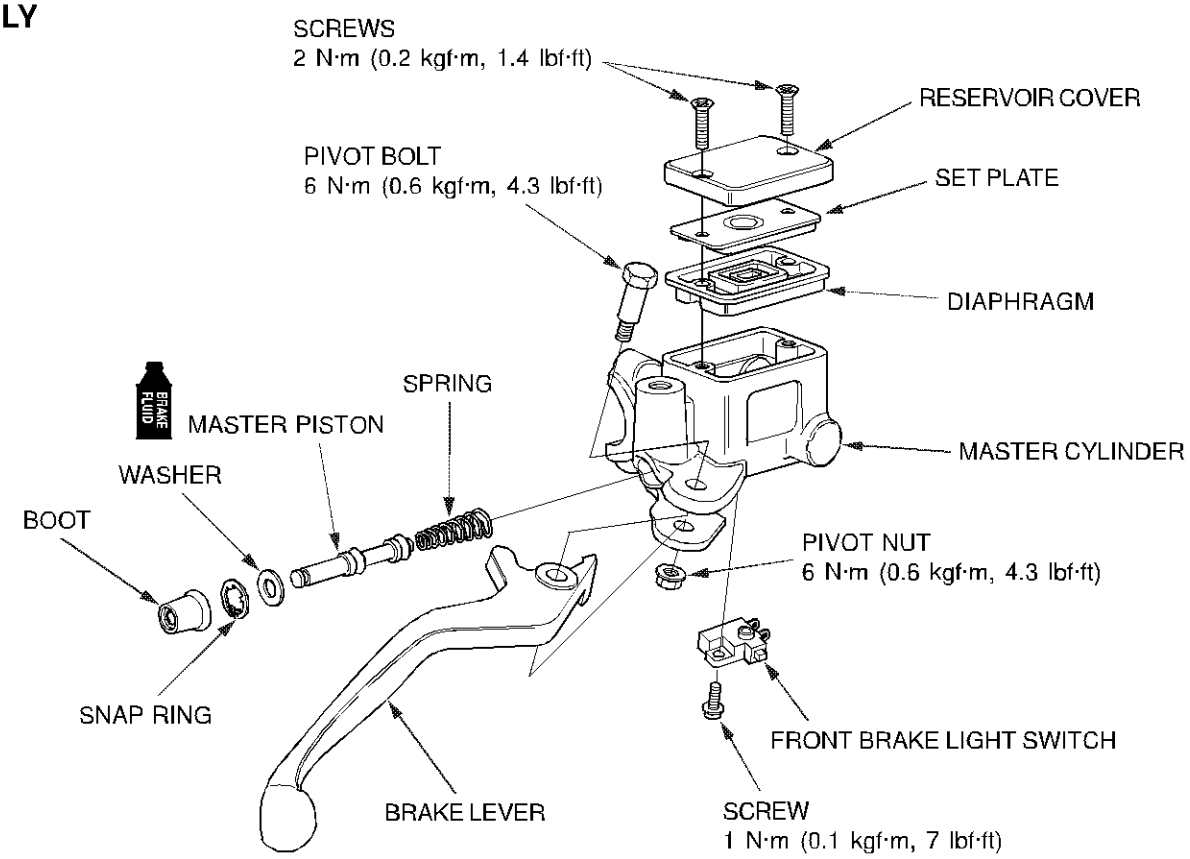


Measure the master piston O.D..

SERVICE LIMIT: 10.95 mm (0.431 in)



ASSEMBLY



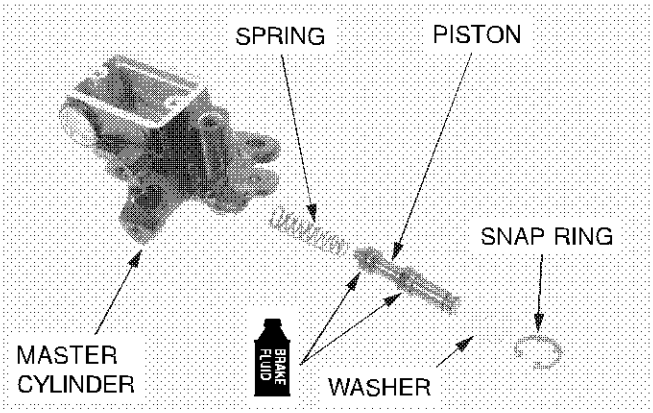
NOTE:

- Replace the master piston, spring, cups and snap ring as a set.
- Replace the boot if it is wear, deterioration or damage.
- Apply silicone grease to the boot inner surface.
- Be sure that each part is free from the dust or dirt before reassembly.

Coat the master piston and piston cups with clean DOT 3 or 4 brake fluid.
Install the spring onto the master piston end.
Install the master piston/spring and washer into the master cylinder.

CAUTION:

Do not allow the piston cup lips to turn inside out.

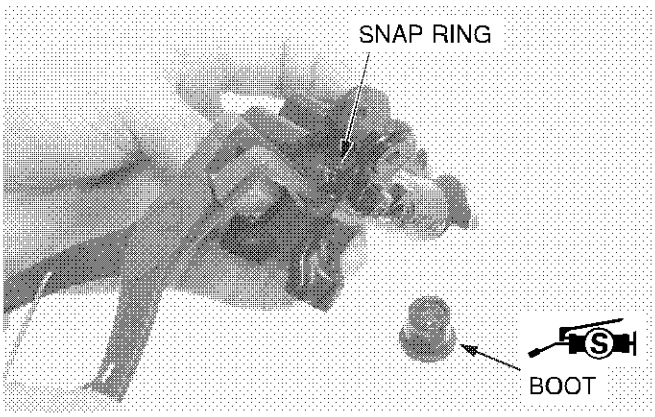


Install the snap ring into the groove in the master cylinder.

TOOL:
Snap ring pliers **07914 – SA50001**

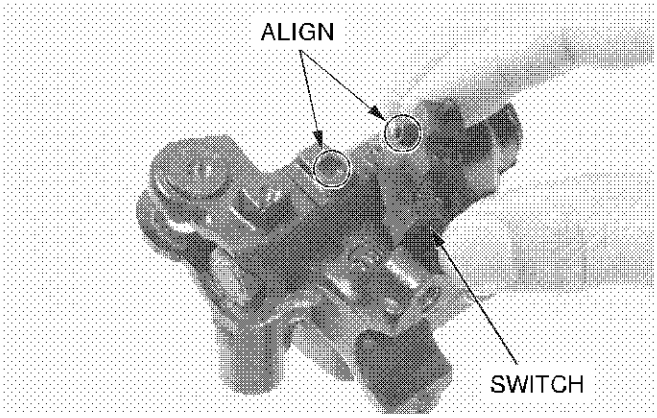
CAUTION:

Be certain the snap ring is firmly seated in the groove.



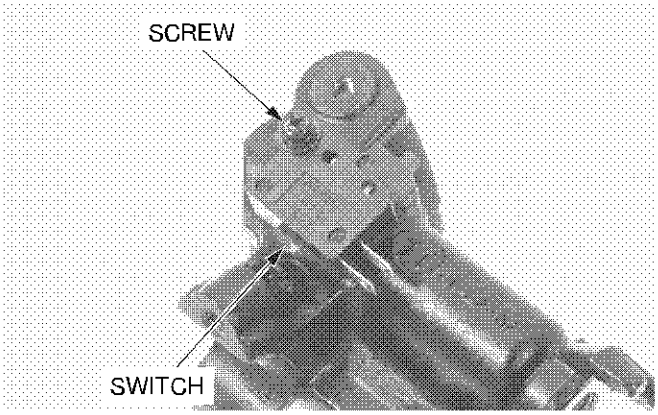
Apply silicone grease to the boot.
Install the boot into the master cylinder and the groove in the master piston.

Install the brake light switch to the master cylinder aligning the brake light switch boss and master cylinder hole.



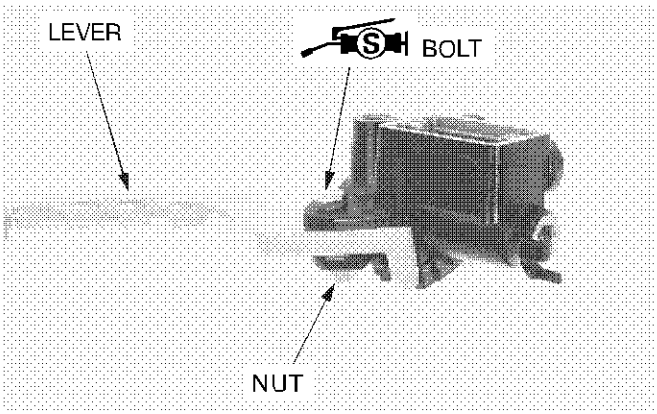
Install and tighten the screw to the specified torque.

TORQUE: 1 N·m (1 kgf·m, 0.7 lbf·ft)



Install the brake lever to the master cylinder.
Apply cilicon grease to the brake lever pivot bolt.
Install and tighten the brake lever pivot bolt and nut to the specified torque.

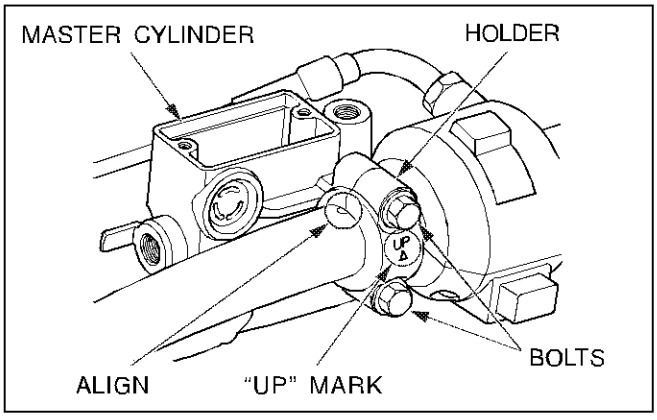
TORQUE:
Pivot bolt: 6 N·m (0.6 kgf·m, 4.3 lbf·ft)
Pivot nut: 6 N·m (0.6 kgf·m, 4.3 lbf·ft)



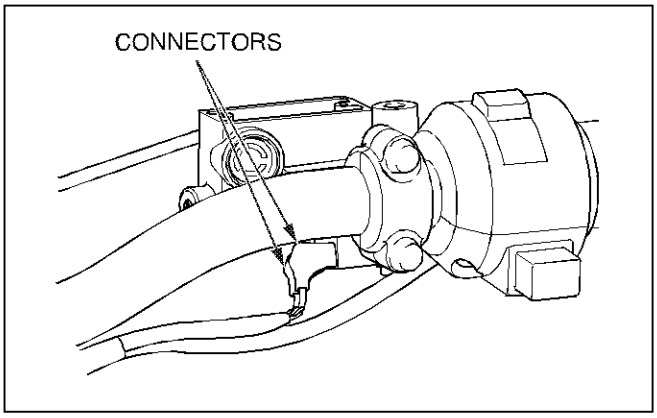
INSTALLATION

Install the master cylinder and the master cylinder holder with the "UP" mark facing up.

Align the end of master cylinder with the punch mark on the handlebar.
Install the front master cylinder bolts and tighten the upper bolt first, then tighten the lower bolt securely.



Connect the brake light switch connectors.



Install the brake hose to the master cylinder.

NOTE:

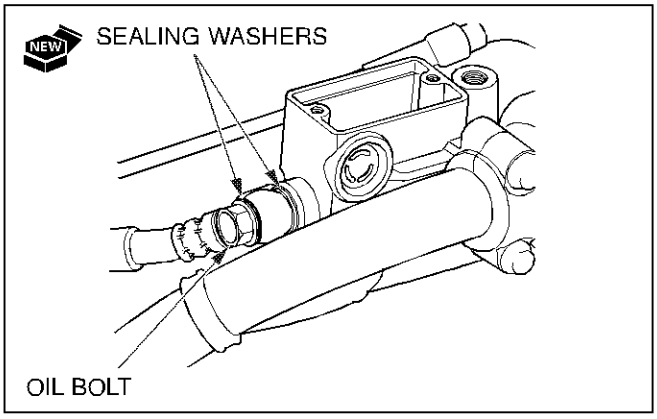
Be careful not to twist the brake hose.

Install the new sealing washers.

Install and tighten the brake oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Refill the brake fluid (page 14-5).



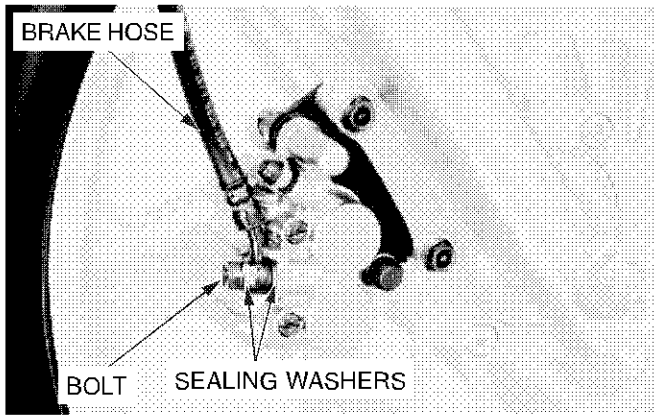
FRONT BRAKE CALIPER

CAUTION:

- ***Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag or shop towel over these parts whenever the system is serviced.***
- ***When removing the oil hose, cover the end of the hose to prevent contamination.***

REMOVAL

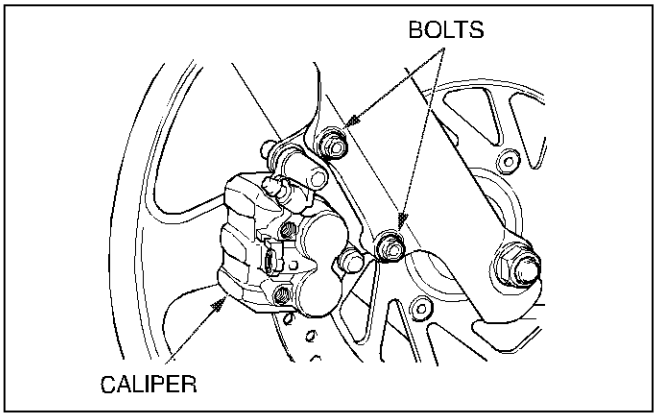
Drain the brake fluid (page 14-4).



Remove the brake oil bolt and sealing washers and disconnect the brake hose from the front brake caliper.

Remove the front brake caliper bracket bolts and front brake caliper.

Remove the brake pad (page 14-6).

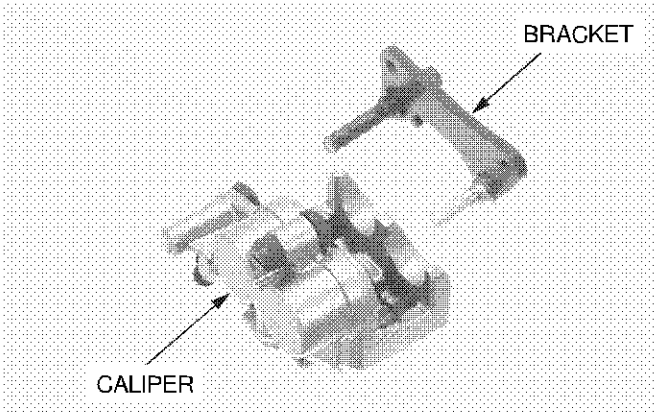


DISASSEMBLY

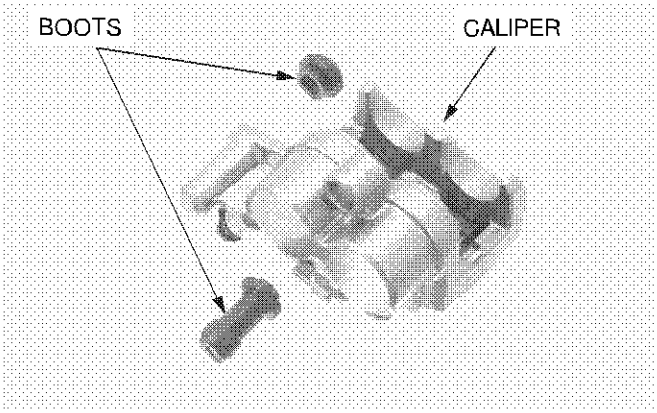
NOTE:

Do not remove the caliper and bracket pins unless replacement.

Remove the caliper bracket from the caliper body.



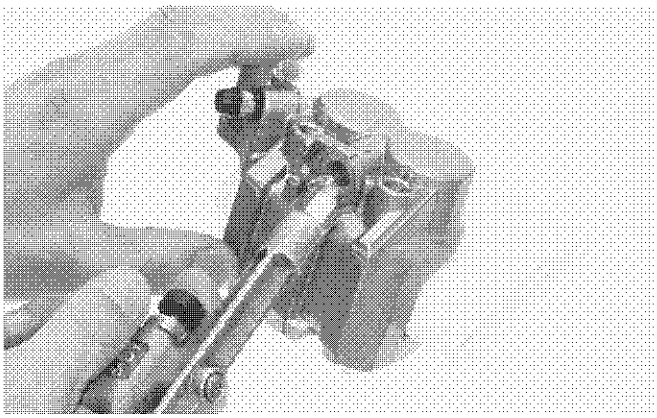
Remove the pad spring and bracket pin boots from the caliper body.



Place a shop towel over the pistons.
Position the caliper body with the pistons down and apply small squirts of air pressure to the fluid inlet to remove the pistons.

⚠ WARNING

Do not use high pressure air or bring the nozzle too close to the inlet.

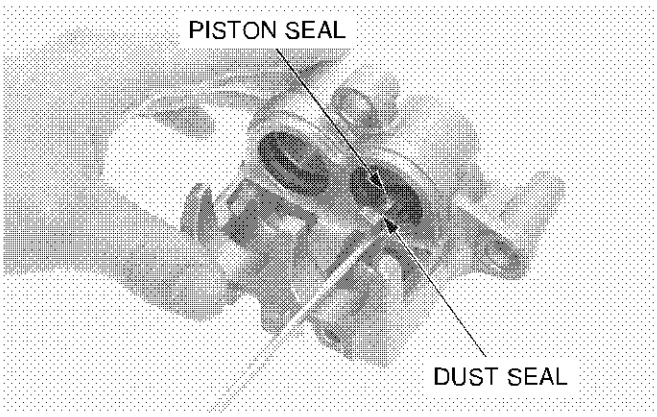


Push the dust seals and piston seals in and lift them out.

CAUTION:

Be careful not to damage the piston sliding surface.

Clean the seal grooves, caliper pistons and caliper piston sliding surfaces with clean brake fluid.

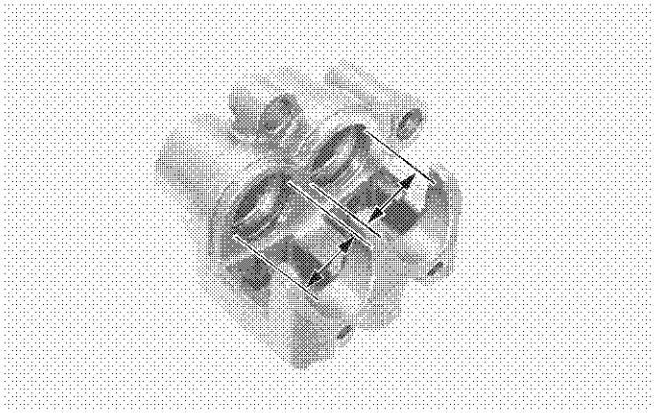


INSPECTION

Check the caliper cylinder and pistons for scoring, scratches or damage.

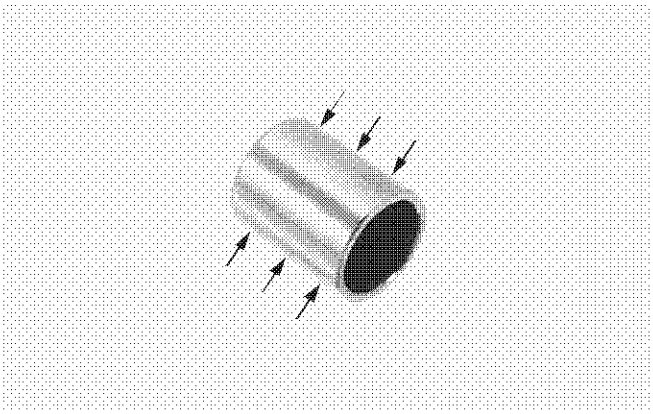
Measure the caliper cylinder I.D..

SERVICE LIMIT: 25.46 mm (1.002 in)

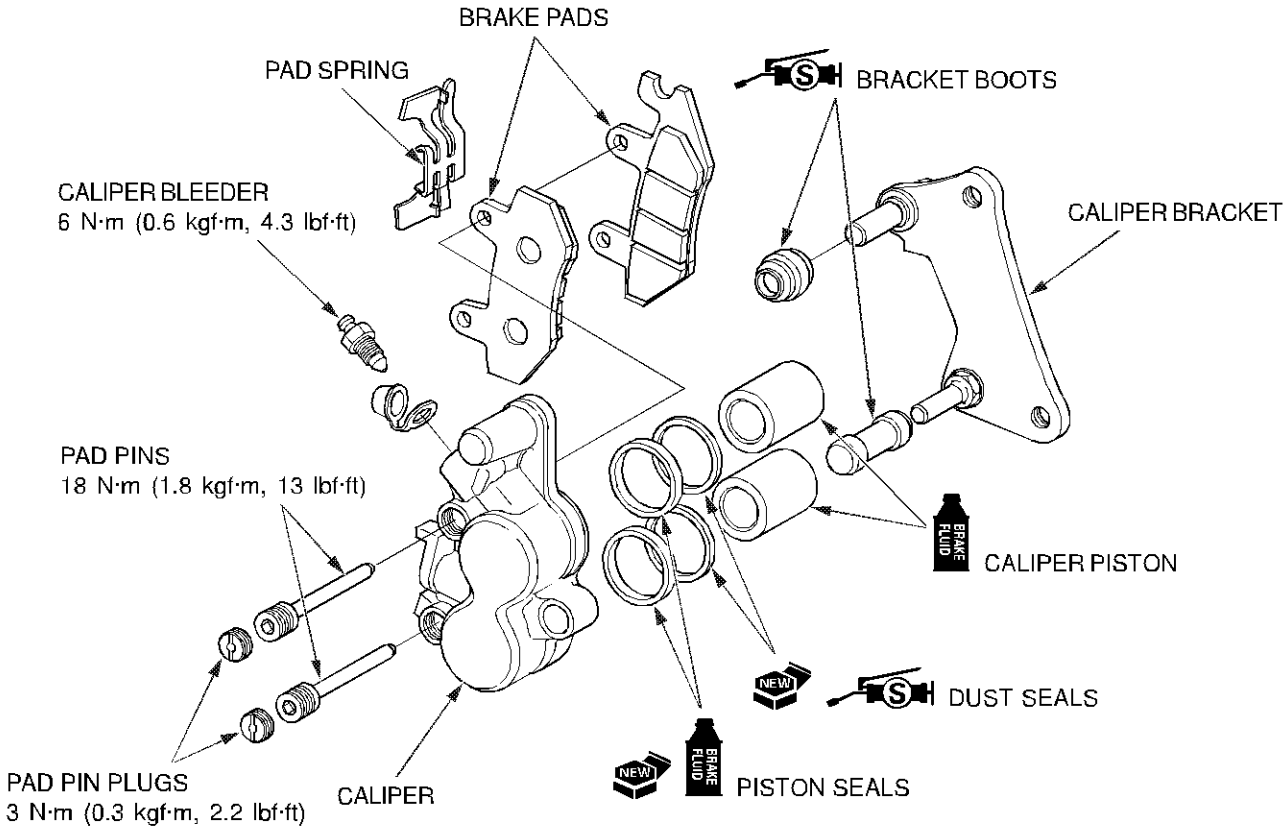


Measure the caliper piston O.D..

SERVICE LIMIT: 25.30 mm (0.996 in)



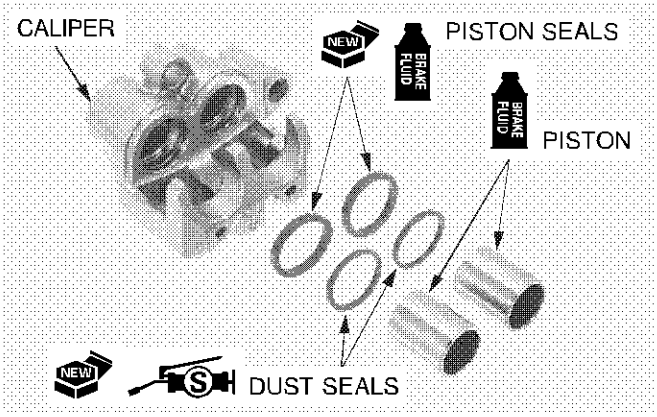
ASSEMBLY



NOTE:

- Replace the dust seals and piston seals with a new ones.
- Replace the caliper and bracket pin boots if it is wear, deterioration or damage.
- Apply silicone grease to the boot inner surface.
- Be sure that each part is free from the dust or dirt before reassembly.

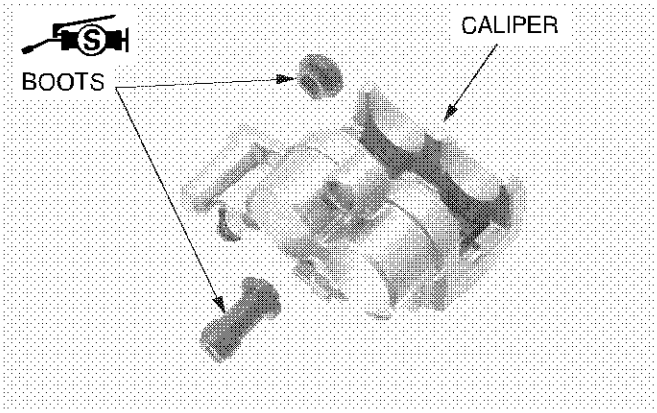
Coat new piston seals with clean brake fluid and install them in the seal grooves in the caliper.
Coat new dust seals with silicone grease and install them in the seal grooves in the caliper.
Coat the caliper piston with clean brake fluid and install it into the caliper cylinder with the opening toward the pads.



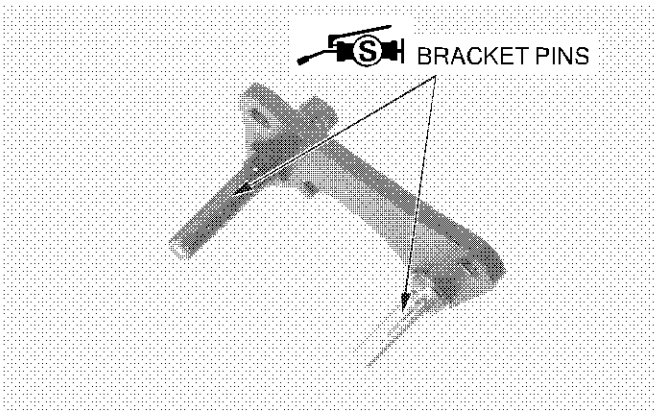
Replace the bracket pin boots with a new ones if it is wear, deterioration or damage.

Apply silicon grease in to the boots.

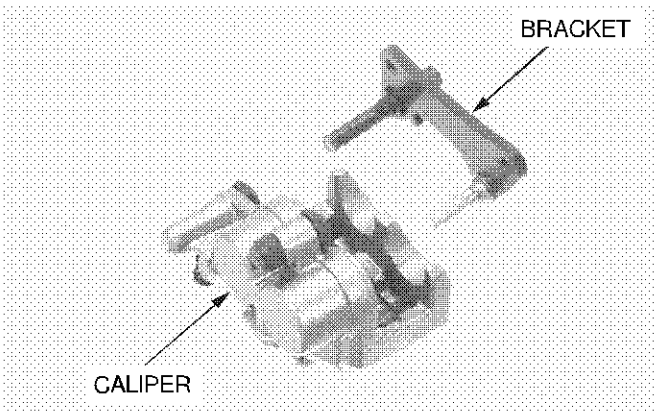
Install the bracket pin boots to the caliper body.



Apply silicone grease to the bracket pins.



Install the caliper bracket over the caliper.
Install the pad spring to the caliper body.

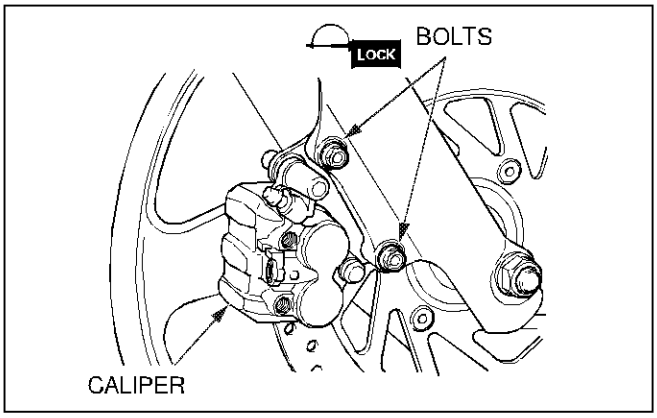


INSTALLATION

Install the brake pad (page 14-6).

Install the front brake caliper to the front fork.
Clean and apply a locking agent to the front caliper bracket bolt threads.
Install and tighten the new front caliper bracket bolts to the specified torque.

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)



Connect the brake hose to the brake caliper with new sealing washers.

NOTE:

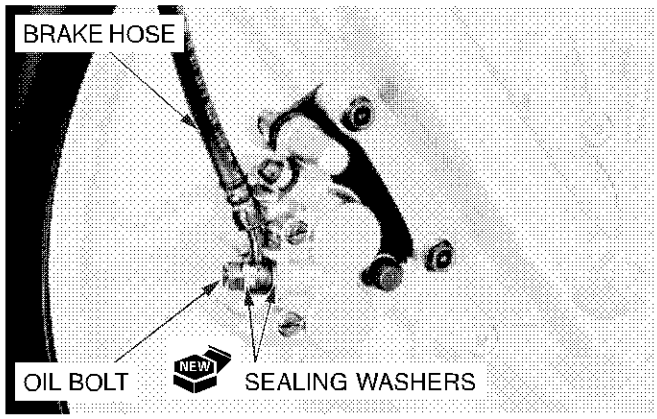
Be careful not to twist the brake hose.

Install and tighten the brake oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

NOTE:

While tightening the brake oil bolt, align the brake hose and with the stopper.



Refill the brake fluid (page 14-5).

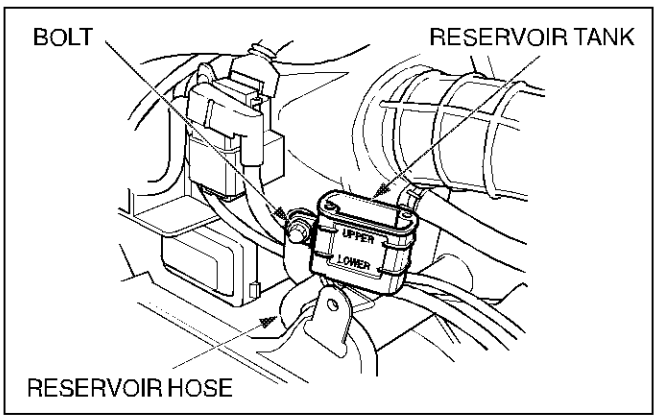
REAR MASTER CYLINDER

CAUTION:

- ***Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag or shop towel over these parts whenever the system is serviced.***
- ***When removing the oil hose bolt, cover the end of the hose to prevent contamination.***

REMOVAL

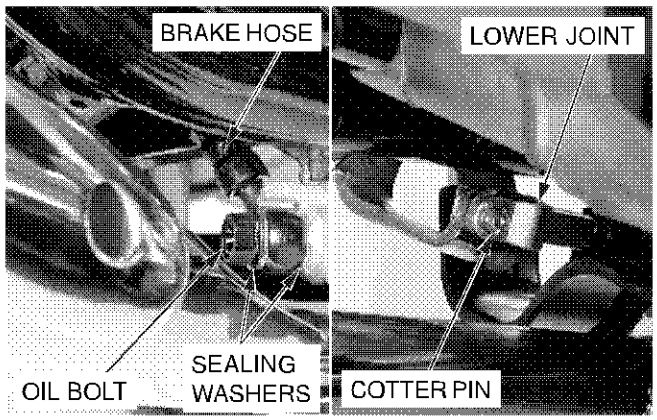
Remove the right side cover (page 2-2).
Drain the brake fluid (page 14-4).



Remove the reservoir tank bolt and disconnect the reservoir hose.
Remove the rear master cylinder reservoir tank.

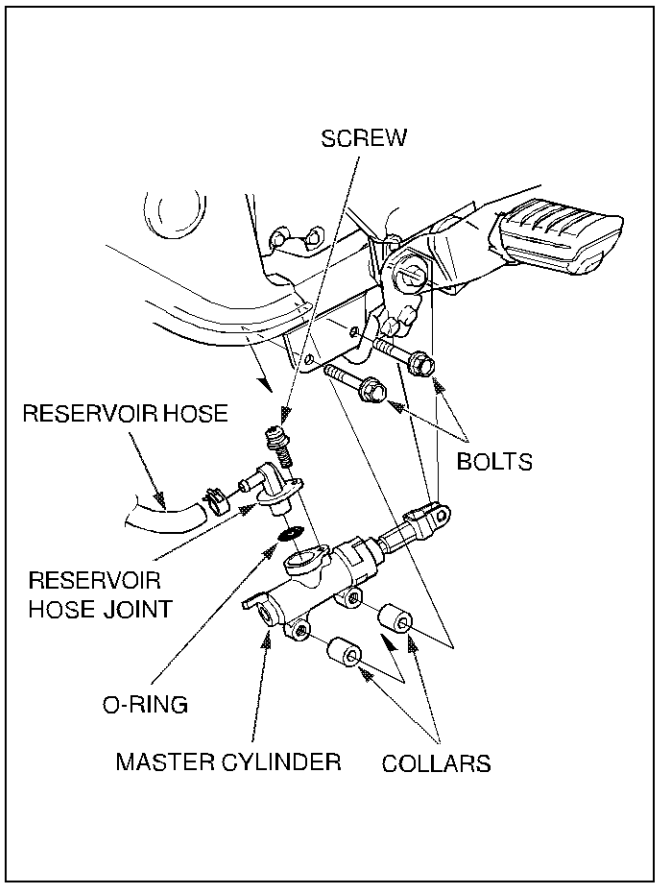
Remove the brake oil bolt and sealing washers.
Disconnect the brake hose from the master cylinder.

Remove the cotter pin and lower joint.



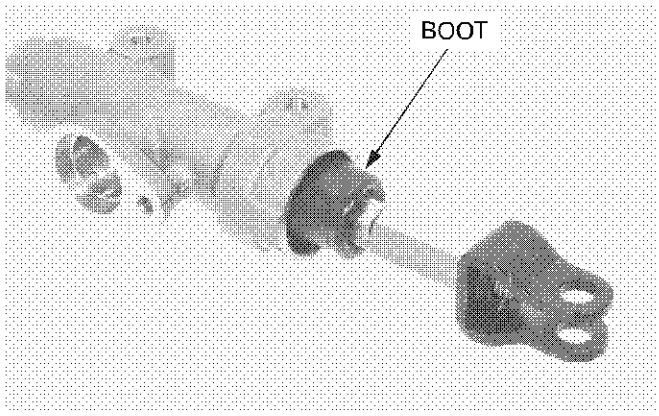
Remove the bolts, collars and rear master cylinder.

Remove the screw, reservoir hose joint and O-ring. Disconnect the reservoir hose from the hose joint.



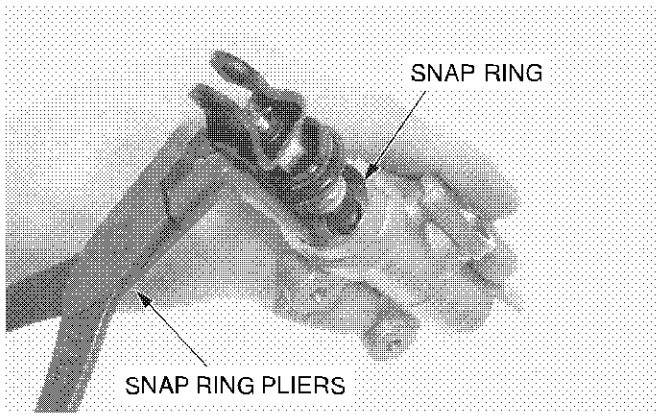
DISASSEMBLY

Remove the boot from the push rod groove and master cylinder.



Remove the snap ring.

TOOL:
Snap ring pliers **07914 – SA50001**

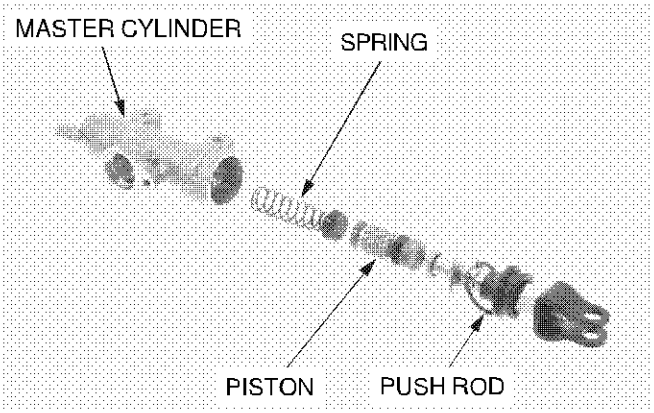


Remove the push rod, master piston and spring.

Clean the master cylinder and master piston with clean brake fluid.

NOTE:

- Replace the master piston, spring, cups and snap ring as a set whenever they are disassembled.
- Be sure that each part is free from the dust or dirt before reassembly.
- Never allow contaminants (dirt, water, etc.) to get into an open reservoir.

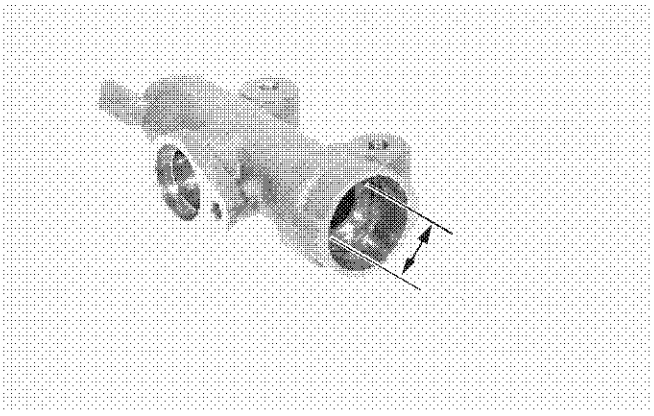


INSPECTION

Check the piston cups for wear, deterioration or damage.
Check the master cylinder and piston for scoring, scratches or damage.

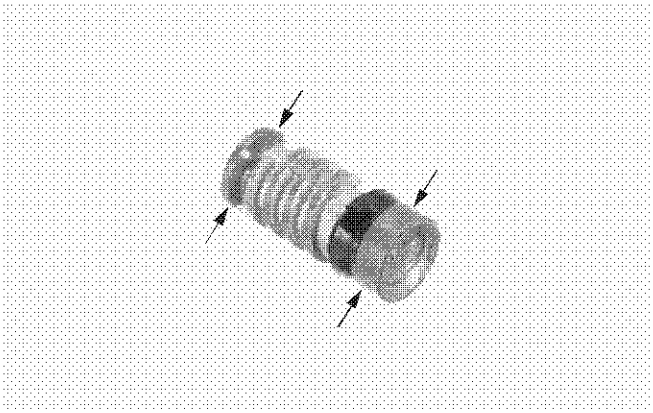
Measure the master cylinder I.D..

SERVICE LIMIT: 14.06 mm (0.554 in)

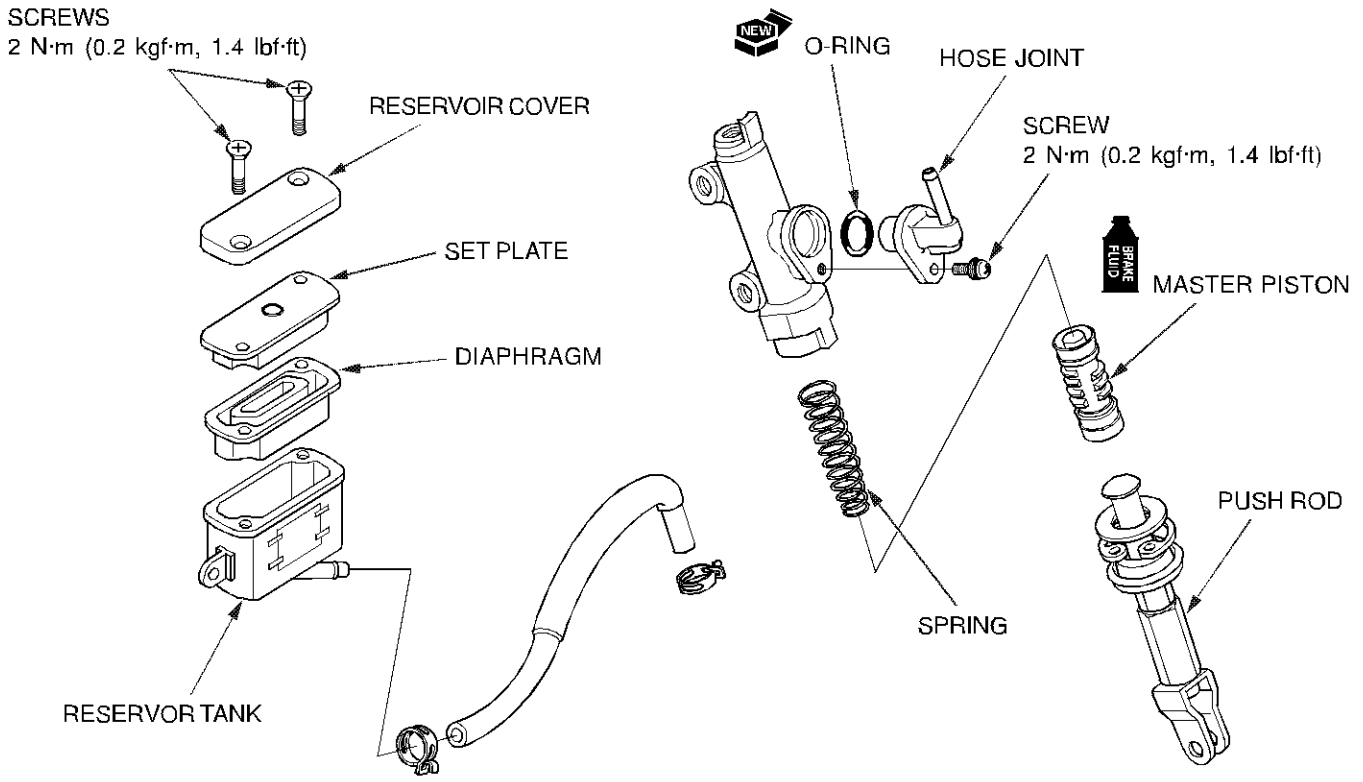


Measure the master piston O.D..

SERVICE LIMIT: 13.95 mm (0.549 in)



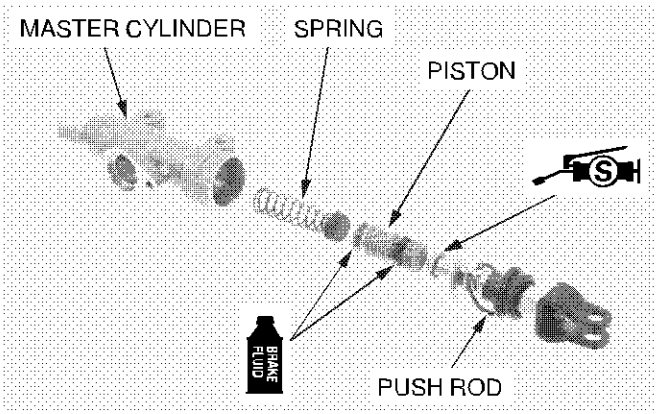
ASSEMBLY



NOTE:

- Replace the master piston, spring, cups and snap ring as a set.
- Replace the boot if it is wear, deterioration or damage.
- Apply silicone grease to the boot inner surface.
- Be sure that each part is free from the dust or dirt before reassembly.

Coat the master piston and piston cups with clean DOT 3 or 4 brake fluid.
Install the spring onto the master piston end.
Install the master piston/spring and washer into the master cylinder.



CAUTION:

Do not allow the piston cup lips to turn inside out.

Apply silicone grease to the master piston contacting surface of the push rod.

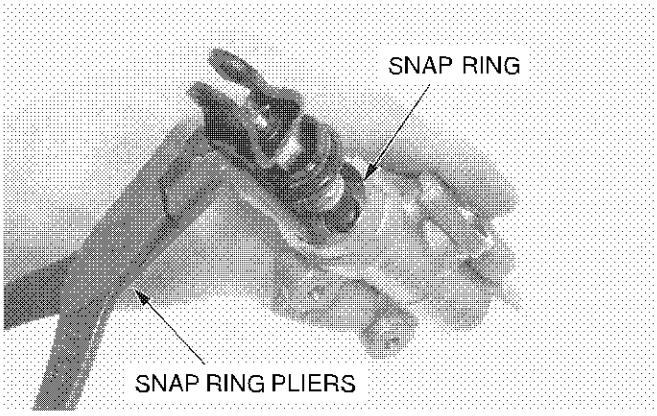
Install the snap ring into the groove in the master cylinder.

TOOL:

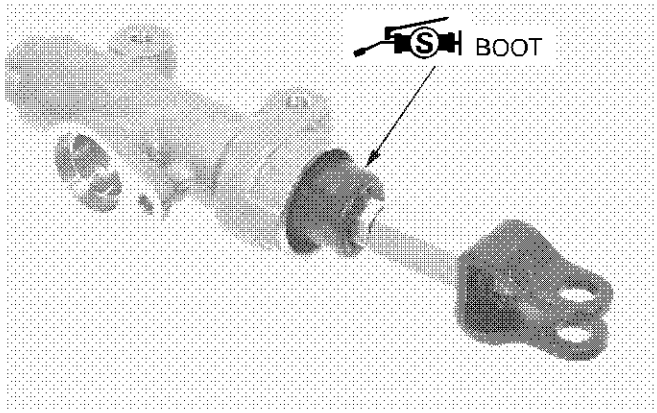
Snap ring pliers	**07914 – SA50001**

CAUTION:

Be certain the snap ring is firmly seated in the groove.



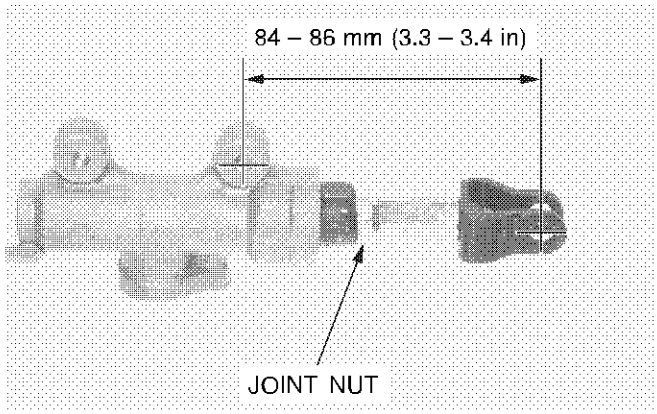
Apply silicone grease to the boot groove in the push rod.
Install the boot into the master cylinder and the groove in the push rod.



If the push rod joint is reinstalled, adjust the push rod length so that the distance from the center of the master cylinder lower mounting hole to the center of the joint pin hole is 84 – 86 mm (3.3 – 3.4 in).

After adjustment, tighten the lower joint nut.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)



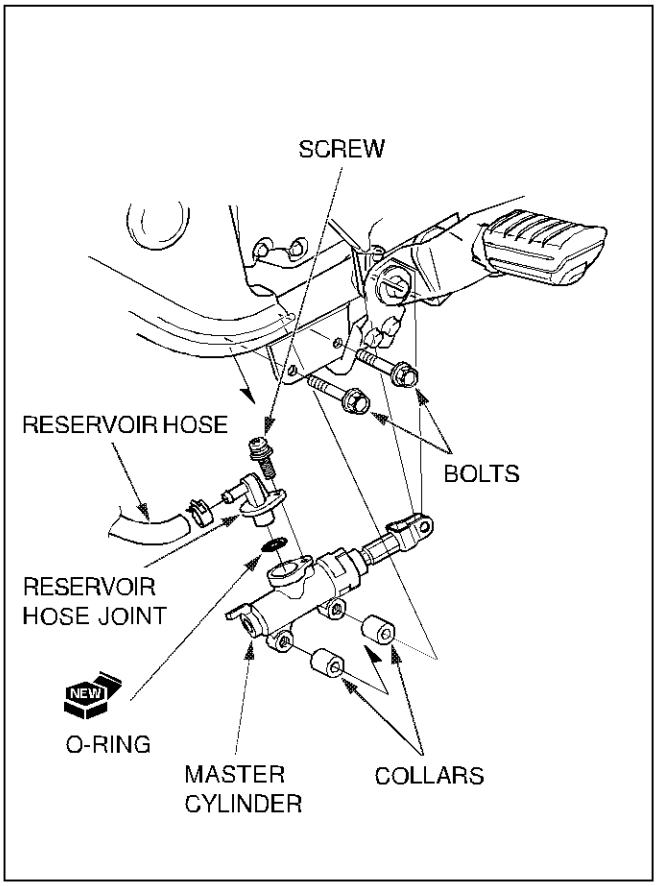
INSTALLATION

Connect the reservoir hose to the hose joint.
Coat the new O-ring with clean brake fluid and install it onto the reservoir hose joint.

Install the reservoir hose joint to the rear master cylinder.
Install and tighten the screw to the specified torque.

TORQUE: 2 N·m (0.2 kgf·m, 1.4 lbf·ft)

Install the rear mastar cylinder, collars and tighten the bolts securely.



Install the lower joint and new cotter pin.

Connect the brake hose to the rear master cylinder with new sealing washers.

NOTE:

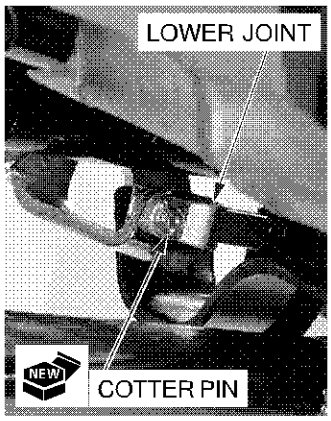
Be careful not to twist the brake hose.

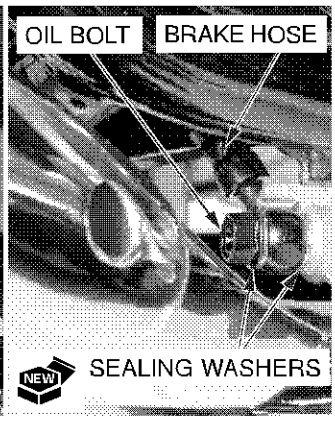
Install and tighten the brake oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

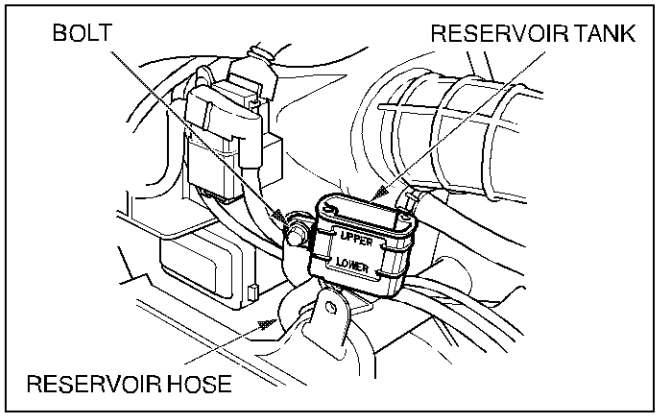
NOTE:

While tightening brake oil bolt, align the brake hose end with the stopper.





Connect the reservoir hose to the master cylinder reservoir tank.
Install the master cylinder reservoir tank to the frame.
Install and tighten the bolt securely.



Refill the brake fluid and bleed the rear hydraulic system (page 14-5).
Install the right side cover (page 2-2).

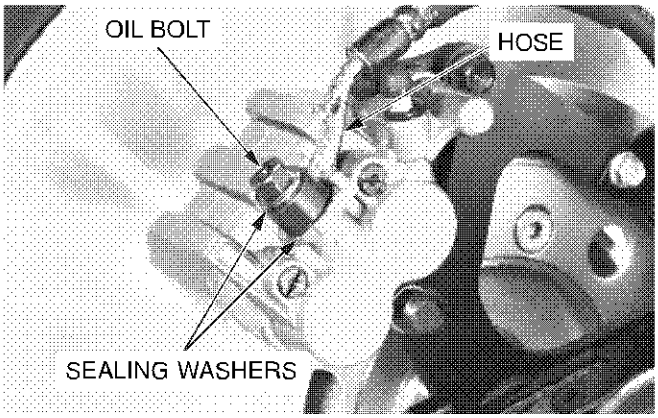
REAR BRAKE CALIPER

CAUTION:

- ***Avoid spilling brake fluid on painted, plastic or rubber parts. Place a rag or shop towel over these parts whenever the system is serviced.***
- ***When removing the oil hose bolt, cover the end of the hose to prevent contamination.***

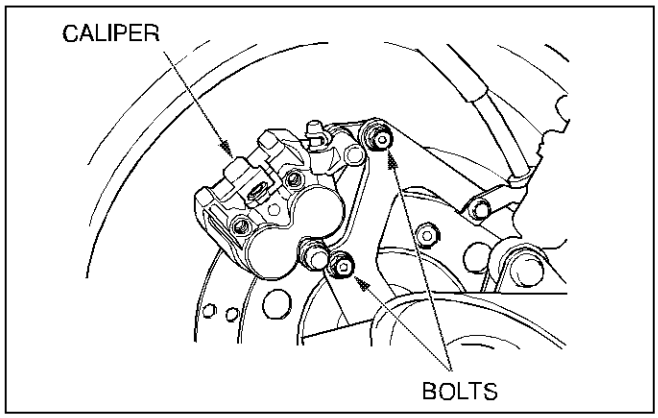
REMOVAL

Drain the brake fluid (page 14-4).
Remove the pad pin plug and loosen the pad pin (page 14-9).



Remove the brake oil bolt and sealing washers.
Disconnect the brake hose from the rear brake caliper.

Remove the rear caliper bracket bolts and rear caliper.



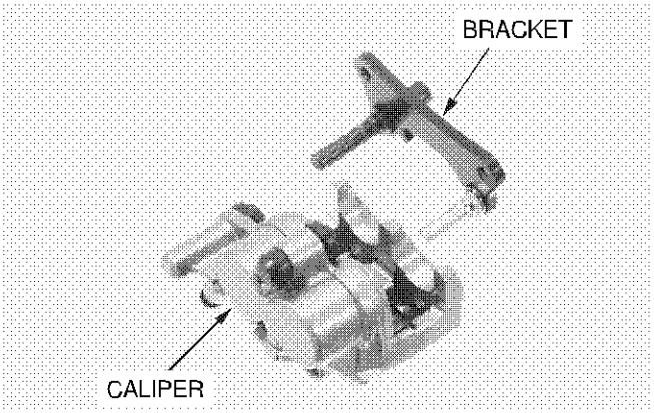
Remove the brake pad (page 14-9).

DISASSEMBLY

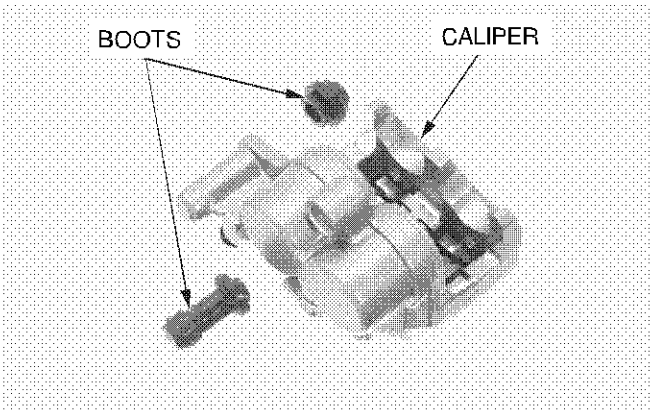
NOTE:

Do not remove the caliper and bracket pins unless replacement.

Remove the caliper bracket from the caliper body.



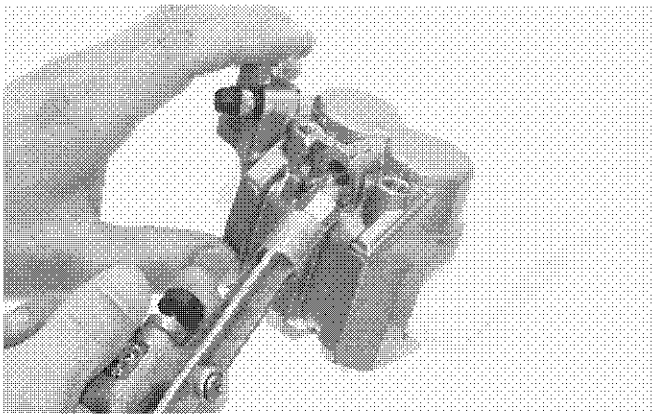
Remove the pad spring and bracket pin boots from the caliper body.



Place a shop towel over the piston.
Position the caliper body with the piston down and apply small squirts of air pressure to the fluid inlet to remove the piston.

⚠ WARNING

Do not use high pressure air or bring the nozzle too close to the inlet.

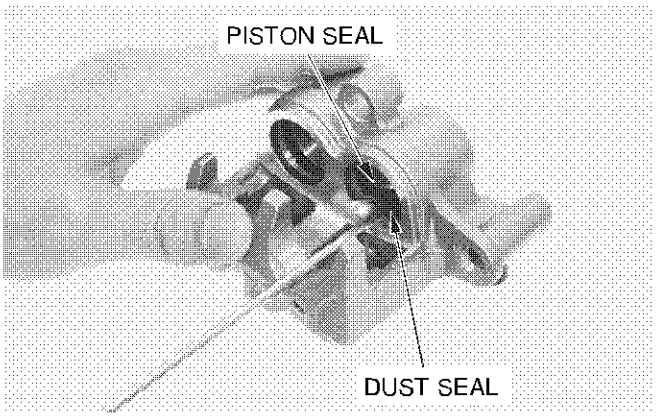


Push the dust seal and piston seal in and lift them out.

CAUTION:

Be careful not to damage the piston sliding surface.

Clean the seal grooves, caliper piston and caliper piston sliding surfaces with clean brake fluid.

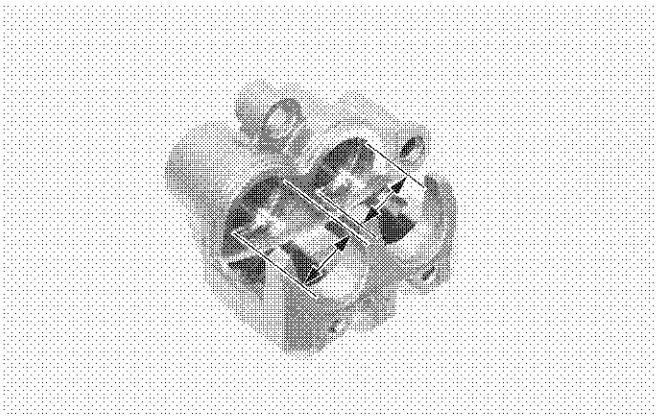


INSPECTION

Check the caliper cylinder and pistons for scoring, scratches or damage.

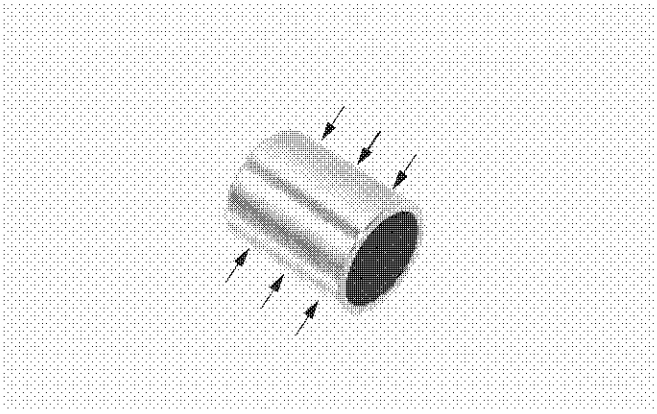
Measure the caliper cylinder I.D..

SERVICE LIMIT: 25.46 mm (1.002 in)

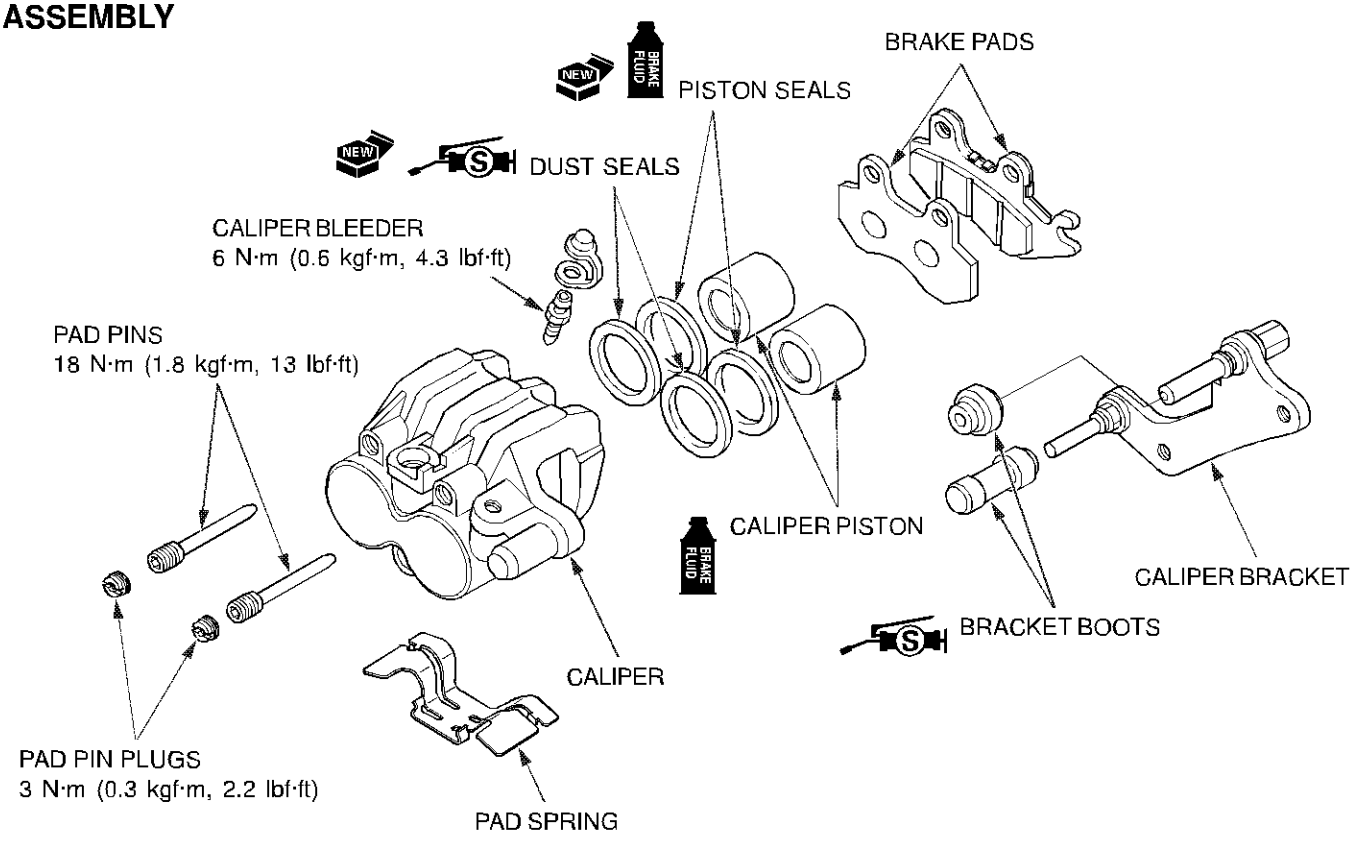


Measure the caliper piston O.D..

SERVICE LIMIT: 25.30 mm (0.996 in)



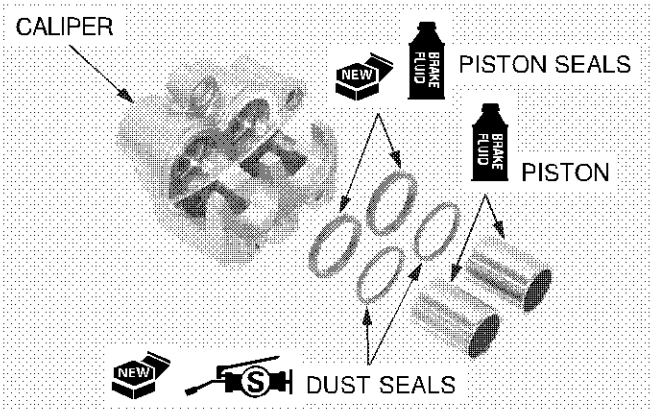
ASSEMBLY



NOTE:

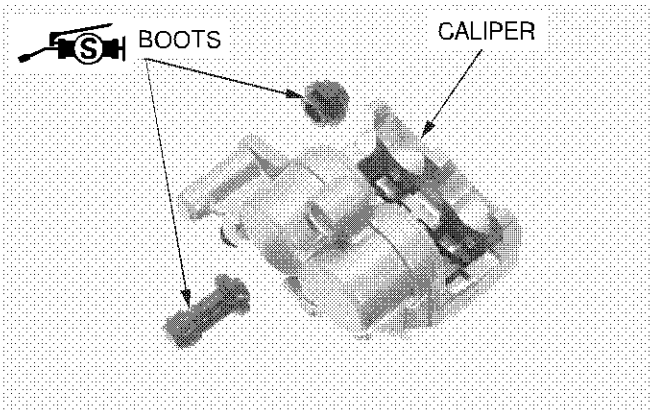
- Replace the dust seals and piston seals with a new ones.
- Replace the caliper and bracket pin boots if it is wear, deterioration or damage.
- Apply silicone grease to the boot inner surface.
- Be sure that each part is free from the dust or dirt before reassembly.

Coat new piston seals with clean brake fluid and install them in the seal grooves in the caliper.
Coat new dust seals with silicone grease and install them in the seal grooves in the caliper.
Coat the caliper piston with clean brake fluid and install it into the caliper cylinder with the opening toward the pads.
Replace the bracket pin boots with a new ones if it is wear, deterioration or damage.

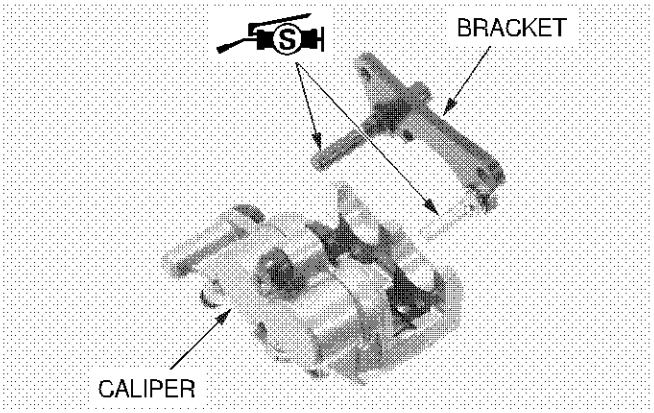


Apply silicone grease to the inside of the bracket pin boots.
Install the bracket pin boots to the caliper body.

Install the pad spring to the caliper body.



Apply silicone grease to the bracket pin sliding surface.

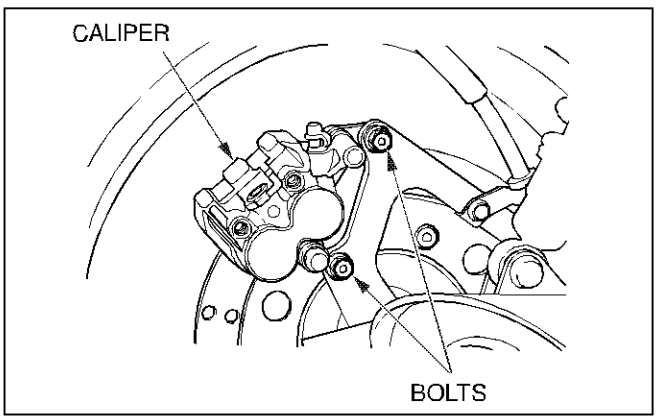


INSTALLATION

Install the brake pad (page 14-10).

Install the rear brake caliper to the swingarm.
Install and tighten the rear caliper bracket bolts to the specified torque.

TORQUE: 26 N·m (2.7 kgf·m, 20 lbf·ft)



Connect the brake hose to the rear master cylinder with new sealing washers.

NOTE:

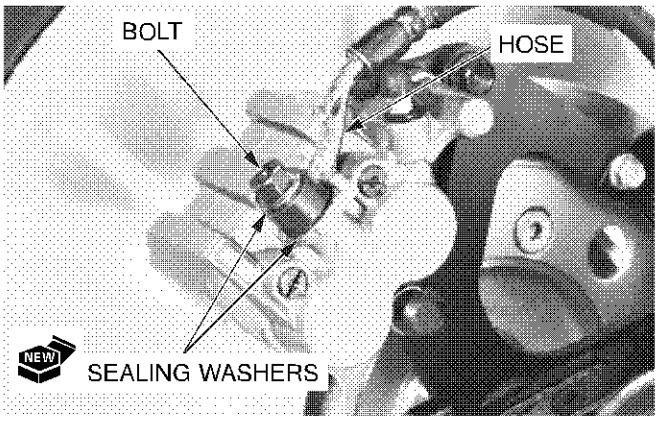
Be careful not to twist the brake hose.

Install and tighten the brake oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

NOTE:

While tightening the brake hose oil bolt, align the brake hose end with the stopper.

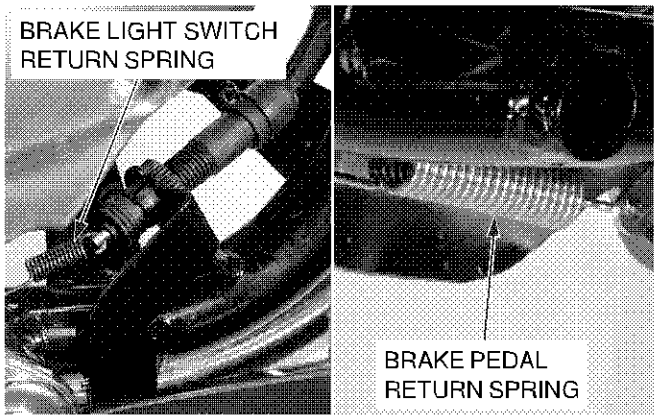


Refill the brake fluid and bleed the rear hydraulic system (page 14-5).

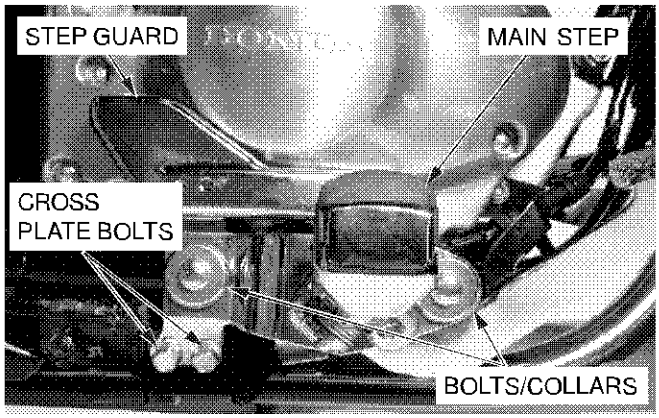
BRAKE PEDAL

REMOVAL

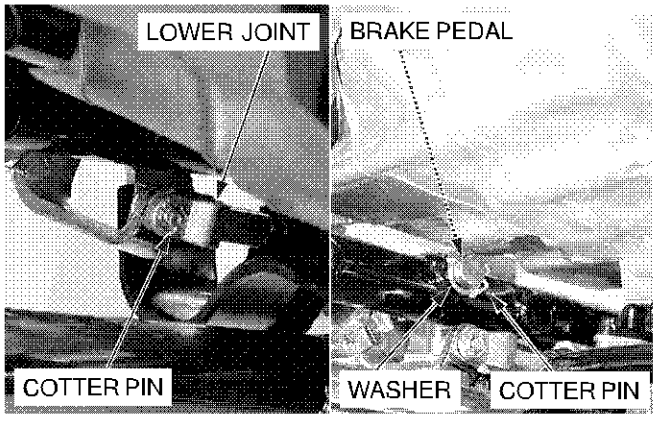
Remove the brake light switch return spring.
Remove the brake pedal return spring.



Remove the cross prate bolts.
Remove the main stap bolts, collar, step guard and main step.



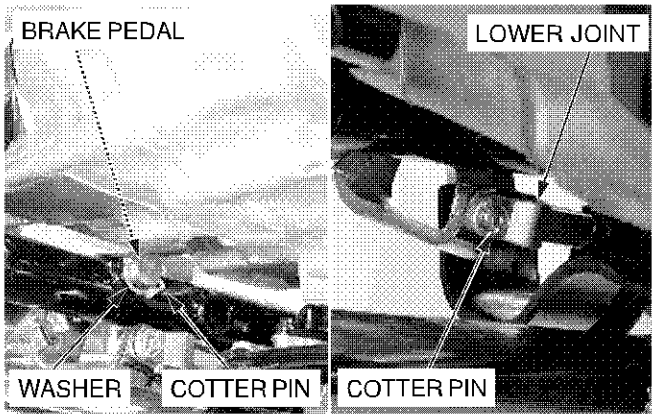
Remove the cotter pin from the lower joint.
Remove the cotter pin and washer from the brake pedal.
Remove the brake pedal.



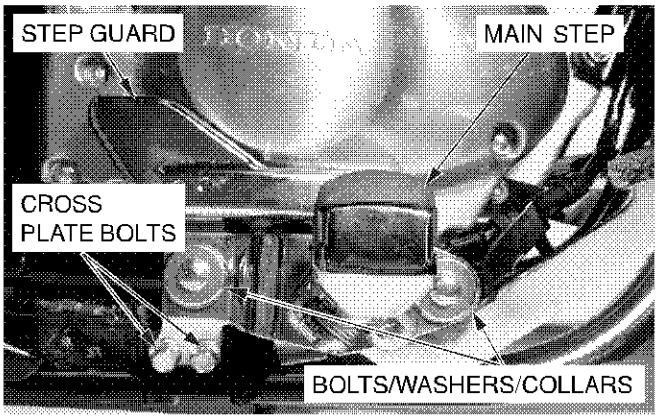
INSTALLATION

Apply grease to the brake pedal pivot.
Install the brake pedal to the frame.

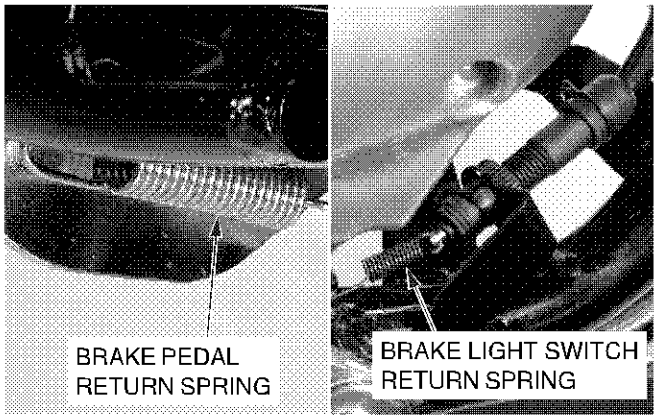
Install the washer and new cotter pin to the brake pedal pivot.
Install the lower joint and new cotter pin.



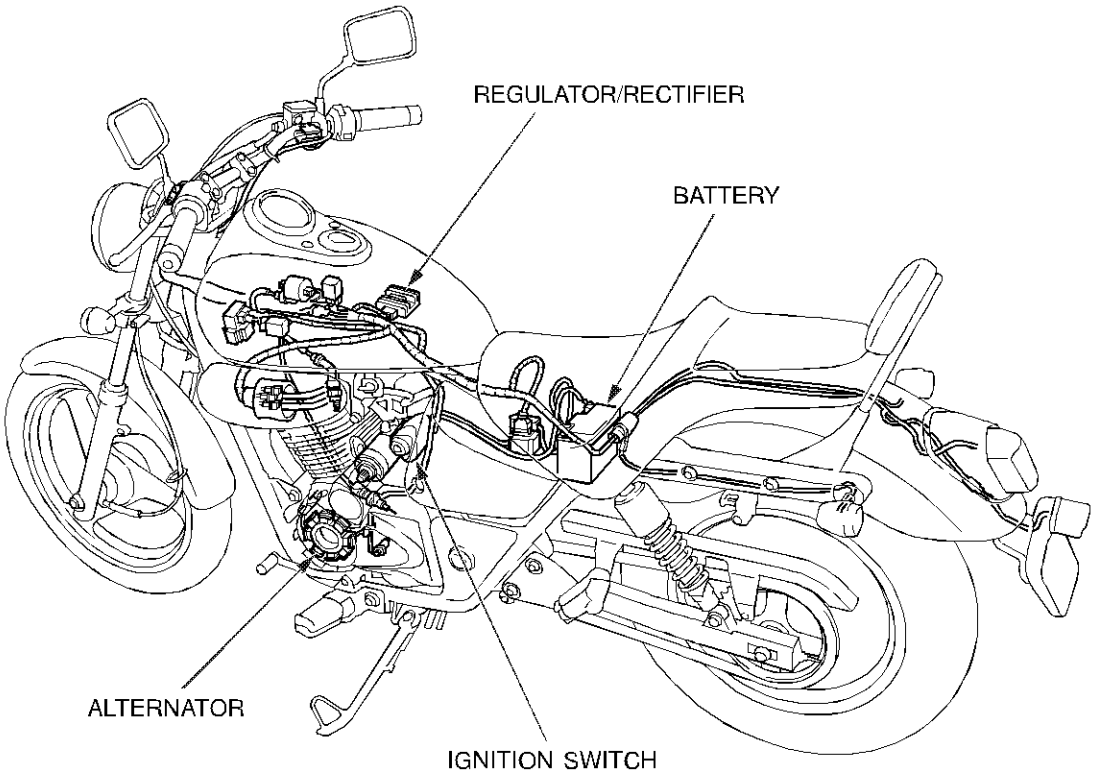
Install the step guard and right main step.
Install the bolts, washers, collars, and tighten it securely (page 6-11).
Install and tighten the cross plate bolts securely.

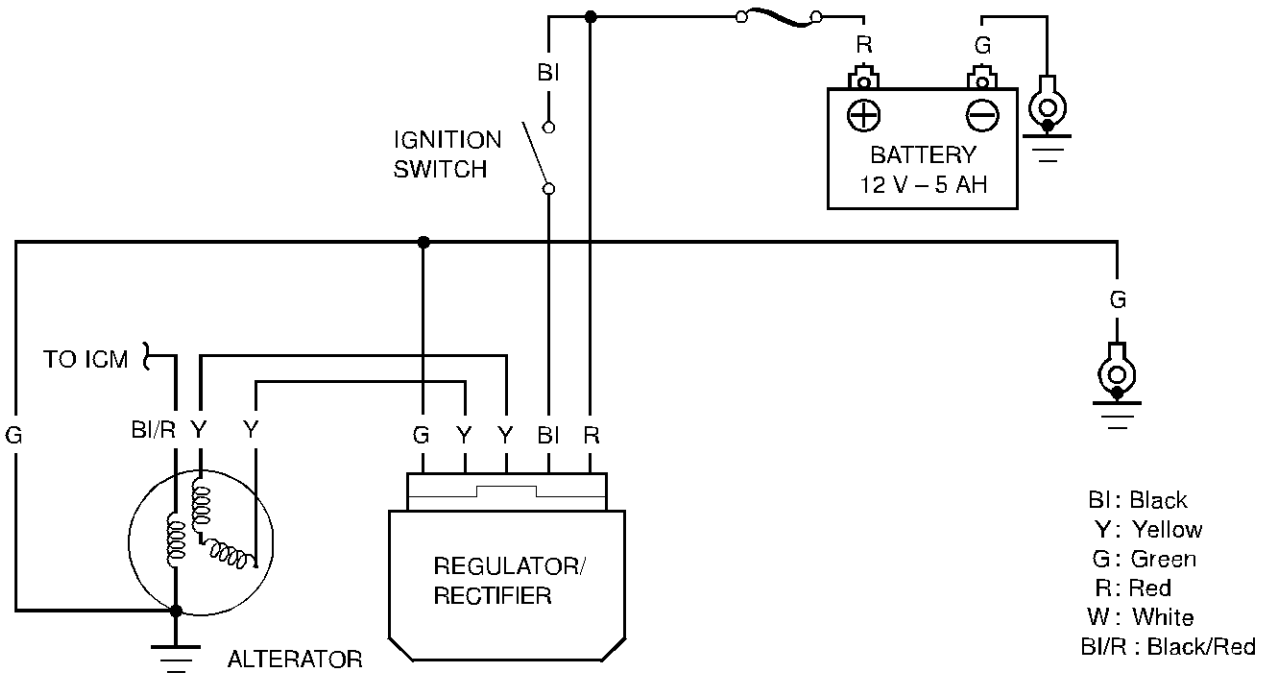


Install the brake pedal return spring.
Install the brake light switch return spring.



SYSTEM DIAGRAM





15. BATTERY/CHARGING SYSTEM

SERVICE INFORMATION

GENERAL

[redacted]

• 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.
• Electrolyte is poisonous.
– If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician.
• KEEP OUT OF REACH OF CHILDREN.

• Always turn off the ignition switch before disconnecting any electrical component.

CAUTION:
Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.

• For extended storage, remove the battery, give it a full charge, and store it in a cool, dry space. For maximum service life, charge the stored battery every two weeks.
• For a battery remaining in a stored motorcycle, disconnect the negative battery cable from the battery terminal.

CAUTION:

The battery caps should not be removed. Attemping to remove the sealing caps from the cells may damage the battery.

• The battery can be damaged if over charged or undercharged, or if left to discharge for long period. These same conditions contribute to shorting the "life span" of the battery. Even under normal use, the performance of the battery deteriorates after 2-3 years.
• Battery voltage may recover after battery charging, but under heavy load, battery voltage will drop quickly and eventually die out. For this reason, the charging system is often suspected to be the problem. Battery overcharge often results from problems in the battery itself, which may appear to be an overcharge symptom. If one of the battery cells is shorted and battery voltage does not increase, the regulator/rectifier supplies excess voltage to the battery. Under these conditions, the electrolyte level goes down quickly.
• Before troubleshooting the charging system, check for proper use and maintenance of the battery. Check if the battery is frequently under heavy load, such as having the headlight and taillight ON for long periods of time without riding the motorcycle.
• The battery will self-discharge when the motorcycle is not in use. For this reason, charge the battery every two weeks to prevent sulfation from forming.

- Filling a new battery with electrolyte will produce some voltage, but in order to achieve its maximum performance, always charge the battery. Also, the battery life is lengthened when it is initial-charged.
- When checking the charging system, always follow the steps in the troubleshooting flow chart (page 15-3).

Battery charging

This model comes with a maintenance-free (MF) battery. Remember the following about MF batteries.

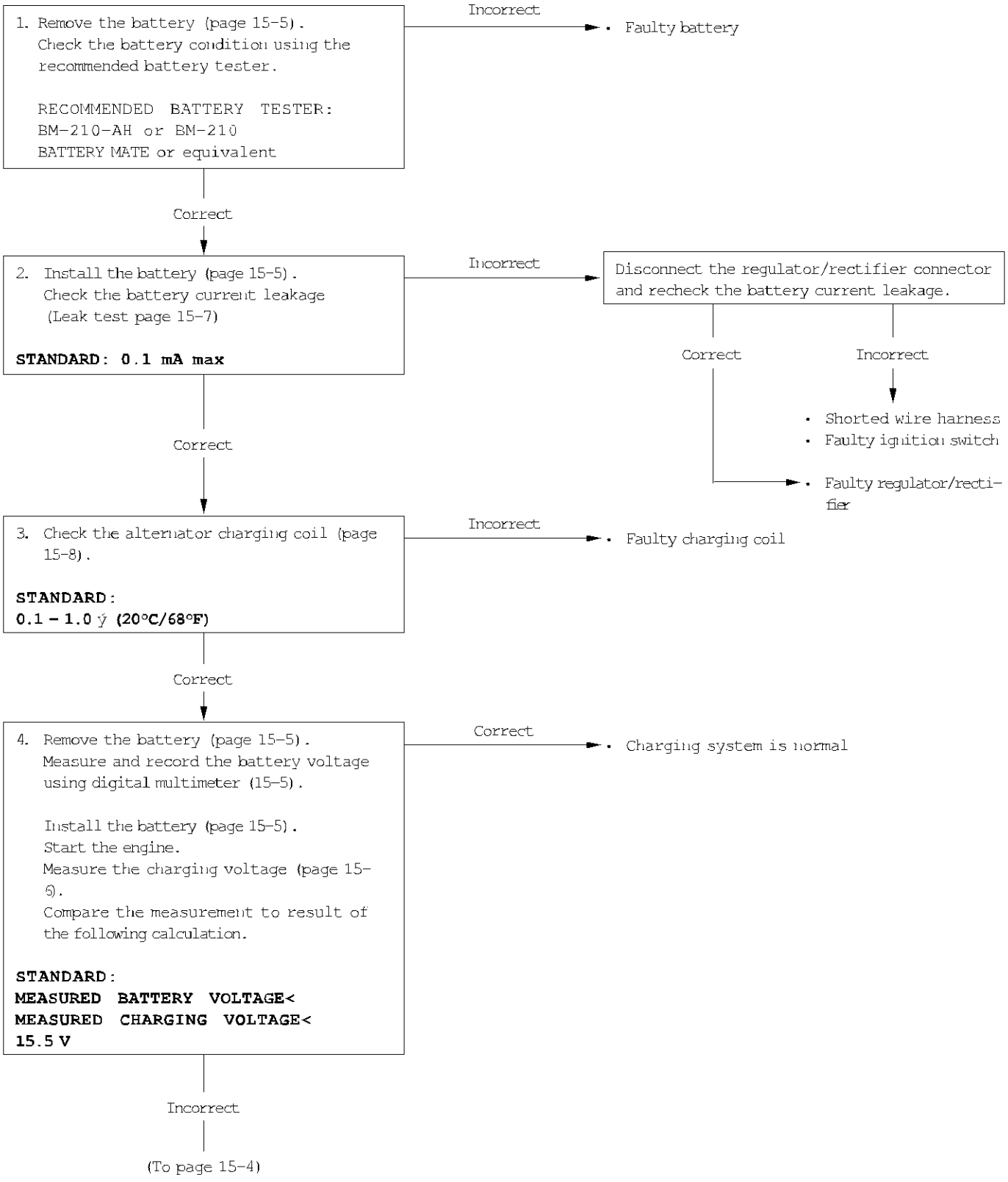
— Use only the electrolyte that comes with the battery
— Use all of the electrolyte
— Seal the battery properly
— Never open the seals again

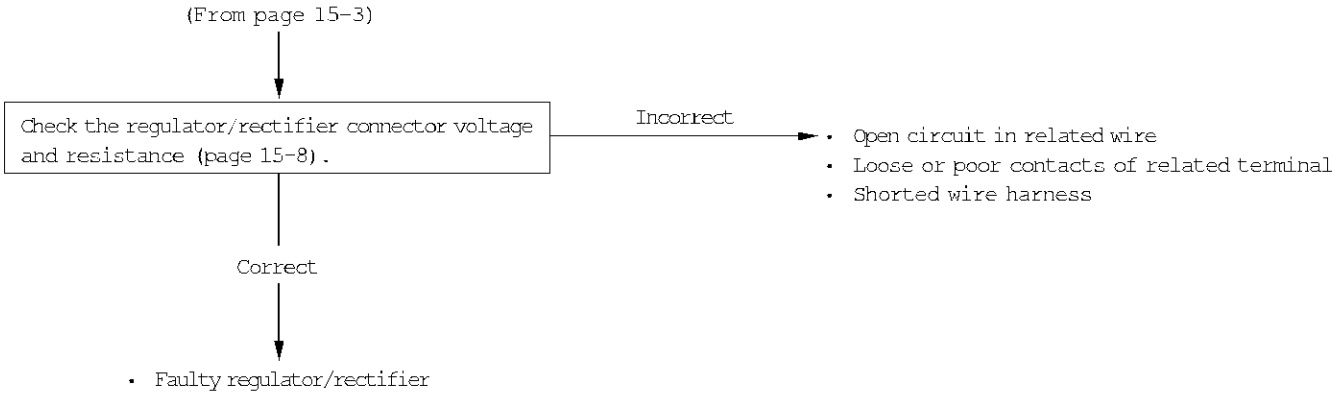
SPECIFICATIONS

ITEM			SPECIFICATIONS
Battery	Capacity		12 V - 5 Ah
	Current leakage		0.1 mA max.
	Voltage (20°C/68°F)	Fully charged	Above "UNDECIDED"
		Needs charging	Below "UNDECIDED"
	Charging current	Normal	0.6 A/5 - 10h
		Quick	3.0 A/0.5h
Alternator	Capacity		130 W/5000 min^{-1} (rpm)
	Charging coil resistance (20°C/68°F)		0.1 - 1.0 ý

TROUBLESHOOTING

BATTERY IS DAMAGED OR WEAK



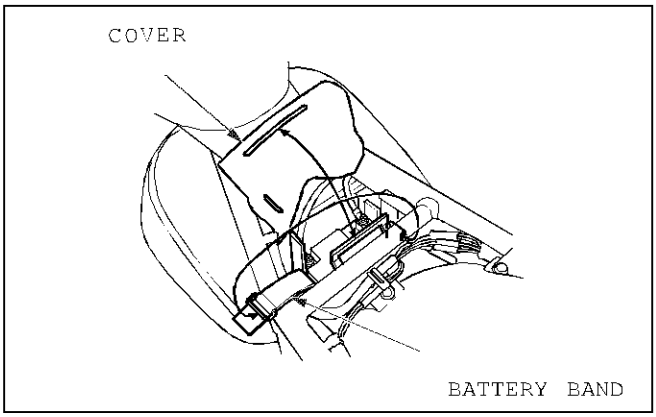

(From page 15-3)
Check the regulator/rectifier connector voltage and resistance (page 15-8).
Incorrect
• Open circuit in related wire
• Loose or poor contacts of related terminal
• Shorted wire harness
Correct
• Faulty regulator/rectifier

BATTERY

REMOVAL

Remove the seat (page 2-2).

Open the cover.
Remove the battery band.
Disconnect the negative cable connector first and then the positive cable connector, and then remove the battery/battery box.



INSTALLATION

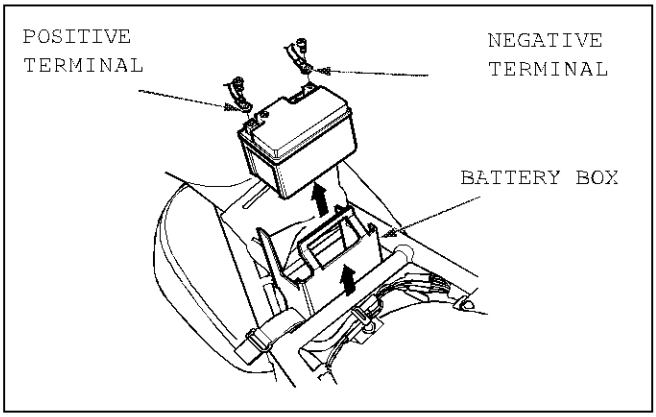
Install the battery in the reverse order of removal with the proper wiring as shown.

NOTE:

Connect the positive terminal first and then the negative cable.

After installing the battery, coat the terminals with clean grease.

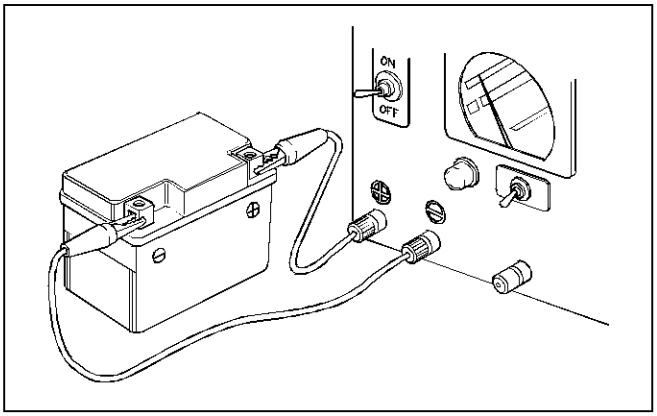
Install the seat (page 2-2).



INSPECTION

Measure the battery voltage using a commercially available digital multimetar.

VOLTAGE: Fully charged: " UNDECIDED" (20°C/68°F)
Under charged: " UNDECIDED" (20°C/68°F)



CHARGING

Remove the battery (page 15-6).
Connect the charger positive (+) cable to the battery positive (+) terminal.
Connect the charger negative (-) cable to the battery negative (-) terminal.

	Normal	Quick
Charging current	0.6 A	3.0 A
Charging time	5 - 10 h	0.5 h

⚠ WARNING

- ***The battery gives off explosive gases; keep sparks, flames, and cigarettes away. Provide adequate ventilation when charging.***
- ***Turn power ON/OFF at the charger, not at the battery terminal.***

CAUTION:

- ***Quick-charging should only be done in an emergency; slow charging is preferred.***
- ***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.***

CHARGING SYSTEM INSPECTION

CHARGING VOLTAGE INSPECTION

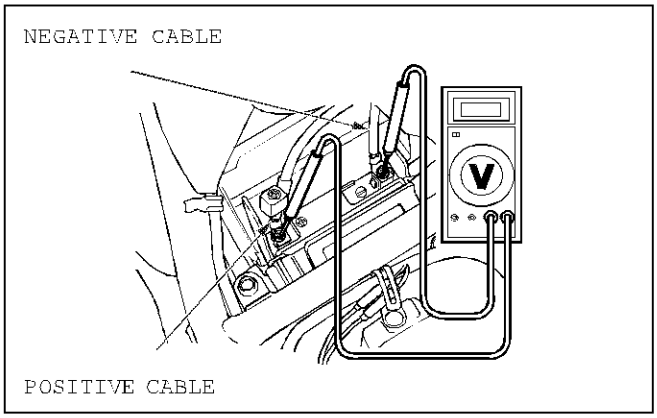
NOTE:

- When inspecting the charging system, check the system components and lines step-by-step according to the trouble-shooting on page 15-3.
- Measuring circuits with a large capacity that exceeds the capacity of the tester may cause damage to the tester. Before starting each test, set the tester at the highest capacity range first, then gradually lower the capacity ranges until you have the correct range.
- When measuring small capacity circuits, keep the ignition switch off. If the switch is suddenly turned on during a test, the tester fuse may blow.

⚠ WARNING

If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

Warm up the engine to normal operating temperature.
Stop the engine, and connect the multimeter as shown.



CAUTION:

- ***To prevent short, make absolutely certain which are the positive and negative terminals or cable.***
- ***Do not disconnect the battery or any cable in the charging system without first switching off the ignition switch. Failure to follow this precaution can damage the tester or electrical components.***

Restart the engine.
With the headlight on Hi beam, measure the voltage on the multimeter when the engine runs at 5,000 rpm.

STANDARD:
Measured battery voltage (page 15-5) <
Measured charging voltage (see above) < 15.5V
at 5,000 rpm

CURRENT LEAKAGE INSPECTION

Turn the ignition switch off and disconnect the battery negative cable from the battery.
Connect the ammeter (+) probe to the ground cable and the ammeter (-) probe to the battery (-) terminal.

With the ignition switch off, check for current leakage.

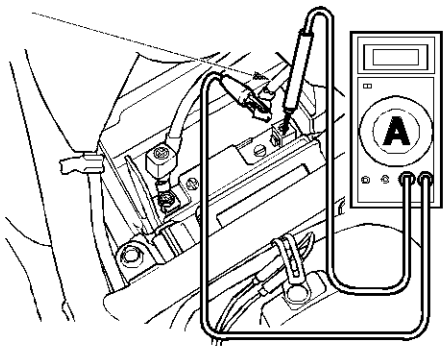
NOTE:

- When measuring current using a tester, set it to a high range, and then bring the range down to an appropriate level. Current flow higher than the range selected may blow out the fuse in the tester.
- While measuring current, do not turn the ignition on. A sudden surge of current may blow out the fuse in the tester.

SPECIFIED CURRENT LEAKAGE: 0.1 mA max.

If current leakage exceeds the specified value, a shorted circuit is likely.
Locate the short by disconnecting connections one by one and measuring the current.

GROUND CABLE



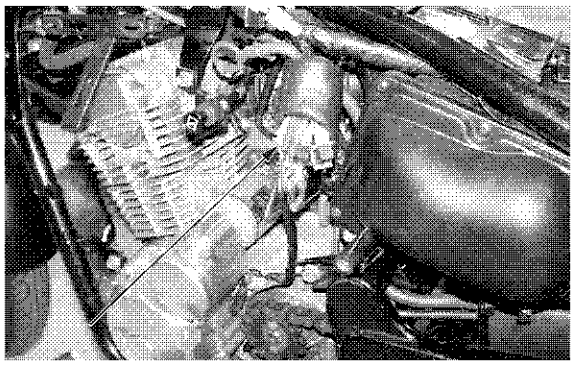
ALTERNATOR INSPECTION

NOTE:

It is not necessary to remove the stator coil to make this test.

Remove the left front side cover (page 2-3).

Disconnect the alternator 4P connector.

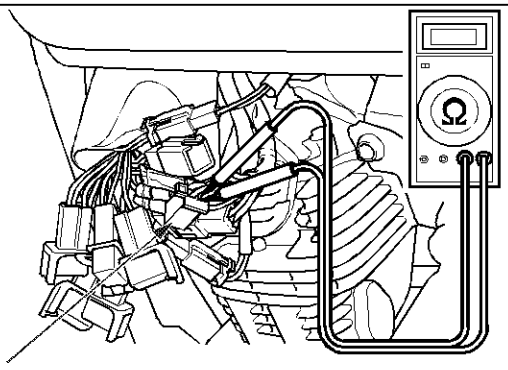


ALTERNATOR 4P CONNECTOR

Check the resistance between following terminals.

STANDARD:
Charging coil (Yellow - Yellow):
0.1 - 1.0 (at 20°C/68°F)

Replace the alternator stator if readings are far beyond the standard.
Refer to section 10 for stator removal.



CONNECTOR

REGULATOR/RECTIFIER

SYSTEM INSPECTION

Remove the front right side cover (page 2-3).

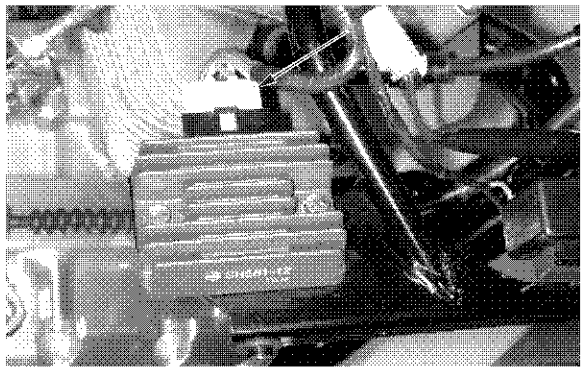
Remove the regulator/rectifier 5P connector, and check it for loose contact or corroded terminals.

If the regulated voltage reading (page 15-7) is out of the specification, measure the voltage between connector terminals (wire harness side) as follows:

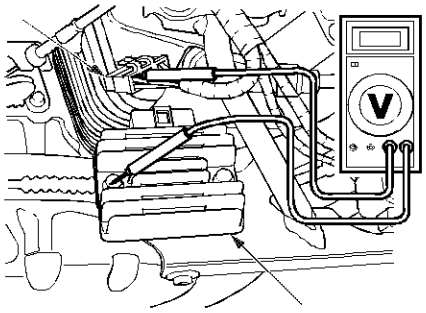
Item	Terminal	Specification
Battery charging line	Red (+) and ground (-)	Battery voltage should register
Charging coil line	Yellow and Yellow Green and	0.1 - 1.0 ý (at 20°C/68°F)
Ground line	Ground	Continuity should exist

If all components of the charging system are normal and there are no loose connections at the regulator/rectifier connectors, replace the regulator/rectifier unit.

REGULATOR/
RECTIFIER 5P



CONNECTOR



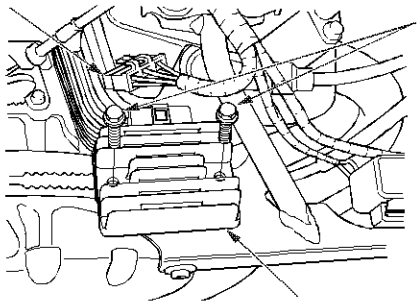
REGULATOR/RECTIFIER

REMOVAL/INSTALLATION

Remove the regulator/rectifier unit mounting bolts.
Disconnect the connector and remove the regulator/rectifier unit.

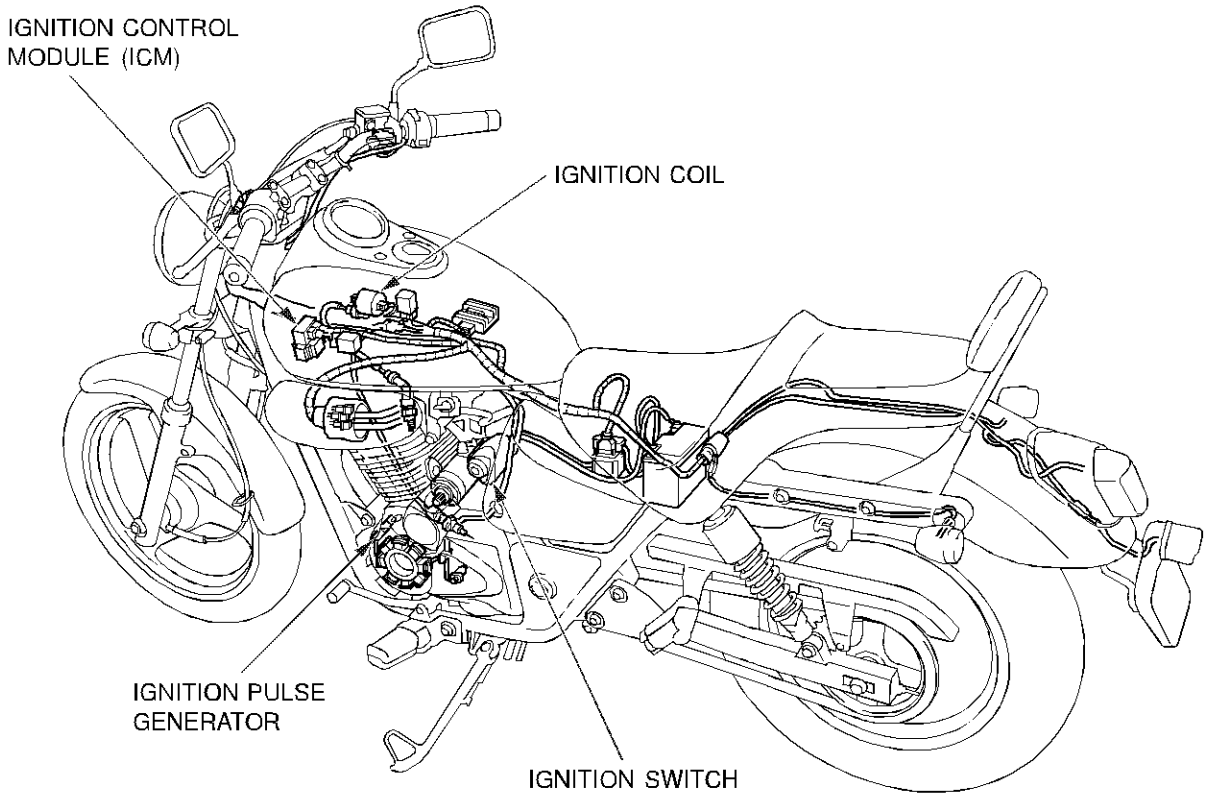
Install the regulator/rectifier unit in the reverse order of removal.

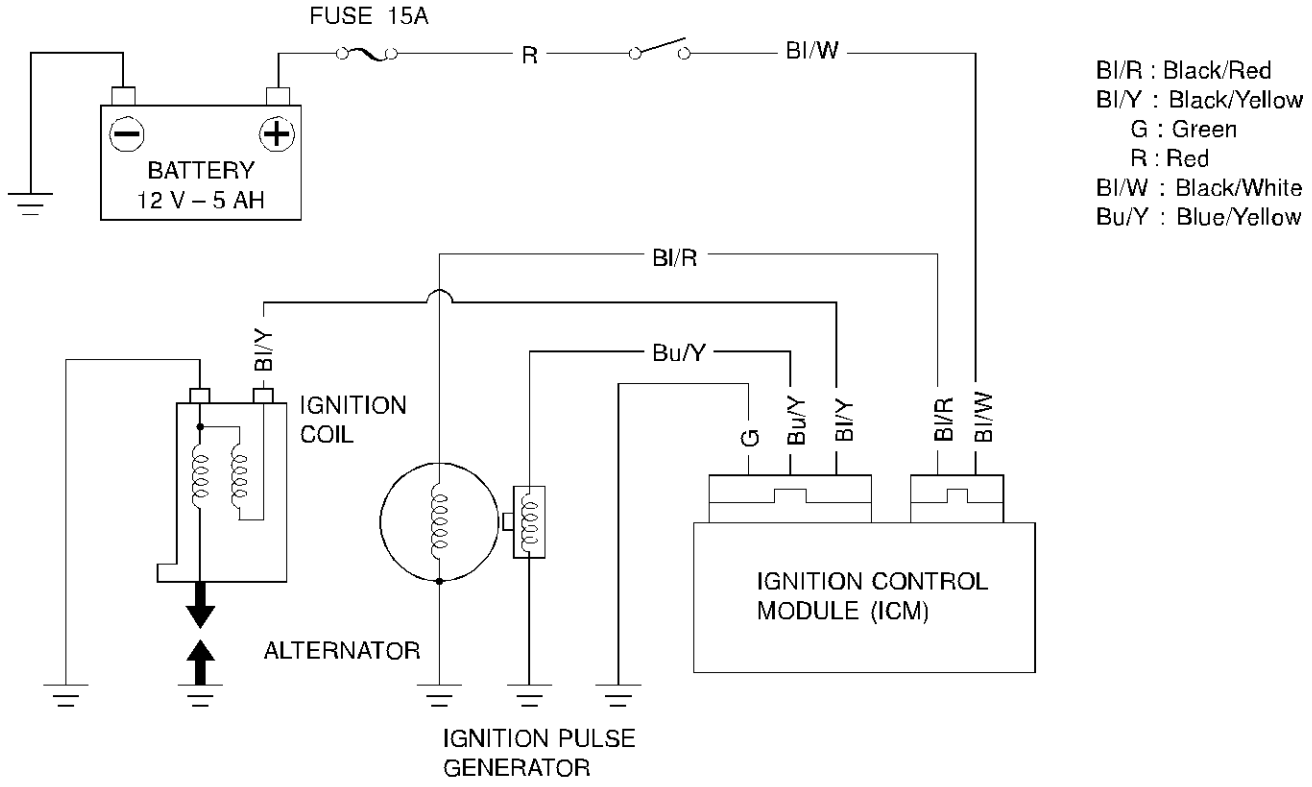
CONNECTOR BOLTS



REGULATOR/RECTIFIER

SYSTEM DIAGRAM





SERVICE INFORMATION

GENERAL

CAUTION:

Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.

- When servicing the ignition system, always follow the steps in the troubleshooting on page 16-2.
- The CDI ignition system uses an electrically controlled ignition timing system. No adjustments can be made to the ignition timing.
- The ignition control module (ICM) may be damaged if dropped. Also, if the connector is disconnected when current is flowing, the excessive voltage may damage the ICM. Always turn off the ignition switch before servicing.
- A faulty ignition system is often related to poor connections. Check those connections before proceeding.
- Make sure the battery is adequately charged. A weak battery may be unable to turn the starter motor quickly enough, or adequate ignition current may not be supplied.
- Use spark plug of the correct heat range. Using spark plug with an incorrect heat range can damage the engine.
- For ignition switch inspection, see section 18.
- For ignition pulse generator (alternator starter) removal/installation, see section 10.

SPECIFICATIONS

ITEM		SPECIFICATIONS	
Spark plug		NGK	DENSO
	Standard	DPR8EA-9	X24EPR-U9
Ignition primary peak voltage		100 V minimum	
Exciter coil peak voltage		100 V minimum	
Ignition pulse generator peak voltage		0.7 V minimum	
Ignition timing ("F" mark)		10° BTDC at idle	

TOOLS

Imrie diagnostic tester (model 625) or Peak voltage adaptor	07HGJ – 0020100 with Commercially available digital multitester (impedance 10 MΩ/DCV minimum)

Right side only

TROUBLESHOOTING

- Inspect the following before diagnosing the system.
  — Faulty spark plug
  — Loose spark plug cap or spark plug wire connections
  — Water got into the spark plug cap (Leaking the ignition coil secondary voltage)
- If there is no spark at cylinder, temporarily exchange the ignition coil with the other good one and perform the spark test. If there is spark, the exchanged ignition coil is faulty.

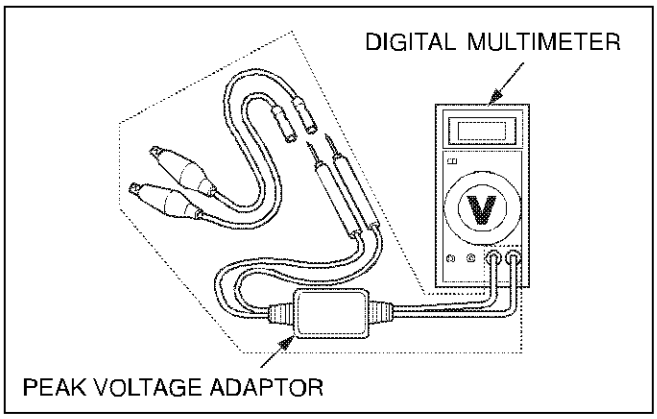
No spark at spark plug

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 connections.) 2. The multimeter impedance is too low; below 10 MΩ/DCV. 3. Cranking speed is too low. 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 ignition system. 6. Faulty exciter coil (Measure the peak voltage). 7. Faulty ignition control module (ICM) (in case when above No. 1 thru. 6 are normal.)
	No peak voltage	1. Incorrect peak voltage adaptor connections. 2. Faulty ignition switch or engine stop switch. 3. Loose or poorly connected ICM connectors. 4. Open circuit or poor connection in ground wire of the ICM. 5. Faulty peak voltage adaptor. 6. Faulty exciter coil (Measure the peak voltage). 7. Faulty ignition pulse generator (Measure the peak voltage). 8. Faulty ICM (in cases when above No. 1 – 7 are normal).
	Peak voltage is normal, but no spark jumps at plug	1. Faulty spark plug or leaking ignition coil secondary current ampere. 2. Faulty ignition coil.
Exciter coil	Low peak voltage	1. Multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too low. • Operating force of the kickstarter is weak. 3. The sampling timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the specifications at least once). 4. Faulty exciter coil (in cases when above No. 1 – 3 are normal).
	No peak voltage	1. Faulty peak voltage adaptor 2. Faulty exciter coil
Ignition pulse generator	Low peak voltage	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too slow. • Operating force of the kickstarter is weak. 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 ignition pulse generator (in case when above No. 1 thru. 3 are normal.)
	No peak voltage	1. Faulty peak voltage adaptor. 2. Faulty ignition pulse generator.

IGNITION SYSTEM INSPECTION

NOTE:

- If not spark jumps at the plug, check all connections for loose or poor contact before measuring each peak voltage.
- Use a commercially available digital multimeter (impedance 10 MΩ/DCV minimum).
- The display value differs depending upon the internal impedance of the multimeter.
- If the Imrie diagnostic tester (model 625) is used, follow the manufacturer's instructions.



Connect the peak voltage adaptor to the digital multimeter.

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

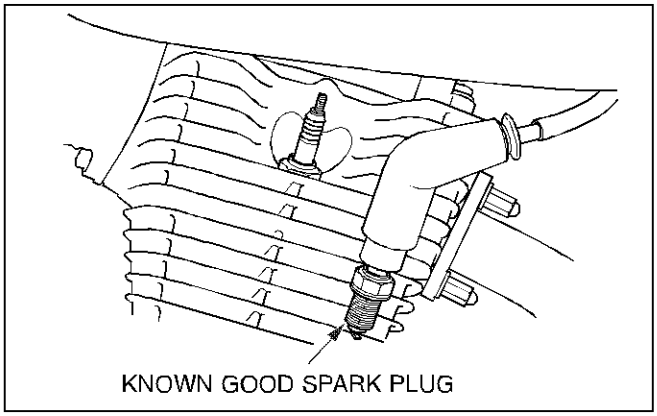
IGNITION PRIMARY PEAK VOLTAGE

NOTE:

- Check all system connections before this inspection. Poor connected connectors can cause incorrect readings.
- Check that the cylinder compression is normal and check that the spark plug is installed correctly in the cylinder head.

Disconnect the spark plug cap from the spark plug (page3-7).

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



With the connector connected, connect the peak voltage adaptor probes to the ignition coil primary terminal and ground.

CONNECTION:
Black/yellow wire terminal (–) — body ground (+)

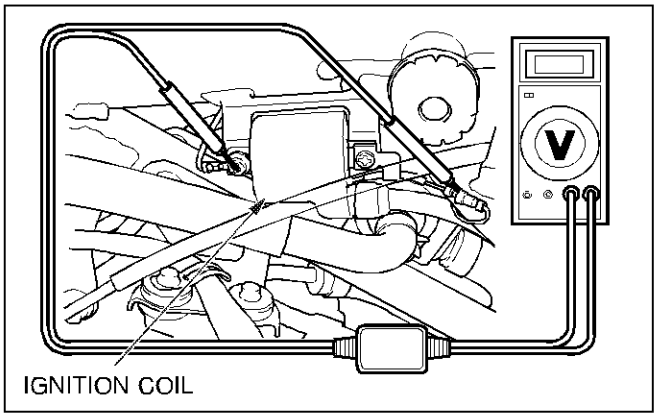
Turn the ignition switch ON.
Crank the engine with the kickstarter and read the ignition coil primary voltage.

PEAK VOLTAGE: 100 V minimum

⚠ WARNING

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

If the peak voltage is lower than the standard value, follow the checks described in the troubleshooting on page 16-2.



EXCITER COIL PEAK VOLTAGE

Remove the ignition control module (ICM) (page 16-6).
Disconnect the ICM 4P and 2P connectors.

Connect the Imrie tester or peak voltage adaptor (+) probe to the exciter coil (Black/Red) wire terminal of the 2P connector, and the (–) probe to the body ground.

TOOL:
Imrie diagnostic tester (model 625) or
Peak voltage adapter 07HGJ – 0020100 with
Commercially available digital multimeter
(impedance 10 MΩ/DCV minimum)

CONNECTION:
Black/Red terminal (+) – Body ground (–)

Crank the engine with the starter switch and read exciter coil peak voltage.

PEAK VOLTAGE: 100 V minimum

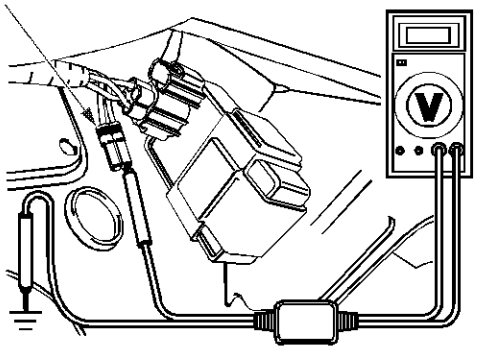
⚠ WARNING

To avoid possible electrical shock during voltage measurements, do not touch test probe metal parts.

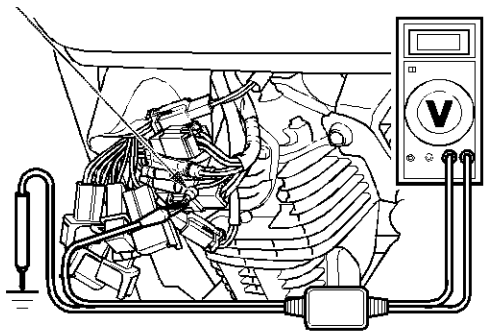
If the peak voltage measured at the ICM connector is abnormal, disconnect the exciter coil line connector (Black/Red) and connect the adaptor probes to the exciter coil terminal and body ground.
In the same manner as at the ICM connector, measure the peak voltage and compare it to the voltage measured at the ICM connector.

- If the peak voltage measured at the ICM is abnormal and the one measured at the exciter coil is normal. The wire harness has an open circuit or loose connections.
- If both peak voltages measure are abnormal, check each item in the troubleshooting chart. If all items are normal, the exciter coil is faulty.

ICM 2P CONNECTOR



EXCITER COIL WIRE CONNECTOR



IGNITION PULSE GENERATOR PEAK VOLTAGE

NOTE:

Check that the cylinder compression is normal and the spark plug is installed correctly in the cylinder head.

Disconnect the ignition control module (ICM) connector (page 16-6).
Connect the peak voltage adaptor (+) probe to the ignition pulse generator (blue/yellow) wire terminal of the 4P connector, and the (-) probe to the body ground.

CONNECTION:
Blue/Yellow wire terminal (+) — Body ground (–)

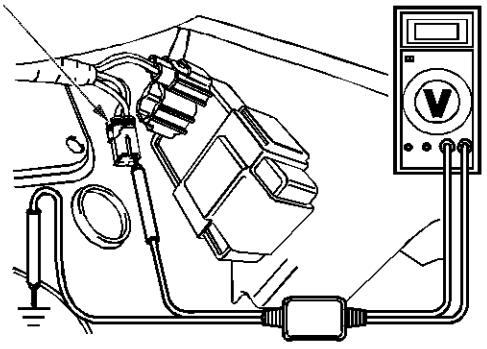
Turn the ignition switch ON.
Crank the engine with the starter switch and read the peak voltage.

PEAK VOLTAGE: 0.7 V minimum

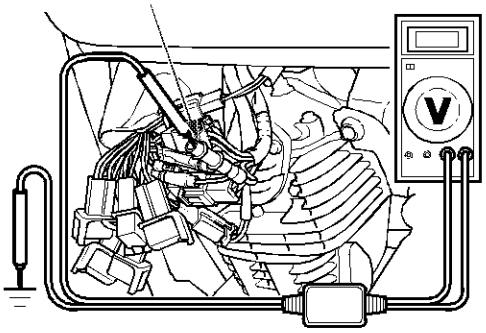
If the peak voltage measured at the ICM connector is abnormal, disconnect the ignition pulse generator connector and connect the adaptor probles to the ignition pulse generator side connector.
In the same manner as the ICM connector, measure the peak voltage and compare it to the voltage measured at the ICM connector.

- If the peak voltage measured at the ICM connector is abnomal and the one measured at the ignition pulse generator connector is normal, the blue/yellow wire has an open or short circuit, or loose connections.
- If both peak voltages are abnormal, follow the checks described in the troubleshooting on page 16-2.

ICM 4P CONNECTOR



IGNITION PULSE GENERATOR WIRE CONNECTOR



IGNITION TIMING

⚠ WARNING

When the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in a closed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

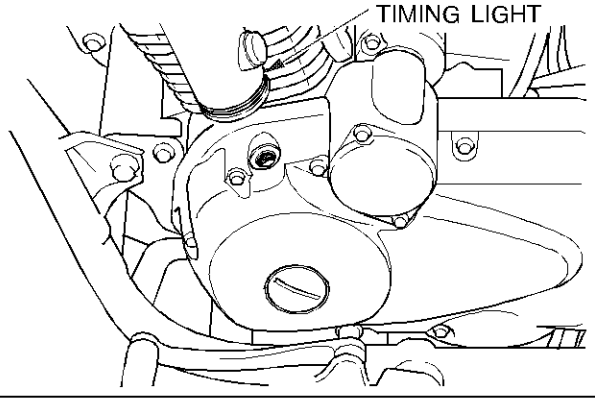
Warm up the engine to the normal operating temperature.

Remove the timing hole cap (page 3-8).
Connect the timing light and a tachometer.

NOTE:

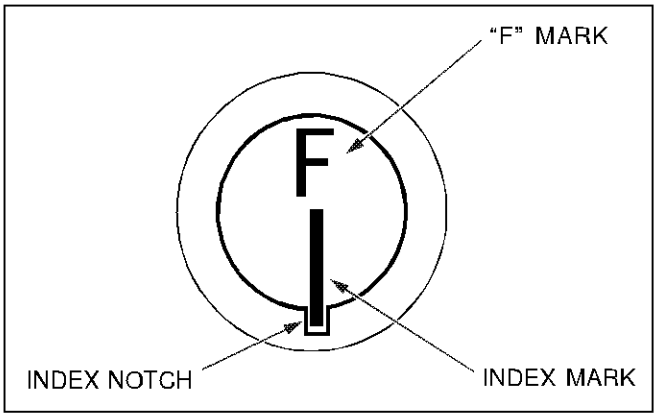
Read the manufacturer's instructions for the timing light and tachometer.

TIMING LIGHT



The ignition timing is correct if the "F" mark and index line on the flywheel aligns with the index notch of the crankcase at idle.

Install the timing hole cap (page 3-10) .



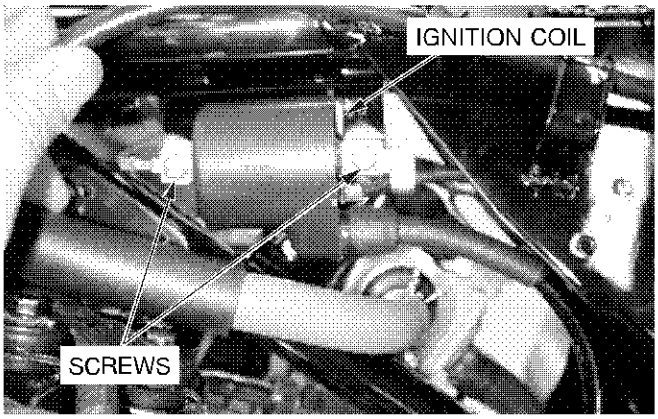
IGNITION COIL

REMOVAL/INSTALLATION

Remove the fuel tank (page 2-5).

Remove the spark plug cap from the spark plug (page3-7).
Remove the screws wire connectors and ignition coil from the frame.

Install the ignition coil in the reverse order of removal.

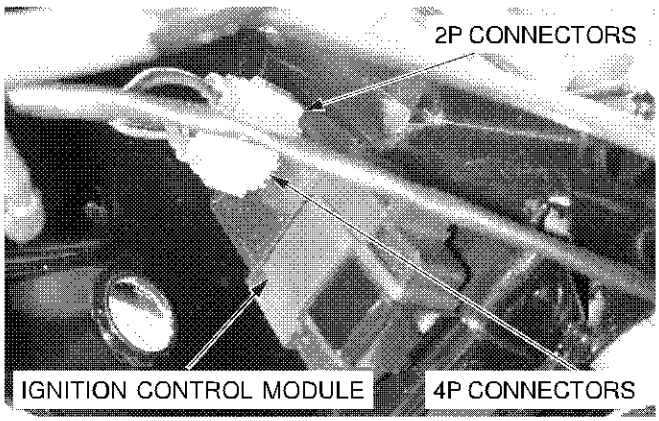


IGNITION CONTROL MODULE (ICM)

REMOVAL/INSTALLATION

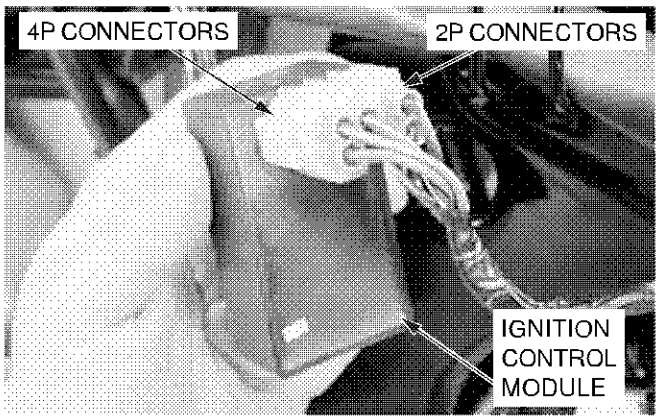
Remove the fuel tank (page 2-5).

Remove the ignition control module (ICM) from the stay of the frame inner side.

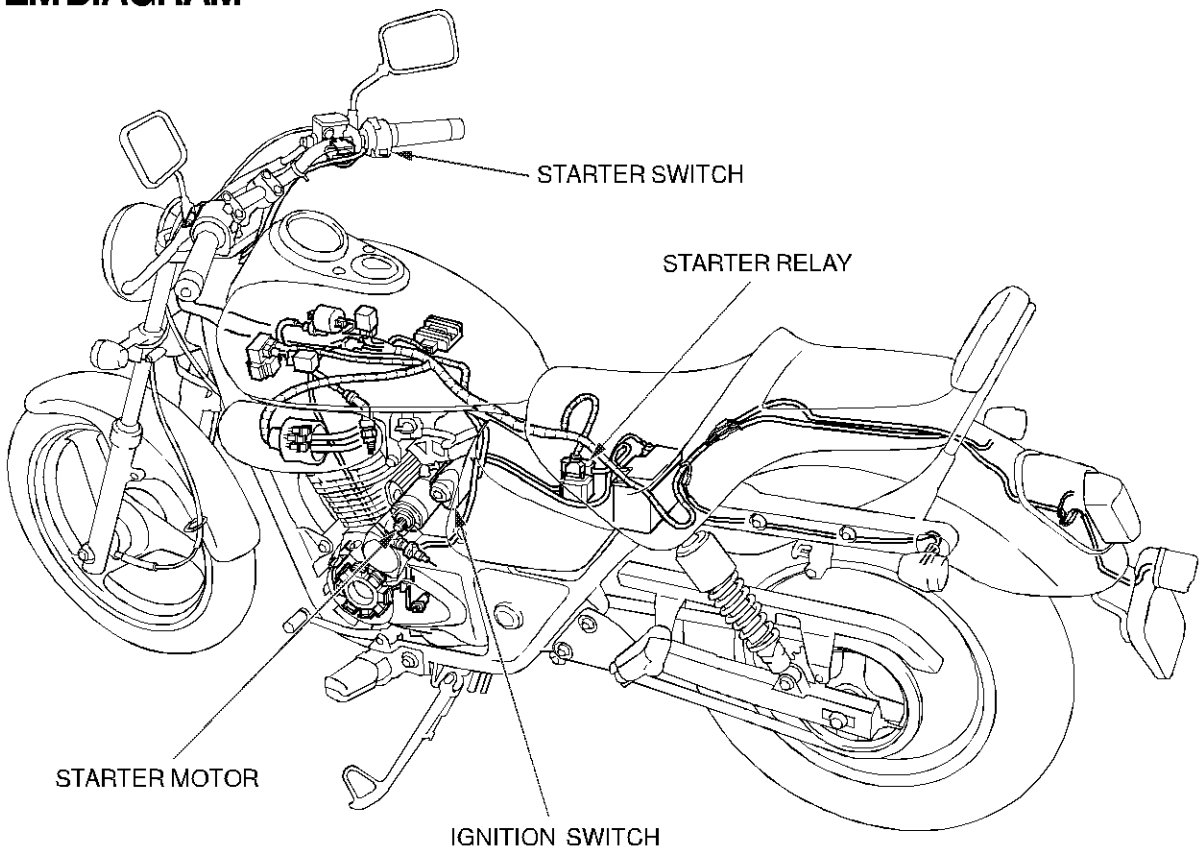


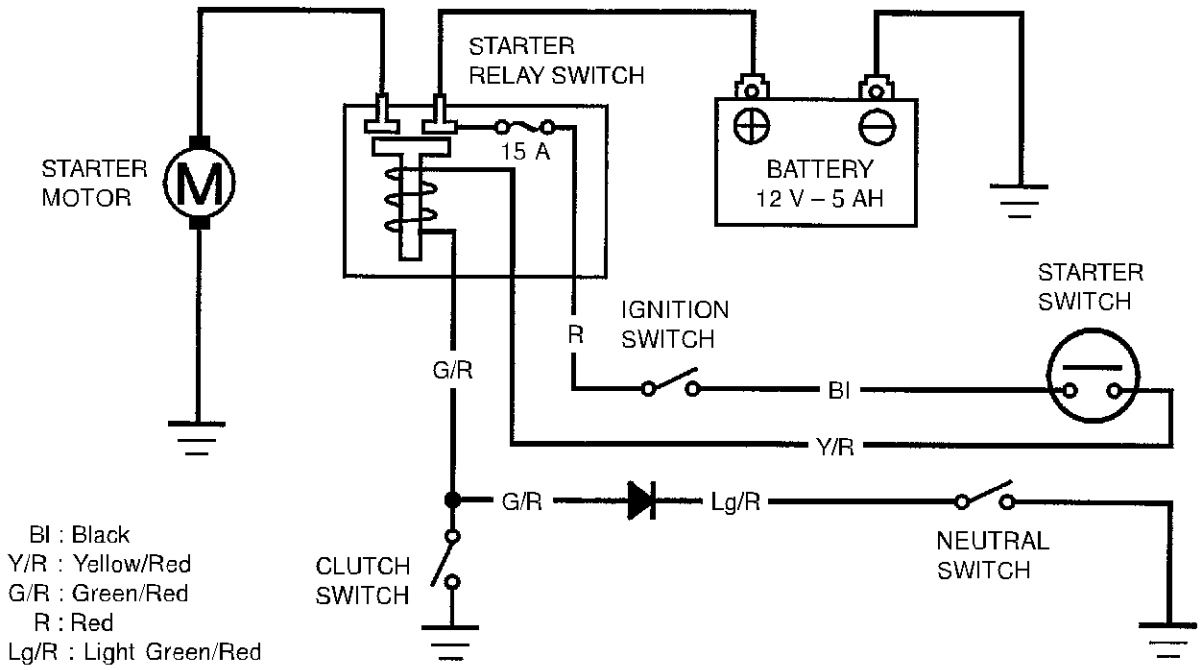
Disconnect the 4P and 2P connecter.

Install the ICM in the reverse order of removal.



SYSTEM DIAGRAM





SERVICE INFORMATION

GENERAL

- The starter motor can be removed with the engine in the frame.
- For the starter drive and driven gear removal/installation, see section 10.
- See section 18 for starter switch and ignition switch inspection.
- A weak battery may be unable to turn the starter motor quickly enough, or supply adequate ignition current.
- If the current is kept flowing through the starter motor to turn it while the engine is not cranking over, the starter motor may be damaged.

SPECIFICATION

Unit: mm (in)

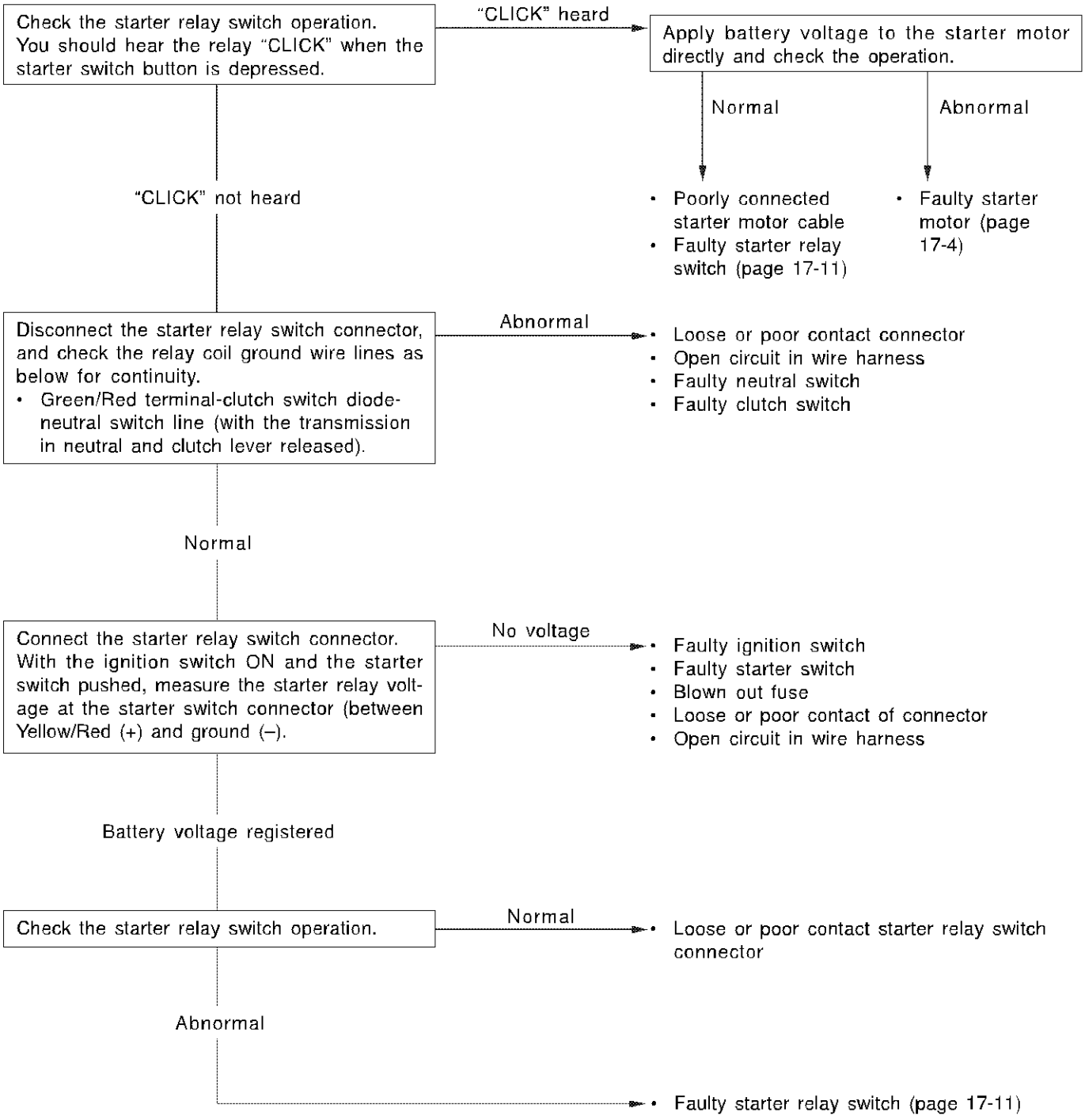
ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length	12.0 (0.5)	8.5 (0.3)

Right side only

TROUBLESHOOTING

Starter motor does not turn

- Check for a blown out fuse before servicing.
- Make sure the battery is fully charged and in good condition.



Starter motor turns engine slowly
- Low battery voltage
- Poorly connected battery terminal cable
- Poorly connected starter motor cable
- Faulty starter motor
- Poor connected battery ground cable

Starter motor turns, but engine does not turn
- Starter motor is running backwards
  — Case assembled improperly
  — Terminals connected improperly
- Faulty starter pinion
- Damaged or faulty starter drive gear

Starter relay switch "Clicks", but engine does not turn over
- Crankshaft does not turn due to engine problems

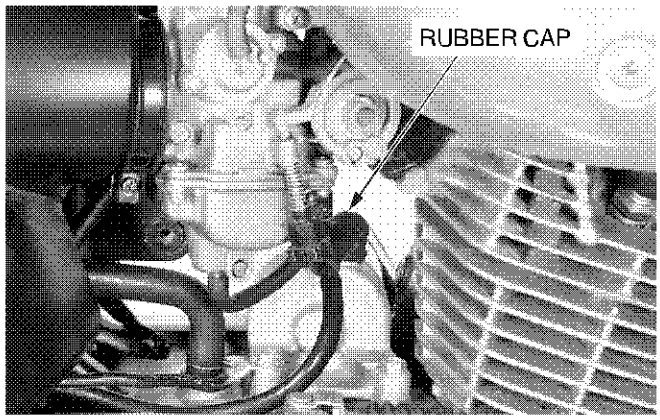
STARTER MOTOR

REMOVAL

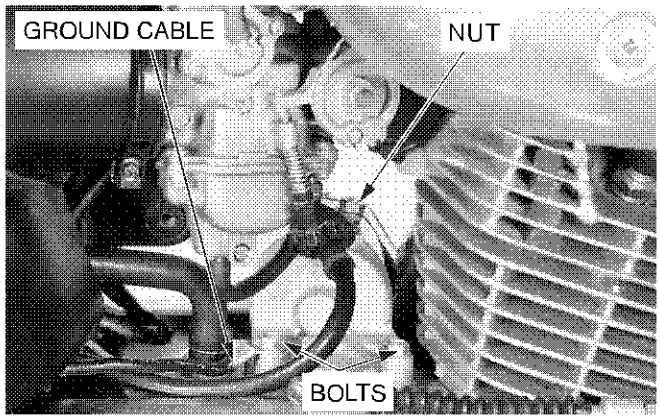
⚠ WARNING

With the ignition switch OFF, remove the negative cable at the battery before servicing the starter motor.

Remove the rubber cap.



Remove starter motor cable nut.
Remove the bolts and ground cable.

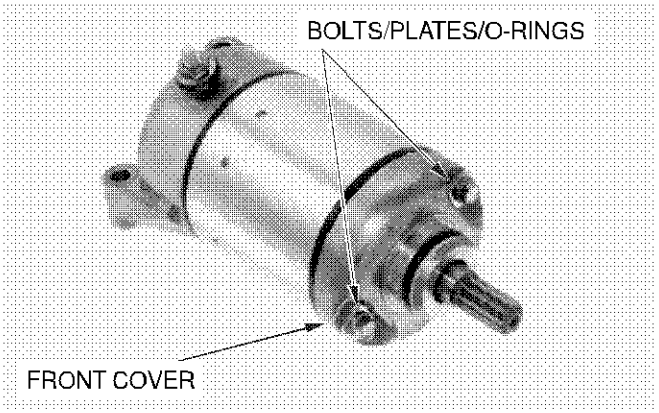


DISASSEMBLY

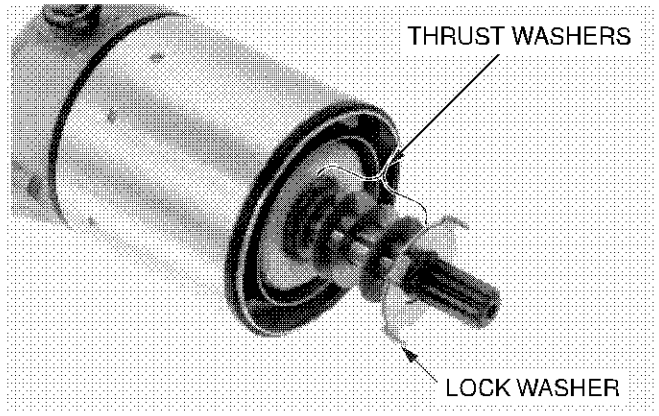
NOTE:

Record the location and number of shims and washers.

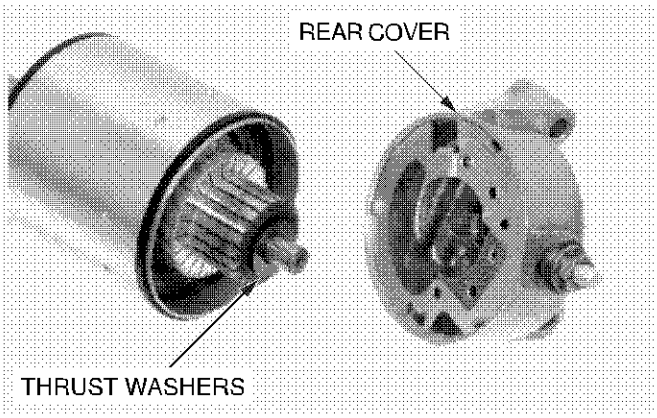
Remove the bolts, set plates and O-rings.
Remove the front cover.



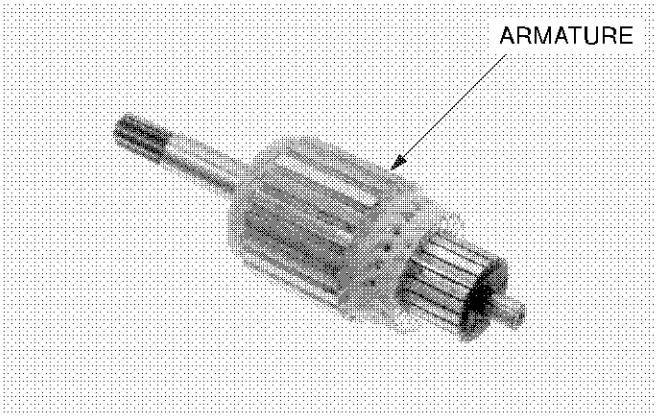
Remove the lock washer and thrust washers.



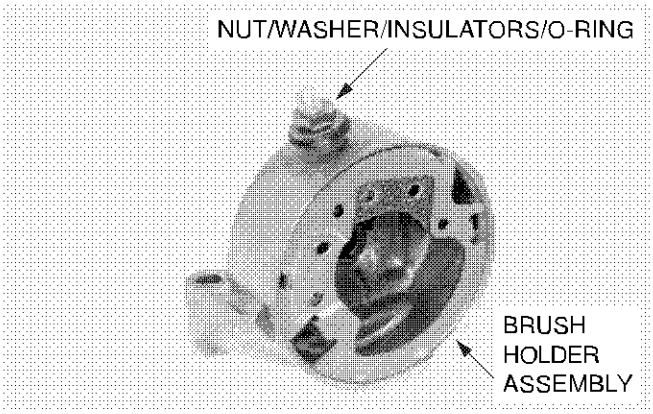
Remove the rear cover.
Remove the thrust washers.



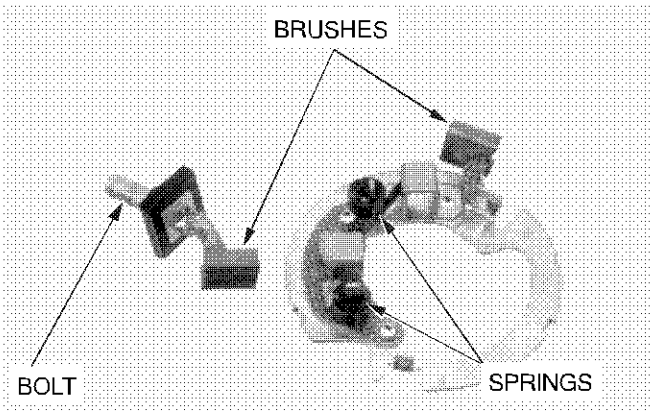
Remove the armature.



Remove the terminal nut.
Remove the washer, insulators and O-ring.
Remove the brush holder assembly.



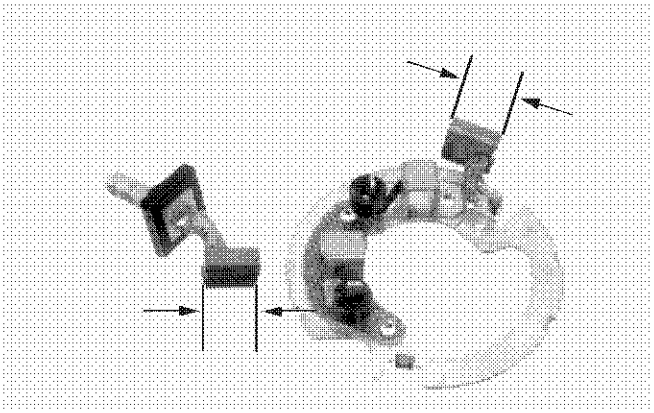
BRUSH HOLDER DISASSEMBLY
Remove the terminal bolt stopper, terminal bolt, motor brushes and brush springs.



INSPECTION

Measure the each brush length.

SERVICE LIMIT: 8.5 mm (0.33 in)

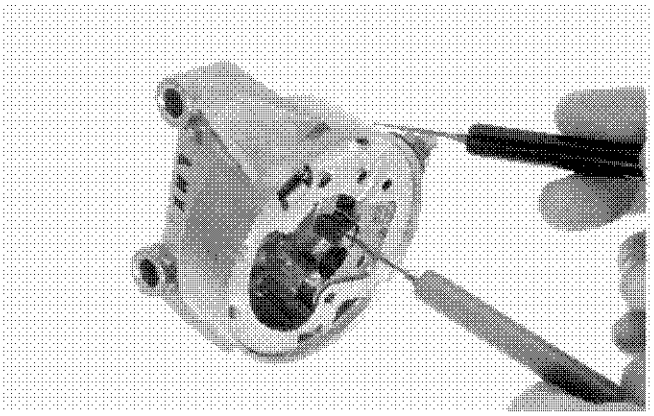


Check for continuity between starter motor terminal and positive brush.

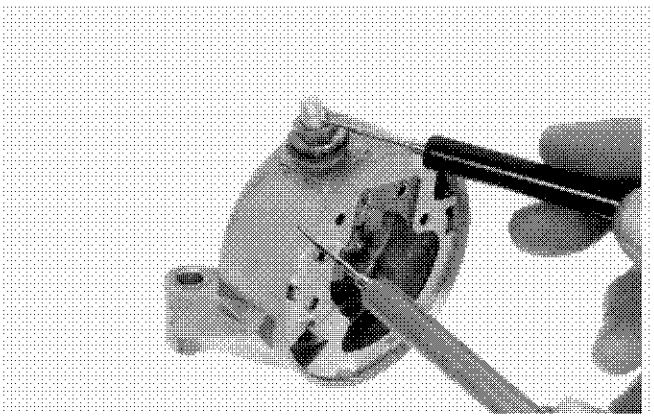
There should be continuity.

Check for continuity between starter motor terminal and starter motor case.

There should be no continuity.



Check for continuity between the rear cover and the brush wire.
There should be no continuity.



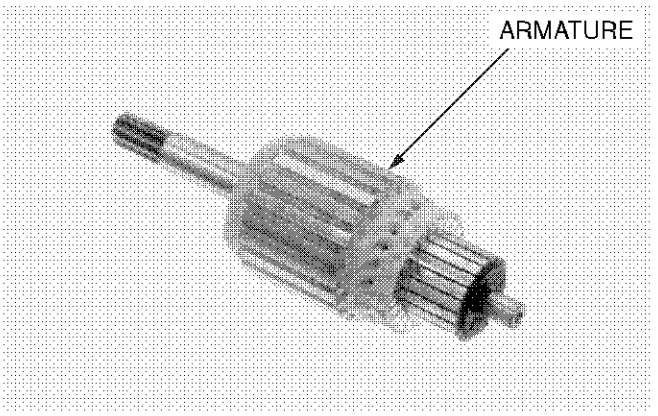
Check the commutator for damage or abnormal wear.
Replace the armature with a new one if necessary.

Check the commutator for metallic debris between commutator bars.
Clean the metallic debris off between commutator bars.

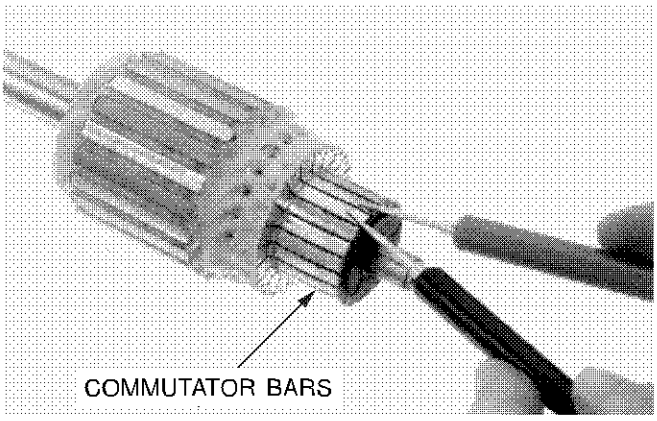
NOTE:

Do not use emery or sand paper on the commutator.

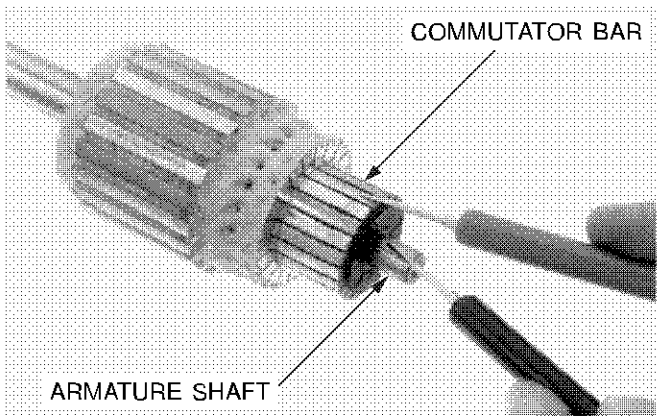
Check the commutator for discolorration of the commutator bar.
Replace the armature with a new one if necessary.



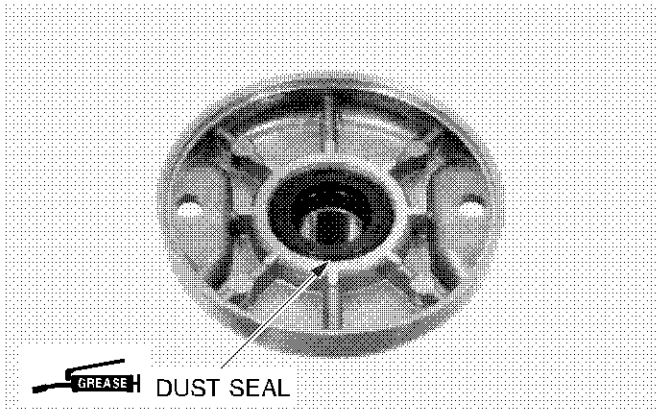
Check for continuity between pairs of commutator bars.
There should be continuity.
Replace the armature with a new one if necessary.



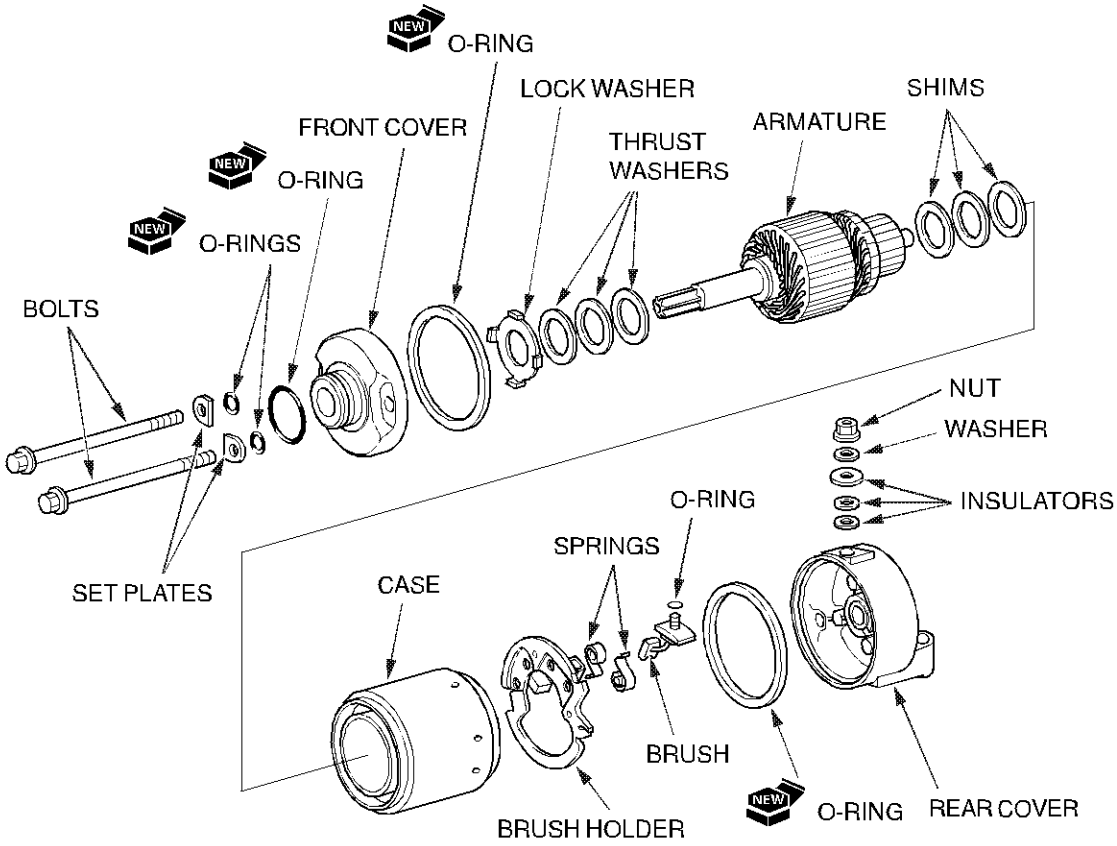
Check for continuity between each individual commutator bar and the armature shaft.
There should be no continuity.
Replace the armature with a new one if necessary.



Check the dust seal for wear or damage.
Apply grease to the dust seal lips.

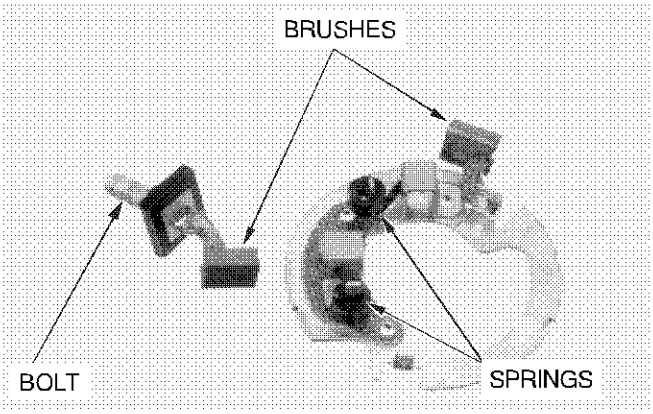


ASSEMBLY



BRUSH HOLDER ASSEMBLY

Install the brush spring, motor brush and terminal bolt.

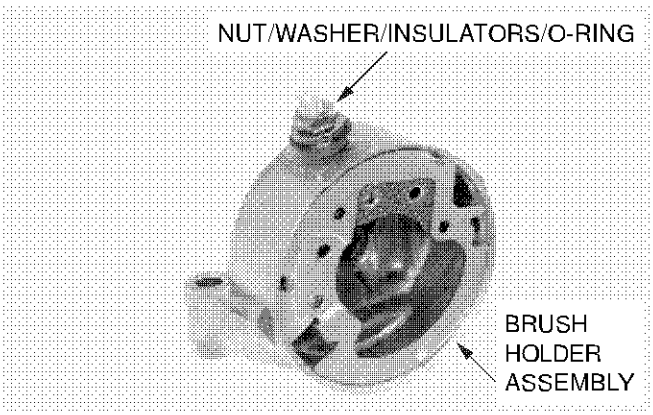


Install the brush holder assembly to the rear cover aligning its boss with the groove in the rear cover.

Install the following:
— O-ring
— Insulators
— Washer
— Nut

NOTE:

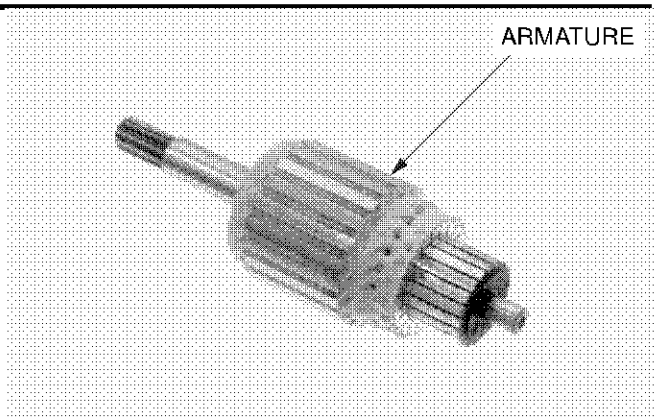
Install the insulators properly as noted during removal.



When installing the armature into the starter motor case, hold the armature tightly to keep the magnet from pulling the armature against the starter motor case.

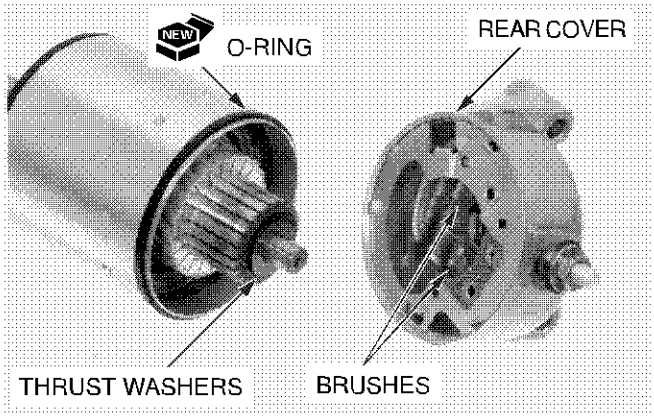
CAUTION:

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

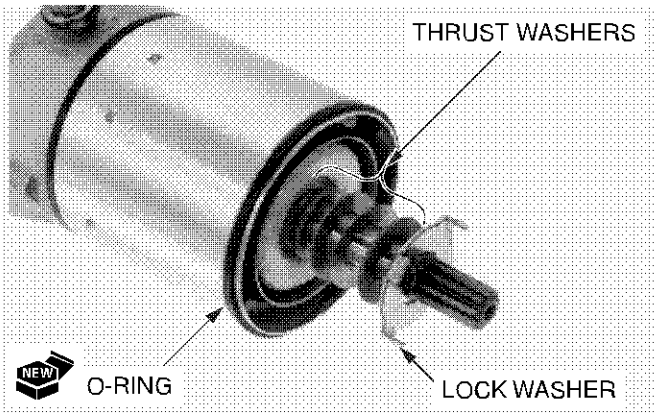


Install the new O-ring.
Apply thin coat of grease to the armature shaft end.
Push the brush inside the brush holder, install the rear cover aligning its groove with the brush holder tab.

Install the same number of thrust washers in the same locations as when disassembled.

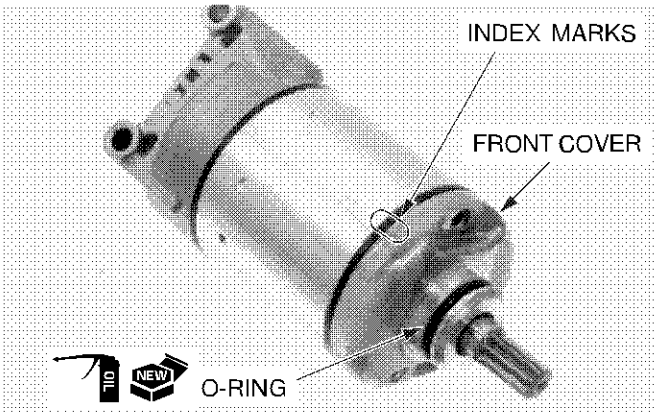


Install the new O-ring.
Install the same number of thrust washers in the same locations as when disassembled.

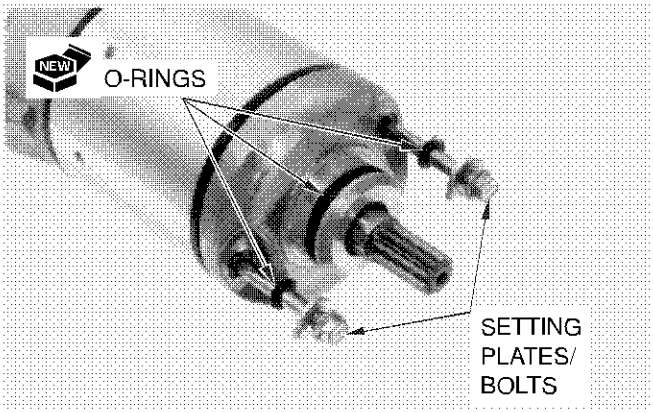


Install the new O-ring and front cover.
Apply oil to the O-ring.

Align the index marks on the starter motor case and front cover.



Install the new O-rings, setting plates and bolts.
Tighten the bolts securely.

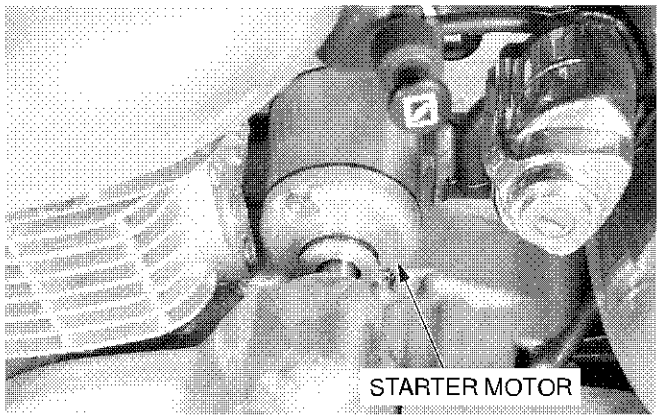


INSTALLATION

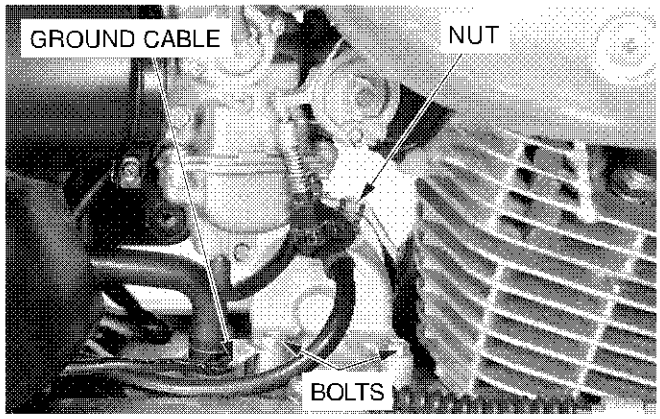
NOTE:

Route the starter motor cable and ground cable properly (page 1-25).

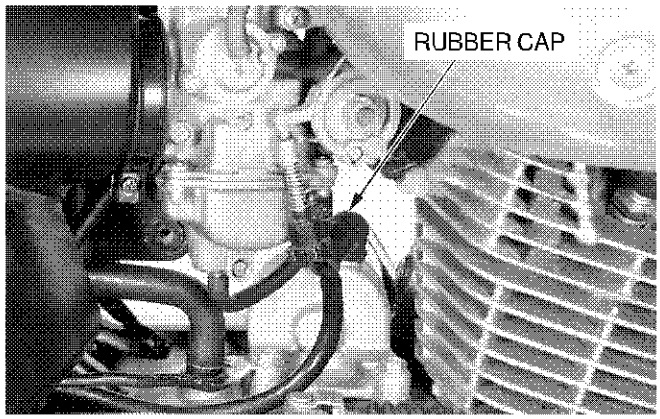
Install the starter motor onto the crankcase from the right side.



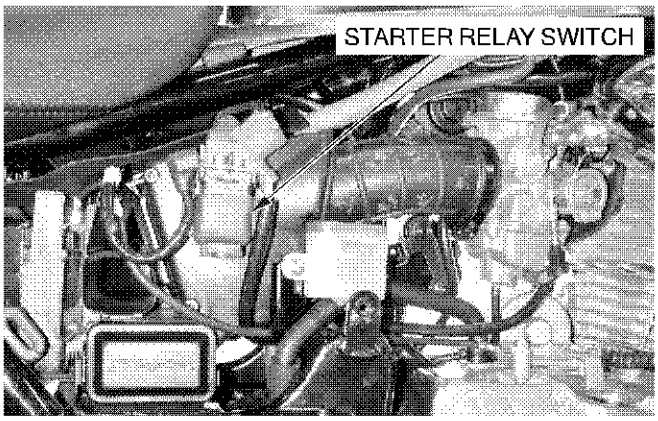
Install the ground cable.
Install and tighten the bolts securely.
Connect the starter motor cable.
Install and tighten the starter motor cable nut.



Install the rubber cap securely.



STARTER RELAY SWITCH



INSPECTION

NOTE:

Before checking the starter relay switch, check for battery condition.

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

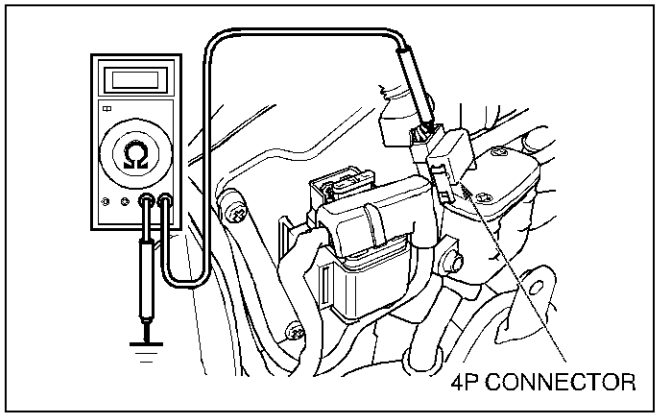
Shift the transmission into neutral.
Turn the ignition switch ON.
Depress the starter switch button.

The coil is normal if the starter relay switch clicks.

If you don't hear the switch "CLICK", inspect the relay switch using the procedure below.

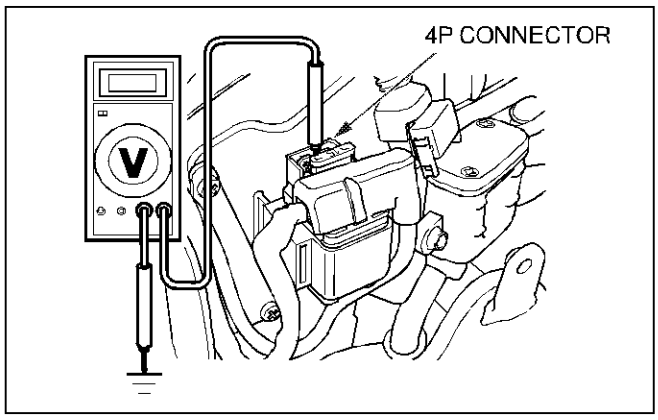
GROUND LINE
Disconnect the starter relay switch 4P connector.
Check for continuity between the Green/Red wire (ground line) and ground.

If there is continuity when the transmission is in neutral or when the clutch is disengaged, the ground circuit is normal (In neutral, there is a slight resistance due to the diode).



STARTER RELAY VOLTAGE
Connect the starter relay switch 4P connector.
Shift the transmission into neutral.
Measure the voltage between the Yellow/Red (+) wire and ground at the starter relay switch 4P connector.

If the battery voltage appears only when the starter switch is pressed with the ignition switch ON, it is normal.



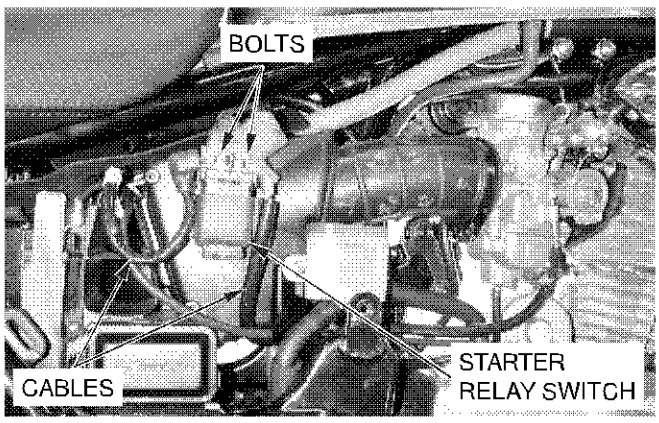
REMOVAL/INSTALLATION

Remove the right side cover (page 2-2)

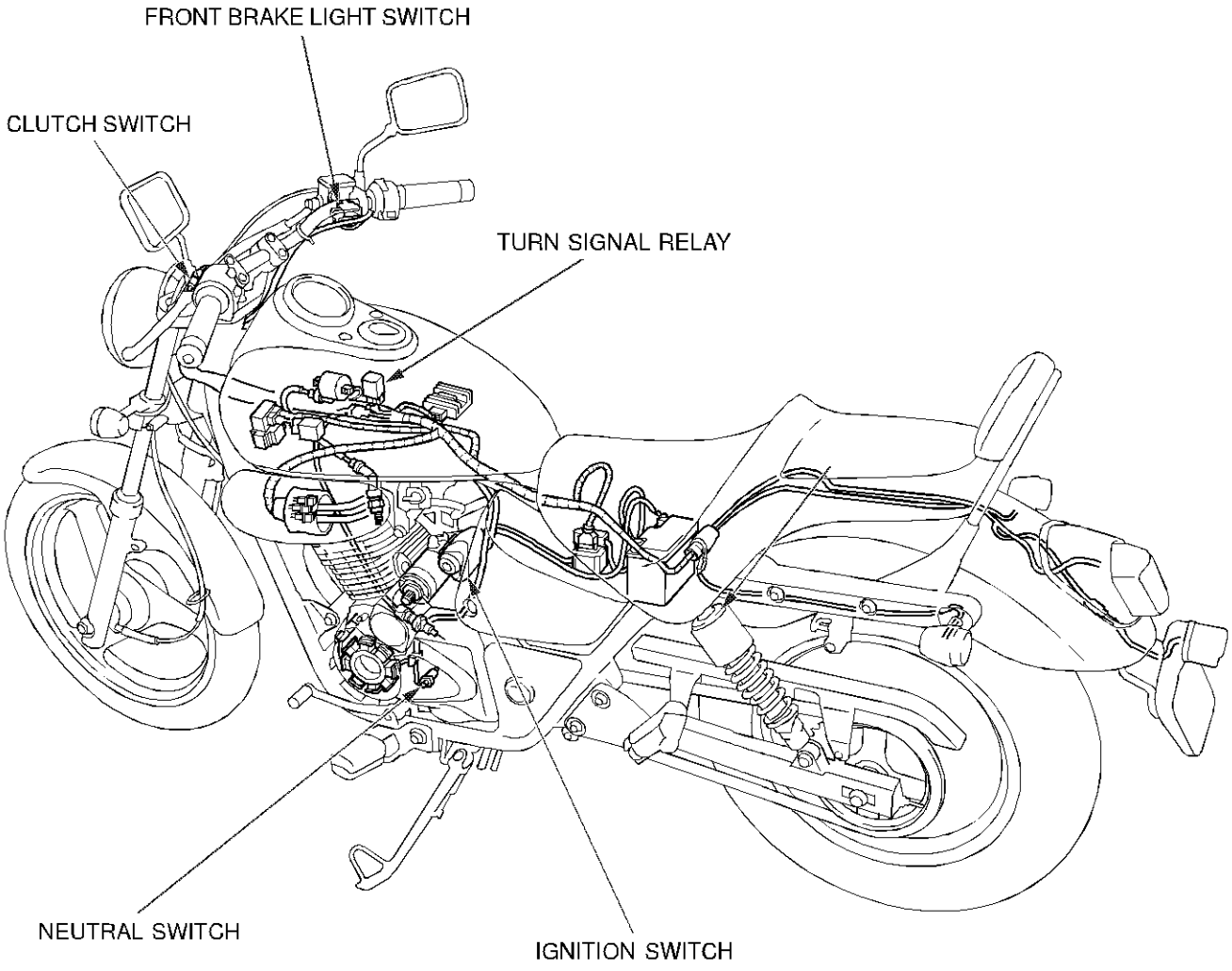
Disconnect the starter relay 4P connector.

Turn over the rubber covers and remove the bolts and cables.
Remove the starter relay switch.

Installation is in the reverse order of removal.



SYSTEM LOCATION



18. LIGHTS/METER/SWITCHES

SERVICE INFORMATION

GENERAL

⚠ WARNING

A halogen headlight bulb becomes very hot while the headlight is ON, and remain hot for a while after it is turned OFF. Be sure to let it cool down before servicing.

- Note the following when replacing the halogen headlight bulb.
  — Wear clean gloves while replacing the bulb. Do not put finger prints on the headlight bulb, as they may create hot spots on the bulb and cause is to fail.
  — If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.
  — Be sure to install the dust cover after replacing the bulb.
- Check the battery condition before performing any inspection that requires proper battery voltage.
- A continuity test can be made with the switches installed on the motorcycle.
- The following color codes are used throughout this section.

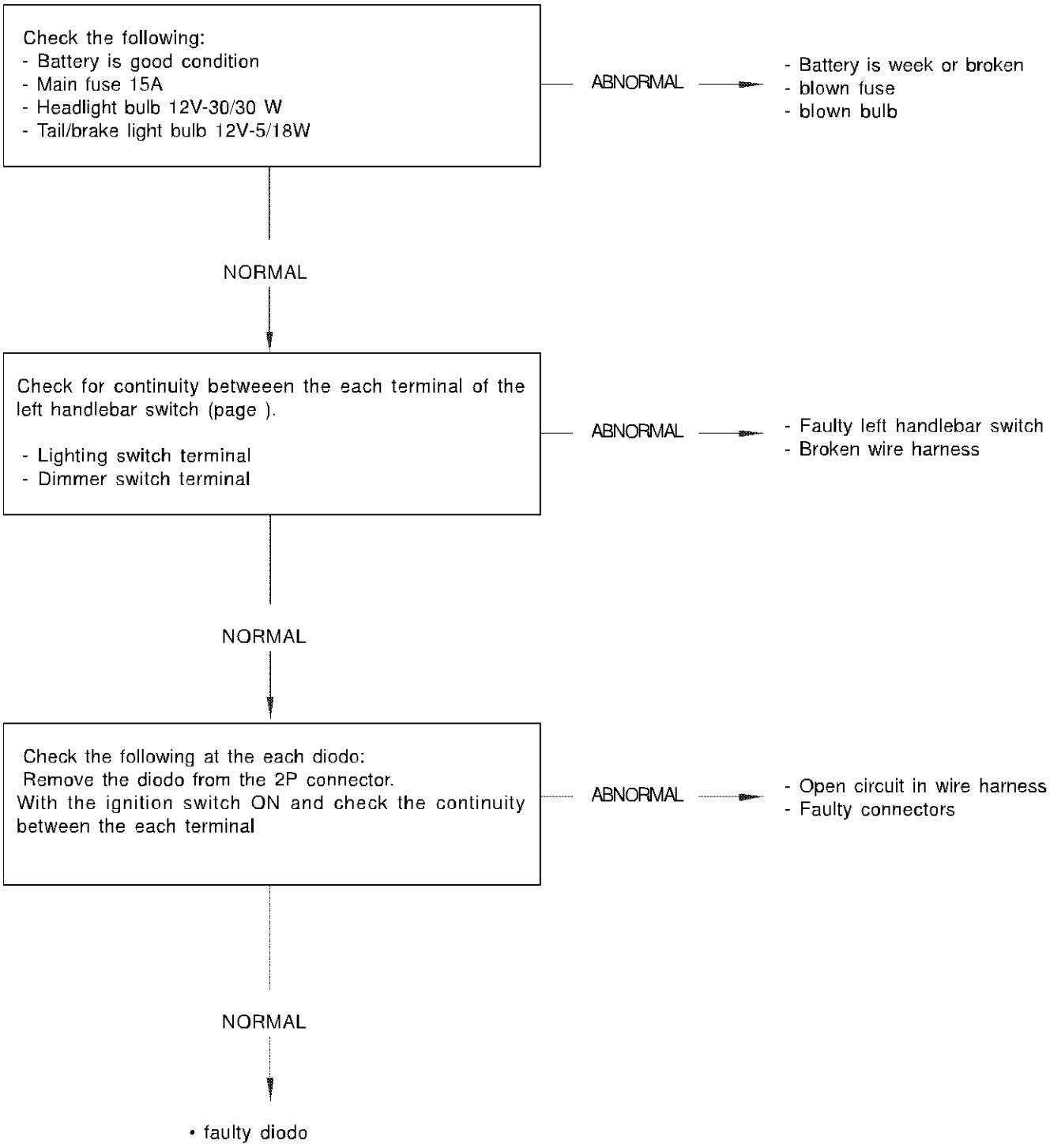
Bu = Blue	G = Green	Lg = Light Green	R = Red
Bl = Black	Gr = Gray	O = Orange	W = White
Br = Brown	Lb = Light Blue	P = Pink	Y = Yellow

SPECIFICATIONS

ITEM		SPECIFICATIONS
Bulbs	Headlight (Hight/low beam)	12 V – 30/30 W
	Tail/brake light	12 V – 5/18 W
	Front turn signal light	12 V – 15 W x 2
	Rear turn signal light	12 V – 15 W x 2
	License light	12 V – 5 W
	Instrument light	12 V – 1.7 W
	Turn signal indicator	12 V – 1.7 W
	High beam indicator	12 V – 1.7 W
	Neutral indicator	12 V – 1.7 W
Fuse	Main fuse	15 A

TROUBLESHOOTING

Headlight and Tail light does not come on.



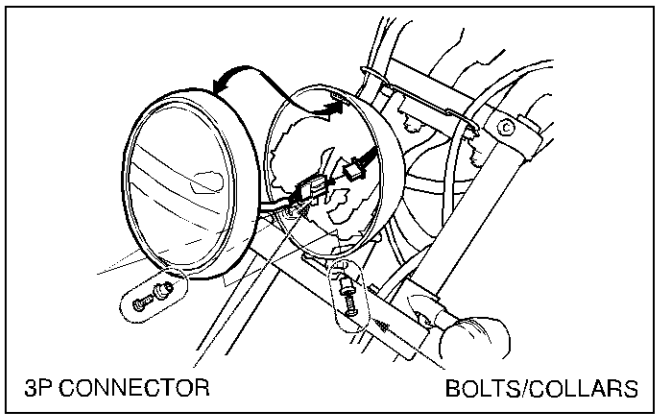
BULB REPLACEMENT

HEADLIGHT

⚠ WARNING

A halogen headlight bulb becomes very hot while the headlight is ON, and remain hot for a while after it is turned OFF. Be sure to let it cool down before servicing.

Remove the two screws, collars and headlight.
Disconnect the headlight 3P connector.



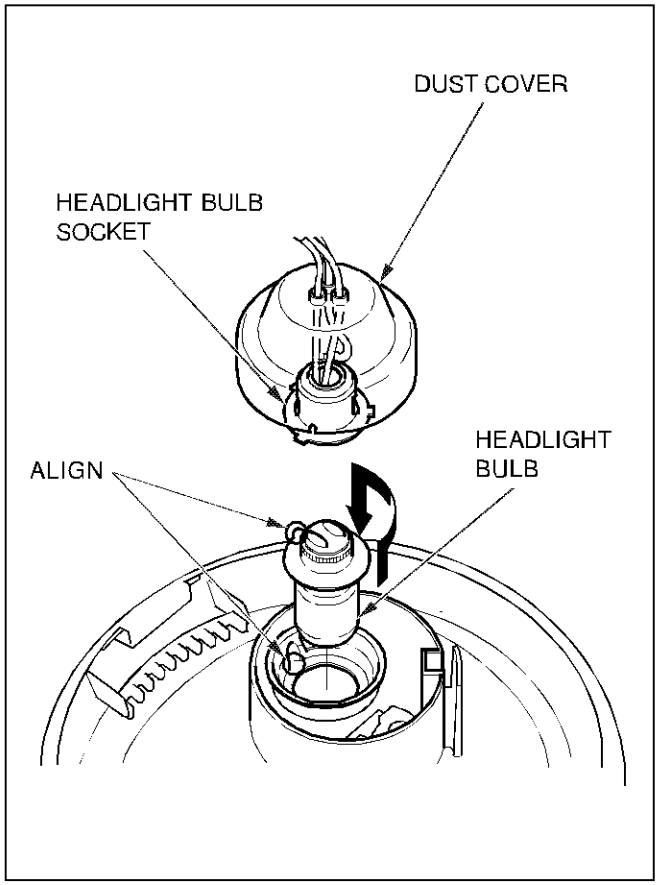
Remove the dust cover.
Remove the headlight bulb socket by turning it counter-clockwise.
Remove the headlight bulb.

CAUTION:

Avoid touching halogen headlight bulb. Finger prints can create hot spots that cause a bulb to break.

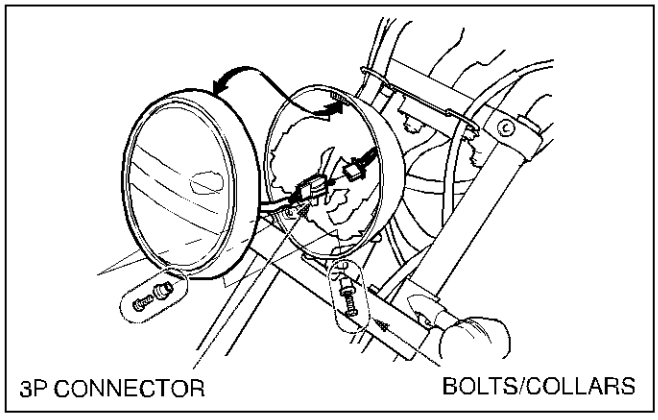
If you touch the bulb with your bare hands, clean it with cloth moistened with denatured alcohol to prevent early bulb failure.

Rplace a new headlight bulb.
install and align the boss off the bulb and slit of the head light unit.
Installation it in the reverse order of removal.



Connect the headlight 3P connecter.
Install the headlight to the headlight case.
Install the two screws, collars and headlight.

Adjust the headlight AIM (page 3-19).

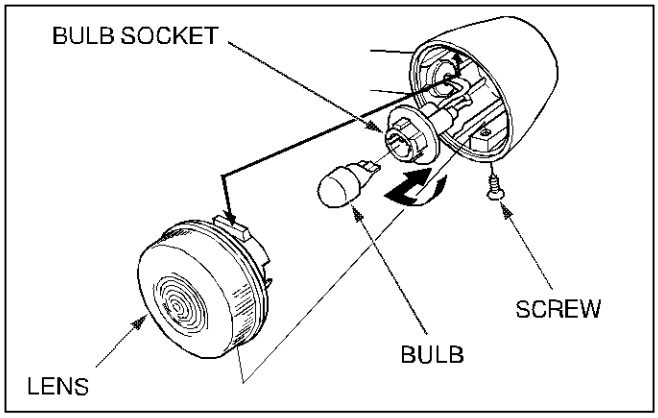


TURN SIGNAL LIGHT

Remove the screw and turn signal lens.
Remove the bulb socket from the lens.

Replace the bulb with a new one.

Installation is in the reverse order of removal.



TAIL/BRAKELIGHT

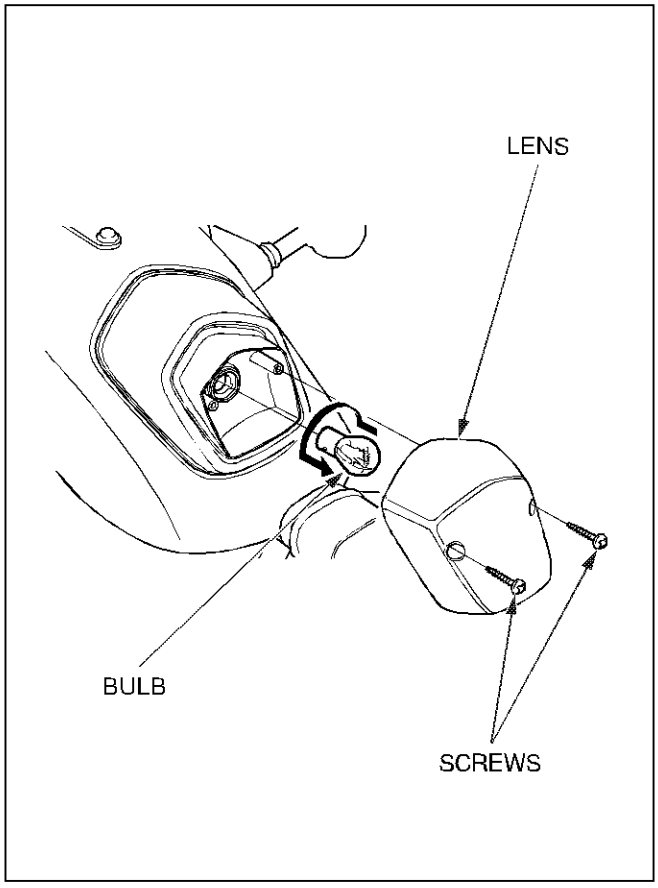
Remove the screws and tail/brakelight lens.

While pushing in, turn the bulb counterclockwise to remove it and replace with a new one.

Installation is in the reverse order of removal.

NOTE:

Seat the rubber packing properly.

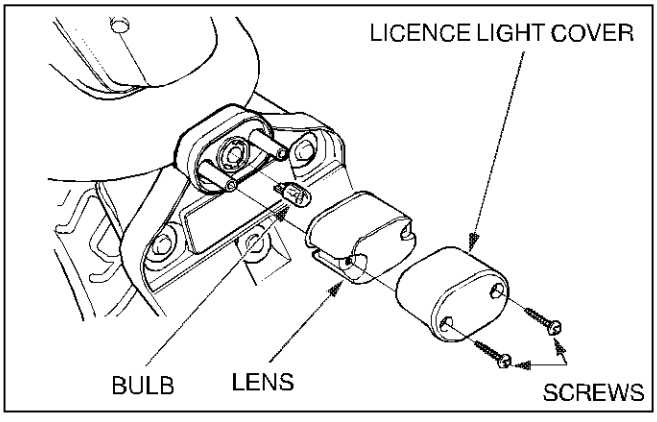


LICENSE LIGHET BULB

Remove the screws and license light cover and lens.

Remove and replace the license light bulb with a new one.

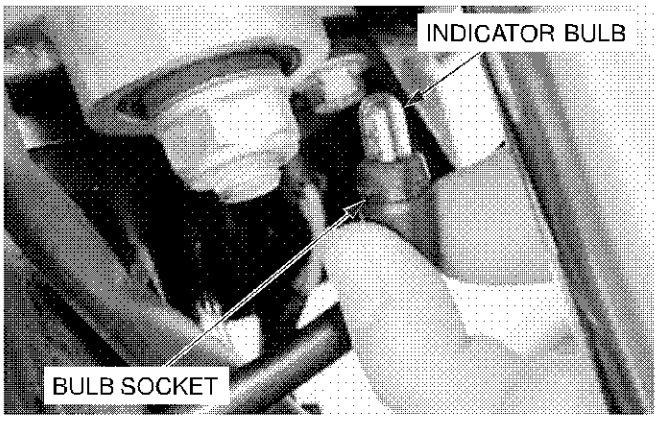
Installation is in the reverse order of removal.



INDICATOR BULB

Remove the bulb sockets from the indicator light assembly.
Remove the indicator bulb from the bulb socket.

Replace the new bulb and install it in the reverse order of removel.

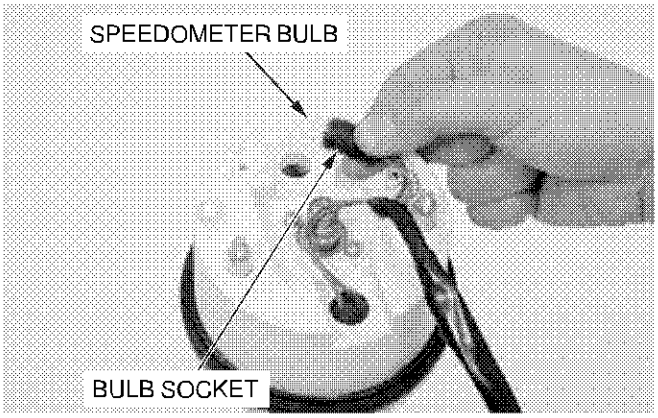


SPEEDOMETER BULB

Remove the speedometer from the speedometer case (page 18-6).

Remove the bulb socket from the speedometer.
Remove the bulb from the bulb socket.

Replace the new bulb and install it in the reverse order of removel.

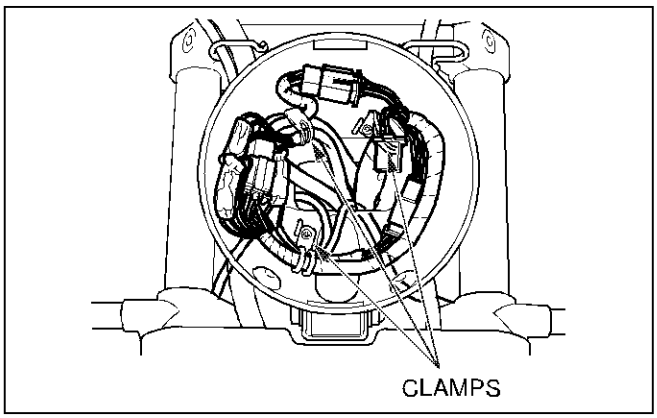


HEADLIGHT

REMOVAL/INSTALLATION

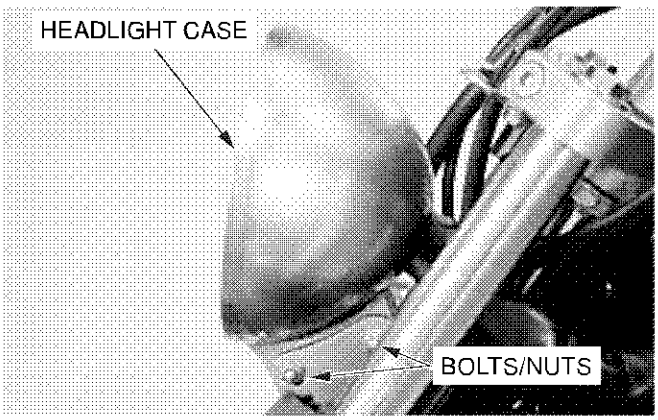
Remove the headlight (page 18-3).

Free the wire harness from the clamps.



Remove the bolts/nuts and headlight case.

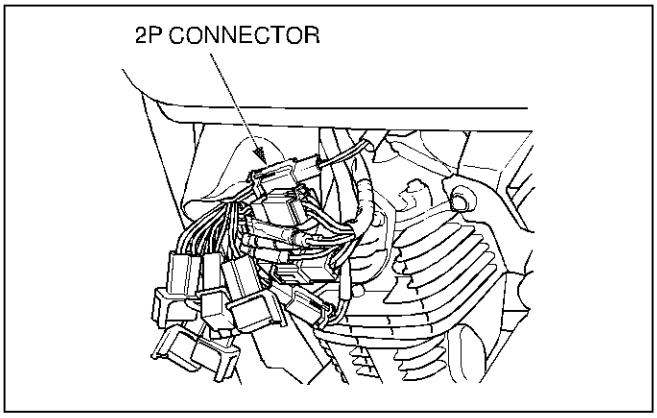
Installation is in the reverse order of removal.
After installation, adjust the headlight AIM (page 3-19).



SPEEDOMETER

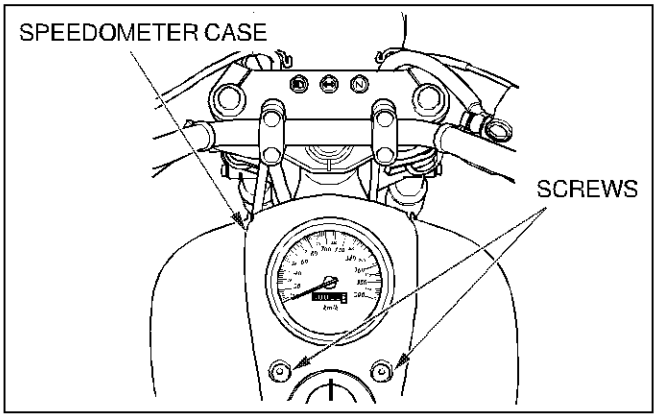
REMOVAL/INSTALLATION

Disconnect the 2P connector.

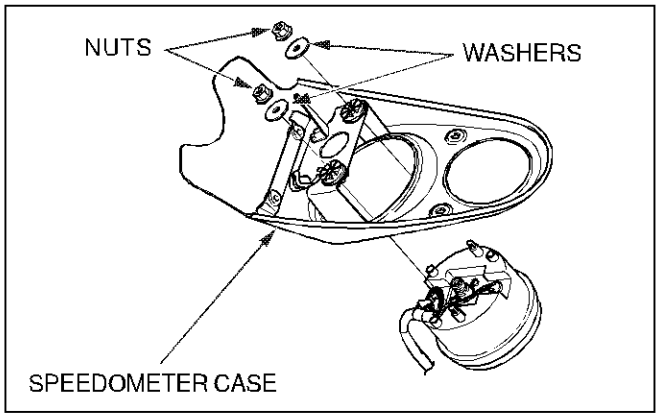


Remove the screws and speedometer case from the fuel tank.

Disconnect the speedometer cable from the speedometer (page 2-5).

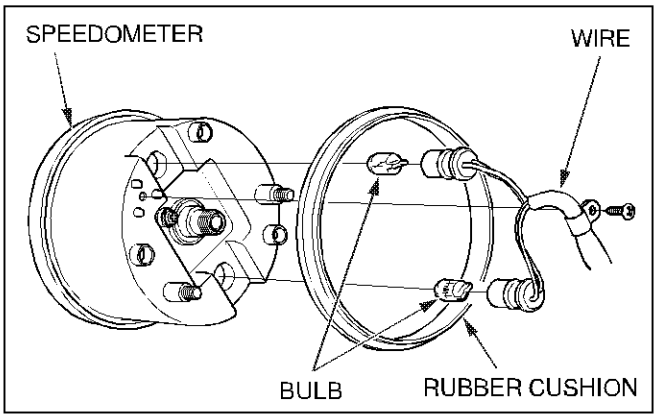


Remove the nuts, washer and speedometer from the speedometer case.



Remove the bulb and bulb sockets.
Remove the rubber cushion.
Remove the screw and speedometer wire.

Installation is in the reverse order of removal.



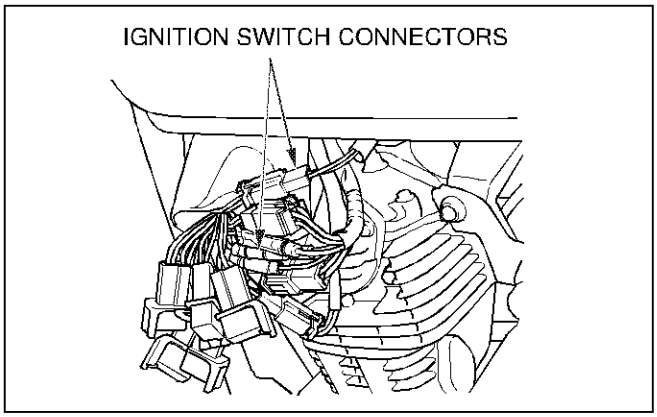
IGNITION SWITCH

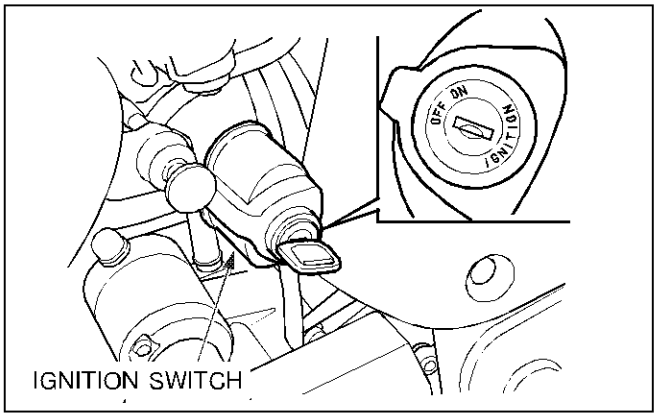
INSPECTION

Disconnect the ignition switch 3P and black/white connector.

Check for continuity between the ignition switch connectors in each switch position.
Continuity should exist between the color coded wires as follows:

Position	BAT2	BAT1	IG	E
OFF			○——	——○
ON	○——	——○		
COLOR	**BI**	**R**	**BI/W**	**G**

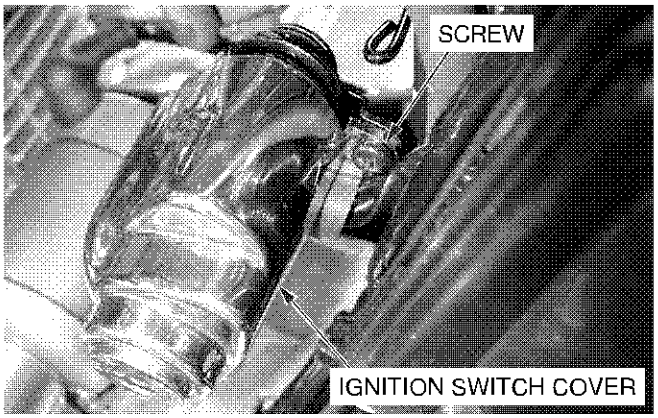




REMOVAL/INSTALLATION

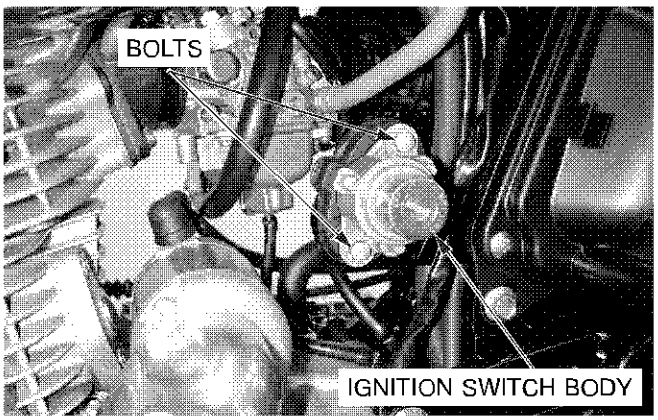
Remove the side cover (page 2-2).

Disconnect the ignition switch connectors (see avobe).
Remove the screw and ignition swith cover.



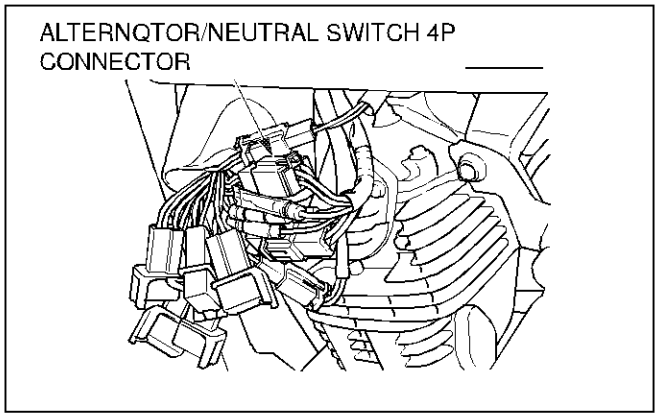
Remove the bolts and ignition switch body.

Installation is in the reverse order of removal.



NEUTRAL SWITCH

Disconnect the alternator/neutral switch 4P connector.
Shift the transmission into neutral and check for continuity between the Light Green/Red wire terminal and ground.
There should be continuity with the transmission is in neutral, and no continuity when the transmission is into gear.

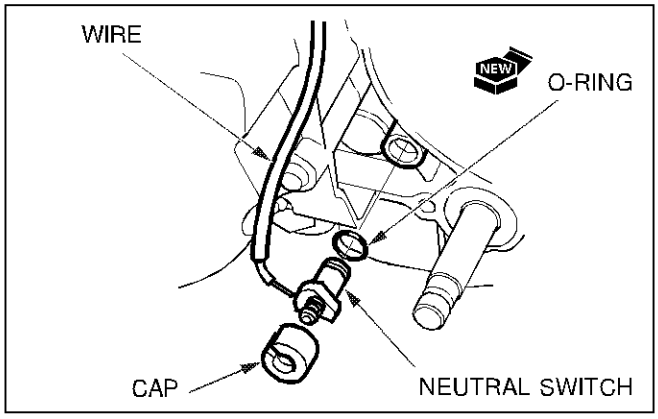


REMOVAL/INSTALLATION

Remove the drive sprocket cover (page 6-3)
Remove the wire cranp plate (page 10-2).

Remove the neutral switch cap and disconnect the neutral switch wire.
Remove the neutral switch and O-ring.

Replace the O-ring and installation is in the reverse order of removal.



TURN SIGNAL RELAY

REMOVAL/INSTALLATION

Remove the right side cover (page 2-3).
Remove the turn signal relay 2P connector and turn signal relay.

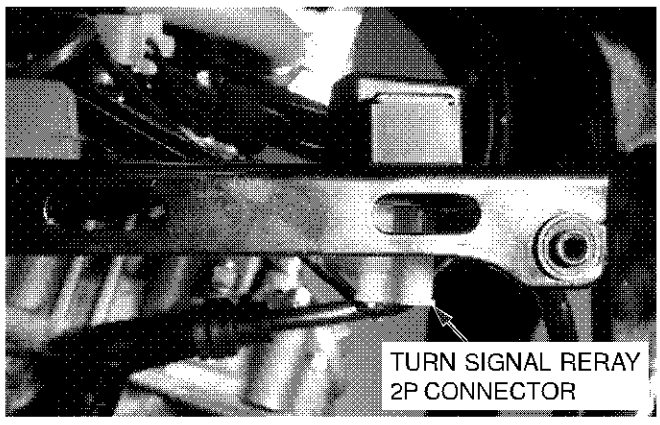
INSPECTION

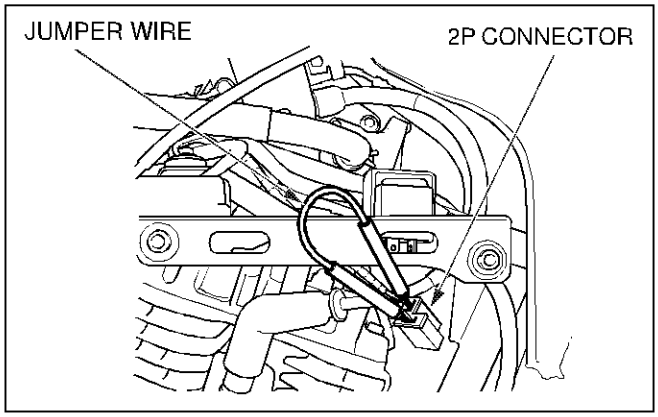
Check the following:
— Battery condition
— Burned out turn signal light bulbs or non-specified wattage
— Burned fuse (15 A)
— Ignition switch and turn signal switch function
— Loose connectors

If the above items are all normal, check the following:
Disconnect the 2P connector from the relay.

Short the Gray and Black terminals of the turn signal relay connector with a jumper wire.
Turn the ignition switch ON and check the turn signal light.

Light does not come on:
• Broken wire harness

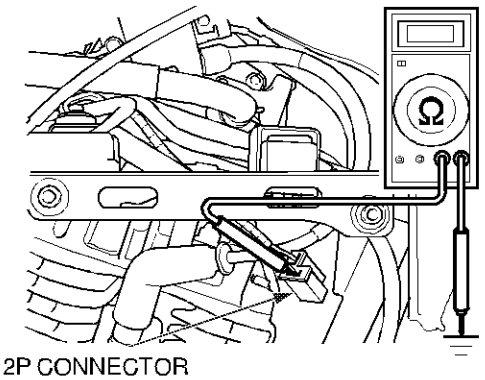




Light comes on:
Check for continuity between the Gray terminal of the relay connector and ground.

— Continuity
- Faulty turn signal relay
- Poor connection of the connector.

— No continuity
- Broken Gray wire harness


2P CONNECTOR

HANDLEBAR SWITCHES

Remove the head light (page 18-3).

Check for continuity between the terminals.
Continuity should exist between the color code wire as shown in each chart.

RIGHT HANDLEBAR SWITCH

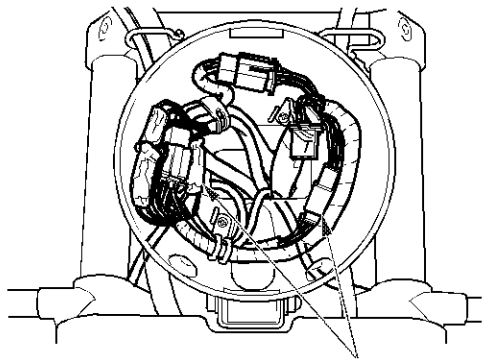
Disconnect the right handlebar switch 4P and brack/white connector

ENGINE STOP SWITCH

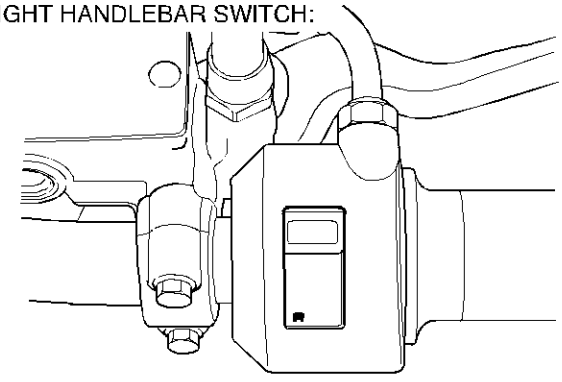
Position	E	IG
RUN		
OFF	○	○
COLOR	G	Bl/W

STARTER SWITCH

Position	ST	BAT2
FREE		
PUSH	○	○
COLOR	Y/R	Bl


RIGHT HANDLEBAR SWITCH CONNECTORS

RIGHT HANDLEBAR SWITCH:



LEFT HANDLEBAR SWITCH

Disconnect the left handlebar switch 9P, orange and lighet blue connector.

LIGHTING SWITCH

Position	HL	BAT2	TL
OFF			
H	○	○	○
COLOR	○	Bl	Br

DIMMER SWITCH

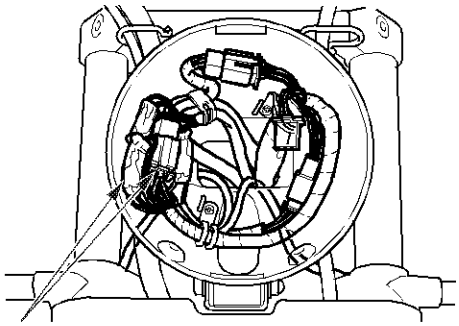
Position \ Color	HL	HI	LO
LO	○		○
(N)	○	○	○
HI	○	○	
COLOR	○	Bu	W

TURN SIGNAL SWITCH

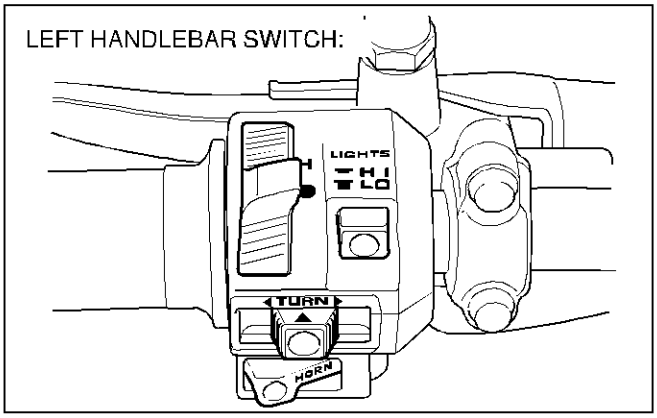
Position \ Color	W	R	L
L	○		○
(N)			
R	○	○	
COLOR	Gr	Lb	O

HORN SWITCH

Position \ Color	BAT2	HO
FREE		
PUSH	○	○
COLOR	Bl	Bl/Br



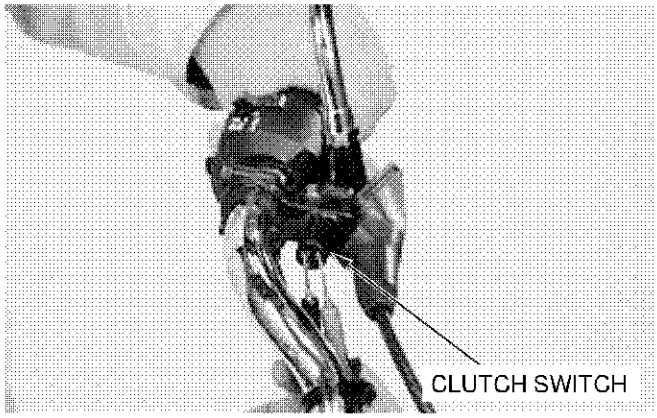
LEFT HANDLEBAR SWITCH CONNECTORS



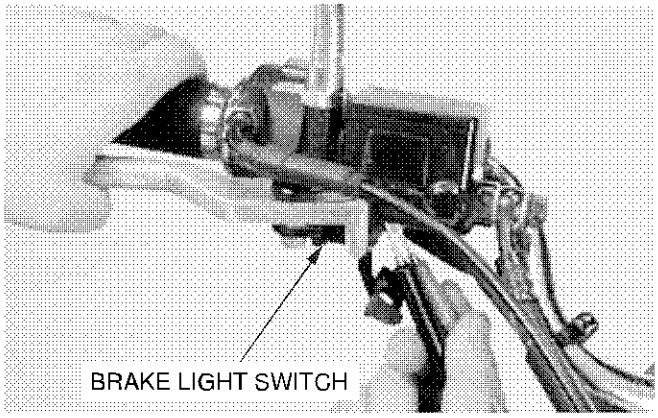
CLUTCH SWITCH

Disconnect the clutch switch 2P connectors.

There should be continuity with the clutch lever applied, and there should be no continuity with the clutch lever is released.



BRAKE LIGHT SWITCH



FRONT

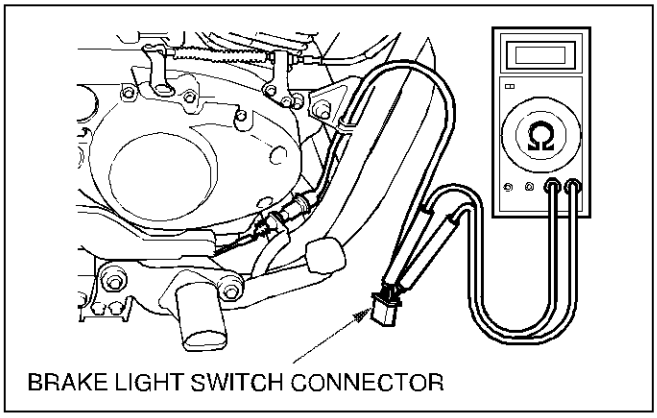
Disconnect the front brake light switch connectors.

There should be continuity with the brake lever applied, and there should be no continuity with the brake lever is released.

REAR

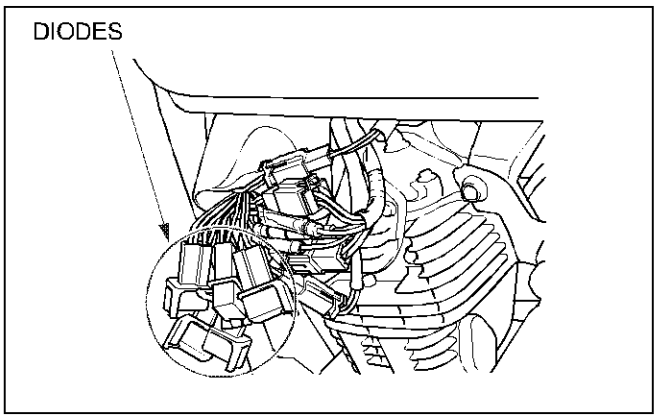
Disconnect the rear brake light switch 2P connector and check for continuity between the terminals.

There should be continuity with the brake pedal applied, and there should be no continuity with the brake pedal is released.



DIODE

Remove the left front side cover (page 2-3).
Remove the diodes.

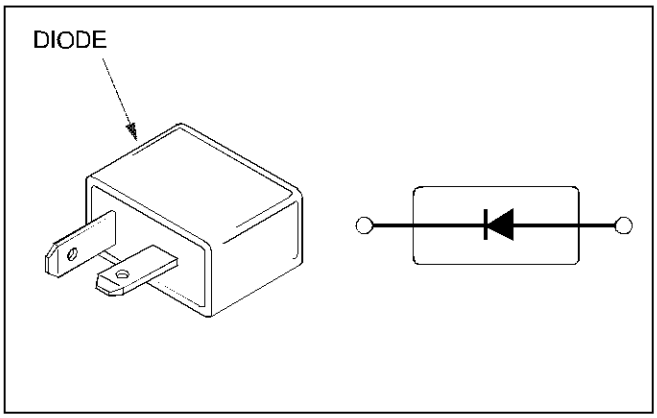


NOTE:

Refer to page 18-2 (troubleshooting).

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

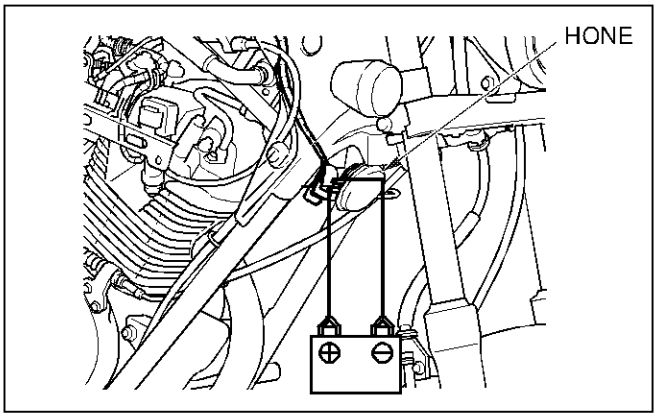
If there is continuity in one direction, the diode is normal.

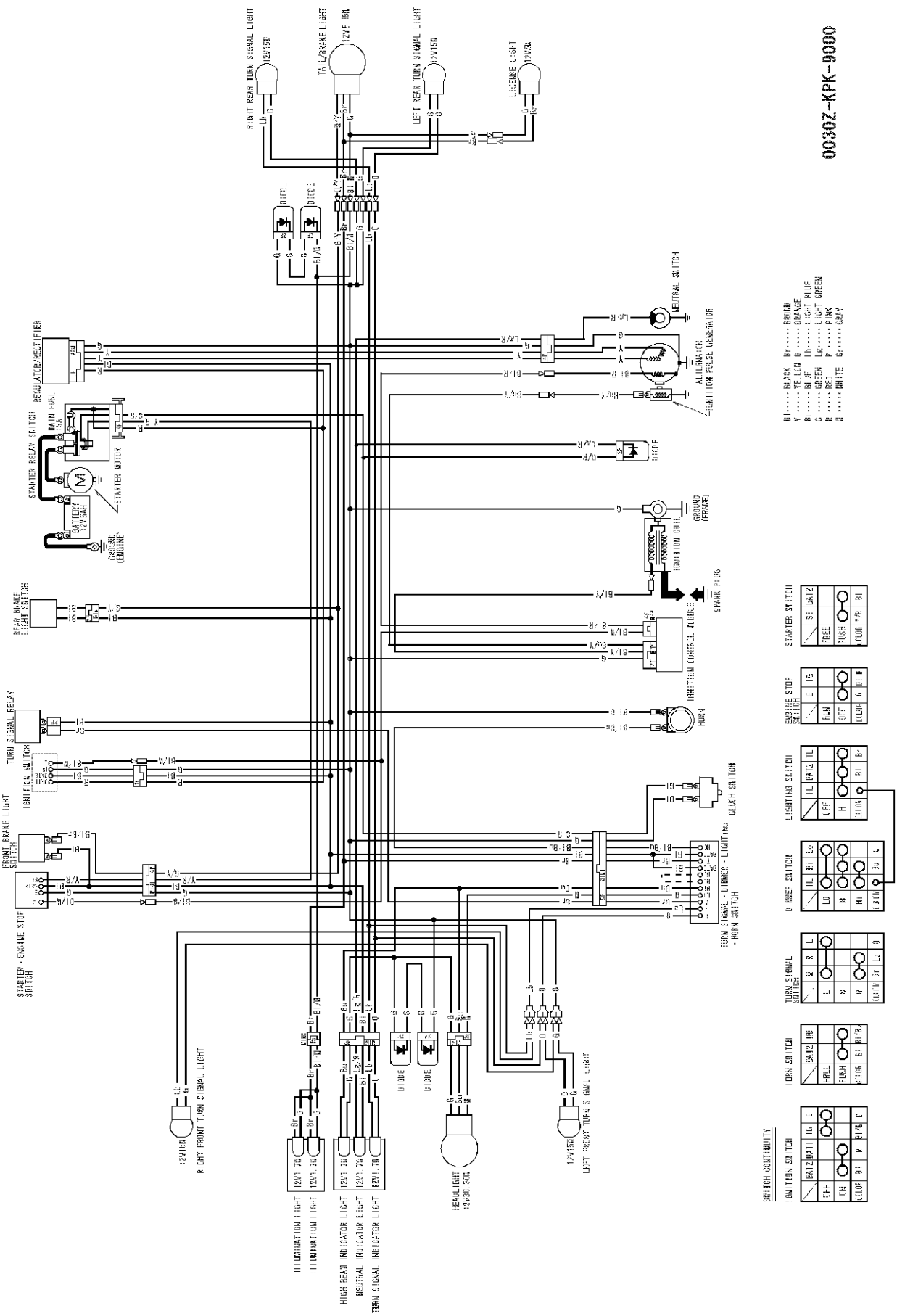


HORN

Disconnect the wire connectors from the horn.

Connect the 12 V battery to the horn terminal directly.
The horn is normal if it sounds when the 12 V battery is connected across the horn terminals.




00307-KPK-9000
RIGHT REAR TURN SIGNAL LIGHT
TAIL/BRAKE LIGHT
LEFT REAR TURN SIGNAL LIGHT
LICENSE LIGHT
DIODE
NEUTRAL SWITCH
ALTERNATOR
IGNITION PULSE GENERATOR
REGULATOR/RECTIFIER
STARTER RELAY SWITCH
MAIN FUSE
STARTER MOTOR
BATTERY
GROUND (ENGINE)
GROUND (FRAME)
IGNITION COIL
SPARK PLUG
REAR BRAKE LIGHT SWITCH
IGNITION CONTROL MODULE
HORN
TURN SIGNAL RELAY
IGNITION SWITCH
FRONT BRAKE LIGHT SWITCH
CLUTCH SWITCH
STARTER ENGINE STOP SWITCH
TURN SIGNAL • DIMMER • LIGHT SW. • HORN SWITCH
RIGHT FRONT TURN SIGNAL LIGHT
LEFT FRONT TURN SIGNAL LIGHT
HEADLIGHT
ILLUMINATION LIGHT
HIGH BEAM INDICATOR LIGHT
NEUTRAL INDICATOR LIGHT
TURN SIGNAL INDICATOR LIGHT
SWITCH CONTINUITY
IGNITION SWITCH
HORN SWITCH
TURN SIGNAL SWITCH
DIMMER SWITCH
LIGHTING SWITCH
ENGINE STOP SWITCH
STARTER SWITCH

ENGINE DOES NOT START OR IS HARD TO START

		Possible cause
1. Check the fuel flow to carburetor	Not reaching carburetor	• Clogged fuel line and strainer • Sticking float valve • Clogged fuel tank breather
Reaching carburetor		
2. Perform a spark test	Weak or no spark	• Faulty spark plug • Fouled spark plug • Faulty ignition control module • Broken or shorted spark plug wire • Faulty ignition switch • Faulty ignition pulse generator • Loose or disconnected ignition system wires
Good spark		
3. Remove and inspect spark plug	Wet plug	• Choke valve ON position • Throttle valve open • Air cleaner dirty
Good		
4. Start by following normal procedure	Engine starts but stops	• Improper SE valve operation • Carburetor incorrectly adjusted • Intake pipe leaking • Improper ignition timing (Faulty ignition coil or ignition pulse generator) • Fuel contaminated
Engine does not start		
5. Test cylinder compression	Low compression	• Valve clearance too small • Valve stuck open • Worn cylinder and piston ring • Damaged cylinder head gasket • Seized valve • Improper valve timing

Right side only

ENGINE LACKS POWER

		Possible cause
1. Raise wheel off the ground and spin by hand ↓ Wheel spins freely	Wheels do not spin freely	• Brake dragging • Worn or damaged wheel bearing • Drive chain too tight
2. Check tire pressure ↓ Pressure normal	Pressure low	• Faulty tire valve • Punctured tire
3. Accelerate rapidly from low to second ↓ Engine speed reduced when clutch is released	Engine speed doesn't change accordingly when clutch is released	• Clutch slipping • Worn clutch discs/plates • Warped clutch discs/plates • Weak clutch spring • Additive in engine oil
4. Accelerate lightly ↓ Engine speed increase	Engine speed does not increase	• SE valve knob ON position • Clogged air cleaner • Restricted fuel flow • Clogged muffler
5. Check ignition timing ↓ Correct	Incorrect	• Faulty ignition control module • Faulty ignition pulse generator
6. Test cylinder compression ↓ Normal	Incorrect	• Valve stuck open • Worn cylinder and piston rings • Leaking cylinder head gasket • Improper valve timing
7. Check carburetor for clogging ↓ Not clogged	Clogged	• Carburetor not serviced frequently enough
8. Remove spark plug ↓ Not fouled or discolored	Fouled or discolored	• Plug not serviced frequently enough • Spark plug is the incorrect heat range
9. Check oil level and condition ↓ Correct	Incorrect	• Oil level too high • Oil level too low • Contaminated oil
10. Remove cylinder head cover and inspect lubrication ↓ Valve train lubricated properly	Valve train not lubricated properly	• Clogged oil passage • Clogged oil control orifice

11. Check for engine overheating	Overheat	• Fuel-air mixture too lean • Use of improper quality of fuel • Excessive carbon build-up in combustion chamber • Clutch slipping • Wrong type of fuel
Not overheat		
12. Try rapid acceleration or run at high speed	Engine knocks	• Worn cylinder or piston • Use of improper grade of fuel • Excessive carbon build-up in combustion chamber • Ignition timing too advanced • Fuel-air mixture too lean
Engine does not knock		

POOR PERFORMANCE AT LOW AND IDLE SPEED

		Possible cause
1. Check carburetor pilot screw adjustment	Incorrect	• See section 5
Correct		
2. Check for leaking intake pipe	Leaking	• Loose insulator clamps • Damaged insulator
Not leak		
3. Perform spark test	Weak or intermittent spark	• Faulty carbon or wet fouled spark plug • Faulty ignition control module • Faulty ignition coil • Broken or shorted spark plug wire • Faulty ignition pulse generator • Faulty ignition switch • Loose or disconnected ignition system wires
Good spark		
4. Check ignition timing	Incorrect	• Improper ignition timing (faulty ignition control module)
Good spark		

POOR PERFORMANCE AT HIGH SPEED

		Possible cause
1. Disconnect fuel tube at carburetor and check fuel flow ↓ Fuel flows freely	Fuel flow restricted	• Clogged fuel line and strainer • Clogged fuel tank breather
2. Remove the carburetor and check for clogging ↓ Not clogged	Clogged	• Clean
3. Check ignition timing ↓ Correct	Incorrect	• Faulty ignition control module • Faulty ignition pulse generator

POOR HANDLING

	Possible cause
1. If steering is heavy	• Steering stem adjusting nut too tight • Damaged steering head bearings • Bent steering stem
2. If either wheel is wobbling	• Excessive wheel bearing play • Bent rim • Improper installed wheel hub • Swingarm pivot bushing excessively worn • Bent frame
3. If the motorcycle pulled to one side	• Faulty shock absorber • Front and rear wheel not aligned • Bent fork • Bent swingarm • Bent axle • Front brake caliper dragging to one side

21. INDEX

To print chapters, click on the printer icon and fill in the page range.

Note: Make sure to select √ Shrink to fit in the printer dialog box when printing wiring diagrams.