

Kawasaki

KX250



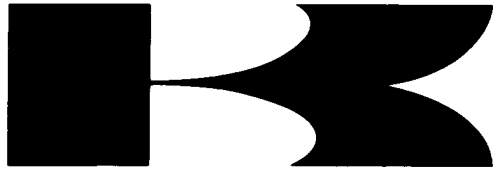
Motorcycle Service Manual

Quick Reference Guide

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This quick reference guide will assist you in locating a desired topic or procedure.

- Bend the pages back to match the black tab of the desired chapter number with the black tab on the edge at each table of contents page.
- Refer to the sectional table of contents for the exact pages to locate the specific topic required.



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Motorcycle Service Manual

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No liability can be accepted for any inaccuracies or omissions in this publication, although every possible care has been taken to make it as complete and accurate as possible.

The right is reserved to make changes at any time without prior notice and without incurring an obligation to make such changes to products manufactured previously. See your Motorcycle dealer for the latest information on product improvements incorporated after this publication.

All information contained in this publication is based on the latest product information available at the time of publication. Illustrations and photographs in this publication are intended for reference use only and may not depict actual model component parts.

LIST OF ABBREVIATIONS

A	ampere(s)	lb	pound(s)
ABDC	after bottom dead center	m	meter(s)
AC	alternating current	min	minute(s)
ATDC	after top dead center	N	newton(s)
BBDC	before bottom dead center	Pa	pascal(s)
BDC	bottom dead center	PS	horsepower
BTDC	before top dead center	psi	pound(s) per square inch
°C	degree(s) Celsius	r	revolution
DC	direct current	rpm	revolution(s) per minute
F	farad(s)	TDC	top dead center
°F	degree(s) Fahrenheit	TIR	total indicator reading
ft	foot, feet	V	volt(s)
g	gram(s)	W	watt(s)
h	hour(s)	Ω	ohm(s)
L	liter(s)		

Read OWNER'S MANUAL before operating

Foreword

This manual is designed primarily for use by trained mechanics in a properly equipped shop. However, it contains enough detail and basic information to make it useful to the owner who desires to perform his own basic maintenance and repair work. A basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily. Whenever the owner has insufficient experience or doubts as to his ability to do the work, all adjustments, maintenance, and repair should be carried out only by qualified mechanics.

In order to perform the work efficiently and to avoid costly mistakes, read the text, thoroughly familiarize yourself with the procedures before starting work, and then do the work carefully in a clean area. Whenever special tools or equipment are specified, do not use makeshift tools or equipment. Precision measurements can only be made if the proper instruments are used, and the use of substitute tools may adversely affect safe operation.

To get the longest life out of your motorcycle:

- Follow the Periodic Maintenance Chart in the Service Manual.
- Be alert for problems and non-scheduled maintenance.
- Use proper tools and genuine Kawasaki motorcycle parts. Special tools, gauges, and testers that are necessary when servicing Kawasaki Motorcycles are introduced by the Service Manual. Genuine parts provided as spare parts are listed in the Parts Catalog.
- Follow the procedures in this manual carefully. Don't take shortcuts.
- Remember to keep complete records of maintenance and repair with dates and any new parts installed.

How to Use this Manual

In this manual, the product is divided into its major systems and these systems make up the manual's chapters. The Quick Reference Guide shows you all of the product's system and assists in locating their chapters. Each chapter in turn has its own comprehensive Table of Contents.

For example, if you want ignition coil information, use the Quick Reference Guide to locate the Electrical System chapter. Then, use the Table of Contents on the first page of the chapter to find the Ignition Coil section.

Whenever you see these WARNING and CAUTION symbols, heed their instructions! Always follow safe operating and maintenance practices.

⚠ WARNING

This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury, or loss of life.

CAUTION

This caution symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

This manual contains four more symbols (in addition to WARNING and CAUTION) which will help you distinguish different types of information.

NOTE

○ *This note symbol indicates points of particular interest for more efficient and convenient operation.*

- Indicates a procedural step or work to be done.
- Indicates a procedural sub-step or how to do the work of the procedural step it follows. It also precedes the text of a NOTE.
- ★ Indicates a conditional step or what action to take based on the results of the test or inspection in the procedural step or sub-step it follows.

In most chapters an exploded view illustration of the system components follows the Table of Contents. In these illustrations you will find the instructions indicating which parts require specified tightening torque, oil, grease or a locking agent during assembly.

General Information

1

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1-2 GENERAL INFORMATION

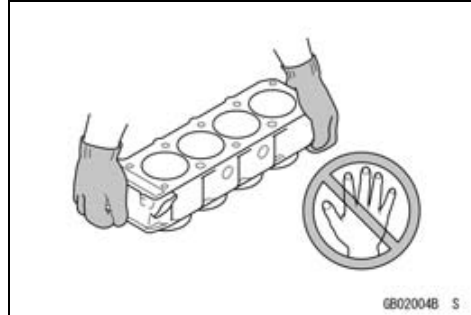
Before Servicing

Before starting to perform an inspection service or carry out a disassembly and reassembly operation on a motorcycle, read the precautions given below. To facilitate actual operations, notes, illustrations, photographs, cautions, and detailed descriptions have been included in each chapter wherever necessary. This section explains the items that require particular attention during the removal and reinstallation or disassembly and reassembly of general parts.

Especially note the following:

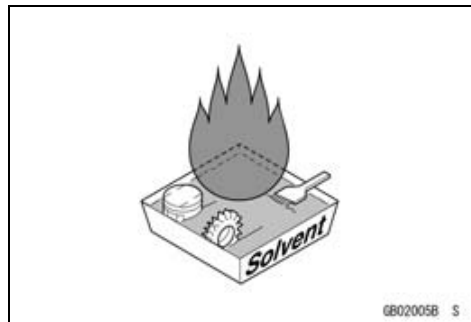
Edges of Parts

Lift large or heavy parts wearing gloves to prevent injury from possible sharp edges on the parts.



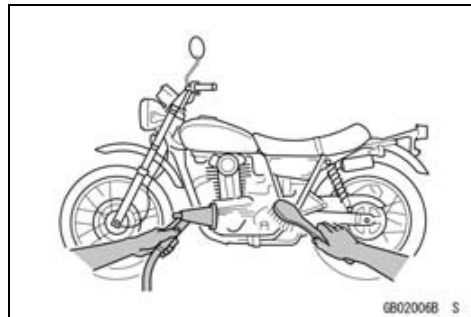
Solvent

Use a high-flash point solvent when cleaning parts. High-flash point solvent should be used according to directions of the solvent manufacturer.



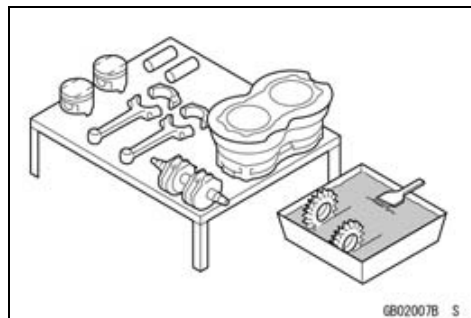
Cleaning vehicle before disassembly

Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Arrangement and Cleaning of Removed Parts

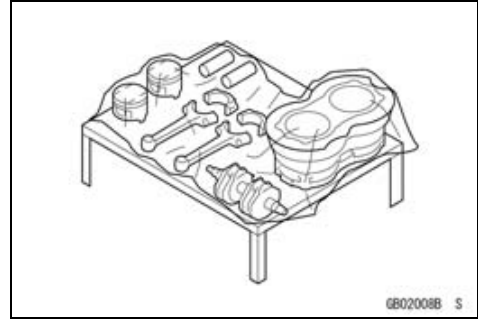
Disassembled parts are easy to confuse. Arrange the parts according to the order the parts were disassembled and clean the parts in order prior to assembly.



Before Servicing

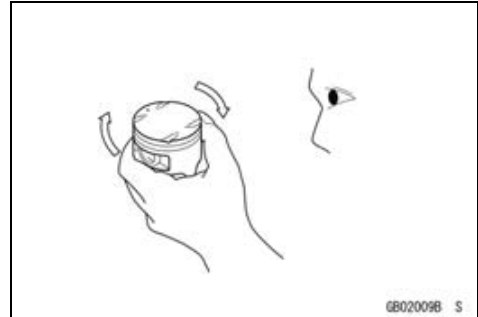
Storage of Removed Parts

After all the parts including subassembly parts have been cleaned, store the parts in a clean area. Put a clean cloth or plastic sheet over the parts to protect from any foreign materials that may collect before re-assembly.



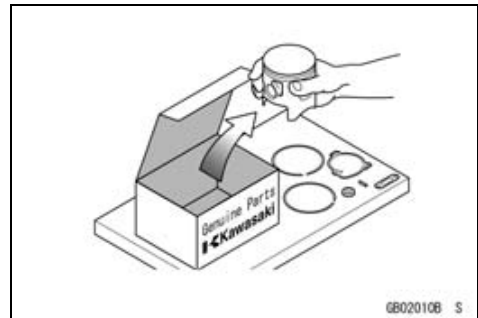
Inspection

Reuse of worn or damaged parts may lead to serious accident. Visually inspect removed parts for corrosion, discoloration, or other damage. Refer to the appropriate sections of this manual for service limits on individual parts. Replace the parts if any damage has been found or if the part is beyond its service limit.



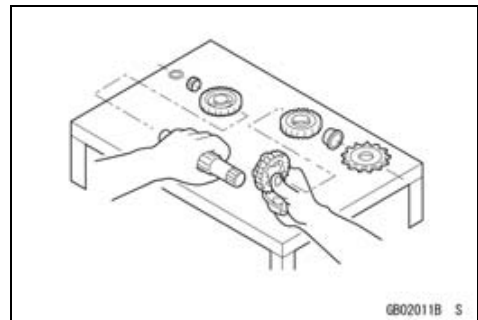
Replacement Parts

Replacement Parts must be KAWASAKI genuine or recommended by KAWASAKI. Gaskets, O rings, Oil seals, Grease seals, circlips or cotter pins must be replaced with new ones whenever disassembled.



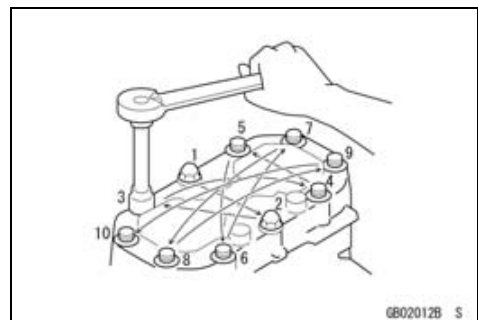
Assembly Order

In most cases assembly order is the reverse of disassembly, however, if assembly order is provided in this Service Manual, follow the procedures given.



Tightening Sequence

Generally, when installing a part with several bolts, nut, or screws, start them all in their holes and tighten them to a snug fit. Then tighten them according to the specified sequence to prevent case warpage or deformation which can lead to malfunction. Conversely when loosening the bolts, nuts, or screws, first loosen all of them by about a quarter turn and then remove them. If the specified tightening sequence is not indicated, tighten the fasteners alternating diagonally.



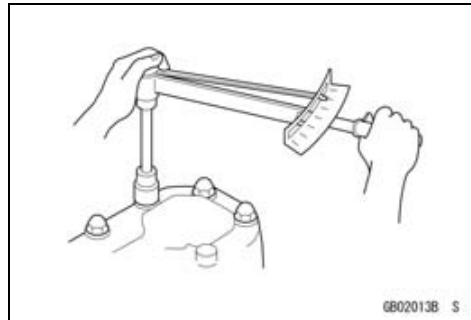
1-4 GENERAL INFORMATION

Before Servicing

Tightening Torque

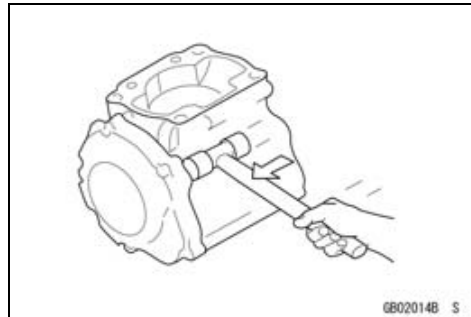
Incorrect torque applied to a bolt, nut, or screw may lead to serious damage. Tighten fasteners to the specified torque using a good quality torque wrench.

Often, the tightening sequence is followed twice initial tightening and final tightening with torque wrench.



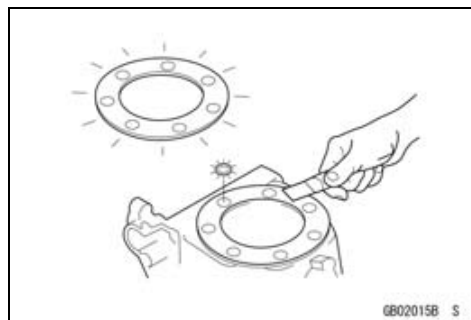
Force

Use common sense during disassembly and assembly, excessive force can cause expensive or hard to repair damage. When necessary, remove screws that have a non-permanent locking agent applied using an impact driver. Use a plastic-faced mallet whenever tapping is necessary.



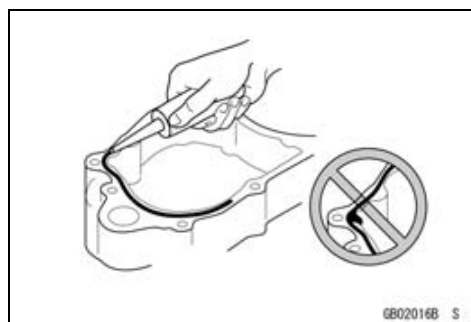
Gasket, O-ring

Hardening, shrinkage, or damage of both gaskets and O-rings after disassembly can reduce sealing performance. Remove old gaskets and clean the sealing surfaces thoroughly so that no gasket material or other material remains. Install new gaskets and replace used O-rings when re-assembling.



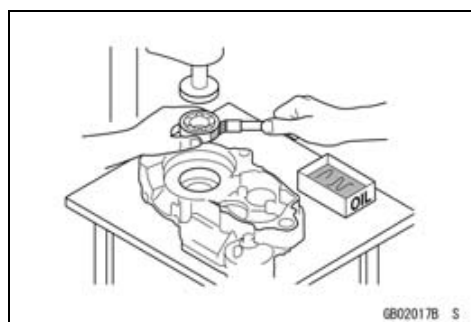
Liquid Gasket, Locking Agent

For applications that require Liquid Gasket or a Non-permanent Locking Agent, clean the surfaces so that no oil residue remains before applying liquid gasket or non-permanent locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Press

For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.

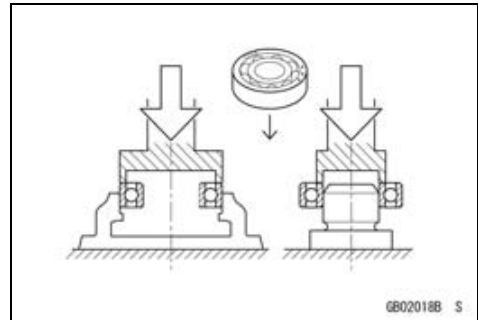


Before Servicing

Ball Bearing and Needle Bearing

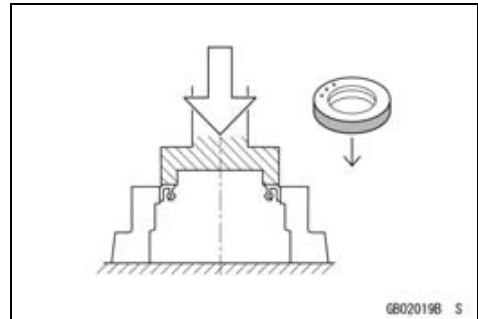
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

Pressing the incorrect race can cause pressure between the inner and outer race and result in bearing damage.

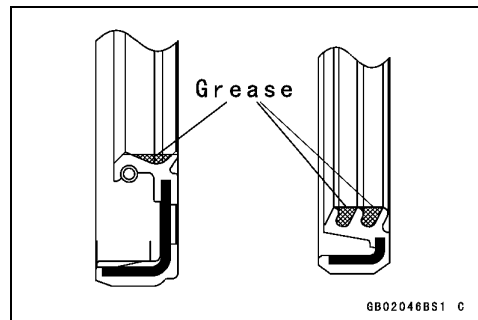


Oil Seal, Grease Seal

Do not remove pressed oil or grease seals unless removal is necessary. Replace with new ones whenever removed. Press new oil seals with manufacture and size marks facing out. Make sure the seal is aligned properly when installing.

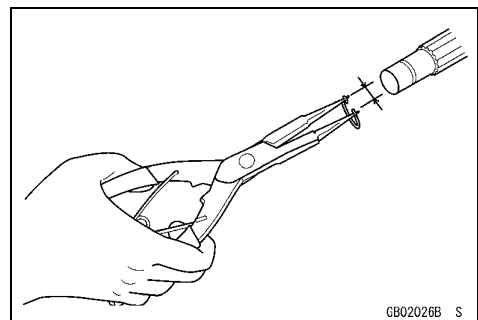


Apply specified grease to the lip of seal before installing the seal.



Circlips, Cotter Pins

Replace circlips or cotter pins that were removed with new ones. Take care not to open the clip excessively when installing to prevent deformation.



Lubrication

It is important to lubricate rotating or sliding parts during assembly to minimize wear during initial operation. Lubrication points are called out throughout this manual, apply the specific oil or grease as specified.

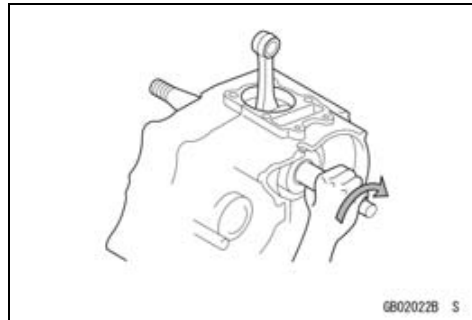


1-6 GENERAL INFORMATION

Before Servicing

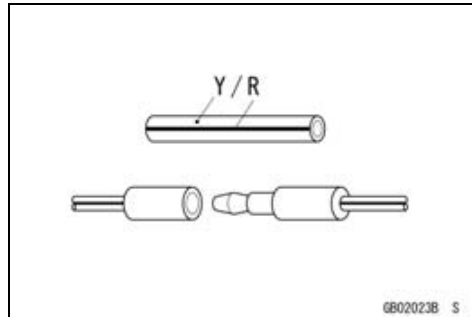
Direction of Engine Rotation

When rotating the crankshaft by hand, the free play amount of rotating direction will affect the adjustment. Rotate the crankshaft to positive direction (clockwise viewed from output side).



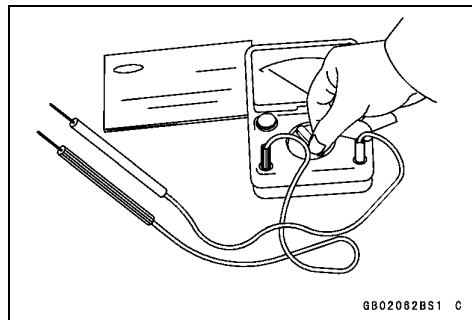
Electrical Leads

A two-color lead is identified first by the primary color and then the stripe color. Unless instructed otherwise, electrical leads must be connected to those of the same color.



Instrument

Use a meter that has enough accuracy for an accurate measurement. Read the manufacturer's instructions thoroughly before using the meter. Incorrect values may lead to improper adjustments.



Model Identification

KX250-R1 Left Side View



KX250-R1 Right Side View



1-8 GENERAL INFORMATION

General Specifications

Items	KX250-R1	KX250R6F ~
Dimensions		
Overall Length	2 185 mm (86.0 in.)	
Overall Width	840 mm (33.1 in.)	815 mm (32.1 in.)
Overall Height	1 265 mm (49.8 in.)	
Wheelbase	1 480 mm (58.3 in.)	
Road Clearance	340 mm (13.4 in.)	
Seat Height	965 mm (38.0 in.)	
Dry Mass	97 kg (214 lb)	
Curb Mass:		
Front	49.9 kg (110 lb)	
Rear	51.7 kg (114 lb)	
Fuel Tank Capacity	8.2 L (2.2 US gal)	
Engine		
Type	2-stroke, single cylinder, piston reed valve	
Cooling System	Liquid-cooled	
Bore and Stroke	66.4 × 72.0 mm (2.61 × 2.85 in.)	
Displacement	249 cm ³ (15.25 cu in.)	
Compression Ratio:		
Low Speed	10.5 : 1, (EUR) 10.2 : 1	
High Speed	9.1 : 1, (EUR) 8.9 : 1	
Carburetion System	Carburetor, KEIHIN PWK38S	
Starting System	Primary kick	
Ignition System	CDI	
Ignition Timing	14° BTDC @7 090 r/min (rpm)	
Spark Plug	NGK BR8ECMVX	
Port Timing:		
Inlet:		
Open	Full open	
Close	-	
Scavenging:		
Open	59.3° BBDC	
Close	59.3° ABDC	
Exhaust:		
Open	82.0° BBDC (low speed), 93.1° BBDC (high speed)	
Close	82.0° ABDC (low speed), 93.1° ABDC (high speed)	
Lubrication System (Gasoline : Oil)	Petrol mix (32 : 1)	
Drive Train		
Primary Reduction System:		
Type	Gear	
Reduction Ratio	3.000 (63/21)	
Clutch Type	Wet, multi disc	

General Specifications

Items	KX250-R1	KX250R6F ~
Transmission:		
Type	5 speed, constant mesh, return shift	
Gear Ratios:		
1st	1.800 (27/15)	
2nd	1.437 (23/16)	
3rd	1.176 (20/17)	
4th	1.000 (21/21)	
5th	0.869 (20/23)	
Final Drive System:		
Type	Chain drive	
Reduction Ratio	3.923 (51/13)	
Overall Drive Ratio	10.234 @Top gear	
Transmission Oil:		
Grade	API SE, SF, or SG API SH or SJ with JASO MA API SH, SJ or SL with JASO MA (KX250R7F ~)	
Viscosity	SAE 10W-40	
Capacity	0.85 L (0.90 US qt)	
Frame		
Type	Tubular, semi-double cradle	
Steering Angle	42° to either side	
Caster (Rake Angle)	26°	
Trail	105 mm (4.1 in.)	
Front Tire:		
Size	80/100-21 51M	
Make/Type	BRIDGESTONE M401, Tube type (EUR) DUNLOP D755F, Tube type	
Rear Tire:		
Size	110/90-19 62M	
Make/Type	BRIDGESTONE M402, Tube type (EUR) DUNLOP D755, Tube type	
Rim Size:		
Front	21 × 1.60	
Rear	19 × 2.15	
Front Suspension:		
Type	Telescopic fork (up side down)	
Wheel Travel	300 mm (11.8 in.)	
Rear Suspension:		
Type	Swingarm (New Uni-trak)	
Wheel Travel	310 mm (12.2 in.)	
Brake Type:		
Front and Rear	Single disc	

1-10 GENERAL INFORMATION

General Specifications

Items	KX250-R1	KX250R6F ~
Effective Disc Diameter:		
Front	225 mm (8.9 in.)	
Rear	215 mm (8.5 in.)	

Specifications are subject to change without notice, and may not apply to every country.
EUR: Europe Model
US: United States Model

Technical Information-Air Oil Separate System Inverted Front Fork

This model has newly developed "air oil separate" inverted front fork.

Outline

The design of the newly developed "air oil separate" inverted front fork aims at the improvement of front suspension performance required for motocross racing. This new fork offers a higher level of control and riding comfort achieved through consistent damping. Pressurization of the cylinder unit prevents cavitation or the formation of air bubbles within the fork oil in low pressure zones within the fork.

The cylinder unit and Travel Control Valve (TCV) provide a stepless, controlled feel of the front fork. By controlling initial damping more efficiently, the fork is progressive and does not have potential hard spots associated with inconsistent damping.

Construction

The new fork, as shown, separates oil and air by using a cylinder unit similar to a shock absorber within the fork. The cylinder unit resides in the upper portion of the fork with the piston rod and fork spring underneath. The TCV is located underneath the fork spring at the bottom of the inner fork tube and provides damping resistance as the fork nears the lower part of its travel. Just like an ordinary fork, the fork oil in the outer chamber, the airspring (air chamber), and fork spring also provide compression damping.

Within the cylinder unit, a spring and free piston apply pressure to the oil and prevent oil/air cavitation (the formation of bubbles within the fork oil caused by varying pressure). The floating piston also takes up the additional volume within the cylinder unit as fluid is displaced by the piston rod. The free piston is designed so that the varying pressure of the air chamber (airspring) outside the cylinder unit will not affect the damping characteristics of the cylinder unit.

Operation mechanism and oil flow

The schematic drawing (A) illustrates the fork in a neutral position. The schematic drawing (B) illustrates the direction of oil flow and the functioning of individual piston valves during fork operation. The left arrows indicate oil flow during the rebound stroke and the right arrows during the compression stroke.

- (1) **During compression:** When the fork is compressed, the piston rod and rebound piston pass through the oil within the cylinder unit. Oil is forced through the rebound piston and opens a shimstack on the bottom of the rebound piston providing compression damping. Oil displaced by the piston rod causes oil to flow through the compression piston opening the compression shims creating further compression damping, and the free piston moves up to take up the displaced volume of oil. The fork spring and air chamber also provide springing to assist in controlling fork action.

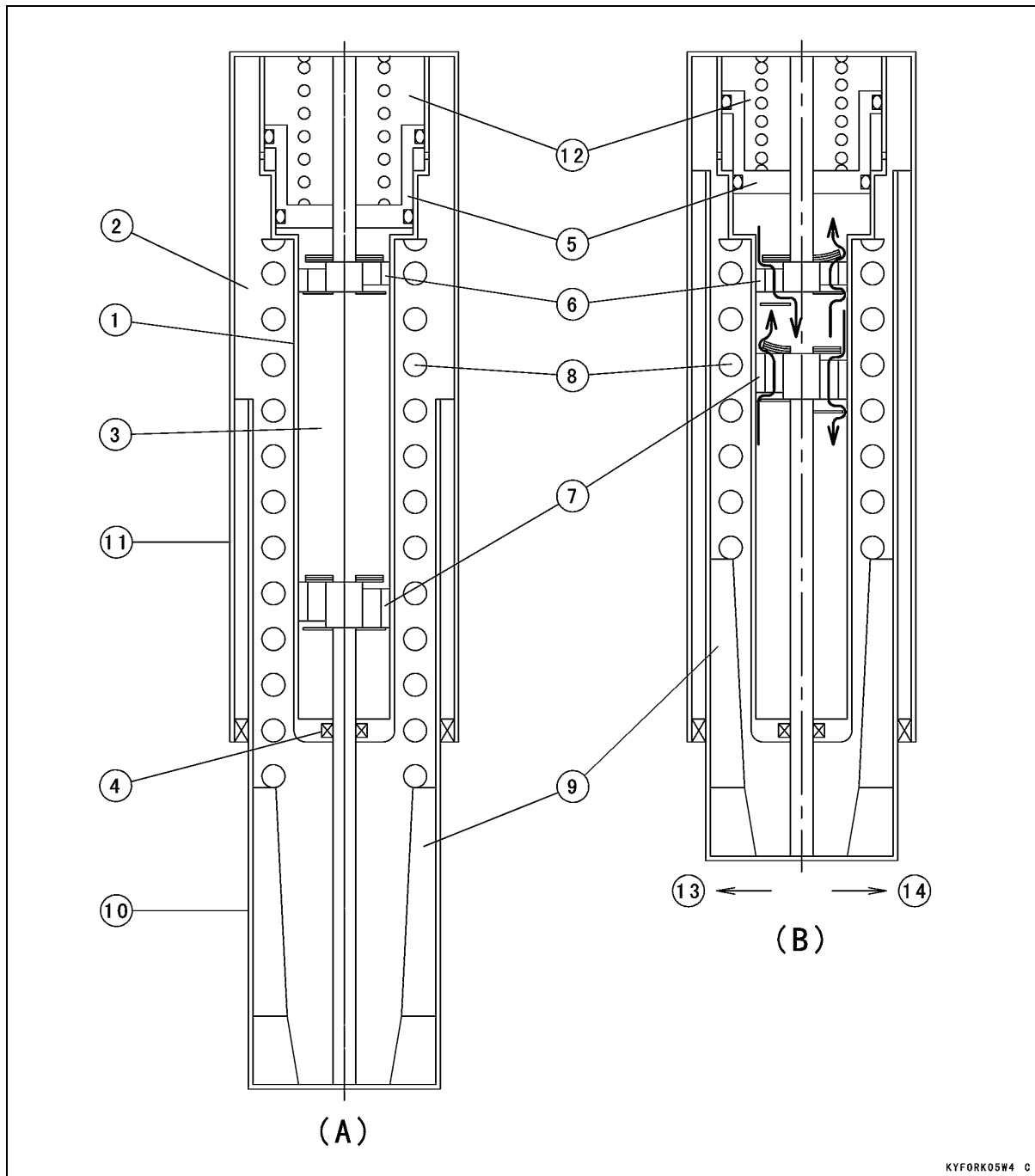
As the fork nears the middle of its travel, the lower portion of the cartridge enters the TCV. The TCV assists in controlling the rate at which the fork compresses, particularly in the middle of the fork's travel, by providing both speed and position sensitive damping. Once the fork nears the end of its travel, the cylinder unit engages the large hydraulic bottoming stop at the bottom of the fork to slow movement.

- (2) **During rebound:** As the fork begins to rebound, the piston rod pulls the rebound piston through the cylinder unit and oil is forced through the rebound piston, as shown by the left side arrows. A shimstack on the top of the rebound piston provides damping to control rebound speed. As the piston rod comes out of the cylinder unit and the volume within the cylinder unit is reduced, the free piston and spring maintain pressure on the oil and return oil to the chamber between the pistons.

1-12 GENERAL INFORMATION

Technical Information-Air Oil Separate System Inverted Front Fork

Air Oil Separate System Inverted Front Fork Diagram



- 1. Cylinder Unit
- 2. Outer Chamber
- 3. Oil Chamber
- 4. Oil Seal
- 5. Free Piston
- 6. Compression Piston
- 7. Rebound Piston

- 8. Fork Spring
- 9. Travel Control Valve
- 10. Inner Tube
- 11. Outer Tube
- 12. Air Chamber
- 13. Rebound Side
- 14. Compression Side

Unit Conversion Table

Prefixes for Units:

Prefix	Symbol	Power
mega	M	× 1 000 000
kilo	k	× 1 000
centi	c	× 0.01
milli	m	× 0.001
micro	μ	× 0.000001

Units of Mass:

kg	×	2.205	=	lb
g	×	0.03527	=	oz

Units of Volume:

L	×	0.2642	=	gal (US)
L	×	0.2200	=	gal (imp)
L	×	1.057	=	qt (US)
L	×	0.8799	=	qt (imp)
L	×	2.113	=	pint (US)
L	×	1.816	=	pint (imp)
mL	×	0.03381	=	oz (US)
mL	×	0.02816	=	oz (imp)
mL	×	0.06102	=	cu in

Units of Force:

N	×	0.1020	=	kgf
N	×	0.2248	=	lb
kgf	×	9.807	=	N
kgf	×	2.205	=	lb

Units of Length:

km	×	0.6214	=	mile
m	×	3.281	=	ft
mm	×	0.03937	=	in

Units of Torque:

N·m	×	0.1020	=	kgf·m
N·m	×	0.7376	=	ft·lb
N·m	×	8.851	=	in·lb
kgf·m	×	9.807	=	N·m
kgf·m	×	7.233	=	ft·lb
kgf·m	×	86.80	=	in·lb

Units of Pressure:

kPa	×	0.01020	=	kgf/cm ²
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cm Hg
kgf/cm ²	×	98.07	=	kPa
kgf/cm ²	×	14.22	=	psi
cm Hg	×	1.333	=	kPa

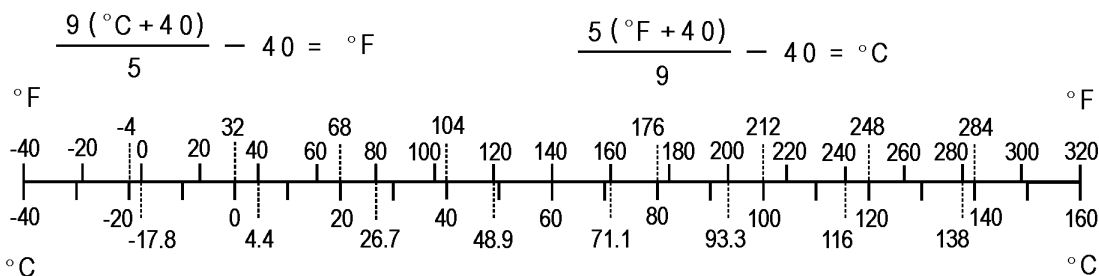
Units of Speed:

km/h	×	0.6214	=	mph
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Units of Power:

kW	×	1.360	=	PS
kW	×	1.341	=	HP
PS	×	0.7355	=	kW
PS	×	0.9863	=	HP

Units of Temperature:



Periodic Maintenance

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2-2 PERIODIC MAINTENANCE

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Periodic Maintenance Chart

The maintenance must be done in accordance with this chart to keep the motorcycle in good running condition.

		FREQUENCY	Each race (or 2.5 hours)	Every 3 races (or 7.5 hours)	Every 6 races (or 15 hours)	Every 12 races (or 30 hours)	See Page	
E N G I N E	Spark plug - clean, gap †	●	R				2-60	
	Clutch - adjust	●					2-24	
	Clutch and friction plates - inspect †	●					2-25	
	Throttle cable - adjust	●					2-12	
	Air cleaner element - clean	●					2-14	
	Air cleaner element - replace		If damaged					2-14
	Carburetor - inspect and adjust	●					2-13	
	Transmission oil - change		●				2-26	
	Piston and piston ring - clean and inspect†	●	R				2-20	
	Cylinder head, cylinder - inspect	●					2-20	
	Small end bearing - inspect †	●					2-22	
	Reed valve - inspect †	●					2-16	
	Exhaust valve - clean and inspect	●					2-22	
	Muffler - clean and inspect†	●					2-23	
	Muffler packing - change		●				2-23	
	Kick pedal and shift pedal - clean	●					–	
	Engine sprocket - inspect †	●					2-32	
	Coolant - check †	●					2-17	
Cooling hoses and connections - inspect †	●					2-19		
C H A S S I S	Brake adjustment - inspect †	●					2-32	
	Brake pad wear - inspect †	●					2-37	
	Brake fluid level - inspect †	●					2-34	
	Brake fluid - change		Every 2 years					2-35
	Brake master cylinder cup and dust cover - replace		Every 2 years					2-38
	Brake caliper fluid seal and dust seal - replace		Every 2 years					2-39
	Brake hoses and pipe - replace		Every 4 years					2-42
	Brake hoses, connections - inspect †	●					2-42	
	Spoke tightness and rim runout - inspect †	●					2-28	
	Wheel bearing - inspect †	●					2-29	
	Drive chain - adjust	●					2-29	
	Drive chain - lubricate	●					2-31	
	Drive chain wear - inspect †	●					2-31	
	Chain slipper and guide - replace		If damaged					2-57
Rear sprocket - inspect †	●					2-32		
Front fork - inspect and clean	●					2-44		
Front fork oil - change				●		2-44		

2-4 PERIODIC MAINTENANCE

Periodic Maintenance Chart

		FREQUENCY	Each race (or 2.5 hours)	Every 3 races (or 7.5 hours)	Every 6 races (or 15 hours)	Every 12 races (or 30 hours)	See Page	
C H A S S I S	Rear shock oil - replace				●		2-52	
	Fuel system - clean			●			2-16	
	Fuel hose - replace		Every 4 years					2-12
	Fuel hose, connections - inspect †	●					2-12	
	Steering play - inspect †	●					2-57	
	Steering stem bearing - grease				●		2-60	
	Swing arm and Uni-Trak linkage pivots - grease			●			2-57	
	Swing arm and Uni-Trak linkage pivots - inspect †			●			2-57	
	Frame - clean and inspect	●					2-60	
	Wheel/tire (air pressure, excessive wear or damage) - inspect	●					2-27	
	Rear shock absorber - inspect	●					2-52	
	Nuts, bolts, fasteners - inspect †	●					2-63	
	General lubrication - perform	●					2-61	

†: Replace, add, adjust, clean or torque if necessary.

R: Replace

Torque and Locking Agent

Tighten all bolts and nuts to the proper torque using an accurate torque wrench. If insufficiently tightened, a bolt or nut may become damaged, strip an internal thread, or break and then fall out. The following table lists the tightening torque for the major bolts and nuts, and the parts requiring use of a non-permanent locking agent or liquid gasket.

When checking the tightening torque of the bolts and nuts, first loosen the bolt or nut by half a turn and then tighten to specified torque.

Letters used in the "Remarks" column mean:

AL: Tighten the two clamp bolts alternately two times to ensure even tightening torque.

L: Apply a non-permanent locking agent to the threads.

LG: Apply liquid gasket to the threads.

S: Tighten the fasteners following the specified sequence.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel System				
Carburetor Top Cover Allen Bolts	3.9	0.40	35 in·lb	
Reed Valve Screws	1.0	0.10	8.8 in·lb	
Carburetor Holder Mounting Bolts	8.8	0.90	78 in·lb	
Carburetor Holding Clamp Screw	1.5	0.15	13 in·lb	
Air Cleaner Duct Clamp Screw	1.5	0.15	13 in·lb	
Air Cleaner Duct Mounting Nuts	3.0	0.30	27 in·lb	
Air Cleaner Housing Bolts	8.8	0.90	78 in·lb	
Rear Frame Mounting Bolts	34	3.5	25	
Cooling System				
Water Pump Cover Bolts	8.8	0.90	78 in·lb	
Water Pump Cover Fitting Bolts	8.8	0.90	78 in·lb	
Coolant Drain Plug	8.8	0.90	78 in·lb	
Water Pump Impeller Bolt	6.9	0.70	61 in·lb	
Right Engine Cover Bolts	8.8	0.90	78 in·lb	
Radiator Shroud Bolts	8.8	0.90	78 in·lb	
Radiator Mounting Bolts	8.8	0.90	78 in·lb	
Radiator Screen Bolts	8.8	0.90	78 in·lb	
Radiator Bracket Bolts	8.8	0.90	78 in·lb	
Cooling Hose Clamp Screws	1.5	0.15	13 in·lb	
Engine Top End				
Main Exhaust Valve Cover Bolts	5.9	0.60	52 in·lb	
Retaining Plate Bolts	5.9	0.60	52 in·lb	
Subexhaust Valve Cover Bolts	8.8	0.90	78 in·lb	
Cylinder Head Nuts				
KX250-R1	25	2.5	18	
KX250R6F ~	31	3.2	23	with 2.3 mm Washer
Engine Mounting Bracket Nuts (Frame Side 8 mm)	29	3.0	22	
Engine Mounting Bracket Nuts (Engine Side 10 mm)	49	5.0	22	
KIPS Cover Bolts	5.9	0.60	52 in·lb	
Governor Shaft Lever Mounting Bolt	5.9	0.60	52 in·lb	

2-6 PERIODIC MAINTENANCE

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Sublever Allen Bolt	3.9	0.40	35 in·lb	L
Main Lever Allen Bolt	3.9	0.40	35 in·lb	L
Stopper Pin Allen Bolt	3.9	0.40	35 in·lb	L
Cylinder Nuts	33	3.4	25	
Muffler Damper Mounting Bolt	8.8	0.90	78 in·lb	
Expansion Chamber Mounting Bolt	12	1.2	8.7	
Muffler Mounting Bolts	8.8	0.90	78 in·lb	
Inner Pipe Mounting Bolts	8.8	0.90	78 in·lb	L
Muffler Pipe Mounting Bolts	8.8	0.90	78 in·lb	L
Engine Right Side				
Clutch Cover Bolts	8.8	0.90	78 in·lb	
Right Engine Cover Bolts	8.8	0.90	78 in·lb	
Governor Shaft Lever Positioning Plug	1.0	0.1	10 in·lb	
Governor Shaft Lever Mounting Bolt	5.9	0.60	52 in·lb	
Advancer				
Lever Mounting Allen Bolts	3.9	0.4	35 in·lb	L
Primary Gear Nut (KX250R6F ~)	78	8.0	58	
Clutch Hub Nut	98	10.0	72	
Clutch Spring Bolts	8.8	0.90	78 in·lb	
Gear Set Lever Nut	8.8	0.90	78 in·lb	
Gear Set Lever Pivot Stud	–	–	–	L (Planted Side)
Ratchet Plate Mounting Bolts	8.8	0.90	78 in·lb	
Shift Mechanism Return Spring Pin	42	4.3	31	L
Shift Pedal Bolt	8.8	0.90	78 in·lb	
Ratchet Guide Bolt	8.8	0.90	78 in·lb	
Kick Pedal Mounting Bolt	25	2.5	18	
Engine Removal/Installation				
Engine Mounting Nuts	49	5.0	36	
Engine Mounting Bracket Nuts:				
Engine Side 10 mm	49	5.0	36	
Frame Side 8 mm	29	3.0	22	
Swing Arm Pivot Shaft Nut	98	10.0	72	
Engine Bottom End/Transmission				
Cylinder Stud	–	–	–	L (Planted Side)
Crankcase Bolts	8.8	0.90	78 in·lb	
Transmission Oil Drain Plug	20	2.0	14.5	
Bearing Retaining Screws	4.9	0.50	43 in·lb	L
Drive Shaft Bearing Retaining Bolts	8.8	0.90	78 in·lb	
Shift Drum Bearing Retaining Bolts	8.8	0.90	78 in·lb	
Shift Drum Operating Cam Bolt	24	2.4	17	L
Flywheel Nut	78	8.0	58	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Wheels/Tires				
Front Axle Nut	78	8.0	58	AL
Front Axle Clamp Bolts	20	2.0	14.5	
Rear Axle Nut	110	11.0	80	
Spoke Nipple	Not less than 2.2	Not less than 0.22	Not less than 19 in·lb	
Final Drive				
Rear Axle Nut	110	11.0	80	
Engine Sprocket Cover Bolts	8.8	0.90	78 in·lb	
Rear Sprocket Nuts	34	3.5	25	
Brakes				
Caliper Mounting Bolts (Front)	25	2.5	18	S
Brake Hose Banjo Bolts	25	2.5	18	
Front Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	
Rear Master Cylinder Mounting Bolts	9.8	1.0	87 in·lb	
Rear Master Cylinder Push Rod Locknut	18	1.8	13.0	
Brake Disc Mounting Bolts:				
Front	9.8	1.0	87 in·lb	L
Rear	23	2.3	16.6	L
Caliper Bleed Valves (Front, Rear)	7.8	0.8	69 in·lb	
Caliper Holder Shaft	27	2.8	20	
Brake Pad Bolt	18	1.8	13	
Rear Brake Pad Bolt Plug	2.5	0.25	22 in·lb	
Brake Pedal Mounting Bolt	25	2.5	18	L
Suspension				
Front Fork Top Plug	29	3.0	22	AL
Front Fork Clamp Bolts (Upper, Lower)	20	2.0	14.5	
Steering Stem Head Nut	78	8.0	58	
Lock Nut/Adjuster Assembly	29	3.0	22	L
Adjuster Assembly	58	6.0	43	
Base Valve Assembly	27	2.8	20	AL
Front Axle Clamp Bolts	20	2.0	14.5	
Swingarm Pivot Shaft Nut	98	10.0	72	
Tie-rod Mounting Nut (Front, Rear)	83	8.5	61	
Rocker Arm Pivot Nut	83	8.5	61	
Rear Shock Absorber Mounting Nut (Upper)	39	4.0	29	
Rear Shock Absorber Mounting Nut (Lower)	34	3.5	25	
Steering				
Steering Stem Head Nut	98	10.0	72	AL
Steering Stem Nut	4.9	0.5	43 in·lb	
Handlebar Holder Bolts	25	2.5	18	
Front Fork Clamp Bolts (Upper, Lower)	20	2.0	14.5	

2-8 PERIODIC MAINTENANCE

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Frame				
Rear Frame Mounting Bolt	34	3.5	25	
Electrical System				
Flywheel Nut	78	8.0	58	
Stator Plate Mounting Screws	4.9	0.50	43 in·lb	
Spark Plug	26	2.7	20	
Magneto Cover Bolts	8.8	0.90	78 in·lb	
Ignition Coil Mounting Bolts	8.8	0.90	78 in·lb	
C.D.I Unit Mounting Bolts	8.8	0.90	78 in·lb	

Basic Torque for General Fasteners

Threads diameter (mm)	Torque		
	N·m	kgf·m	ft·lb
5	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in·lb
6	5.9 ~ 7.8	0.60 ~ 0.80	52 ~ 69 in·lb
8	14 ~ 19	1.4 ~ 1.9	10.0 ~ 13.5
10	25 ~ 34	2.6 ~ 3.5	19.0 ~ 25
12	44 ~ 61	4.5 ~ 6.2	33 ~ 45
14	73 ~ 98	7.4 ~ 10.0	54 ~ 72
16	115 ~ 155	11.5 ~ 16.0	83 ~ 115
18	165 ~ 225	17.0 ~ 23.0	125 ~ 165
20	225 ~ 325	23 ~ 33	165 ~ 240

Specifications

Item	Standard	Service Limit
Fuel System		
Throttle Grip Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	---
Air Cleaner Element Oil	High quality foam air filter oil	---
Read Valve Warp		0.5 mm (0.020 in.)
Cooling System		
Coolant:		
Type (Recommended)	Permanent type antifreeze	
Color	Green	
Mixed Ratio	Soft water 50% and coolant 50%	
Freezing Point	-35°C (-31°F)	
Total Amount	1.20 L (1.27 US qt)	
Engine Top End		
Cylinder Head Warp	---	0.03 mm (0.0012 in.)
<i>Cylinder, Piston</i>		
Cylinder Inside Diameter (30 mm (1.18 in.) below of the Cylinder Head)	66.400 ~ 66.415 mm (2.6142 ~ 2.6148 in.)	66.46 mm (2.617 in.)
Piston Diameter	66.336 ~ 66.351 mm (2.6116 ~ 2.6122 in.)	66.19 mm (2.6059 in.)
Piston/Cylinder Clearance	0.049 ~ 0.079 mm (0.0019 ~ 0.0031 in.)	---
Piston Ring/Groove Clearance	0.025 ~ 0.06 mm (0.00098 ~ 0.00236 in.)	0.16 mm (0.006 in.)
Piston Ring Groove Width	1.01 ~ 1.03 mm (0.0398 ~ 0.0406 in.)	1.11 mm (0.044 in.)
Piston Ring Thickness	0.970 ~ 0.985 mm (0.0382 ~ 0.0388 in.)	0.90 mm (0.035 in.)
Piston Ring End Gap	0.25 ~ 0.45 mm (0.0098 ~ 0.0177 in.)	0.75 mm (0.030 in.)
Piston Pin Diameter	17.995 ~ 18.000 mm (0.7085 ~ 0.7087 in.)	17.96 mm (0.707 in.)
Piston Pin Hole Diameter	18.001 ~ 18.011 mm (0.7087 ~ 0.7091 in.)	18.08 mm (0.712 in.)
Small End Inside Diameter	22.003 ~ 22.012 mm (0.8663 ~ 0.8666 in.)	22.05 mm (0.868 in.)
Engine Right Side		
Clutch Lever Free Play	8 ~ 13 mm (0.3 ~ 0.5 in.)	---
Friction Plate Thickness	2.92 ~ 3.08 mm (0.115 ~ 0.121 in.)	2.8 mm (0.110 in.)
Steel Plate Thickness	1.46 ~ 1.74 mm (0.057 ~ 0.069 in.)	1.36 mm (0.054 in.)
Friction Plate Warp	Not more than 0.15 mm (0.006 in.)	0.3 mm (0.012 in.)
Steel Plate Warp	Not more than 0.2 mm (0.008 in.)	0.3 mm (0.012 in.)

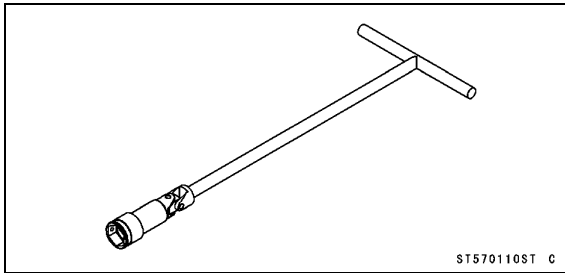
2-10 PERIODIC MAINTENANCE

Specifications

Item	Standard	Service Limit
Engine Bottom End/Transmission		
Transmission Oil:		
Grade	API SE, SF or SG API SH, SJ or SL with JASO MA	
Viscosity	SAE 10W-40	
Capacity	0.85 L (0.90 US qt)	---
Wheels/Tires		
Rim Runout:		
Axial	TIR 1.0 mm (0.04 in.) or less	TIR 2 mm (0.08 in.)
Radial	TIR 1.0 mm (0.04 in.) or less	TIR 2 mm (0.08 in.)
Final Drive		
Drive Chain Slack	52 ~ 62 mm (2.05 ~ 2.44 in.)	---
Drive Chain 20 Link Length	317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)	323 mm (12.72 in.)
Engine Sprocket Diameter	55.48 ~ 55.68 mm (2.184 ~ 2.192 in.)/13T	54.8 mm (2.157 in.)
Rear Sprocket Diameter	247.64 ~ 248.14 mm (9.750 ~ 9.769 in.)/51T	247.3 mm (9.736 in.)
Rear Sprocket Runout	TIR 0.4 mm (0.016 in.) or less	TIR 0.5 mm (0.020 in.)
Brakes		
Brake Lever Free Play	Adjustable (to suit rider)	---
Brake Fluid:		
Grade:		
Front	DOT3 or DOT4	---
Rear	DOT4	---
Brake Pad Lining Thickness:		
Front	3.8 mm (0.150 in.)	1 mm (0.04 in.)
Rear	6.4 mm (0.252 in.)	1 mm (0.04 in.)
Suspension		
Fork Oil:		
Oil Viscosity	KHL15-10 (KAYABA 01) or equivalent	(Adjustable range)
Oil Quantity:		
Outer (Outer/Inner Tubes):		
KX250-R1	300 mL (10.14 US oz.)	280 ~ 320 mL (9.47 ~ 10.82 US oz.)
KX250R6F ~	310 mL (10.48 US oz.)	290 ~ 330 mL (9.80 ~ 11.16 US oz.)
Inner (Subtank)	160 mL (5.41 US oz.)	---
Electrical System		
Spark Plug Gap	0.7 ~ 0.8 mm (0.028 ~ 0.031 in.)	---

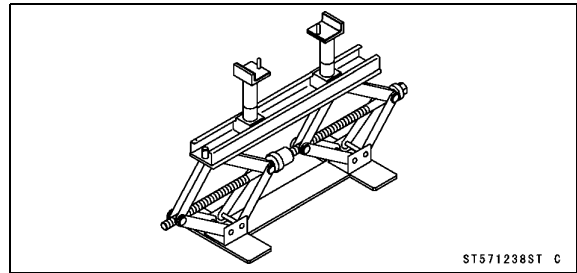
Special Tools

Spark Plug Wrench, Hex 21:
57001-110



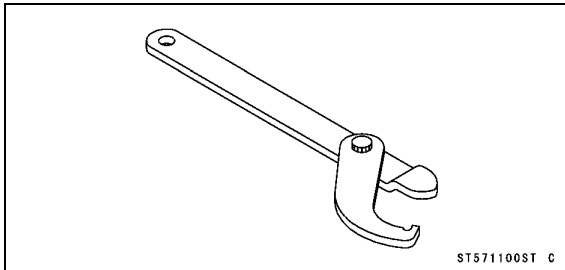
ST570110ST C

Jack:
57001-1238



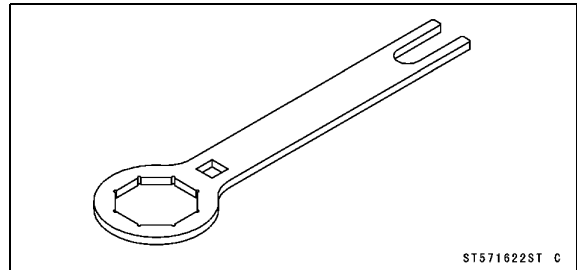
ST571238ST C

Steering Stem Nut Wrench:
57001-1100



ST571100ST C

Top Plug Wrench (46 mm):
57001-1622



ST571622ST C

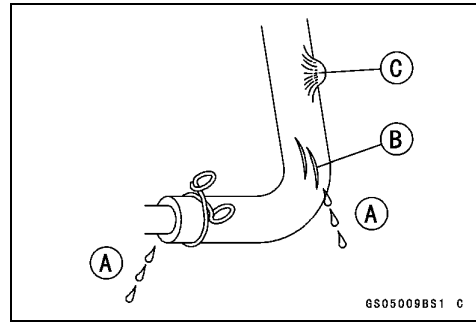
2-12 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Fuel System

Fuel Hose and Connection Check

- Check the fuel hose periodically in accordance with the Periodic Maintenance Chart, and if the motorcycle is not properly handled, the inside the fuel line can cause fuel to leak [A] or the hose to burst. Remove the fuel tank and check the fuel hose.
- ★ Replace the fuel hose if any fraying, cracks [B] or bulges [C] are noticed.
- Check that the hoses are securely connected and clamps are tightened correctly.
- When installing, route the hoses according to Cable, Wire, and Hose Routing section in the Appendix chapter.
- When installing the fuel hoses, avoid sharp bending, kinking, flattening or twisting, and route the fuel hoses with a minimum of bending so that the fuel flow will not be obstructed.
- ★ Replace the hose if it has been sharply bent or kinked.



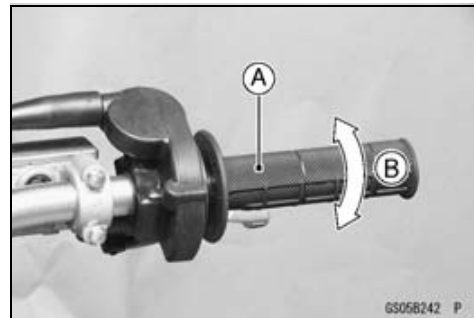
Throttle Grip Free Play Inspection

- Check throttle grip free play [B] by lightly turning the throttle grip [A] back and forth.
- ★ If the free play is improper, adjust the throttle cable.

Throttle Grip Free Play

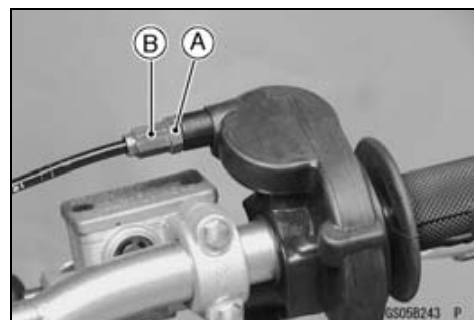
Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)

- Check that the throttle grip moves smoothly from full open to close, and the throttle closes quickly and completely in all steering positions by the return spring.
- ★ If the throttle grip does not return properly, check the throttle cable routing, grip free play, and cable damage. Then lubricate the throttle cable.
- Run the engine at the idle speed, and turn the handlebar all the way to the right and left to ensure that the idle speed does not change.
- ★ If the idle speed increase, check the throttle cable free play and the cable routing.



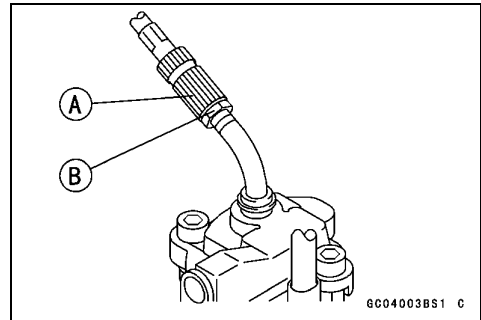
Throttle Cable Adjustment

- Loosen the locknut [A] at the upper end of the throttle cable.
- Turn the adjuster [B] until the proper amount of throttle grip free play is obtained.
- Tighten the locknut.



Periodic Maintenance Procedures

- ★ If the throttle grip free play cannot be adjusted with the adjuster at the upper end of the throttle cable, use the cable adjuster [A] at the carburetor.
- Pull the boot off of the carburetor top. Make the necessary free play adjustment at the lower cable adjuster, tighten the locknut [B], and install the boot.
- Turn the handlebar from side to side while idling the engine. If idle speed varies, the throttle cable may be poorly routed or it may be damaged.



⚠ WARNING
Operation with an improperly adjusted, incorrectly routed, or damaged cable could result in an unsafe riding condition.

Idle Speed Inspection

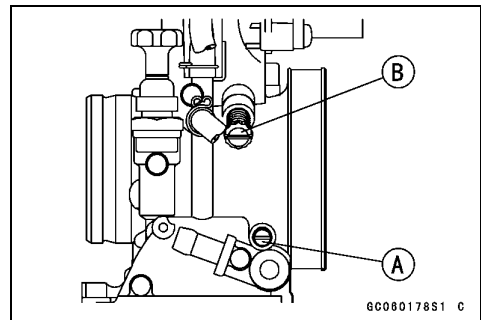
- Start the engine and warm it up thoroughly.
- With the engine idling, turn the handlebar to both sides.
- ★ If handlebar movement changes the idle speed, the throttle cable may be improperly adjusted or incorrectly routed, or it may be damaged. Be sure to correct any of these conditions before riding (see Cable, Harness, Hose Routing in the Appendix chapter).

⚠ WARNING
Operation with an improperly adjusted, incorrectly routed, or damaged cable could result in an unsafe riding condition.

- Check idle speed.
- ★ Adjust it as needed.

Idle Speed Adjustment

- First turn in the air screw [A] until it seats lightly, and back it out the specified number of turns. (see specifications in the Fuel System chapter)
- Start the engine and warm it up thoroughly.
- Turn the idle adjusting screw [B] to obtain desired idle speed. If no idle is preferred, turn out the screw until the engine stops.
- Open and close the throttle a few times to make sure that the idle speed is as desired. Readjust if necessary.



2-14 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Air Cleaner Element Cleaning and Inspection

The air cleaner element should be cleaned and oiled before each race or practice session. A dirty or improperly oiled element can diminish engine performance, cause spark plug fouling, and could affect long term durability of the engine. After cleaning, oil the air cleaner element using a high-quality foam-air filter oil.

NOTE

- *In dusty areas, the element should be cleaned more frequently than recommended interval.*
- *After riding through rain or on muddy roads, the element should be cleaned immediately.*
- *Since repeated cleaning opens the pores of the element, replace it with a new one in accordance with the Periodic Maintenance Chart. Also, if there is a break in the element material or any other damage to the element, replace the element with a new one.*

▲ WARNING

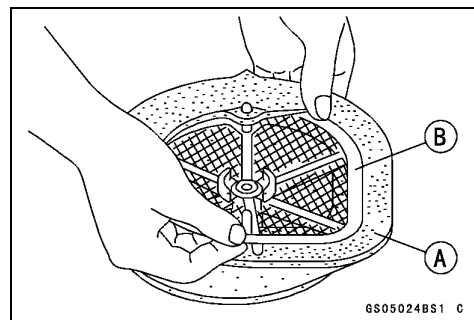
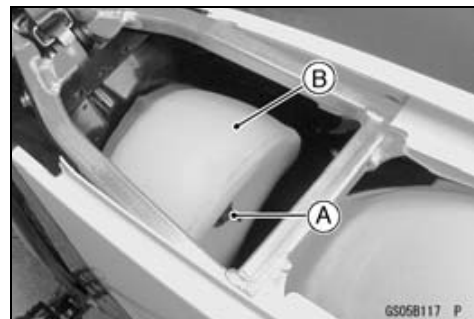
Clean the element in a well-ventilated area, and take care that there are no sparks or flame anywhere near the working area; this includes any appliance with a pilot light. Because of the danger of highly flammable liquids, do not use gasoline or a low flash-point solvent to clean the element.

- Remove:
 - Seat (see Frame chapter)
 - Wing Bolt [A]
 - Air Cleaner Element [B]
- Stuff a clean, lint-free towel into the carburetor so no dirt is allowed to enter the carburetor.
- Wipe out the inside of the air cleaner housing with a clean damp towel.

CAUTION

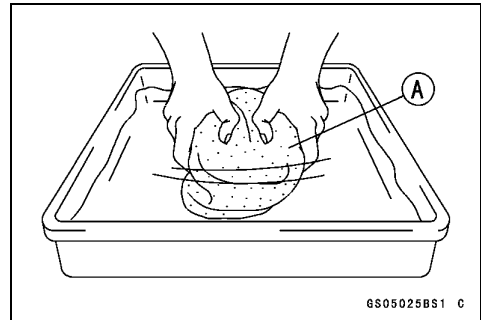
Check inside of the inlet tract and carburetor for dirt. If dirt is present, clean the intake tract and carburetor thoroughly. You may also need to replace the element and seal the housing and inlet tract.

- Separate the element [A] from the frame [B].

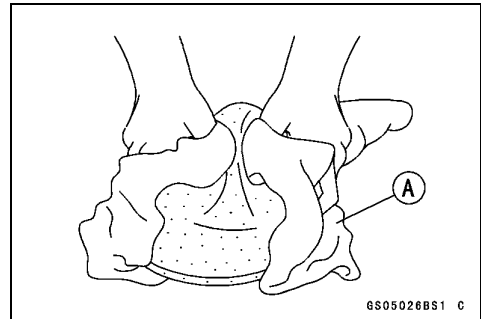


Periodic Maintenance Procedures

- Clean the element [A] in a bath of a high-flash-point solvent using a soft bristle brush.

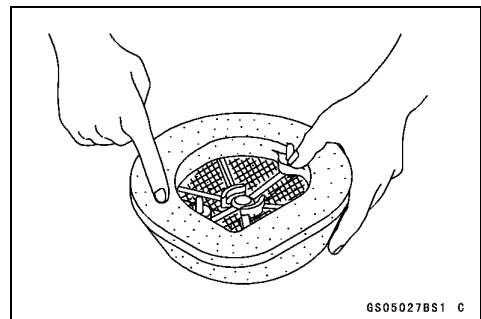


- Squeeze it dry in a clean towel [A]. Do not wring the element or blow it dry; the element can be damaged.
- Check all the parts of the element for visible damage.
- ★ If any of the parts of the element are damaged, replace them.

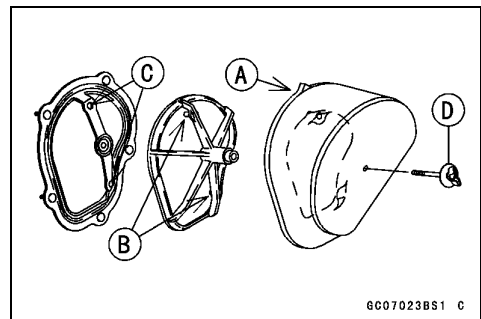


- After cleaning, saturate the element with a high-quality foam-air-filter oil, squeeze out the excess, then wrap it in a clean towel and squeeze it as dry as possible.
- Be careful not to tear the sponge filter.
- Assemble the element.
- Remove the towel from the carburetor.

- Apply grease to all connections and screw holes in the air cleaner housing and intake tract.
- Install the element onto its frame, and coat the element lip and lip seat with a thick layer of all-purpose grease to assure a complete seal.



- Install the air cleaner element so that its tab faces [A] upward and its projections [B] align with the holes [C] in the housing.
- Tighten the wing bolt [D]
- Install the seat.



2-16 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Fuel Tank and Tap Cleaning

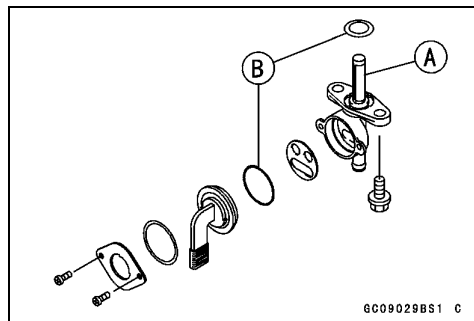
⚠ WARNING

Clean the fuel tank in a well-ventilated area, and take care that there is no sparks or flame anywhere near the working area. Because of the danger of highly flammable liquids, do not use gasoline or low flash-point solvent to clean the tank.

- Remove the fuel tank and drain it.
- Pour some high-flash-point solvent into the fuel tank and shake the tank to remove dirt and fuel deposits.
- Pour the solvent out of the tank.
- Remove the fuel tap from the tank by taking out the bolts.
- Clean the fuel tap filter screen in a high flash-point solvent.
- Pour high-flash-point solvent through the tap in all lever positions.
- Dry the tank and tap with compressed air.
- Install the tap in the fuel tank.
- Install the fuel tank.

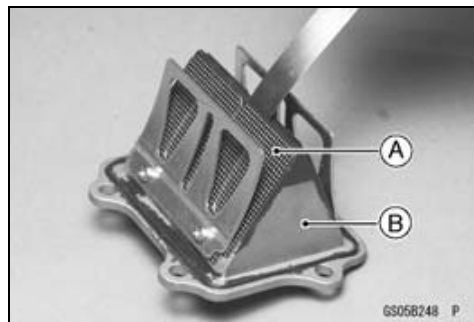
Fuel Tap Inspection

- Remove the fuel tap.
- Check the fuel tap filter screen [A] for any breaks or deterioration.
- ★ If the fuel tap screen have any breaks or is deteriorated, it may allow dirt to reach the carburetor, causing poor running. Replace the fuel tap.
- ★ If the fuel tap leaks, or allows fuel to flow when it is at OFF position, replace the damaged O-ring [B].



Reed Valve Inspection

- Inspect the reeds for cracks, folds, or other visible damage.
- ★ If there is any doubt as to the condition of a reed, replace the reed valve part with a new one.
- ★ If a reed becomes wavy, replace the valve part with a new one even if its warp is less than the service limit.
- Measure the clearance between the reed [A] and holder [B], and check the reed warp as shown.
- ★ If any one of the clearance measurements exceeds the service limit, replace the damaged valve parts with a new one.



Reed Warp

Service Limit: 0.5 mm (0.020 in.)

Periodic Maintenance Procedures

Cooling System

Check the coolant level each day before riding the motorcycle, and replenish coolant if the level is low. Change the coolant in accordance with the Periodic Maintenance Chart.

▲ WARNING

To avoid burns, do not remove the radiator cap or try to inspect the coolant level or change the coolant when the engine is still hot. Wait until it cools down.

Coolant Level Inspection

NOTE

○ Check the level when the engine is cold (room or ambient temperature).

- Place the motorcycle by using the side stand so that the radiator cap is located uppermost in order to exhaust the air accumulated in the radiator.
- Remove the radiator cap [A].

NOTE

○ Remove the radiator cap in two steps. First turn the cap counterclockwise to the first stop and wait there for a few seconds. Then push down and turn it further in the same direction and remove the cap.

- Check the coolant level. The coolant level [A] should be at the bottom of the filler neck [B].
- ★ If the coolant level is low, add coolant through the filler opening to the bottom of the filler neck. Install the cap.

Recommended coolant:

Permanent type of antifreeze (soft water and ethylene glycol plus corrosion and rust inhibitor chemicals for aluminum engines and radiators)

Water and coolant mixture ratio:

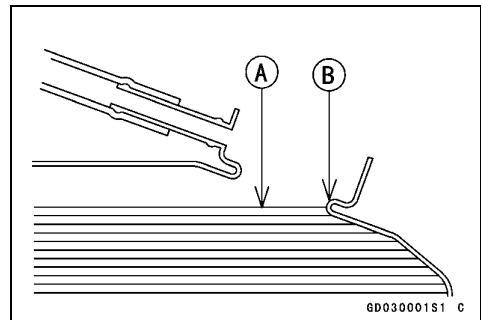
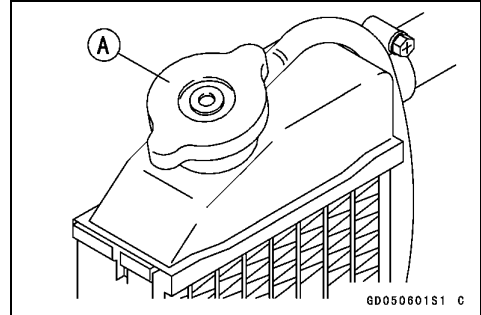
1 : 1 (water 50%, Coolant 50%)

Total amount:

1.20 L (1.27 US qt.)

Coolant Deterioration Inspection

- Visually inspect the coolant.
- ★ If whitish cotton-like wafts are observed, aluminum parts in the cooling system are corroded. If the coolant is brown, iron or steel parts are rusting. In either case, flush the cooling system.
- ★ If the coolant gives off an abnormal smell, check for a cooling system leak. It may be caused by exhaust gas leaking into the cooling system.



2-18 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Coolant Draining

The coolant should be changed periodically to ensure long engine life.

⚠ WARNING

To avoid burns, do not remove the radiator cap or try to change the coolant when the engine is still hot. Wait until it cools down.

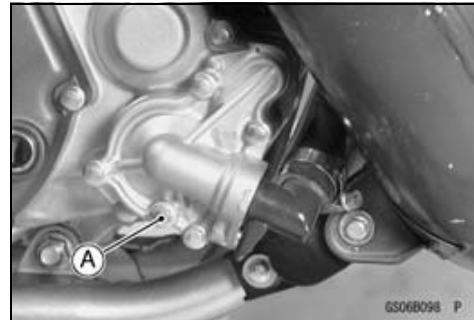
Coolant on tires will make them slippery and can cause an accident and injury. Immediately wipe up or wash away any coolant that spills on the frame, engine or other painted parts. Since coolant is harmful to the human body, do not use for drinking.

- Remove the radiator cap.

NOTE

○ Remove the radiator cap in two steps. First turn the cap counterclockwise to the first stop and wait there for a few seconds. Then push down and turn it further in the same direction and remove the cap.

- Place a container under the coolant drain plug [A], and drain the coolant from the radiator and engine by removing the drain plug on the water pump cover. Immediately wipe or wash out any coolant that spills on the frame, engine, or wheel.
- Inspect the old coolant for visual evidence of corrosion and abnormal smell (see Coolant Deterioration Inspection).



Coolant Filling

CAUTION

Use coolant containing corrosion inhibitors made specifically for aluminum engines and radiators in accordance with the instruction of the manufacturer's. Soft or distilled water must be used with the antifreeze (see below for antifreeze) in the cooling system. If hard water is used in the system, it causes scale accumulation in the water passages, and considerably reduces the efficiency of the cooling system.

Recommended Coolant

Type:	Permanent type antifreeze (soft water and ethylene glycol plus corrosion and rust inhibitor chemicals for aluminum engines and radiators)
Color:	Green
Mixed ratio:	Soft water 50%, Coolant 50%
Freezing point:	-35°C (-31°F)
Total amount:	1.20 L (1.27 US qt.)

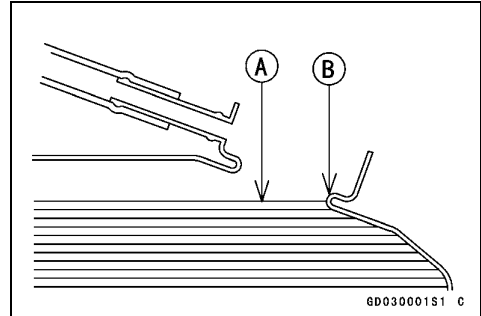
Periodic Maintenance Procedures

- Install the drain plug.
 - Replace the gasket with a new one.
- Torque - Coolant Drain Plug on Water Pump Cover: 8.8 N·m
(0.90 kgf·m, 78 in·lb)**

- Fill the radiator up to the bottom of the radiator filler neck [B] with coolant [A], and install the cap, turning it clockwise about 1/4 turn.

NOTE

○ Pour in the coolant slowly so that it can expel the air from the engine and radiator. The radiator cap must be installed in two steps. First turn the cap clockwise to the first stop. Then push down on it and turn it the rest of the way.



- Check the cooling system for leaks.

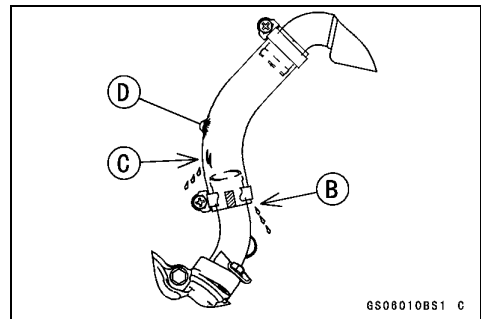
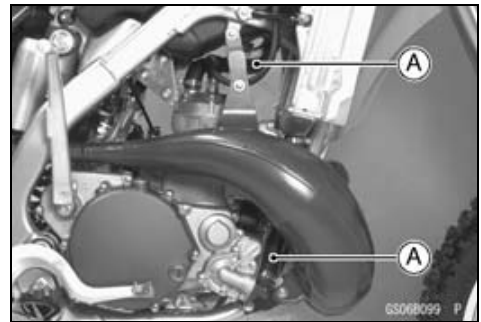
Air Bleeding

Before putting the motorcycle into operation, any air trapped in the cooling system must be removed as follows.

- Start the engine, warm up the engine thoroughly, and then stop the engine. Wait until the engine cools down.
- Remove the radiator cap.
- Check the coolant level.
- ★ If the coolant level is low, add coolant up to the bottom of the filler neck.
- Install the radiator cap.
- Check the cooling system for leaks.

Cooling Hoses and Connections Inspection

- The high pressure inside the cooling hose [A] can cause coolant to leak [B] or the hose to burst if the line is not properly maintained. Visually inspect the hoses for signs of deterioration. Squeeze the hoses. A hose should not be hard and brittle, nor should it be soft or swollen.
- ★ Replace the hose if any fraying, cracks [C] or bulges [D] are noticed.
- Check that the hoses are securely connected and clamps are tightened correctly.



2-20 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

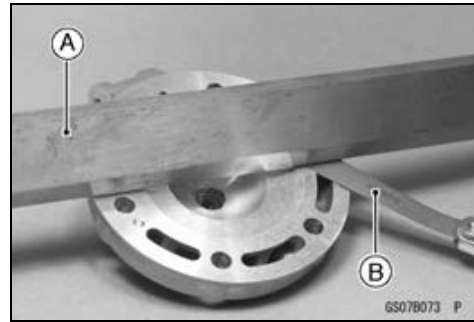
Engine Top End

Cylinder Head Warp Inspection

- Lay a straightedge [A] across the lower surface of the head at several different points, and measure warp by inserting a thickness gauge [B] between the straightedge and the head.
- ★ If warp exceeds the service limit, repair the mating surface. Replace the cylinder head if the mating surface is badly damaged.

Cylinder Head Warp

Service Limit: 0.03 mm (0.0012 in.)



Cylinder Wear Inspection

NOTE

○ Measure the cylinder inside diameter when the cylinder is cold (room or ambient temperature).

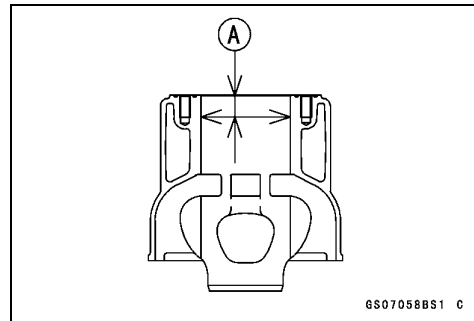
- Visually inspect the inside of the cylinder for scratches and abnormal wear.
- ★ If the cylinder is damaged or badly worn, replace it with a new one.
- Since there is a difference in cylinder wear in different directions, take a side-to-side and a front-to back measurement shown in the figure.
- ★ If any of the cylinder inside diameter measurements exceeds the service limit, the cylinder must be replaced with a new one since the PLATING cylinder cannot be bored or honed.

(A): 30 mm (1.2 in.)

Cylinder Inside Diameter

Standard: 66.400 ~ 66.415 mm (2.6142 ~ 2.6148 in.), and less than 0.01 mm (0.0004 in.) difference between any two measurements.

Service Limit: 66.46 mm (2.617 in.), or more than 0.05 mm (0.020 in.) difference between any two measurements.



Piston Diameter Measurement

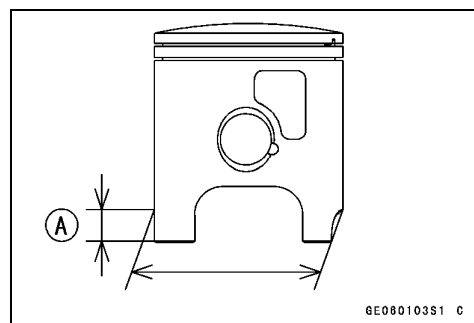
- Measure the outside diameter of the piston 20.5 mm (0.81 in.) [A] up from the bottom of the piston at a right angle to the direction of the piston pin.
- ★ If the measurement is under the service limit, replace the piston.

(A): 20.5 mm (0.81 in.)

Piston Diameter

Standard: 66.336 ~ 66.351 mm (2.6116 ~ 2.6122 in.)

Service Limit: 66.19 mm (2.606 in.)



Periodic Maintenance Procedures

Piston/Cylinder Clearance

The piston-to-cylinder clearance is measured whenever a piston or cylinder is replaced with a new one. The standard piston-to-cylinder clearance must be adhered to whenever the cylinder is replaced.

If only a piston is replaced, the clearance may exceed the standard slightly. But it must not be less than the minimum, in order to avoid piston seizure.

The most accurate way to find the piston clearance is by making separate piston and cylinder diameter measurements and then computing the difference between the two values. Measure the piston diameter as just described, and measure the cylinder diameter at the very bottom of the cylinder.

Piston/Cylinder Clearance

Standard: 0.049 ~ 0.079 mm (0.0023 ~ 0.0031 in.)

Piston Ring, Piston Ring Groove Inspection

- Visually inspect the piston rings and the piston ring grooves.
- ★ If the rings are worn unevenly or damaged, they must be replaced.
- ★ If the piston ring grooves are worn unevenly or damaged, the piston must be replaced and fitted with new rings.
- Check for uneven groove wear by inspecting the ring seating.
- The rings should fit perfectly parallel to the groove surfaces. If not, the piston must be replaced.
- With the piston ring in its groove, make several measurements with a thickness gauge [A] to determine piston ring/groove clearance.
- ★ If the clearance exceeds the service limit, measure the thickness of the piston ring
- ★ If the ring has worn down to less than the service limit, replace the ring; if the groove width exceeds the service limit, replace the piston.

Piston Ring/Groove Clearance

Standard: 0.025 ~ 0.060 mm (0.0010 ~ 0.0024 in.)

Service Limit: 0.16 mm (0.006 in.)

Piston Ring Thickness

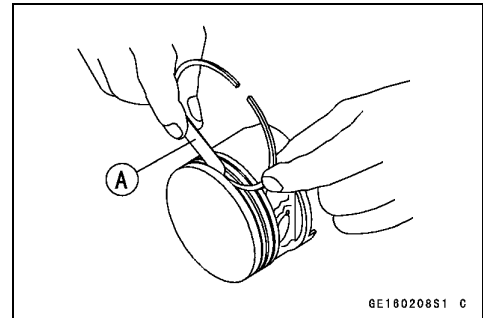
Standard: 0.970 ~ 0.985 mm (0.0382 ~ 0.0388 in.)

Service Limit: 0.90 mm (0.035 in.)

Piston Ring Groove Width

Standard: 1.01 ~ 1.03 mm (0.0398 ~ 0.0406 in.)

Service Limit: 1.11 mm (0.044 in.)



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2-22 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

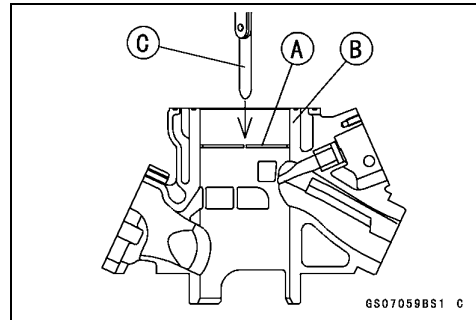
Piston Ring End Gap Inspection

- Place the piston ring [A] inside the cylinder [B], using the piston to locate the ring squarely in place.
- Set it close to the bottom of the cylinder, where cylinder wear is low.
- Measure the gap between the ends of the ring with a thickness gauge [C]
- ★ If the gap is wider than the service limit, the ring is over-worn and must be replaced.

Piston Ring End Gap

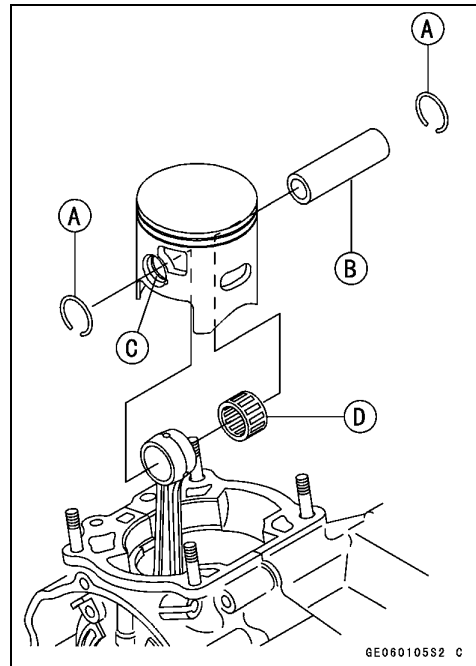
Standard: 0.25 ~ 0.45 mm (0.0098 ~ 0.0177 in.)

Service Limit: 0.75 mm (0.030 in.)



Piston, Piston Pin, Connecting Rod Wear Inspection

- Visually inspect the snap ring [A] still fitted in place.
- ★ If the ring shows weakness or deformation, replace the ring. Also if the pin hole groove shows excessive wear, replace the piston.
- Measure the diameter of the piston pin [B] with a micrometer.
- ★ If the piston pin diameter is less than the service limit at any point, replace the piston pin.
- Using a cylinder gauge, measure the diameter of both of piston pin holes [C] in the piston and the inside diameter of the connecting rod small end.
- ★ If either piston pin hole diameter exceeds the service limit, replace the piston.
- ★ If the connecting rod small end inside diameter exceeds the service limit, replace the crankshaft assembly.
- Check the needle bearing [D].
- The rollers in a needle bearing normally wear very little, and wear is difficult to measure. Instead of measuring, inspect the bearing for abrasion, color change, other damage.
- ★ If there is any doubt as to the condition of a needle bearing, replace the bearing and piston pin.



Piston Pin Diameter

Standard: 17.995 ~ 18.000 mm (0.7085 ~ 0.7087 in.)

Service Limit: 17.96 mm (0.707 in.)

Piston Pin Hole Diameter

Standard: 18.001 ~ 18.011 mm (0.7087 ~ 0.7091 in.)

Service Limit: 18.08 mm (0.712 in.)

Small End Inside Diameter

Standard: 22.003 ~ 22.012 mm (0.8663 ~ 0.8666 in.)

Service Limit: 22.05 mm (0.868 in.)

Exhaust Valve Clean and Inspect

- Refer to Exhaust Valve (KIPS) section in the Engine Top End chapter.

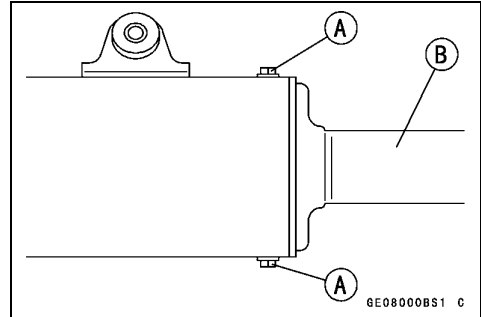
Periodic Maintenance Procedures

Exhaust System

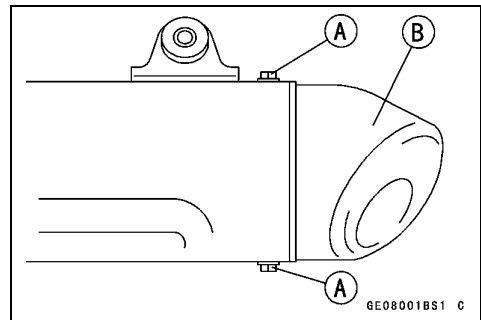
- The exhaust system, in particular, the baffle is equipped in the muffler body to reduce exhaust noise and conduct the exhaust gases away from the rider while minimizing power loss. If carbon has built up inside the baffle, exhaust efficiency is reduced, causing engine performance to drop.
- If the muffler body is badly damaged, dented, cracked or rusted, replace it. Replace the muffler baffle if the exhaust noise becomes too loud or engine performance drops.

Muffler Baffle Change

- Remove the muffler body.
- Remove the inner pipe mounting bolts [A], and pull the muffler pipe [B] from the muffler body.



- Unscrew the inner pipe mounting bolts [A].
- Pull the inner pipe [B] from the muffler body.



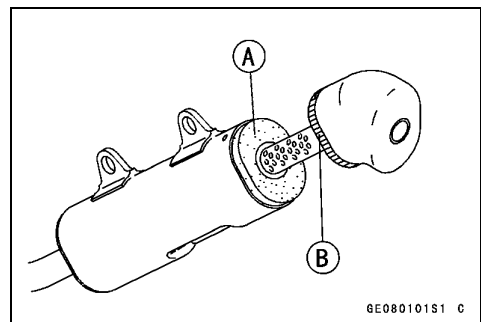
- Pull off the old muffler baffle, and install the new muffler baffle [A] into the muffler body.
- Apply silicone sealant to the circumference [B] of the muffler pipe and inner pipe.
- Apply a non-permanent locking agent to the pipe mounting bolts.
- Tighten:

Torque - Inner Pipe Mounting Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

Muffler Pipe Mounting Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

- Install the muffler body.

Torque - Muffler Mounting Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)



Engine Right Side

⚠ WARNING

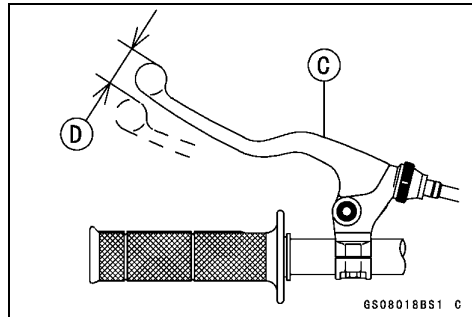
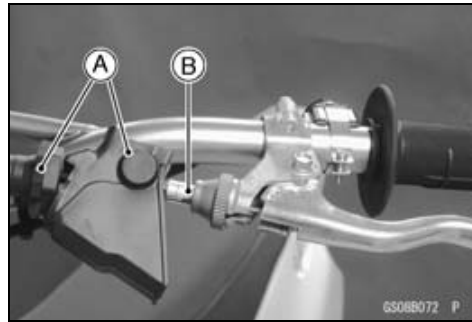
To avoid a serious burn, never touch the hot engine or exhaust chamber during clutch adjustment.

2-24 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Clutch Lever Free Play Check

- Slide the clutch lever dust covers [A] out of place.
 - Check that the clutch cable upper end is fully seated in the adjusting bolt [B].
 - Check that the clutch lever [C] has 8 ~ 13 mm (0.3 ~ 0.5 in.) of play [D].
- ★ If it does not, adjust the lever play.



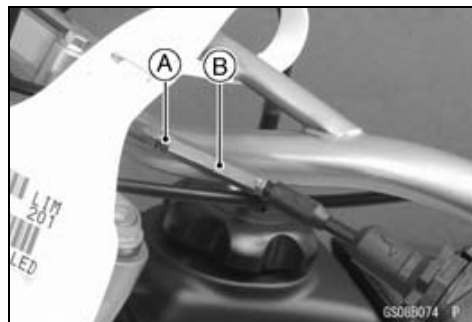
Clutch Lever Free Play Adjustment

- Slide the clutch lever dust cover out of place.
- Turn the adjuster [A] so that the clutch lever will have 8 ~ 13 mm (0.3 ~ 0.5 in.) of play.

NOTE

○ Be sure that the outer cable end at the clutch lever is fully seated in the adjusting bolt at the clutch lever, or it could slip into the place later, creating enough cable play to prevent clutch disengagement.

- If it cannot be done, loosen the locknut [A] at the middle of the clutch cable, and turn the adjusting nut [B] so that clutch lever has 8 ~ 13 mm (0.3 ~ 0.5 in.) of play.
- After the adjustment is made, tighten the locknut, and start the engine and check that the clutch does not slip and that it release properly.



Periodic Maintenance Procedures

Friction and Steel Plates Wear, Damage Inspection

- Visually inspect the friction and steel plates to see if they show any signs of seizure, or uneven wear.
- ★ If any plates show signs of damage, replace the friction plates and steel plates as a set.
- Measure the thickness [A] of the friction plates [B] and steel plates with vernier calipers.
- ★ If they have worn past the service limit, replace them with new ones.

Friction Plate Thickness

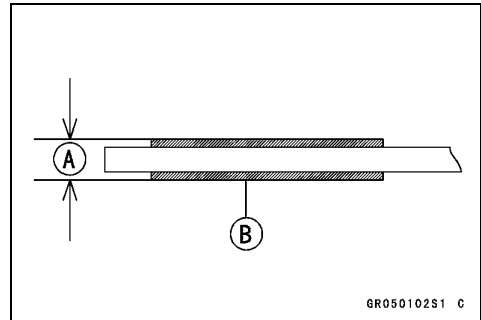
Standard: 2.92 ~ 3.08 mm (0.115 ~ 0.121 in.)

Service Limit: 2.8 mm (0.110 in.)

Steel Plate Thickness

Standard: 1.46 ~ 1.74 mm (0.057 ~ 0.069 in.)

Service Limit: 1.36 mm (0.054 in.)



Friction and Steel Plate Warp Inspection

- Place each friction plate or steel plate on a surface plate, and measure the gap between the surface plate [A] and each friction plate or steel plate [B] with a thickness gauge [C]. The gap is the amount of friction or steel plate warp.
- ★ If any plate is warped over the service limit, replace it with a new one.

Friction and Steel Plates Warp

Standard:

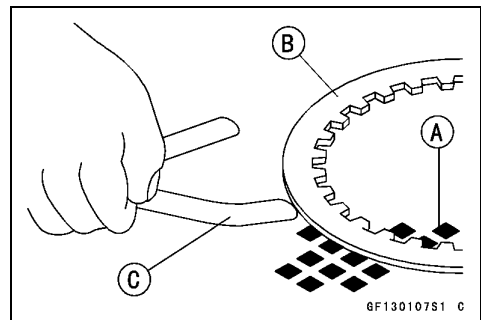
Friction Plate 0.15 mm (0.006 in.) or less

Steel Plate 0.2 mm (0.008 in.) or less

Service Limit:

Friction Plate 0.3 mm (0.012 in.)

Steel Plate 0.3 mm (0.012 in.)



Engine Bottom End/Transmission

In order for the transmission and clutch to function properly, always maintain the transmission oil at the proper level and change the oil periodically.

▲ WARNING

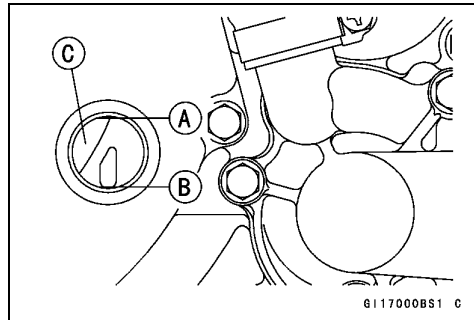
Motorcycle operation with insufficient, deteriorated, or contaminated transmission oil will accelerated wear and may result in transmission seizure, and injury.

2-26 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Transmission Oil Level Inspection

- Situate the motorcycle so that it is perpendicular to the ground.
- If the motorcycle has just been used, wait several minutes until the oil settles.
- Check that the oil level comes up between the upper level [A] and lower level [B] through the oil level gauge [C] on the clutch cover.
- ★ If the oil level is too high, remove the excess oil through the oil filler opening using a syringe or some other suitable device.
- ★ If the oil level is too low, add the correct amount of oil. Use the same type and make of oil that is already in the engine.



NOTE

○ If the transmission oil type and make are unknown, use any brand of the specified oil to top up the level in preference to running the engine with the oil level low. Then at your earliest convenience, change the oil completely.

Transmission Oil Change

- Warm up the engine thoroughly so that the oil will pick up any sediment and drain easily. Then stop the engine.
- Place an oil pan beneath the engine.
- Remove the transmission oil drain plug [A] on the bottom of the engine, and let the oil drain completely.

NOTE

○ Hold the motorcycle upright so that the oil may drain completely.

- Replace the gasket at the drain plug with a new one.
- After the oil has completely drained out, install the drain plug with the gasket, and tighten it.

Torque - Transmission Oil Drain Plug: 20 N·m (2.0 kgf·m, 14.5 ft·lb)

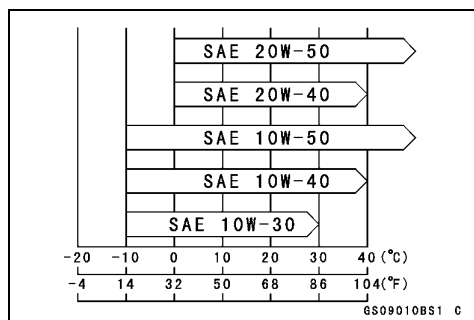
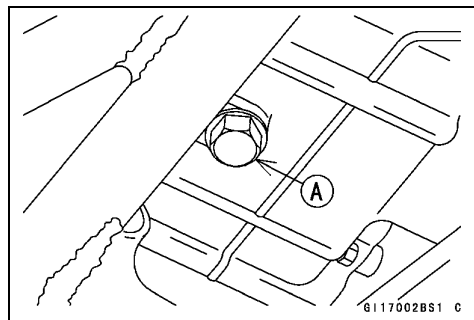
- Fill the engine with a good quality engine oil specified below.
- Check the oil level.

Recommended Transmission Oil

Grade	API SE, SF or SG
	API SH, SJ or SL with JASO MA
Viscosity	SAE10W-40
Capacity	0.85 L (0.90 US qt.)

NOTE

○ Although 10W-40 engine oil is the recommended oil for most conditions, the oil viscosity may need to be changed to accommodate atmospheric conditions in your riding area.



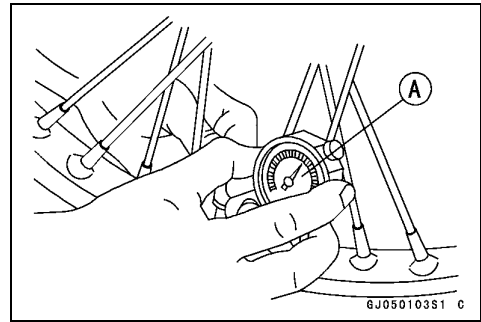
Periodic Maintenance Procedures

Wheel/Tires

Air Pressure Inspection/Adjustment

- Using tire air pressure gauge [A], measure the tire pressure when the tires are cold.
- ★ Adjust the tire air pressure to suit track conditions and rider preference, but do not stray too far from the recommended pressure.

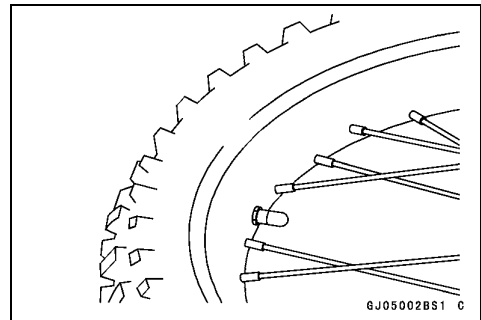
Track Condition	Tire Pressure
When the track is wet, muddy, sandy or slippery, reduce the tire pressure to increase the tire tread surface on the ground.	80 kPa (0.8 kgf/cm ² , 11 psi) ↑
When the track is pebbly or hard, increase the tire pressure to prevent damage or punctures, through the tires will skid more easily.	↓ 100 kPa (1.0 kgf/cm ² , 14 psi)



Tires Inspection

As the tire tread wears down, the tire becomes more susceptible the puncture and failure.

- Remove any imbedded stones or other foreign particles from the tread.
- Visually inspect the tire for cracks and cuts, replacing the tire in case of bad damage. Swelling or high spots indicate internal damage, requiring tire replacement.



⚠ WARNING

To ensure safe handling and stability, use only the recommended standard tires for replacement, inflated to the standard pressure.

NOTE

○ Check and balance the wheel when a tire is replaced with a new one.

Standard Tire

Front:

- Size** 80/100-21 51M
- Make** BRIDESTONE (EUR) DUNLOP
- Type** M401, Tube (EUR) D755F, Tube

Rear:

- Size** 110/90-19 62M
- Make** BRIDESTONE M402 (EUR) DUNLOP
- Type** M402, Tube (EUR) D755, Tube

2-28 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Spoke Tightness Inspection

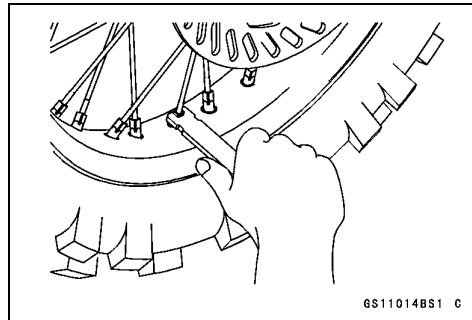
- Check that all the spokes are tightened evenly.
- ★ If spoke tightness is uneven or loose, tighten the spoke nipples evenly.

Torque - Spoke Nipples: 2.2 N·m (0.22 kgf·m, 19 in·lb)

- Check the rim runout.

WARNING

If any spoke breaks, it should be replaced immediately. A missing spoke places an additional load on the other spokes, which will eventually cause other spokes to break.

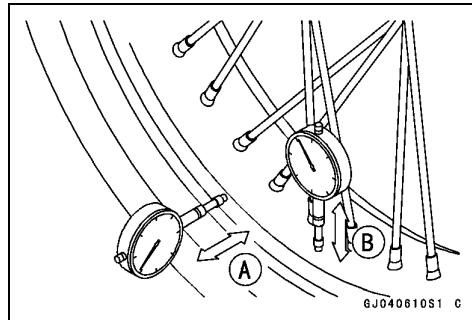


Rim Runout Inspection

- Place the jack under the frame so that the front/rear wheel off the ground.

Special Tool - Jack: 57001-1238

- Inspect the rim for small cracks, dents, bending, or warping.
- ★ If there is any damage to the rim, it must be replaced.
- Set a dial gauge against the side of the rim, and rotate the rim to measure the axial runout [A]. The difference between the highest and lowest dial readings is the amount of runout.
- Set a dial gauge against the outer circumference of the rim, and rotate the rim to measure radial runout [B]. The difference between the highest and lowest dial readings is the amount of runout.
- ★ If rim runout exceeds the service limit, check the wheel bearings first. Replace them if they are damaged. If the problem is not due to the bearings, correct the rim warp (runout). A certain amount of rim warp can be corrected by recentering the rim. Loosen some spokes and tighten others within the standard torque to change the position of different parts of the rim. If the rim is badly bent, however, it must be replaced.



Rim Runout (with tire installed)

Standard:

Axial TIR 1.0 mm (0.039 in.) or less

Radial TIR 1.0 mm (0.039 in.) or less

Service Limit:

Axial TIR 2 mm (0.08 in.)

Radial TIR 2 mm (0.08 in.)

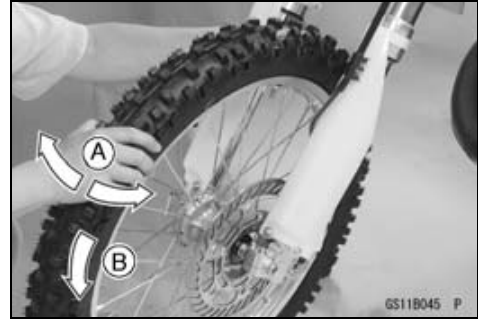
Periodic Maintenance Procedures

Wheel/Bearing Inspection

- Using a jack, raise the front wheel off the ground (see Wheels/Tires chapter).

Special Tool - Jack: 57001-1238

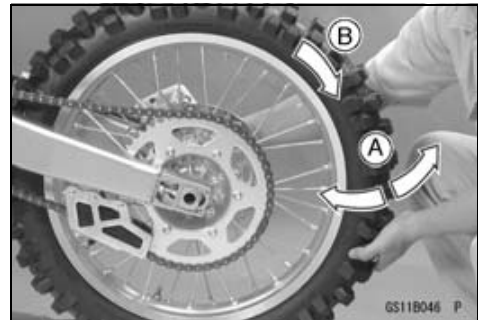
- Turn the handlebar all the way to the right or left.
- Hold the front fork leg and move [A] the front wheel sideways with force to inspect the roughness of the hub bearing.
- Spin [B] the front wheel lightly, and check for smoothly turn, roughness, binding or noise.
- ★ If roughness, binding or noise is found, remove the front wheel and inspect the hub bearing (see Wheels/Tires chapter).



- Using a jack, raise the rear wheel off the ground (see Wheels/Tires chapter).

Special Tool - Jack: 57001-1238

- Hold the swingarm and move [A] the rear wheel sideways with force to inspect the roughness of the hub bearing.
- Spin [B] the front wheel lightly, and check for smoothly turn, roughness, binding or noise.
- ★ If roughness, binding or noise is found, remove the rear wheel and inspect the wheel bearing (see Wheels/Tires chapter).



Final Drive

Drive Chain Slack Inspection

- Raise the rear wheel off the ground.
- Check the wheel alignment (see Wheel Alignment Inspection in the Final Drive chapter), and adjust it if necessary (see Wheel Alignment Adjustment in the Final Drive chapter).

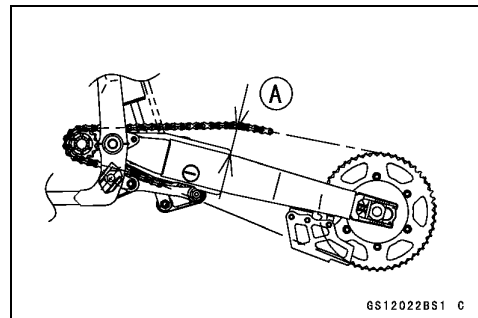
NOTE

○ Clean the drive chain if it is dirty, and lubricate it if it appears dry.

- Rotate the rear wheel to find the position where the chain is tightest (because it wears unevenly).
- Measure the space (chain slack) [A] between the chain and the swingarm at the rear of the chain slipper as shown.
- ★ If the drive chain slack exceeds the standard, adjust it.

Chain Slack

Standard: 52 ~ 62 mm (2.05 ~ 2.44 in.)

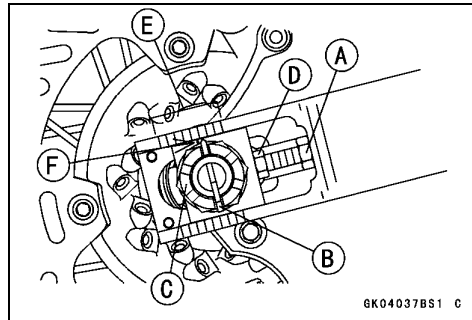


2-30 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Drive Chain Slack Adjustment

- Loosen the left and right chain adjuster locknuts [A].
- Remove the cotter pin [B] and loosen the axle nut [C].
- ★ If the chain is too tight, turn in the left and right chain adjusting bolts [D] evenly, and push the wheel forward until the chain is too loose.
- ★ If the chain is too loose, turn out both chain adjusting bolts evenly until the drive chain has the correct amount of slack. To keep the chain and wheel properly aligned, the notch on the left chain adjuster should align with the same swingarm mark [E] as the right chain adjuster notch [F].



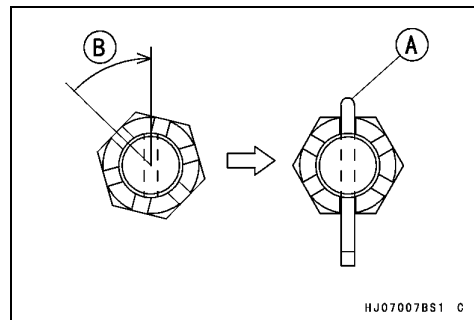
- Check the wheel alignment.
- Tighten both chain adjuster locknuts securely.
- Tighten the axle nut.

Torque - Rear Axle Nut: 110 N·m (11.0 kgf·m, 80 ft·lb)

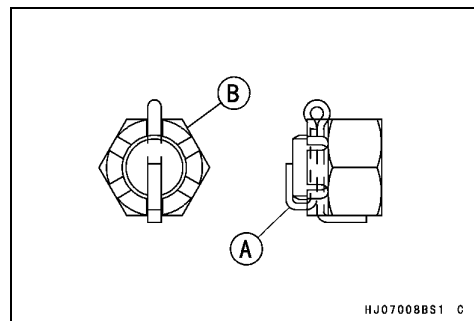
- Rotate the wheel, measure the chain slack again at the tightest position, and readjust if necessary.
- Install a new cotter pin [A] through the axle nut and axle, and spread its ends.

NOTE

- When inserting the cotter pin, if the slots in the nut do not align with the cotter pin hole in the axle shaft, tighten the nut clockwise [B] up to next alignment.
- It should be within 30 degree.
- Loosen once tighten again when the slot goes past the nearest hole.



- Bend the cotter pin [A] over the nut [B].



▲ WARNING

If the axle nut is not securely tightened, or the cotter pin is not installed, an unsafe riding condition may result.

- Check the rear brake (see Brakes chapter).

NOTE

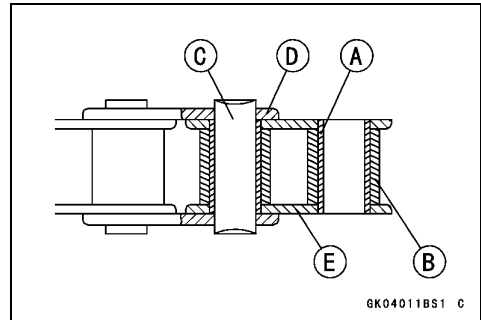
- In wet and muddy conditions, mud sticks to the chain and sprockets resulting in an overly tight chain, and the chain may break. To prevent this, adjust the chain to 62 ~ 72 mm (2.44 ~ 2.83 in.) of slack whenever necessary.

Periodic Maintenance Procedures

Drive Chain Wear Inspection

- Rotate the rear wheel to inspect the drive chain for damaged rollers, and loose pins and links.
- ★ If there is any irregularity, replace the drive chain.
- ★ Lubricate the drive chain if it appears dry.

- [A] Bushing
- [B] Roller
- [C] Pin
- [D] Pin Link
- [E] Roller Link



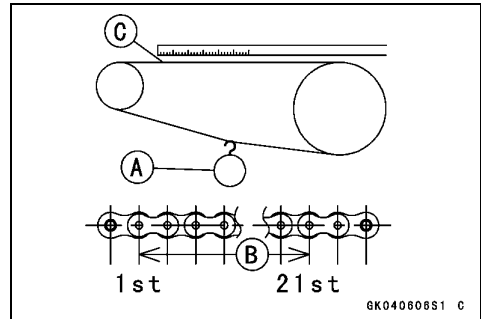
- Stretch the chain taut by hanging a 98 N (10 kgf, 20 lb) weight [A] on the chain.
- Measure the length of 20 links [B] on the straight part [C] of the chain from the pin center of the 1st pin to the pin center of the 21st pin. Since the chain may wear unevenly, take measurements at several places.

Chain 20-link Length

Standard: 317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)

Service Limit: 323 mm (12.72 in.)

- ★ If any measurements exceed the service limit, replace the chain. Also, replace the front and rear sprockets when the drive chain is replaced.



⚠ WARNING

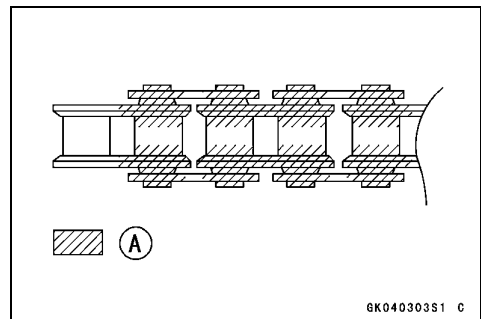
If the drive chain wear exceeds the service limit, replace the chain or an unsafe riding condition may result. A chain that breaks or jumps off the sprockets could snag on the engine sprocket or lock the rear wheel, severely damaging the motorcycle and causing it to go out of control.

Standard Chain

- Make:** DAIDO
- Type:** D.I.D 520DMA2
- Link:** 114 Links

Drive Chain Lubrication

- If the chain appears especially dirty, it should be cleaned before lubrication with high flash-point solvent.
- If a special lubricant is not available, a heavy oil such as SAE90 is preferred to a lighter oil because it will stay on the chain longer and provide better lubrication.
- Apply oil to the sides of the rollers so that oil will penetrate to the rollers and bushings.
- Wipe off any excess oil.
Oil applied area [A]

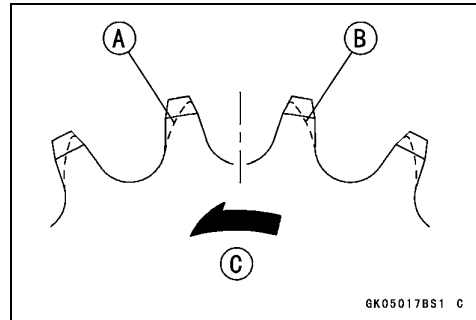


2-32 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Sprocket Wear Inspection

- Visually inspect the front and rear sprocket teeth for wear and damage.
- ★ If they are worn as illustrated or damaged, replace the sprocket.
 - A. Worn Tooth (Engine Sprocket)
 - B. Worn Tooth (Rear Sprocket)
 - C. Direction of Rotation



- Measure the diameter of the sprocket at the base of the teeth.
- ★ If the sprocket is worn down to less than the service limit, replace the sprocket.

Engine Sprocket Diameter

Standard: 55.48 ~ 55.68 mm (2.184 ~ 2.192 in.)/13T

Service Limit: 54.8 mm (2.175 in.)

Rear Sprocket Diameter

Standard: 247.64 ~ 248.14 mm (9.750 ~ 9.769 in.)/51T

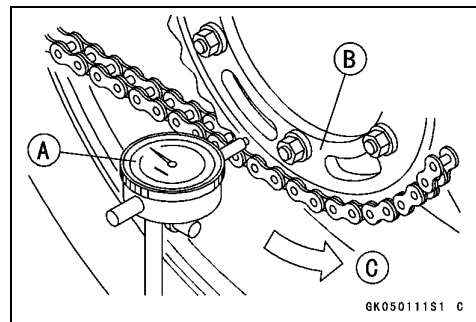
Service Limit: 247.3 mm (9.736 in.)

NOTE

○ If a sprocket requires replacement, the chain is probably worn also. When replacing a sprocket, inspect the chain.

Rear Sprocket Warp Inspection

- Using the jack, raise the rear wheel off the ground.
 - Special Tool - Jack:** 57001-1238
- Set a dial gauge [A] against the rear sprocket [B] near the teeth as shown and rotate [C] the rear wheel to measure the sprocket runout (warp). The difference between the highest and lowest dial gauge readings is the amount of runout (warp).
- ★ If the runout exceeds the service limit, replace the rear sprocket.



Rear Sprocket Runout

Standard: TIR 0.4 mm (0.016 in.) or less

Service Limit: TIR 0.5 mm (0.020 in.)

Brakes

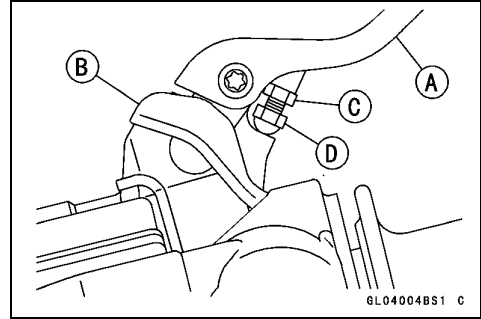
Brake Lever and Pedal Position Adjustment

⚠ WARNING

Always maintain proper brake adjustment. If adjustment is improper, the brake could drag and overheat. This could damage the brake assembly and possibly lock the wheel resulting in loss of control.

Periodic Maintenance Procedures

- Adjust the front brake lever [A] to suit you.
- Slide the brake lever dust cover [B] out of place.
- Loosen the adjuster locknut [C] and turn the adjuster [D] to either side.
- After adjustment, tighten the locknut.



NOTE

○ Usually it is not necessary to adjust the pedal position, but always adjust it when the master cylinder is disassembled or pedal position is incorrect.

- Measure the length indicated in the figure.

Length [A]

Standard: 68.5 ±1 mm (3.09 ±0.04 in.)

- ★ If it is not specified length, the brake pedal may be deformed or incorrectly installed.

- ★ If it is not within the specified length, adjust the clevis [A] as following.

○ Loosen the push rod locknut [B].

○ Remove:

 Cotter Pin [C]

 Washer

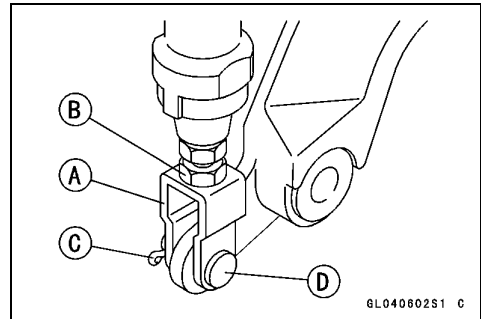
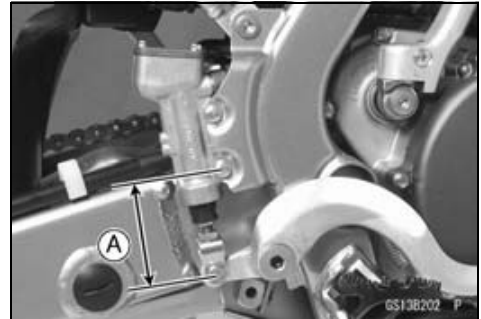
 Joint Pin [D]

○ Turn the clevis [D] to obtain the specified length.

○ Tighten the locknut.

Torque - Rear Master Cylinder Push Rod Locknut: 18 N·m (1.8 kgf·m, 13 ft·lb)

- Install the joint pin and new cotter pin.



2-34 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Brake Fluid Level Inspection

In accordance with the Periodic Maintenance Chart, inspect the brake fluid level in the front or rear brake fluid reservoirs.

- Check the brake fluid level in the front or rear brake reservoir [A].

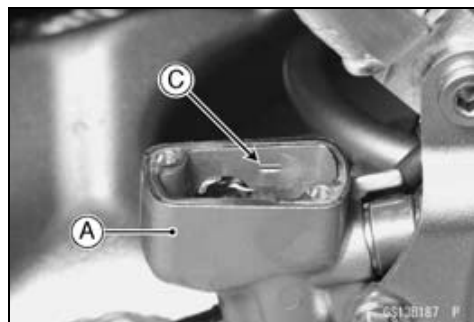
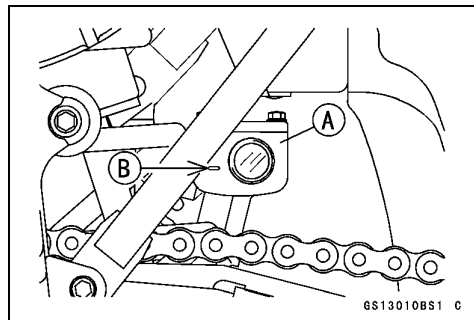
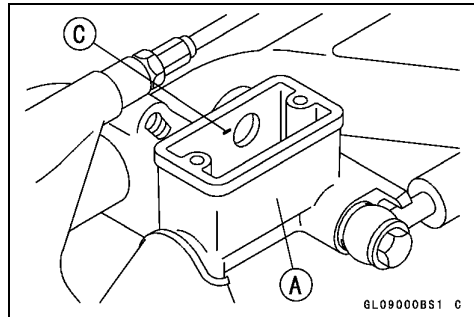
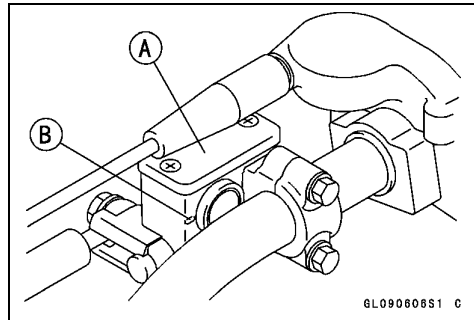
NOTE

- Hold the reservoir horizontal when checking brake fluid level.
- The front or rear reservoir must be kept above the lower level line [B]. If the fluid level in front or rear reservoir is lower than the lower level line, fill the reservoir to the upper level line. Inside the reservoir is stopped end showing the upper level line [C].

Torque - Brake Reservoir Cap Screws: 1.5 N·m (0.15 kgf·m, 13 in·lb)

⚠ WARNING

Do not mix two brands of fluid. Change the brake fluid in the brake line completely if the brake fluid must be refilled but the type and brand of the brake fluid that is already in the reservoir are unidentified. After changing the fluid, use only the same type and brand of fluid thereafter.



Periodic Maintenance Procedures

Brake Fluid Change

In accordance with the Periodic Maintenance Chart, change the brake fluid. The brake fluid should also be changed if it becomes contaminated with dirt or water. Furthermore, the brake fluid should be changed to bleed the air quickly and completely whenever the brake line parts are removed.

▲ WARNING

When working with the disc brake, observe the precautions listed below.

1. Never reuse old brake fluid.
2. Do not use fluid from a container that has been left unsealed or that has been open for a long time.
3. Do not mix two types and brands of fluid for use in the brake. This lowers the brake fluid boiling point and could cause the brake to be ineffective. It may also cause the rubber brake parts to deteriorate.
4. Don't leave the reservoir cap off for any length of time to avoid moisture contamination of the fluid.
5. Don't change the fluid in the rain or when a strong wind is blowing.
6. Except for the disc pads and disc, use only disc brake fluid, isopropyl alcohol, or ethyl alcohol for cleaning brake parts. Do not use any other fluid for cleaning these parts. Gasoline, engine oil, or any other petroleum distillate will cause deterioration of the rubber parts. Oil spilled on any part will be difficult to wash off completely and will eventually deteriorate the rubber used in the disc brake.
7. When handling the disc pads or disc, be careful that no disc brake fluid or any oil gets on them. Clean off any fluid or oil that inadvertently gets on the pads or disc with a high-flash point solvent. Do not use one which will leave an oily residue. Replace the pads with new ones if they cannot be cleaned satisfactorily.
8. Brake fluid quickly ruins painted surfaces; any spilled fluid should be completely wiped up immediately.
9. If any of the brake line fittings or the bleed valve is opened at any time, the **AIR MUST BE BLED FROM THE BRAKE LINE.**

Recommended Disc Brake Fluid

Type:

Front DOT3 or DOT4

Rear DOT4

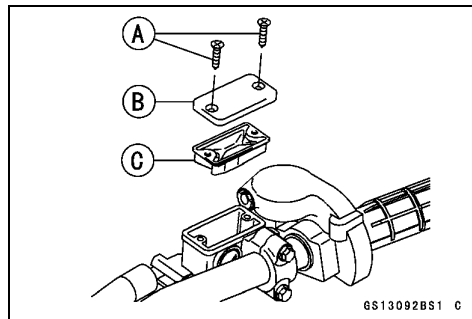
2-36 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

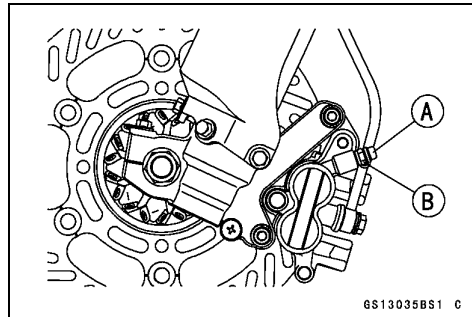
NOTE

○ The procedure to change the front brake fluid. Changing the rear brake fluid is the same as for the front brake.

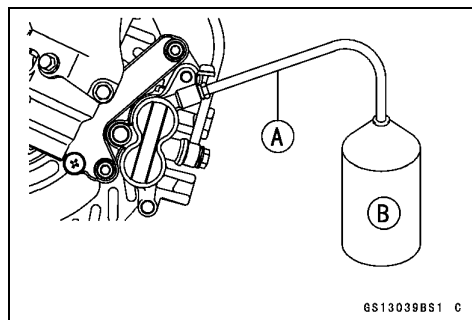
- Level the brake fluid reservoir.
- Remove the screw [A], reservoir cap [B] and diaphragm [C].



- Remove the rubber cap [A] on the bleed valve [B].



- Attach a clear plastic hose [A] to the bleed valve on the caliper, and run the other end of the hose into a container [B].



Periodic Maintenance Procedures

- Change the brake fluid as follows:
 - Repeat this operation until fresh brake fluid comes out from the plastic hose or the color of the fluid changes.
 1. Open the bleed valve [A]
 2. Apply the brake and hold it [B]
 3. Close the bleed valve [C]
 4. Release the brake [D]
 - Fill the reservoir with fresh specified brake fluid.

NOTE

○ The fluid level must be checked often during the changing operation and replenished with fresh brake fluid. If the fluid in the reservoir runs out any time during the changing operation, the brakes will need to be bled since air will have entered the brake line.

- Remove the clear plastic hose.
- Tighten the bleed valves, and install the rubber caps.

**Torque - Caliper Bleed Valve: 7.8 N·m (0.8 kgf·m, 69 in·lb)
 Brake Reservoir Cap Screws: 1.5 N·m (0.15 kgf·m, 13 in·lb)**

- After changing the fluid, check the brake for good braking power, no brake drag, and no fluid leakage.
- ★ If necessary, bleed the air from the lines.

⚠ WARNING

Do not mix two brands of fluid. Change the brake fluid in the brake line completely if the brake fluid must be refilled but the type and brand of the brake fluid that is already in the reservoir are unidentified.

Brake Pad Wear Inspection

- Check the lining thickness and condition of the pads in each caliper.
- ★ If either pad is damaged, replace both pads in the caliper as a set.
- ★ If the lining thickness [A] of either pad is less than the service limit [B], replace both pads in the caliper as a set.

Lining Thickness

Standard:

Front 3.8 mm (0.150 in.)

Rear 6.4 mm (0.252 in.)

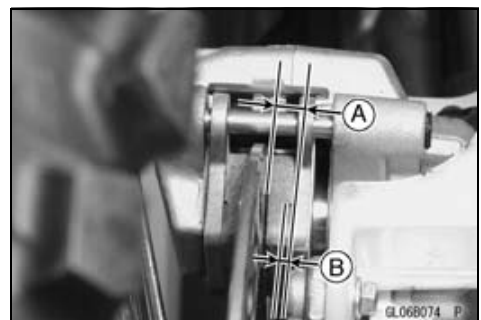
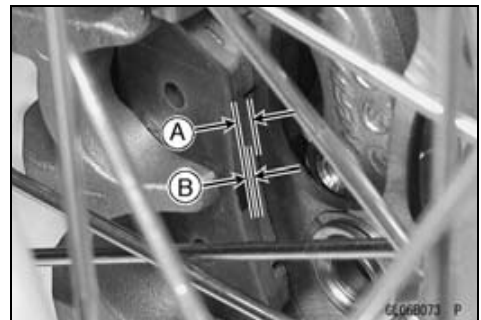
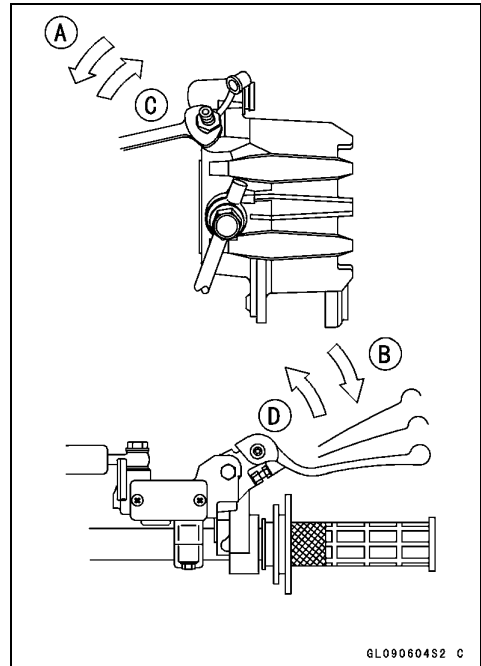
Service Limit:

Front 1 mm (0.04 in.)

Rear 1 mm (0.04 in.)

- Install the brake pad (see Brake Pad Installation in the Brakes chapter).
- Tighten:

Torque - Brake Pad Bolt: 18 N·m (1.8 kgf·m, 13 ft·lb)



2-38 PERIODIC MAINTENANCE

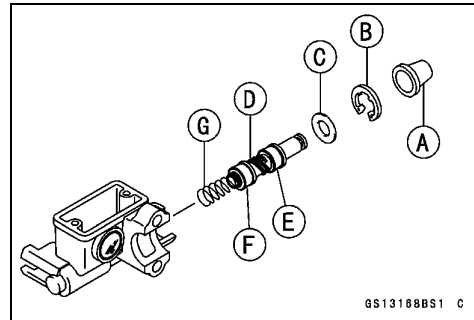
Periodic Maintenance Procedures

Brake Master Cylinder Cup and Dust Cover Replacement

- Remove the front master cylinder (see Brake chapter).
- Remove the reservoir cap and diaphragm, and pour the brake fluid into a container.
- Unscrew the locknut and pivot bolt, and remove the brake lever.
- Pull the dust cover [A] out of place, and remove the circlip [B].

Special Tool - Inside Circlip Pliers: 57001-143

- Remove the washer [C].
- Pull out the piston [D], secondary cup [E], primary cup [F], and return spring [G].



CAUTION

Do not remove the secondary cup from the piston since removal will damage it.

- Remove the rear master cylinder (see Brake chapter).

NOTE

○Do not remove the push rod clevis for master cylinder disassembly since removal requires brake pedal position adjustment.

- Remove the reservoir cap and diaphragm, and pour the brake fluid into a container.
- Slide the dust cover [A] on the push rod [B] out of place, and remove the circlip [C].

Special Tool - Inside Circlip Pliers: 57001-143

- Pull out the push rod with the piston stop [D].
- Take off the piston [E], secondary cup [F], primary cup [G], and return spring [H].

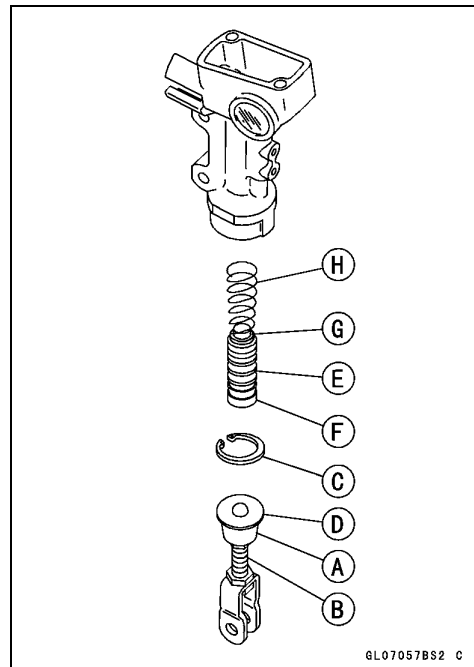
CAUTION

Do not remove the secondary cup from the piston since removal will damage it.

- Before assembly, clean all parts including the master cylinder with brake fluid or alcohol.

CAUTION

Except for the disc pads and disc, use only disc brake fluid, isopropyl alcohol, or ethyl alcohol for cleaning of the brake parts. Do not use any other fluid for cleaning of these parts, Gasoline, engine oil, or any other petroleum distillate will cause deterioration of the rubber parts. Oil spilled on any part will be difficult to wash off completely, and will eventually deteriorate the rubber used in the disc brake.

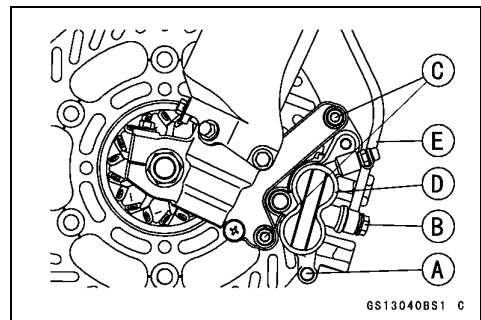


Periodic Maintenance Procedures

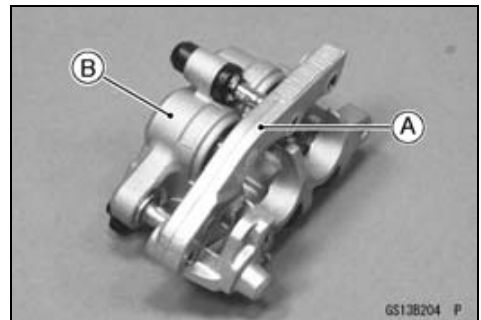
- Replace the piston, secondary cup, primary cup and spring as a set with a new one.
- Replace the dust cover with a new one.
- Apply brake fluid to the removed parts and to the inner wall of the cylinder.
- Take care not to scratch the piston or the inner wall of the cylinder.
- Apply silicone grease (ex. PBC grease).
 - Brake Lever Pivot Bolt
 - Brake Lever Pivot Contact
 - Push Rod Contact (Rear)
 - Dust Covers
- Tighten:
 - Torque - Brake Lever Pivot Bolt: 5.9 N·m (0.6 kgf·m, 52 in·lb)**

Caliper Fluid Seal and Dust Seal Replacement

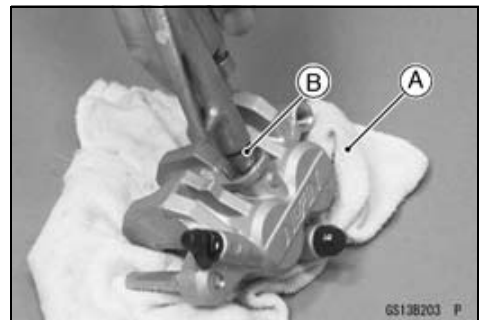
- Loosen the brake pad pin [A] and banjo bolt [B], and tighten them loosely.
- Remove:
 - Front Caliper Mounting Bolts [C]
 - Banjo Bolt
 - Brake Hose [E]
 - Front Caliper [D] (see Brakes chapter)
 - Brake Pads (see Brakes chapter)



- Separate the caliper holder [A] from the caliper [B] and remove the anti-rattle spring.



- Using compressed air, remove the pistons. One way to remove the pistons is as follows.
 - Cover the caliper opening with a clean, heavy cloth [A].
 - Remove the pistons by lightly applying compressed air [B] to the hose joint opening.



⚠ WARNING

To avoid serious injury, never place your fingers or palm in front of the piston. If you apply compressed air into the caliper, the piston may crush your hand or fingers.

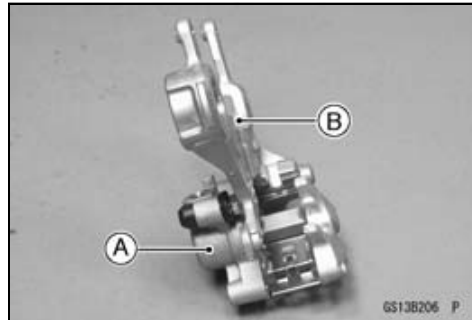
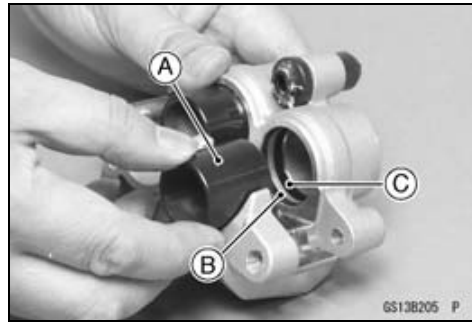
2-40 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

- Pull out the piston [A] by hand.
- Remove the dust seals [B] and fluid seals [C].

NOTE

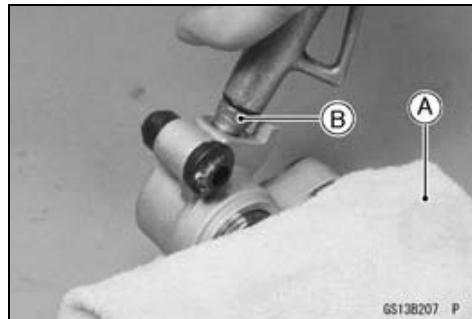
- If compressed air is not available, do as follows for both calipers coincidentally, with the brake hose connected to the caliper.
 - Prepare a container for brake fluid, and perform the work above it.
 - Remove the spring and pads (see Brakes chapter)
 - Pump the brake lever until the pistons come out of the cylinders, and then disassembly the caliper.
- Remove the rear caliper (see Brakes chapter).
 - Remove the pads (see Brakes chapter).
 - Separate the caliper holder [B] from the caliper [A].



- Using compressed air, remove the piston.
- Cover the caliper opening with a clean, heavy cloth [A].
- Remove the piston by lightly applying compressed air [B] to where the brake line fits into the caliper.

⚠ WARNING

To avoid serious injury, never place your fingers or palm inside the caliper opening. If you apply compressed air into the caliper, the piston may crush your hand or finger.



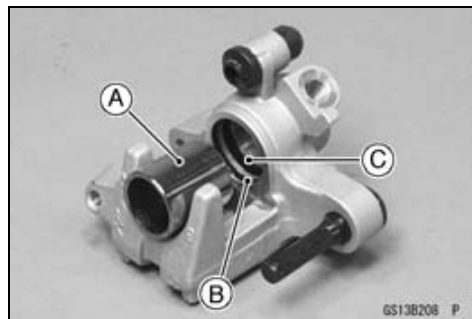
- Pull out the piston [A] by hand.
- Remove the dust seal [B] and fluid seal [C].
- Clean the caliper parts except for the pads.

CAUTION

For cleaning of the parts, use only disc brake fluid, isopropyl alcohol, or ethyl alcohol.

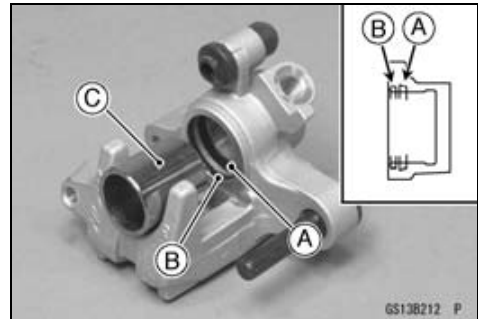
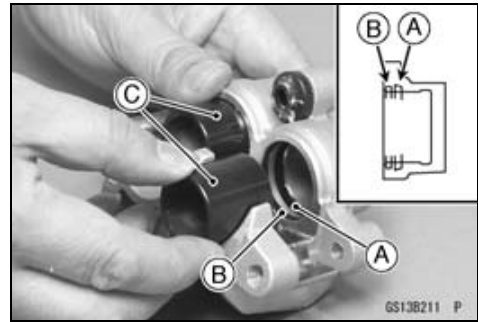
- The bleed valve was removed, install the bleed valve and rubber cap.

Torque - Bleed Valve: 7.8 N·m (0.80 kgf·m, 69 in·lb)

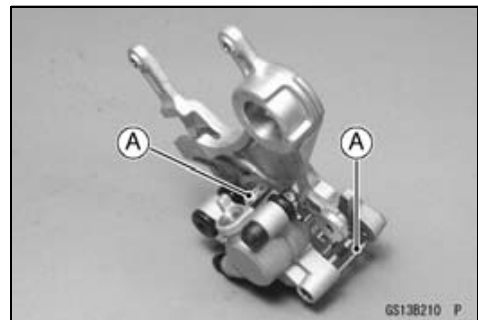
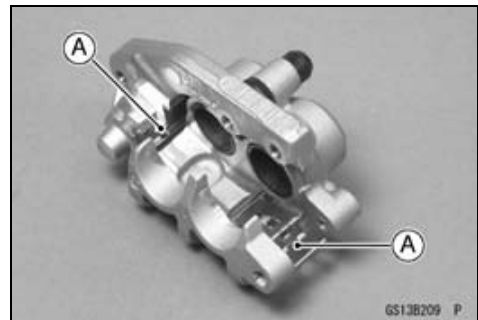


Periodic Maintenance Procedures

- Replace the fluid seal(s) [A] with new ones.
- Apply brake fluid to the fluid seal(s), and install them into the cylinders by hand.
- Replace the dust seal(s) [B] with new ones.
- Apply brake fluid to the dust seal(s), and install them into the cylinder by hand.
- Apply brake fluid to the outside of the pistons [C], and push them into each cylinder by hand.



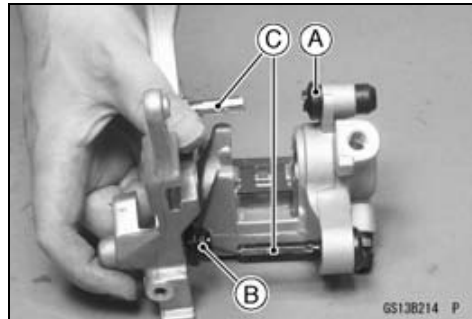
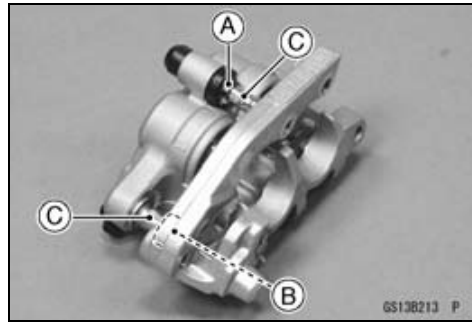
- Install the anti-rattle spring [A] in the caliper as shown.



2-42 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

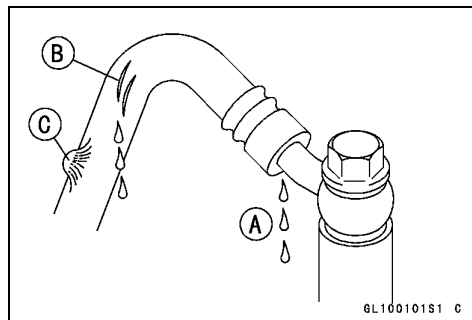
- Replace the shaft rubber boot [A] and dust cover [B] if they are damaged.
- Apply a thin coat of PBC (Poly Butyl Cuprysil) grease to the caliper holder shafts [C] and holder holes (PBC is a special high temperature, water-resistance grease).



- Install the pads (see Brakes chapter).
- Install the caliper (see Brakes chapter).
- Wipe up any spilled brake fluid on the caliper with wet cloth.

Brake Hose and Connection Check

- Inspect the brake hose and fittings for deterioration, cracks and signs of leakage.
- The high pressure inside the brake line can cause fluid to leak [A] or the hose to burst if the line is not properly maintained. Bend and twist the rubber hose while examining it.
- ★ Replace the hose if any cracks [B] or bulges [C] are noticed.
- ★ Tighten any loose fittings.



Brake Hose Replacement

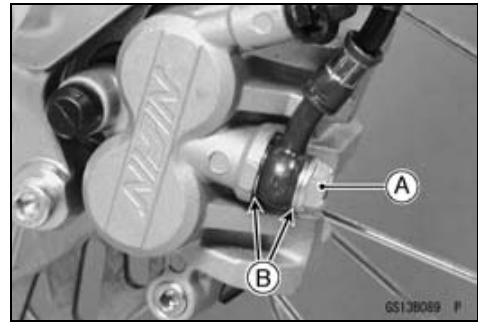
CAUTION

Brake fluid quickly ruins painted surfaces; any spilled fluid should be completely washed away immediately.

- When removing the brake hose, take care not to spill the brake fluid on the painted or plastic parts.
- When removing the brake hose temporarily secure the end of the brake hose to some high place to keep fluid loss to a minimum.
- Immediately wash away any brake fluid that spills.

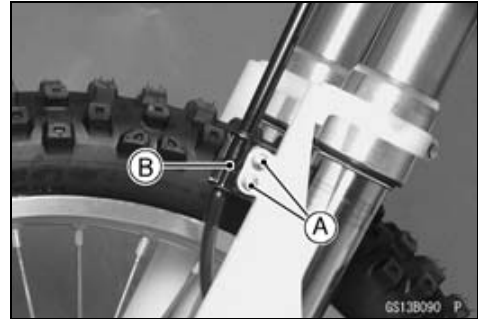
Periodic Maintenance Procedures

- Remove each banjo bolts [A] and washers [B].
- Replace the washers with new ones.



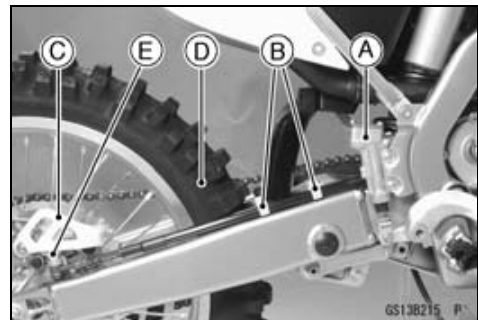
For Front Brake

- Remove
 - Bolts [A]
 - Brake Hose Clamps [B]



For Rear Brake

- Remove:
 - Master Cylinder [A]
 - Hose Clamps [B]
 - Caliper Cover [C]
 - Rear Wheel [D]
 - Rear Caliper [E]



- When installing the hoses, avoid sharp bending, kinking, flattening or twisting, and route the hoses according to Cable, Wire, and Hose Routing section in the Appendix chapter.
- Tighten the banjo bolts on the hose fittings.
 - Torque - Brake Hose Banjo Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)**
- Fill the brake line after installing the brake hose (see Brake Fluid Changing).

2-44 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Suspension

Front Fork Inspection

- Holding the brake lever, compress the front fork several times to check for smooth operation.
- Visually inspect the front fork for oil leakage, scoring or scratches on the outer surface of the inner tube [A].
- ★ If necessary, repair any damage.
- Nick or rust damage can sometimes be repaired by using a wet-stone to remove sharp edges or raised areas which cause seal damage.
- ★ If the damage is not repairable, replace the inner tube. Since damage to the inner tube damages the oil seal, replace the oil seal whenever the inner tube is repaired or replaced.
- If the fork is not smooth, confirm the cause.

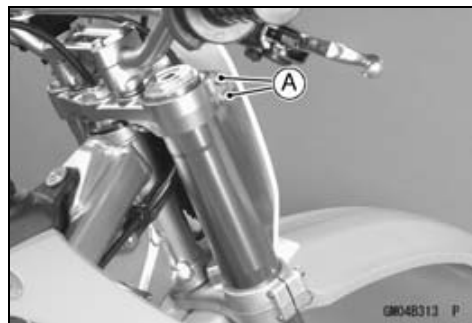


CAUTION

If the inner tube is badly bent or creased, replace it. Excessive bending, followed by subsequent straightening, can weaken the inner tube.

Front Fork Oil Change (each fork leg)

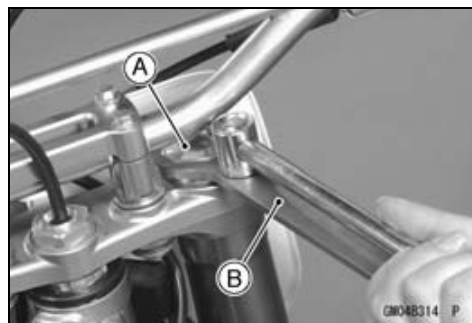
- Loosen the front fork upper clamp bolts [A].



- Loosen the fork top plug (subtank) [A] with the special tool.

Special Tool - Top Plug Wrench, 46 mm: 57001-1622 [B]

- Remove the front fork (see Front Fork Removal).



NOTE

○ Set rebound and compression damping setting to the softest settings before disassembling to prevent the needle of adjusters from damaging. Record the setting before turning the adjuster.

- Thoroughly clean the fork before disassembly.

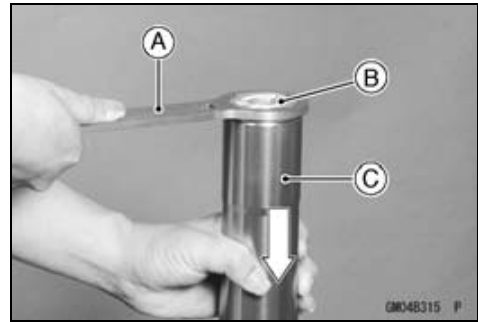
CAUTION

**Be careful not scratch the inner tube and not to damage the dust seal.
Avoid scratching or damaging the inner tube or the dust seal. Use a mild detergent and sponge out dirt with plenty of water.**

Periodic Maintenance Procedures

- Using the special tool [A], remove the fork top plug [B] (subtank) from the outer tube and slowly slide down the outer tube [C].

Special Tool - Top Plug Wrench, 46 mm: 57001-1622



- Place a drain pan under the front fork and drain fork oil [A].

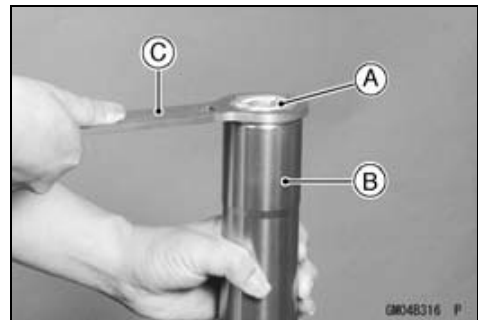
NOTE

○ Pump the fork tube several times to discharge the fork oil.



- Raise the outer tube and temporarily install the fork top plug [A] (subtank) to the outer tube [B] with the special tool [C].

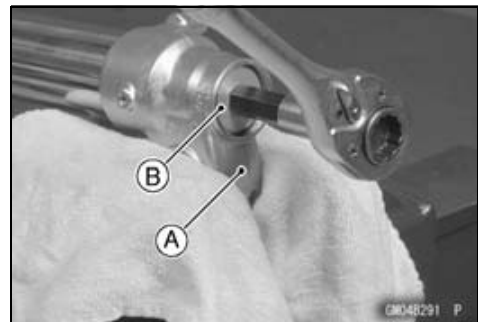
Special Tool - Top Plug Wrench, 46 mm: 57001-1622



- Hold the axle holder [A] with a vise.
- Protect the axle holder with a rag when using a vise.
- Loosen the adjuster assembly [B] completely.

⚠ WARNING

Clamping the axle holder too tight can damage it which will affect riding stability. Do not clamp the axle holder too tight.

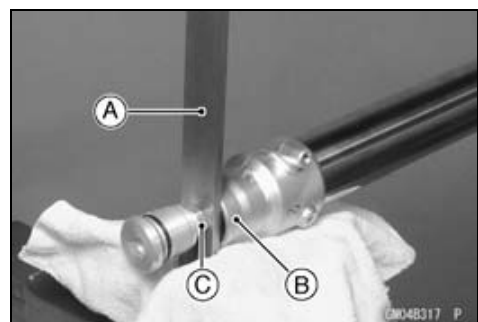


- Compress the outer tube by hands and install the top plug wrench (special tool) [A] between the axle holder bottom [B] and lock nut [C].

Special Tool - Top Plug Wrench, 46 mm: 57001-1622

⚠ WARNING

Be careful of reaction force in spring and fix surely so that the special tool should not come off. Do not place the finger etc. while servicing.



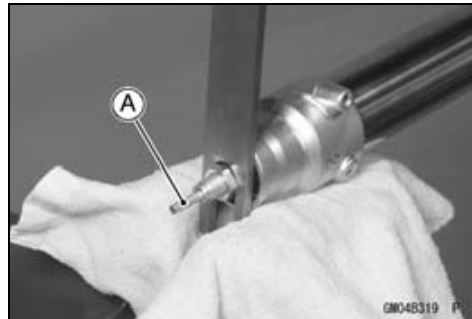
2-46 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

- Hold the locknut [A] with a wrench [B] and remove the adjuster assembly [C].



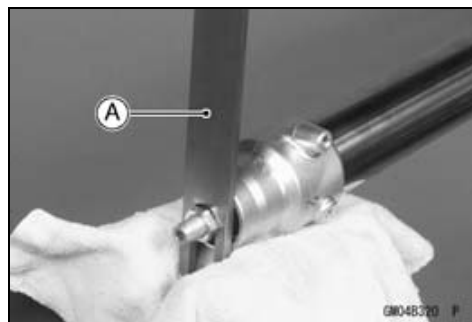
- Remove the push rod [A].



- With the outer tube compressed by hands, remove the top plug wrench (special tool) [A].

CAUTION

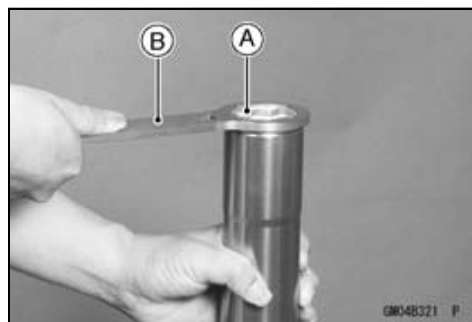
Removing the lock nut and pushing the piston rod thread into the cylinder unit will damage the oil seal. Do not remove the lock nut from the piston rod.



- Remove the fork leg from the vise.

- Loosen the fork top plug (subtank) with the special tool [A].

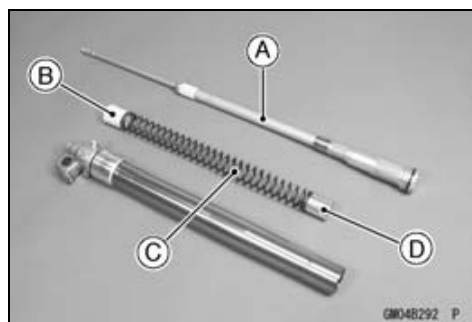
Special Tool - Top Plug Wrench, 46 mm: 57001-1622 [B]



- Remove:
 - Cylinder Unit [A]
 - Spring Collar [B] (KX250-R1)
 - Fork Spring [C]
 - Spring Collar [D]

CAUTION

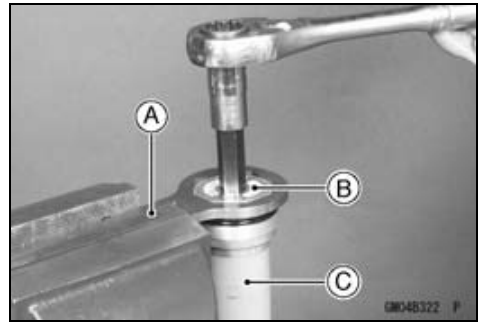
Disassembling the cylinder unit can lead to trouble. Do not disassemble the cylinder unit.



Periodic Maintenance Procedures

- Holding the top plug wrench [A] with a vise, loosen the base valve assembly [B] on the subtank [C].

Special Tool - Top Plug Wrench, 46 mm: 57001-1622 [B]



- Remove the base valve assembly [A] from the subtank [B].

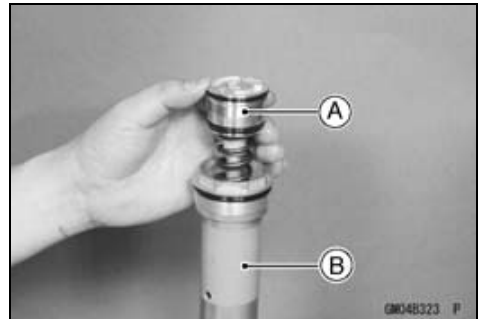
NOTE

○ *Slowly compress the piston rod until it stops so that the base valve assembly can be removed easily.*

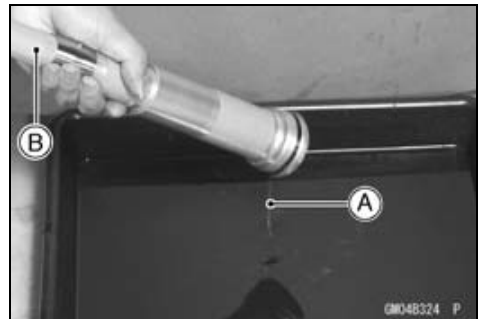
CAUTION

Disassembling the base valve assembly can lead to trouble.

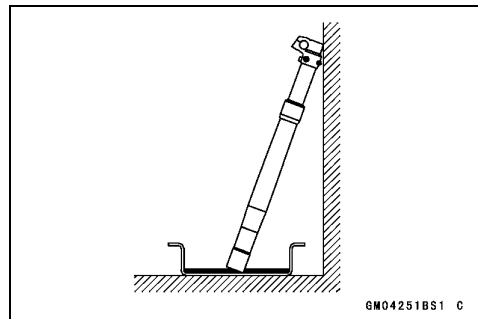
Do not disassemble the base valve assembly.



- Drain the fork oil [A] from the cylinder unit [B] by pumping the piston rod several times



- Hold the front fork inverted position for more than 20 minutes to allow the fork oil to fully drain.



- Clean the threads [A] of subtank and base valve assembly.



2-48 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

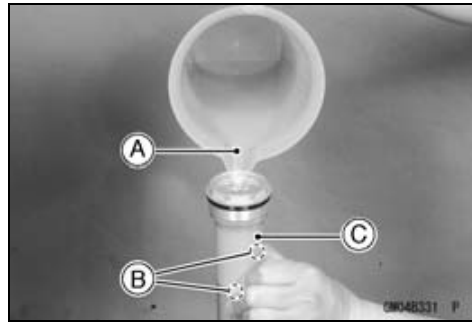
- With the piston rod in fully compressed position, pour the specified amount of fork oil [A].

Recommended Oil: KHL15-10 (KAYABA01) or equivalent

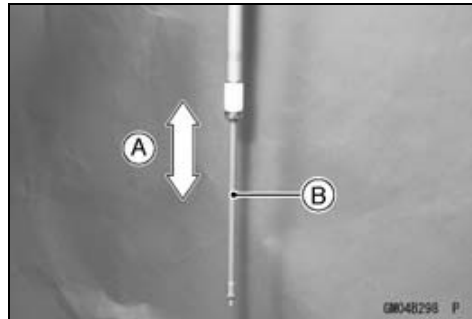
Recommended Quantity: 160 ml (5.41 US oz.)

NOTE

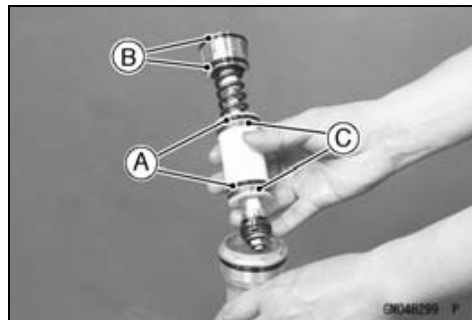
○ Plug the two oil holes [B] on the subtank [C] with fingers.



- Pump [A] the piston rod [B] slowly several times to expel air.



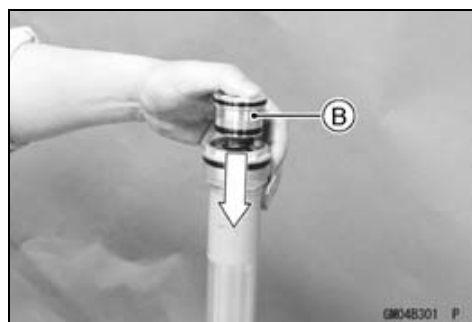
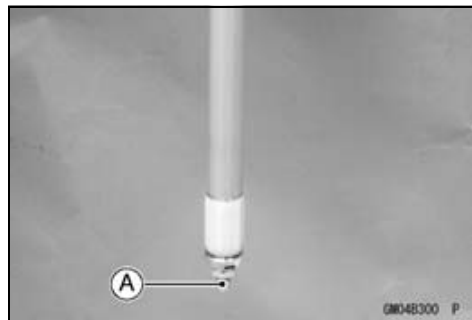
- Replace the O-rings [A] on the base valve assembly with new ones.
- Apply specified fork oil to the O-rings [A] [B] and bushings [C] on the base valve assembly.



- With the piston rod held immobile in fully compressed position [A], gently install the base valve assembly [B] to the subtank.
- Screw in the base valve assembly in the subtank when the piston rod extends.

NOTE

○ When it is hard to screw in the base valve assembly, pull down the piston rod a little.

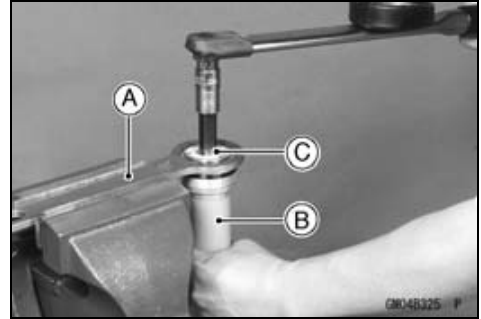


Periodic Maintenance Procedures

- Holding the top plug wrench [A] (special tool) with a vise.
- Holding the subtank [B] with the top plug wrench, torque the base valve assembly [C].

Special Tool - Top Plug Wrench, 46 mm: 57001-1622

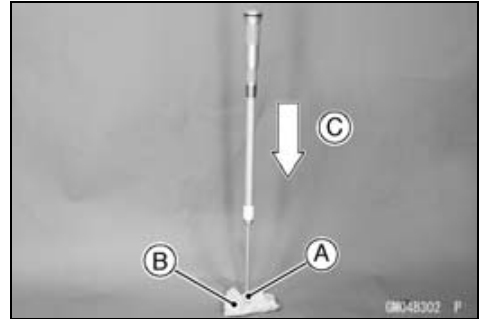
Torque - Base Valve Assembly: 27 N·m (2.8 kgf·m, 20 ft·lb)



- Protect the piston rod end [A] with a rag [B] to prevent fork damage.
- Discharge the extra oil off the cylinder unit by pumping [C] the piston rod to full stroke.

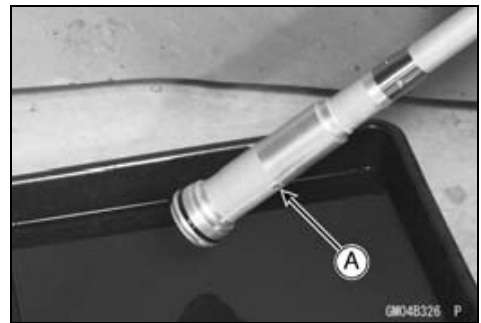
CAUTION

Be careful not to bend or damage the piston rod when the piston rod is stroked. Service carefully because oil flies out from the oil hole of the cylinder unit.

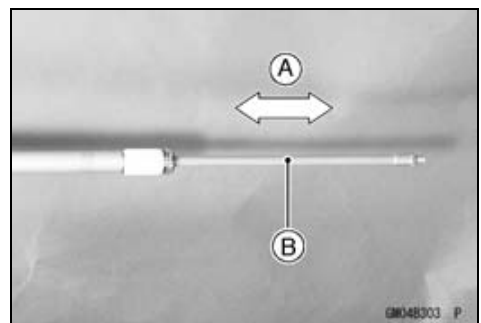


NOTE

- Set the compression damper setting to the softest.
 - Check the piston rod sliding surface for damage.
 - Apply fork oil to the piston rod sliding surface.
- Drain the extra oil from the subtank oil hole [A].



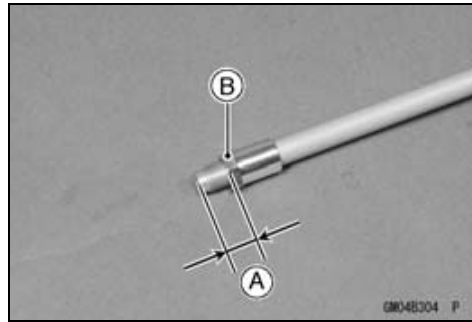
- With the cylinder unit in horizontal position, move [A] the piston rod [B] by hand to inspect it if operating smoothly.
- If the piston rod is not extend, remove the base valve assembly and perform the air bleeding (pour the specified amount fork oil and discharge an excess of oil).



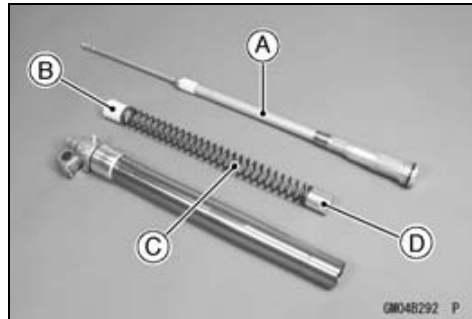
2-50 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

- Make sure about 16 mm (0.63 in.) [A] of push rod thread is exposed from the lock nut [B].

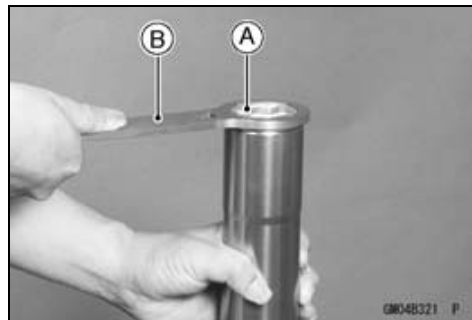


- Completely wipe of the fork oil from the following parts.
 - Cylinder Unit [A]
 - Spring Collar [B] (KX250-R1)
 - Fork Spring [C]
 - Spring Collar [D]
- Insert above-mentioned parts into the fork.



- Temporarily tighten the fork top plug [A] (subtank) using the special tool.

Special Tool - Top Plug Wrench, 46 mm: 57001-1622 [B]



- Clamp the axle holder with a vise.
- Protect the axle holder with a rag when using a vise.

⚠ WARNING

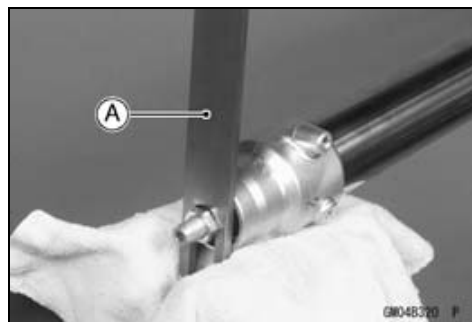
**Clamping the axle holder too tight can damage it which will affect riding stability.
Do not clamp the axle holder too tight.**

- Compress the outer tube by hands and install the top plug wrench [A] (special tool) between the axle holder bottom and lock nut.

Special Tool - Top Plug Wrench, 46 mm: 57001-1622

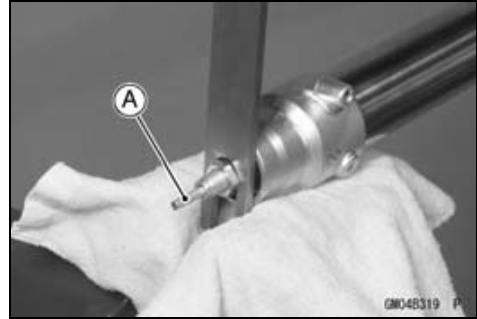
⚠ WARNING

**Be careful of reaction force in spring and fix surely so that special tool should not come off.
Do not place the fingers etc. while serving.**

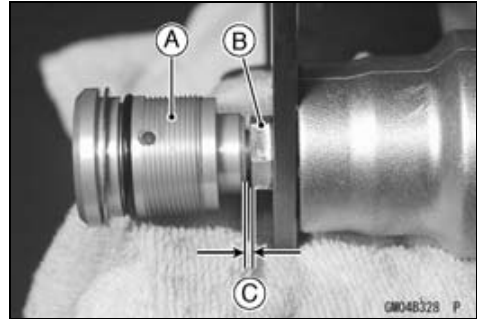


Periodic Maintenance Procedures

- Insert the push rod [A] into the piston rod.



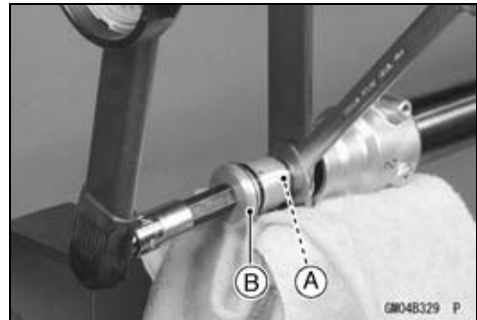
- Replace the O-ring and gasket on the adjuster assembly with new ones and apply specified fork oil to the O-ring.
- Slowly turn the adjuster assembly [A] clockwise until resistance is felt and check the clearance between the lock nut [B] and adjuster assembly [A] to provide more than 1 mm (0.04 in.) [C].



- Turn the lock nut [A] counterclockwise until it contacts with the adjuster assembly [B].
- With the lock nut held immovable using a wrench, tighten the adjuster assembly to the specified torque.

Torque - Lock Nut/Adjuster Assembly: 29 N·m (3.0 kgf·m, 22 ft·lb)

- With the outer tube compressed by hands, remove the special tool.



- Apply a non-permanent locking agent to the threads of a adjuster assembly.
- Torque the adjuster assembly [A].

Torque - Adjuster Assembly: 58 N·m (6.0 kgf·m, 43 ft·lb)



- Loosen and remove the fork top plug (subtank) from the outer tube and slowly slide down the outer tube.

Special Tool - Top Plug Wrench, 46 mm: 57001-1622

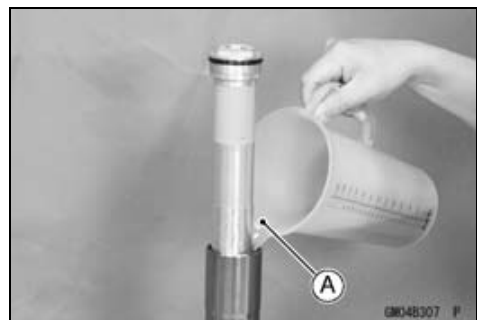
- Pour [A] the specified amount of fork oil into the outer tube.

Recommended Oil: KHL15-10 (KAYABA01) or equivalent

Recommended Quantity:

KX250-R1: 300 mL (10.14 US oz.)

KX250-R2 ~: 310 mL (10.48 US oz.)



2-52 PERIODIC MAINTENANCE

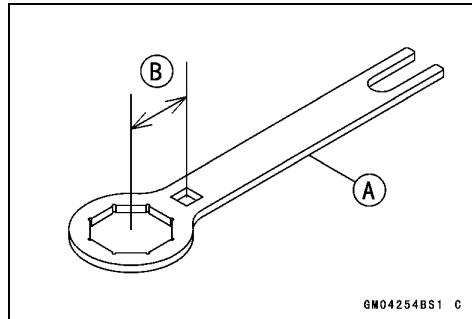
Periodic Maintenance Procedures

- Raise the outer tube and temporarily tighten the fork top plug (subtank).
Special Tool - Top Plug Wrench, 46 mm: 57001-1622
- After installing the front fork, torque the top plug [A].
Special Tool - Top Plug Wrench, 46 mm: 57001-1622 [B]



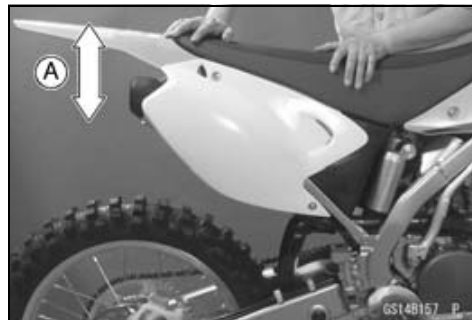
The torque of fork top plug is specified to **29 N·m (3.0 kgf·m, 22 ft·lb)** however, when you use the top plug wrench (special tool) [A], reduce the torque to 90% of the specified value [**26 N·m (2.7 kgf·m, 20 ft·lb)**] due to the distance [B] between the center of the square hole, where the torque wrench is fitted, and that of the octagonal hole of the wrench.

This torque value [**26 N·m (2.7 kgf·m, 20 ft·lb)**] is applicable when you use a torque wrench whose length gives leverage of approximately 310 mm between the grip point to the center of the coupling square.



Rear Shock Absorber Inspection

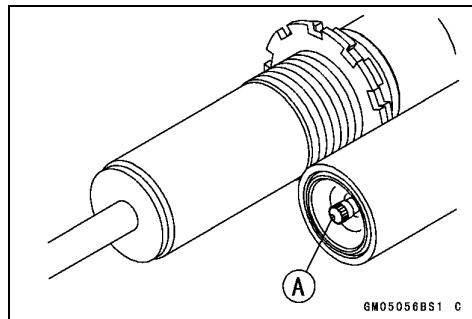
- Bounce [A] the rear of the motorcycle up and down and check for smooth suspension stroke.
- Lift the rear frame (see Carburetor Removal in the Fuel System).
- Check for a broken or collapsed spring.
- Check the shock for a bent shaft or oil leaks.
- ★ If the shock does not smoothly or damaged, replace or repair defective parts.



Rear Shock Absorber Oil Change

The oil should be changed in the rear shock absorber at least once per racing season. The frequency for best performance must be based upon riding conditions and rider ability.

- Remove the rear shock absorber from the frame (see Suspension chapter).
- Remove the shock absorber spring (see Suspension chapter).
- Point the valve [A] away from you. Slowly release nitrogen gas pressure by pushing down the valve core with a screw driver.

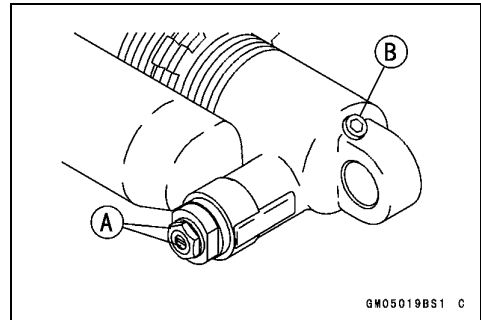


⚠ WARNING

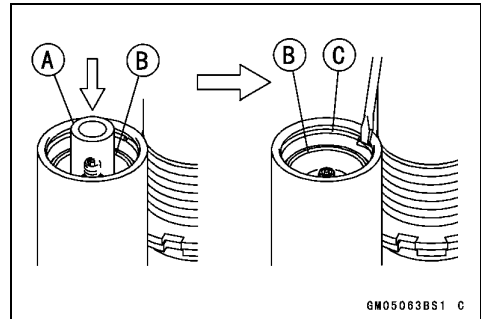
Do not to point the reservoir valve toward your face or body when releasing nitrogen gas pressure. An oil mist is often released with the nitrogen. Always release nitrogen gas pressure before disassembling the rear shock absorber to prevent explosive separation of parts.

Periodic Maintenance Procedures

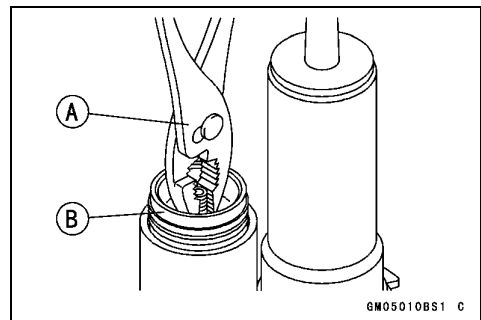
- Adjust the gas reservoir damping adjusters [A] to the softest position.
- Remove the air bleeder bolt [B] and pump the rear shock to drain the oil out the rear shock body.
- Install the air bleeder bolt.



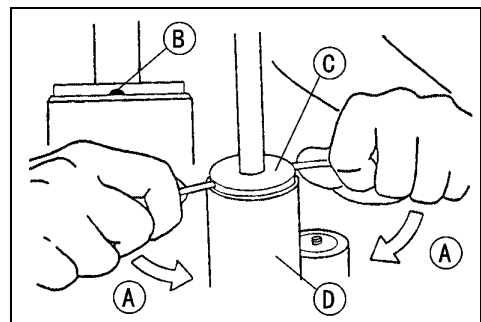
- Using the suitable tool [A] and press, push the reservoir cap [B] in 10 mm (0.39 in.).
- Remove the circlip [C] from the gas reservoir.



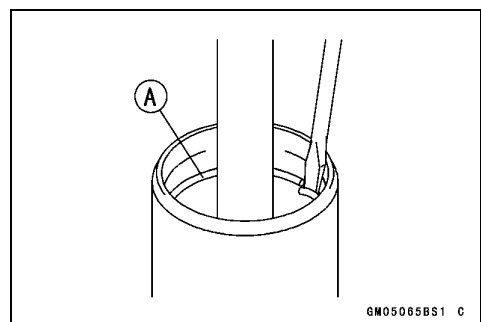
- Pull the gas reservoir cap [B] out of the gas reservoir using the pliers [A].



- Pry or tap [A] at the gaps [B] in the stop [C] with suitable tools to free the stop from the rear shock body [D].



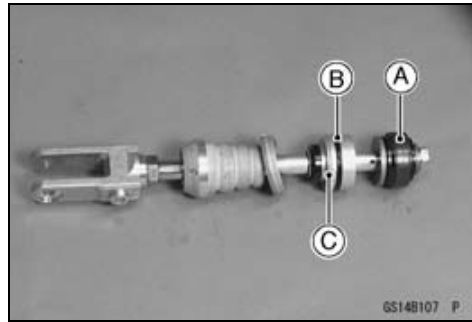
- Slide the stop up the top of the piston rod then lightly tap around the seal with a suitable rod and mallet, and push the seal assembly 10 mm (0.39 in.) down.
- Remove the circlip [A].
- Lightly move the piston rod back and forth, and pull out the piston rod assembly.
- Pour the oil out of the rear shock body.



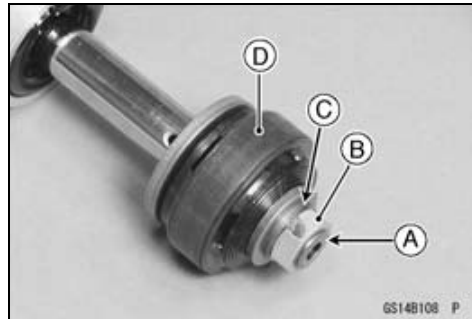
2-54 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

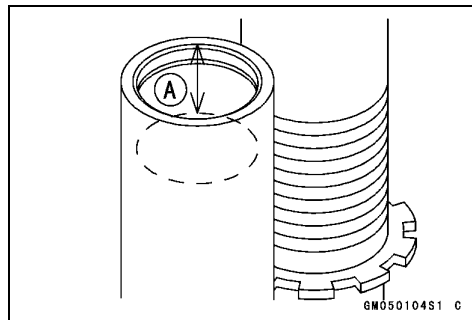
- Visually inspect the piston [A], O-ring [B], and oil seal assy [C].
- If the piston, O-ring and oil seal assy are badly scored, rusty or damaged, replace them.



- Using the grinder, shave off the stopper portion [A] of the rod.
- Remove:
 - Nut [B]
 - Washer [C]
 - Piston [D]
- Install the new piston and tighten the locknut.
- Discard a washer or two.



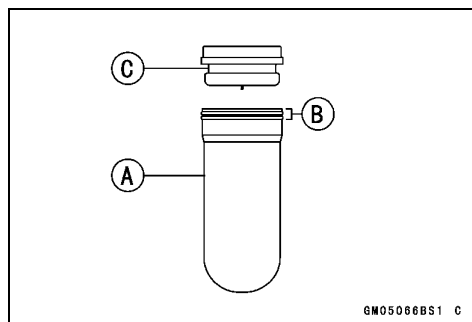
- Pour KYB K2-C oil into the gas reservoir to 60 ~ 70 mm (2.63 ~ 2.76 in.) [A] from the gas reservoir upper end.



- Check that the bladder [A] on the gas reservoir cap is not partially collapsed.
- ★ If it is, push down the valve core with a screwdriver.
- Check the bladder for sign of damage or crack.
- ★ If necessary, replace it with a new one.

CAUTION

Do not use a damaged or partially collapsed bladder, because it may burst, gently reducing rear shock performance. .



- Apply grease to the lip [B] of the bladder and install the reservoir cap [C].
- Push the bladder into the gas reservoir slowly until it just clears the circlip groove. Wipe out any spilled oil.

CAUTION

Ensure that no air remains in the system.

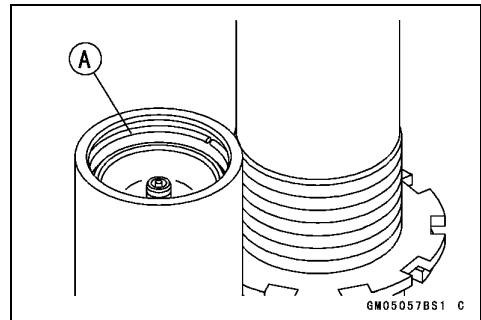
Periodic Maintenance Procedures

- Check the circlip for weakening, deformity and flaws.
- ★ If necessary, replace it with a new one.

CAUTION

If weakened, deformed or flawed circlip is used, the gas reservoir cap may not hold when injecting the nitrogen gas. This would allow oil and internal parts to explode out of the reservoir.

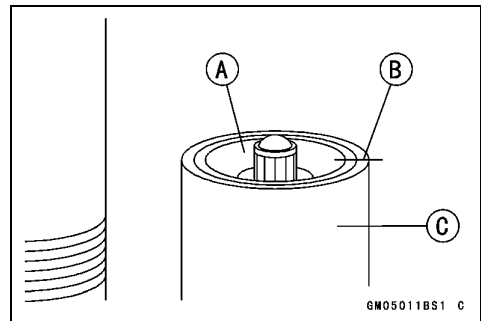
- Mount the circlip [A] in the groove in the gas reservoir.



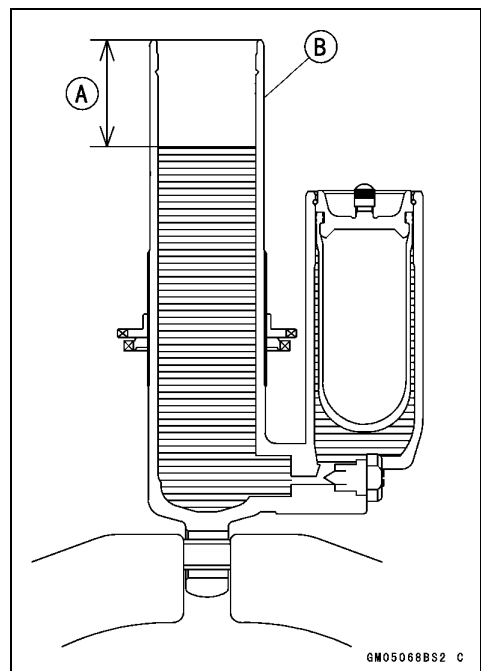
- Pull up the gas reservoir cap [A] against the circlip. The end of the gas reservoir cap must align [B] with the end of the gas reservoir [C].

⚠ WARNING

If the end of the gas reservoir cap and the end of the gas reservoir are not aligned, the circlip is not correctly fitting in the groove in the gas reservoir or is deformed. In this case, the oil and internal parts could explode out of the reservoir when injecting the nitrogen gas or while riding the motorcycle.



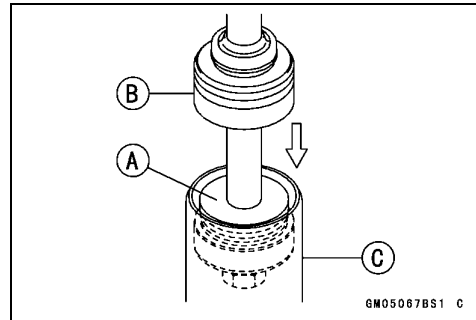
- Pour KYB K2-C oil into the rear shock body to 55 mm (1.77 in.) [A] from the lower end of the rear shock body [B].



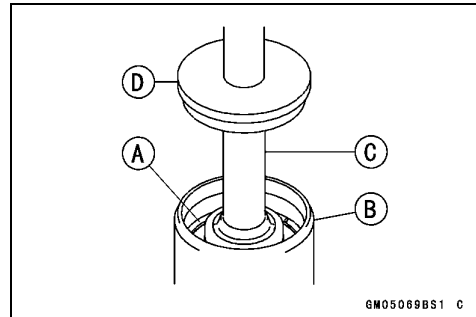
2-56 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

- Insert the piston end [A] of the piston rod assembly into the rear shock body [C] slowly. Do not insert the seal assembly [B] yet. Pump the piston rod until all the air is forced out of the rear shock body.



- Push the seal assembly into the rear shock body until it just clears the circlip groove.
- Check the circlip.
- ★ If it is deformed or damaged, replace it with a new one.
- Fit the circlip [A] into the groove in the rear shock body [B].



CAUTION

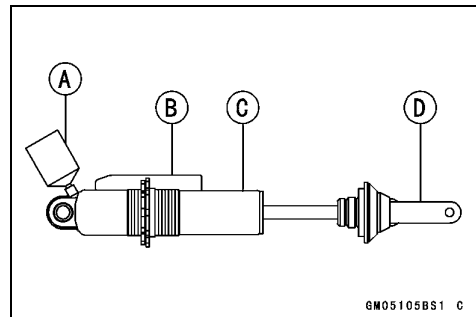
If the circlip is not a certain fit in the groove in the rear shock body, the piston rod assembly may come out of the shock absorber when injecting the nitrogen gas or riding the motorcycle.

- Pull up the piston rod assembly [C] against the circlip.
- Force the stop [D] into the rear shock body by lightly tapping around the edge of the stop with a mallet.
- Fully extend the piston rod assembly.

- Install the suitable oil cup [A] to the air bleeder bolt hole, and fill the specified oil into the cup.
- Purge the air from between the gas reservoir [B] and rear shock body [C] by slowly pumping the push rod [D] in and out.
- Install the air bleeder bolt securely.

Torque - Air Bleeder Bolt: 6.4 N·m (0.65 kgf·m, 56 in·lb)

- Fully extend the push rod assembly.



- Inject nitrogen gas to a pressure of 50 kPa (0.5 kgf/cm², 7 psi) through the valve on the gas reservoir.
- Check the rear shock body and gas reservoir for oil and gas leaks.
- ★ If there are no leaks, inject the nitrogen gas up to the 980 kPa (10 kgf/cm², 142 psi) pressure.

⚠ WARNING

Pressurize the gas reservoir with nitrogen gas only. Do not use air or other gases, since they may cause premature wear, rust, fire hazard or substandard performance.

High pressure gas is dangerous. Have a qualified mechanic perform this procedure.

- Install the spring and spring guide.
- Adjust spring preload. Reinstall the rear shock absorber.
- Install the parts removed.

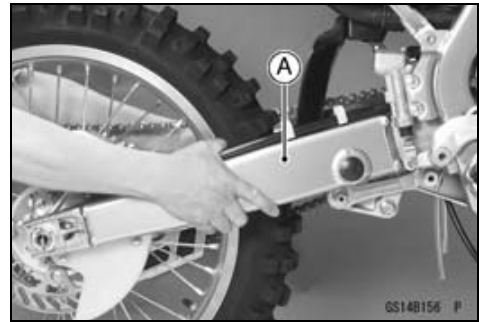
Periodic Maintenance Procedures

Swingarm and Uni-Trak Linkage Inspection

- Check the uni-trak component parts for wear periodically, or whenever excessive play is suspected.
- Using the jack under the frame, raise the rear wheel off the ground.

Special Tool - Jack: 57001-1238

- Push and pull on the swingarm [A], up and down, to check for wear.
- ★ A small amount of play on the swingarm is normal and no corrective action is needed. However, if excessive play is felt, remove the uni-trak parts from the frame and check for wear.

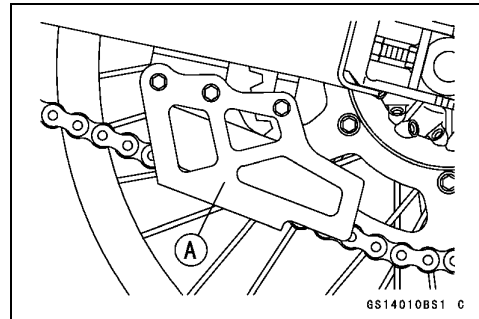


Swingarm and Uni-Track Linkage Pivot Lubricate

- Refer to the Swingarm Bearing Installation and Rocker Arm Bearing Installation in Suspension chapter.

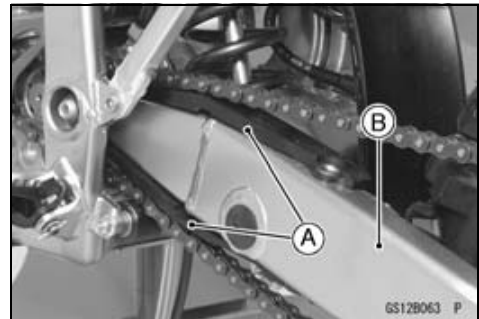
Chain Guide Wear Inspection

- Visually inspect the drive chain guide [A] and replace it if excessively worn or damaged.



Chain Slipper Wear Inspection

- Visually inspect the upper and lower chain slippers [A] on the swingarm [B] and replace them if worn or damaged.



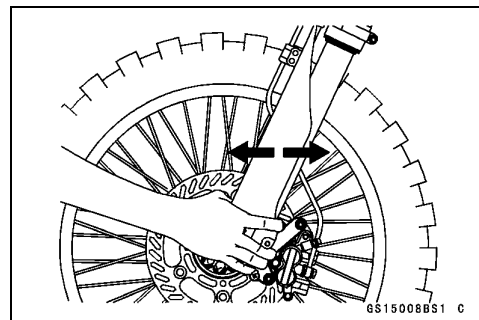
Steering

Steering Inspection

- Using the jack, raise the front wheel off the ground.

Special Tool - Jack: 57001-1238

- With the front wheel pointing straight ahead, alternately nudge each end of the handlebar. The front wheel should swing fully left and right from the force of gravity until the fork hits the stop.
- ★ If the steering binds or catches before the stop, check the routing of the cables, hoses, and harnesses.
- ★ If the steering feels tight, adjust or lubricate the steering.
- Feel for steering looseness by pushing and pulling the forks.
- ★ If you feel looseness, adjust the steering.



Steering Adjustment

- Using the jack, raise the front wheel off the ground.

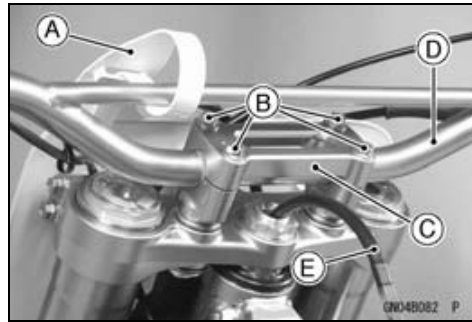
Special Tool - Jack: 57001-1238

2-58 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

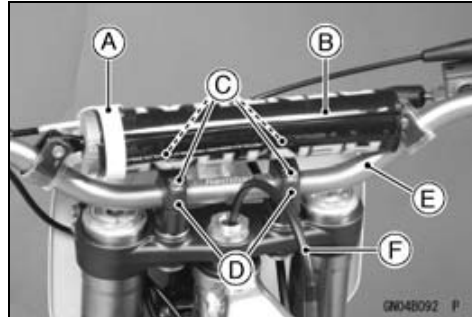
KX250-R1:

- Remove:
 - Number Plate [A]
 - Handlebar Holder Bolts [B]
 - Handlebar Holder [C]
 - Handle Bar [D]
- Pull out the breather hose [E].

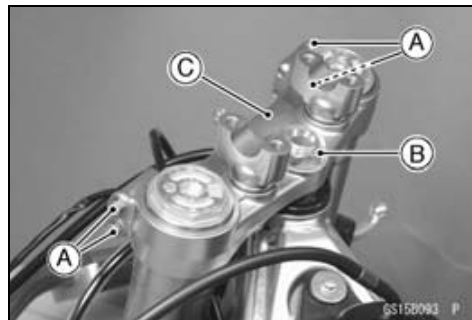


KX250R6F ~:

- Remove:
 - Number Plate [A]
 - Pad [B]
 - Handlebar Holder Bolts [C]
 - Handlebar Holders (Upper) [D]
 - Handlebar [E]
- Pull out the breather hose [F].



- Loosen the front fork upper clamp bolts [A], and remove the steering stem head nut [B] and steering stem head [C].

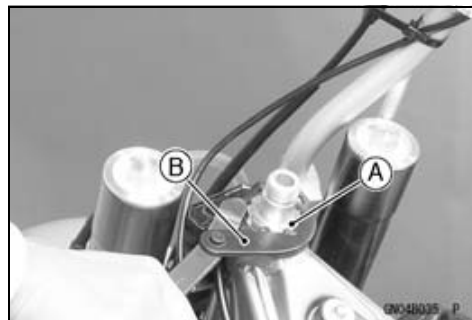


- Turn the steering stem nut [A] with the steering stem nut wrench [B] to obtain the proper adjustment.
- ★ If the steering is too tight, loosen the stem nut a fraction of a turn; if the steering is too loose, tighten the stem nut a fraction of a turn.

Special Tool - Steering Stem Nut Wrench: 57001-1100

NOTE

- Turn the stem nut 1/8 turn at a time maximum.



- Install the steering stem head.
- Tighten the following:
 - Torque - Steering Stem Head Nut: 98 N·m (10.0 kgf·m, 72 ft·lb)**
 - Upper Front Fork Clamp Bolts: 20 N·m (2.0 kgf·m, 14.5 ft·lb)**

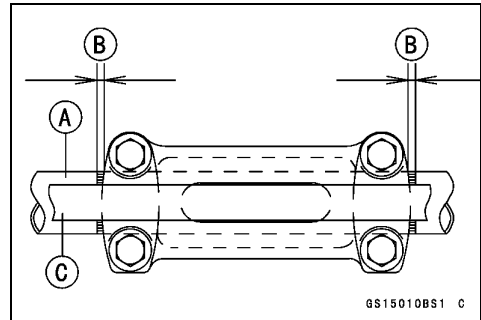
NOTE

- Tighten the two clamp bolts alternately two times to ensure even tightening torque.
- Check the steering again.
- ★ If the steering is too tight or too loose, repeat the adjustment as mentioned above.

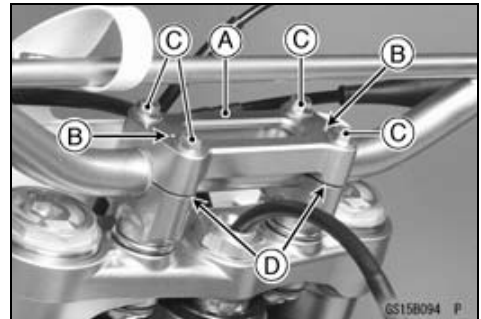
Periodic Maintenance Procedures

KX250-R1:

- Install the handlebar [A] on the handlebar holder as shown.
 - Same Length [B]
 - Bridge Bar [C]

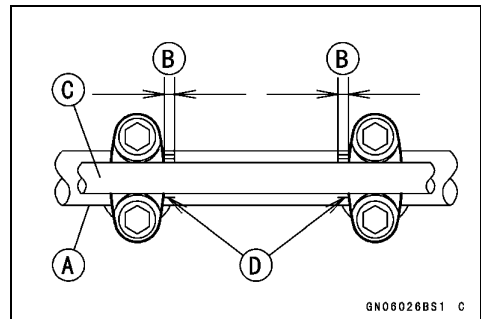


- Install the handlebar holder [A] together with the handlebar so that the mark side [B] on the holder points at the rear.
- Tighten the handlebar holder bolts [C].
 - Torque - Handlebar Holder Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)**
- Tighten the holder bolts, front first and then the rear. If the handlebar holder is correctly installed, there will be no gap at the front and a gap [D] at the rear after tightening.
- Install the number plate.

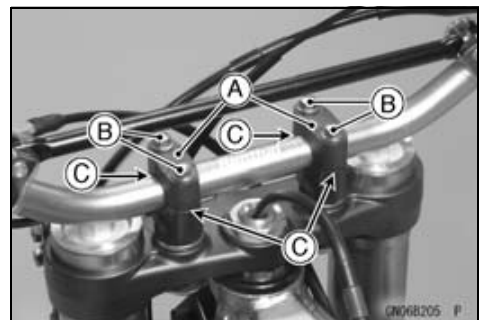


KX250R6F ~:

- Install the handlebar [A] on the handlebar holder as shown.
 - Same Length [B]
 - Bridge Bar [C]
 - Protrusion of Graduation [D]



- Install the handlebar holders. [A] with handlebar.
- Tighten the front and rear bolts [B] of the handlebar equally.
- ★ If the handlebar holders are correctly installed, there will be same amount of gap [C] on the front and rear side of the clamp after the bolts tightening.
 - Torque - Handlebar Holder Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)**
- Install:
 - Pad
 - Number Plate

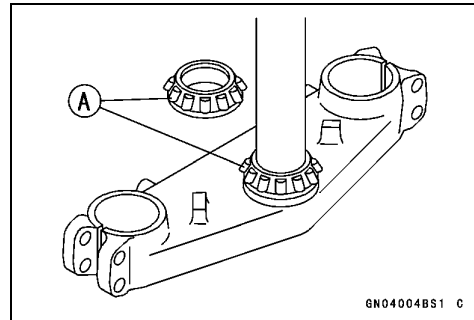


2-60 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Stem Bearing Lubrication

- Remove the steering stem (see Steering Stem Removal in Steering chapter).
- Using a high-flash-point solvent, wash the upper and lower tapered rollers in the cages, and wipe the upper and lower outer races, which are press-fitted into the frame head pipe, clean off grease and dirt.
- Visually check the outer races and the rollers.
- ★ Replace the bearing assemblies if they show wear or damage.
- Pack the upper and lower tapered roller bearings [A] in the cages with grease, and apply a light coat of grease to the upper and lower outer races.
- Install the steering stem, and adjust the steering (see Steering chapter).



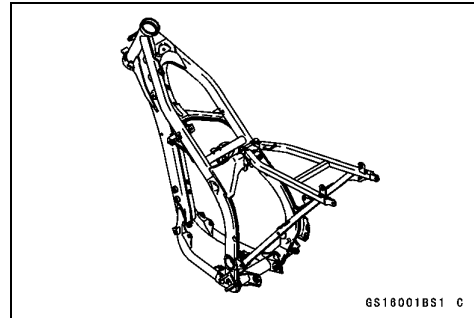
Frame

Frame Inspection

- Clean the frame with steam cleaner.
- Visually inspect the frame and rear frame for cracks, dents, bending, or warp.
- ★ If there is any damage to the frame, replace it.

⚠ WARNING

A repaired frame may fail in use, possibly causing an accident. If the frame is bent, dented, cracked, or warped, replace it.



Electrical System

Spark Plug Cleaning and Inspection

- Remove:
 - Seat (see Frame chapter)
 - Fuel Tank (see Fuel System chapter)
 - Spark Plug Cap
- Clean the cylinder head and area around the spark plug, using the compressed air [A].

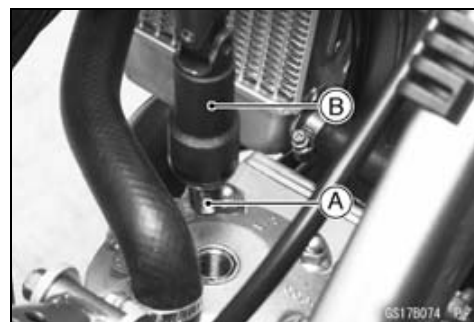


- Remove the spark plug [A], using the spark plug wrench [B].

Special Tool - Spark Plug Wrench: 57001-110

Owner's Tool - Spark Plug Wrench, 16 mm: 92110-1200

- Clean the spark plug, preferably in a sandblasting device, and then clean off any abrasive particles. The plug may also be cleaned using a high-flash-point solvent and a non-wire brush.



CAUTION

Do not use wire brush when cleaning the spark plug to prevent the platinum electrode damage.

- ★ If the spark plug electrodes are corroded or damaged, or if the insulator is cracked, replace the plug. Use the standard spark plug.

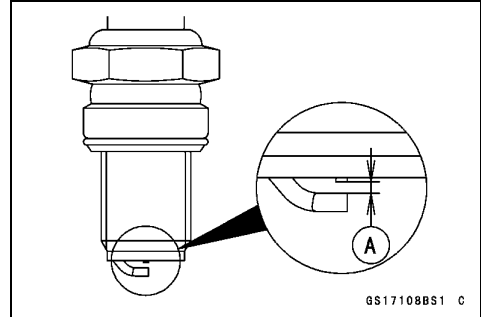
Periodic Maintenance Procedures

- Measure the gap [A] with a wire-type thickness gauge to prevent possible damage to the platinum electrode.
- ★ If the gap is incorrect, replace it with the standard plug.

Spark Plug Gap

Standard: 0.7 ~ 0.8 mm (0.028 ~ 0.031 in.)

- Install the spark plug.
- Torque - Spark Plug: 26 N·m (2.7 kgf·m, 20 ft·lb)



- Fit the plug cap securely.
- Pull the spark plug cap [A] to make sure the installation of the spark plug cap.



General Lubrication

Lubrication

- Before lubricating each part, clean off any rusty spots with rust remover and wipe off any grease, oil, dirt, or grime.
- Lubricate the points listed below with indicated lubricant.

NOTE

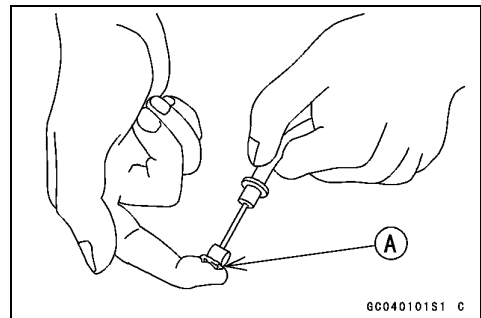
○ Whenever the vehicle has been operated under wet or rainy conditions, or especially after using a high-pressure water spray, perform the general lubrication.

Pivots: Lubricate with Engine Oil

- Clutch Lever
- Brake Lever
- Kick Pedal
- Shift Pedal
- Rear Brake Rod Joint
- Drive Chain
- Rear Brake Rod Joint Pin

Points: Lubricate with Grease.

- Clutch Inner Cable Upper End [A]
- Throttle Inner Cable Upper End
- Swingarm Pivot
- Tie-Rod Pivot
- Rocker Arm Pivot
- Steering Stem Bearing



2-62 PERIODIC MAINTENANCE

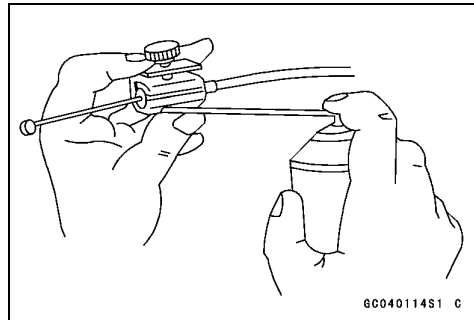
Periodic Maintenance Procedures

Cables: Lubricate with Cable Lubricant

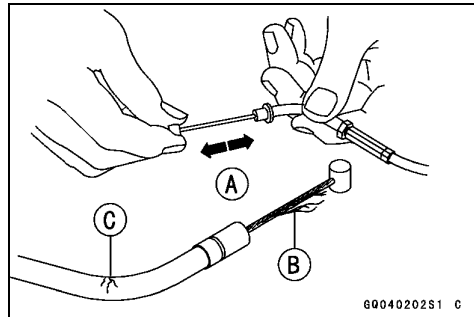
Throttle Cables

Clutch Cable

- Lubricate the cables by seeping the oil between the inner cable and cable housing.
- The cable may be lubricated by using a commercially available pressure cable lubricator with an aerosol cable lubricant.



- With the cable disconnected at the both ends, the cable should move freely [A] within the cable housing.
- ★ If cable movement is not free after lubricating, if the cable is frayed [B], or if the cable housing is kinked [C], replace the cable.



Periodic Maintenance Procedures

Nut, Bolt, and Fastener Tightness

Tightness Inspection

- Check the tightness of bolts and nuts listed here. Also, check to see that each cotter pin is in place and in good condition.

NOTE

○ *For the engine fasteners, check the tightness of them when the engine is cold (at room temperature).*

- ★ If there are loose fasteners, retorque them to the specified torque following the specified tightening sequence. Refer to the appropriate chapter for torque specifications. If torque specifications are not in the appropriate chapter, see the Standard Torque Table. For each fastener, first loosen it by 1/2 turn, then tighten it.
- ★ If cotter pins are damaged, replace them with new ones.

Nut, Bolt and Fastener to be checked

Wheels:

Spoke Nipples
 Front Axle Nut
 Rear Axle Nut Cotter Pin
 Rear Axle Nut

Final Drive:

Chain Adjuster Locknuts
 Rear Sprocket Nuts

Brakes:

Front Master Cylinder Clamp Bolts
 Caliper Mounting Bolts (Front)
 Rear Master Cylinder Mounting Bolts
 Rear Master Cylinder Joint Cotter Pin
 Brake Lever Pivot Nut
 Brake Pedal Bolt

Suspension:

Front Fork Clamp Bolts
 Front Fender Mounting Bolt
 Rear Shock Absorber Mounting Nuts
 Swingarm Pivot Shaft Nut
 Uni-Trak Link Nuts

Steering:

Steering Stem Head Nut
 Handlebar Holder Bolts

Engine:

Engine Mounting Nuts
 Engine Bracket Nuts
 Cylinder Head Nuts
 Shift Pedal Bolt
 Muffler Bolt and Nut
 Kick Pedal Bolt

Others:

Rear Frame Mounting Bolts

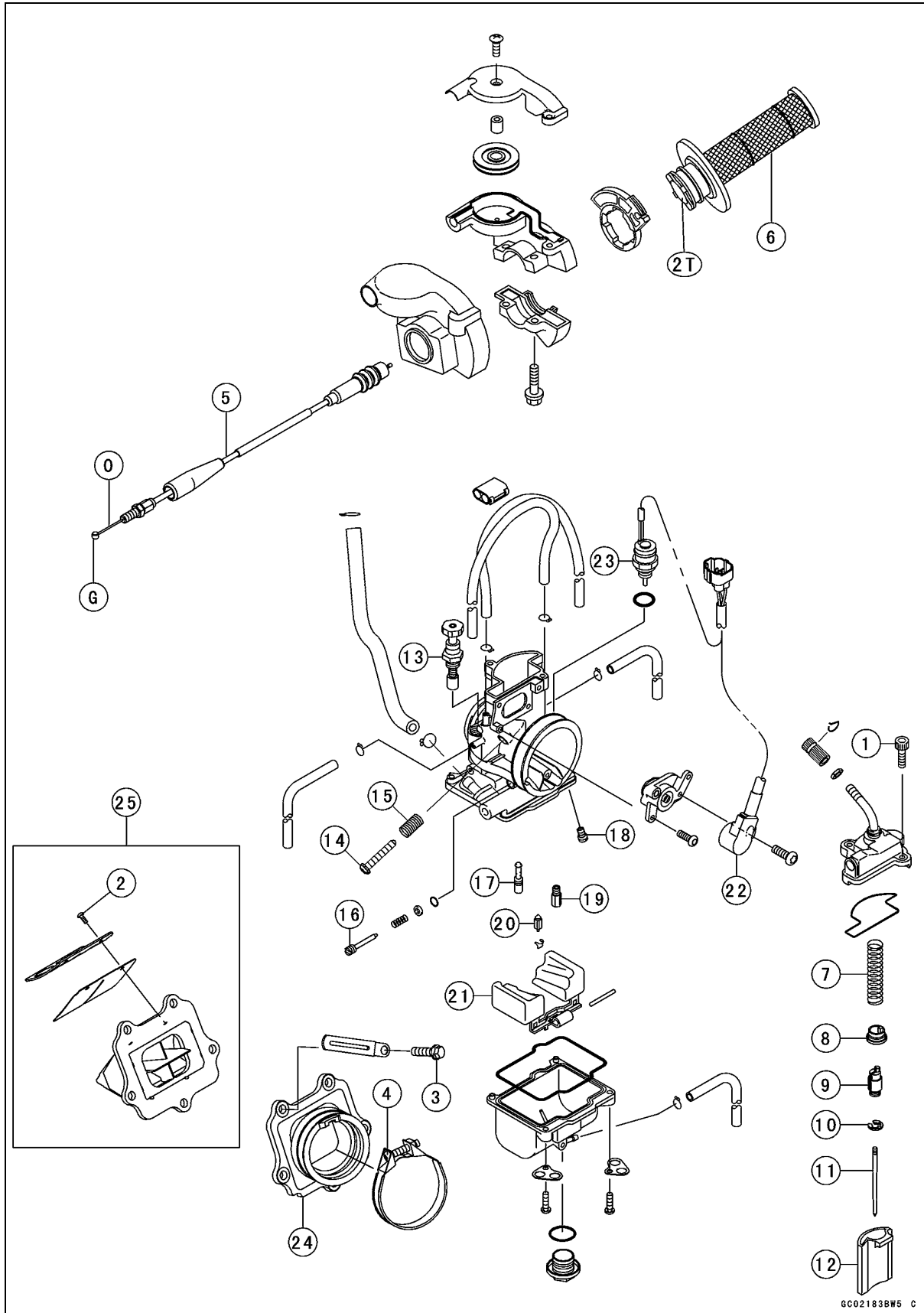
Fuel System

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3-2 FUEL SYSTEM

Exploded View



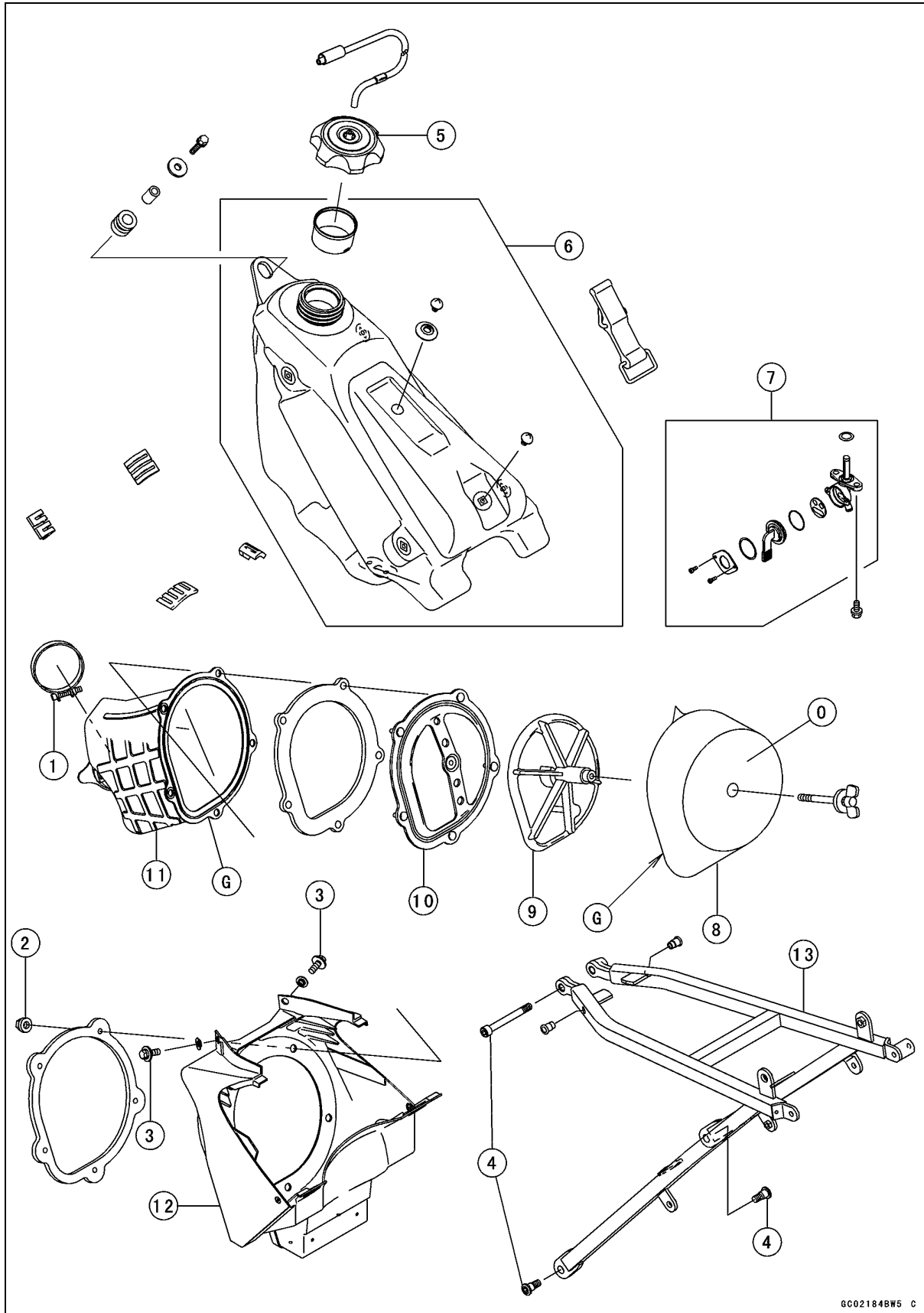
Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Carburetor Top Cover Allen Bolts	3.9	0.40	35 in·lb	
2	Reed Valve Screws	1.0	0.10	8.8 in·lb	
3	Carburetor Holder Mounting Bolts	8.8	0.90	78 in·lb	
4	Carburetor Holding Clamp Screw	1.5	0.15	13 in·lb	

- 5. Throttle Cable
- 6. Throttle Grip
- 7. Spring
- 8. Retainer
- 9. Connector
- 10. Jet Needle Clip
- 11. Jet Needle
- 12. Throttle Valve
- 13. Choke Knob
- 14. Idle Adjusting Screw
- 15. Spring
- 16. Air Screw
- 17. Slow Jet
- 18. Power Jet
- 19. Main Jet
- 20. Float Valve Needle
- 21. Float
- 22. Throttle Sensor
- 23. Fuel Cut Valve
- 24. Carburetor Holder
- 25. Reed Valve
- G: Apply grease.
- O: Apply oil.
- 2T: Apply 2 stroke oil.

3-4 FUEL SYSTEM

Exploded View



GC02184BWS C

Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Air Cleaner Duct Clamp Screw	1.5	0.15	13 in·lb	
2	Air Cleaner Duct Mounting Nut	3.0	0.30	27 in·lb	
3	Air Cleaner Housing Bolts	8.8	0.90	78 in·lb	
4	Rear Frame Mounting Bolts	34	3.5	25	

- 5. Fuel Tank Cap
- 6. Fuel Tank
- 7. Fuel Tap
- 8. Element
- 9. Frame
- 10. Holder
- 11. Air Cleaner Duct
- 12. Air Cleaner Housing
- 13. Rear Frame
- G: Apply grease.
- O: High-quality foam-air-filter oil.

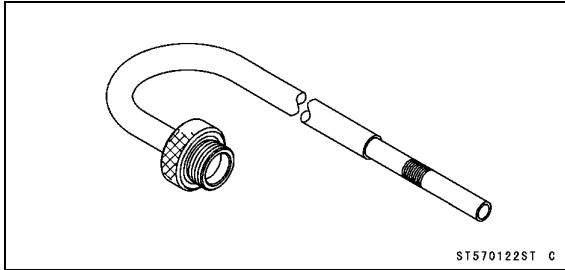
3-6 FUEL SYSTEM

Specifications

Item	Standard	Service Limit
Carburetor		
Make/Type	KEIHIN PWK38S	---
Main Jet:	#160	---
Power Jet:	#55	---
Throttle Valve Cutaway	#8	---
Jet Needle	NFTG	---
Jet Needle Clip Position	2nd groove from the top	---
Slow Jet (Pilot Jet)	#50	---
Air Screw (Turns Out)	1 1/2	---
Service Fuel Level (above the Bottom Edge of the Carburetor Body)	10.5 ±1 mm (0.413 ±0.039 in.)	---
Float Height	6.5 ±1 mm (0.256 ±0.039 in.)	---
Fuel Cut Valve	see Electrical System chapter	
Throttle Sensor	see Electrical System chapter	

Special Tool

Fuel Level Gauge, M18 × 1.0:
57001-122



3-8 FUEL SYSTEM

Throttle Grip and Cable

If the throttle grip has excessive free play due to cable stretch or misadjustment, there will be a delay in throttle response. Also, the throttle valve may not open fully at full throttle. On the other hand, if the throttle grip has no play, the throttle will be hard to control, and the idle speed will be erratic. Check the throttle grip play periodically in accordance with the Periodic Maintenance Chart, and adjust the play if necessary.

The throttle cable routing is shown in Cable, Wire and Hose Routing in the Appendix chapter.

Free Play Inspection

- Refer to the Throttle Grip Free Play Inspection in the Periodic Maintenance chapter.

Free Play Adjustment

- Refer to the Throttle Grip Free Play Adjustment in the Periodic Maintenance chapter.

Throttle Cable Installation

- Install the throttle cable in accordance with the Cable, Wire and Hose Routing in the Appendix chapter.
- After the installation, adjust each cable properly.

⚠ WARNING

Operation with an incorrectly routed or improperly adjusted cable could result in an unsafe riding condition.

Throttle Cable Lubrication

- Refer to the General Lubrication in the Periodic Maintenance chapter.

Carburetor

Since the carburetor regulates and mixes the fuel and air going to the engine, there are two general types of carburetor trouble: too rich a mixture (too much fuel), and too lean a mixture (too little fuel). Such trouble can be caused by dirt, wear, maladjustment, or improper fuel level in the float chamber. A dirty or damaged air cleaner can also alter the fuel to air ratio.

Idle Speed Inspection

- Refer to the Idle Speed Inspection in the Periodic Maintenance chapter.

Idle Speed Adjustment

- Refer to the Idle Speed Adjustment in the Periodic Maintenance chapter.

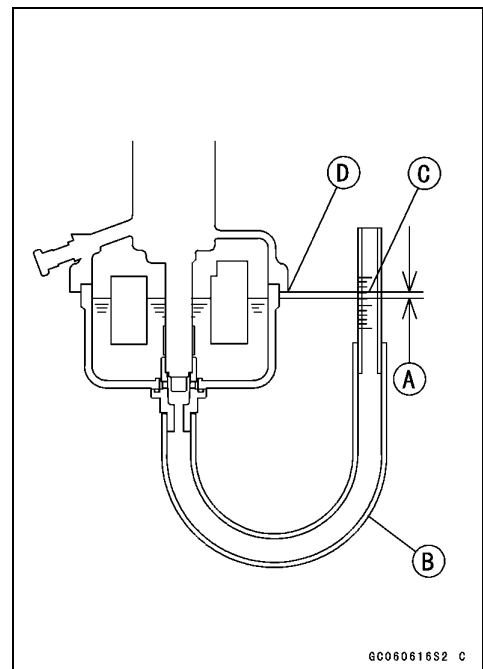
Service Fuel Level Inspection

⚠ WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

- Turn the fuel tap to the OFF position.
- Remove the fuel tank.
- Remove the carburetor, and hold it in true vertical position on a stand. The fuel hose and carburetor cable do not have to be removed to inspect the fuel level [A].
- Put the fuel tank on a bench, and connect the fuel tap to the carburetor using a suitable hose.
- Remove the drain plug from the bottom of the float bowl, and screw a fuel level gauge [B] into the plug hole.

Special Tool - Fuel Level Gauge, M18 × 1.0: 57001-122



GC060616S2 C

3-10 FUEL SYSTEM

Carburetor

- Hold the gauge vertically against the side of the carburetor body so that the “zero” line [C] is several millimeters higher than the bottom edge [D] of the carburetor body.
- Turn the fuel tap to the ON position to feed fuel to the carburetor.
- Wait until the fuel level in the gauge settles.
- Keeping the gauge vertical, slowly lower the gauge until the “zero” line is even with the bottom edge of the carburetor body.

NOTE

○ Do not lower the “zero” line below the bottom edge of the carburetor body. If the gauge is lowered and then raised again, the fuel level measure shows somewhat higher than the actual fuel level. If the gauge is lowered too far, dump the fuel out of it into a suitable container and start the procedure over again.

- Read the fuel level in the gauge and compare it to the specification.

Service Fuel Level (above the bottom edge of the carburetor body)

Standard: 10.5 ±1 mm (0.413 ±0.039 in.)

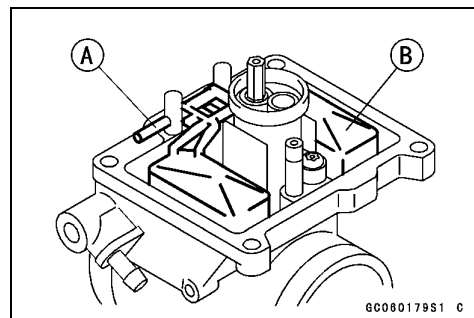
- ★ If the fuel level is incorrect, adjust it.
- Turn the fuel tap to the OFF position and remove the fuel level gauge.
- Install the drain plug on the bottom of the float bowl.

Service Fuel Level Adjustment

⚠ WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well-ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

- Remove the carburetor, and drain the fuel into a suitable container.
- Remove the float bowl.
- Drive out the pivot pin [A] and remove the float [B].



Carburetor

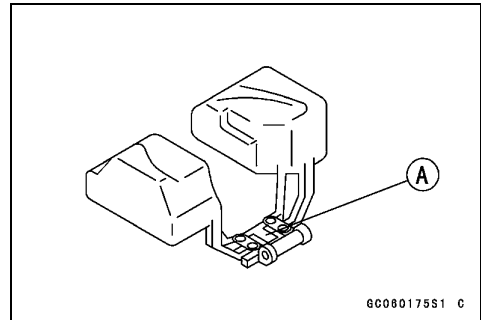
- Bend the tang [A] on the float arm very slightly to change the float height. Increasing the float height lowers the fuel level and decreasing the float height raises the fuel level.

Float Height

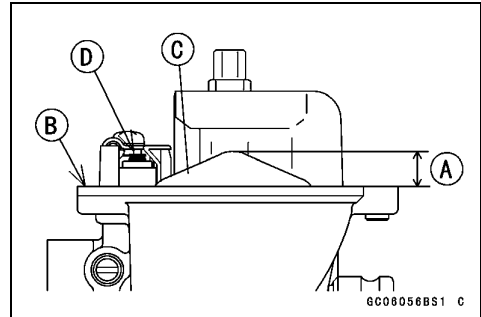
Standard: 6.5 ±1 mm (0.256 ±0.039 in.)

NOTE

- Float height [A] is the distance from the float bowl mating surface [B] of the carburetor body (with the gasket removed) to the top of the float [C]. Measure the height with the carburetor upside down.
- Do not push the needle rod [D] in during the float height measurement.



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- Assemble the carburetor, and recheck the fuel level.
- ★ If the fuel level cannot be adjusted by this method, the float or the float valve is damaged.

Carburetor Removal

⚠ WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well-ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

- Turn the fuel tap to the OFF position and pull the fuel hose off the tap.
- Remove the fuel tank and left shroud.
- Disconnect the carburetor lead connector [A].

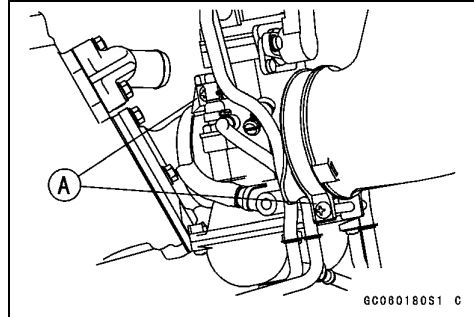


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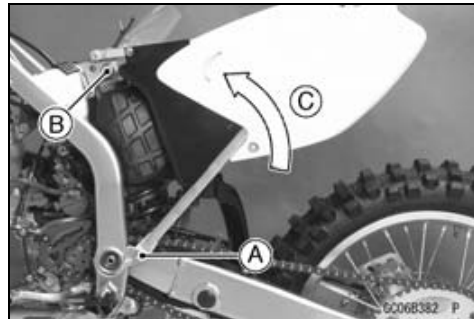
3-12 FUEL SYSTEM

Carburetor

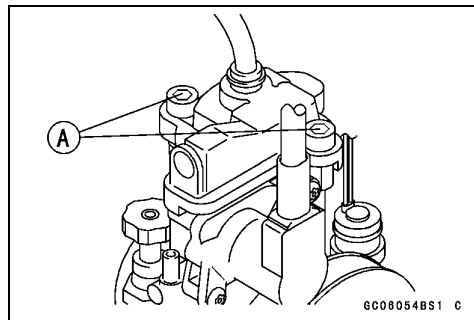
- Loosen the clamps [A].



- Remove:
 - Right Side Cover
 - Muffler
 - Rear Frame Bolts [A] (Left and Right)
- Loosen the rear frame bolts [B], pull up the rear frame [C] with the air cleaner housing and remove the carburetor.



- Drain the fuel from the float bowl by removing the drain plug. After draining, install the drain plug securely.
- Unscrew the carburetor cap bolts [A].



- Pull out the throttle valve assembly [A].

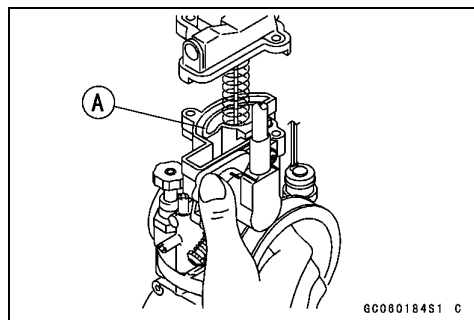
CAUTION

If the throttle valve is not removed from the cable, wrap it in a clean cloth to avoid damage.

- After removing the carburetor, push a clean, lint-free towel into the carburetor holder and the air cleaner duct to keep dirt or other foreign material from entering.

⚠ WARNING

If dirt or dust is allowed to pass through into the carburetor, the throttle may become stuck, possibly causing an accident.



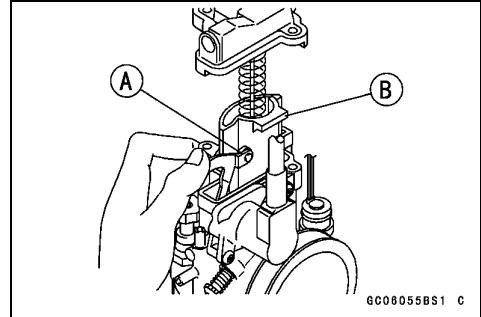
CAUTION

If dirt gets through into the engine, excessive engine wear and possibly engine damage will occur.

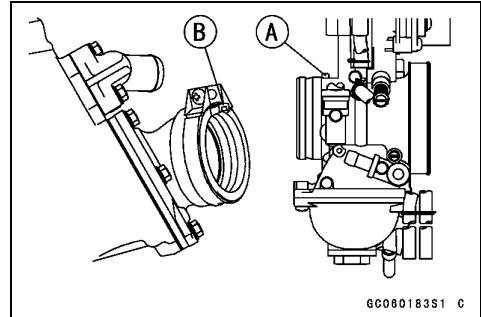
Carburetor

Carburetor Installation

- Lifting up the link shaft end [A] of the throttle sensor install the throttle valve assembly.
- Being careful not to bend or otherwise damage the jet needle. Check to see that the throttle valve [B] goes all the way down into the carburetor body, and slides smoothly.



- When installing the carburetor into the carburetor holder, align the center [A] of the carburetor with the groove [B] on the holder.
- Tighten the clamps securely.



- Route the air vent and overflow hoses properly (see Appendix chapter).

CAUTION

Always keep the hoses free of obstruction, and make sure they do not get pinched by the chain or shock absorber.

- Connect the carburetor lead connector.
- After installing the carburetor, do the following.
 - Turn the fuel tap to the ON position, and check for fuel leakage from the carburetor.

⚠ WARNING

Fuel spilled from the carburetor is hazardous.

- Adjust the following items if necessary:
 - Throttle Cable
 - Idle Speed

Fuel Inspection

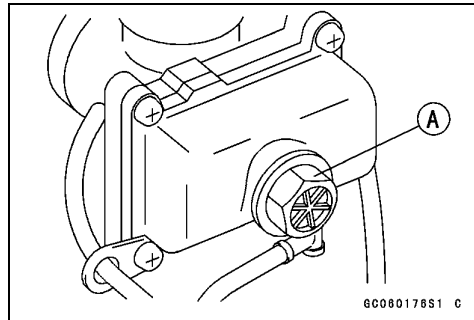
⚠ WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well-ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

3-14 FUEL SYSTEM

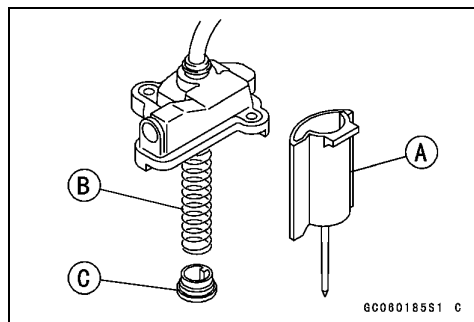
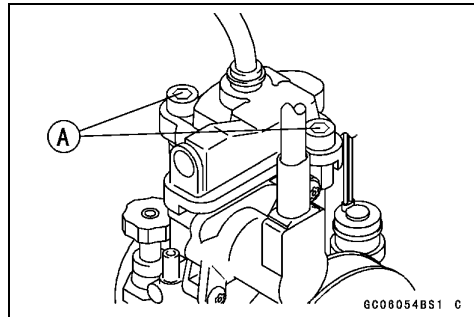
Carburetor

- Turn the fuel tap to the OFF position.
- Remove the carburetor.
- Place a suitable container beneath the carburetor.
- Remove the drain plug [A] from the bottom of the float bowl and check for water or dirt in the fuel.
- ★ If any water or dirt comes out, clean the carburetor, fuel tap and fuel tank (see this chapter).
- Install the drain plug on the float bowl, and tighten it securely.
- Install the carburetor.

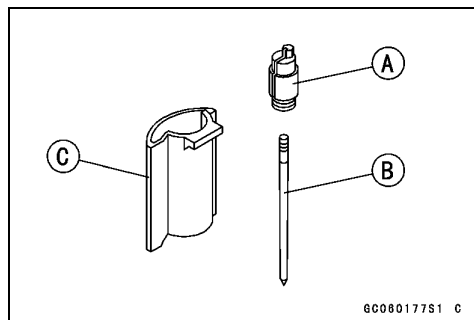


Carburetor Disassembly

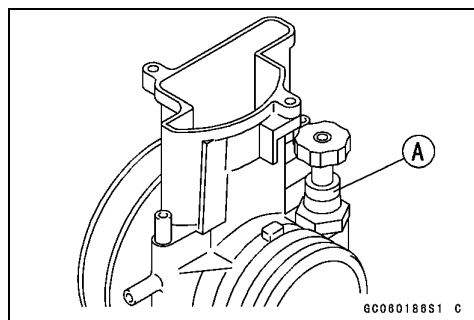
- Remove the carburetor.
 - Unscrew the carburetor top cap bolts [A].
 - Pull out the throttle valve assembly.
-
- Remove the throttle valve assembly [A], spring [B], retainer [C] and carburetor cap from the carburetor cable lower end.



- Disassemble the throttle valve assembly; connector [A], jet needle with circlip [B] and throttle valve [C].

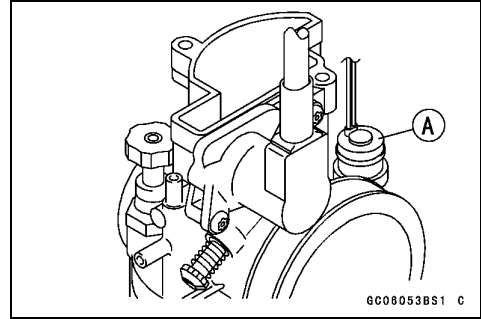


- Remove the choke knob/starter plunger assembly [A] from the carburetor.

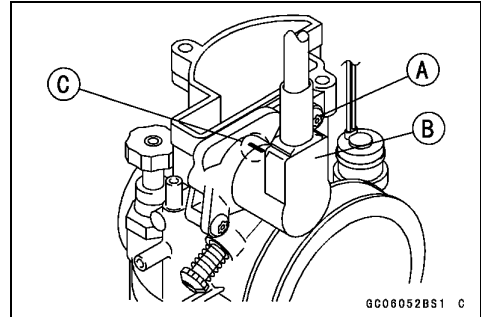


Carburetor

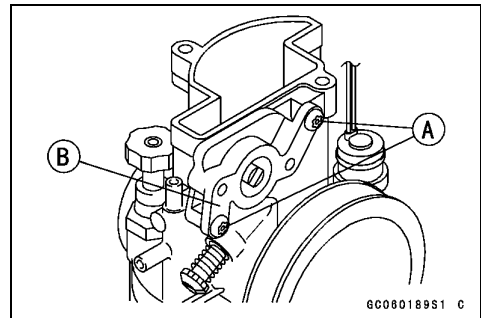
- Remove the fuel cut valve [A] from the carburetor.



- Remove the throttle sensor mounting bolt [A].
- Before removing the throttle sensor [B], mark [C] the carburetor body and sensor so that it can be installed later in the same position.

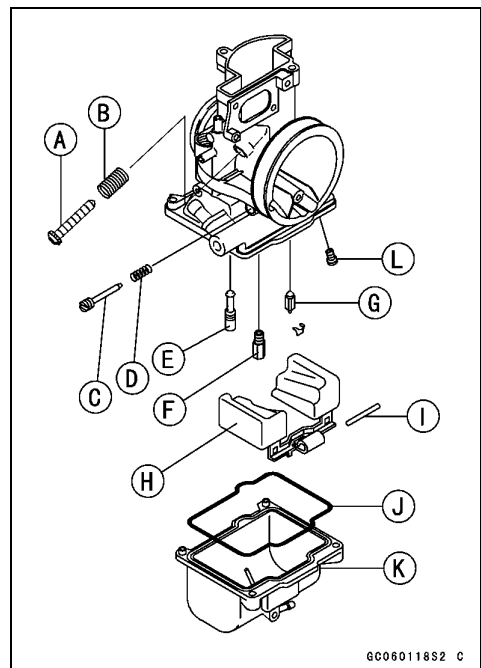


- Remove the throttle sensor link assembly screws [A].
- Remove the link assembly [B].



- Remove the following parts from the carburetor body.

- [A] Idle Adjusting Screw
- [B] Spring
- [C] Air Screw
- [D] Spring
- [E] Slow Jet
- [F] Main Jet
- [G] Float Valve Needle
- [H] Float
- [I] Pin
- [J] O-ring
- [K] Float Bowl
- [L] Power Jet

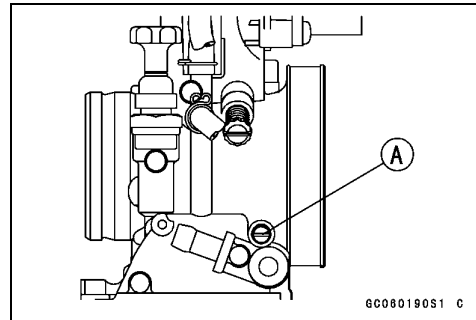


3-16 FUEL SYSTEM

Carburetor

Carburetor Assembly

- Clean the disassembly parts before assembling.
- Replace the O-rings with a new one if it is deteriorated or damaged.
- Turn in the air screw [A] fully but not tightly, and then back it out the specified number of turns. (see Specifications of this chapter)
- Install the throttle sensor so that the marks aligns and check it position (see Electrical System chapter).



Carburetor Cleaning

▲ WARNING

Clean the carburetor in a well-ventilated area, and take care that there is no spark or flame anywhere near the working area; this includes any appliance with a pilot light. Because of the danger of highly flammable liquids, do not use gasoline or low flash-point solvent to clean the carburetor.

- Make sure the fuel tap is in the OFF position.
- Remove the carburetor.
- Drain the fuel in the carburetor.
- Disassemble the carburetor.

CAUTION

Do not use compressed air on an assembled carburetor, the float may be deformed by the pressure. Remove as many rubber or plastic parts from the carburetor as possible before cleaning the carburetor with a cleaning solution. This will prevent damage or deterioration of the parts. Do not use a strong carburetor cleaning solution which could attack the plastic parts; instead, use a mild high flash-point cleaning solution safe for plastic parts. Do not use wire or any other hard instrument to clean carburetor parts, especially jets, as they may be damaged.

- Immerse all the metal parts in a carburetor cleaning solution.
- Rinse the parts in water.
- After the parts are cleaned, dry them with compressed air.
- Blow through the air and fuel passages with compressed air.
- Assemble the carburetor, and install it on the motorcycle.

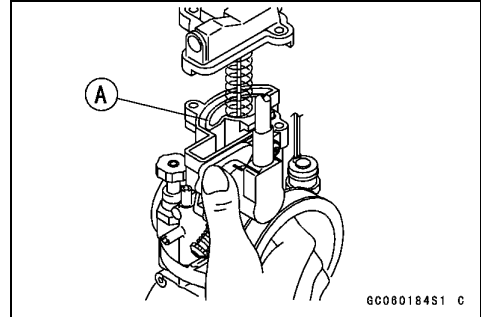
Carburetor Inspection

▲ WARNING

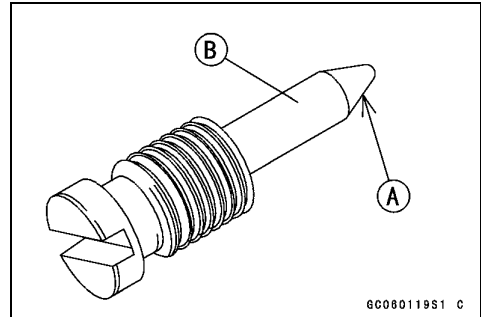
Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well-ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

Carburetor

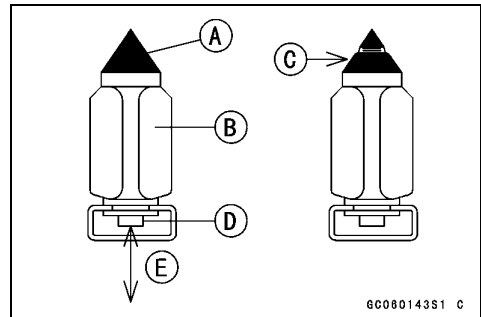
- Remove the carburetor.
- Before disassembling the carburetor, check the fuel level (see Fuel Level Inspection).
- ★ If the fuel level is incorrect, inspect the rest of the carburetor before correcting it.
- Pull the carburetor cable to check that the throttle valve [A] moves smoothly and returns by spring pressure.
- ★ If the throttle valve does not move smoothly. Replace the carburetor.
- Disassemble the carburetor.
- Clean the carburetor.



- Check the O-rings on the float bowl, pilot screw, and throttle sensor are in good condition.
- ★ If any of the O-rings are not in good condition, replace them.
- Check the tapered portion [A] of the pilot screw [B] for wear or damage.
- ★ If the pilot screw is worn or damaged on the tapered portion, it will prevent the engine from idling smoothly. Replace it.



- Remove the float valve needle.
- Check the plastic tip [A] of the float valve needle [B] for wear.
- ★ If the needle is worn as shown right [C], replace the valve needle.
- Push the rod [D] in the valve needle, then release it.
- ★ If the rod does not come out fully by spring tension, replace the valve needle.
- Push and release [E]



- Remove the slow jet.
- Check the slow jet for any damage.
- ★ If the slow jet is damaged, replace it with a new one.
- Remove the throttle valve and jet needle.
- Inspect the outside of the throttle valve for scratches and abnormal wear.
- ★ If it is badly scratched or worn, replace the throttle valve.
- Inspect the inside of the carburetor body for these same faults.
- ★ If it is badly scratched or worn, replace the entire carburetor.
- Check the jet needle for wear.
- ★ A worn jet needle should be replaced.
- Clean the fuel and air passages with a high flash-point solvent and compressed air.

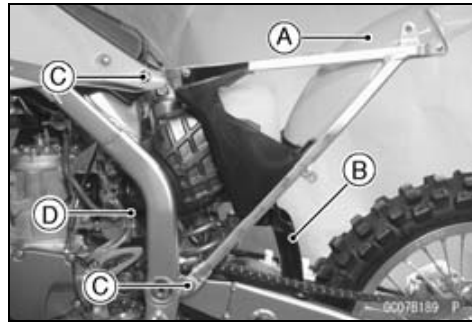
3-18 FUEL SYSTEM

Air Cleaner

Air Cleaner Housing Removal

- Remove:
 - Side Covers (see Frame chapter)
 - Seat (see Frame chapter)
 - Muffler (see Engine Top End chapter)
 - Bolts and Rear Fender [A] (see Frame chapter)
 - Screws and Rear Flap [B] (see Frame chapter)
 - Rear Frame Mounting Bolts [C]
- Loosen the air cleaner duct clamp [D].
- Remove the rear frame.

- Unscrew the bolt [A].
- Remove the air cleaner housing [B].

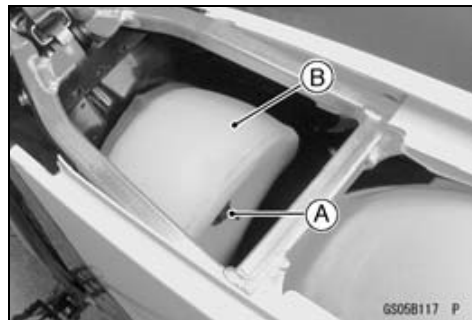


Air Cleaner Housing Installation

- Installation is the reverse of the removal.
- Install the air cleaner housing and tighten it.
 - Torque - Air Cleaner Housing Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)**
- Tighten the rear frame mounting bolts.
 - Torque - Rear Frame Mounting Bolts: 34 N·m (3.5 kgf·m, 25 ft·lb)**

Element Removal

- Remove the seat.
- Remove the wing bolt [A] and pull out the element [B].
- Stuff a clean, lint-free towel into the carburetor so no dirt is allowed to enter the carburetor.
- Wipe out the inside of the air cleaner housing with a clean damp towel.



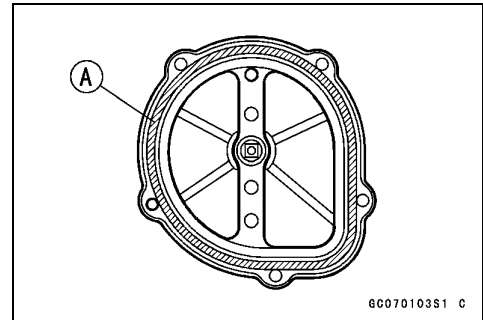
CAUTION

Check inside of the inlet tract and carburetor for dirt. If dirt is present, clean the intake tract and carburetor thoroughly. You may also need to replace the element and seal the housing and inlet tract.

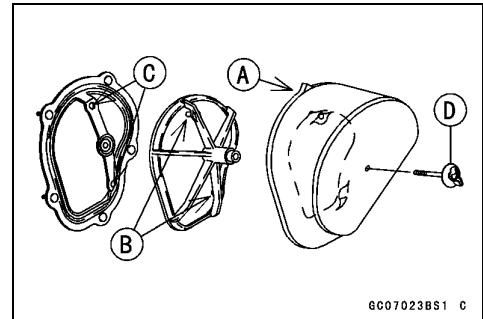
Air Cleaner

Element Installation

- When installing the element, coat the lip of the element with a thick layer of all purpose grease [A] to assure a complete seal against the air cleaner element base. Also, coat the base where the lip of the element fits.
- Apply grease to all connections and screw holes in the air cleaner housing and intake tract.
- Take out the towel from the carburetor securely.



- Install the element so that its tab [A] faces upward and fit the element projections [B] to the holes of the housing [C].
- Tighten the wing bolt [D].
- Install the seat (see Frame chapter).



Element Cleaning and Inspection

- Refer to the Air Cleaner Element Cleaning and Inspection in the Periodic Maintenance chapter.

3-20 FUEL SYSTEM

Fuel Tank

Fuel Tank Removal

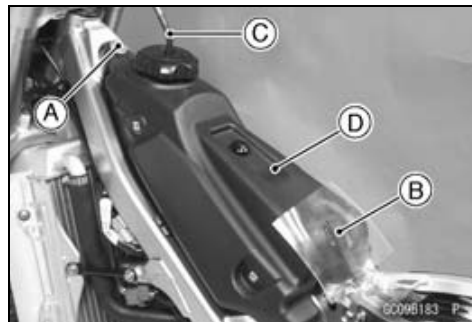
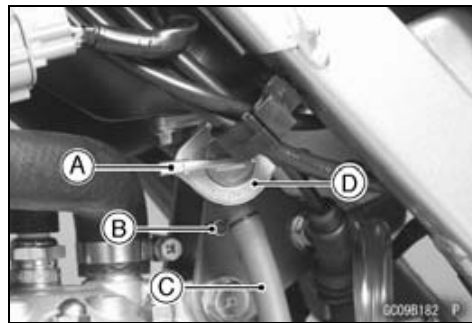
⚠ WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well-ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

- Remove:
 - Seat [A] (see Frame chapter)
 - Bolts [B]
 - Radiator Shrouds [C]

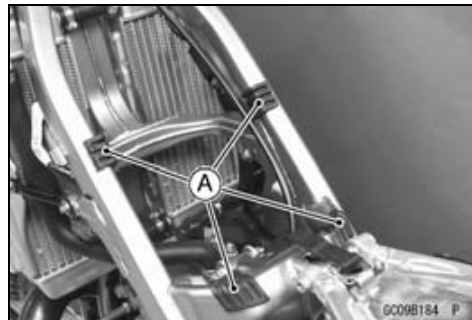
- Turn the fuel tap lever [A] to the OFF position.
- Slide out the clamp [B] and pull the fuel hose [C] off the fuel tap [D].

- Remove the fuel tank mounting bolt [A] and band [B].
- Pull out the fuel tank breather hose [C].
- Remove the fuel tank [D].
- Drain the fuel.



Fuel Tank Installation

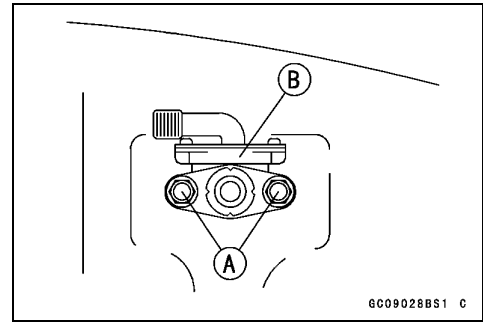
- Check the rubber dampers [A] on the frame.
- ★ If the dampers are damaged or deteriorated, replace them.
- Be sure the fuel hose is clamped to the fuel tap to prevent leaks.
- Insert the fuel tank breather hose outlet end into the steering stem hole (see Appendix chapter).



Fuel Tank

Fuel Tap Removal

- Remove the fuel tank and drain it.
- Remove the mounting bolts [A] and take out the fuel tap [B].

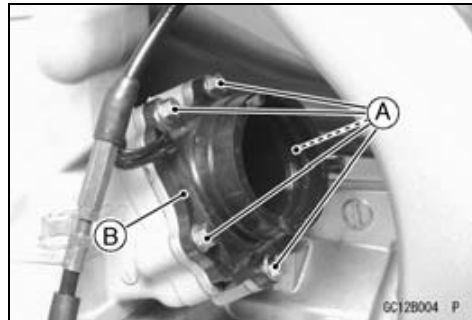


3-22 FUEL SYSTEM

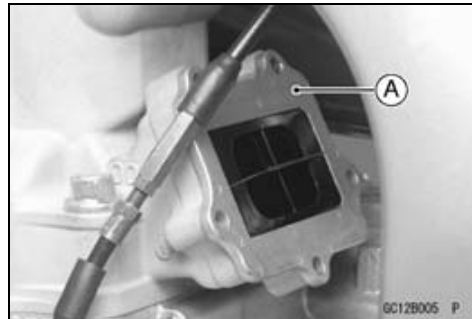
Reed Valve

Reed Valve Removal

- Remove the carburetor.
- Remove the holder mounting bolts [A], and take off the carburetor holder [B].



- Take the reed valve [A] out of the cylinder.



Reed Valve Installation

- Tighten the carburetor holder mounting bolts.
Torque - Carburetor Holder Mounting Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

Reed Valve Inspection

- Refer to the Reed Valve Inspection in the Periodic Maintenance chapter.

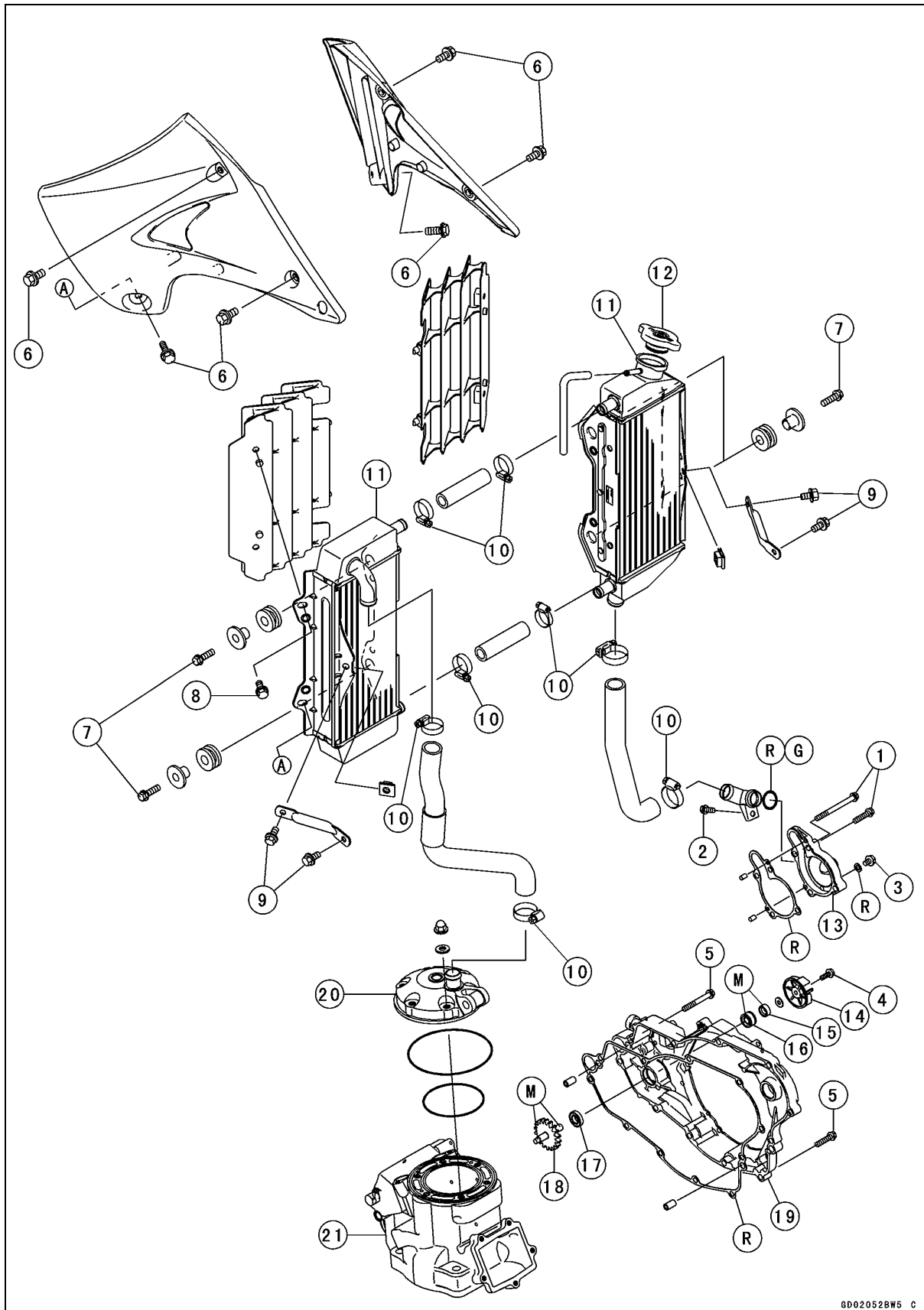
Cooling System

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4-2 COOLING SYSTEM

Exploded View



GD02052BWS C

Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Water Pump Cover Bolts	8.8	0.90	78 in·lb	
2	Water Pump Cover Fitting Bolts	8.8	0.90	78 in·lb	
3	Coolant Drain Plug	8.8	0.90	78 in·lb	
4	Water Pump Impeller Bolt	6.9	0.70	61 in·lb	
5	Right Engine Cover Bolts	8.8	0.90	78 in·lb	
6	Radiator Shroud Bolts	8.8	0.90	78 in·lb	
7	Radiator Mounting Bolts	8.8	0.90	78 in·lb	
8	Radiator Screen Bolts	8.8	0.90	78 in·lb	
9	Radiator Bracket Bolts	8.8	0.90	78 in·lb	
10	Cooling Hose Clamp Screws	1.5	0.15	13 in·lb	

- 11. Radiator
 - 12. Radiator Cap
 - 13. Water Pump Cover
 - 14. Impeller
 - 15. Oil Seal (Short)
 - 16. Oil Seal (Long)
 - 17. Bearing
 - 18. Water Pump Gear
 - 19. Right Engine Cover
 - 20. Cylinder Head
 - 21. Cylinder
- G: Apply grease.
M: Apply molybdenum disulfide grease.
R: Replacement Part

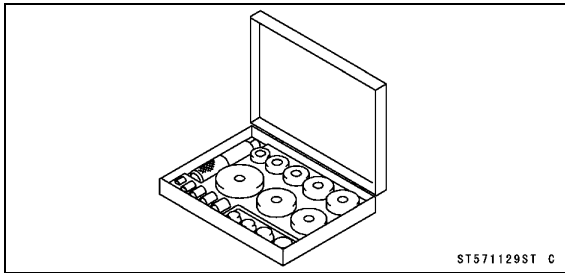
4-4 COOLING SYSTEM

Specifications

Item	Service Limit
Coolant Type Color Mixed Ratio Total Amount	Permanent type antifreeze for aluminum engines and radiators Green Soft water 50%, antifreeze 50% 1.20 L (1.27 US qt.)
Radiator Cap Relief Pressure	93 ~ 123 kPa (0.95 ~ 1.25 kgf/cm ² , 13 ~ 18 psi)

Special Tool

**Bearing Driver Set:
57001-1129**



4-6 COOLING SYSTEM

Coolant

Check the coolant level each day before riding the motorcycle, and replenish coolant if the level is low. Change the coolant in accordance with the Periodic Maintenance Chart (see Periodic Maintenance chapter).

⚠ WARNING

To avoid burns, do not remove the radiator cap or try to inspect the coolant level or change the coolant when the engine is still hot. Wait until it cools down.

Coolant Level Inspection

- Refer to the Coolant Level Inspection in the Periodic Maintenance chapter.

Coolant Deterioration Inspection

- Refer to the Coolant Deterioration Inspection in the Periodic Maintenance chapter.

Coolant Draining

- Refer to the Coolant Draining in the Periodic Maintenance chapter.

Coolant Filling

- Refer to the Coolant Filling in the Periodic Maintenance chapter.

Air Bleeding

- Refer to the Air Bleeding in the Periodic Maintenance chapter.

Cooling System Pressure Testing

CAUTION

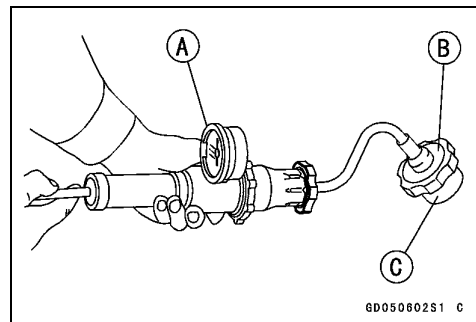
During pressure testing, do not exceed the pressure for which the system is designed to work. The maximum pressure is 123 kPa (1.25 kgf/cm², 18 psi).

- Remove the radiator cap, and install a cooling system pressure tester [A] and adapter [B] on the radiator filler neck [C].

NOTE

○ *Wet the adapter cap sealing surfaces with water or coolant to prevent pressure leaks.*

- Build up pressure in the system carefully until the pressure reaches 123 kPa (1.25 kgf/cm², 18 psi).
- Watch the gauge for at least 6 seconds. If the pressure holds steady, the cooling system is all right.
- Remove the pressure tester, replenish the coolant, and install the radiator cap.
- ★ If the pressure drops and no external source is found, check for internal leaks. Check the cylinder head gasket for leaks.



Coolant

Cooling System Flushing

Over a period of time, the cooling system accumulates rust, scale, and lime in the water jacket and radiator. When this accumulation is suspected or observed, flush the cooling system. If this accumulation is not removed, it will clog up the water passages and considerably reduce the efficiency of the cooling system.

- Drain the cooling system.
- Fill the cooling system with fresh water mixed with a flushing compound.

CAUTION
Avoid the use of a flushing compound which is harmful to the aluminum engine and radiator. Carefully follow the instructions supplied by the manufacture of the cleaning product.

- Warm up the engine, and run it at normal operating temperature for about ten minutes.
- Stop the engine, and drain the cooling system after the coolant cools down.
- Fill the system with fresh water.
- Warm up the engine and drain the system after the coolant cools down.
- Repeat the previous two steps once more.
- Fill the system with a permanent type coolant, and bleed the air from the system (see Air Bleeding).

4-8 COOLING SYSTEM

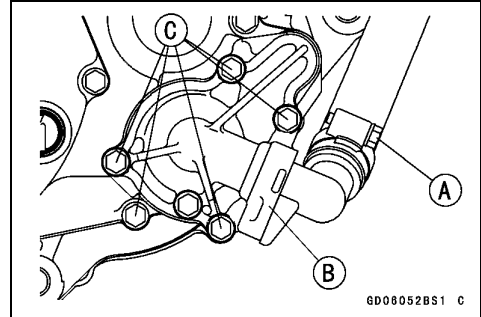
Disassembly and Assembly Precautions

- Prior to disassembly of cooling system parts (radiator, pump, etc), wait until the coolant cools down, and then drain the coolant.
- After assembling and filling the system with coolant, bleed any air from the system.

Water Pump

Water Pump Cover Removal

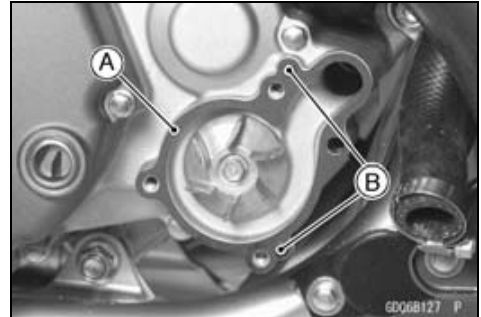
- Drain the coolant (see Coolant Draining).
- Loosen the cooling hose clamps [A], and disconnect the cooling hoses on the water pump cover [B].
- Unscrew the cover bolts [C], and remove the water pump cover.



Water Pump Cover Installation

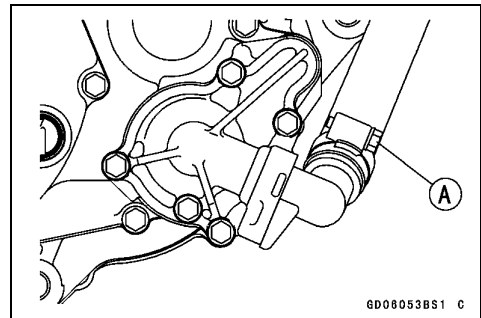
- Replace the pump cover gasket [A] with a new one.
- Be sure the dowel pins [B] are in position.
- Tighten the water pump cover bolts.

Torque - Water Pump Cover Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)



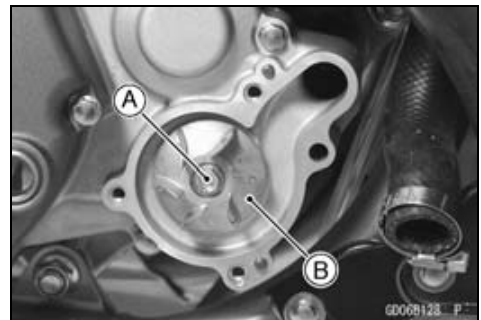
- Install the hose clamp [A] as shown and tighten the clamp screw securely.

Torque - Cooling Hose Clamp Screws: 1.5 N·m (0.15 kgf·m, 13 in·lb)



Impeller Removal

- Drain the coolant (see Coolant Draining).
- Remove the cover bolts and hose, and take out the water pump cover from the right engine cover.
- Remove the impeller bolt [A], and take out the impeller [B] and washer.



Impeller Installation

- Tighten the impeller bolt.

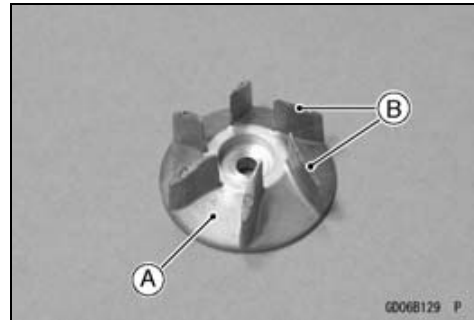
Torque - Water Pump Impeller Bolt: 6.9 N·m (0.70 kgf·m, 61 in·lb)

4-10 COOLING SYSTEM

Water Pump

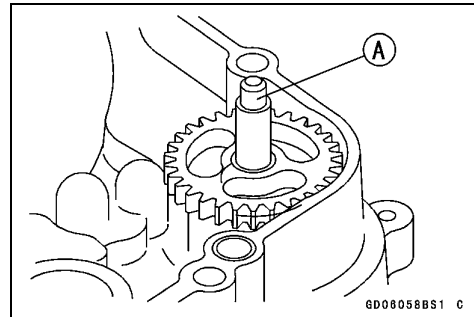
Impeller Inspection

- Visually check the impeller [A].
- ★ If the surface is corroded, or if the blades [B] are damaged, replace the impeller.



Water Pump Shaft Removal

- Remove:
 - Right Engine Cover (see Engine Right Side chapter)
- Pull out the water pump shaft [A] toward inside of the right engine cover.

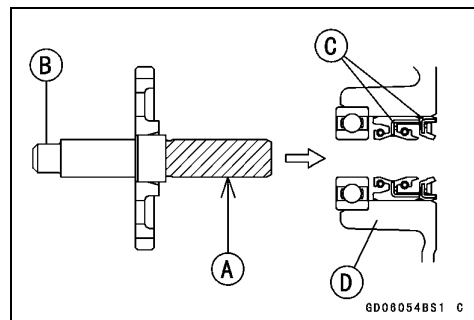


Water Pump Shaft Installation

- To prevent the oil seal lips from peeling, apply a molybdenum disulfide grease [A] to the water pump shaft [B] and insert it into the oil seals [C] from the inside of the right engine cover [D].

CAUTION

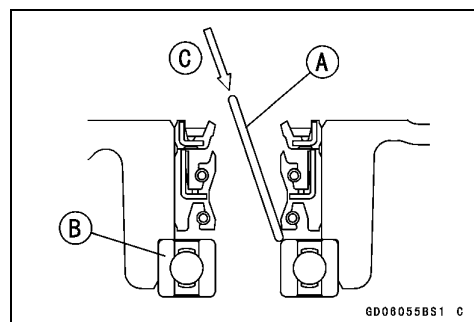
Be sure to apply a molybdenum disulfide grease to the water pump shaft when installing. If it is installed dry, the seals may wear excessively.



- Instal the impeller and check to see that the impeller turn freely.

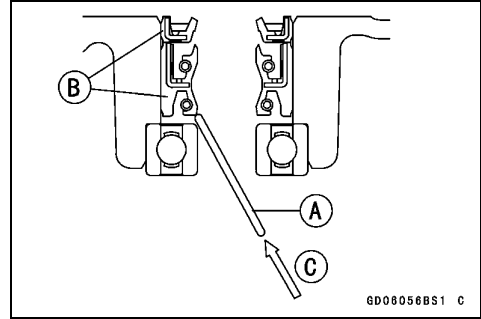
Oil Seal Removal

- Remove:
 - Right Engine Cover (see Engine Right Side chapter)
 - Water Pump Shaft
- Insert a bar [A] into the water pump shaft hole from the outside of the right engine cover, and remove the ball bearing [B] by tapping [C] evenly around the bearing inner race.



Water Pump

- Insert a bar [A] into the water pump shaft hole from the inside of the right engine cover, and remove the oil seal [B] by tapping [C] evenly around the seal lips.



Oil Seal Installation

CAUTION

If the oil seal or ball bearing is removed, replace all of them with new ones at the same time

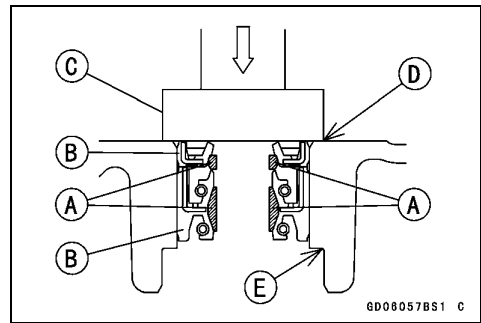
- Be sure to replace the oil seals.
 - Apply plenty of high temperature grease to the oil seal lips [A].
 - Press the oil seals [B] into the hole from the outside of the right engine cover.
- Special Tool - Bearing Driver Set: 57001-1129 [C]**
- Set the oil seal (thick) so that dual lips side face outward and set the oil seal (thin) so that a lip faces outward as shown.

NOTE

○ Use a bearing driver larger in diameter than the oil seal, and press the oil seal into the hole until the edge of the oil seal faces [D] the surface of right engine cover.

- Press the ball bearing into the hole until the bearing is bottomed against the step [E].

Special Tool - Bearing Driver Set: 57001-1129

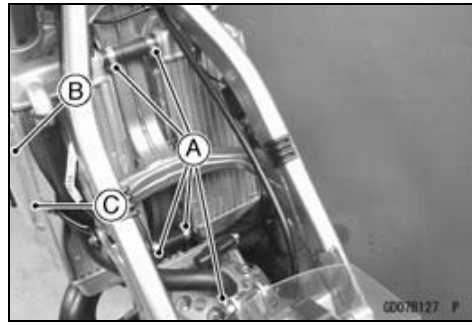


4-12 COOLING SYSTEM

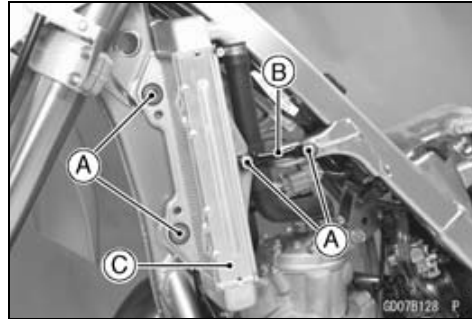
Radiator

Radiator Removal

- Drain the coolant (see Coolant Draining)
- Remove:
 - Radiator Shrouds
 - Fuel Tank (see Fuel System chapter)
- Unscrew the clamps [A] and the bolts [B].
- Remove the radiator screens [C].



- Unscrew the bolts [A].
- Remove:
 - Radiator Brackets [B]
 - Radiator [C] with the cooling hoses



Radiator Installation

- Radiator installation is the reverse of removal.
- Tighten:
 - Torque - Cooling Hose Clamp Screws: 1.5 N·m (0.15 kgf-m, 13 in·lb)**
 - Radiator Bracket Bolts: 8.8 N·m (0.90 kgf-m, 78 in·lb)**
 - Radiator Mounting Bolts 8.8 N·m (0.90 kgf-m, 78 in·lb)**
 - Radiator Screen Bolts 8.8 N·m (0.90 kgf-m, 78 in·lb)**
 - Radiator Shroud Bolts 8.8 N·m (0.90 kgf-m, 78 in·lb)**
- Route the cooling and breather hoses correctly.

Radiator

Radiator Inspection

- Check the radiator core.
- ★ If there are obstructions to air flow, remove them.
- ★ If the corrugated fins are deformed, carefully straighten them with the thin blade of a screwdriver [A].

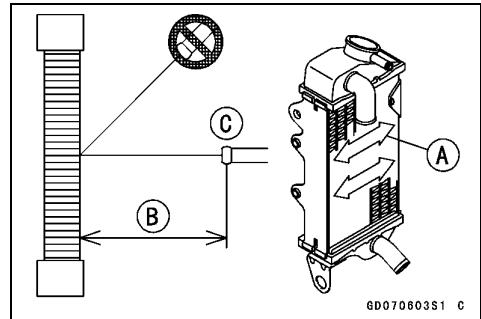
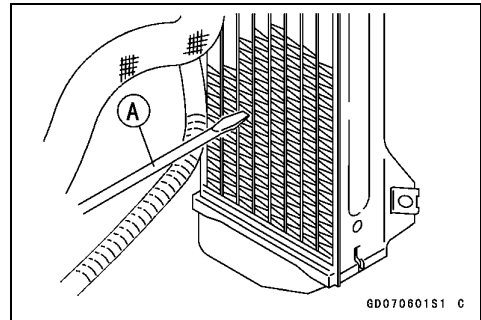
CAUTION

Do not tear the radiator tubes while straightening the fins.

- ★ If the air passages of the radiator core are blocked more than 20% by unremovable obstructions or irreparably deformed fins, replace the radiator with a new one.

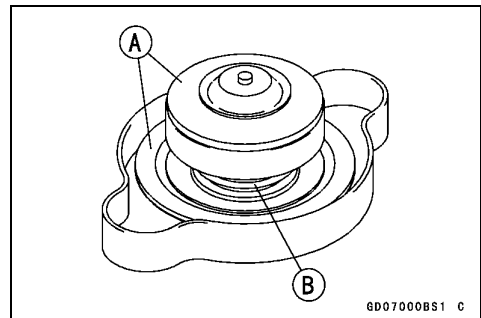
CAUTION

When cleaning the radiator with steam cleaner, be careful of the following to prevent radiator damage. Keep the steam gun [C] away more than 0.5 m (1.64 ft) [B] from the radiator core. Hold the steam gun perpendicular to the core surface. Run the steam gun following the core fin direction [A].

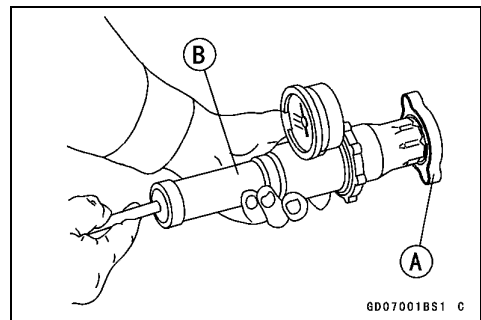


Cap Inspection

- Check the condition of the valve spring [B], and the top and bottom valve seals [A] of the radiator cap.
- ★ If any one of them shows visible damage, replace the cap.



- Wet the top and bottom valve seals with water or coolant to prevent pressure leaks.
- Install the cap [A] on a cooling system pressure tester [B].
- Watching the pressure gauge, slowly pump the pressure tester to build up the pressure. The gauge hand must remain within the relief pressure range in the table below at least 6 seconds. Continue to pump the tester until the relief valve opens, indicated by the gauge hand flicking downward. The relief valve must open within the specified range.



Radiator Cap Relief Pressure:

Standard: 93 ~ 123 kPa (0.95 ~ 1.25 kgf/cm², 13 ~ 18 psi)

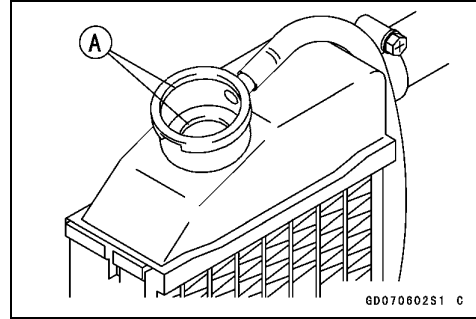
- ★ If the cap cannot hold the pressure, or if the relief pressure is too high or too low, replace the cap with a new one.

4-14 COOLING SYSTEM

Radiator

Filler Neck Inspection

- Check the radiator filler neck for signs of damage.
- Check the condition of the top and bottom sealing seats [A] in the filler neck. They must be smooth and clean for the radiator cap to function properly.



Cooling Hoses, Breather Hose Inspection

- Refer to the Cooling Hoses and Connections Inspection in the Periodic Maintenance chapter.

Cooling Hoses, Breather Hose Installation

- Install the cooling hoses or breather hose being careful to follow the performed bends (see Appendix chapter). Avoid sharp bending, kinking, flattening, or twisting.
- Tighten the hose clamps securely.

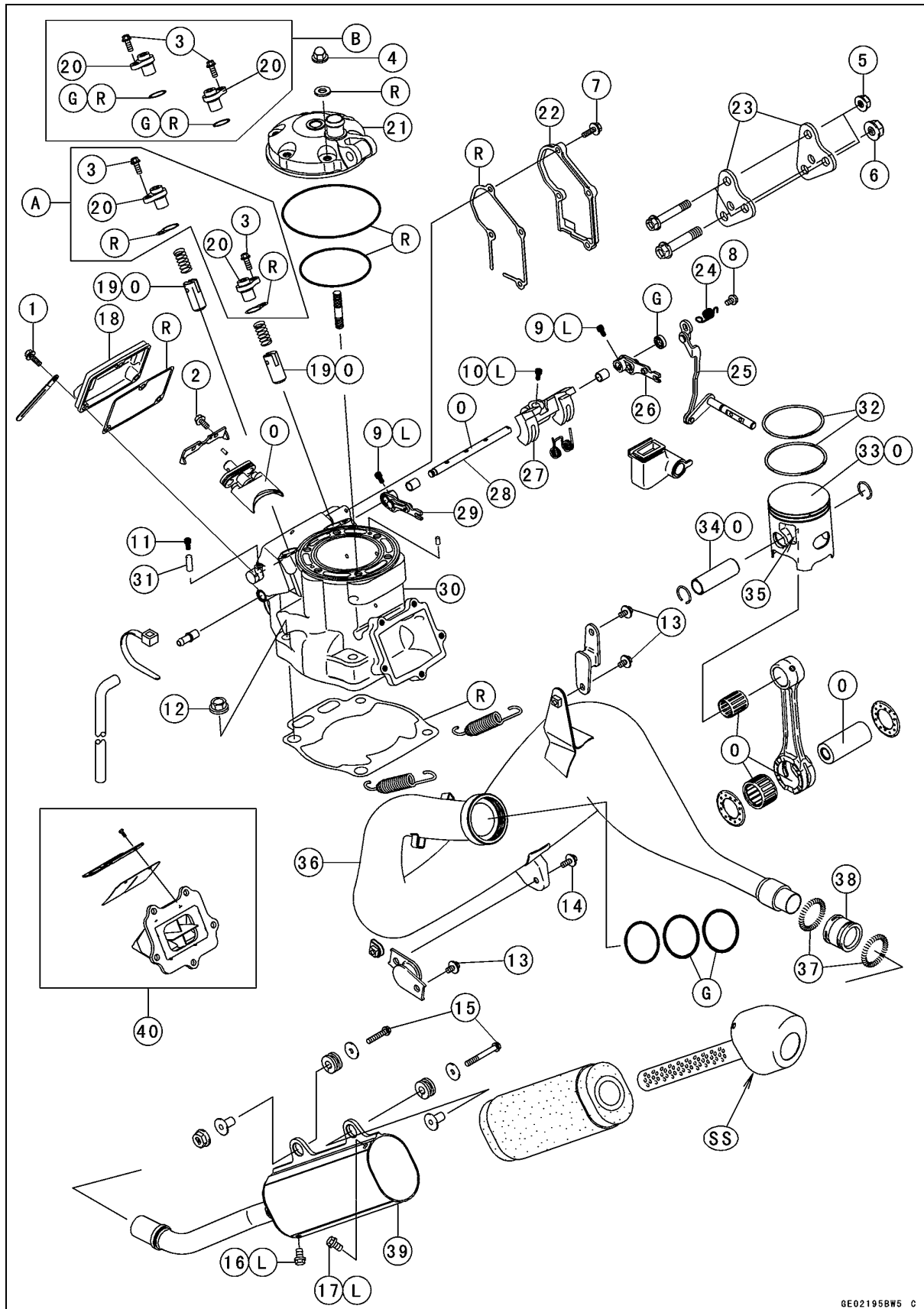
Engine Top End

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5-2 ENGINE TOP END

Exploded View



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Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Main Exhaust Valve Cover Bolts	5.9	0.60	52 in·lb	
2	Retaining Plate Bolts	5.9	0.60	52 in·lb	
3	Subexhaust Valve Cover Bolts	8.8	0.90	78 in·lb	
4	Cylinder Head Nuts: KX250-R1 KX250R6F ~	25 31	2.5 3.2	18 23	with 2.3 mm washer
5	Engine Mounting Bracket Nuts (Frame Side 8 mm)	29	3.0	22	
6	Engine Mounting Bracket Nuts (Engine Side 10 mm)	49	5.0	22	
7	KIPS Cover Bolts	5.9	0.60	52 in·lb	
8	Governor Shaft Lever Mounting Bolt	5.9	0.60	52 in·lb	
9	Sublever Allen Bolt	3.9	0.40	35 in·lb	L
10	Main Lever Allen Bolt	3.9	0.40	35 in·lb	L
11	Stopper Pin Allen Bolt	3.9	0.40	35 in·lb	L
12	Cylinder Nuts	33	3.4	25	
13	Muffler Damper Mounting Bolt	8.8	0.90	78 in·lb	
14	Expansion Chamber Mounting Bolt	12	1.2	8.7	
15	Muffler Mounting Bolts	8.8	0.90	78 in·lb	
16	Muffler Pipe Mounting Bolts	8.8	0.90	78 in·lb	L
17	Inner Pipe Mounting Bolts	8.8	0.90	78 in·lb	L

- 18. Main Exhaust Valve Cover
- 19. Subexhaust Valves
- 20. Subexhaust Valve Covers
- 21. Cylinder Head
- 22. KIPS Cover
- 23. Engine Mounting Brackets
- 24. Spring
- 25. Governor Shaft Lever
- 26. Subexhaust Valve (Right Side)
- 27. Main Exhaust Valve
- 28. Exhaust Valve Shaft
- 29. Subexhaust Valve (Left Side)
- 30. Cylinder
- 31. Stopper Pin
- 32. Piston Rings
- 33. Piston

- 34. Piston Pin
- 35. IN Mark
- 36. Expansion Chamber
- 37. Springs
- 38. Connecting Seal
- 39. Muffler Body
- 40. Reed Valve
- G: Apply grease.
- L: Apply a non-permanent locking agent.
- M: Apply molybdenum disulfide grease.
- O: Apply 2-stroke engine oil.
- R: Replacement Part
- SS: Apply silicone sealant.
- A: KX250-R1 Model
- B: KX250R6F Model ~

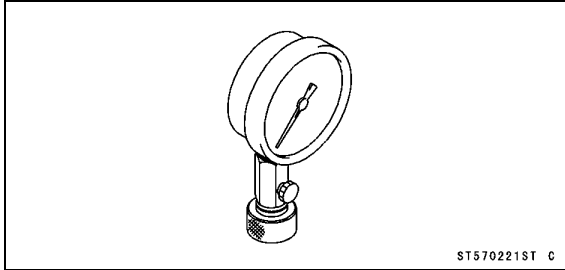
5-4 ENGINE TOP END

Specifications

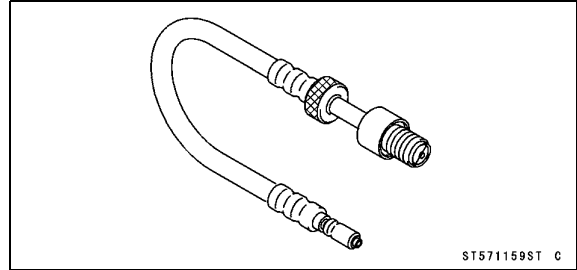
Item	Standard	Service Limit
Cylinder Head		
Cylinder Compression	(Usable range) 825 ~ 1 275 kPa (8.4 ~ 13.0 kgf/cm ² , 119 ~ 185 psi)	— — —
Cylinder Head Warp	— — —	0.03 mm (0.0012 in.)
Cylinder, Piston		
Cylinder Inside Diameter 30 mm (1.18 in.) below of the cylinder head)	66.400 ~ 66.415 mm (2.6142 ~ 2.6148 in.)	66.46 mm (2.617 in.)
Piston Diameter	66.336 ~ 66.351 mm (2.6116 ~ 2.6122 in.)	66.19 mm (2.6059 in.)
Piston/Cylinder Clearance	0.049 ~ 0.079 mm (0.0019 ~ 0.0031 in.)	— — —
Piston Ring/Groove Clearance	0.025 ~ 0.06 mm (0.00098 ~ 0.00236 in.)	0.16 mm (0.006 in.)
Piston Ring Groove Width	1.01 ~ 1.03 mm (0.0398 ~ 0.0406 in.)	1.11 mm (0.044 in.)
Piston Ring Thickness	0.970 ~ 0.985 mm (0.0382 ~ 0.0388 in.)	0.90 mm (0.035 in.)
Piston Ring End Gap	0.25 ~ 0.45 mm (0.0098 ~ 0.0177 in.)	0.75 mm (0.030 in.)
Piston Pin Diameter	17.995 ~ 18.000 mm (0.7085 ~ 0.7087 in.)	17.96 mm (0.707 in.)
Piston Pin Hole Diameter	18.001 ~ 18.011 mm (0.7087 ~ 0.7091 in.)	18.08 mm (0.712 in.)
Small End Inside Diameter	22.003 ~ 22.012 mm (0.8663 ~ 0.8666 in.)	22.05 mm (0.868 in.)

Special Tools

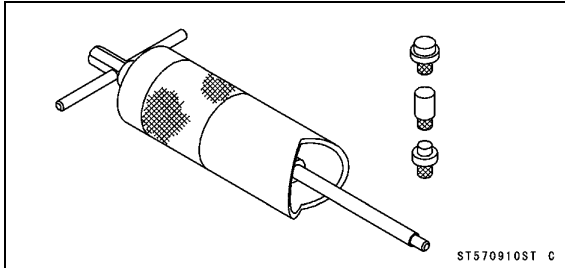
Compression Gauge, 20 kgf/cm²:
57001-221



Compression Gauge Adapter, M14 × 1.25:
57001-1159



Piston Pin Puller Assembly:
57001-910



5-6 ENGINE TOP END

Cylinder Head

Cylinder Compression Measurement

- Start the engine.
- Thoroughly warm up the engine so that the engine oil between the piston and cylinder wall will help seal compression as it does during normal running.
- Stop the engine.
- Remove the fuel tank (see Fuel System chapter).
- Remove the spark plug, and screw a compression gauge firmly into the spark plug hole.

Special Tools - Compression Gauge, 20 kgf/cm²: 57001-221

[A]

Compression Gauge Adapter, M14 × 1.25:

57001-1159 [B]

- With the throttle fully open, turn the engine over sharply with the kickstarter several times until the compression gauge stops riding; the compression is the highest reading obtainable.

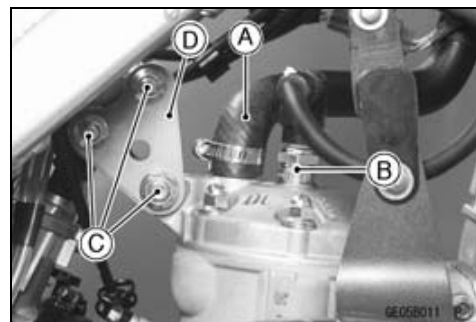
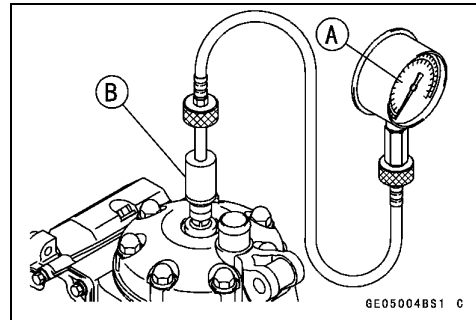
Cylinder Compression

Usable Range: 825 ~ 1 275 kPa (8.4 ~ 13.0 kgf/cm², 119 ~ 185 psi)

- ★ If cylinder compression is higher than the usable range, check the following:
 1. Carbon build up on the piston head and cylinder head - clean off any carbon on the piston head.
 2. Cylinder head gasket, cylinder base gasket - use only the proper gaskets for the cylinder head and base. The use of gasket of the incorrect thickness will change the compression.
- ★ If cylinder compression is lower than the usable range, check the following:
 1. Piston/cylinder clearance, piston seizure.
 2. Gas leakage around the cylinder head - replace the damaged gasket and check the cylinder head for warping.
 3. Piston ring, piston ring groove.

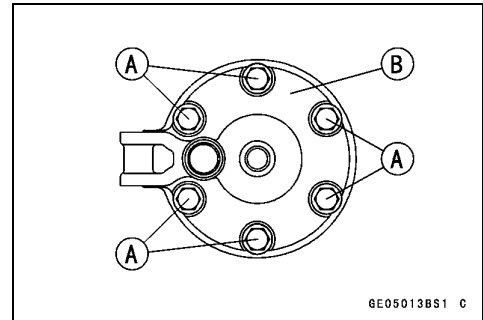
Cylinder Head Removal

- Drain the coolant (see Cooling System chapter).
- Remove:
 - Radiator Shrouds
 - Seat
 - Side Covers
 - Fuel Tank (see Fuel System chapter)
 - Cooling Hose [A]
 - Spark Plug [B]
 - Bolts & Nuts [C]
 - Engine Mounting Brackets [D]



Cylinder Head

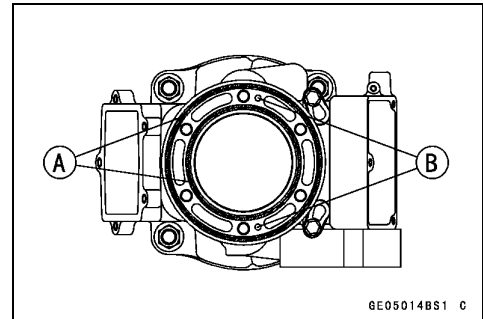
- Remove the cylinder head nuts [A], and take off the cylinder head [B] and the O-rings.



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Cylinder Head Installation

- Scrape out any carbon and clean the head with a high flash-point solvent.
- Check for a crust of minerals and rust in the head water jacket, and remove them if necessary.
- Install new O-rings [A] to the grooves of the cylinder securely.
- Be sure the dowel pins [B] are in position.



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CAUTION

Do not reuse the old cylinder head bolt washers.

- Release the cylinder head bolt washers with new ones.
- Temporarily tighten the head nuts diagonally.
Torque - Cylinder Head Nuts: 9.8 N·m (1.0 kgf·m, 87 in·lb)
- Tighten the head nuts diagonally.
Torque - Cylinder Head Nuts:
 - KX250-R1: 25 N·m (2.5 kgf·m, 18 ft·lb)**
 - KX250R6F ~: 31 N·m (3.2 kgf·m, 23 ft·lb) with 2.3 mm washer**
- Tighten the engine mounting bracket nuts.
Torque - Engine Mounting Bracket Nuts:
 - 10 mm: 49 N·m (5.0 kgf·m, 36 ft·lb)**
 - 8 mm: 29 N·m (3.0 kgf·m, 22 ft·lb)**
- Tighten the spark plug.
Torque - Spark Plug: 26 N·m (2.7 kgf·m, 20 ft·lb)

Cylinder Head Warp Inspection

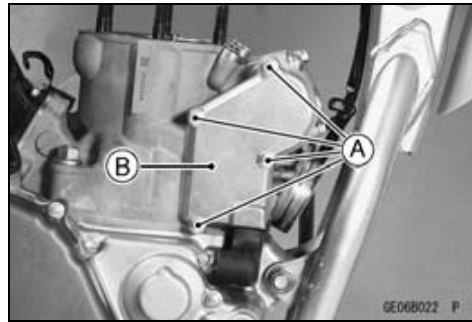
- Refer to the Cylinder Head Warp Inspection in the Periodic Maintenance chapter.

5-8 ENGINE TOP END

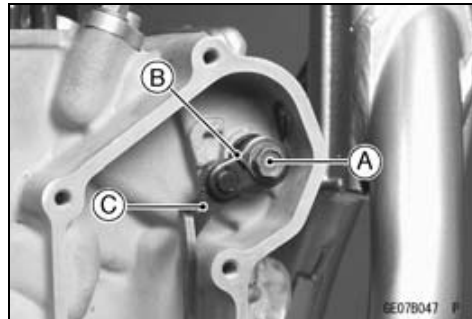
Cylinder

Cylinder Removal

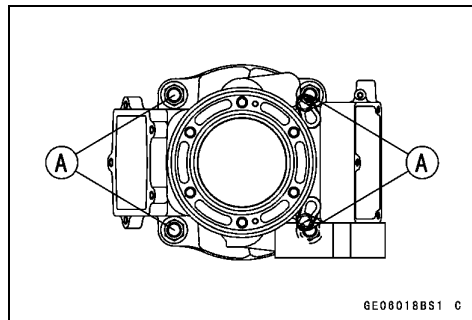
- Drain the coolant (see Cooling System chapter).
- Remove the cylinder head (see this chapter).
- Remove the cooling hoses.
- Unscrew the KIPS cover bolts [A] and remove the KIPS cover [B].



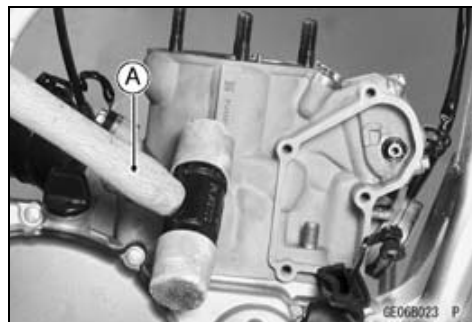
- Remove:
Bolt [A] and Spring [B]
Governor Shaft Lever [C]



- Remove the magneto lead and the clutch cable from clamp.
- Remove the cylinder nuts [A].



- Lift off the cylinder, and remove the cylinder base gasket. If necessary, tap lightly around the base of the cylinder with a plastic mallet [A], taking care not to damage the cylinder.
- Remove the exhaust valves from the cylinder (see Exhaust Valve Removal).



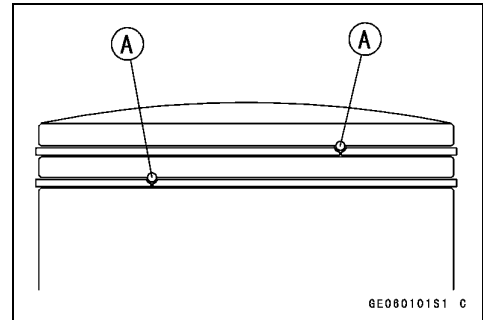
Cylinder Installation

- Scrape any carbon out of the exhaust port.
- Check on a crust of minerals and rust in the cylinder water jacket, and remove them if necessary.
- Replace the cylinder base gasket with a new one.
- Apply 2-stroke engine oil to the piston surface, piston rings and cylinder bore.

Cylinder

- Check to see that the pin [A] in each piston ring groove is between the ends of the piston ring, and fit the base of the cylinder over each ring, pressing in on opposite sides of the ring as necessary. Be certain that the rings do not slip out of position.
- Tighten the cylinder nuts diagonally.

Torque - Cylinder Nuts: 33 N·m (3.4 kgf·m, 25 ft·lb)



GE080101S1 C

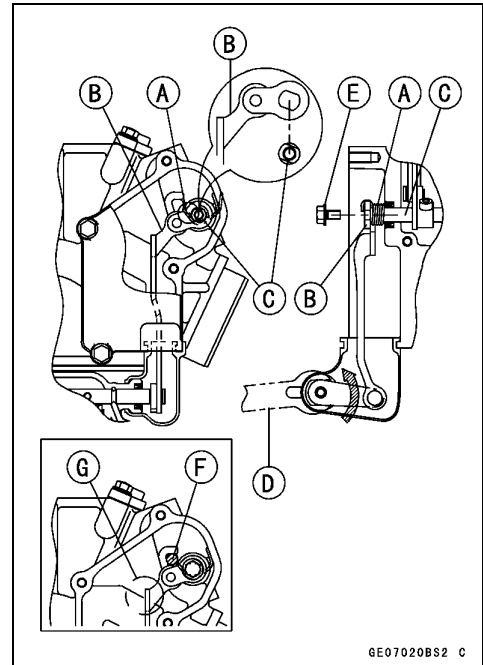
- Set the spring [A] as shown.
- [B] Governor Shaft Lever
- [C] Exhaust Valve Shaft
- Using a 14 mm open-end wrench [D], install the governor shaft lever [B] as shown.
- Tighten:

Torque - Governor Shaft Lever Mounting Bolt [E]: 5.9 N·m (0.60 kgf·m, 52 in·lb)

NOTE

○Put a screw driver ($\phi 6$ mm) [F] on the hollow of cylinder as shown to prevent the lever link portion [G] from bending.

- Install the KIPS cover.
- Install the removed parts.



GE070208S2 C

Piston Removal

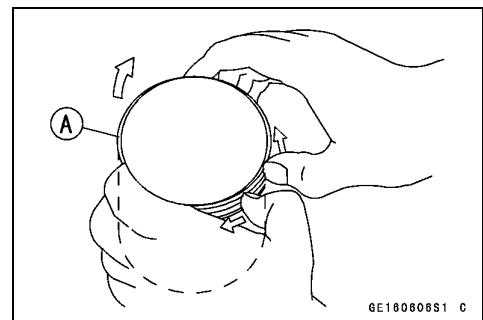
- Remove the cylinder.
- Stuff a clean cloth into the crankcase opening around the connecting rod so that no parts will fall into the crankcase.
- Remove one of the piston pin snap rings with needle nose pliers.
- Remove the piston by pushing the piston pin out the side from which the snap ring was removed. Use a piston pin puller assembly [A], if the pin is tight.

Special Tool - Piston Pin Puller Assembly: 57001-910

- Remove the piston ring(s).
- Carefully spread the ring [A] opening with your thumbs and then push up on the opposite side of the ring to remove it.



GE060024 P



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5-10 ENGINE TOP END

Cylinder

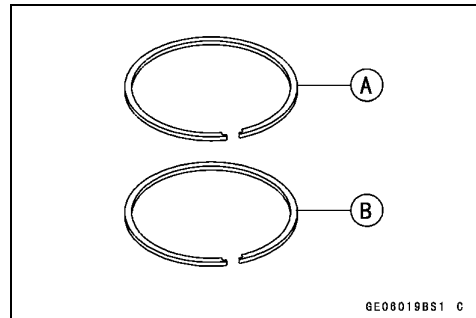
Piston Installation

- Stuff a clean cloth into the crankcase opening around the connecting rod so that no parts will fall into the crankcase.
- Scrape off any carbon of the piston, then lightly polish the piston with fine emery cloth.
- Clean carbon and dirt out of the piston ring groove using a suitable tool.

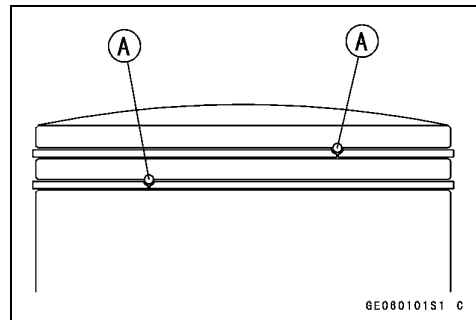
CAUTION

Carbon particles can be very abrasive to piston ring. Don't allow such particles to fall onto the cylinder walls.

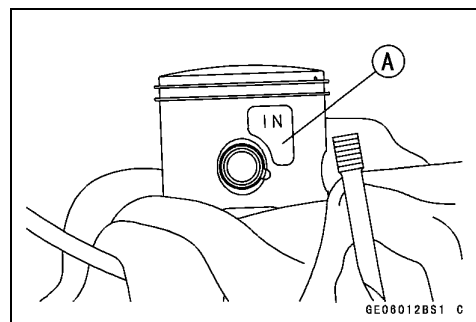
- When installing the piston ring on the piston, note the following:
 - The top [A] and second [B] rings are identical.
 - First fit one end of the piston ring against the pin in the ring groove, spread the ring opening with the other hand and then slip the ring into the groove.



- Install the ring so that the pin [A] in the piston ring groove is between the ends of the piston ring.



- Apply 2-stroke engine oil to the connecting rod needle bearing and the piston pin.
- Install the piston so that the "IN" marked side [A] faces the back side of the engine.

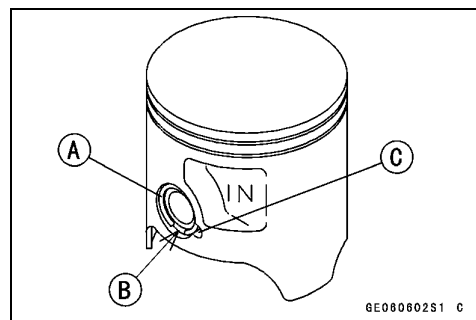


- When installing a piston pin snap ring [A], compress it only enough to install it and no more.

CAUTION

Do not reuse snap rings, as removal weakens and deforms them. They could fall out and score the cylinder wall.

- Fit a new piston pin snap ring into the side of the piston so that the ring opening [B] does not coincide with the notch [C] in the edge of the piston pin hole.



Cylinder

Cylinder Wear Inspection

- Refer to the Cylinder Wear Inspection in the Periodic Maintenance chapter.

Piston Diameter Measurement

- Refer to the Piston Diameter Measurement in the Periodic Maintenance chapter.

Piston/Cylinder Clearance

- Refer to the Piston/Cylinder Clearance in the Periodic Maintenance chapter.

Piston Ring, Piston Ring Groove Inspection

- Refer to the Piston Ring, Piston Ring Groove Inspection in the Periodic Maintenance chapter.

Piston Ring End Gap Inspection

- Refer to the Piston Ring End Gap Inspection in the Periodic Maintenance chapter.

Piston, Piston Pin, Connecting Rod Wear Inspection

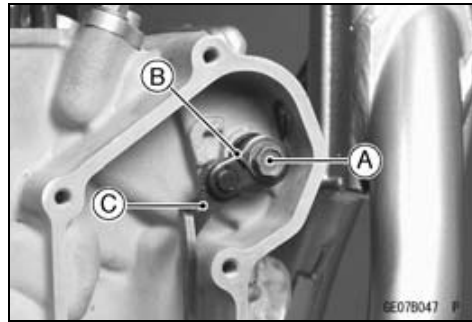
- Refer to the Piston, Piston Pin, Connecting Rod Wear Inspection in the Periodic Maintenance chapter.

5-12 ENGINE TOP END

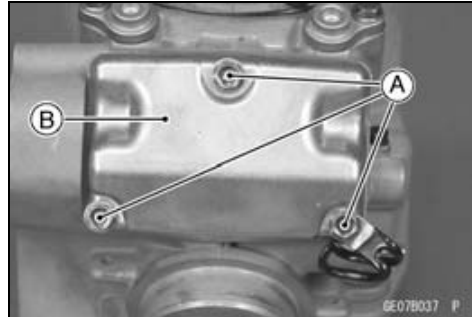
Exhaust Valve (KIPS)

Exhaust Valve Removal

- Remove:
 - Carburetor (see Fuel System chapter)
 - Cylinder Head (see Cylinder Head Removal)
 - KIPS Cover (see Cylinder Removal)
 - Bolt [A] and Spring [B]
 - Governor Shaft Lever [C]

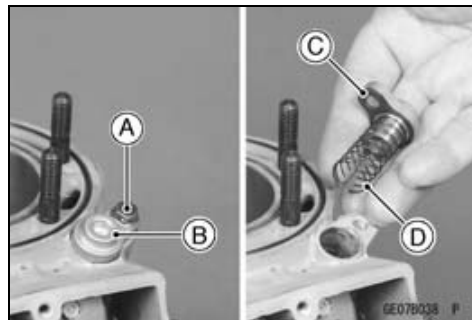


- Remove:
 - Cylinder (see Cylinder Removal)
 - Main Exhaust Valve Cover Bolts [A]
 - Main Exhaust Valve Cover [B] and Gasket



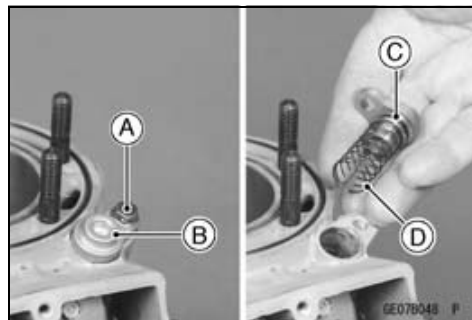
KX250-R1:

- Remove:
 - Subexhaust Valve Cover Bolts [A]
 - Subexhaust Valve Covers [B]
 - Gaskets [C]
 - Springs [D]

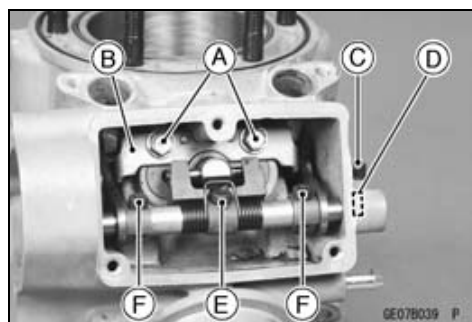


KX250R6F ~:

- Remove:
 - Subexhaust Valve Cover Bolts [A]
 - Subexhaust Valve Cover [B]
 - O-rings [C]
 - Springs [D]

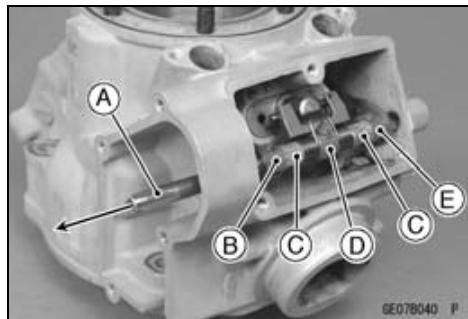


- Remove:
 - Retaining Plate Bolts [A]
 - Retaining Plate [B]
 - Stopper Pin Allen Bolt [C]
 - Stopper Pin [D]
 - Main Lever Allen Bolt [E]
 - Sublever Allen Bolts [F]

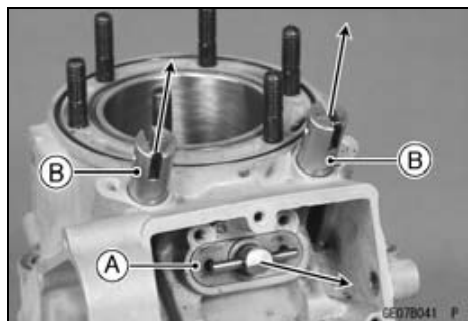


Exhaust Valve (KIPS)

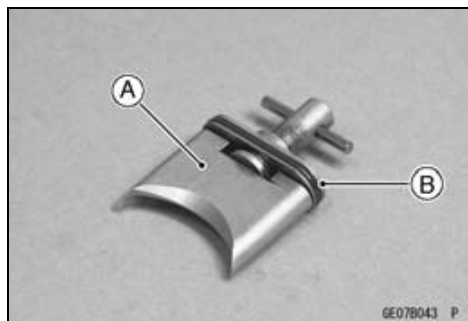
- Pull out the exhaust valve shaft [A] from the cylinder.
- Remove:
 - Sublever (Right) [B]
 - Collar [C]
 - Main Lever [D] with Spring
 - Sublever (Left) [E]



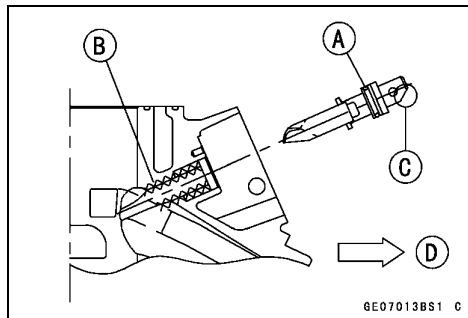
- Pull out:
 - Main Exhaust Valves [A]
 - Subexhaust Valves [B]

**Exhaust Valve Installation**

- Remove any carbon and clean the valves with a high-flash point solvent.
- Check the following for signs of damage.
 - Exhaust Valves
 - Exhaust Valve Shaft
 - Oil Seal on Exhaust Valve Shaft
- ★ If necessary, replace damaged or worn items with new ones
- Set up the main exhaust valve assembly as shown.
 - Slide Valve [A]
 - Valve Holder [B]
- Check the slide valve move smoothly.



- Replace the O-ring [A] with a new one and apply high temperature grease to it.
- Apply a 2-stroke engine oil to the surface [B] of the cylinder, shown with X marks.
- Install the main exhaust valve so that its chamfer side [C] faces downward.
 - [D] Front

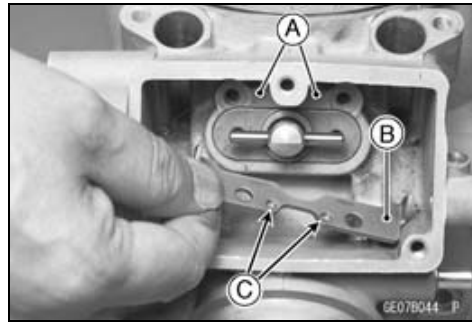


5-14 ENGINE TOP END

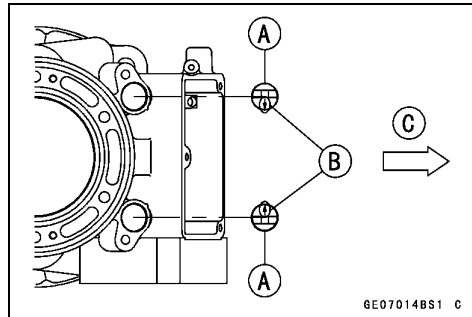
Exhaust Valve (KIPS)

- Be sure the dowel pins [A] are in positions.
- Install the retaining plate [B] so that its hollows [C] are aligned with the dowel pins.
- Tighten the retaining plate bolts.

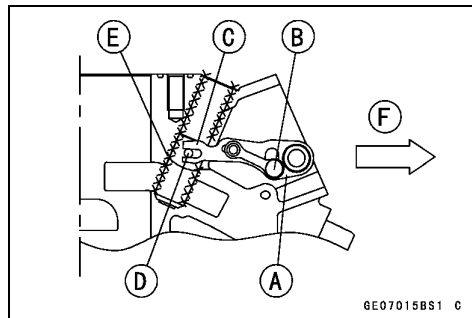
Torque - Retaining Plate Bolts: 5.9 N·m (0.60 kgf·m, 52 in·lb)



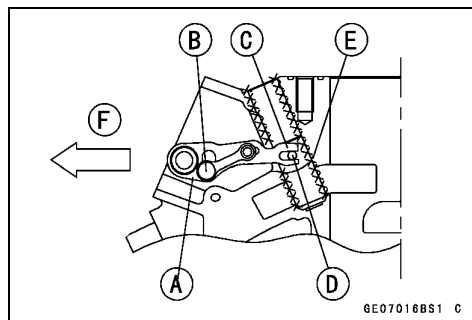
- Set the subexhaust valves and sublevers.
 - Apply a 2-stroke engine oil to the surfaces of the cylinder, shown with X marks (shown in illustration below).
 - Insert the subexhaust valves [A] so that their arrows [B] point opposite.
- [C] Front



- Sublever (right) [A] does not have the plated (yellow color) rivet portion [B].
 - Set the sublever (right), aligning its hook portion [C] with the pin [D] of the subexhaust valve.
- [E] Apply a 2-stroke engine oil.
[F] Front

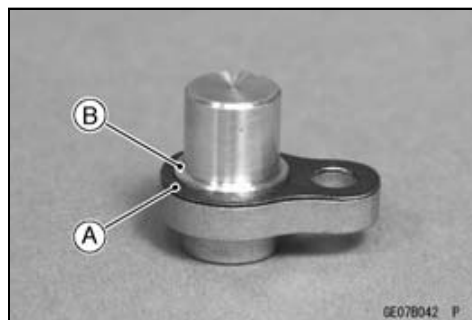


- Sublever (left) [A] has the plated (yellow color) rivet portion [B].
 - Set the sublever (left), aligning its hook portion [C] with the pin [D] of the subexhaust valve.
- [E] Apply a 2-stroke engine oil.
[F] Front



KX250-R1:

- Install the subexhaust valve covers on the cylinder.
- Set the gasket [A] on the valve cover [B] as shown.



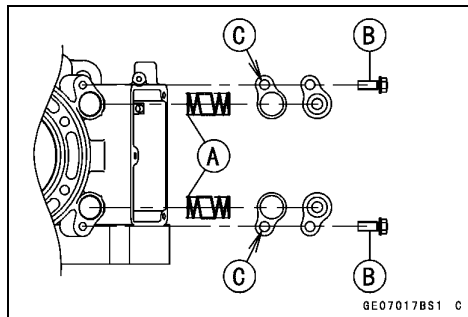
Exhaust Valve (KIPS)

- Insert the springs [A] and valve cover with gasket.
- Tighten the subexhaust valve cover bolts [B].

Torque - Subexhaust Valve Cover Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

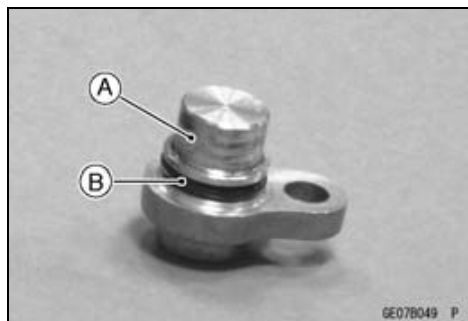
NOTE

- Be careful not to bite the gasket [C] when installing the subexhaust cover bolts.



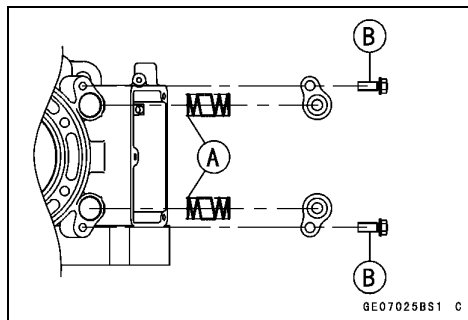
KX250R6F ~:

- Install the subexhaust valve cover [A] in the cylinder.
- Replace the O-ring [B] with a new one and apply high temperature grease to it.

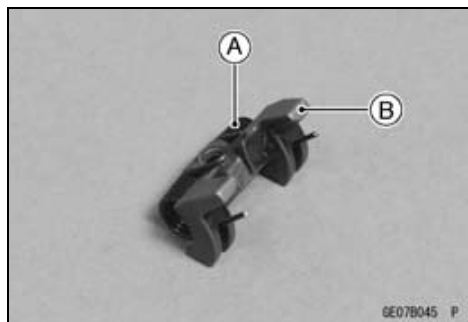


- Insert the springs [A] and valve cover with O-ring.
- Tighten the subexhaust valve cover bolts [B].

Torque - Subexhaust Cover Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)



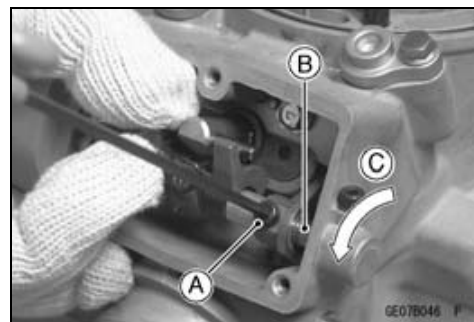
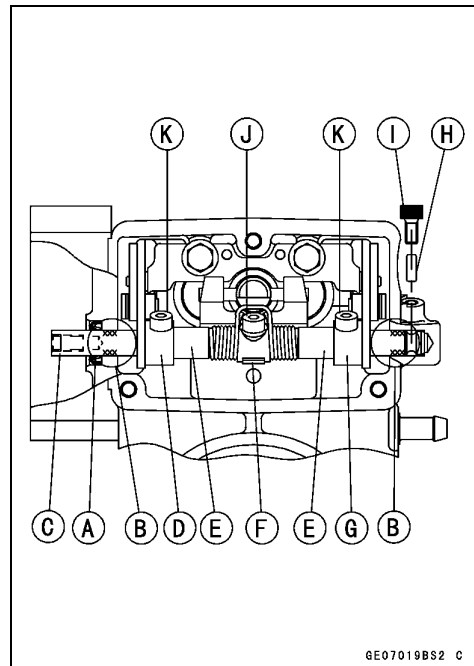
- Fit the spring [A] to the main lever [B].



5-16 ENGINE TOP END

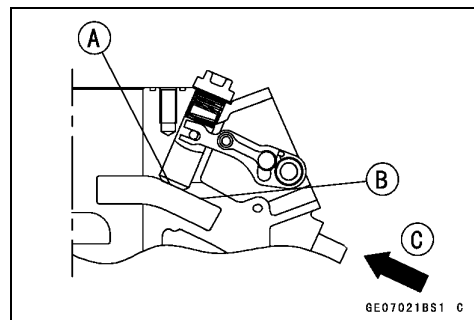
Exhaust Valve (KIPS)

- Apply a high temperature grease to the oil seal lip [A].
- Apply a 2-stroke engine oil to the surfaces [B] of the exhaust valve shaft [C], shown with X marks.
- Install:
 - Exhaust Valve Shaft [C]
 - Sublever (Right) [D]
 - Collar [E]
 - Main Lever [F]
 - Collar [E]
 - Sublever (Left) [G]
- Insert the stopper pin [H]. Apply a non-permanent locking agent to the stopper pin Allen bolt [I] and torque it.
Torque - Stopper Pin Allen Bolt: 3.9 N·m (0.40 kgf·m, 35 in·lb)
- Apply a non-permanent locking agent to the main lever Allen bolt [J] and torque it.
Torque - Main Lever Allen Bolt: 3.9 N·m (0.40 kgf·m, 35 in·lb)
- Apply a non-permanent locking agent to the sublever Allen bolts [K] and temporarily tighten them.
- Torque the sublever Allen bolts [A] with the exhaust valve shaft [B] fully turned clockwise [C].
Torque - Sublever Allen Bolts: 3.9 N·m (0.40 kgf·m, 35 in·lb)

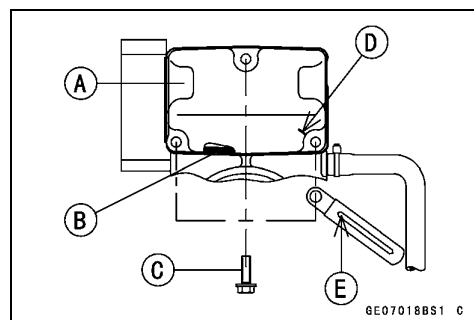


NOTE

- When exhaust valve shaft turns clockwise and with the subexhaust valves fully opened, check the end of the subexhaust valves [A] and exhaust ports [B] are aligned with. Turn the cylinder upside down and the alignment of the valve and port can be viewed from the exhaust pipe port [C].
- Check that exhaust valves operate smoothly by turning the exhaust valve shaft.



- Install the main exhaust valve cover [A].
- Replace the gasket [B] with a new one.
- Torque:
Torque - Main Exhaust Valve Cover Bolts [C]: 5.9 N·m (0.60 kgf·m, 52 in·lb)
- Align the mark [D] on the cover with the hole [E] on the clamp.



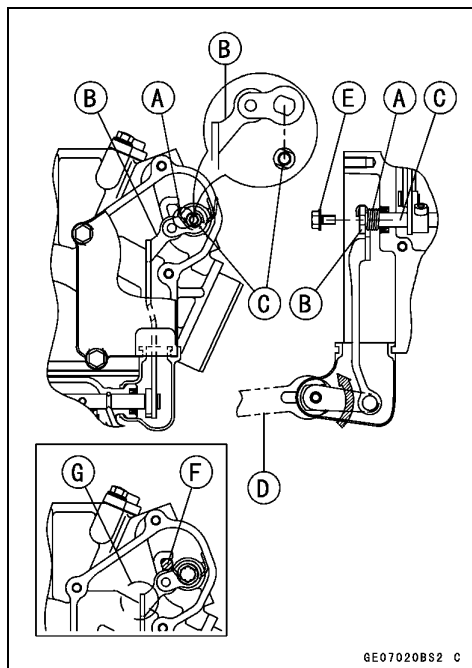
Exhaust Valve (KIPS)

- Install the cylinder (see Cylinder Installation)
Torque - Cylinder Nuts: 33 N·m (3.4 kgf·m, 25 ft·lb)
- Set the spring [A] as shown.
[B] Governor Shaft Lever
[C] Exhaust Valve Shaft
- Using a 14 mm open-end wrench [D], install the governor shaft lever [B] as shown.
- Tighten:
Torque - Governor Shaft Lever Mounting Bolt [E]: 5.9 N·m (0.60 kgf·m, 52 in·lb)

NOTE

○Put a screw driver ($\phi 6$ mm) [F] on the hollow of cylinder as shown to prevent the lever link portion [G] from bending.

- Install the KIPS cover.
- Install the removed parts.



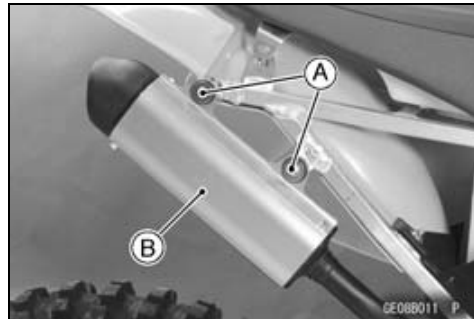
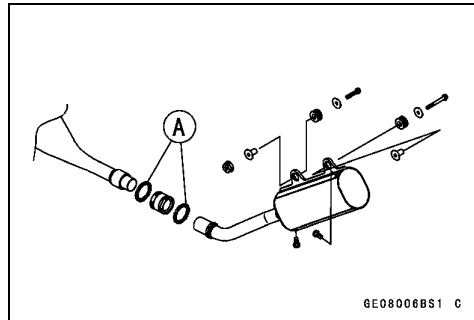
GE07020BS2 C

5-18 ENGINE TOP END

Muffler (Expansion Chamber, Muffler Body)

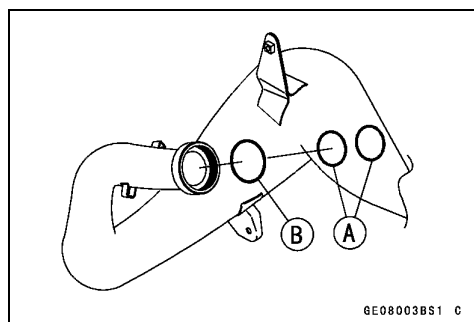
Muffler Removal

- Remove:
 - Right Radiator Shroud
 - Right Side Cover
 - Springs [A] on Connecting Seal
- Remove the mounting bolts [A] and pull the muffler body [B] off toward the rear.
- Remove the exhaust pipe holding springs [A].
- Remove the muffler damper mounting bolts [A], and pull off the expansion chamber to the front ward.
- Remove the O-rings from the expansion chamber.
- Be sure to remove exhaust gasket.



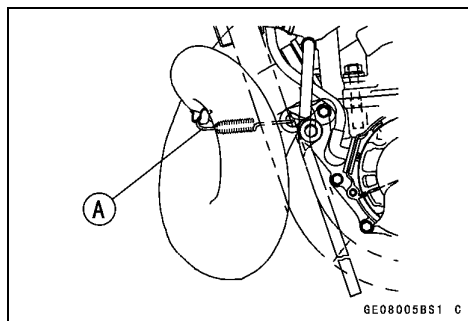
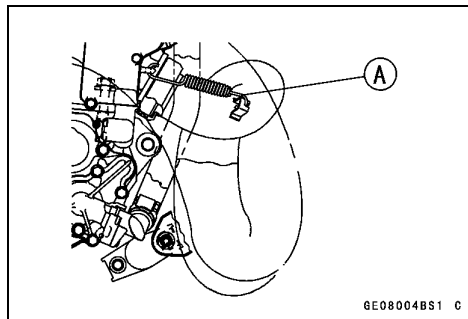
Muffler Installation

- Scrape any carbon out of the exhaust chamber.
- Check the exhaust O-rings [A] and gasket [B] for signs of damage.
- ★ If necessary, replace them with new ones.



Muffler (Expansion Chamber, Muffler Body)

- Hook [A] the spring side which turns freely to the expansion chamber.
- Tighten:
Torque - Muffler Damper Mounting Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

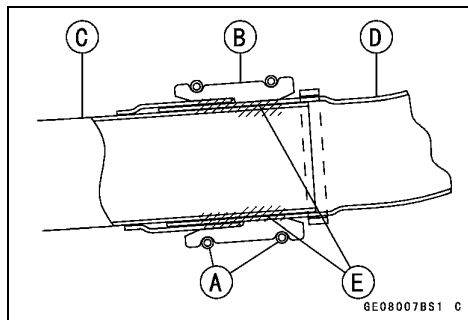


- Install the springs [A] on connecting seal [B], as shown.
 [C] Expansion Chamber
 [D] Muffler Body

NOTE

○ Apply grease to the indicated area [E] to make service easy.

- Tighten:
Torque - Muffler Mounting Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)



Muffler Baffle Change

- Refer to the Exhaust System in the Periodic Maintenance chapter.

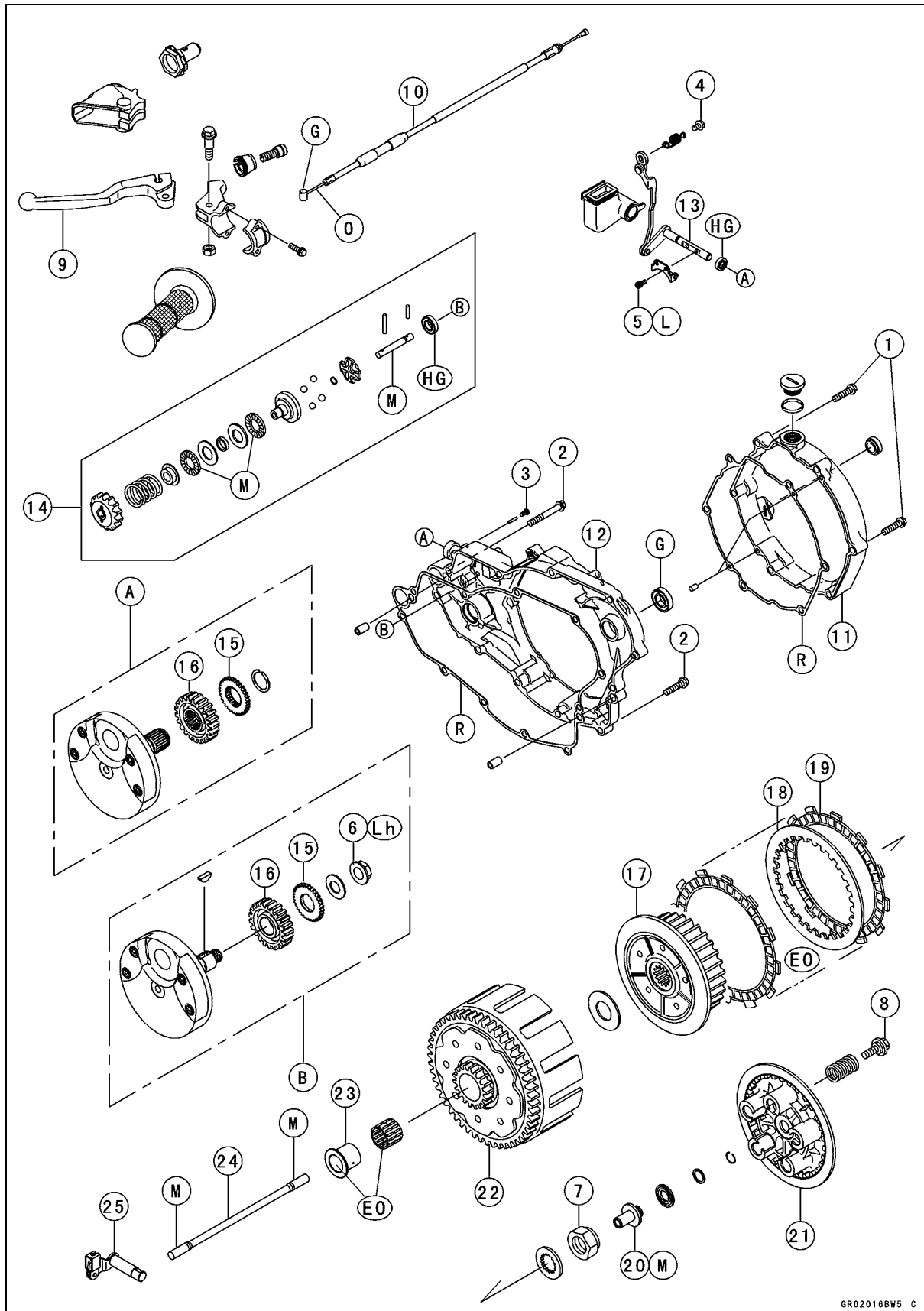
Engine Right Side

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6-2 ENGINE RIGHT SIDE

Exploded View



GR02016BWS C

Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Clutch Cover Bolts	8.8	0.90	78 in·lb	
2	Right Engine Cover Bolts	8.8	0.90	78 in·lb	
3	Governor Shaft Lever Positioning Plug	1.0	0.1	10 in·lb	
4	Governor Shaft Lever Mounting Bolt	5.9	0.60	52 in·lb	
5	Advancer Lever Mounting Allen Bolt	3.9	0.4	35 in·lb	L
6	Primary Gear Nut	78	8.0	58	Lh
7	Clutch Hub Nut	98	10.0	72	
8	Clutch Spring Bolts	8.8	0.90	78 in·lb	

- 9. Clutch Lever
- 10. Clutch Cable
- 11. Clutch Cover
- 12. Right Engine Cover
- 13. Governor Shaft Lever
- 14. Exhaust Advancer Assembly
- 15. Water Pump Drive Gear
- 16. Primary Gear
- 17. Clutch Hub
- 18. Steel Plate
- 19. Friction Plate
- 20. Push Rod Holder
- 21. Clutch Pressure Plate
- 22. Clutch Housing
- 23. Sleeve
- 24. Push Rod
- 25. Release Lever Shaft

EO: Apply engine oil.

G: Apply grease.

HG: Apply high temperature grease.

L: Apply a nonpermanent locking agent to the threads.

Lh: Left-hand threads

M: Apply molybdenum disulfide grease.

O: Apply oil.

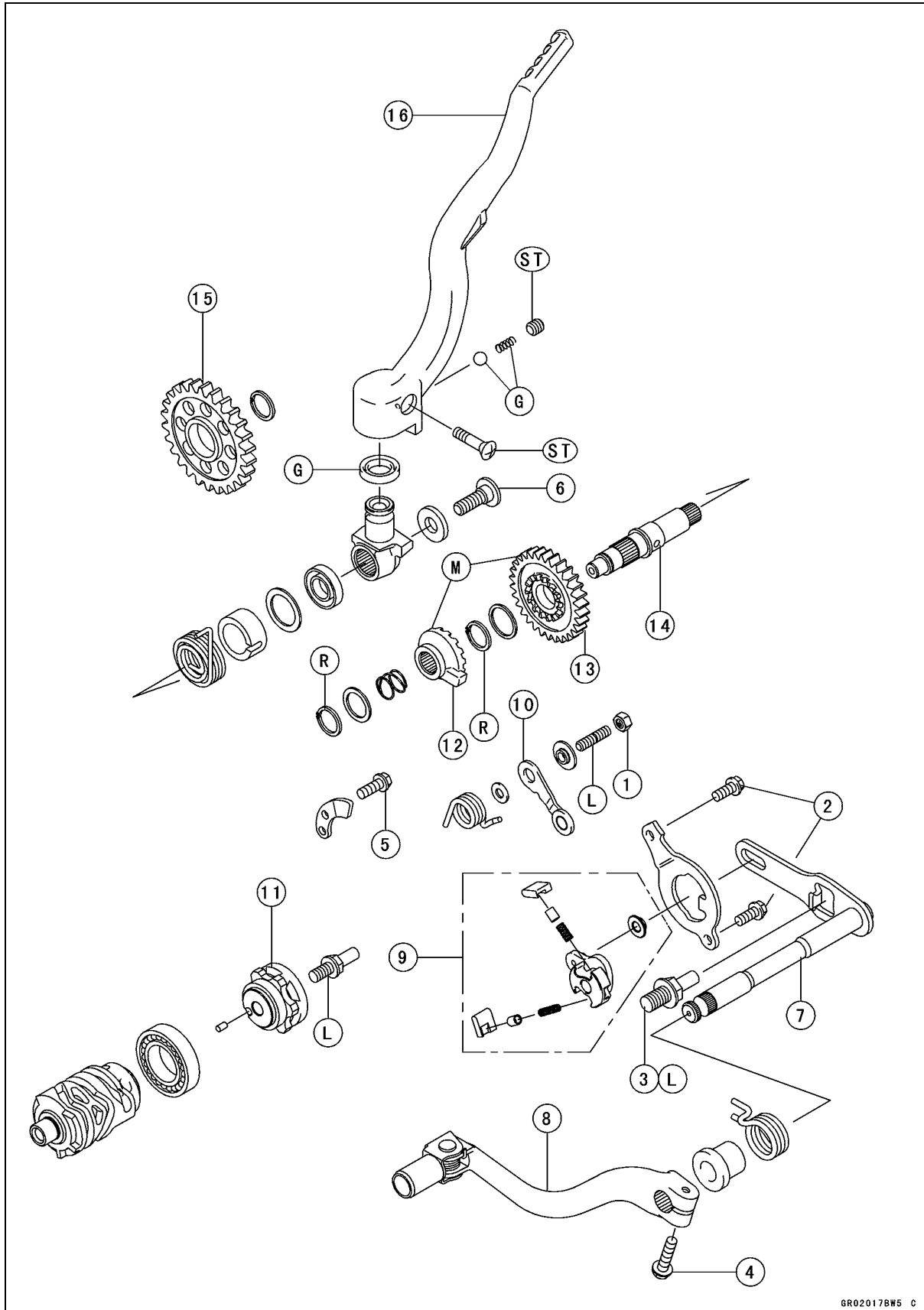
R: Replacement Part

A: KX250-R1 Model

B: KX250T6F Model ~

6-4 ENGINE RIGHT SIDE

Exploded View



GR02017BWS C

Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Gear Set Lever Nut	8.8	0.90	78 in·lb	
2	Ratchet Plate Mounting Bolts	8.8	0.90	78 in·lb	
3	Shift Mechanism Return Spring Pin	42	4.3	31	L
4	Shift Pedal Bolt	8.8	0.90	78 in·lb	
5	Ratchet Guide Bolt	8.8	0.90	78 in·lb	
6	Kick Pedal Mounting Bolt	25	2.5	18	

- 7. Shift Shaft
- 8. Shift Pedal
- 9. Ratchet Assembly
- 10. Gear Set Lever
- 11. Shift Drum Operating Cam
- 12. Ratchet Gear
- 13. Kick Gear
- 14. Kick Shaft
- 15. Kickstarter Idle Gear
- 16. Kick Pedal

G: Apply grease.

L: Apply a nonpermanent locking agent to the threads.

M: Apply molybdenum disulfide grease.

R: Replacement Part

St: Stake the fasteners.

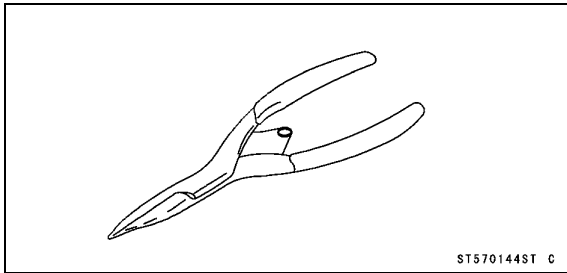
6-6 ENGINE RIGHT SIDE

Specifications

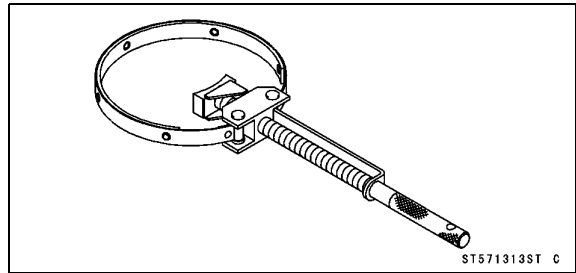
Item	Standard	Service Limit
Clutch		
Lever Free Play	8 ~ 13 mm (0.3 ~ 0.5 in.)	— — —
Friction Plate Thickness	2.92 ~ 3.08 mm (0.115 ~ 0.121 in.)	2.8 mm (0.110 in.)
Steel Plate Thickness	1.46 ~ 1.74 mm (0.057 ~ 0.069 in.)	1.36 mm (0.054 in.)
Friction Plate Warp	0.15 mm (0.006 in.) or less	0.3 mm (0.119 in.)
Steel Plate Warp	0.2 mm (0.008 in.) or less	0.3 mm (0.119 in.)
Clutch Spring Free Length	35.0 mm (1.378 in.)	33.6 mm (1.323 in.)
Friction Plate/Clutch Housing Clearance	0.15 ~ 0.45 mm (0.0059 ~ 0.0177 in.)	0.8 mm (0.0315 in.)

Special Tools

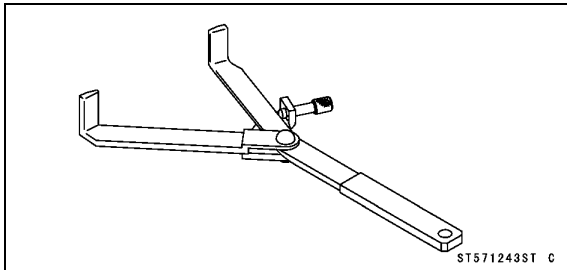
Outside Circlip Pliers:
57001-144



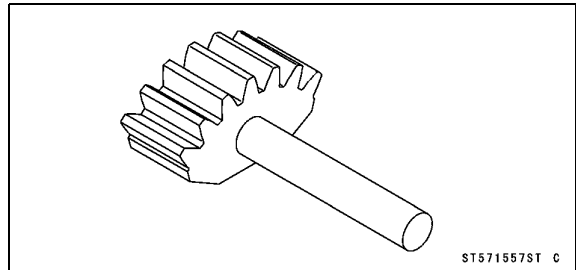
Flywheel Holder:
57001-1313



Clutch Holder:
57001-1243



Gear Holder, m2.0:
57001-1557



6-8 ENGINE RIGHT SIDE

Clutch Cable

Due to friction plate wear and clutch cable stretch over a long period of use, the clutch must be adjusted in accordance with the Periodic Maintenance Chart.

▲ WARNING

To avoid a serious burn, never touch the hot engine or exhaust chamber during clutch adjustment.

Clutch Lever Free Play Check

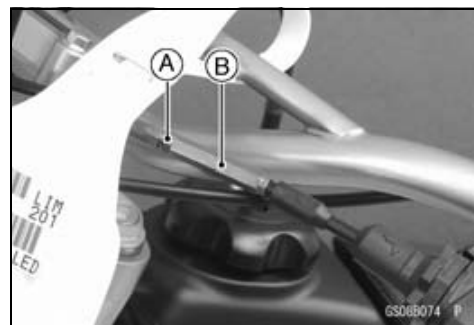
- Refer to the Clutch Lever Free Play Check in the Periodic Maintenance chapter.

Free Play Adjustment

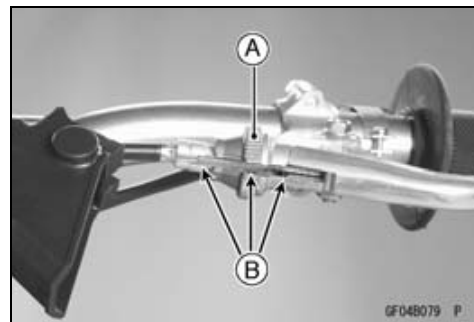
- Refer to the Clutch Lever Free Play Adjustment in the Periodic Maintenance chapter.

Clutch Cable Removal

- Loosen the locknut [A] at the middle of clutch cable, and turn the adjusting nut [B] to give the cable plenty of play.



- Slide the dust cover out of place.
- Turn the adjuster [A] to give the cable plenty of play.
- Line up the slot [B] in the clutch lever, adjuster and adjusting bolt, and free the cable from the clutch lever.

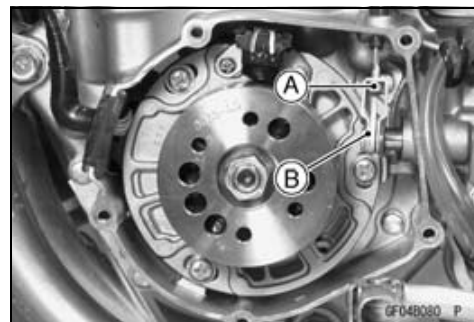


- Remove the magneto cover.
- Free the clutch inner cable tip [A] from the clutch release lever [B].

CAUTION

Do not remove the clutch release shaft unless it is absolutely necessary. If removed, release shaft oil seal must be replaced with a new one.

- Pull the clutch cable out of frame.



Clutch Cable Installation

- Run the clutch cable according to the Cable, Wire and Hose Routing in the Appendix chapter.
- Adjust the clutch cable (see Free Play Adjustment).

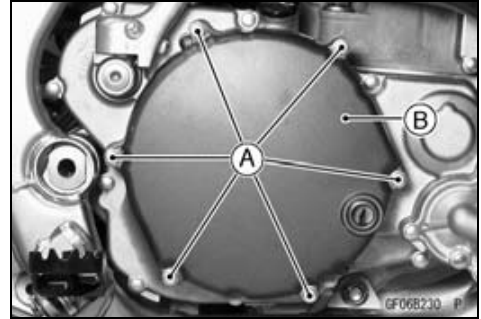
Clutch Cable Lubrication and Inspection

- Refer to the General Lubrication in the Periodic Maintenance chapter.

Clutch Cover

Clutch Cover Removal

- Drain the engine oil (see Engine Bottom End/Transmission chapter).
- Remove the brake pedal (see Brake chapter).
- Unbolt the clutch cover bolts [A], and take off the clutch cover [B].



Clutch Cover Installation

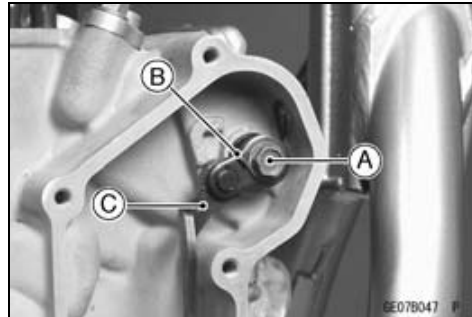
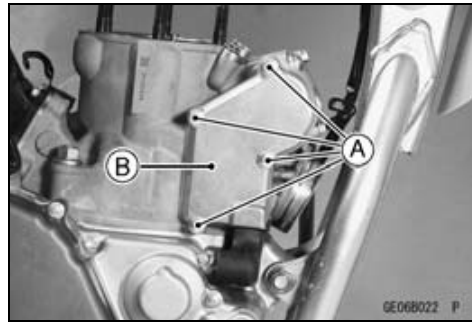
- There are two knock pins of the mating surfaces of right engine cover and clutch cover.
- Replace the clutch cover gasket with a new one.
- Tighten the clutch cover bolts.
Torque - Clutch Cover Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)
- Install the brake pedal (see Brake chapter)

6-10 ENGINE RIGHT SIDE

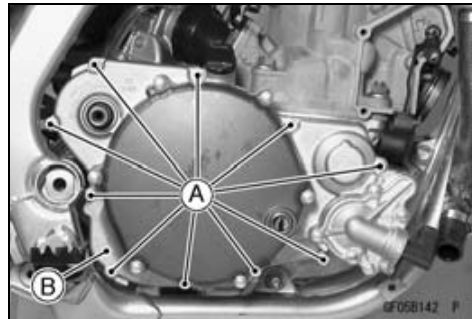
Right Engine Cover

Right Engine Cover Removal

- Remove:
 - Engine Oil (drain) (see Engine Bottom End/Transmission chapter)
 - Coolant (drain) (see Cooling System chapter)
 - Cooling Hose Lower End
 - Kick Pedal
 - Brake Pedal
 - Muffler
- Unscrew the KIPS cover bolt [A] and remove the KIPS cover [B] from the right side of the cylinder.
- Remove:
 - Bolt [A] and Spring [B]
 - Governor Shaft Lever [C]



- Remove the cover bolts [A] and take off the right engine cover [B] and gasket.



Right Engine Cover Installation

- There are two knock pins of the mating surfaces of the crankcase and right engine cover.
- In case the exhaust advancer assembly has been removed, install it and turn the gear so as to level the gear drive pin [A].

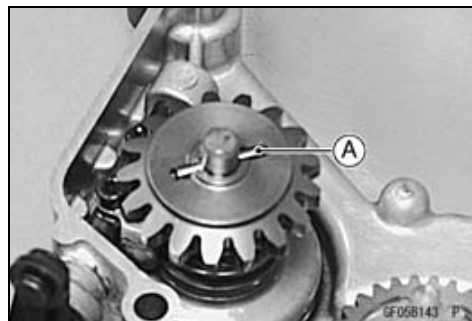
CAUTION

If the gear drive pin is not positioned level, it may fall out when installing the right engine cover.

- Apply a high-temperature grease to the kick pedal oil seal lips and kick shaft spline.
- Tighten the right engine cover bolts and kick shaft mounting bolt.

Torque - Right Engine Cover Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

Kick Pedal Mounting Bolt: 25 N·m (2.5 kgf·m, 18 ft·lb)



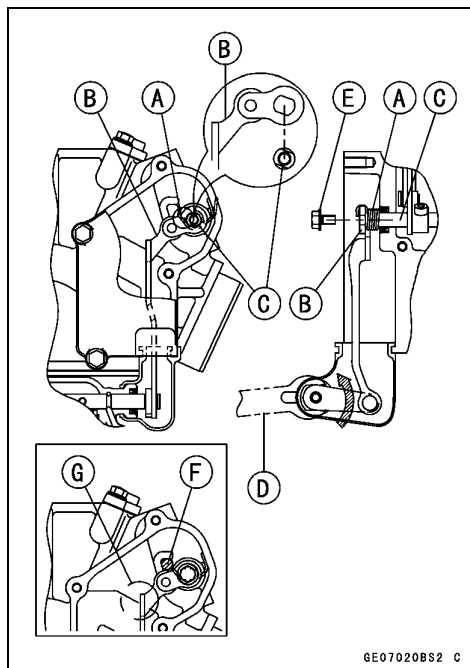
Right Engine Cover

- Set the spring [A] as shown.
[B] Governor Shaft Lever
[C] Exhaust Valve Shaft
- Using a 14 mm open-end wrench [D], install the governor shaft lever [B] as shown.
- Tighten:
Torque - Governor Shaft Lever Mounting Bolt [E]: 5.9 N·m (0.60 kgf·m, 52 in·lb)

NOTE

○Put a screw driver ($\phi 6$ mm) [F] on the hollow of cylinder as shown to prevent the lever link portion [G] from bending.

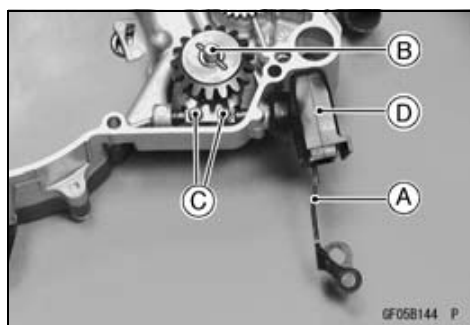
- Install the KIPS cover.
Torque - KIPS Cover Bolts: 5.9 N·m (0.60 kgf·m, 52 in·lb)



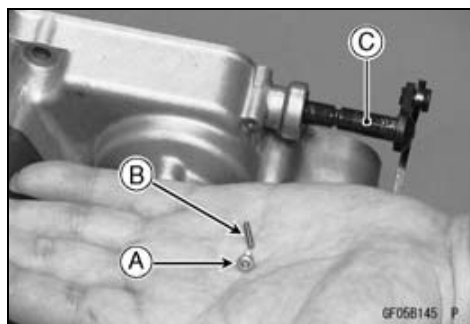
- Apply grease to the inside of the brake pedal boss.
- Tighten the brake pedal mounting bolt.
Torque - Brake Pedal Mounting Bolt: 25 N·m (2.5 kgf·m, 18 in·lb)
- Fill the cooling system with coolant (see Cooling System chapter).
- Fill the transmission with oil (see Engine Bottom End/Transmission chapter).
- Check the rear brake.

Right Engine Cover Disassembly

- Remove the right engine cover.
- Turn the governor shaft lever [A] to the left, and remove the exhaust advancer assembly [B].
- Remove the Allen bolts [C], and take off the advancer lever.
- Pull the dust cover [D].



- Remove the plug screw [A] and take out the governor shaft lever positioning pin [B].
- Pull the governor shaft lever [C] out of the right engine cover.
- Pull off the water pump shaft (see Cooling System chapter).

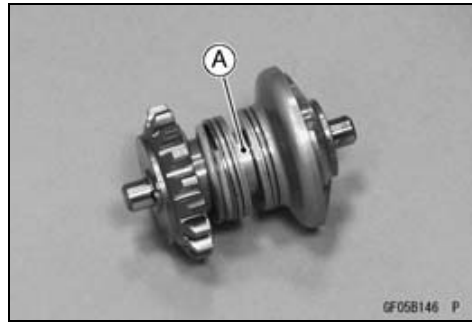


6-12 ENGINE RIGHT SIDE

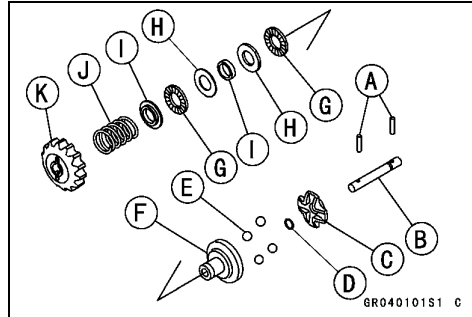
Right Engine Cover

Exhaust Advancer Assembly Disassembly/Assembly

- The exhaust advancer assembly [A] consists of the following parts.



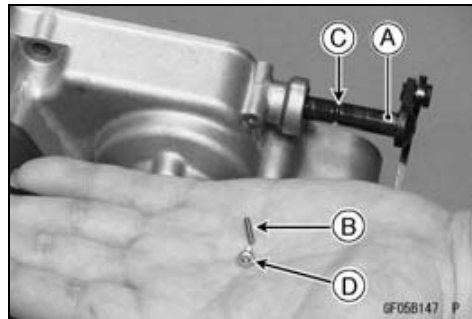
- [A] Pins
- [B] Rod
- [C] Guide
- [D] O-ring
- [E] Steel Balls
- [F] Holder
- [G] Needle Bearing
- [H] Spacer
- [I] Collar
- [J] Spring
- [K] Gear



- Check the exhaust advancer assembly parts for damage.
- ★ Any damaged parts should be replaced with new ones.
- When assembling, apply molybdenum disulfide grease between the rod and inside/outside diameter parts of the holder, needle bearing and spacer .

Right Engine Cover Assembly

- Apply high temperature grease to the oil seal lips before inserting the governor shaft lever.
- Apply molybdenum disulfide grease to the surface of the lever shaft, and insert the governor shaft lever [A] into the right engine cover hole.
- Insert the positioning pin [B] into the hole then fit it to the groove [C] of the shaft.
- Tighten the governor shaft lever positioning plug screw [D] securely.

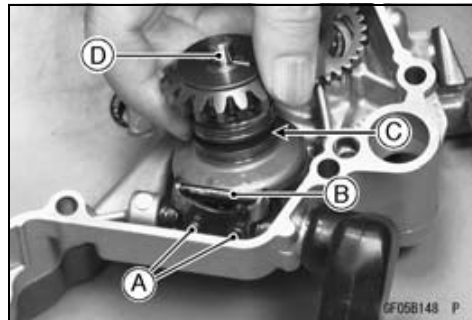


**Torque - Governor Shaft Lever Positioning Plug: 1.0 N·m
(0.1 kgf·m, 10 in·lb)**

- Install the dust cover.
- Apply a non-permanent locking agent to the threads of the advancer mounting Allen bolts.
- Tighten the advancer lever mounting Allen bolts [A].

**Torque - Advancer Lever Mounting Allen Bolts: 3.9 N·m
(0.4 kgf·m, 35 in·lb)**

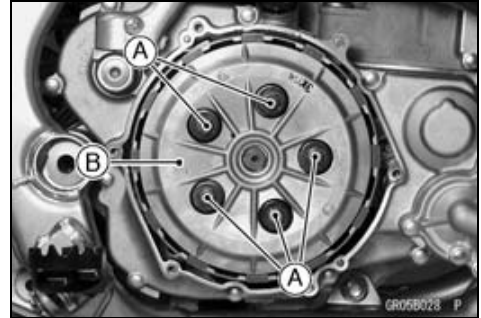
- Fit the advancer lever pin [B] into the groove [C] on the exhaust advancer assembly [D], and install the assembly in the engine cover while turning the governor shaft lever to the left.



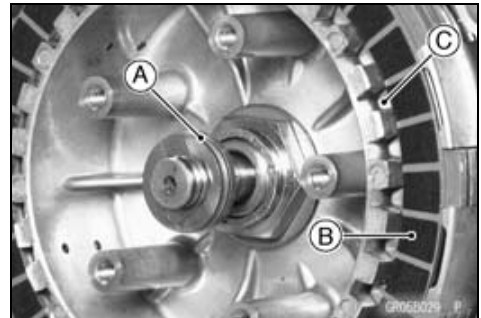
Clutch

Clutch Removal

- Remove the clutch cover (see Clutch Cover Removal).
- Remove the clutch spring bolts [A], spring, and clutch pressure plate [B].



- Remove the push rod holder assy [A], friction plates [B], steel plates [C], and push rod.

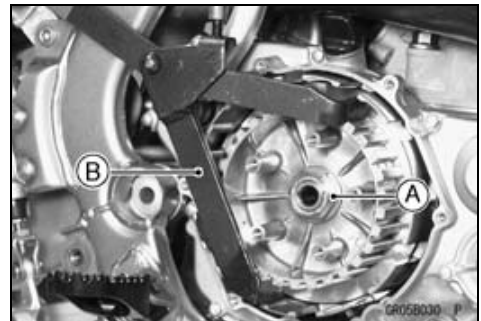


- Remove the clutch hub nut [A] and washer.

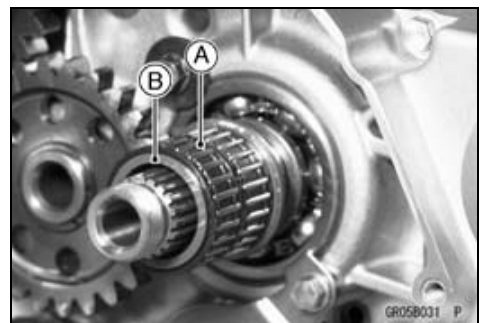
NOTE

○ Use the clutch holder [B] to prevent the clutch hub from rotating.

Special Tool - Clutch Holder: 57001-1243



- Remove the clutch hub and housing, needle bearing [A], and sleeve [B].

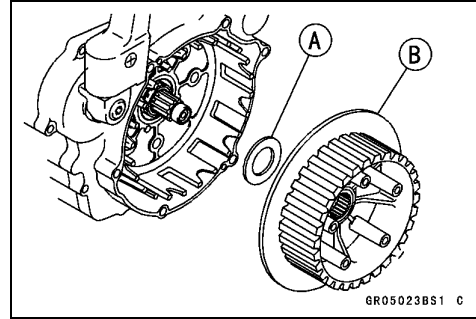


6-14 ENGINE RIGHT SIDE

Clutch

Clutch Installation

- Apply molybdenum disulfide grease to the outside of the sleeve.
- Apply transmission oil to the inside of the clutch housing gear and kickstarter driven gear.
- Install the sleeve, needle bearing, clutch hub and housing.
- Do not forget to install the thrust washer [A] before installing the clutch hub [B].

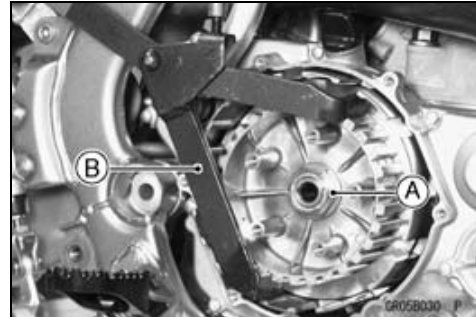


- Tighten the clutch hub nut [A].
Torque - Clutch Hub Nut: 98 N·m (10 kgf·m, 72 ft·lb)

NOTE

- Use the clutch holder [B] to prevent the clutch hub from rotating.

Special Tool - Clutch Holder: 57001-1243



- Install the friction plates and steel plates, starting with a friction plate and alternating them. Finishing with a friction plate.

CAUTION

If dry steel plates and friction plates are installed, apply transmission oil to the surfaces of each plate to avoid clutch plate seizure.

- Apply molybdenum disulfide grease to the rubbing portion of the push rod holder.
- Tighten the clutch spring bolts fixing the flywheel with the Special Tool.

Torque - Clutch Spring Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

Special Tool - Flywheel Holder: 57001-1313

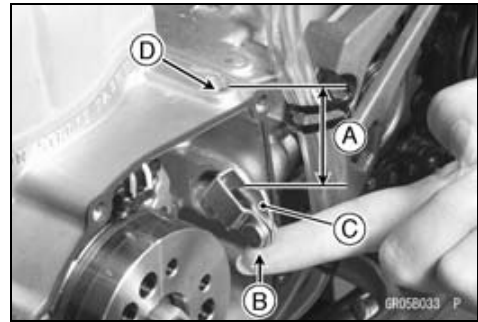
Clutch

- Check the release shaft lever positions [A].
- Remove the magneto cover.
- Pushing [B] the release shaft lever [C] lightly upward, measure the distance between the lever and the seating surface [D] of clutch cable, as shown.

Release Shaft Lever Position

Standard: 33.5 ~ 40.5 mm

- ★ If the lever position is not within the standard, select the correct thickness of adjusting washer(s) according to the tables shown.



Adjusting Washers

Thickness	Part Number
1.5 mm	92200-1548
1.0 mm	92200-0045

Release Shaft Lever Position and Adjusting Washer Selection

Position Distance	Judgment	Washers Thickness	Qty
33.5 mm to 40.5 mm	Standard	1.5 mm	1
More than 40.5 mm	Too big	1.0 mm	1
Less than 33.5 mm	Too small	1.0 mm	2

- ★ Remove the push rod holder assy as necessary and re-install the clutch.

Friction and Steel Plates Wear, Damage Inspection

- Refer to the Friction and Steel Plates Wear, Damage Inspection in the Periodic Maintenance chapter.

Friction and Steel Plate Warp Inspection

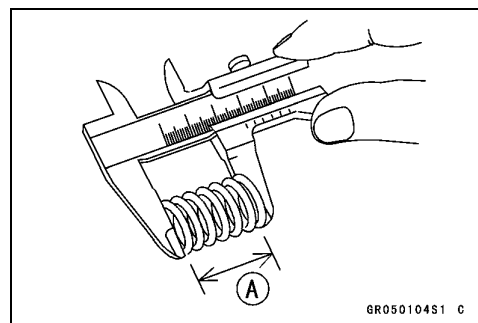
- Refer to the Friction and Steel Plate Warp Inspection in the Periodic Maintenance chapter.

Spring Free Length Measurement

- Since the spring [A] becomes shorter as it weakens, check its free length to determine its condition.
- ★ If any of the springs is shorter than the service limit, it must be replaced.

Standard: 35 mm (1.378 in.)

Service Limit: 33.6 mm (1.323 in.)



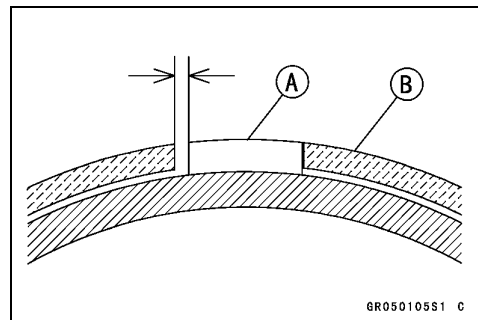
Friction Plate/Clutch Housing Clearance Inspection

- Measure the clearance between the tangs [A] on the friction plate and the fingers [B] of the clutch housing.
- ★ If this clearance is excessive, the clutch will be noisy.
- ★ If the clearance exceeds the service limit, replace the friction plates.

Friction Plate/Clutch Housing Clearance

Standard: 0.15 ~ 0.45 mm (0.0059 ~ 0.0177 in.)

Service Limit: 0.8 mm (0.0315 in.)

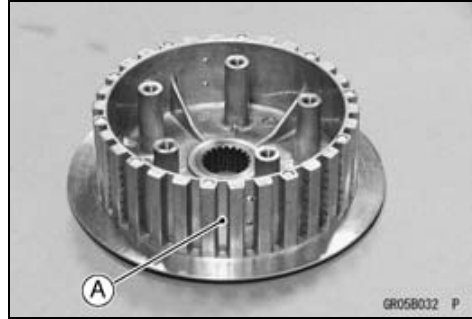


6-16 ENGINE RIGHT SIDE

Clutch

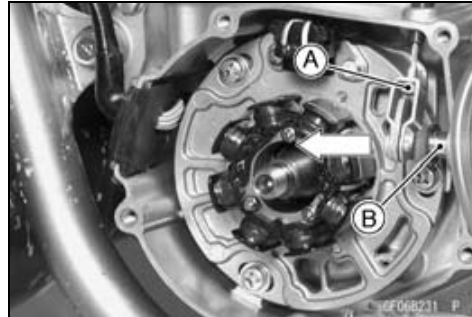
Clutch Hub Spline Inspection

- Visually inspect where the teeth on the steel plates wear against the splines [A] of the clutch hub.
- ★ If there are notches worn into the splines, replace the clutch hub. Also, replace the clutch plates if their teeth are damaged.



Release Shaft Removal

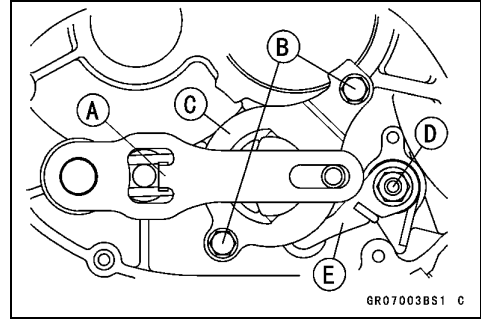
- When the release shaft remove, do following procedure.
- Remove the magnet cover and the magneto flywheel.
- Remove the clutch cover and loosen the clutch spring bolts.
- Disconnect the clutch cable lower end [A] and then remove the release shaft assembly [B].



External Shift Mechanism

External Shift Mechanism Removal

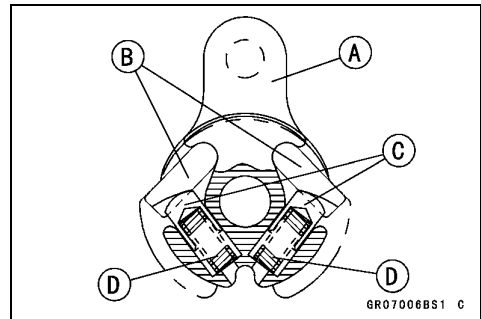
- Remove:
 - Shift Pedal
 - Right Engine Cover (see Right Engine Cover Removal)
 - Clutch Housing (see Clutch Removal)
- Pull out the external shift shaft [A].
- Remove the bolts [B] and take off the shift ratchet assembly [C] with collar.
- Remove the nut [D], and take off the gear set lever [E].



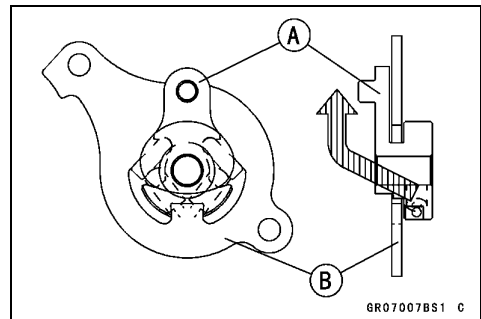
External Shift Mechanism Installation

- Install the gear set lever.
- Do not forget to install the collar.
- Tighten the gear set lever nut.
 - Torque - Gear Set Lever Nut: 8.8 N·m (0.90 kgf·m, 78 in·lb)**

- Set up the shift ratchet assembly as shown in the figure.
 - Ratchet [A]
 - Pawls [B]
 - Pins [C]
 - Springs [D]



- Then install the ratchet assembly [A] to the ratchet plate [B] as shown in the figure.
- Install the ratchet assembly to the shift drum.
- Tighten:
 - Torque - Ratchet Plate Mounting Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)**



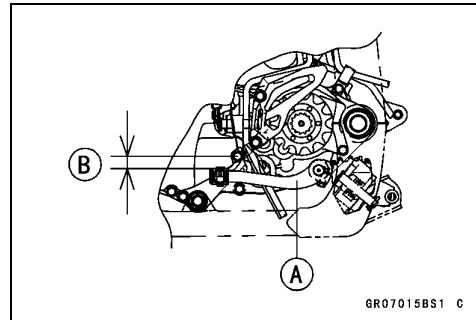
- Do not forget to install the collar [A].
- Before installing the shift shaft, apply high temperature grease to the oil seal lips and shift shaft splines.
- Install the removal parts.



6-18 ENGINE RIGHT SIDE

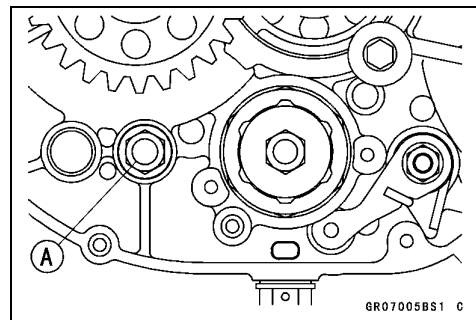
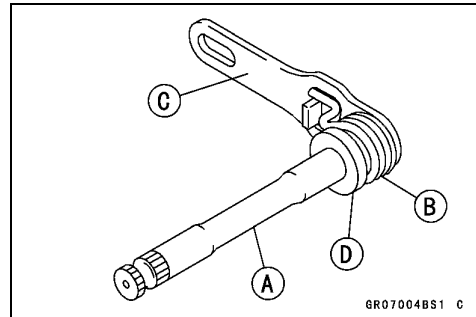
External Shift Mechanism

- Install the shift pedal [A] as shown.
[B] 4 ~ 24 mm (0.16 ~ 0.94 in.)
- Tighten:
Torque - Shift Pedal Bolt: 8.8 N·m (0.90 kgf·m, 78 in·lb)



External Shift Mechanism Inspection

- Check the shift shaft [A] for bending or damage to the splines.
 - ★ If the shaft is bent, straighten or replace it. If the splines are damaged, replace the shift mechanism.
 - Check the return spring [B] for cracks or distortion.
 - ★ If the spring is damaged in any way, replace it.
 - Check the shift mechanism arm [C] for distortion.
 - ★ If the shift mechanism arm is damaged in any way, replace the shift mechanism.
 - Check the collar [D] for damage.
 - ★ If the collar is damaged in any way, replace it.
 - Check the ratchet assembly for damage.
 - ★ If ratchet, pawls, pins or springs are damaged in any way, replace them.
 - Check that the return spring pin [A] is not loose.
 - ★ If it is loose, unscrew it, apply a non-permanent locking agent to the threads, and tighten it.
- Torque - Shift Mechanism Return Spring Pin: 42 N·m (4.3 kgf·m, 31 ft·lb)**



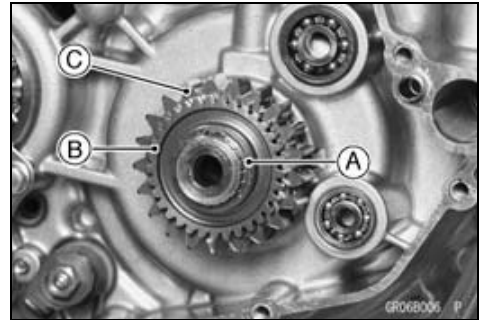
- Check the gear set lever and its spring for cracks or distortion.
 - ★ If the lever or spring is damaged in any way, replace them.
- Visually inspect the shift drum cam.
 - ★ If it is badly worn or if it shows any damage, replace it.

Primary Gear

Primary Gear Removal (KX250-R1)

- Remove the right engine cover (see Right Engine Cover Removal)
- Remove the clutch (see Clutch Removal).
- Remove the circlip [A], and take off the water pump drive gear [B] and primary gear [C].

Special Tool - Outside Circlip Pliers: 57001-144

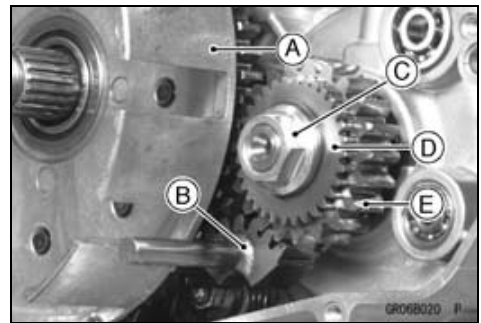


Primary Gear Removal (KX250R6F ~)

- Remove:
 - Right Engine Cover (see Right Engine Cover Removal)
 - Remove the clutch (see Clutch Removal).
 - Temporarily install the clutch housing [A].
 - Using the gear holder [B], secure the primary gear.

Special Tool - Gear Holder, m2.0: 57001-1557

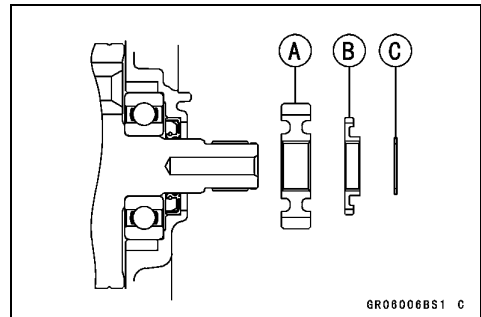
- Remove the clutch housing.
- Remove the primary gear nut [C], washer, water pump drive gear [D] and the primary gear [E].
- Primary gear nut is left-hand threads.



Primary Gear Installation (KX250-R1)

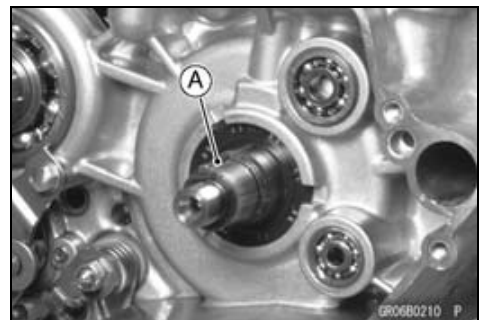
- Install the following as shown.
 - Primary Gear [A]
 - Water Pump Drive Gear [B]
- Replace the old circlip with a new one [C].

Special Tool - Outside Circlip Pliers: 57001-144



Primary Gear Installation (KX250R6F ~)

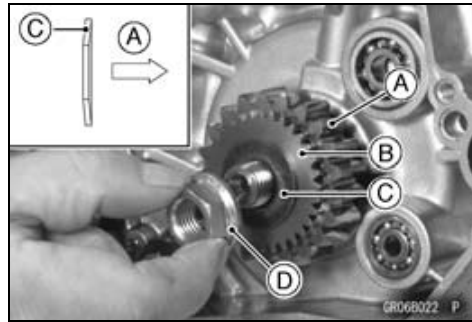
- Fit the woodruff key [A] securely in the slot of the crankshaft before installing the primary gear.



6-20 ENGINE RIGHT SIDE

Primary Gear

- Insert the primary gear [A] and water pump drive gear [B] to the crankshaft.
- Install the washer [C] so that concave side faces inward (primary gear side).
- Install the primary gear nut [D].

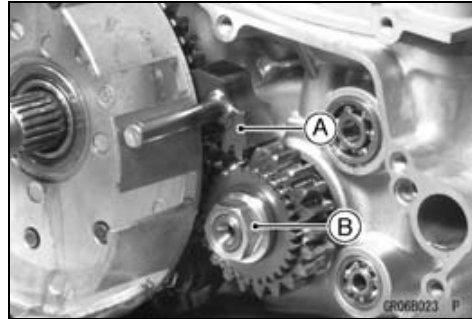


- Using the gear holder [A], secure the clutch gear and the bottom of the primary gear; then, tighten the primary gear nut [B].
- Primary gear nut is left-hand threads.

Torque - Primary Gear Nut: 78 N·m (8.0 kgf·m, 58 ft·lb)

Special Tool - Gear Holder, m2.0: 57001-1557

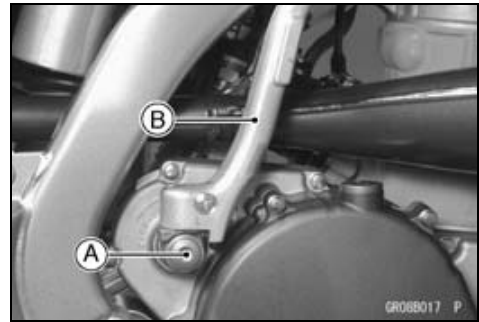
- Install:
 - Clutch (see Clutch Installation)
 - Right Engine Cover (see Right Engine Cover Installation)



Kickstarter

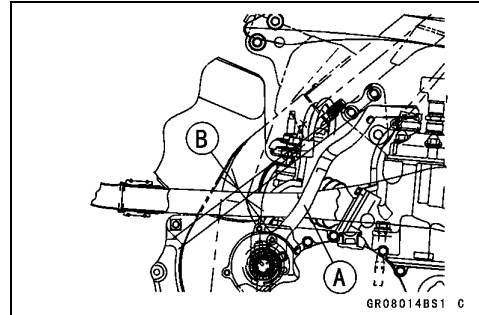
Kick Pedal Removal

- Remove:
 - Mounting Bolt [A]
 - Kick Pedal [B]



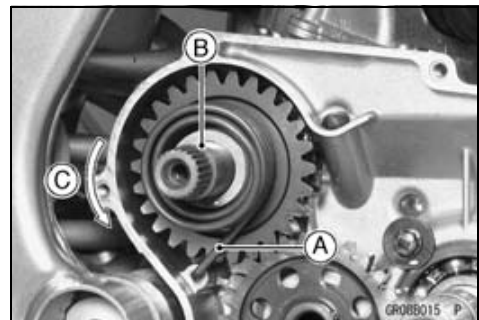
Kick Pedal Installation

- Install the kick pedal [A] as shown.
 - [B] 8 ~ 28 mm (0.32 ~ 1.10 in.)
- Apply a non-permanent locking agent to the mounting bolt.
- Torque.
 - Torque - Kick Pedal Bolt: 25 N·m (2.5 kgf·m, 18 ft·lb)**

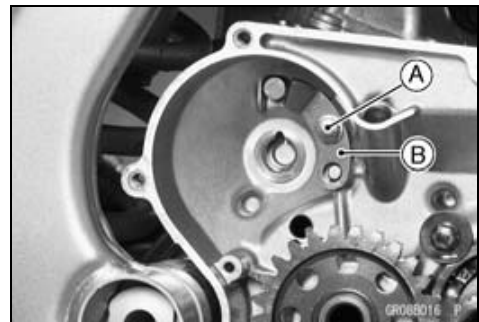


Kickshaft Removal

- Remove:
 - Right Engine Cover (see Right Engine Cover Removal)
 - Clutch Housing (see Clutch Removal)
- Pull the end of the kick spring [A] out of the hole in the crankcase.
- Turn the kickshaft counterclockwise [C] and remove the kickstarter assembly [B].

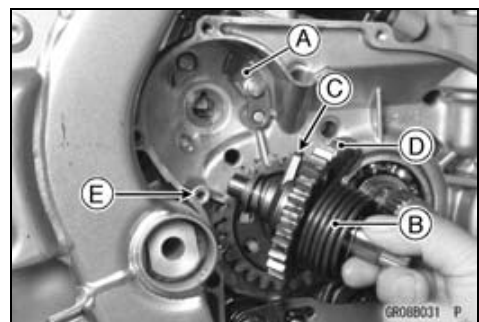


- Remove the bolts [A], take off the ratchet guide [B].



Kickshaft Installation

- Install the ratchet guide [A].
 - Torque - Ratchet Guide Bolt: 8.8 N·m (0.90 kgf·m, 78 in·lb)**
- Apply molybdenum disulfide grease to the end of the kickshaft.
- Insert the kickstarter assembly [B] into the crankcase.
- Securely engage the stopper portion [C] of the ratchet gear with the guide.
- Insert the spring end [D] into the hole [E].
- Install:
 - Clutch Housing (see Clutch Installation)
 - Right Engine Cover (see Right Engine Cover Installation)



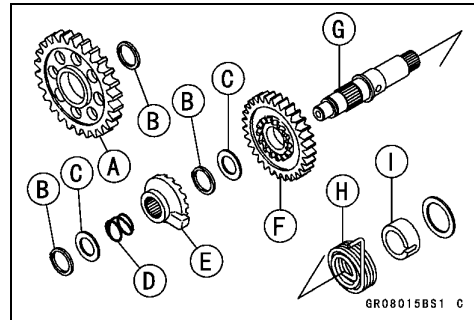
6-22 ENGINE RIGHT SIDE

Kickstarter

Kickstarter Assembly Disassembly/Assembly

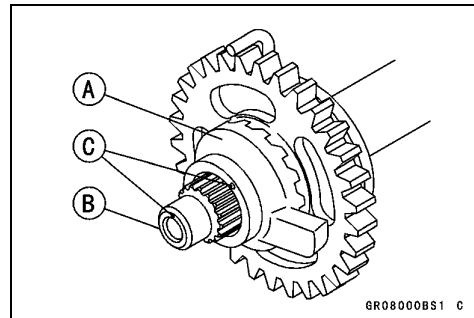
- The kickstarter assembly consists of the following parts.
- Check the kickstarter assembly parts for damage. Any damaged parts should be replaced with new ones.

- [A] Idle Gear
- [B] Circlip
- [C] Washer
- [D] Spring
- [E] Ratchet Gear
- [F] Kick Gear
- [G] Kick Shaft
- [H] Kick Spring
- [I] Spring Guide



- Apply molybdenum disulfide grease to the inside of the kick gear and ratchet gear.
- When assembling the ratchet gear [A] onto the kick shaft [B], align the punch mark [C] on the ratchet gear with the punch mark [C] on the kick shaft.
- Replace the circlips that were removed with new ones.

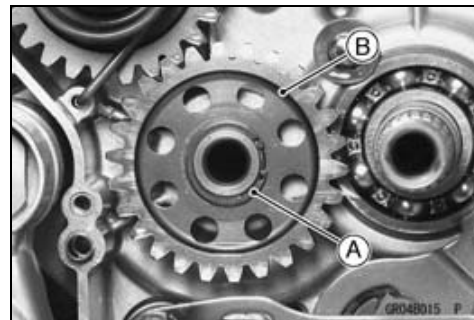
Special Tool - Outside Circlip Pliers: 57001-144



Idle Gear Removal

- Remove:
 - Right Engine Cover (see Right Engine Cover Removal)
 - Clutch Housing (see Clutch Removal)
- Remove the circlip [A] and pull off the idle gear [B].

Special Tool - Outside Circlip Pliers: 57001-144



Idle Gear Installation

- Apply molybdenum disulfide grease to the inside of the idle gear.
- Replace the circlip with a new one.

Special Tool - Outside Circlip Pliers: 57001-144

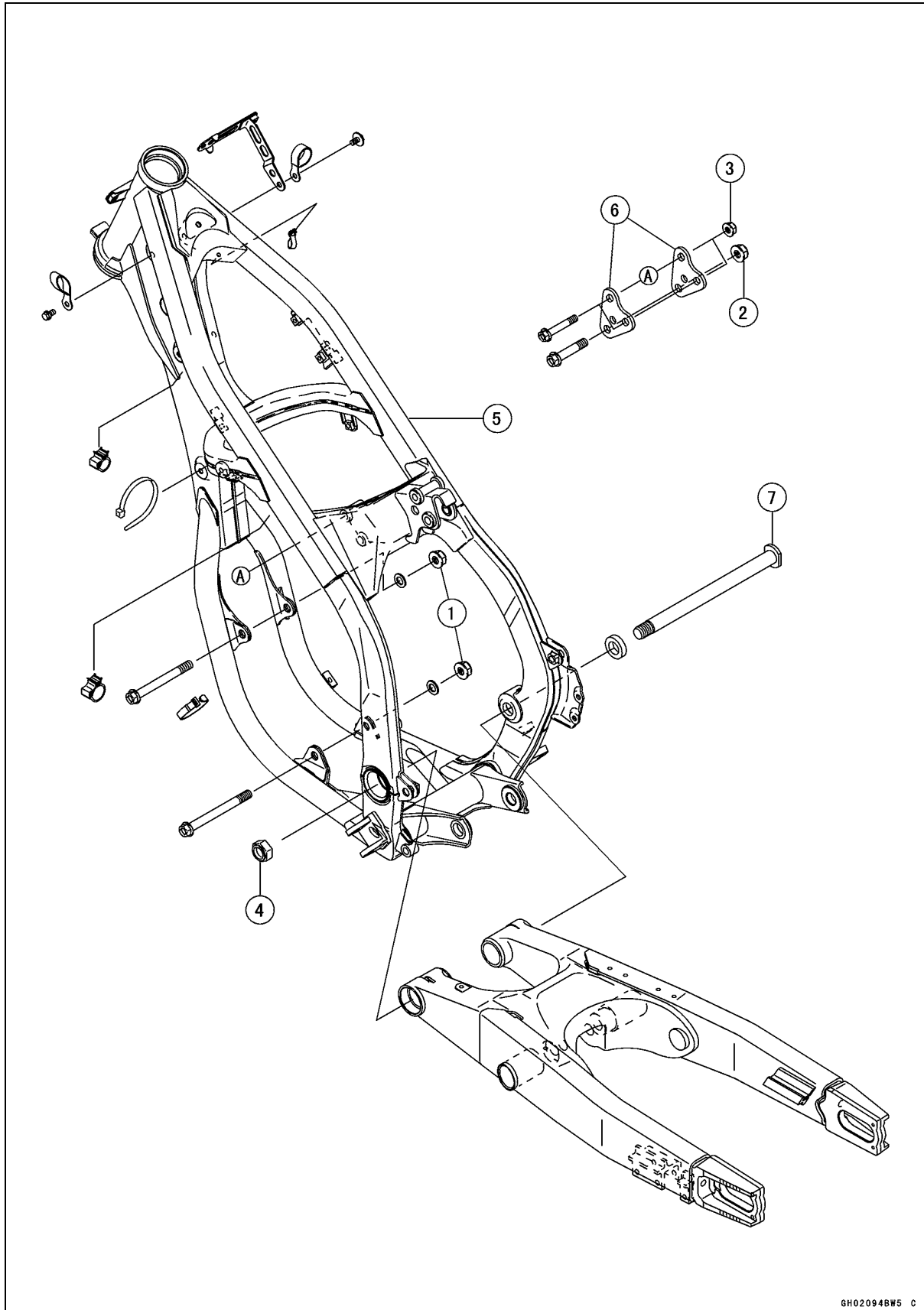
Engine Removal/Installation

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Engine Installation.....	7-6

7-2 ENGINE REMOVAL/INSTALLATION

Exploded View



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ENGINE REMOVAL/INSTALLATION 7-3

Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Engine Mounting Nuts	49	5.0	36	
2	Engine Mounting Bracket Nuts (Engine Side 10 mm)	49	5.0	36	
3	Engine Mounting Bracket Nuts (Frame Side 8 mm)	29	3.0	22	
4	Swing Arm Pivot Shaft Nut	98	10.0	72	

5. Frame

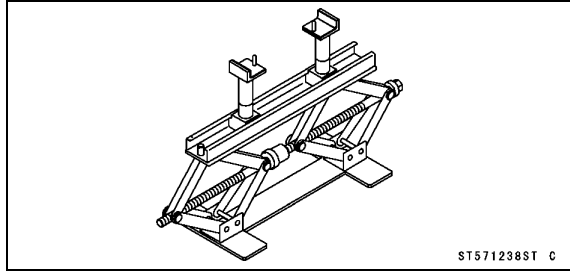
6. Engine Mounting Bracket

7. Swing Arm Pivot Shaft

7-4 ENGINE REMOVAL/INSTALLATION

Special Tool

Jack:
57001-1238

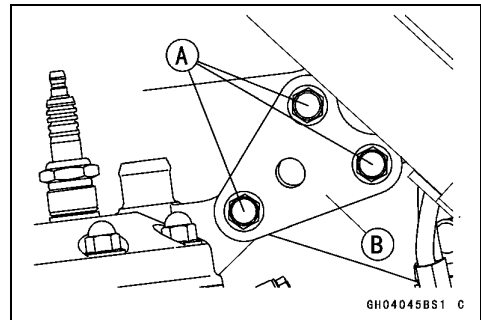


Engine Removal/Installation

Engine Removal

- Drain the engine oil (see Engine Bottom End/Transmission chapter).
- Drain the coolant (see Cooling System chapter).
- Remove:
 - Radiator Shrouds
 - Side Covers
 - Seat
 - Fuel Tank
 - Cooling Hoses
 - Radiators
 - Expansion Chamber
 - Ignition Coil

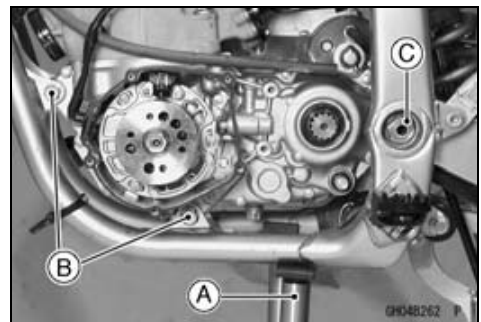
 - Spark Plug Cap
 - Carburetor (with Cables, Hoses and Wires)
 - Clutch Cable Lower End
 - Drive Chain
 - Engine Sprocket
 - Shift Pedal
 - Brake Pedal
- Disconnect the magneto output lead, and free the leads from the clamp at the left side of the cylinder.
- Unbolt the mounting bolts [A] and remove the engine mounting brackets [B].



- Place a jack [A] under the frame to lift the motorcycle off the ground, and put blocks under the front and rear tires to steady the motorcycle.

⚠ WARNING

The swingarm pivot shaft also serves as the engine mounting bolt. Take precautions to insure the frame is well supported, and that the motorcycle will not fall over when the pivot shaft is removed.



Special Tool - Jack: 57001-1238

- Remove the engine mounting bolts [B].
- Pull out the swing arm pivot shaft [C].
- Lift the engine out to the right.

7-6 ENGINE REMOVAL/INSTALLATION

Engine Removal/Installation

Engine Installation

- Tighten the following nuts.

Torque - Engine Mounting Nuts:

49 N·m (5.0 kgf·m, 36 ft·lb)

Engine Mounting Bracket Nuts:

10 mm: 49 N·m (5.0 kgf·m, 36 ft·lb)

8 mm: 29 N·m (3.0 kgf·m, 22 ft·lb)

Swing Arm Pivot Shaft Nut: 98 N·m (10.0 kgf·m, 72 ft·lb)

- To route the leads, cables and hoses, refer to the Appendix chapter.
- To install parts removed, refer to the appropriate chapters.
- Fill the cooling system with coolant (see Cooling System chapter).
- Fill the engine with engine oil (see Engine Bottom End/Transmission chapter).
- Adjust:
 - Throttle Cable
 - Clutch Cable
 - Drive Chain
 - Rear Brake

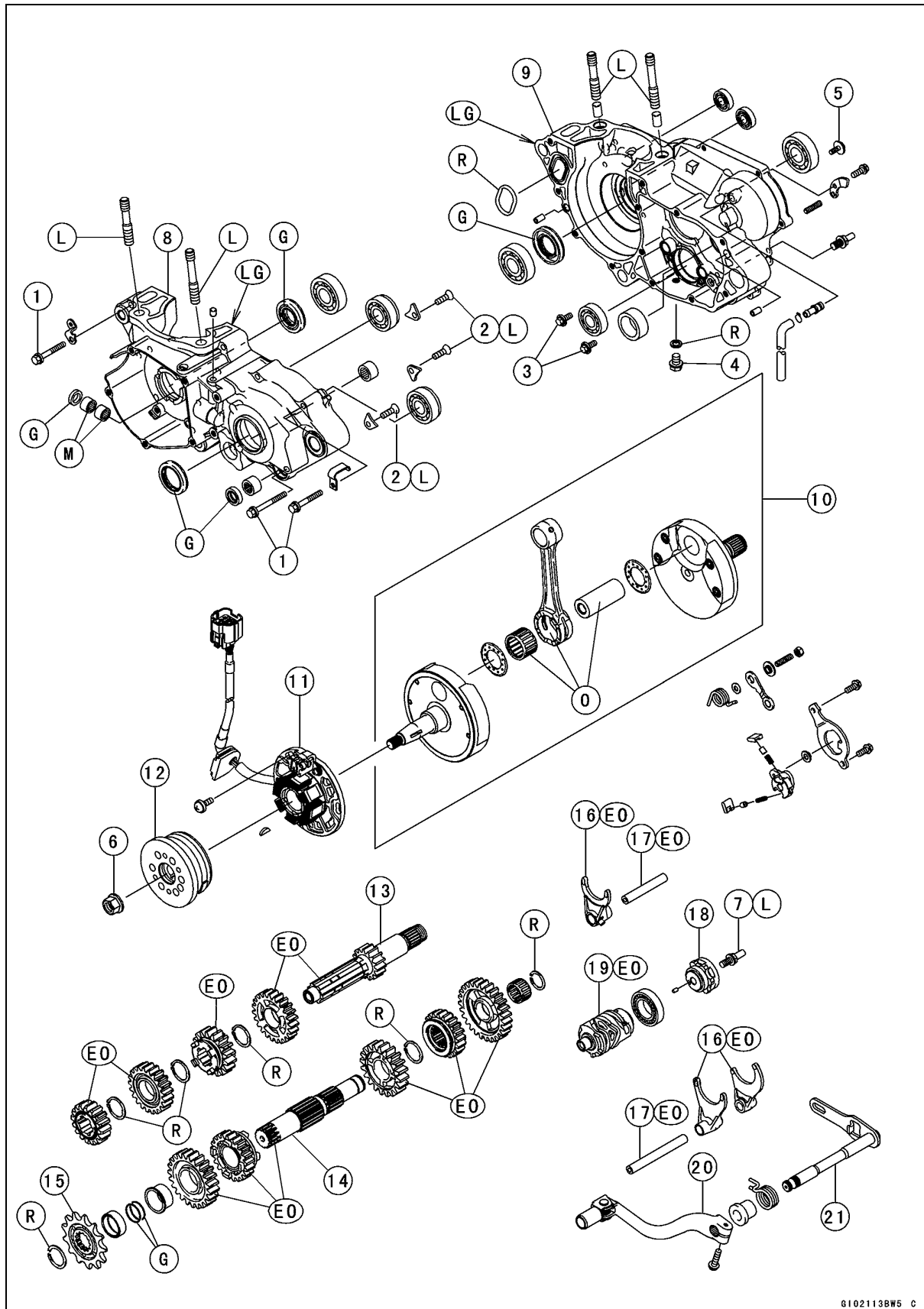
Engine Bottom End/Transmission

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8-2 ENGINE BOTTOM END/TRANSMISSION

Exploded View



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ENGINE BOTTOM END/TRANSMISSION 8-3

Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Crankcase Bolts	8.8	0.90	78 in·lb	
2	Bearing Retaining Screws	4.9	0.50	43 in·lb	L
3	Shift Drum Bearing Retaining Bolts	8.8	0.90	78 in·lb	
4	Transmission Oil Drain Plug	20	2.0	14.5	
5	Drive Shaft Bearing Retaining Bolts	8.8	0.90	78 in·lb	
6	Flywheel Nut	78	8.0	58	
7	Shift Drum Operating Cam Bolt	24	2.4	17	L

- 8. Left Crankcase
- 9. Right Crankcase
- 10. Crankshaft Assembly
- 11. Stator
- 12. Flywheel Magneto
- 13. Drive Shaft
- 14. Output Shaft
- 15. Engine Sprocket
- 16. Shift Fork
- 17. Shift Rod
- 18. Shift Drum Operating Cam
- 19. Shift Drum
- 20. Shift Pedal
- 21. Shift Shaft

EO: Apply engine oil to the transmission gears and shift forks, etc.

G: Apply high temperature grease.

L: Apply a non-permanent locking agent.

LG: Apply liquid gasket to the left and right case mating surface.

M: Apply molybdenum disulfide grease.

O: Apply 2-stroke engine oil.

R: Replacement parts.

8-4 ENGINE BOTTOM END/TRANSMISSION

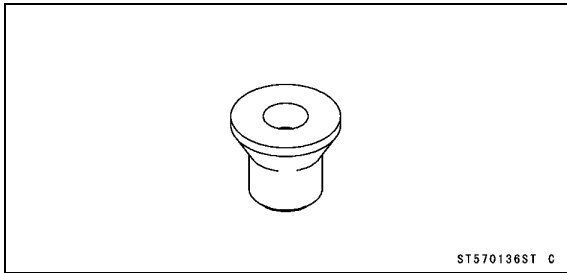
Specifications

Item	Standard	Service Limit
Transmission Oil		
Grade	API SE, SF or SG API SH, SJ or SL with JASO MA	---
Viscosity	SAE 10W-40	---
Capacity	0.85 L (0.90 US qt)	---
Crankshaft, Connecting Rod		
Connecting Rod Bend	Not more than 0.03 mm (0.0012 in.)/100 mm (3.937 in.)	0.2 mm (0.008 in.)/100 mm (3.937 in.)
Connecting Rod Big End Radial Clearance	0.037 ~ 0.049 mm (0.0015 ~ 0.0019 in.)	0.10 mm (0.004 in.)
Connecting Rod Big End Side Clearance	0.45 ~ 0.55 mm (0.0177 ~ 0.0217 in.)	0.70 mm (0.028 in.)
Crankshaft Runout	TIR 0.03 mm (0.0012 in.) or less	TIR 0.05 mm (0.002 in.)
Transmission		
Gear Backlash	0.02 ~ 0.20 mm (0.0008 ~ 0.0078 in.)	0.30 mm (0.012 in.)
Shift Fork Ear Thickness	4.40 ~ 4.50 mm (0.1732 ~ 0.1772 in.)	4.30 mm (0.169 in.)
Gear Shift Fork Groove Width	4.55 ~ 4.65 mm (0.1791 ~ 0.1830 in.)	4.75 mm (0.187 in.)
Shift Fork Guide Pin Diameter	5.90 ~ 6.00 mm (0.2323 ~ 0.2362 in.)	5.80 mm (0.228 in.)
Shift Drum Groove Width	6.05 ~ 6.20 mm (0.2382 ~ 0.2440 in.)	6.25 mm (0.246 in.)

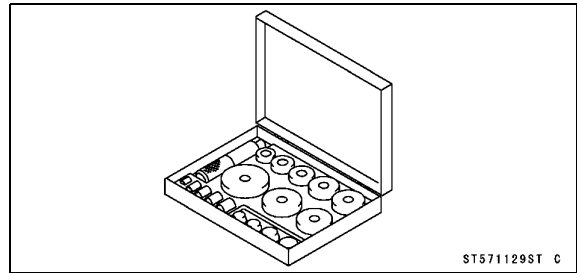
ENGINE BOTTOM END/TRANSMISSION 8-5

Special Tools

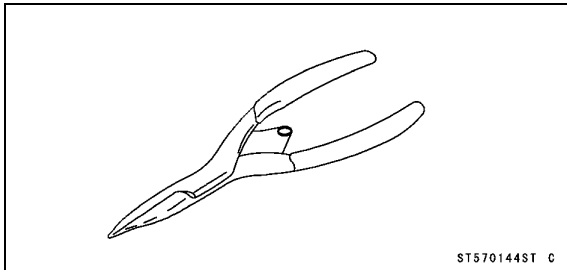
**Bearing Puller Adapter:
57001-136**



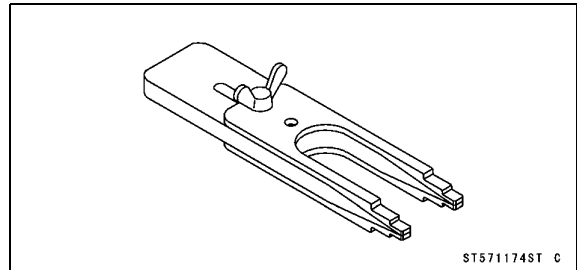
**Bearing Driver Set:
57001-1129**



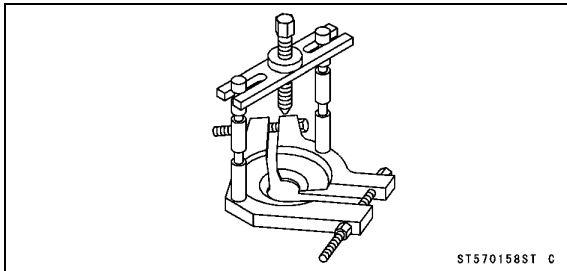
**Outside Circlip Pliers:
57001-144**



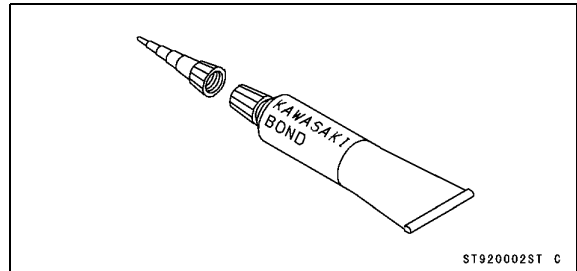
**Crankshaft Jig:
57001-1174**



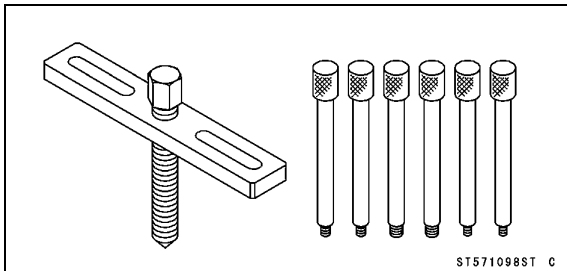
**Bearing Puller:
57001-158**



**Kawasaki Bond (Liquid Gasket - Silver):
92104-002**



**Crankcase Splitting Tool Assembly:
57001-1098**



8-6 ENGINE BOTTOM END/TRANSMISSION

Transmission Oil

In order for the transmission and clutch to function properly, always maintain the transmission oil at the proper level and change the oil periodically.

WARNING

Motorcycle operation with insufficient, deteriorated, or contaminated transmission oil will accelerated wear and may result in transmission seizure, and injury.

Oil Level Inspection

- Refer to the Transmission Oil Level Inspection in the Periodic Maintenance chapter.

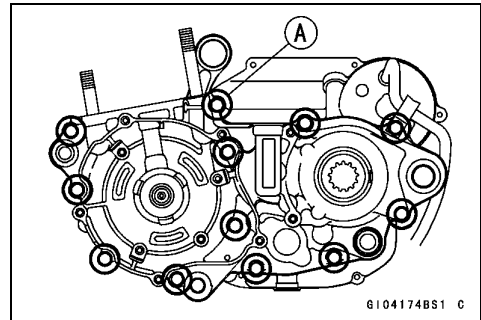
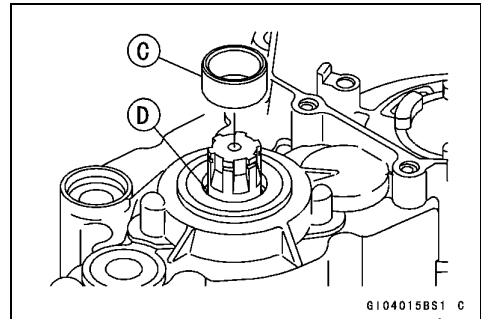
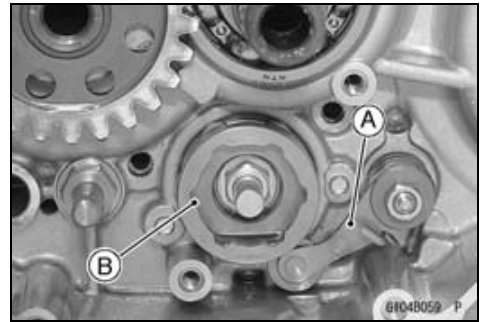
Oil Change

- Refer to the Transmission Oil Change in the Periodic Maintenance chapter.

Crankcase

Crankcase Splitting

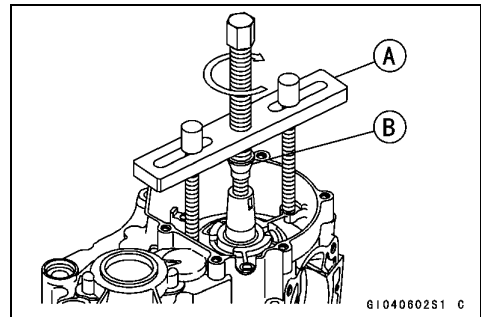
- Remove the engine (see the Engine Removal/Installation chapter).
- Set the engine on a clean surface while parts are being removed.
- Remove:
 - Cylinder Head (see Engine Top End chapter)
 - Cylinder (see Engine Top End chapter)
 - Piston (see Engine Top End chapter)
 - Right Engine Cover (see Engine Right Side chapter)
 - Clutch (see Engine Right Side chapter)
 - Primary Gear (see Engine Right Side chapter)
 - Kickstarter Assembly (see Engine Right Side chapter)
 - Kickstarter Idle Gear (see Engine Right Side chapter)
 - External Shift Mechanism (see Engine Right Side chapter)
 - Shift Ratchet Assembly (see Engine Right Side chapter)
 - Gear Set Lever [A]
 - Shift Drum Operating Cam [B]
 - Output Shaft Sleeve [C] and O-rings [D]
 - Flywheel Magneto and Stator (see Electrical System chapter)
- Remove the crankcase bolts [A].



- Install the crankcase splitting tool [A] and bearing puller adapter [B] into the left side of the crankcase. Be certain to screw the tool in all the way.

Special Tools - Bearing Puller Adapter: 57001-136
Crankcase Splitting Tool Assembly: 57001-1098

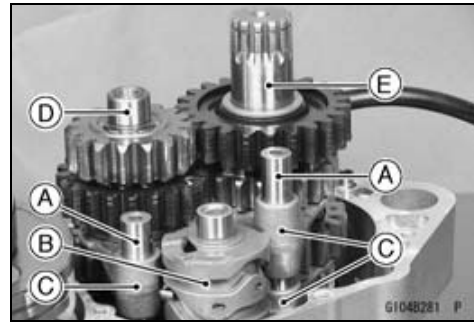
- Tighten the bolt on the crankcase splitting tool to split the crankcase halves.
- Once the crankcase is split, remove the crankcase splitting tool, and lift off the left crankcase half.



8-8 ENGINE BOTTOM END/TRANSMISSION

Crankcase

- Pull out the shift rods [A].
- Disengage the shift fork guide pins from the shift drum grooves.
- Take off the shift drum [B]
- Remove the shift forks [C] from the transmission gears.
- Take out the drive shaft [D] and output shaft [E] together with their gear meshed.
- Remove the crankshaft from the right crankcase half using a press.



Crankcase Disassembly

CAUTION

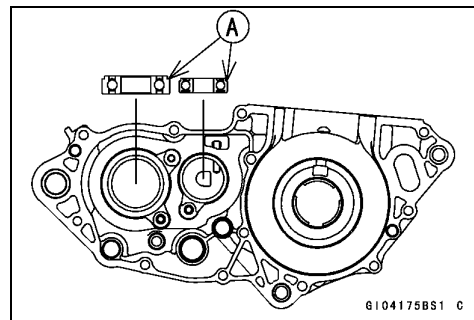
**Do not remove the bearings and the oil seals unless it is necessary.
Removal may damage them.**

Crankcase Assembly

- Before fitting the left case on the right case, note the following:
 - Chip off the old gasket from the mating surfaces of the crankcase halves, and clean off the crankcase with a high flash-point solvent. After cleaning, apply transmission oil to the transmission gears, shift drum, shift forks and so on.
 - Be sure to replace any oil seal removed with a new one. Press in the new oil seal using a press and suitable tools so that the seal surface is flush with the surface of the crankcase.
 - Apply high temperature grease to the oil seal lips.
 - Press in the ball bearings using the bearing driver set until the bearing is bottomed.

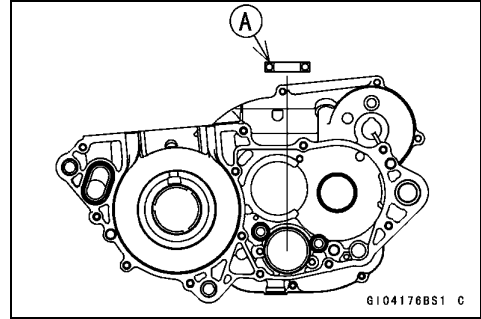
Special Tool - Bearing Driver Set: 57001-1129

- Install the bearings for the output shaft and drive shaft into the left crankcase half so that stepped sides face [A] inside.



Crankcase

- Install the bearing for the shift drum so that its sealed side faces [A] inside.



CAUTION

Install the bearings for the crankshaft in the right and left crankcase so that their sealed sides face toward the oil seal side.

- Tighten the output and drive shaft bearing retaining bolts/screws securely.

Torque - Bearing Retaining Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

Bearing Retaining Screws: 4.9 N·m (0.50 kgf·m, 43 in·lb)

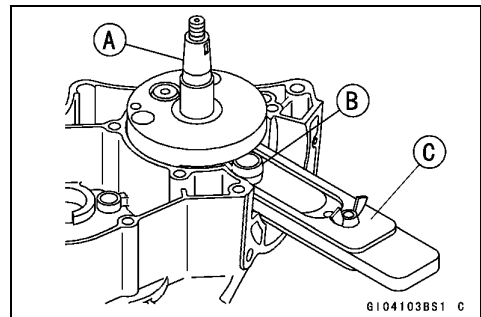
- If the crankshaft bearings stay on the crankshaft when splitting the crankcase, remove the bearings from the crankshaft and reinstall them in the crankcase, and then assemble the crankcase (see Crankshaft Removal and Installation).

- Turn the crankshaft [A] to BDC, and install the crankshaft jig [C] between the flywheels opposite the connecting rod [B] big end to protect flywheel alignment as shown.

- If the crankshaft has been removed from the crankcase, install the jig between the crankshaft flywheels before pressing the crankshaft into the right crankcase half.

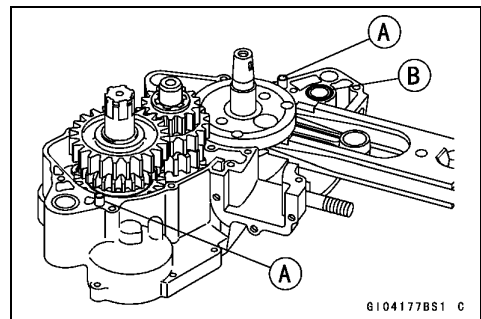
Special Tool - Crankshaft Jig: 57001-1174

- Install the transmission shaft as a set (see this chapter).
- Install the shift fork, shift drum and shift rod.



- Check to see that the crankcase knock pins [A] and O-ring [B] are in place on the right crankcase half.

- Replace the O-ring with a new one.



8-10 ENGINE BOTTOM END/TRANSMISSION

Crankcase

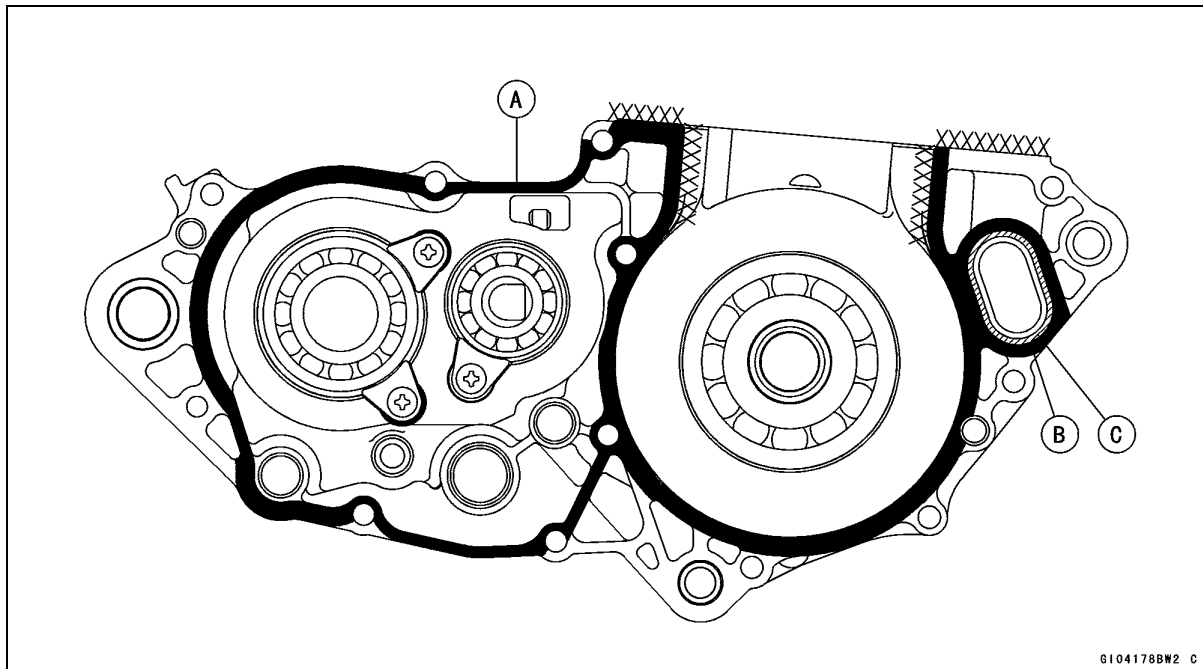
- Apply liquid gasket to the mating surface [A] of the crankcase half.

Sealant - Kawasaki Bond (Liquid Gasket - Silver): 92104-002

- Apply liquid gasket [B] to the outside of O-ring seating surface [C].
- After fitting the left case on the right case, wipe off any excess liquid gasket, shown with X marks.

NOTE

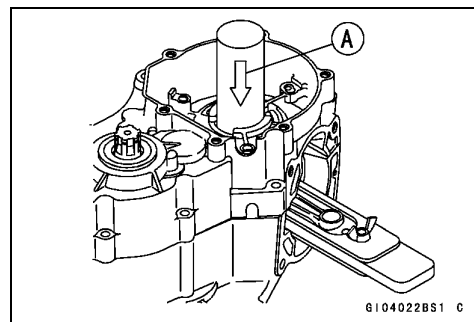
- *Make the application finish within 30 minutes when the liquid gasket to the mating surface of left crankcase half is applied.*



- Using a suitable tool on the left crankcase to press [A] around the hole for the crankshaft, fit the crankcase halves together with a press on the tool.

NOTE

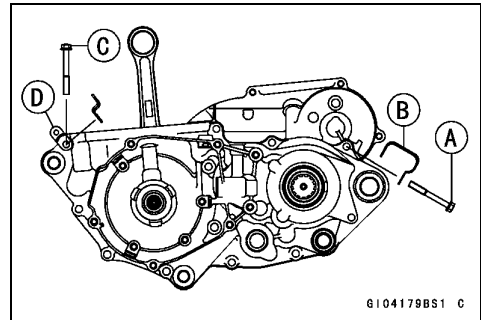
- *Constantly check the alignment of the two crankcase halves, and the position of the transmission shafts, and shift drum. The front and rear of the crankcase must be pushed together evenly.*



Crankcase

- Remove the crankshaft jig from the flywheels.
- Tighten the crankcase bolts starting with the ones around the crankshaft, and then the farther ones.
- At this time, tighten the crankcase bolt [A] and clamp [B] for the breather hoses together.
- At this time, tighten the crankcase bolt [C] and plate [D] for the exhaust pipe holding spring together.

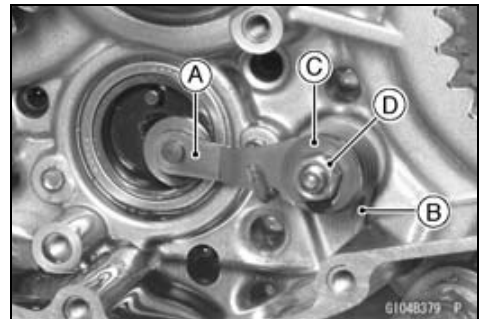
Torque - Crankcase Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)



- Check to see that the crankshaft, drive shaft, and output shaft all turn freely (in the neutral position).
- ★ If the crankshaft will not turn, probably the crankshaft is not centered; tap the appropriate end of the crankshaft with a mallet to reposition it.

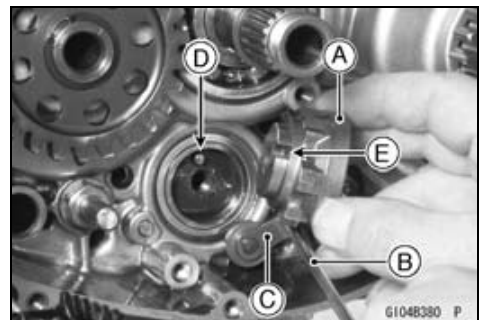
- Install the gear set lever [A].
- Fit each end of the spring [B] or original positions.
- Do not forget to install the collar and washer [C].
- Tighten the gear set lever nut [D].

Torque - Gear Set Lever Nut: 8.8 N·m (0.9 kgf·m, 78 in·lb)



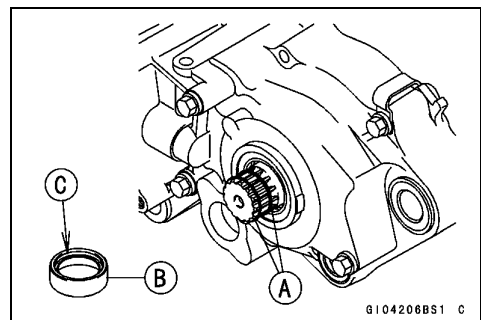
- To install the shift drum cam [A], use the driver [B] to bring the gear set lever [C] to the bottom of the crankcase.
- Mate the shift drum pin [D] into the shift drum hole.
- Fit the groove [E] of the shift drum cam on the shift drum pin.
- Apply non-permanent locking agent to the shift drum cam bolts and tighten them.

Torque - Shift Drum Operating Cam Bolt: 24 N·m (2.4 kgf·m, 17 ft·lb)



- Check to see that gears shift smoothly from 1st to 5th gear, and 5th to 1st while spinning the output shaft.
- Set the shift drum in the neutral position.

- Replace the O-rings [A] on the output shaft with new ones.
- Install two O-rings on the grinding faces of the output shaft while expanding the O-ring by the hand.
- Apply grease to the inside of the output shaft collar [B].
- Insert the collar with the oil groove end facing [C] in.
- Install the other removed parts.



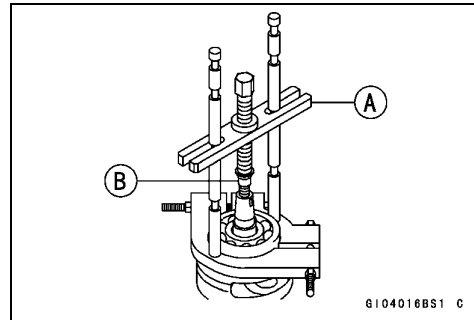
8-12 ENGINE BOTTOM END/TRANSMISSION

Crankshaft, Connecting Rod

Crankshaft Removal

- Split the crankcase (see Crankcase Splitting).
- Remove the transmission shafts (see Transmission Shaft Removal).
- Using a press, remove the crankshaft from the right crankcase.
- If the bearings stay on the crankshaft when splitting the crankcase or removing the crankshaft from the right crankcase, remove the bearings from the crankshaft with a bearing puller [A] and adapter [B].

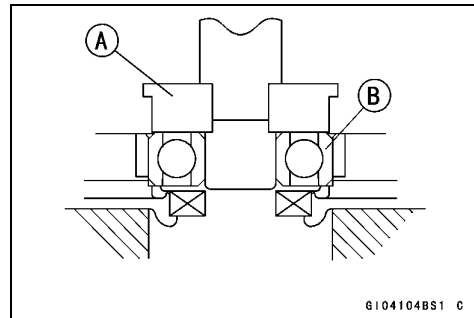
Special Tools - Bearing Puller: 57001-158
Bearing Puller Adapter: 57001-136



Crankshaft Installation

- When installing the crankshaft bearings [B], apply high temperature grease to the outer sides of the bearings, and then press them into the crankcase using the bearing driver [A] until the bearing bottoms against the step.
- Position the crankcase half so that the main bearing housing is seated on a suitable press fixture.
- Install the crankshaft bearing so that the mark side faces out.

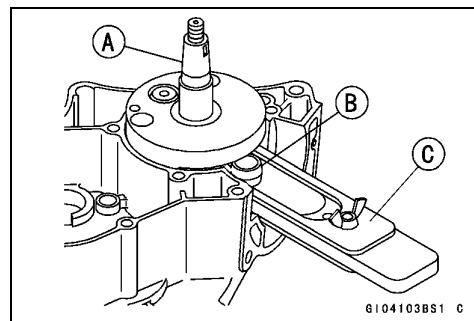
Special Tool - Bearing Driver Set: 57001-1129



- Insert the crankshaft jig [C] between the crankshaft flywheels opposite the connecting rod [B] big end to protect flywheel alignment as shown, and press the crankshaft [A] into the right crankcase.
- When pressing, position the jig in the crankcase opening so the jig does not hit the crankcase.

Special Tool - Crankshaft Jig: 57001-1174

- Apply 2-stroke oil to the connecting rod big end bearing.



Crankshaft Disassembly

Since assembly of the crankshaft demands exacting tolerances, the disassembly and reassembly of the crankshaft can only be done by a shop having the necessary tools and equipment.

- If it should be necessary to disassemble the crankshaft, use a press to remove the crankpin.

Crankshaft Assembly

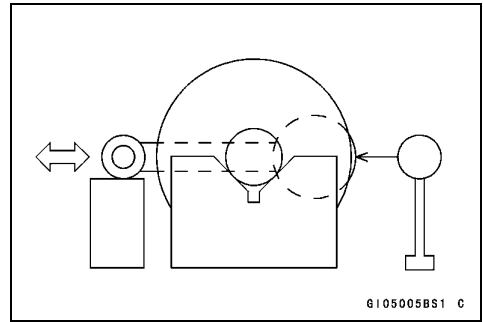
Since the assembly of the crankshaft demands exacting tolerances, the disassembly and reassembly of the crankshaft can only be done by a shop having the necessary tools and equipment.

- Reassemble the crankshaft according to the standard tolerances in Specifications.
- Connecting rod bend, twist
- Connecting rod big end radial clearance.
- Cold-fitting tolerance between crankpin and flywheels.
- Side clearance between the connecting rod big end and one of flywheels.
- Crankshaft runout.

Crankshaft, Connecting Rod

Connecting Rod Big End Radial Clearance

- Set the crankshaft in a flywheel alignment jig or on V blocks, and place a dial gauge against the connecting rod big end.
- Push the connecting rod first towards the gauge and then in the opposite direction. The difference between the two gauge readings is the radial clearance.
- ★ If the radial clearance exceeds the service limit, the crankshaft should be either replaced or disassembled and the crankpin, needle bearing, and connecting rod big end examined for wear.



Connecting Rod Big End Radial Clearance

Standard: 0.037 ~ 0.049 mm (0.0015 ~ 0.0019 in.)

Service Limit: 0.10 mm (0.004 in.)

Connecting Rod Big End Seizure

- ★ In case of serious seizure with damaged flywheels, the crankshaft must be replaced.
- ★ In case of less serious damage, disassemble the crankshaft and replace the crankpin, needle bearing, side washers, and connecting rod.

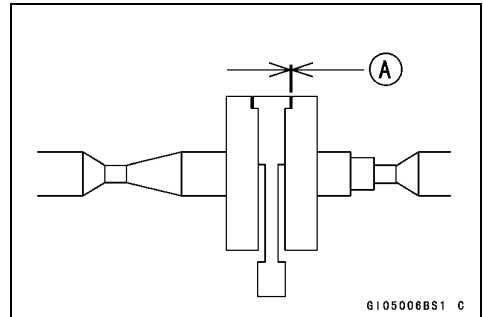
Connecting Rod Big End Side Clearance

- Measure the side clearance [A] of the connecting rod with a thickness gauge.
- ★ If the clearance exceeds the service limit, replace the crankshaft.

Connecting Rod Big End Side Clearance

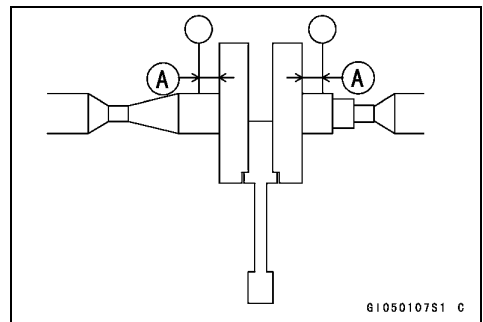
Standard: 0.45 ~ 0.55 mm (0.0177 ~ 0.0217 in.)

Service Limit: 0.70 mm (0.028 in.)



Crankshaft Runout

- Set the crankshaft in a flywheel alignment jig or on V blocks, and place a dial gauge against the points indicated.
- Turn the crankshaft slowly. The maximum difference in gauge readings is the crankshaft runout.
- ★ If the runout at either point exceeds the service limit, align the flywheels so that the runout falls within the service limit.



Crankshaft Runout

Standard: TIR 0.03 mm (0.0012 in.) or less

Service Limit: TIR 0.05 mm (0.002 in.)

(A): 8.5 mm (0.335 in.)

8-14 ENGINE BOTTOM END/TRANSMISSION

Crankshaft, Connecting Rod

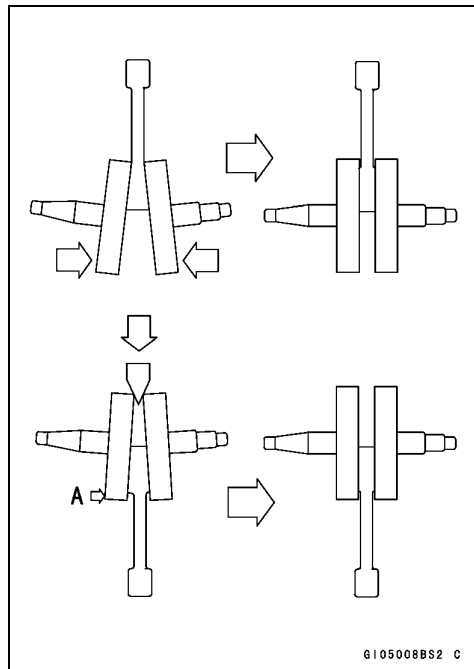
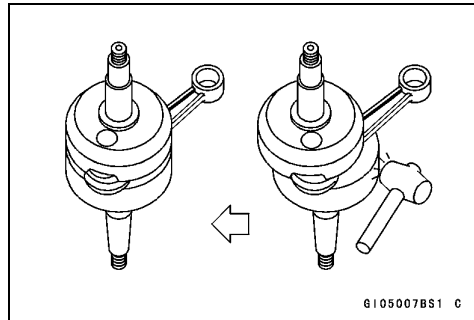
Crankshaft Alignment

- In the case of horizontal misalignment, which is the most common, strike the projecting rim of the flywheel with a plastic, soft lead, or brass hammer as indicated in the figure.
- Recheck the runout with a dial gauge, repeating the process until the runout falls within the service limit.
- Vertical misalignment is corrected either by driving a wedge in between the flywheels or by squeezing the flywheel rims in a vise, depending on the nature of the misalignment. In cases of both horizontal and vertical misalignment, correct the horizontal misalignment first.

CAUTION

Don't hammer the flywheel at point "A".

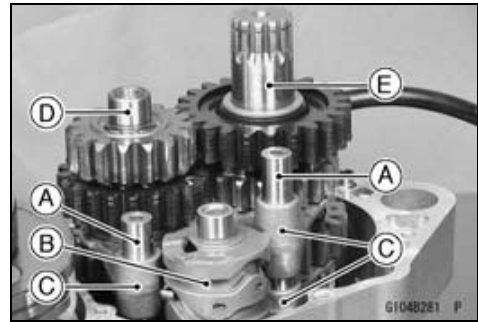
- ★ If flywheel misalignment cannot be corrected by the above method, replace the crankpin or the crankshaft itself.



Transmission

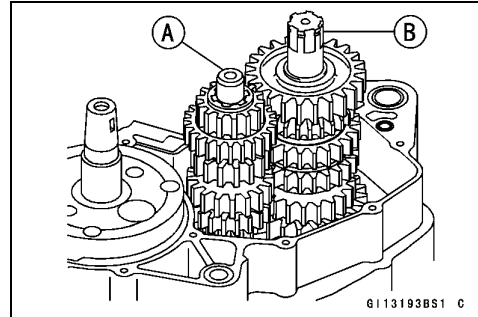
Shaft Removal

- Split the crankcase (see Crankcase Splitting).
- Pull off the shift rods [A], and disengage the shift fork guide pins from the shift drum grooves.
- Remove the shift drum [B]
- Remove the shift forks [C] from the transmission gears.
- Take out the drive shaft [D] and output shaft [E] together, with their gears meshed.



Shaft Installation

- Hold the drive shaft [A] and output shaft [B] together, with their gears meshed, and fit them into the right crankcase half.
- To install the shift forks and shift drum (see Shift Drum and Fork Installation).



Shaft Disassembly

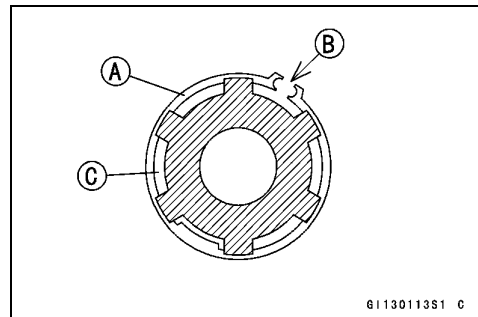
- Remove the transmission shafts (see Shaft Removal).
- Using circlip pliers to remove the circlips, disassemble the transmission shaft.

Special Tool - Outside Circlip Pliers: 57001-144

Shaft Assembly

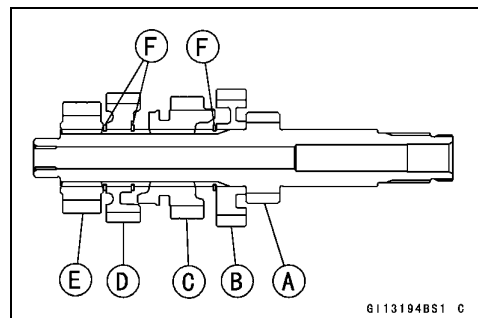
- Apply engine oil liberally to the transmission shaft, gears and bearings.
- Replace any circlips that were removed with new ones.
- Always install circlips [A] so that the opening [B] is aligned with a spline groove [C].

Special Tool - Outside Circlip Pliers: 57001-144



- The drive shaft gears can be identified by size; the smallest diameter gear is 1st gear, and the largest is 5th. Be sure that all parts are put back in the correct sequence, and facing the proper direction, and that all circlips and the washers are properly in place.

- 1st gear (15T; part of drive shaft)
- 5th gear (23T; dog recesses face left)
- 3rd gear (17T; fork groove goes to the left side of the gear teeth)
- 4th gear (21T; dog recesses face right)
- 2nd gear (16T; chamfered side faces right)
- Circlip



- The output shaft gears can be identified by size; the largest diameter gear is 1st gear, and the smallest is 5th. Be sure that all parts are put back in the correct sequence and facing the proper direction, and that all circlips are properly in place.

8-16 ENGINE BOTTOM END/TRANSMISSION

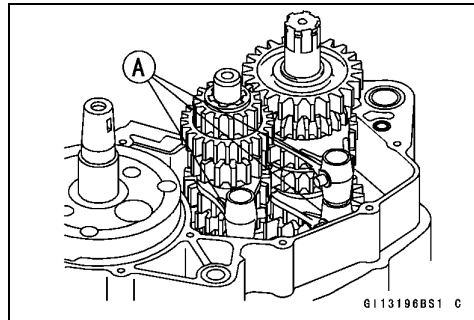
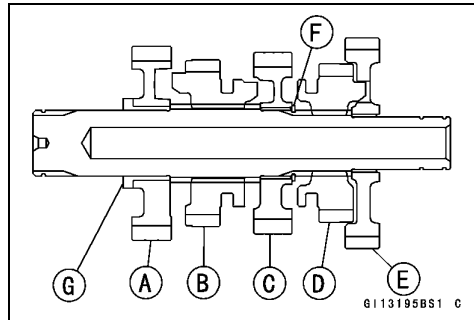
Transmission

- A. 2nd gear (23T; dog recesses face right)
- B. 4th gear (21T; fork groove goes to the right side of the gear teeth)
- C. 3rd gear (20T; dog recesses face left)
- D. 5th gear (20T; fork groove goes to the left side of the gear teeth)
- E. 1st gear (27T; dog recesses face left)
- F. Circlip
- G. Collar

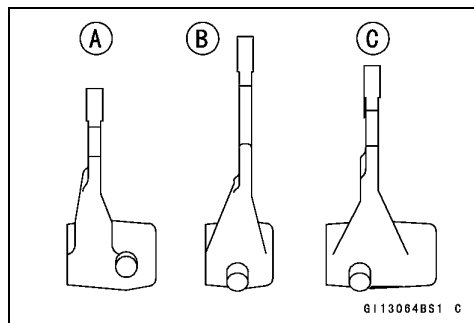
- Check that each gear spins or slides freely on the transmission shaft without binding after assembly.

Shift Drum and Fork Installation

- Apply a little transmission oil to the shift fork [A] ears, and fit the shift forks into the gear grooves.

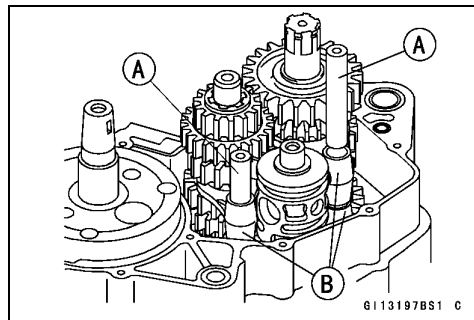


Drive shaft 3rd gear and 4th gear shift fork [A]	ears are shorter than those of the other two shift forks
Output shaft 4th gear shift fork [B]	guide pin goes to center side of the ears
Output shaft 5th gear shift fork [C]	guide pin goes to left side of the ears



- Tighten the shift drum bearing retaining screws or bolts.
Torque - Shift Drum Bearing Retaining bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)
- Install the shift drum [A].
- Fit the shift fork guide pins into the corresponding shift drum grooves.
- Apply a little engine oil to the shift rods [A], and slide them into the shift forks [B].
- Holding the shift drum with the suitable tool and tighten the shift drum operating plate bolt.

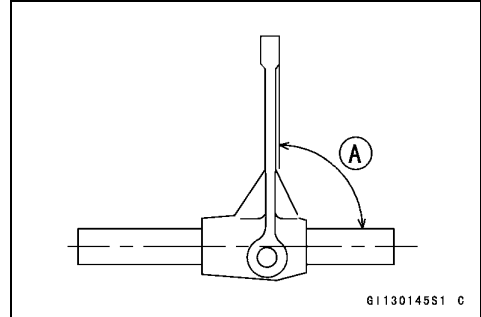
Torque - Shift Drum Operating Cam Bolt: 24 N·m (2.4 kgf·m, 17 ft·lb)



Transmission

Shift Fork Bending

- Visually inspect the shift forks, and replace any fork that is bent. A bent fork could cause difficulty in shifting, or allow the transmission to jump out of gear when under power.
- A. 90°



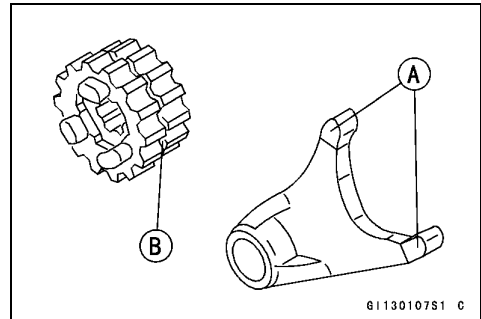
Shift Fork/Gear Groove Wear

- Measure the thickness of the shift fork ears [A], and measure the width [B] of the shift fork grooves in the transmission gears.
- ★ If the thickness of a shift fork ear is less than the service limit, the shift fork must be replaced.

Shift Fork Ear Thickness

Standard: 4.40 ~ 4.50 mm (0.1732 ~ 0.1772 in.)

Service Limit: 4.3 mm (0.169 in.)



- ★ If a gear shift fork groove is worn over the service limit, the gear must be replaced.

Shift Fork Groove Width

Standard: 4.55 ~ 4.65 mm (0.1791 ~ 0.1830 in.)

Service Limit: 4.75 mm (0.187 in.)

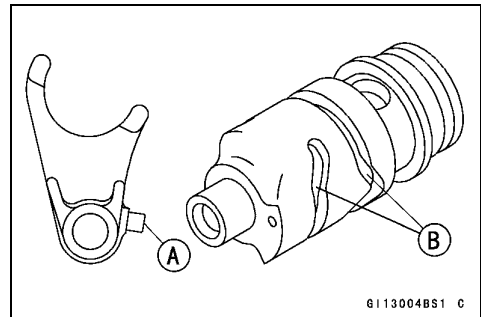
Shift Fork Guide Pin/Shift Drum Groove Wear

- Measure the diameter [A] of each shift fork guide pin, and measure the width [B] of each shift drum groove.
- ★ If the guide pin on any shift fork is less than the service limit, the fork must be replaced.

Shift Fork Guide Pin Diameter

Standard: 5.90 ~ 6.00 mm (0.2323 ~ 0.2362 in.)

Service Limit: 5.80 mm (0.228 in.)



- ★ If any shift drum groove is worn over the service limit, the drum must be replaced.

Shift Drum Groove Width

Standard: 6.05 ~ 6.20 mm (0.2382 ~ 0.2440 in.)

Service Limit: 6.25 mm (0.246 in.)

Gear Damage

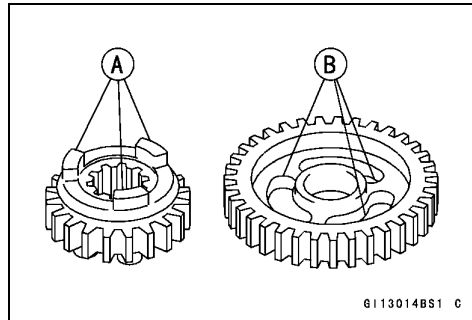
- Visually inspect the gear teeth on the transmission gears.
- ★ Repair lightly damaged gear teeth with an oilstone. The gear must be replaced if the teeth are badly damaged.
- ★ When gear is repaired or replaced, the driving gear should also be inspected and repaired or replaced if necessary.

8-18 ENGINE BOTTOM END/TRANSMISSION

Transmission

Gear Dog/Gear Dog Hole Damage

- Visually inspect the gear dogs [A] and gear dog holes [B].
- ★ Replace any damaged gears or gears with excessively worn dogs or dog holes.



Ball Bearing Wear

- Check the ball bearing on the crankcase.
- ★ Since the ball bearings are made to extremely close tolerances, the wear must be judged by feel rather than measurement. Clean each bearing in a high flash-point solvent, dry it (do not spin the bearing while it is dry), and oil it with engine oil.
- Spin the bearing by hand to check its condition.
- ★ If the bearing is noisy, does not spin smoothly, or has any rough spots, replace it.

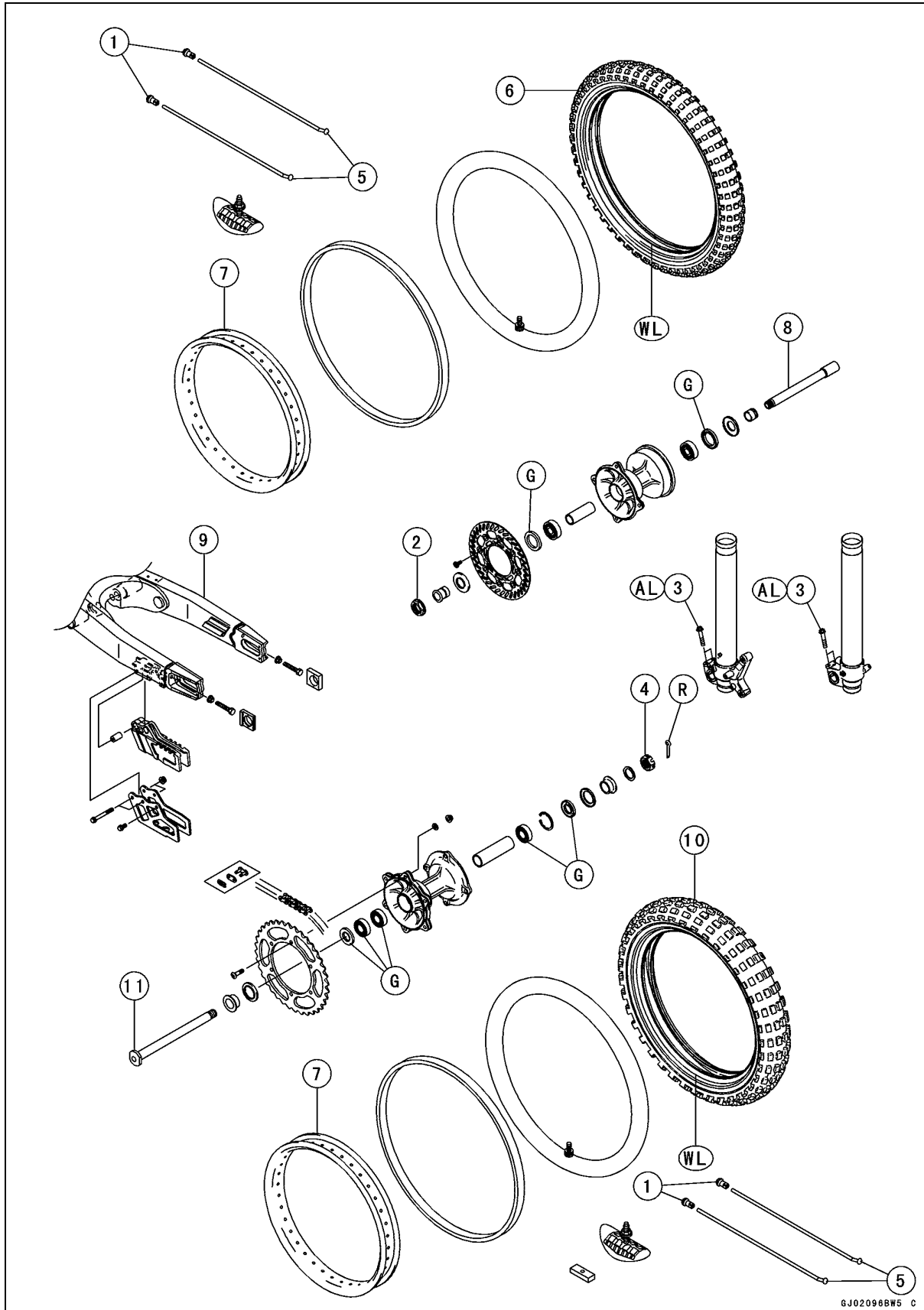
Wheels/Tires

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9-2 WHEELS/TIRES

Exploded View



GJ02096BWS C

Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Spoke Nipple	2.2	0.22	19 in·lb	
2	Front Axle Nut	78	8.0	58	
3	Front Axle Clamp Bolts	20	2.0	14.5	AL
4	Rear Axle Nut	110	11.0	80	

5. Spoke

6. Front Tire

7. Rim

8. Front Axle

9. Swingarm

10. Rear Tire

11. Rear Axle

AL: Tighten the two clamp bolts alternately two times to ensure even tightening torque.

G: Apply grease.

R: Replacement Part

WL: Apply soap and water solution, or rubber lubricant.

9-4 WHEELS/TIRES

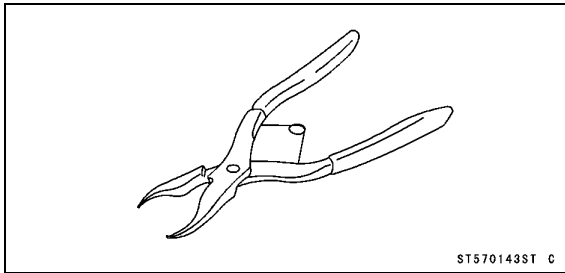
Specifications

Item	Standard	Service Limit
Wheels (Rims)		
Rim Size:		
Front	21 × 1.60	---
Rear	19 × 2.15	---
Rim Runout		
Axial	TIR 1.0 mm (0.039 in.) or less	TIR 2 mm (0.079 in.)
Radial	TIR 1.0 mm (0.039 in.) or less	TIR 2 mm (0.079 in.)
Axle Runout/100 mm	0.1 mm (0.004 in.)	0.2 mm (0.008 in.)
Tires Air Pressure		
Front and Rear	100 kPa (1.0 kgf/cm ² , 14 psi)	---
Tires		
Standard Tire		
Front:		
Size	80/100-21 51M	---
Make	BRIDGESTONE (EUR) DUNLOP	
Type	M401, Tube (EUR) D755F, Tube	
Rear:		
Size	110/90-19 62M	---
Make	BRIDGESTONE (EUR) DUNLOP	
Type	M402, Tube (EUR) D755, Tube	

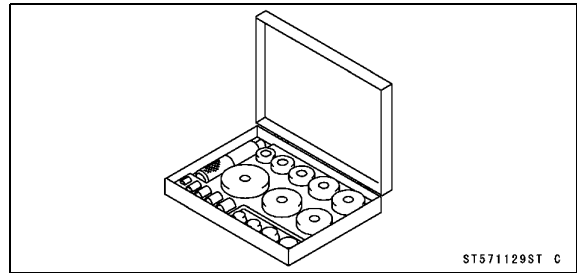
EUR: Europe Model

Special Tools

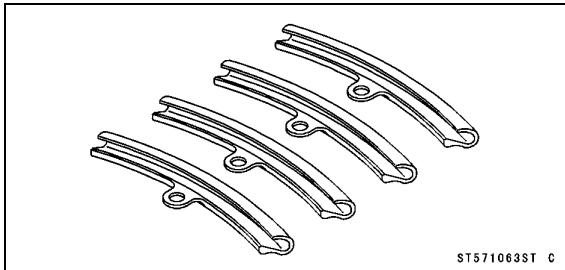
Inside Circlip Pliers:
57001-143



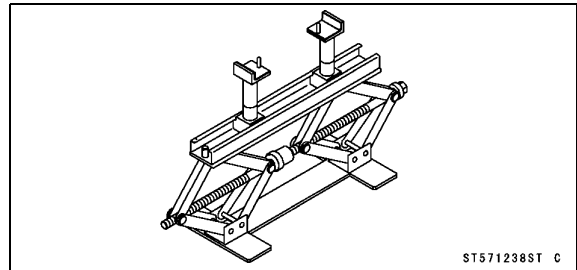
Bearing Driver Set:
57001-1129



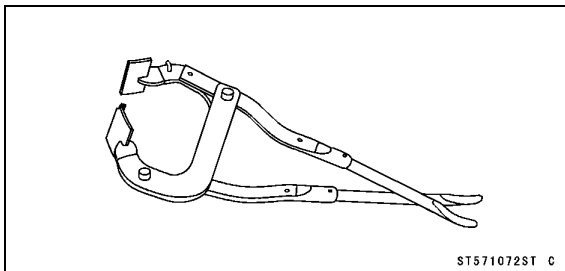
Rim Protector:
57001-1063



Jack:
57001-1238



Bead Breaker Assembly:
57001-1072



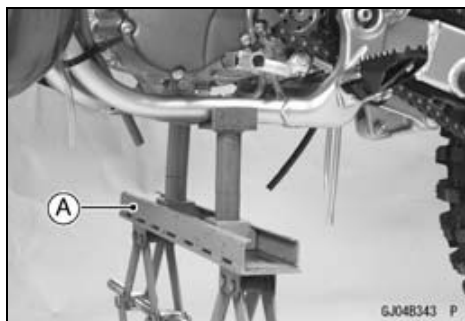
9-6 WHEELS/TIRES

Wheels (Rims)

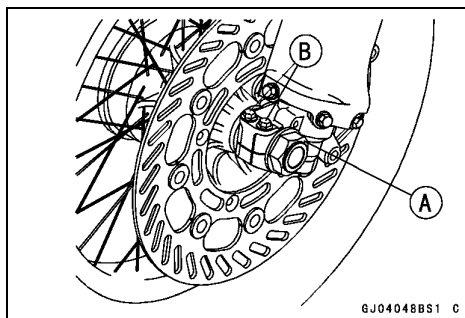
Front Wheel Removal

- Using the jack [A] under the frame, and stabilize the motorcycle.

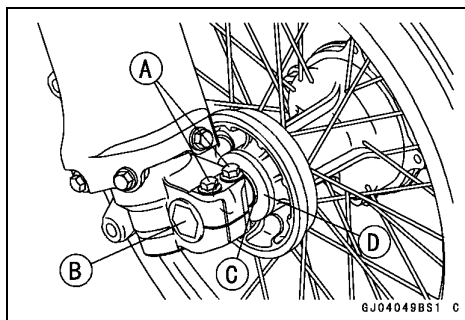
Special Tool - Jack: 57001-1238



- Unscrew the axle nut [A].
- Loosen the left axle clamp bolts [B].



- Loosen the right axle clamp bolts [A].
- Place a stand under the engine to raise the front wheel off the ground.
- Remove the axle [B], and pull out the wheel. Take off the collar [C] and cap [D] from each side of the front hub.



CAUTION

Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so the disc does not touch the ground.

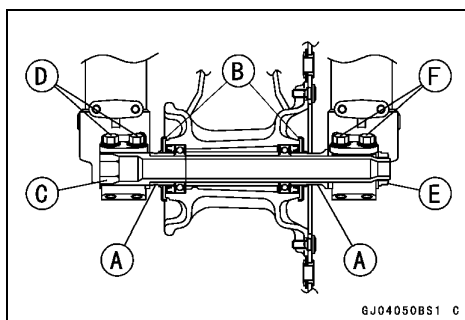
- Insert a wood wedge between the disc brake pads this prevents them from being moved out of their proper position, should the brake lever be squeezed accidentally.

Front Wheel Installation

- Apply grease to the seals.
- Fit the projection on the cap to the groove on the collar.
- Install the caps [B] collars [A] on the left (longer collar) and right (shorter collar) side of the hub.
- Insert the axle [C] from right side.
- Unbolt the right axle clamp bolts [D] temporarily.
- Tighten the axle nut [E].
- Tighten the left axle clamp bolts [F].

Torque - Front Axle Nut: 78 N·m (8.0 kgf·m, 58 ft·lb)

Left Axle Clamp Bolts : 20 N·m (2.0 kgf·m, 14.5 ft·lb)



NOTE

- Tighten the two clamp bolts alternately two times to ensure even tightening torque.

Wheels (Rims)

- Remove the jack.
- Before tightening the clamp bolts on the right fork leg, pump the forks up and down [A] 4 or 5 times to allow the right fork leg to find a neutral position on the front axle.

NOTE

○ Do not apply the front brake during this process to stop the motorcycle from rolling forward. Put a block [B] in front of the wheel to stop it from moving.

- Tighten the right axle clamp bolts.

Torque - Front Axle Clamp Bolts: 20 N·m (2.0 kgf·m, 14.5 ft·lb)

NOTE

○ Tighten the two clamp bolts alternately two times to ensure even tightening torque.

- Check the front brake for good braking power and no brake drag.

⚠ WARNING

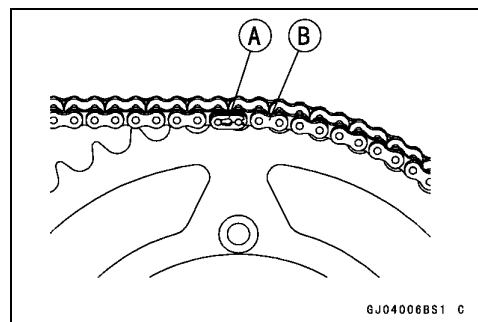
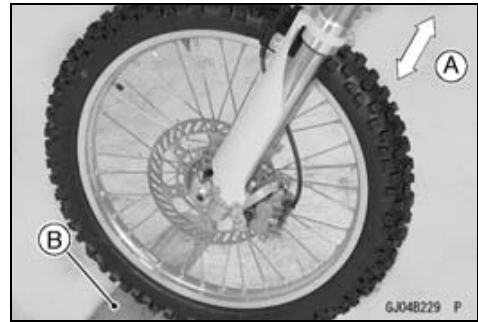
Do not attempt to drive the motorcycle until a full brake lever is obtained by pumping the brake lever until the pads are against the disc. The brake will not function on the first application of the lever if this is not done.

Rear Wheel Removal

- Using the jack under the frame so that the rear wheel is raised off the ground.

Special Tool - Jack: 57001-1238

- Remove the clip [A] from the master link using pliers, and free the drive chain [B] from the rear sprocket.



9-8 WHEELS/TIRES

Wheels (Rims)

- Remove:
 - Disc Cover [A]
 - Cotter Pin [B]
 - Axle Nut [C]
- Pull out the axle [D].
- Move the rear wheel back with the rear caliper installed.
- Take off the collar and cap from the each side of the rear hub.

CAUTION

Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so the disc does not touch the ground.

- Insert a wood wedge between the brake pads. This prevents them from being moved out of their proper position, should the brake pedal be squeezed accidentally.

Rear Wheel Installation

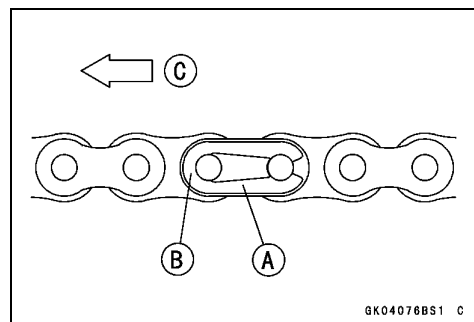
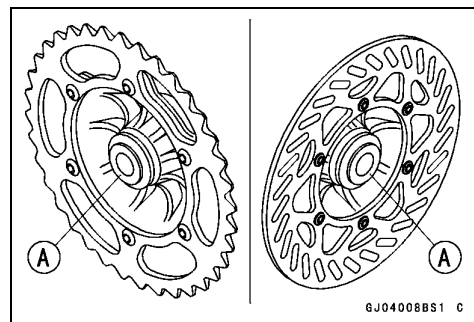
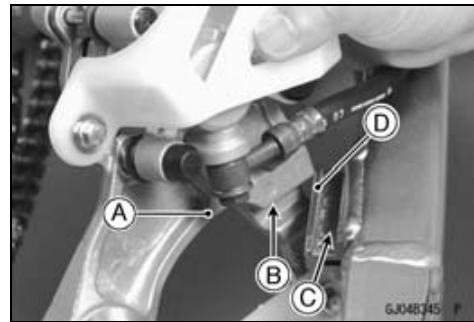
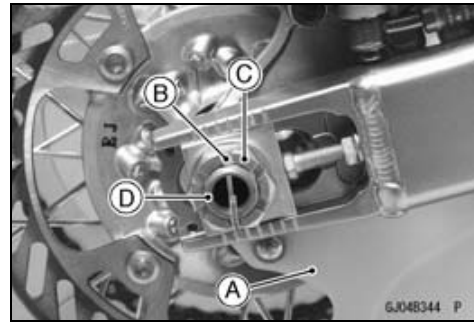
- Fit the brake holder stop [A] with the stop grooves [B] against the swingarm stop space [C] with the stop projection [D].

- Fit the projection on the cap to the groove on the collar.
- Install the collars [A] on the left and right side of the hub.

- Install the drive chain. Install the master link clip [A] so that the closed end of the "U" [B] points in the direction of chain rotation [C].

- Check the drive chain slack (see Final Drive chapter).
- Tighten the axle nut.

Torque - Rear Axle Nut: 110 N·m (11 kg·m, 80 ft·lb)

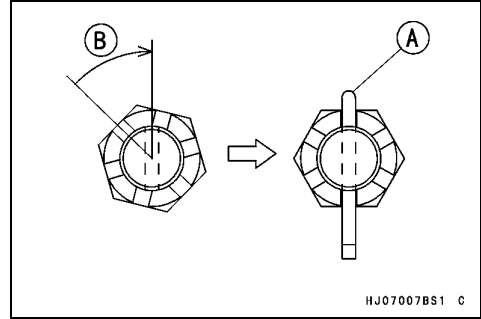


Wheels (Rims)

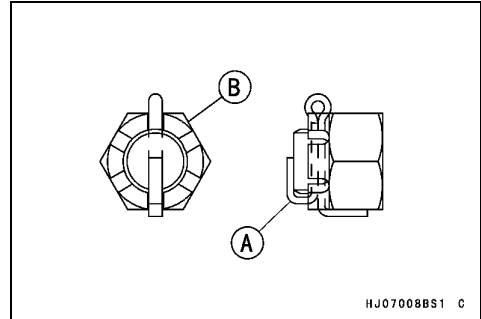
- Install the new cotter pin [A] and spread its end.

NOTE

- When inserting the cotter pin, if the slots in the nut do not align with the cotter pin hole in the axle shaft, tighten the nut clockwise [B] up to next alignment.
- It should be within 30 degree.
- Loosen once tighten again when the slot goes past the nearest hole.



- Bend the cotter pin [A] over the nut [B].



- Install disc cover.
- Check the rear brake for good braking power and no brake drag.

▲ WARNING

Do not attempt to drive the motorcycle until a full brake pedal is obtained by pumping the brake pedal until the pads are against the disc. The brake will not function on the first application of the pedal if this is not done.

Wheels Inspection

- Place the jack under the frame so that the front/rear wheel is raised off the ground.

Special Tool - Jack: 57001-1238

- Spin the wheel lightly, and check for roughness or binding.
- ★ If roughness or binding is found, replace the hub bearings.
- Visually inspect the front and rear axles for damage.
- ★ If axle is damaged or bent, replace it.

Spoke Tightness Inspection

- Refer to the Spoke Tightness Inspection in the Periodic Maintenance chapter.

Rim Runout Inspection

- Refer to the Rim Runout Inspection in the Periodic Maintenance chapter.

9-10 WHEELS/TIRES

Wheels (Rims)

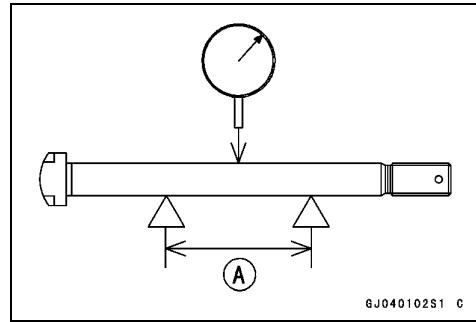
Axle Inspection

- Visually inspect the front and rear axle for damages.
- ★ If the axle is damaged or bent, replace it.
- Place the axle in V blocks that are 100 mm (3.937 in.) [A] apart, and set a dial gauge on the axle at a point halfway between the blocks. Turn the axle to measure the runout. The difference between the highest and lowest dial readings is the amount of runout.
- ★ If runout exceeds the service limit, replace the axle.

Axle Runout/100 mm (3.937 in.)

Standard: TIR 0.1 mm (0.004 in.) or less

Service Limit: TIR 0.2 mm (0.008 in.)



Tires

Air Pressure Inspection/Adjustment

- Refer to the Air Pressure Inspection/Adjustment in the Periodic Maintenance chapter.

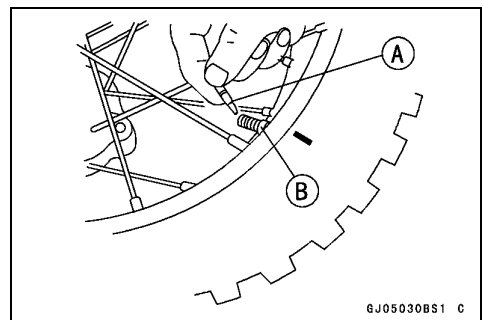
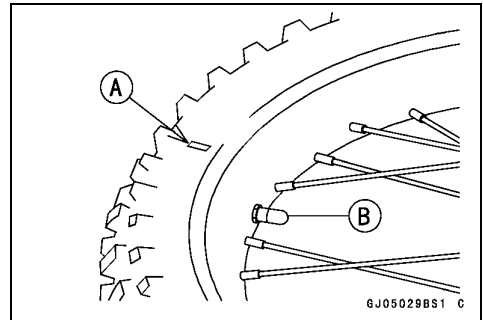
Tires Inspection

- Refer to the Tire Inspection in the Periodic Maintenance chapter.

Tire Removal

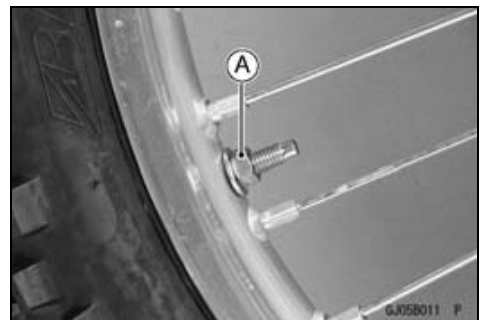
CAUTION
Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so the disc does not touch the ground.

- Remove the wheel from the motorcycle (see Wheels Removal).
 - To maintain wheel balance, mark [A] the valve stem position on the tire with chalk so that the tire can be reinstalled in the same position.
 - Remove the valve cap [B].
 - Take out the valve core [A] to let out the air.
 - Remove the valve stem nut [B].
- When handling the rim, be careful not to damage the rim flanges.

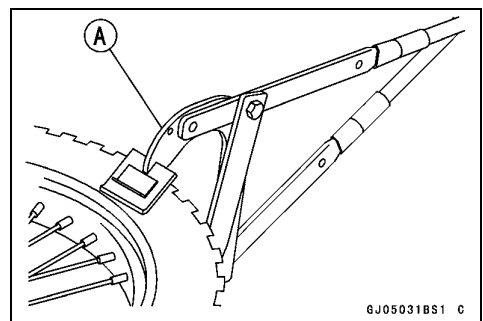


- Loosen the bead protector nut [A].
- Lubricate the tire beads and rim flanges on both sides with a soap and water solution or rubber lubricant. This helps the tire beads slip off the rim flanges.

CAUTION
Never lubricate with mineral oil (engine oil) or gasoline because they will cause deterioration of the tire.



- Break the beads away from both sides of the rim with the bead breaker [A].
- Special Tool - Bead Breaker Assembly: 57001-1072**



9-12 WHEELS/TIRES

Tires

- Step on the side of the tire opposite valve stem, pry the tire off the rim with the tire iron [A] of the bead breaker protecting the rim with rim protectors [B].

Special Tools - Rim Protector: 57001-1063

Bead Breaker Assembly: 57001-1072

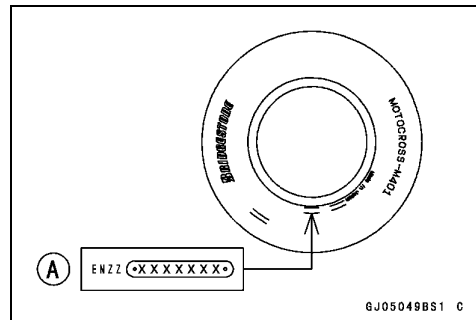
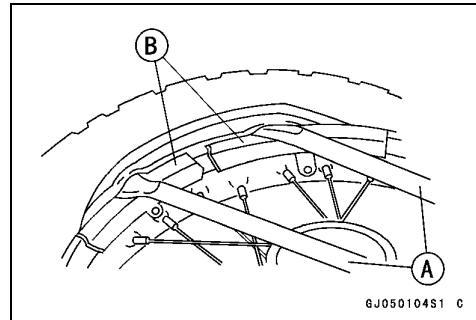
CAUTION

Take care not to inset the tire irons so deeply that the tube gets damaged.

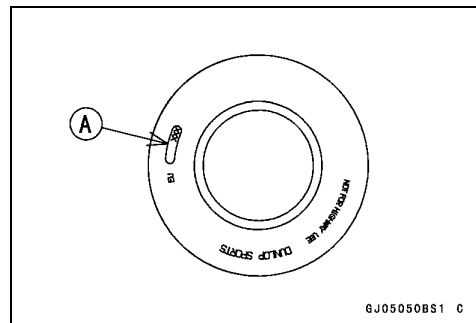
- Remove the tube when one side of the tire is pried off.
- Pry the tire off the rim.

Installation

- Inspect the rim and tire, and replace them if necessary.
- Install the tube band and tube.
- Apply a soap and water solution, or rubber lubricant to the rim flange and tire beads.
- Position the tires on the rims so that the serial numbers [A] face the left.



- For the European model, position the tires on the rims so that the indications of manufacture week [A] face the left.

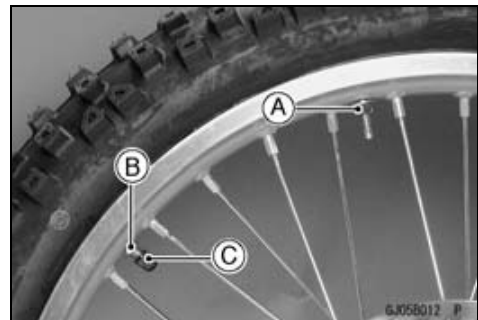
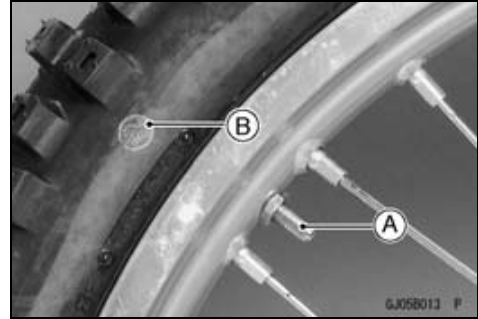


Tires

- Position the tire on the rim so that the valve [A] is at the tire balance mark [B] (the chalk mark made during removal, or the yellow paint mark on a new tire. see Removal).
- Insert the valve stem into the rim, and screw the nut on loosely.
- Fit the rim protectors and use tire irons to install the tire bead.

NOTE

- To prevent rim damage, be sure to place the rim protectors at any place the tire irons are applied.
- Pry one side of the tire back onto the rim. Fit the bead protector into the tire.
- Pry the other side of the tire onto the rim, starting at the side opposite the valve.
- Take care not to insert the tire irons so deeply that the tube is damaged.
- Install the other side of the tire bead onto the rim in the same manner.
- Check that the tube is not pinched between the tire and rim.
- Tighten the bead protector nut [A] and valve stem nut [B], and put on the valve cap [C].
- Check and adjust the air pressure after installing.



9-14 WHEELS/TIRES

Hub Bearings

Hub Bearing Removal

- Remove the wheel (see Wheel Removal).

CAUTION

Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so that the disc does not touch the ground.

- Remove the oil seals and circlip.
- Remove the hub bearing by tapping evenly around the bearing inner race as shown.

Bar [A]

Distance Collar [B]

Hub Bearing [C]

Hub Bearing Installation

- Before installing the wheel bearings, blow any dirt or foreign particles out of the hub [B] with compressed air to prevent contamination of the bearings.
- Replace the bearings with new ones.
- Lubricate them and install them using the bearing driver set [A] so that the marked or shielded sides face out.
- Press in the bearings until they are bottomed.

Special Tool - Bearing Driver Set: 57001-1129

- Replace the circlips and oil seals with new ones.
- Press in the oil seals [A] so that the seal surface is flush [B] with the end of the hole.
- Apply high temperature grease to the oil seal lips.

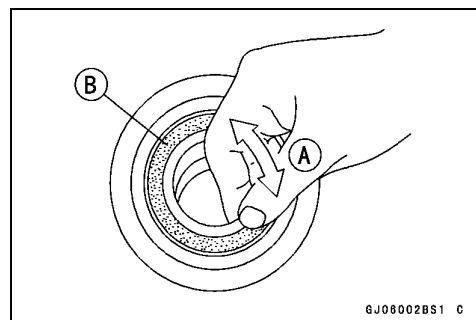
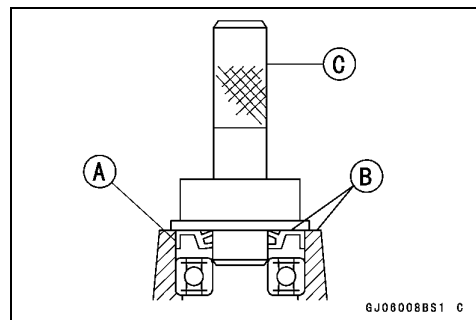
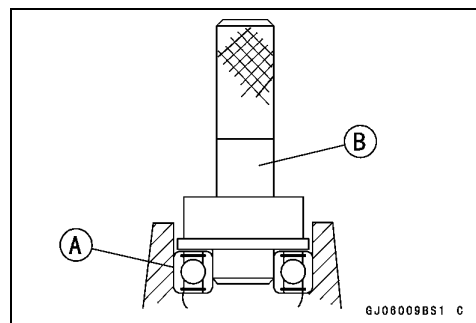
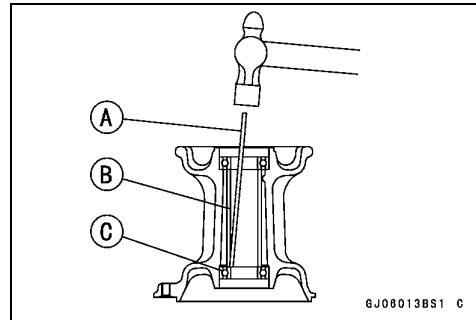
Special Tool - Bearing Driver set : 57001-1129 [C]

Hub Bearing Inspection

NOTE

○ It is not necessary to remove any bearings for inspection. If any bearings are removed, they will need to be replaced with new ones.

- Spin [A] it by hand to check its condition.
- ★ If it is noisy, does not spin smoothly, or has any rough spots, it must be replaced.
- Examine the bearing seal [B] for tears or leakage.
- ★ If the seal is torn or is leaking, replace the bearing.



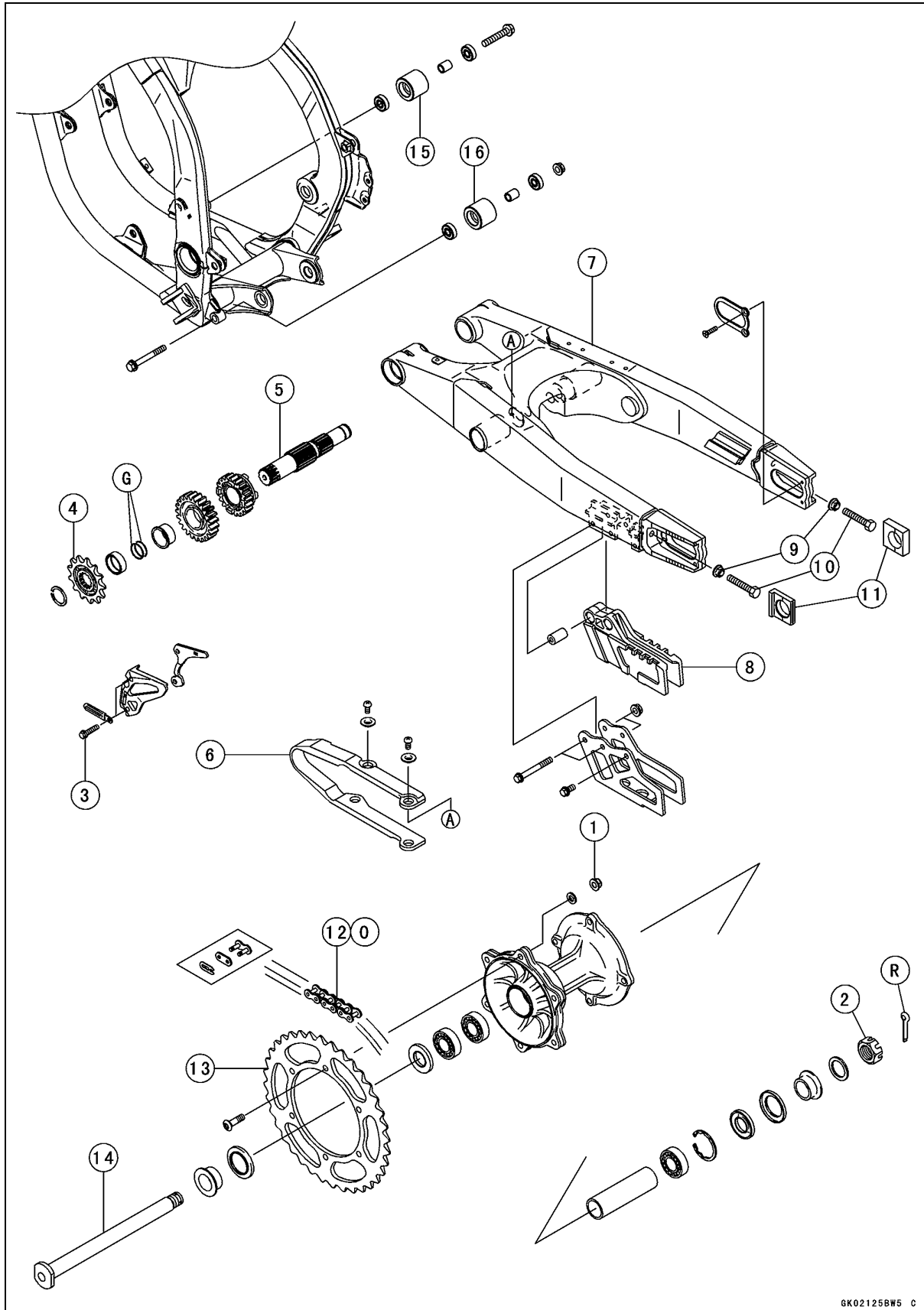
Final Drive

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10-2 FINAL DRIVE

Exploded View



GK02125BWS C

Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Rear Sprocket Nuts	34	3.5	25	
2	Rear Axle Nut	110	11.0	80	
3	Engine Sprocket Cover Bolts	8.8	0.90	78 in·lb	

- 4. Engine Sprocket
- 5. Output Shaft
- 6. Chain Slipper
- 7. Swingarm
- 8. Chain Guide
- 9. Locknut
- 10. Adjusting Bolt
- 11. Chain Adjuster
- 12. Drive Chain
- 13. Rear Sprocket
- 14. Rear Axle
- 15. Upper Chain Guide Roller
- 16. Lower Chain Guide Roller
- G: Apply grease.
- O: Apply oil.
- R: Replacement Part

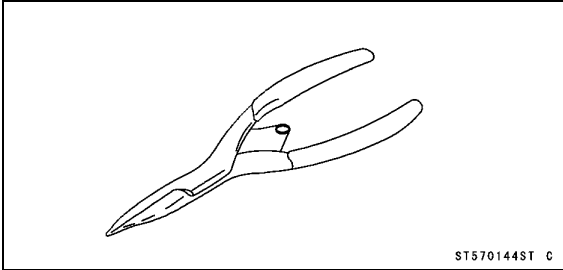
10-4 FINAL DRIVE

Specifications

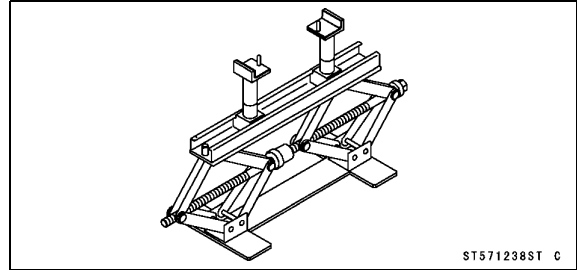
Item	Standard	Service Limit
Drive Chain		
Chain Slack	52 ~ 62 mm (2.05 ~ 2.44 in.)	---
Chain 20-link Length	317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)	323 mm (12.72 in.)
Standard Chain:		
Make	DAIDO	---
Type	DID 520DMA2	---
Length	114 Links	---
Sprocket		
Engine Sprocket Diameter	55.48 ~ 55.68 mm (2.184 ~ 2.192 in.)/13T	54.8 mm (2.157 in.)
Rear Sprocket Diameter	247.64 ~ 248.14 mm (9.750 ~ 9.769 in.)/51T	247.3 mm (9.736 in.)
Rear Sprocket Runout	TIR 0.4 mm (0.016 in.) or less	TIR 0.5 mm (0.020 in.)

Special Tools

Outside Circlip Pliers:
57001-144



Jack:
57001-1238



10-6 FINAL DRIVE

Drive Chain

Drive Chain Slack Inspection

- Refer to the Drive Chain Slack Inspection in the Periodic Maintenance chapter.

Drive Chain Slack Adjustment

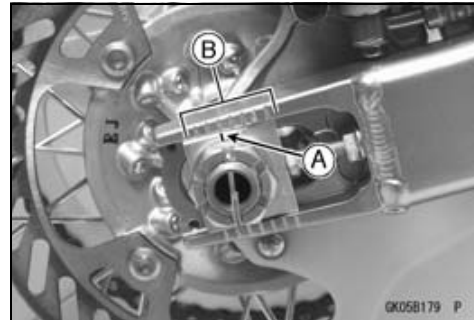
- Refer to the Drive Chain Slack Adjustment in the Periodic maintenance chapter.

Wheel Alignment Inspection

- Check that the notch [A] on the left chain adjuster aligns with the same swing arm mark [B] as the right chain adjuster.

⚠ WARNING

Misalignment of the wheel will result in abnormal wear, and may result in an unsafe riding condition.



Wheel Alignment Adjustment

This procedure is the same as Drive Chain Slack Adjustment.

Drive Chain Wear Inspection

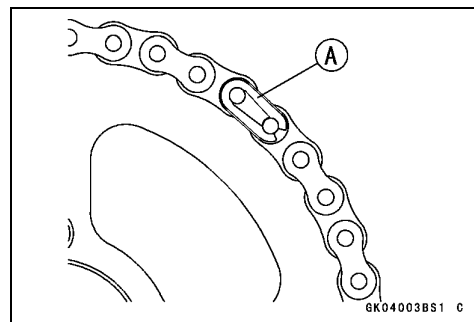
- Refer to the Drive Chain Wear Inspection in the Periodic Maintenance chapter.

Drive Chain Lubrication

- Refer to the Drive Chain Lubrication in the Periodic Maintenance chapter.

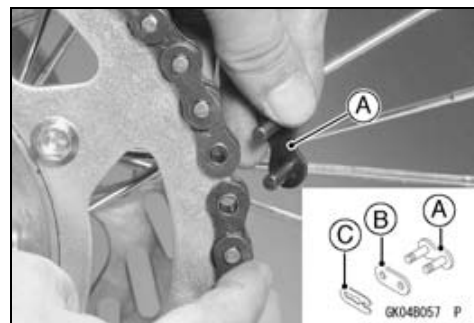
Drive Chain Removal

- Remove the engine sprocket cover and the drive chain guide (see Engine Sprocket Removal in this chapter).
- Remove the clip [A] from the master link using pliers, and free the drive chain from the rear sprocket.
- Remove the drive chain from the chassis.



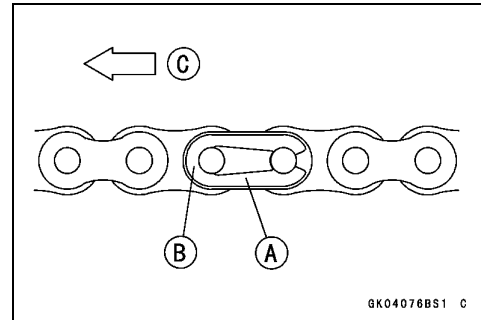
Drive Chain Installation

- Fit the drive chain back onto the sprockets with the ends at the rear sprocket.
- Install the master link [A] from the frame side.
- Install the link plate [B] so that the mark faces out.
Clip [C]



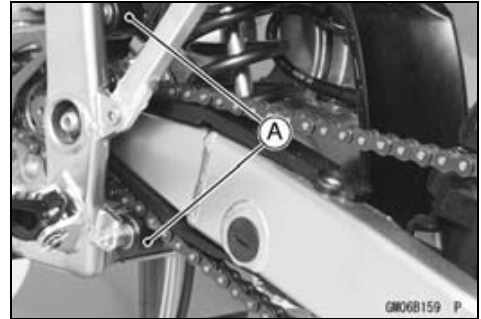
Drive Chain

- Install the clip [A] so that the closed end of the “U” [B] pointed in the direction of chain rotation [C].
- Adjust the drive chain slack (see Drive Chain Slack Adjustment).
- Check the rear brake (see the Brakes chapter).



Drive Chain Guide Roller Wear

- Visually inspect the upper and lower chain guide rollers [A] and replace them if excessively worn or damaged.

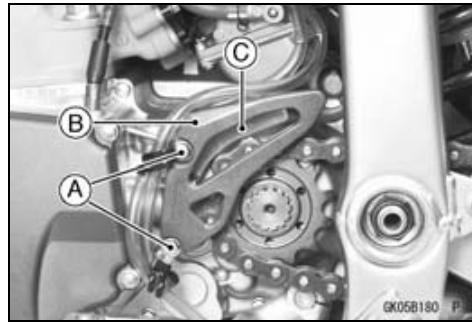


10-8 FINAL DRIVE

Sprockets

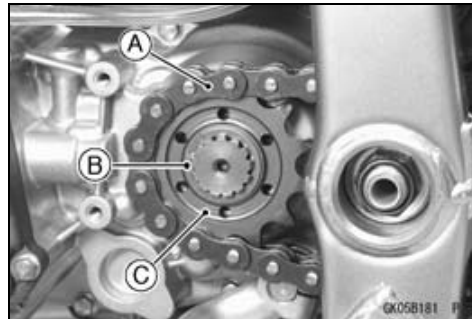
Engine Sprocket Removal

- Remove:
 - Engine Sprocket Cover Bolts [A]
 - Engine Sprocket Cover [B]
 - Drive Chain Guide [C]



- Remove:
 - Drive Chain [A] (free of engine sprocket)
- Remove the circlip [B], and pull off the engine sprocket [C].

Special Tool - Outside Circlip Pliers: 57001-144

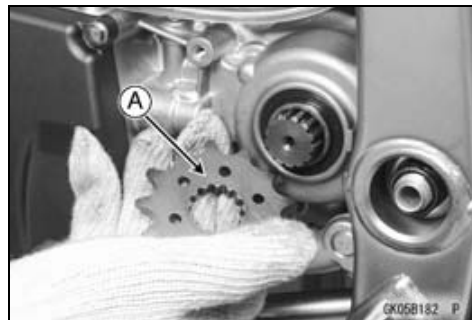


Engine Sprocket Installation

- Install the engine sprocket so that the flatten side faces [A] inside.
- Replace the circlip with a new one.
- Install the circlip so that the tooth is aligned with a spline groove.

Special Tool - Outside Circlip Pliers: 57001-144

- Tighten:
 - Torque - Engine Sprocket Cover Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)**



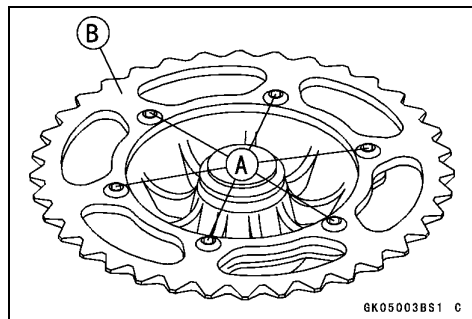
Rear Sprocket Removal

- Remove the rear wheel (see Wheels/Tires chapter).

CAUTION

Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so that the disc does not touch the ground.

- Unscrew the rear sprocket bolts [A], and remove the rear sprocket [B].

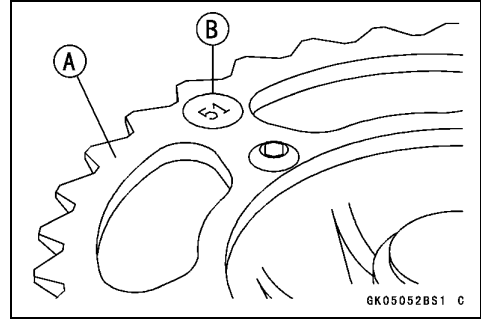


Sprockets

Rear Sprocket Installation

- Install the rear sprocket [A] so that the marked side [B] faces out.
- Install the rear sprocket bolts and tighten the nuts.

Torque - Rear Sprocket Nuts: 34 N·m (3.5 kgf·m, 25 ft·lb)



Sprocket Wear Inspection

- Refer to the Sprocket Wear Inspection in the Periodic Maintenance chapter.

Rear Sprocket Warp Inspection

- Refer to the Rear Sprocket Warp Inspection in the Periodic Maintenance chapter.

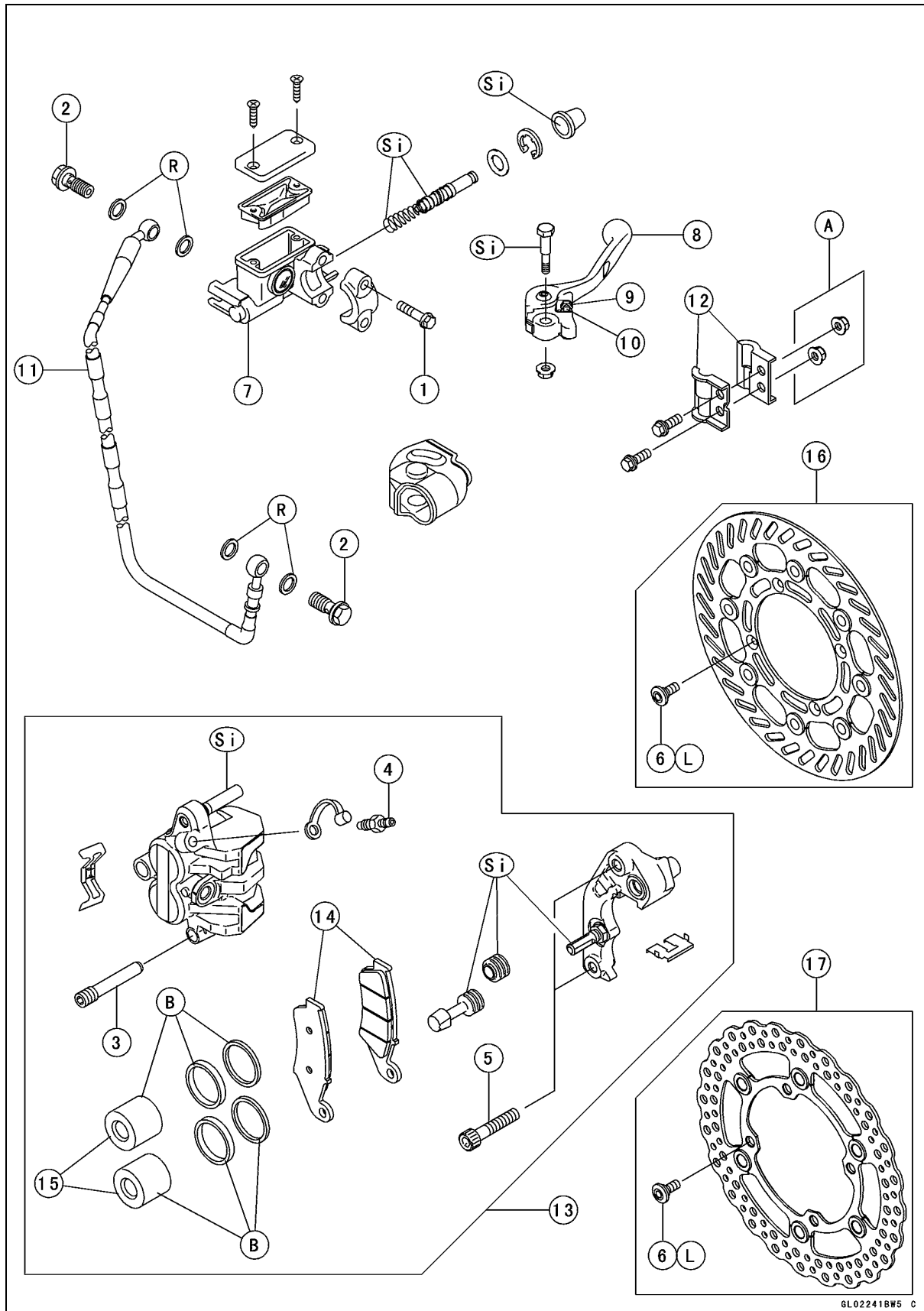
Brakes

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11-2 BRAKES

Exploded View



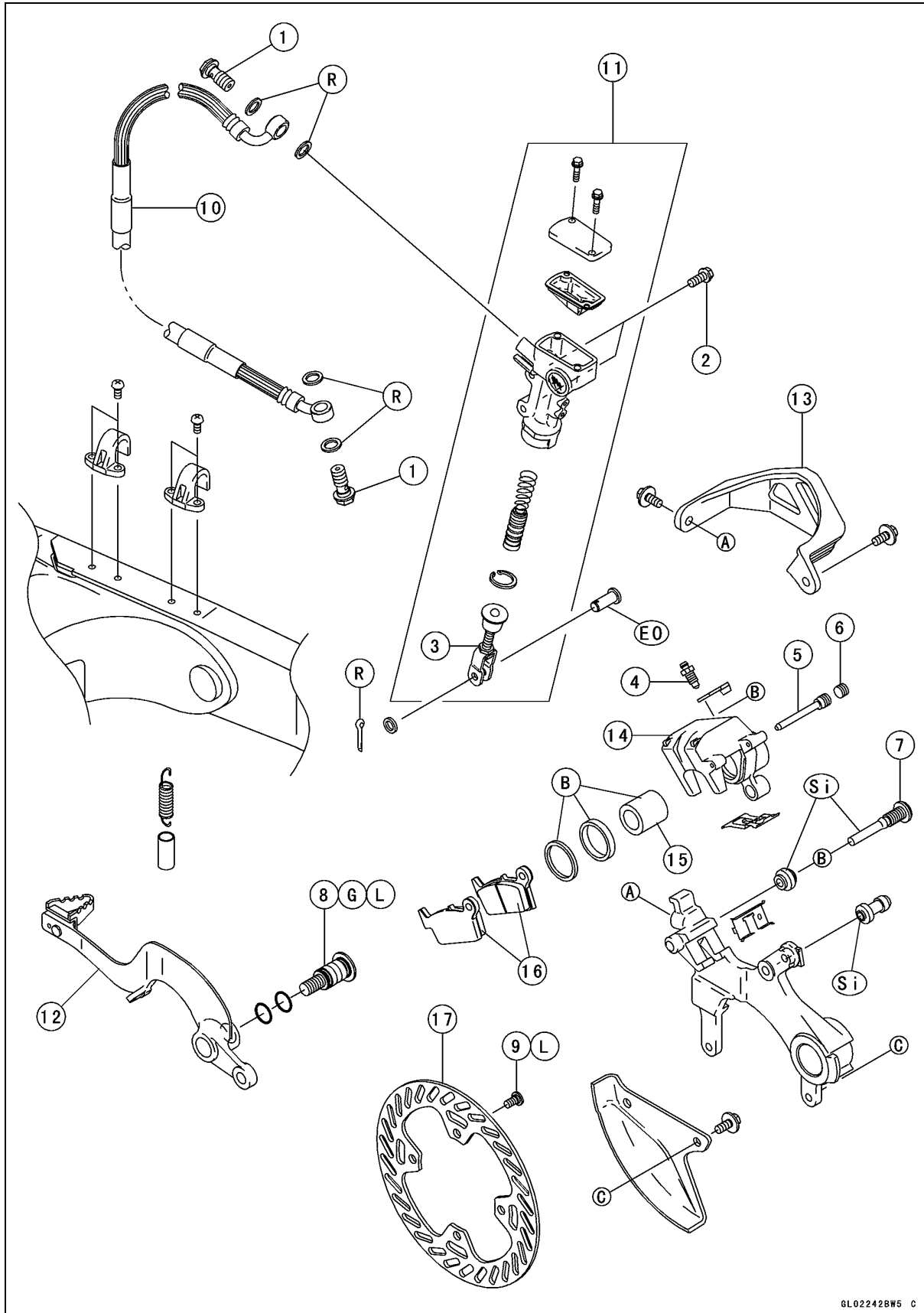
Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Front Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	
2	Brake Hose Banjo Bolts	25	2.5	18	
3	Brake Pad Bolt	18	1.8	13	
4	Caliper Bleed Valve	7.8	0.8	69 in·lb	
5	Caliper Mounting Bolts	25	2.5	18	
6	Brake Disc Mounting Bolts	9.8	1.0	87 in·lb	L

- 7. Front Brake Reservoir
- 8. Brake Lever
- 9. Brake Lever Adjuster
- 10. Locknut
- 11. Brake Hose
- 12. Clamps
- 13. Front Caliper
- 14. Brake Pad
- 15. Piston
- 16. Front Disc (KX250-R1)
- 17. Front Disc (KX250R6F ~)
- A: KX250-R1 ~ R6F
- B: Apply brake fluid.
- R: Replacement Parts
- Si: Apply Silicone grease.

11-4 BRAKES

Exploded View



GL02242BWS C

Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Brake Hose Banjo Bolts	25	2.5	18	
2	Rear Master Cylinder Mounting Bolts	9.8	1.0	87 in·lb	
3	Rear Master Cylinder Push Rod Locknut	18	1.8	13	
4	Caliper Bleed Valve	7.8	0.8	69 in·lb	
5	Brake Pad Bolt	18	1.8	13	
6	Rear Brake Pad Bolt Plug	2.5	0.25	22 in·lb	L
7	Caliper Holder Shaft	27	2.8	20	
8	Brake Pedal Mounting Bolt	25	2.5	18	
9	Brake Disc Mounting Bolts	23	2.3	16.6	L

10. Brake Hose

11. Rear Master Cylinder

12. Brake Pedal

13. Rear Caliper Cover

14. Rear Caliper

15. Piston

16. Brake Pad

17. Rear Disc

B: Apply brake fluid.

EO: Apply engine oil

G: Apply high temperature grease.

L: Apply a non-permanent locking agent.

R: Replacement Parts

Si: Apply silicone grease.

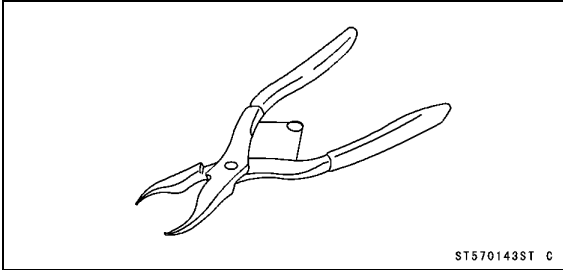
11-6 BRAKES

Specifications

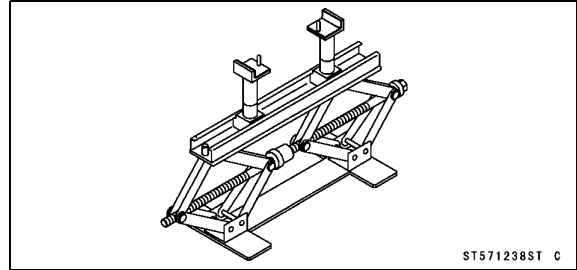
Item	Standard	Service Limit
Brake Adjustment Lever Play	Adjustable (to suit rider)	— — —
Brake Fluid Recommended Disc Brake Fluid: Grade: Front Rear	DOT3 or DOT4 DOT4	— — — — — —
Brake Pads Lining Thickness: Front Rear	3.8 mm (0.150 in.) 6.4 mm (0.252 in.)	1 mm (0.04 in.) 1 mm (0.04 in.)
Brake Disc Thickness: Front Rear Runout	2.85 ~ 3.15 mm (0.112 ~ 0.124 in.) 3.85 ~ 4.15 mm (0.152 ~ 0.163 in.) TIR 0.25 mm (0.098 in.) or less	2.5 mm (0.10 in.) 3.5 mm (0.14 in.) TIR 0.3 mm (0.01 in.)

Special Tools

Inside Circlip Pliers:
57001-143



Jack:
57001-1238



11-8 BRAKES

Brake Lever, Brake Pedal

Brake Lever Adjustment

- Refer to the Brake Lever and Pedal Position Adjustment in the Periodic Maintenance chapter.

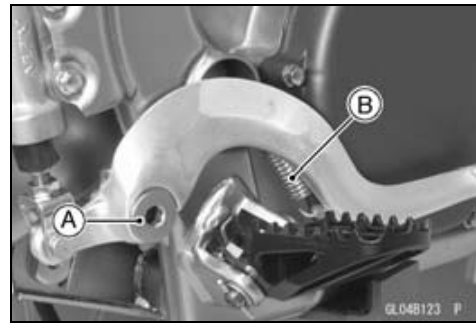
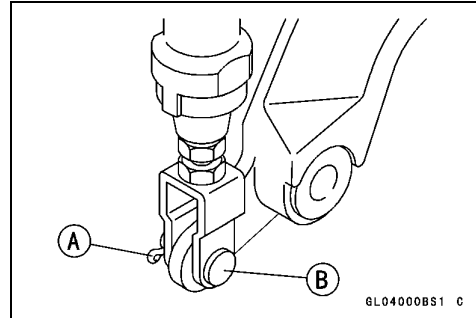
Brake Pedal Position Adjustment

- Refer to the Brake Lever and Pedal Position Adjustment in the Periodic Maintenance chapter.

Brake Pedal Removal

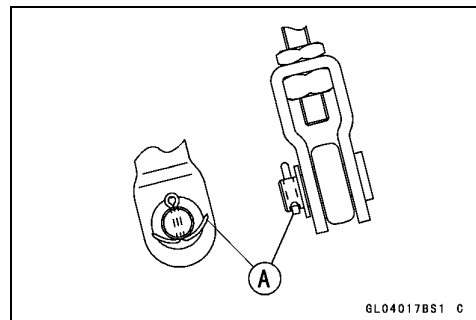
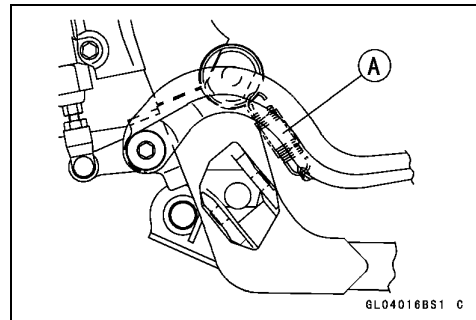
- Remove:
 - Cotter Pin [A]
 - Joint Pin [B]
 - Washer

- Remove the mounting bolt [A] and take off the brake pedal and return spring [B].



Brake Pedal Installation

- Replace O-rings with new one and apply high temperature grease to the O-rings.
- Apply high temperature grease to the shaft portion of the brake pedal, and install the pedal with return spring onto the frame.
- Install the return spring [A] as shown.
- **Torque - Brake Pedal Mounting Bolt: 25 N·m (2.5 kgf·m, 18 ft·lb)**
- Check the brake pedal position.
- Install the joint pin, washer and a new cotter pin.
- Bend the ends [A] of the cotter pin.



Brake Fluid

⚠ WARNING

When working with the disc brake, observe the precautions listed below.

1. Never reuse old brake fluid.
2. Do not use fluid from a container that has been left unsealed or that has been open for a long time.
3. Do not mix two types and brands of fluid for use in the brake. This lowers the brake fluid boiling point and could cause the brake to be ineffective. It may also cause the rubber brake parts to deteriorate.
4. Don't leave the reservoir cap off for any length of time to avoid moisture contamination of the fluid.
5. Don't change the fluid in the rain or when a strong wind is blowing.
6. Except for the disc pads and disc, use only disc brake fluid, isopropyl alcohol, or ethyl alcohol for cleaning of the brake parts. Do not use any other fluid for cleaning these parts. Gasoline, engine oil, or any other petroleum distillate will cause deterioration of the rubber parts. Oil spilled on any part will be difficult to wash off completely and will eventually deteriorate the rubber used in the disc brake.
7. When handling the disc pads or disc, be careful that no disc brake fluid or any oil gets on them. Clean off any fluid or oil that inadvertently gets on the pads or disc with a high flash-point solvent. Do not use one which will leave an oily residue. Replace the pads with new ones if they cannot be cleaned satisfactorily.
8. Brake fluid quickly ruins painted surfaces; any spilled fluid should be completely wiped up immediately.
9. If any of the brake line fittings or the bleed valve is opened at any time, the **AIR MUST BE BLED FROM THE BRAKE LINE.**

Fluid Level Inspection

- Refer to the Brake Fluid Level Inspection in the Periodic Maintenance chapter.

Fluid Change

- Refer to the Brake Fluid Change in the Periodic Maintenance chapter.

11-10 BRAKES

Brake Fluid

Bleeding the Brake Line

The brake fluid has a very low compression coefficient so that almost all the movement of the brake lever or pedal is transmitted directly to the caliper for braking action. Air, however, is easily compressed. When air enters the brake lines, brake lever or pedal movement will be partially used in compressing the air. This will make the lever or pedal feel spongy, and there will be a loss in braking power.

▲ WARNING

Be sure to bleed the air from the brake whenever brake lever or pedal action feels soft or spongy, after the brake fluid is changed, or whenever a brake line fitting has been loosened for any reason.

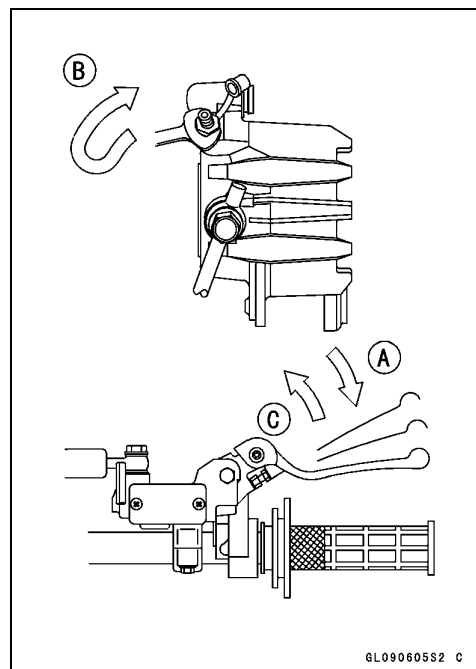
NOTE

○ *The procedure to bleed the front brake line is as follows. Bleeding the rear brake line is the same as for the front brake.*

- Remove the reservoir cap, and check that there is plenty of fluid in the reservoir.
- With the reservoir cap off, slowly pump the brake lever several times until no air bubbles can be seen rising up through the fluid from the holes at the bottom of the reservoir.
- Bleed the air completely from the master cylinder by this operation.
- Install the reservoir cap.
- Attach a clear plastic hose to the bleed valve on the caliper, and run the other end of the hose into a container.
- Bleed the brake line and the caliper as follows:
 - Repeat this operation until no more air can be seen coming out into the plastic hose.
 1. Pump the brake lever until it becomes hard, and apply the brake and hold it [A].
 2. Quickly open and close the bleed valve while holding the brake applied [B].
 3. Release the brake [C].

NOTE

- *The fluid level must be checked often during the bleeding operation and replenished with fresh brake fluid as necessary. If the fluid in the reservoir runs almost out any time during bleeding operation, the bleeding operation must be done over again from the beginning since air will have entered the line.*
- *Tap the brake hose lightly from the caliper to the reservoir for easier bleeding.*



GL090605S2 C

Brake Fluid

- Remove the clear plastic hose.
- Tighten the bleed valves, and install the rubber caps.
Torque - Caliper Bleed Valve: 7.8 N·m (0.8 kgf·m, 69 in·lb)
- Check the fluid level.
- After bleeding is done, check the brake for good braking power, no brake drag, and no fluid leakage.

WARNING

Do not attempt to drive the motorcycle until a full brake lever or pedal is obtained by pumping the brake lever or pedal until the pads are against the disc. The brake will not function on the first application of the lever or pedal if this is not done.

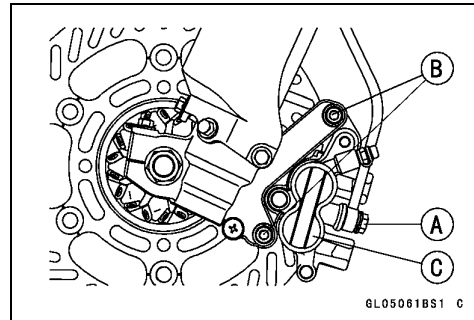
11-12 BRAKES

Caliper

Caliper Removal

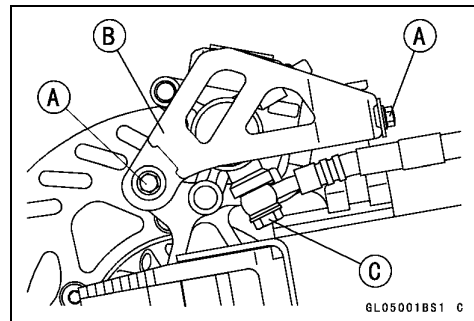
Front Brake

- Loosen the banjo bolt [A] so as not to spill brake fluid.
- Remove the caliper mounting bolts [B].
- Remove the banjo bolt and take off the brake hose from the caliper [C].
- If the caliper is to be disassembled after removal and if compressed air is not available, remove the piston using the following steps before disconnecting the brake hose from the caliper.
 - Remove the pads.
 - Pump the brake lever to remove the piston.



Rear Brake

- Unbolt the guard bolts [A] and remove the rear caliper guard [B].
- Loosen the banjo bolt [C] so as not to spill brake fluid.

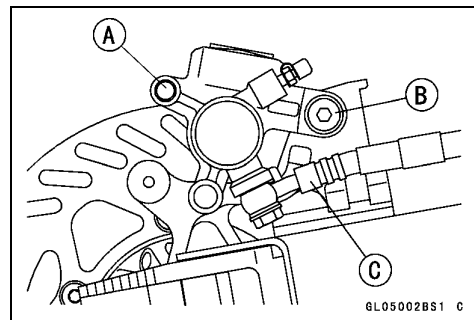


- Remove the brake pad bolt plug.
- Loosen the brake pad bolt [A] and caliper holder shaft [B] before the caliper removal if the caliper is to be disassembled.

NOTE

○ If the caliper is to be disassembled after removal and compressed air is not available, disassemble the caliper before brake hose removal (see *Caliper Disassembly*).

- Remove the rear wheel. (see *Wheels/Tires* chapter)
- Unscrew the banjo bolt and remove the brake hose [C] from the caliper (see *Brake Hose Removal/Installation*).



CAUTION

Immediately wipe up any brake fluid that is spilled.

Caliper

Caliper Installation

- Tighten the brake pad bolts if it was removed.

Torque - Brake Pad Bolts: 18 N·m (1.8 kgf·m, 13 ft·lb)

Front Brake:

- Install the caliper and tighten the bolts.

Torque - Caliper Mounting Bolts: 25 N·m (2.5 kgf·m, 18.0 ft·lb)

Rear Brake:

- Before install the caliper, install the rear wheel (see Wheels/Tires chapter).
- Install the brake hose lower end.
- Replace the washers that are on each side of hose fitting with new ones.

Torque - Brake Hose Banjo Bolt: 34 N·m (3.5 kgf·m, 25 ft·lb)

- Bleed the brake line (see Bleeding the Brake Line).
- Check the brake for good braking power, no brake drag, and no fluid leakage.

⚠ WARNING

Do not attempt to drive the motorcycle until a full brake lever or pedal is obtained by pumping the brake lever or pedal until the pads are against the disc. The brakes will not function on the first application of the lever or pedal if this is not done.

Caliper Disassembly

- Refer to the Caliper Piston Seal and Dust Seal Replacement in the Periodic Maintenance chapter.

Caliper Assembly

- Refer to the Caliper Fluid Seal and Dust Seal Replacement in the Periodic Maintenance chapter.

Fluid Seal Damage

The fluid seal around the piston maintains the proper pad/disc clearance. If this seal is not in good condition, pad wear will increase, and constant pad drag on the disc will raise brake and brake fluid temperature.

- Replace the fluid seals under any of the following conditions: (a) fluid leakage around the pad; (b) brakes overheat; (c) there is a large difference in left and right pad wear; (d) the seal is stuck to the piston. If the fluid seal is replaced, replace the dust seal as well. Also, replace all seals every other time the pads are changed.

Dust Seal and Cover Damage

- Check that the dust seals and covers are not cracked, worn, swollen, or otherwise damaged.
- ★ If they show any damage, replace them.

Piston Cylinder Damage

- Visually inspect the piston and cylinder surfaces.
- ★ Replace the cylinder and piston if they are badly scored or rusty.

11-14 BRAKES

Caliper

Caliper Holder Shaft Wear

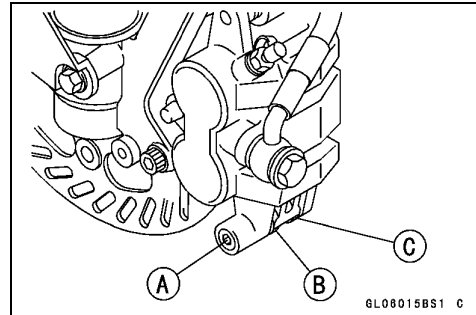
The caliper body must slide smoothly on the caliper holder shafts. If the body does not slide smoothly, one pad will wear more than the other, pad wear will increase, and constant drag on the disc will raise brake and brake fluid temperature.

- Check too see if the caliper holder shafts are not badly worn or stepped, or the rubber friction boot is not damaged.
- ★ If the shafts or rubber friction boot are damaged, replace the shafts, rubber friction boot, and the caliper holder.

Brake Pad Removal

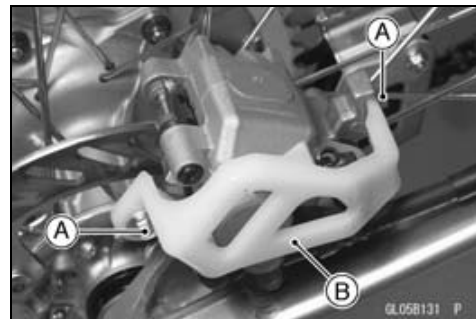
For Front Brake Pad

- Unscrew the pad bolt [A].
- Take the piston side pad [B].
- Push the caliper holder toward the piston, and then remove another pad [C] from the caliper holder.

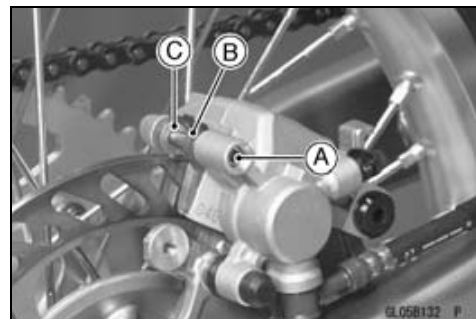


For Rear Brake Pad

- Unscrew the caliper guard bolts [A] and remove the caliper guard [B].
- Remove the pad bolt plug.



- Unscrew the pad bolt [A].
- Take the piston side pad [B].
- Push the caliper hold toward the piston, and then remove another pad [C] from the caliper holder.



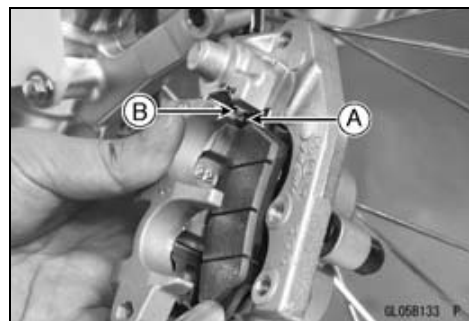
Caliper

Brake Pad Installation

- Push the caliper pistons in by hand as far as they will go.
- Install the piston side pad first, and then another pad.
- Fit the pad end [A] into the groove [B] of the anti-rattle spring securely.
- Tighten the brake pad bolt.

Torque - Brake Pad Bolt: 18 N·m (1.8 kgf·m, 13 ft·lb)

- Check the brake for good braking power, no brake drag, and no fluid leakage.



⚠ WARNING

Do not attempt to drive the motorcycle until a full brake lever or pedal is obtained by pumping the brake lever or pedal until the pads are against the disc. The brake will not function on the first application of the lever or pedal if this is not done.

Brake Pad Inspection

- Refer to the Brake Pad Wear Inspection in the Periodic Maintenance chapter.

11-16 BRAKES

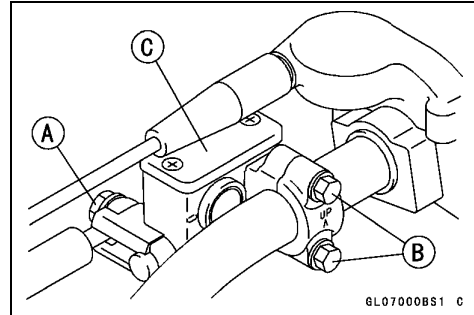
Master Cylinder

CAUTION

Brake fluid quickly ruins painted or plastic surfaces; any spilled fluid should be completely wiped up immediately.

Front Master Cylinder Removal

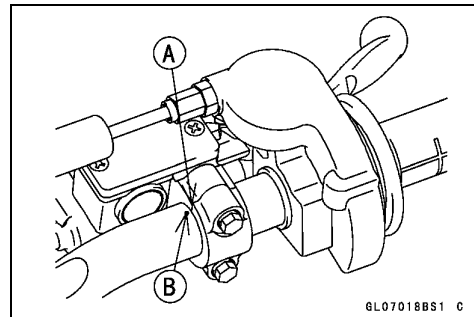
- Remove the banjo bolt [A] to disconnect the upper brake hose from the master cylinder (see Brake Hose Removal/Installation).
- When removing the brake hose, temporarily secure the end of the brake hose to some high place to keep fluid loss to a minimum.
- Unscrew the clamp bolts [B], and take off the master cylinder [C] as an assembly with the reservoir and brake lever.



Front Master Cylinder Installation

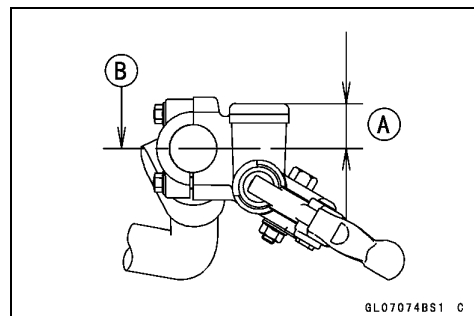
KX250-R1:

- Position the master cylinder so that the vertical parting line [A] of the front master cylinder clamps align with the punch mark [B] on the handlebar.



KX250R6F ~:

- Position the master cylinder so that the reserve tank cap alien [A] to the frame horizontal line [B] as shown.



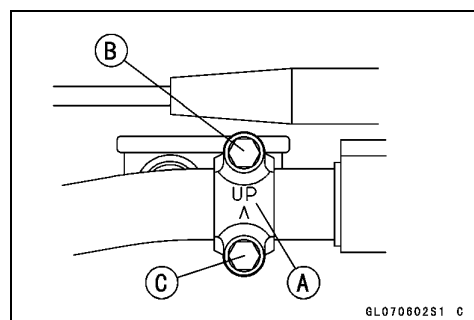
- The master cylinder clamp must be installed with the arrow mark [A] upward.
- Tighten the upper clamp bolt [B] first, and then the lower clamp bolt [C]. There will be a gap at the lower part of the clamp after tightening.

Torque - Front Master Cylinder Clamp Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

- Replace the washers that are on each side of hose fitting with new ones.
- Tighten the brake hose banjo bolt.

Torque - Brake Hose Banjo Bolt: 25 N·m (2.5 kgf·m, 18 ft·lb)

- Bleed the brake line (see Bleeding the Brake Line).
- Check the brake for good braking power, no brake drag, and no fluid leakage.



Master Cylinder

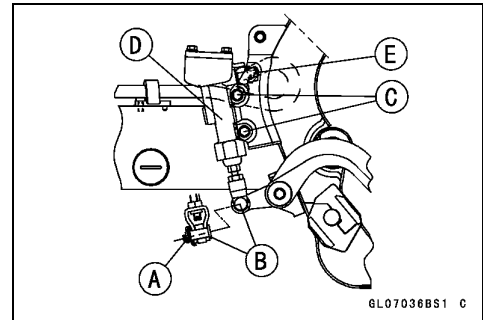
Rear Master Cylinder Removal

- Remove the cotter pin [A].
- Pull off the joint pin [B] with washer.

NOTE

○ Pull off the joint pin while pressing down the brake pedal.

- Unscrew the master cylinder mounting bolts [C], and remove the master cylinder [D].
- Unscrew the brake hose banjo bolt [E].
- When removing the brake hose, temporarily secure the end of the brake hose to some high place to keep fluid loss to a minimum.



Rear Master Cylinder Installation

- Replace the cotter pin with a new one.
- Replace the washers are on each side of hose fitting with new ones.
- Tighten the following:

Torque - Brake Hose Banjo Bolt: 25 N·m (2.5 kgf·m, 18 ft·lb)

Rear Master Cylinder Mounting Bolts: 9.8 N·m (1.0 kgf·m, 87 in·lb)

- Bleed the brake line (see Bleeding the Brake Line).
- Check the brake for good braking power, no brake drag, and no fluid leakage.
- Check the brake pedal position (master cylinder push rod length).

Front Master Cylinder Disassembly

- Refer to the Brake Master Cylinder Cup and Dust Cover Replacement in the Periodic Maintenance chapter.

Rear Master Cylinder Disassembly

- Refer to the Brake Master Cylinder Cup and Dust Cover Replacement in the Periodic Maintenance chapter.

Master Cylinder Assembly

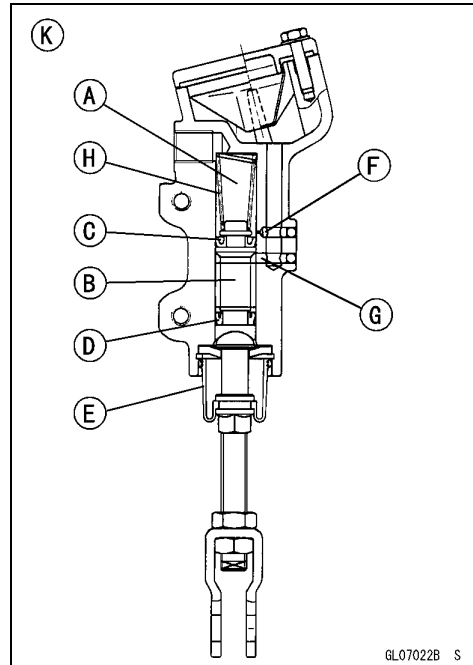
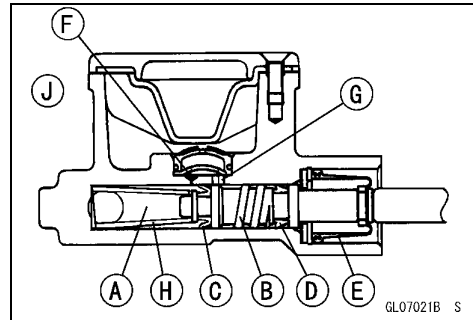
- Refer to the Brake Master Cylinder Cup and Dust Cover Replacement in the Periodic Maintenance chapter.

11-18 BRAKES

Master Cylinder

Master Cylinder Inspection (Visual Inspection)

- Disassemble the front and rear master cylinders.
 - Check that there are no scratches, rust or pitting on the inner wall of each master cylinder [A] and on the outside of each piston [B].
 - ★ If a master cylinder or piston shows any damage, replace them.
 - Inspect the primary [C] and secondary [D] cups.
 - ★ If a cup is worn, damaged, softened (rotted), or swollen, the piston assembly should be replaced to renew the cups.
 - ★ If fluid leakage is noted at the brake lever, the piston assembly should be replaced to renew the cup.
 - Check the dust covers [E] for damage.
 - ★ If they are damaged, replace them.
 - Check that the relief [F] and supply [G] ports are not plugged.
 - ★ If the small relief port becomes plugged, the brake pads will drag on the disc. Blow the ports clean with compressed air.
 - Check the piston return springs [H] for any damage.
 - ★ If a spring is damaged, replace it.
- [K] Rear Master Cylinder.



Brake Disk

Brake Disc Inspection

- Visually inspect the disc [A].
- ★ If it is scratched or damaged, replace the disc.
- Measure the thickness of each disc at the point [B] where it has worn the most.
- ★ Replace the disc if it has worn past the service limit.

Thickness

Standard:

Front 2.85 ~ 3.15 mm (0.112 ~ 0.124 in.)

Rear 3.85 ~ 4.15 mm (0.152 ~ 0.163 in.)

Service Limit:

Front 2.5 mm (0.10 in.)

Rear 3.5 mm (0.14 in.)

- Place a jack under the motorcycle so that the front/rear wheel is raised off the ground.

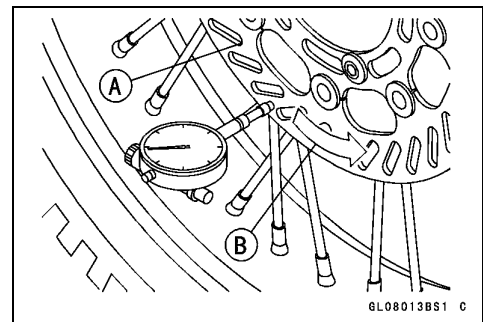
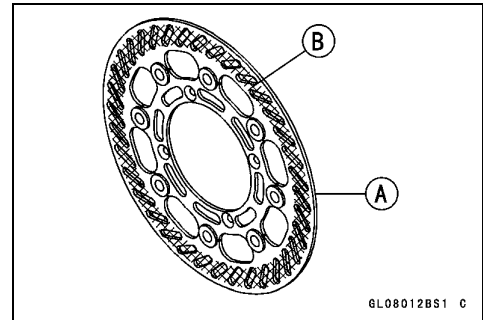
Special Tool - Jack: 57001-1238

- Set up a dial gauge against the disc [A] as illustrated.
- For the front disc, turn the handlebar fully to one side.
- Measure the disc runout while rotating the wheel slowly [B].
- ★ If the runout exceeds the service limit, replace the disc.

Runout

Standard: TIR 0.25 mm (0.098 in.) or less

Service Limit: TIR 0.3 mm (0.01 in.)



11-20 BRAKES

Brake Hose

Brake Hose Removal/Installation

- Refer to the Brake Hose Replacement in the Periodic Maintenance chapter.

Brake Hose Inspection

- Refer to the Brake Hose and Connection Check in the Periodic Maintenance chapter.

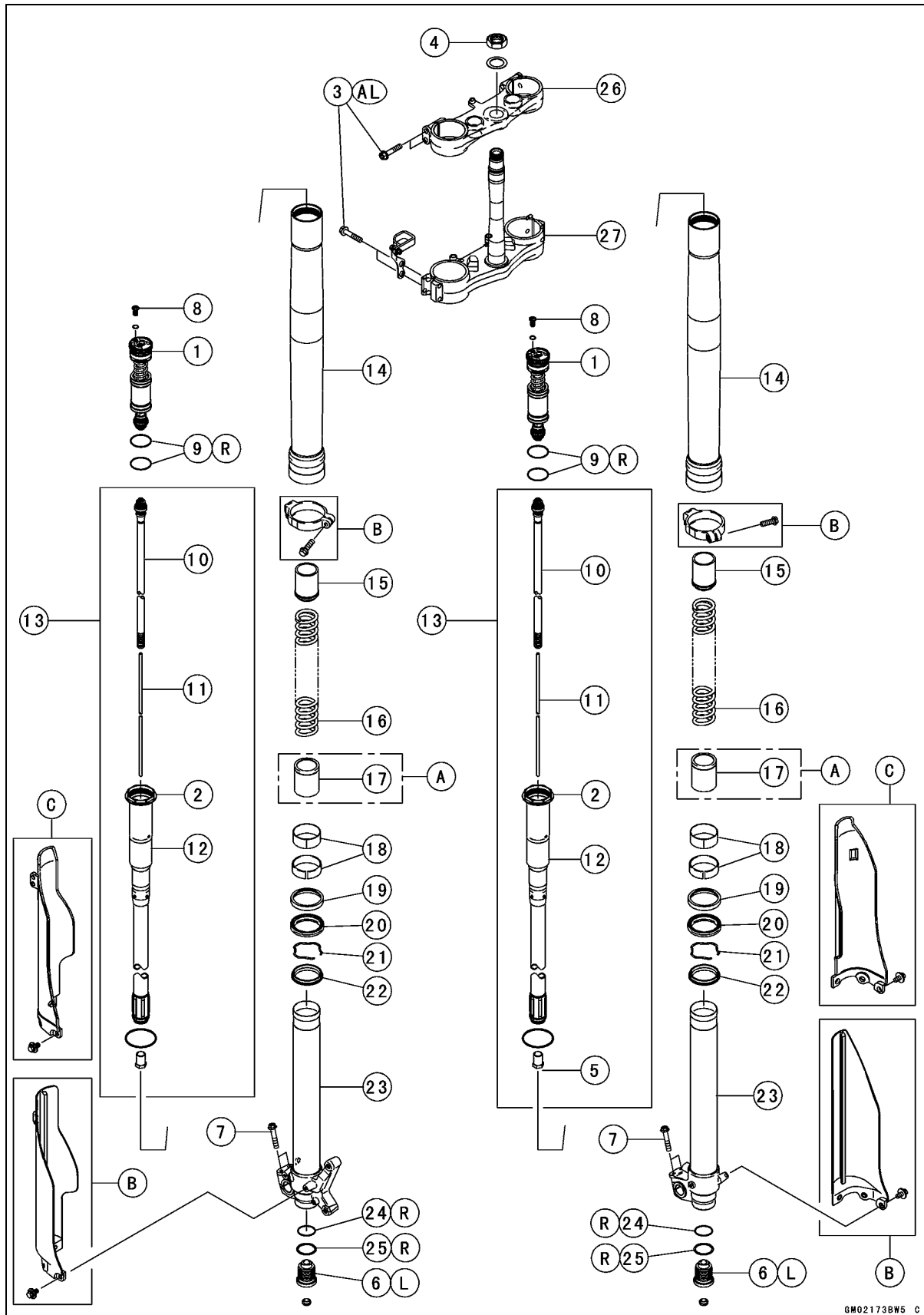
Suspension

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12-2 SUSPENSION

Exploded View



Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Base Valve Assembly	27	2.8	20	
2	Front Fork Top Plug	29	3.0	22	
3	Front Fork Clamp Bolts (Upper, Lower)	20	2.0	14.5	AL
4	Steering Stem Head Nut	78	8.0	58	
5	Lock Nut/Adjuster Assembly	29	3.0	22	
6	Adjuster Assembly	58	6.0	43	L
7	Front Axle Clamp Bolts	20	2.0	14.5	AL

- 8. Screw
- 9. O-ring
- 10. Piston Rod
- 11. Rebound Damping Adjuster Rod
- 12. Subtank
- 13. Cylinder Unit
- 14. Outer Tube
- 15. Collar
- 16. Spring
- 17. Collar
- 18. Bushings
- 19. Washer
- 20. Oil Seal
- 21. Retaining Ring
- 22. Dust Seal
- 23. Inner Tube
- 24. O-ring
- 25. Gasket
- 26. Steering Stem Head
- 27. Steering Stem

AL: Tighten the two clamp bolts alternately two times to ensure even tightening torque.

L: Apply a non-permanent locking agent to the threads.

R: Replacement Parts

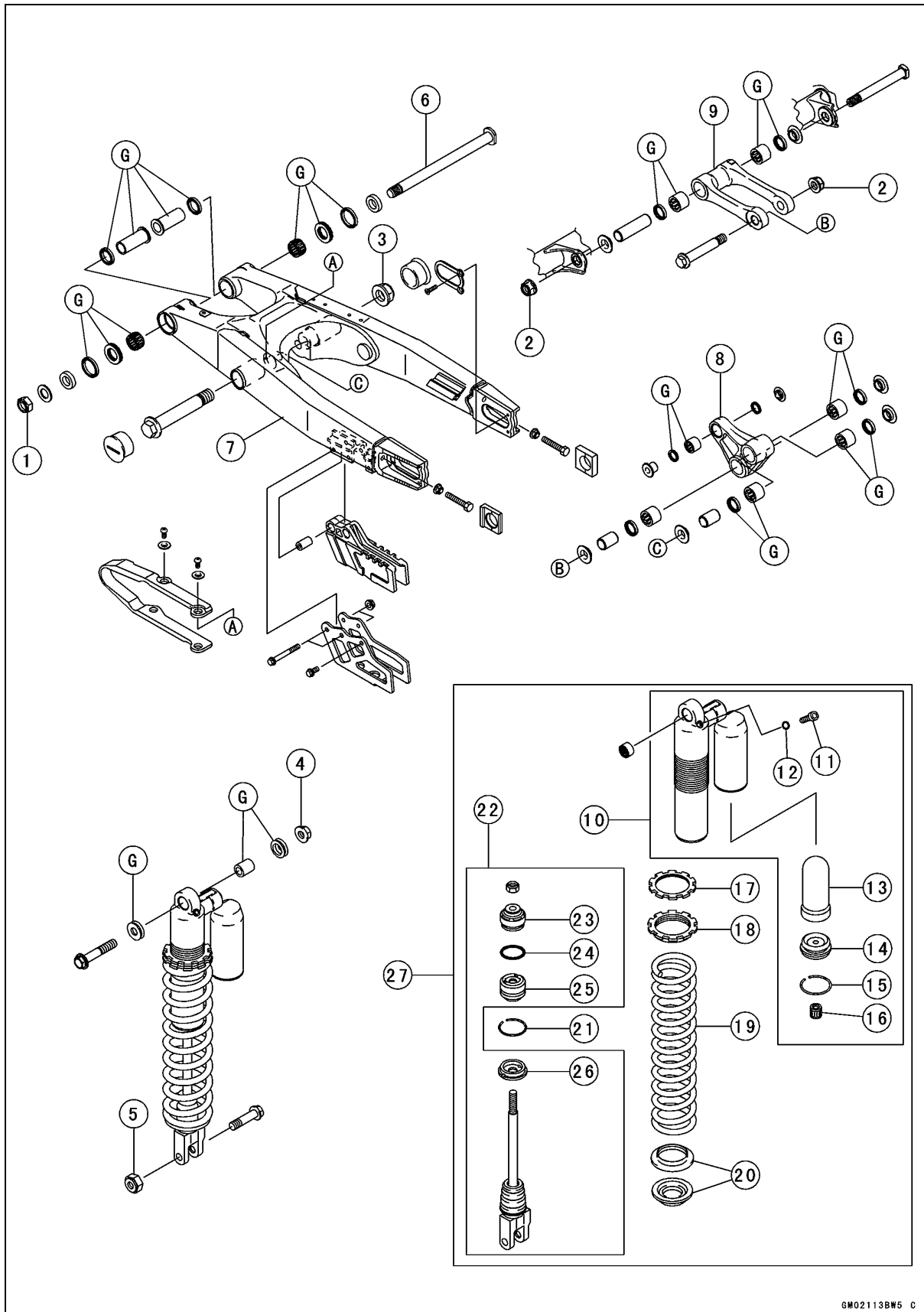
A: KX250-R1 Model

B: KX250-R1, R6F

C: KX250R7F

12-4 SUSPENSION

Exploded View



Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Swingarm Pivot Shaft Nut	98	10.0	72	
2	Tie-rod Mounting Nut (Front, Rear)	83	8.5	61	
3	Rocker Arm Pivot Nut	83	8.5	61	
4	Rear Shock Absorber Mounting Nut (Upper)	39	4.0	29	
5	Rear Shock Absorber Mounting Nut (Lower)	34	3.5	25	

- 6. Pivot Shaft
 - 7. Swingarm
 - 8. Rocker Arm
 - 9. Tie-rod
 - 10. Rear Shock Absorber Cylinder
 - 11. Air Bleeder Bolt
 - 12. O-ring
 - 13. Bladder
 - 14. Cap
 - 15. Circlip
 - 16. Valve Cap
 - 17. Locknut
 - 18. Adjusting Nut
 - 19. Spring
 - 20. Spring Guide
 - 21. Circlip
 - 22. Piston Rod Assembly
 - 23. Piston
 - 24. O-ring
 - 25. Oil Seal
 - 26. Stopper
 - 27. Rear Shock Absorber
- G: Apply grease.

12-6 SUSPENSION

Specifications

Item	Standard	Service Limit
Front Fork		
Air Pressure:	Atmospheric pressure	— — —
Rebound Damping Adjustment (from the Seated Position Adjuster Turned Fully Clockwise)		(Adjustable Range)
KX250-R1	12 clicks counterclockwise	16 clicks
KX250R6F ~	11 clicks counterclockwise	
Compression Damping Adjustment (from the Seated Position Adjuster Turned Fully Clockwise)		(Adjustable Range)
KX250-R1	10 clicks counterclockwise	16 clicks
KX250R6F ~	11 clicks counterclockwise	
Oil Viscosity	KHL15-10 (KAYABA 01) or equivalent	— — —
Oil Quantity:		(Adjustable Range)
Outer (Outer/Inner Tubes)		280 ~ 320 mL (9.47 ~ 10.82 US oz)
KX250-R1	300 mL (10.14 US oz)	
KX250R6F ~	310 mL (10.48 US oz)	290 ~ 330 mL (9.80 ~ 11.16 US oz)
Inner (Subtank)	160 mL (5.41 US oz)	
Fork Spring Free Length	465 mm (18.31 in.)	456 mm (17.95 in.)
Rear Suspension (Uni-Trak)		
Rear Shock Absorber		
Rebound Damping Adjustment (from the Seated Position Adjuster Fully Clockwise) Turned		(Adjustable Range)
KX250-R1	9 clicks counterclockwise	16 clicks
KX250R6F ~	10 clicks counterclockwise	
Spring Preload Adjustment (Adjusting Nut Position from the Center of the Mounting Hole Upper)		(Adjustable Range)
KX250-R1	120 mm (4.72 in.)	109 ~ 129.5 mm (4.29 ~ 5.10 in.)
KX250R6F ~	118 mm (4.65 in.)	
Rear Shock Spring Free Length	260 mm (10.24 in.)	255 mm (10.04 in.)
Gas Reservoir		
Compression Damping Adjustment (from the Seated Position Adjuster Turned Fully Clockwise)		
High Speed:		(Adjustable Range)
KX250-R1	— — —	
KX250R6F ~	1 1/4 turns out	0 ~ 2 turns out
Low Speed	12 clicks counterclockwise	16 clicks
Gas Pressure	980 kPa (10 kgf/cm ² , 142 psi)	— — —

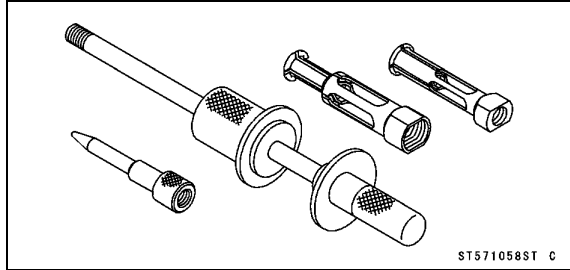
Specifications

Item	Standard	Service Limit
Tie-rod, Rocker Arm		
Sleeve Outside Diameter:		
Tie-rod	19.987 ~ 20.000 mm (0.7869 ~ 0.7874 in.)	19.85 mm (0.781 in.)
Rocker Arm:		
Large	19.987 ~ 20.000 mm (0.7869 ~ 0.7874 in.)	19.85 mm (0.781 in.)
Small	15.95 ~ 16.00 mm (0.628 ~ 0.630 in.)	15.91 mm (0.626 in.)
Rocker Arm Mounting Bolt Runout	under 0.1 mm (0.004 in.)	0.2 mm (0.008 in.)

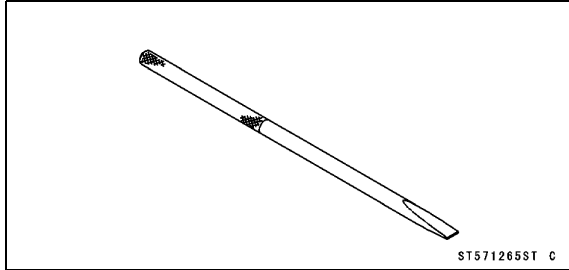
12-8 SUSPENSION

Special Tools

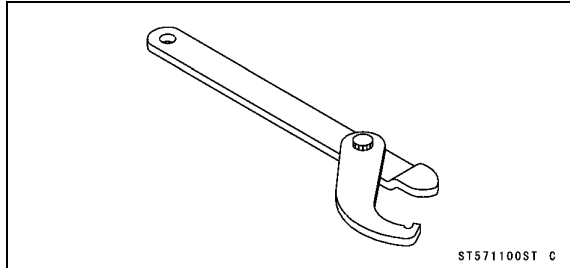
Oil Seal & Bearing Remover:
57001-1058



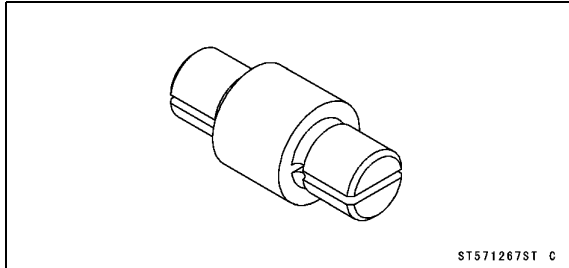
Bearing Remover Shaft, $\phi 9$:
57001-1265



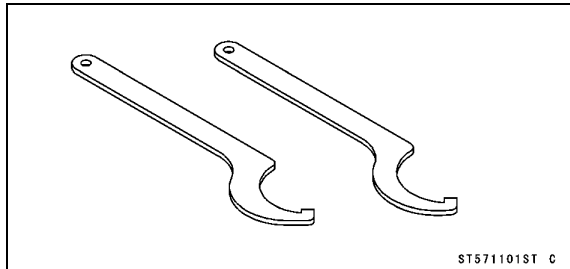
Steering Stem Nut Wrench:
57001-1100



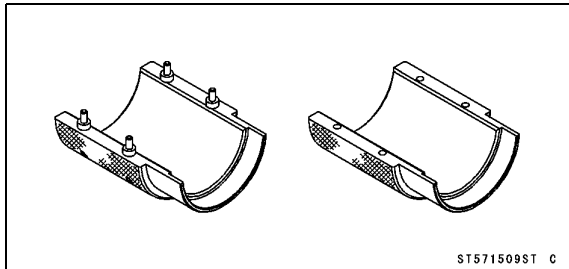
Bearing Remover Head, $\phi 15 \times \phi 17$:
57001-1267



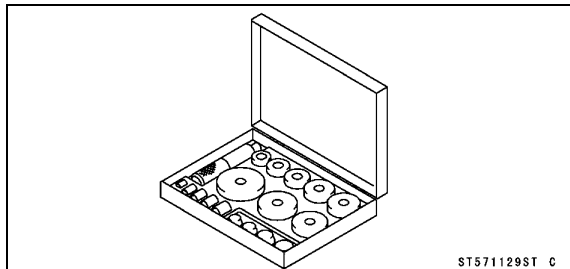
Hook Wrench R37.5, R42:
57001-1101



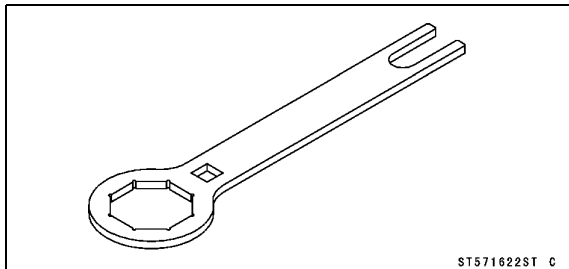
Fork Oil Seal Driver, $\phi 48$:
57001-1509



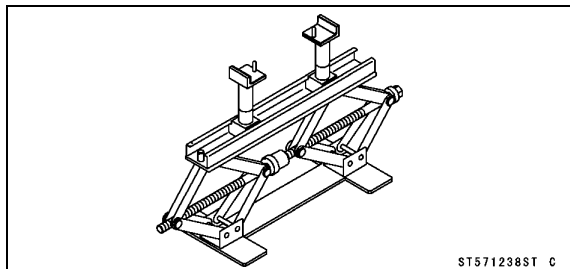
Bearing Driver Set:
57001-1129



Top Plug Wrench (46 mm):
57001-1622



Jack:
57001-1238



Front Fork

Air Pressure

The standard air pressure in the front fork legs is atmospheric pressure. Air pressure in the fork legs increase with normal use, so the fork action stiffens during operation. Release air pressure from the fork legs prior to each race through the pressure relief screw located in each front fork cap.

- Place the jack under the frame so that the front wheel off the ground.

Special Tool - Jack: 57001-1238

- Remove the screws [A] at the top of the front fork top plugs to let the air pressure equalize.

NOTE

- Do not use the side stand when adjusting the air pressure.
- Adjust the air pressure when the front forks are cold.

- Replace the O-rings of the screw with new ones.
- Install the screw.

Compression Damping Adjustment

- Place the jack under the frame so that the front wheel off the ground.

Special Tool - Jack: 57001-1238

- To adjust compression damping, turn the adjuster [A] on the front fork top plugs with the blade of a screwdriver until you feel a click. Adjust the compression damping to suit your preference under special condition.

NOTE

- The left and right fork legs must have the same shock damping.

Seated positions: adjuster turned fully clockwise [A].

Compression Damping Adjuster Setting

Standard:

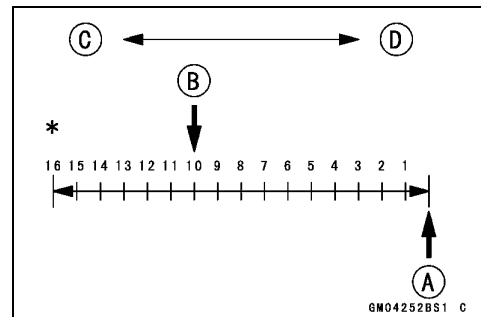
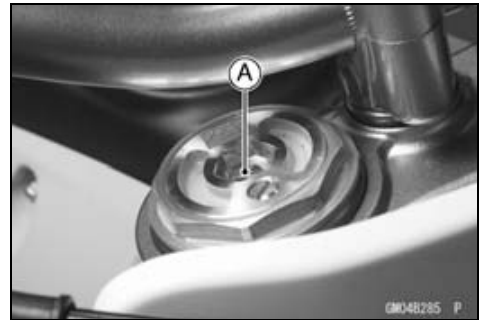
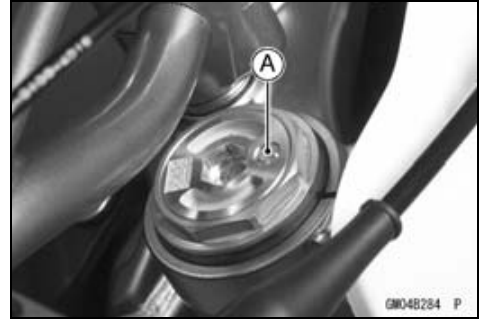
KX250-R1 10 clicks [B]

KX250R6F ~ 11 clicks

Softer (Counterclockwise) [C]

Harder (Clockwise) [D]

*: Number of turns counterclockwise usable range-16 clicks or more.



CAUTION

Do not force the rebound and compression damping force adjusters beyond the fully seated position, or the adjusting mechanism may be damaged.

12-10 SUSPENSION

Front Fork

Rebound Damping Adjustment

- Place the jack under the frame so that the front wheel off the ground.

Special Tool - Jack: 57001-1238

- Clean the bottom of the fork tubes.
- To adjust rebound damping, turn the adjuster [A] on the front fork cylinder valve with the blade of a screwdriver until you feel a click. Adjust the rebound damping to suit your preference under special condition.

NOTE

- The left and right fork legs must have the same shock damping.

Seated positions adjuster turned fully clockwise [A].

Rebound Damping Adjuster Setting

Standard:

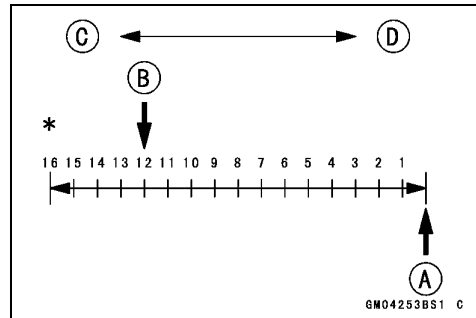
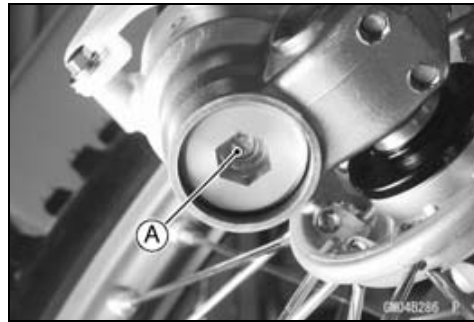
KX250-R1 12 clicks [B]

KX250R6F ~ 11 clicks

Softer (Counterclockwise) [C]

Harder (Clockwise) [D]

*: Number of turns counterclockwise usable range-16 clicks or more.



CAUTION

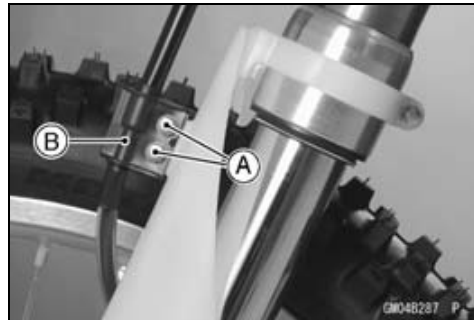
Do not force the rebound and compression damping force adjusters beyond the fully seated position, or the adjusting mechanism may be damaged.

Oil Change (each fork leg)

- Refer to the Front Fork Oil Change in the Periodic Maintenance chapter.

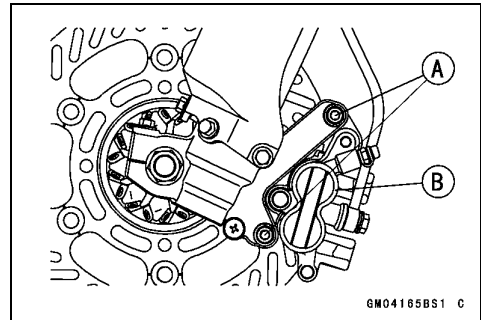
Front Fork Removal

- Unscrew the bolts [A], and remove the front brake hose clamps [B].

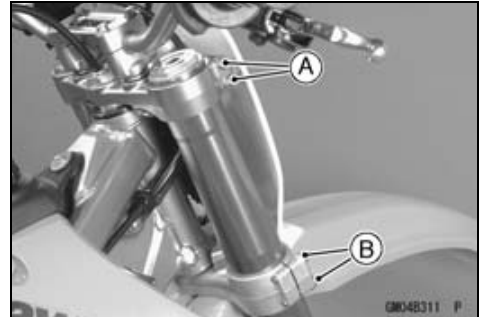


Front Fork

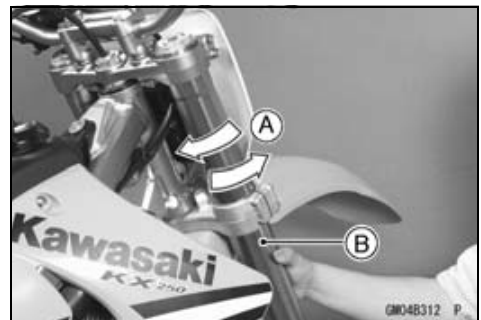
- Remove:
 - Front wheel (see Wheels/Tires chapter)
 - Bolts [A]
- Remove the caliper [B] from the fork leg to be removed, and rest the caliper on some kind of stand so that it doesn't dangle.



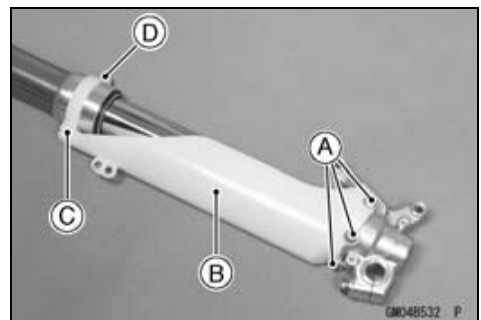
- Loosen the upper [A], and lower [B] fork clamp bolts.



- Remove the front fork.
 - With a twisting motion [A], work the fork leg [B] down and out.



- Remove:
 - Bolts [A]
 - Fork Protector [B]
 - Guide [C] (KX250-R1, R6F)
 - Bolt [D] (KX250-R1, R6F)



12-12 SUSPENSION

Front Fork

Front Fork Installation

- Install the fork so that the distance between the top end of the outer tube and the upper surface of the steering stem head is specified dimension.
[A] = 4 mm (0.16 in.)
- Route the cables and hose according to the Cable, Harness, Hose Routing section in the Appendix chapter.
- Install the front wheel (see Wheels/Tires chapter).
- Tighten the fork clamp bolts.

Torque - Fork Clamp Bolts: 20 N·m (2.0 kgf·m, 14.5 ft·lb)

NOTE

○ Tighten the two clamp bolts alternately two times to ensure even tightening torque.

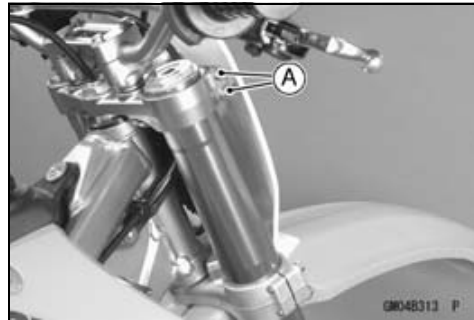
- Tighten:

Torque - Front Caliper Mounting Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)

- Check the front brake operation after installation.

Front Fork Disassembly (each fork leg)

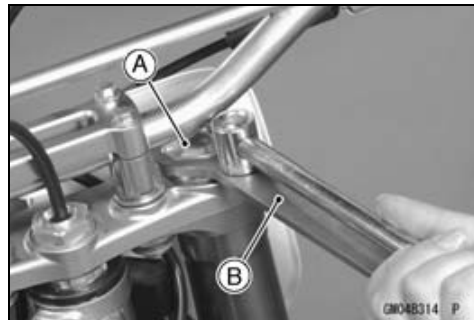
- Loosen the front fork upper clamp bolts [A].



- Loosen the fork top plug (subtank) [A] with the special tool.

Special Tool - Top Plug Wrench, 46 mm: 57001-1622 [B]

- Remove the front fork (see Front Fork Removal).



NOTE

○ Set rebound and compression damping setting to the softest settings before disassembling to prevent the needle of adjusters from damaging. Record the setting before turning the adjuster.

- Thoroughly clean the fork before disassembly.

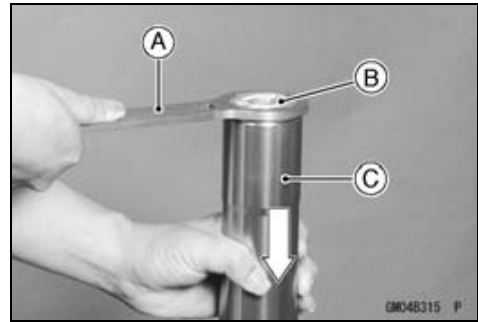
CAUTION

Be careful not scratch the inner tube and not to damage the dust seal.
Avoid scratching or damaging the inner tube or the dust seal. Use a mild detergent and sponge out dirt with plenty of water.

Front Fork

- Using the special tool [A], remove the fork top plug [B] (subtank) from the outer tube and slowly slide down the outer tube [C].

Special Tool - Top Plug Wrench, 46 mm: 57001-1622



- Place a drain pan under the front fork and drain fork oil [A].

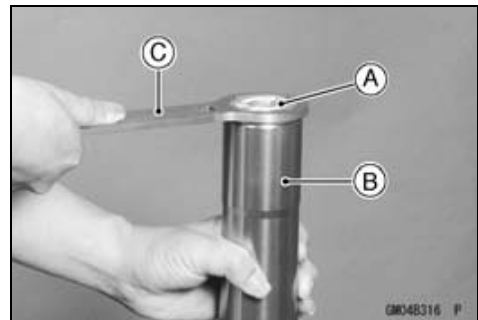
NOTE

○ Pump the fork tube several times to discharge the fork oil.



- Raise the outer tube and temporarily install the fork top plug [A] (subtank) to the outer tube [B] with the special tool [C].

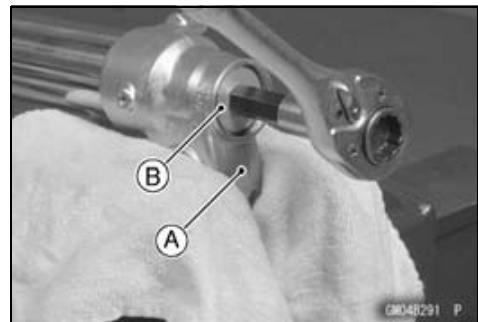
Special Tool - Top Plug Wrench, 46 mm: 57001-1622



- Hold the axle holder [A] with a vise.
- Protect the axle holder with a rag when using a vise.
- Loosen the adjuster assembly [B] completely.

⚠ WARNING

Clamping the axle holder too tight can damage it which will affect riding stability. Do not clamp the axle holder too tight.

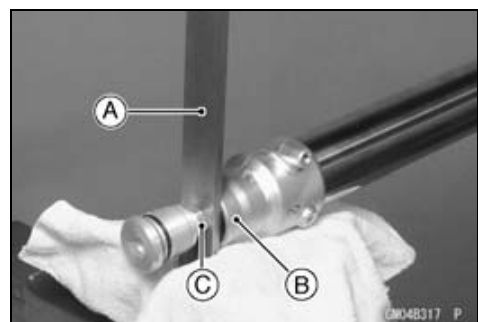


- Compress the outer tube by hands and install the top plug wrench (special tool) [A] between the axle holder bottom [B] and lock nut [C].

Special Tool - Top Plug Wrench, 46 mm: 57001-1622

⚠ WARNING

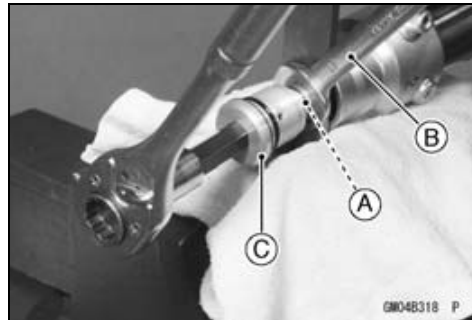
Be careful of reaction force in spring and fix surely so that the special tool should not come off. Do not place the finger etc. while servicing.



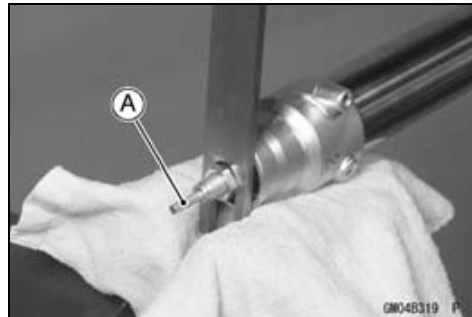
12-14 SUSPENSION

Front Fork

- Hold the locknut [A] with a wrench [B] and remove the adjuster assembly [C].



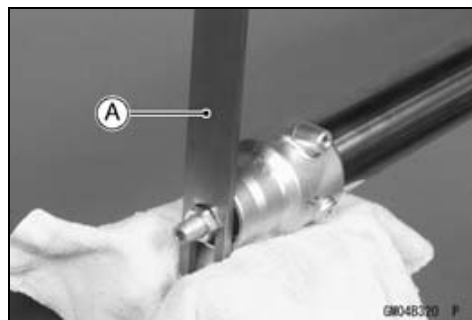
- Remove the push rod [A].



- With the outer tube compressed by hands, remove the top plug wrench (special tool) [A].

CAUTION

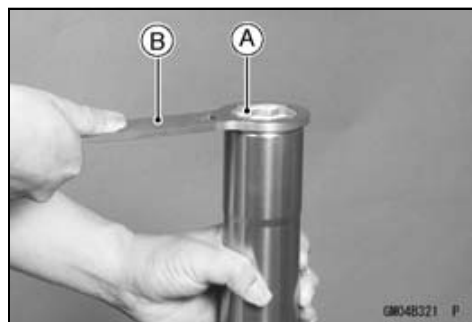
Removing the lock nut and pushing the piston rod thread into the cylinder unit will damage the oil seal. Do not remove the lock nut from the piston rod.



- Remove the fork leg from the vise.

- Loosen the fork top plug (subtank) [A] with the special tool.

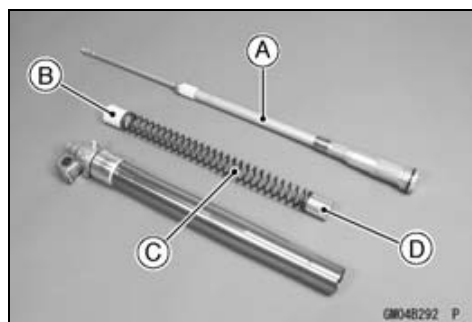
Special Tool - Top Plug Wrench, 46 mm: 57001-1622 [B]



- Remove:
 - Cylinder Unit [A]
 - Spring Collar [B] (KX250-R1)
 - Fork Spring [C]
 - Spring Collar [D]

CAUTION

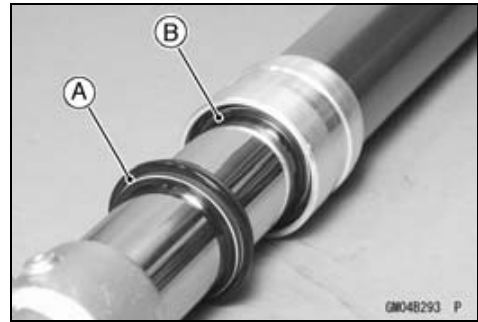
Disassembling the cylinder unit can lead to trouble. Do not disassemble the cylinder unit.



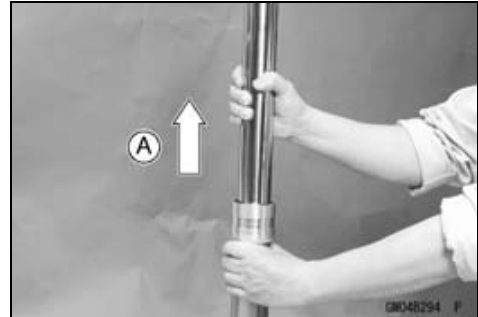
Front Fork

- Remove the dust seal [A] and the retaining ring [B].

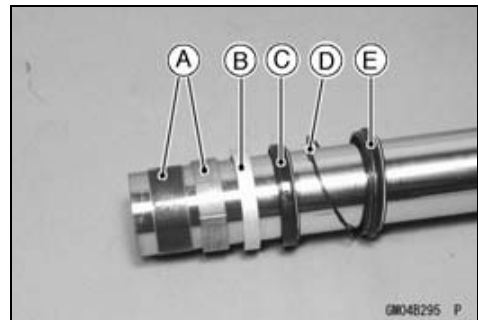
CAUTION
Be careful not to scratch the inner tube.



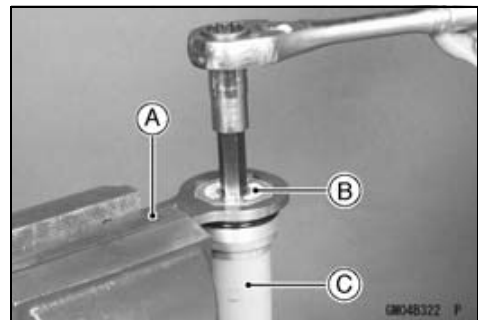
- Grasp the outer tube and stroke [A] the inner tube several times. The shock to fork seal separates the inner tube from the outer tube.



- Remove the following parts from the inner tube.
 - Guide Bushes [A]
 - Washer [B]
 - Oil Seal [C]
 - Retaining Ring [D]
 - Dust Seal [E]



- Holding the top plug wrench [A] with a vise, loosen the base assembly [B] on the subtank [C].
Special Tool - Top Plug Wrench, 46 mm: 57001-1622 [B]

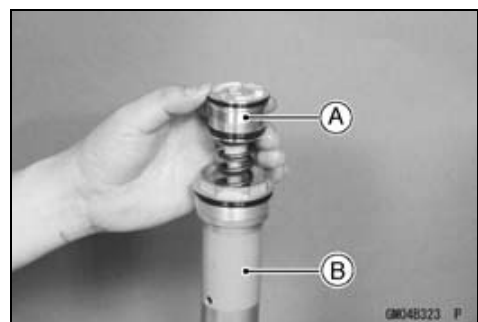


- Remove the base valve assembly [A] from the subtank [B].

NOTE

○ Slowly compress the piston rod until it stops so that the base valve assembly can be removed easily.

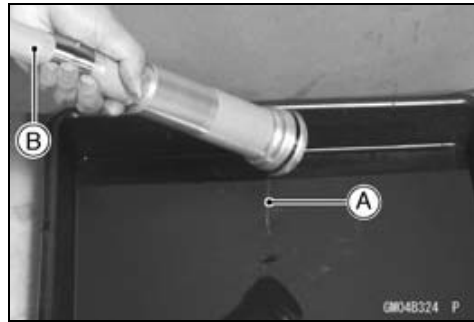
CAUTION
Disassembling the base valve assembly can lead to trouble.
Do not disassemble the base valve assembly.



12-16 SUSPENSION

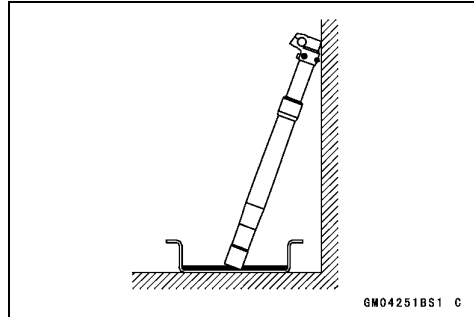
Front Fork

- Drain the fork oil [A] from the cylinder unit [B] by pumping the piston rod several times

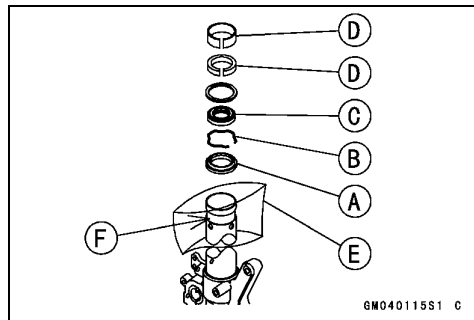


Front Fork Assembly

- When the fork tubes are not disassembled, hold the fork inverted position for more than 20 minutes to allow the fork oil to fully drain.



- Replace the following with new ones:
 - Dust Seal [A]
 - Retaining Ring [B]
 - Oil Seal [C]
 - Guide Bushes [D]
- Place an oil coated plastic bag [E] over the end of the inner tube to protect the oil seals.
- The inner tube guide bush groove has a sharp edge [F] that can cut the sealing lip of the seals as they are pushed down over the inner tube.
- Install in order these parts on the inner tube.



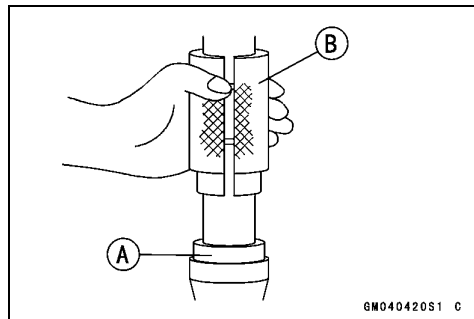
- When assembling the new outer tube guide bush [A], hold the washer against the new one, and tap the washer with the fork oil seal driver [B] until it stops.

Special Tool - Fork Oil Seal Driver, ϕ 48: 57001-1509

- After installing the washer, install the oil seal by using the fork oil seal driver.

Special Tool - Fork Oil Seal Driver, ϕ 48: 57001-1509

- Install the retaining ring to the outer tube.
- Push the dust seal into the outer tube, and put the spring band on the dust seal.



Front Fork

- Clean the threads [A] of subtank and base valve assembly.



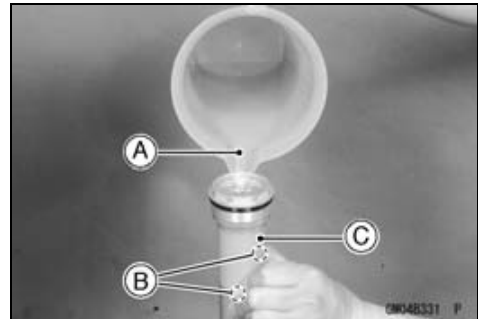
- With the piston rod in fully compressed position, pour the specified amount of fork oil [A].

Recommended Oil: KHL15-10 (KAYABA01) or equivalent

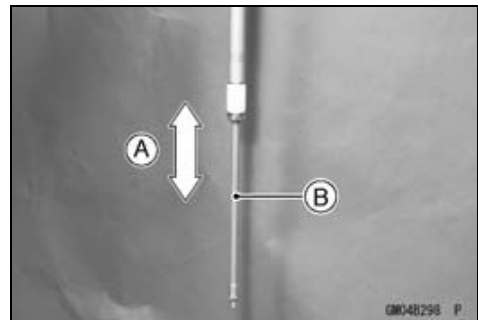
Recommended Quantity: 160 ml (5.41 US oz)

NOTE

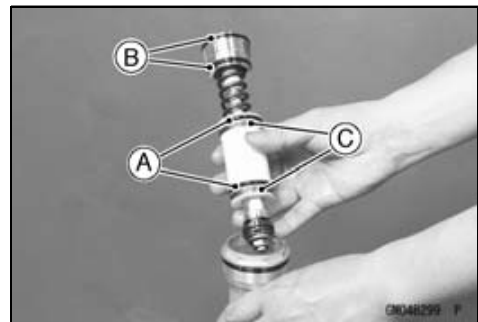
○ Plug the two oil holes [B] on the subtank [C] with fingers.



- Pump [A] the piston rod [B] slowly several times to expel air.



- Replace the O-rings [A] on the base valve assembly with new ones.
- Apply specified fork oil to the O-rings [A] [B] and bushings [C] on the base valve assembly.



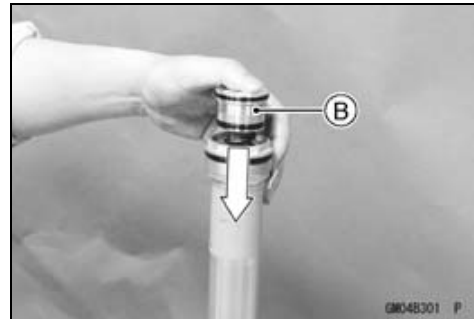
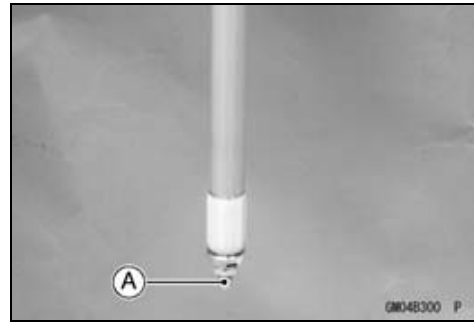
12-18 SUSPENSION

Front Fork

- With the piston rod held immovable in fully compressed position [A], gently install the base valve assembly [B] to the subtank.
- Screw in the base valve assembly in the subtank when the piston rod extends.

NOTE

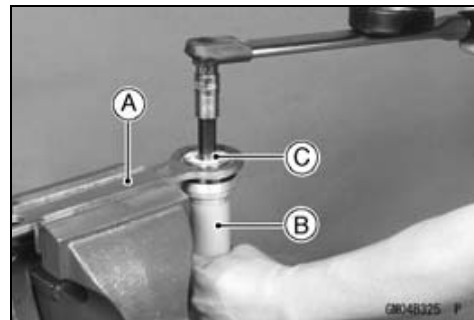
○When it is hard to screw in the base valve assembly, pull down the piston rod a little.



- Holding the top plug wrench [A] (special tool) with a vise.
- Holding the subtank [B] with the top plug wrench, torque the base valve assembly [C].

Special Tool - Top Plug Wrench, 46 mm: 57001-1622

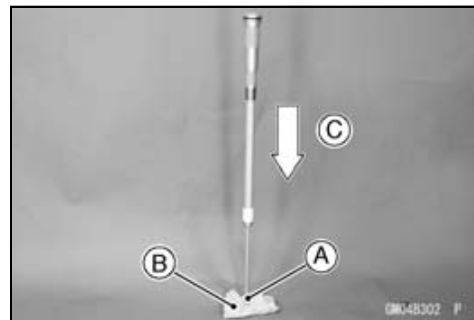
Torque - Base Valve Assembly: 27 N·m (2.8 kgf·m, 20 ft·lb)



- Protect the piston rod end [A] with a rag [B] to prevent fork damage.
- Discharge the extra oil off the cylinder unit by pumping [C] the piston rod to full stroke.

CAUTION

Be careful not to bend or damage the piston rod when the piston rod is stroked. Service carefully because oil flies out from the oil hole of the cylinder unit.



NOTE

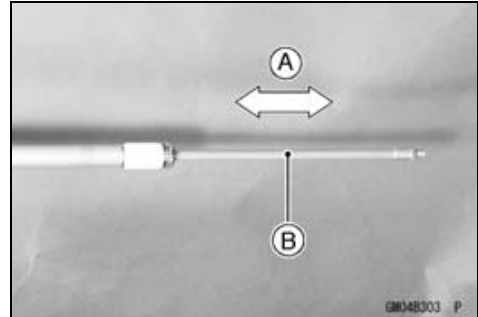
- Set the compression damper setting to the softest.
- Check the piston rod sliding surface for damage.
- Apply fork oil to the piston rod sliding surface.

Front Fork

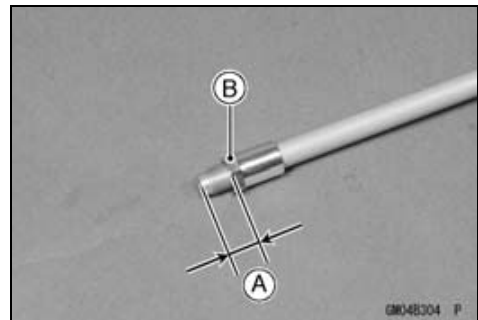
- Drain the extra oil from the subtank oil hole [A].



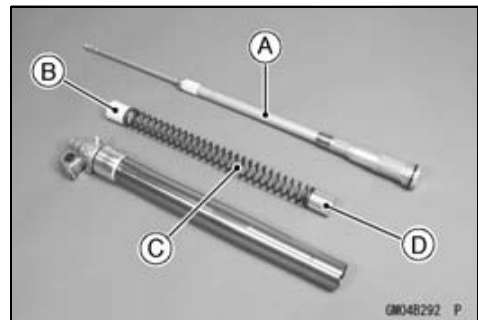
- With the cylinder unit in horizontal position, move [A] the piston rod [B] by hand to inspect it if operating smoothly.
- If the piston rod is not extend, remove the base valve assembly and perform the air bleeding (pour the specified amount fork oil and discharge an excess of oil).



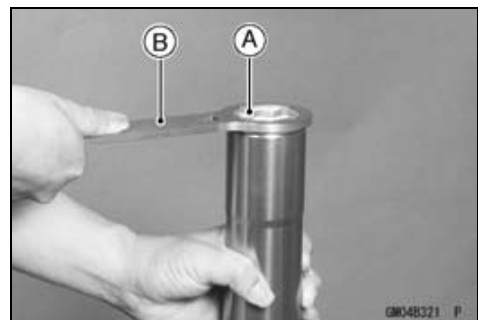
- Make sure about 16 mm (0.63 in.) [A] of push rod thread is exposed from the lock nut [B].



- Completely wipe of the fork oil from following parts.
 - Cylinder Unit [A]
 - Spring Collar [B] (KX250-R1)
 - Spring [C]
 - Spring Collar [D]
- Insert above-mentioned parts into the fork.



- Temporarily tighten the fork top plug [A] (subtank) using the special tool.
- **Special Tool - Top Plug Wrench, 46 mm: 57001-1622 [B]**



12-20 SUSPENSION

Front Fork

- Clamp the axle holder with a vise.
- Protect the axle holder with a rag when using a vise.

▲ WARNING

**Clamping the axle holder too tight can damage it which will affect riding stability.
Do not clamp the axle holder too tight.**

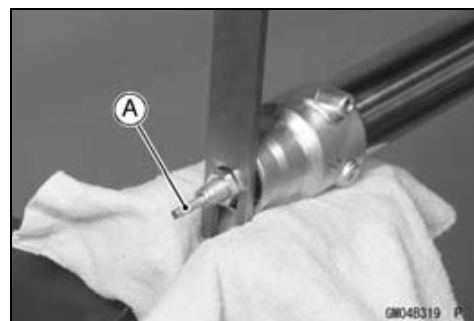
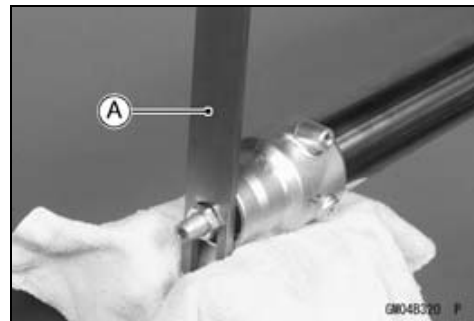
- Compress the outer tube by hands and install the top plug wrench [A] (special tool) between the axle holder bottom and lock nut.

Special Tool - Top Plug Wrench, 46 mm: 57001-1622

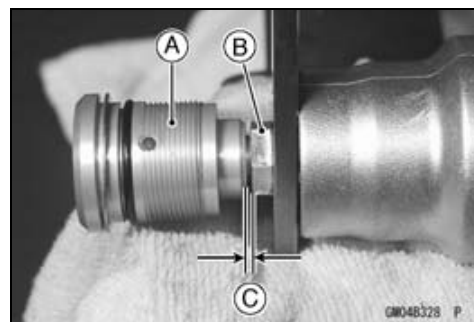
▲ WARNING

**Be careful of reaction force in spring and fix surely so that special tool should not come off.
Do not place the fingers etc. while serving.**

- Insert the push rod [A] into the piston rod.



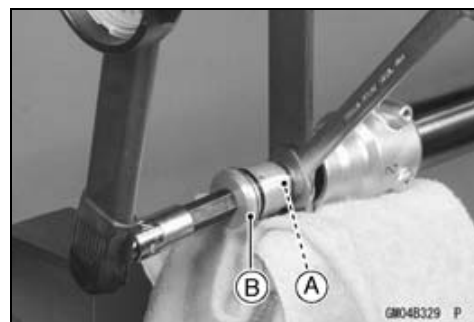
- Replace the O-ring and gasket on the adjuster assembly with new ones and apply specified fork oil to the O-ring.
- Slowly turn the adjuster assembly [A] clockwise until resistance is felt and check the clearance between the lock nut [B] and adjuster assembly [A] to provide more than 1 mm (0.04 in.) [C].



- Turn the lock nut [A] counterclockwise until it contacts with the adjuster assembly [B].
- With the lock nut held immovable using a wrench, tighten the adjuster assembly to the specified torque.

Torque - Lock Nut/Adjuster Assembly: 29 N·m (3.0 kgf·m, 22 ft·lb)

- With the outer tube compressed by hands, remove the special tool.



Front Fork

- Apply a non-permanent locking agent to the threads of adjuster assembly.
- Torque the adjuster assembly [A].

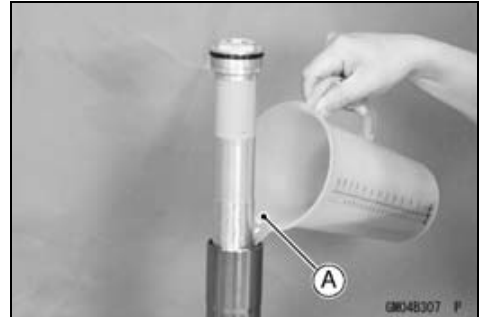
Torque - Adjuster Assembly: 58 N·m (6.0 kgf·m, 43 ft·lb)



- Loosen and remove the fork top plug (subtank) from the outer tube and slowly slide down the outer tube.

Special Tool - Top Plug Wrench, 46 mm: 57001-1622

- Pour [A] the specified amount of fork oil into the outer tube.



Recommended Oil: KHL15-10 (KAYABA01) or equivalent

Recommended Quantity:

KX250-R1	300 mL (10.14 US oz)
KX250R6F ~	310 mL (10.48 US oz)

- Raise the outer tube and temporarily tighten the fork top plug (subtank).

Special Tool - Top Plug Wrench, 46 mm: 57001-1622

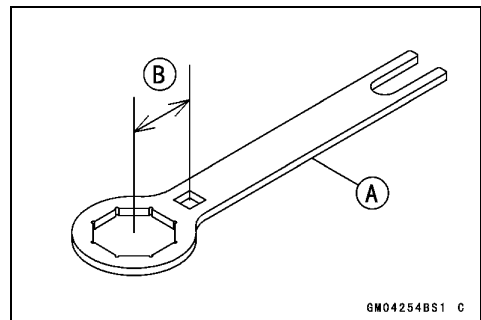
- After installing the front fork, torque the top plug [A].

Special Tool - Top Plug Wrench, 46 mm: 57001-1622 [B]



The torque of fork top plug is specified to **29 N·m (3.0 kgf·m, 22 ft·lb)**, however, when you use the top plug wrench (special tool) [A] reduce the torque to 90% of the specified value [**26 N·m (2.7 kgf·m, 20 ft·lb)**] due to the distance [B] between the center of the square hole, where the torque wrench is fitted, and that of the octagonal hole of the wrench.

This torque value [**26 N·m (2.7 kgf·m, 20 ft·lb)**] is applicable when you use a torque wrench whose length gives leverage of approximately 310 mm between the grip point to the center of the coupling square.

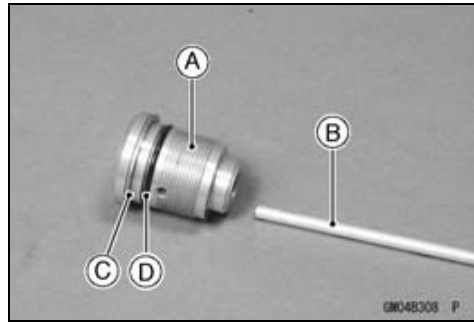


12-22 SUSPENSION

Front Fork

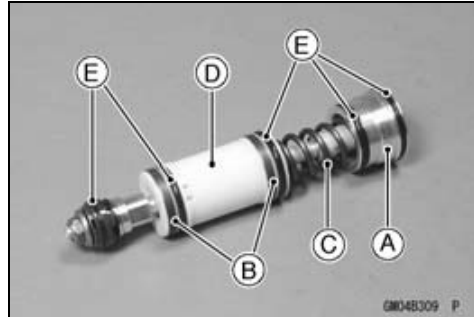
Adjuster Assembly Inspection

- Inspect the adjuster assembly [A] and push rod [B] for damage.
- ★ If they are damaged, replace them with new ones.
- Replace the gasket [C] and O-ring [D] on the adjuster assembly with new ones.



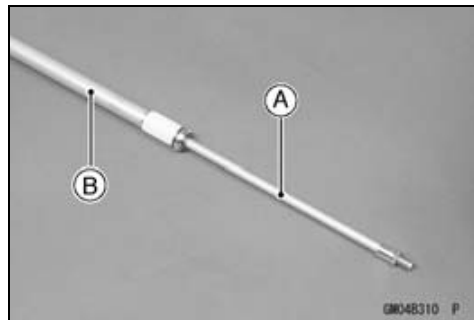
Base Valve Assembly Inspection

- Inspect the threads portion [A], bushing [B] and spring [C] of base valve assembly [D] for damage.
- ★ If they are damaged, replace base valve assembly with new one.
- Replace the O-rings [E] with new ones.



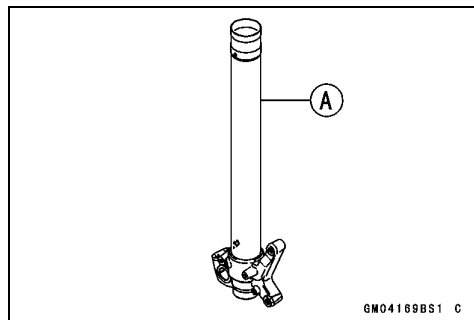
Cylinder Unit Inspection

- Inspect the piston rod [A] of cylinder unit [B] for scratches or bending.
- ★ If it has scratches or is bent, replace cylinder unit with a new one.

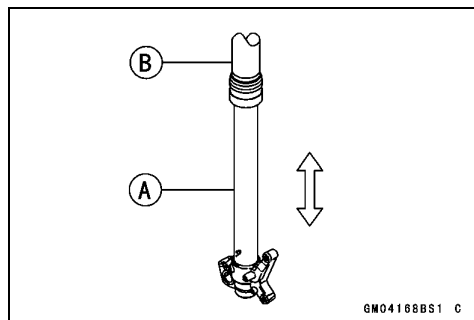


Inner Tube Inspection

- Visually inspect the inner tube [A], repair any damage.
- Nick or rust damage can sometimes be repaired by using a wet-stone to remove sharp edges or raised areas which cause seal damage.
- ★ If the damage is not repairable, replace the inner tube. Since damage to the inner tube damages the oil seal, replace the oil seal whenever the inner tube is repaired or replaced.



- Temporarily assemble the inner [A] and outer tubes [B], and pump them down and up manually to check for smooth operation.



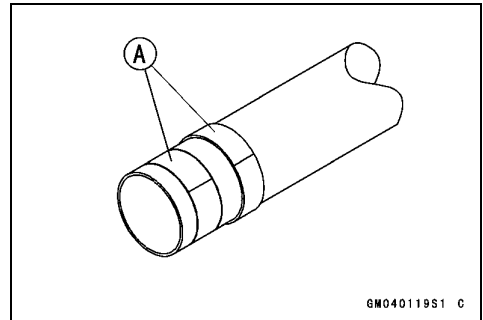
CAUTION

If the inner tube is badly bent or creased, replace it. Excessive bending, followed by subsequent straightening, can weaken the inner tube.

Front Fork

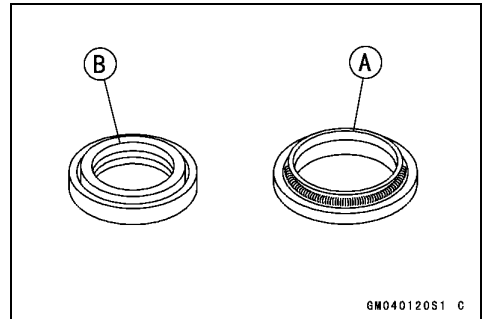
Guide Bush Inspection

- Visually inspect the guide bushes [A], and replace them if necessary.



Dust Seal/Oil Seal Inspection

- Inspect the dust seal [A] for any signs of deterioration or damage.
- ★ Replace it if necessary.
- Replace the oil seal [B] with a new one whenever it has been removed.



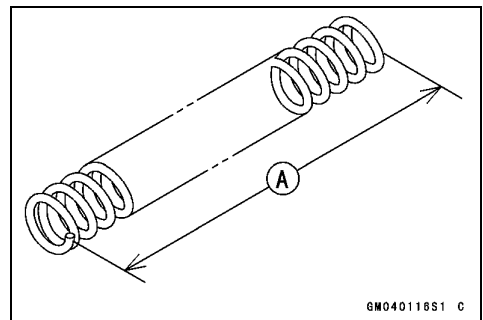
Spring Tension

- Since a spring becomes shorter as it weakens, check its free length [A] to determine its condition.
- ★ If the spring of either fork leg is shorter than the service limit, it must be replaced.

Fork Spring Free Length

Standard: 465 mm (18.31 in.)

Service Limit: 456 mm (17.95 in.)



12-24 SUSPENSION

Rear Suspension (Uni-Trak)

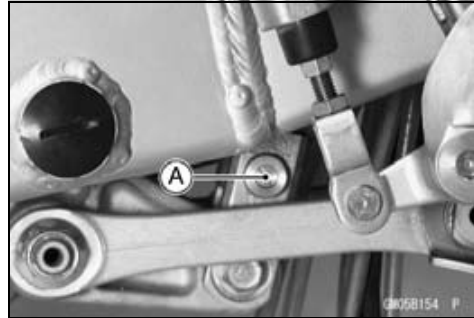
Rear Shock Absorber

The rear suspension system of this motorcycle is new Uni-trak. It consists of a rear shock absorber, swing arm, tie-rod and rocker arm.

To suit to various riding conditions, the spring preload of the shock absorber can be adjusted or the spring can be replaced with an optional one. Also the damping force can be adjusted easily so changing oil viscosity unnecessary.

Rebound Damping Adjustment

- Turn the rebound damping adjuster [A] on the rear shock absorber lower end with the blade of a screwdriver until you feel a click.
- ★ If the damper setting feels too soft or too stiff, adjust it in accordance with the following table:



Seated position: adjuster turned fully clockwise [A].

Rebound Damping Adjuster Setting

Standard:

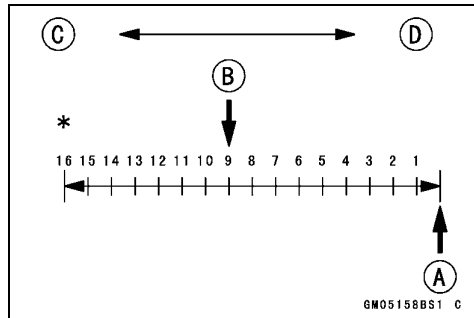
KX250-R1 9 clicks [B]

KX250R6F ~ 10 clicks

Softer (Counterclockwise) [C]

Harder (Clockwise) [D]

*: Number of turns counterclockwise usable range-16 clicks or more.



CAUTION

Do not force the rebound and compression damping force adjusters beyond the fully seated position, or the adjusting mechanism may be damaged.

NOTE

○ Adjustment of the rebound damping adjuster for the rear suspension will slightly affect the compression damping force. Always make any damping adjustments in small steps and test their effects before using them in competition.

Rear Suspension (Uni-Trak)

Compression Damping Adjustment

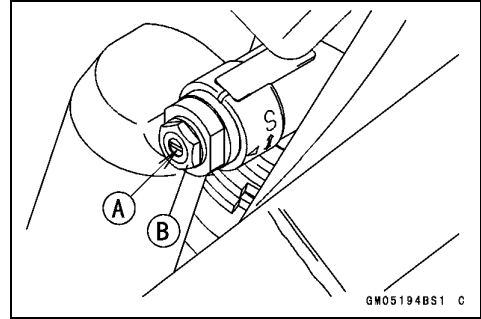
KX250-R1

- Turn the compression damping adjuster [A] on the rear shock absorber gas reservoir with a flat-blade screwdriver.

KX250R6F ~

There are two adjustments you can make to the rear shock absorber gas reservoir.

- To adjust the high speed compression damping, turn the high speed compression damping adjuster [B] with a 17 mm wrench
 - To adjust the low speed compression damping, turn the low speed compression damping adjuster [A] with a flat head screwdriver.
- ★ If the damping feels too soft or too stiff, adjust it in accordance with the following table.



High Speed Compression Damping Adjuster Setting

Standard:

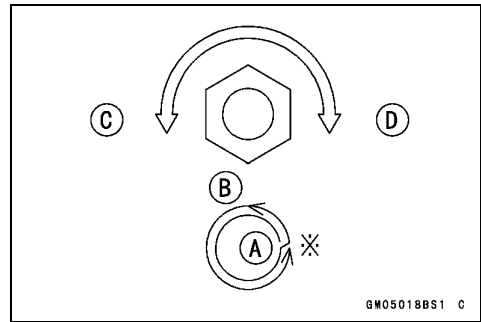
KX250R6F ~ 1 1/4 turns out [B]

Seated position : adjuster turned fully clockwise [A].

Softer (Counterclockwise) [C]

Harder (Clockwise) [D]

*: Number of turns counterclockwise usable range-2 turns out.



Low Speed Compression Damping Adjuster Setting

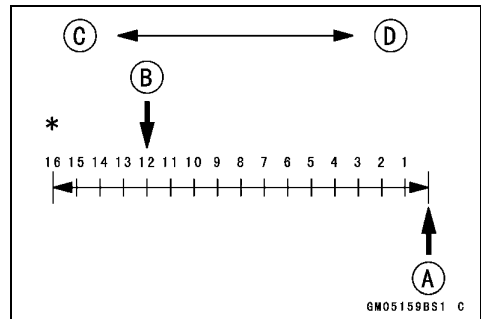
Standard: 12 clicks [B]

Seated position : adjuster turned fully clockwise [A].

Softer (Counterclockwise) [C]

Harder (Clockwise) [D]

*: Number of turns counterclockwise usable range-16 clicks or more.



CAUTION

Do not force the rebound and compression damping force adjusters beyond the fully seated position, or the adjusting mechanism may be damaged.

NOTE

○ Adjustment of the rebound damping adjuster for the rear suspension will slightly affect the compression damping force. Always make any damping adjustments in small steps and test their effects before using them in competition.

12-26 SUSPENSION

Rear Suspension (Uni-Trak)

Spring Preload Adjustment

- Remove:
 - Seat
 - Side Covers
 - Muffler
 - Rear Frame Mounting Bolts [A]
 - Rear Frame [B] with Air Cleaner Housing
- Using the jack under the frame, raise the rear wheel off the ground.

Special Tool - Jack: 57001-1238

- Using the hook wrenches [A], loosen the locknut [B] on the rear shock absorber.

Special Tool - Hook Wrench R37.5, R42: 57001-1101

- Using the stem nut wrench [A], turn the adjusting nut [B] as required. Turning the adjusting nut downward marks the spring action harder and upward softer.

Special Tool - Steering Stem Nut Wrench: 57001-1100

Spring Preload Adjustment (Adjusting nut position at the lower surface [A] from the center of the mounting hole)

Standard:

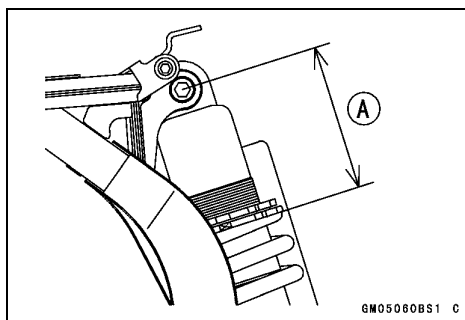
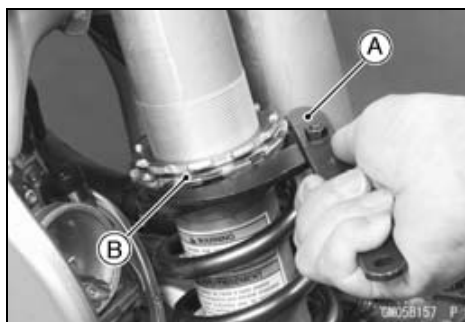
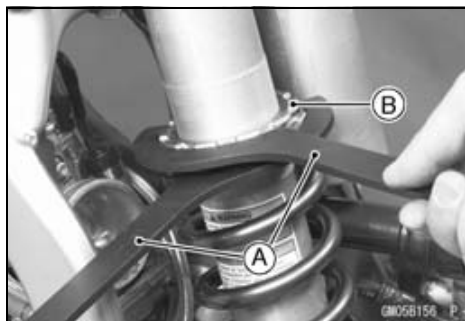
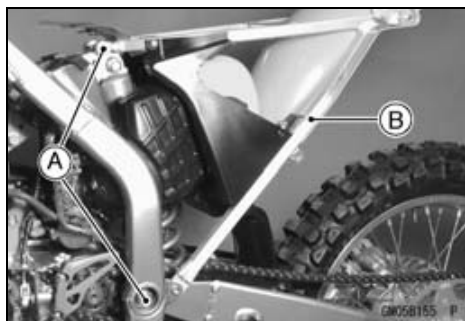
KX250-R1 120 mm (4.72 in.)

KX250R6F ~ 118 mm (4.65 in.)

Adjustable Range: 109 ~ 129.5 mm (4.29 ~ 5.10 in.)

- Tighten the locknut securely.
- After adjusting, move the spring up and down to make sure that the spring is seated.
- Install the parts removed.
- Tighten the rear frame mounting bolts.

Torque - Rear Frame Mounting Bolts: 34 N·m (3.5 kgf·m 25 ft·lb)



Rear Suspension (Uni-Trak)

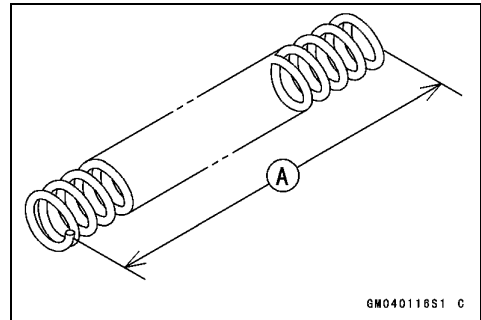
Spring Tension

- Since the spring becomes shorter as it weakens, check its free length [A] to determine its condition.
- ★ If the spring is shorter than the service limit, it must be replaced.

Shock Absorber Spring Free Length

Standard: 260 mm (10.24 in.)

Service Limit: 255 mm (10.04 in.)



Rear Shock Absorber Removal

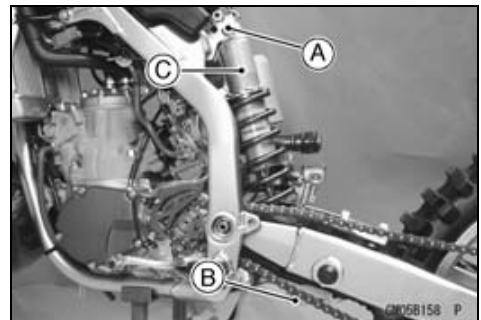
- Remove:
 - Seat
 - Side Covers
 - Muffler
 - Rear Frame with Air Cleaner Housing
- Using the jack under the frame, raise the rear wheel off the ground.

Special Tool - Jack: 57001-1238

CAUTION

When pulling out the mounting bolts, lift the rear wheel slightly. Forcing or tapping on a bolt could damage the bolt, sleeve, and bearing

- Remove the rear shock absorber upper [A] and lower [B] mounting bolts and nuts.
- Remove the rear shock absorber [C].



Rear Shock Absorber Installation

- Pack the rocker arm needle bearings with grease.
- Tighten the following:
 - Torque - Rear Shock Absorber Mounting Nut (Upper):** 39 N·m (4.0 kgf·m, 29 ft·lb)
 - Rear Shock Absorber Mounting Nut (Lower):** 34 N·m (3.5 kgf·m, 24 ft·lb)
 - Tie-rod Mounting Nut:** 83 N·m (8.5 kgf·m, 61 ft·lb)
 - Rear Frame Mounting Bolts:** 34 N·m (3.5 kgf·m, 25 ft·lb)

Spring Replacement

In addition to the standard spring, heavy and light springs are available. If the standard spring is improper for your purpose, select a proper one according to the rider's weight or course conditions.

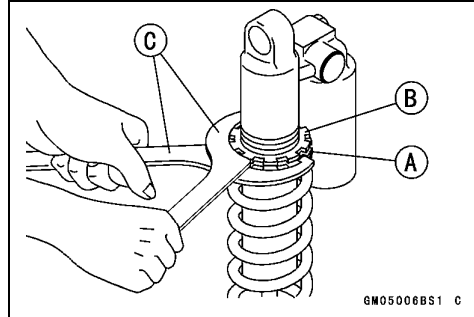
- Remove:
 - Side Covers
 - Seat
 - Muffler
 - Rear Frame with Air Cleaner Housing
- Remove the rear shock absorber.
- Clean the threaded portion on the upper of the rear shock absorber.
- Hold the lower of the rear shock absorber with a vise.

12-28 SUSPENSION

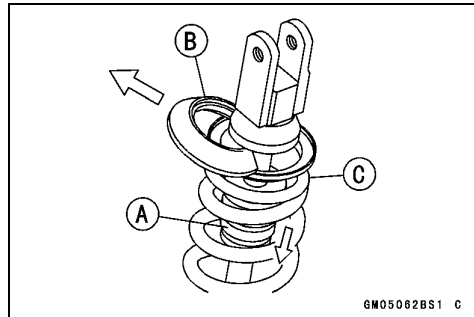
Rear Suspension (Uni-Trak)

- Using the hook wrenches [C], loosen the locknut [B] and turn the adjusting nut [A] all way up.

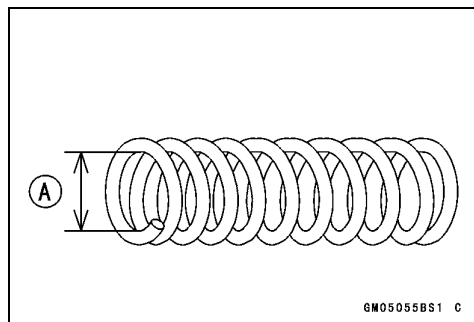
Special Tool - Hook Wrench R37.5, R42: 57001-1101



- Remove the rear shock absorber from the vise.
- Slide down the rubber bumper [A].
- Remove the spring guide [B] from the shock absorber and lift off the spring [C].



- Exchange the spring for an optional part. Install the spring so that closed coil large diameter end [A] faces upward.
- Install the spring guide.
- Adjust the spring preload (see Spring Preload Adjustment).
- Install the rear shock absorber.
- Install the parts removed.



Rear Shock Absorber Disassembly (Oil Change)

- Refer to the Rear Shock Absorber Oil Change in the Periodic Maintenance chapter.

Rear Shock Absorber Assembly

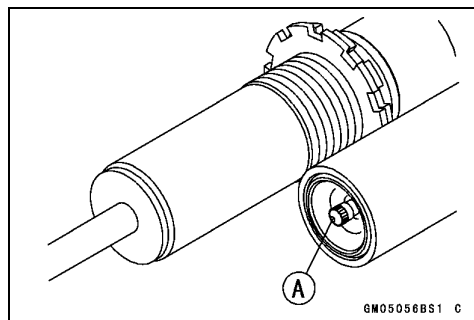
- Refer to the Rear Shock Absorber Oil Change in the Periodic Maintenance chapter.

Rear Shock Absorber Scrapping

⚠ WARNING

Since the reservoir tank of the rear shock absorber contains nitrogen gas, do not incinerate the reservoir tank without first releasing the gas or it may explode.

- Remove the shock absorber (see Rear Shock Absorber Removal).
- Remove the valve cap [A] and release the nitrogen gas completely from the gas reservoir.
- Remove the valve.



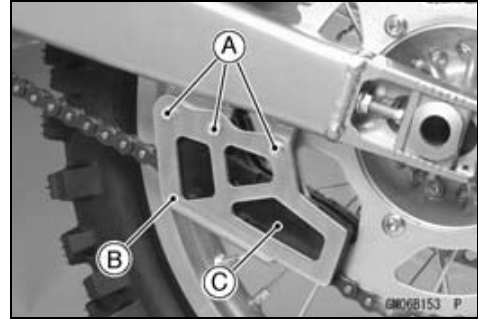
⚠ WARNING

Since the high pressure gas is dangerous, do not point the valve toward your face or body.

Swingarm

Swingarm Removal

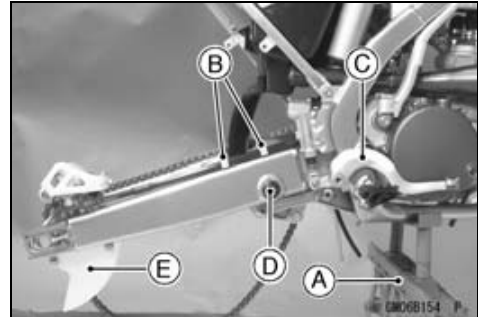
- Remove:
 - Bolts [A]
 - Chain Guide Plate [B]
 - Chain Guide [C]



- Place the jack [A] under the frame so that the rear wheel is off the ground.

Special Tool - Jack: 57001-1238

- Remove
 - Rear Wheel (see Wheels/Tires chapter)
 - Clamps [B]
 - Brake Pedal [C] (see Brakes chapter)
 - Caps [D]
 - Disc Protector [E]



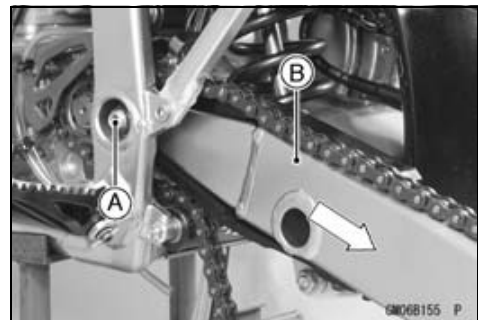
- Unscrew the rocker arm mounting nut [A] and pull out the rocker arm bolt.

CAUTION

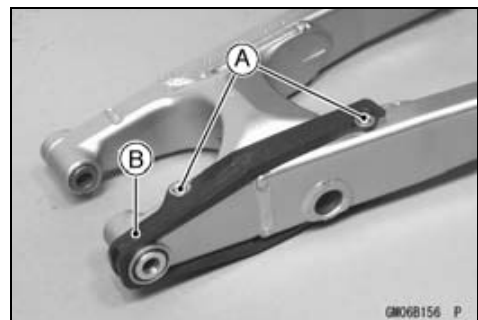
When pulling out the mounting bolts, lift the swingarm slightly. Forcing or tapping on a bolt could damage the bolt, sleeve, and bearing.



- Unscrew the nut [A].
- Pull out the swingarm pivot shaft, and remove the swingarm [B].



- Unscrew the screws [A]
- Separate the chain slipper [B] from the swingarm.



12-30 SUSPENSION

Swingarm

Swingarm Installation

- Apply plenty of grease to the inside of the needle bearings, sleeves, and oil seals.
- Tighten the following:

Torque - Swingarm Pivot Shaft Nut: 98 N·m (10.0 kgf·m, 72 ft·lb)

Rocker Arm Mounting Nut: 83 N·m (8.5 kgf·m, 61 ft·lb)

- Refer to the Wheels/Tires, Final Drive, and Brakes chapters for wheel installing.

Swingarm Bearing Removal

- Remove:
 - Swingarm
 - Collars [A]
 - Grease Seals [B]
 - Sleeves [C]
 - Needle Bearings [D]
- Remove the needle bearings [E] using the oil seal & bearing remover.

Special Tool - Oil Seal & Bearing Remover: 57001-1058

Swingarm Bearing Installation

- Replace the needle bearings and, grease seals with new ones.
- Apply plenty of grease to the grease seals, and needle bearings [A].

NOTE

- Install the needle bearings so that the manufacturer's marks face out.
- Install the grease seals so that the deep groove side of the rip faces in-ward.

Special Tool - Bearing Driver Set: 57001-1129

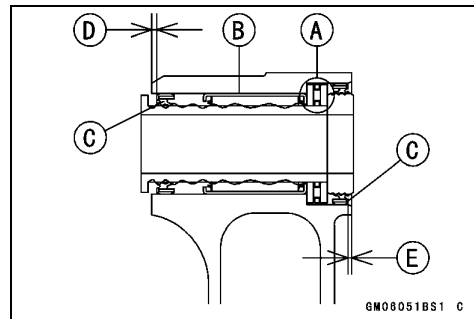
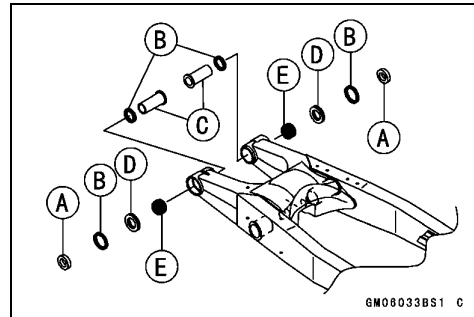
- Install the needle bearings [A], [B], and grease seals [C] position as shown.
 - [D] 1.5 mm (0.059 in.)
 - [E] 1 mm (0.039 in.)
- The installation procedure is the same as the counter side.

Swingarm Bearing, Sleeve Inspection

CAUTION

Do not remove the bearings for inspection. Removal may damage them.

- Inspect the needle bearings installed in the swingarm.
 - The rollers in a bearing normally wear very little, and wear is difficult to measure. Instead of measuring, visually inspect the bearing for abrasion, discoloration, or other damage.
 - ★ If the needle bearing, and sleeve show any signs of abnormal wear, discoloration, or damage, replace them as a set.



Tie-rod, Rocker Arm

Tie-rod Removal

- Using the jack under the frame, raise the rear wheel off the ground.

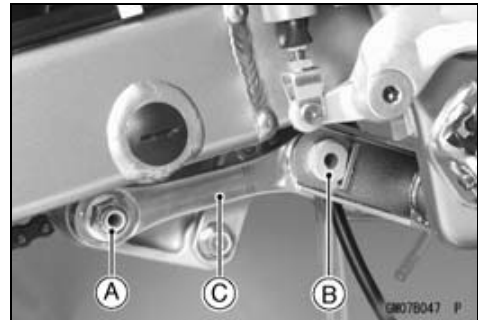
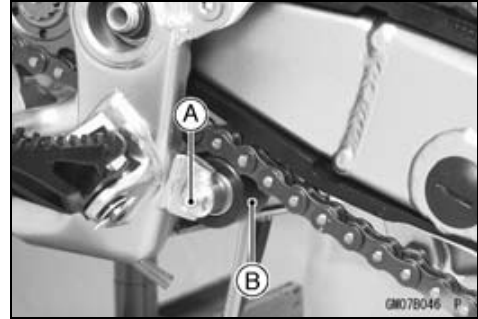
Special Tool - Jack: 57001-1238

- Unscrew the nut [A] and remove the guide roller [B].

CAUTION

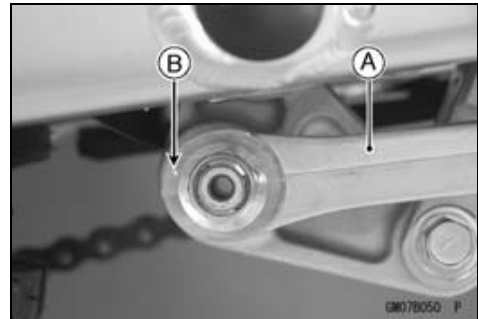
When pulling out the mounting bolts, lift the rear wheel slightly. Forcing or tapping on a bolt could damage the bolt, sleeve, and bearing.

- Remove the tie-rod rear mounting bolt [A].
- Remove the tie-rod front mounting bolt [B], and then take out the tie-rod [C].



Tie-rod Installation

- Install the tie-rod [A] so that its mark [B] faces right side.



- Apply plenty of grease to the inside of the oil seals.
- Be sure seated the washers.
- Tighten the tie-rod front and rear mounting nuts.

Torque - Tie-rod Mounting Nuts: 83 N·m (8.5 kgf·m, 61 ft·lb)

Rocker Arm Removal

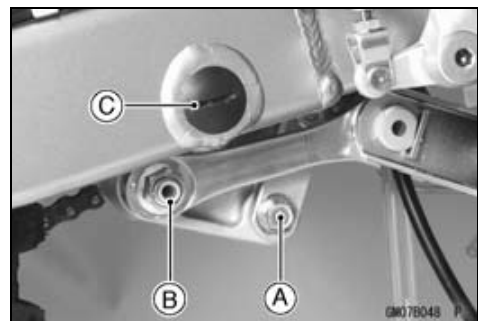
- Using the jack under the frame, raise the rear wheel off the ground.

Special Tool - Jack: 57001-1238

CAUTION

When pulling out the mounting bolts, lift the rear wheel slightly. Forcing or tapping on bolt could damage the bolt, sleeve, and bearing.

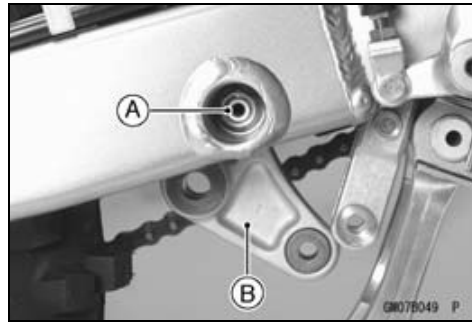
- Remove the rear shock absorber lower mounting bolt [A].
- Remove the tie-rod rear mounting bolt [B].
- Remove the caps [C].



12-32 SUSPENSION

Tie-rod, Rocker Arm

- Remove the rocker arm pivot shaft [A].
- Remove the rocker arm [B].



Rocker Arm Installation

- Apply plenty of grease to the inside of the rocker arm, needle bearings, oil seals and grease seals outside of the sleeve.
- Be sure seated the washers.
- Tighten the following:

Torque - Rear Shock Absorber Mounting Nut (Lower): 34 N·m (3.5 kgf·m, 25 ft·lb)

Rocker Arm Pivot Nut: 83 N·m (8.5 kgf·m, 61 ft·lb)

Tie-rod Mounting Nuts: 83 N·m (8.5 kgf·m, 61 ft·lb)

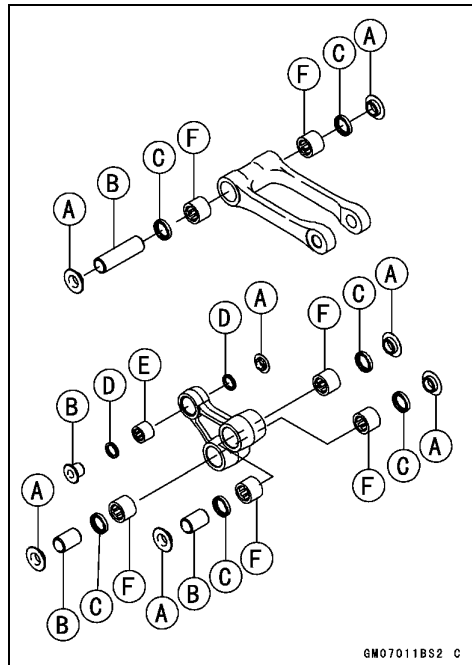
Tie-rod and Rocker Arm Bearing Removal

- Remove:
 - Tie-rod (see Tie-rod Removal)
 - Rocker Arm (see Rocker Arm Removal)
 - Washers [A]
 - Sleeves [B]
 - Oil Seal [C]
 - Grease Seals [D]
- Remove the needle bearings [E], using the bearing remover head and bearing remover shaft.
- Remove the needle bearing [F], using the oil seal & bearing remover.

Special Tools - Bearing Remover Head, $\phi 15 \times \phi 17$: 57001-1267

Bearing Remover Shaft, $\phi 9$: 57001-1265

Oil Seal & Bearing Remover: 57001-1058



Tie-rod and Rocker Arm Bearing Installation

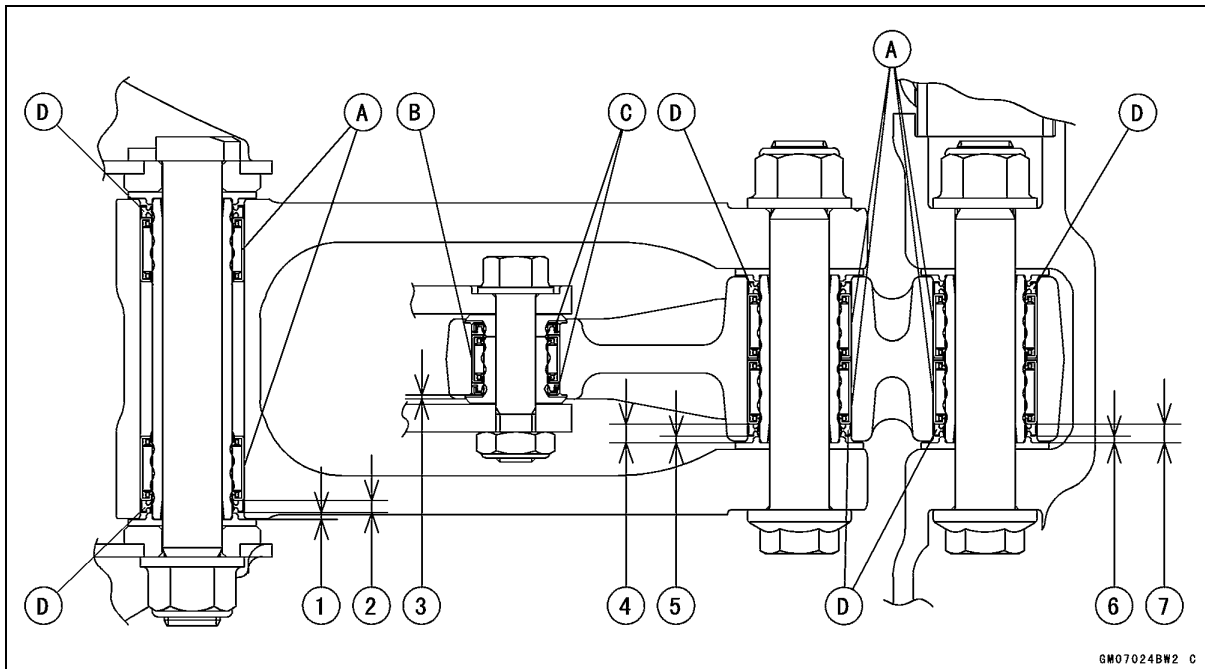
- Replace the needle bearing, grease seals and oil seals with new ones.
- Apply plenty of grease to the oil seal and needle bearings.

NOTE

- Install the needle bearings so that the manufacturer's marks faces out.
- Install the grease seals so that the deep groove side of the rip out-ward.

Tie-rod, Rocker Arm

- Install the needle bearings [A], [B], grease seals [C], and oil seals [D] position as shown.
- The installation procedure is the same as the counter side.



1. 1.5 mm (0.0591 in.)
2. 4.5 mm (0.1772 in.)
3. 1.0 mm (0.039 in.)
4. 4.25 mm (0.1673 in.)
5. 1.25 mm (0.0492 in.)
6. 1.25 mm (0.0492 in.)
7. 4.25 mm (0.1673 in.)

Needle Bearing Inspection

- ★ If there is any doubt as to the condition of either needle bearing, replace the bearing and sleeve as a set.

12-34 SUSPENSION

Uni-Trak Maintenance

Uni-Trak Linkage Inspection

- Refer to the Uni-Trak Linkage Inspection in the Periodic Maintenance chapter.

Tie-rod and Rocker Arm Sleeve Wear

- Pull out the sleeves [A] of the tie-rod and rocker arm.
- Measure the outside diameter of the sleeve.
- ★ If the sleeve is worn past the service limit, replace the sleeve.

Sleeve Outside Diameter

Standard:

Tie-rod 19.987 ~ 20.000 mm (0.7869 ~ 0.7874 in.)

Rocker Arm:

Large 19.987 ~ 20.000 mm (0.7869 ~ 0.7874 in.)

Small 15.95 ~ 16.00 mm (0.628 ~ 0.630 in.)

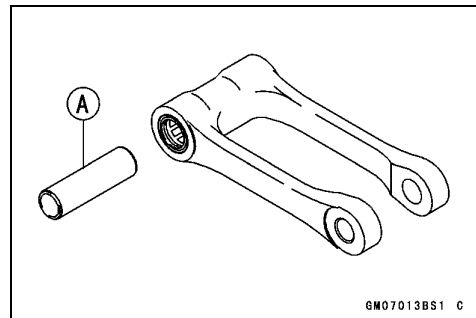
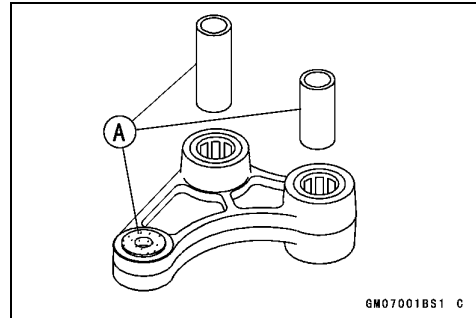
Service Limit:

Tie-rod 19.85 mm (0.781 in.)

Rocker Arm:

Large 19.85 mm (0.781 in.)

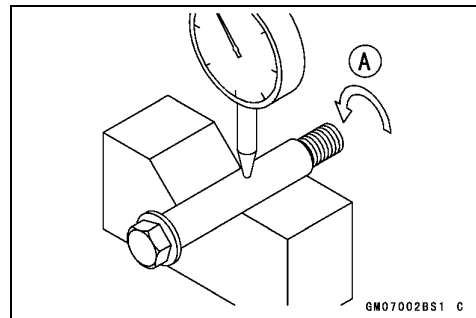
Small 15.91 mm (0.626 in.)



Tie-rod and Rocker Arm Mounting Bolt Bend

A bent bolt causes vibration, poor handling, and instability.

- To measure the bolt runout, remove the bolt, place it in V blocks, and set a dial gauge to the bolt at a point halfway between the blocks. Turn [A] the bolt to measure the runout. The amount of dial variation is the amount of runout.
- ★ If runout exceeds the service limit, replace the bolt.



Bolt Runout

Standard: TIR 0.1 mm (0.004 in.) or less

Service Limit: TIR 0.2 mm (0.008 in.)

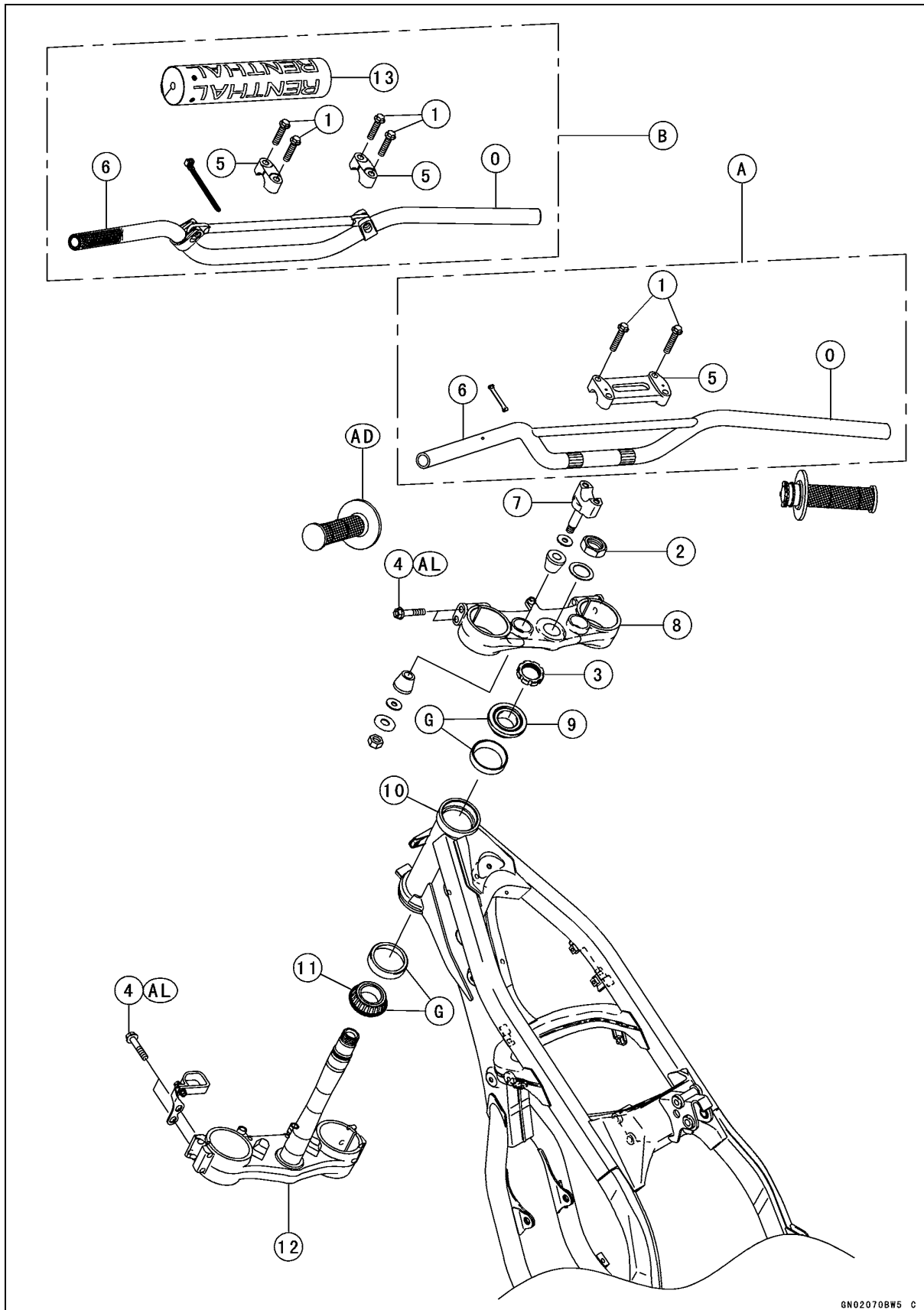
Steering

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13-2 STEERING

Exploded View



Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Handlebar Holder Bolts	25	2.5	18.0	
2	Steering Stem Head Nut	98	10.0	72	
3	Steering Stem Nut	4.9	0.5	43 in·lb	T
4	Front Fork Clamp Bolts (Upper, Lower)	20	2.0	14.5	AL

5. Handlebar Holder(s) (Upper)

6. Handlebar

7. Handlebar Holders (Lower)

8. Steering Stem Head Bracket

9. Tapered Roller Bearing

10. Head Pipe

11. Tapered Roller Bearing

12. Steering Stem

13. Pad

AD: Apply adhesive cement.

AL: Tighten the clamp bolts alternately two times to ensure even tightening torque.

G: Apply grease.

O: Apply 2 Stroke Oil.

T: Tighten all snugly, then loosen, retighten to 4.9 N·m (0.5 kgf·m, 43 in·lb).

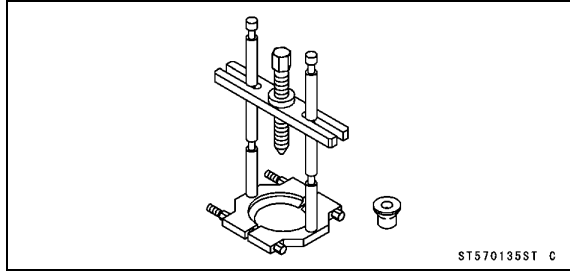
A: KX250-R1 Model

B: KX250R6F Model ~

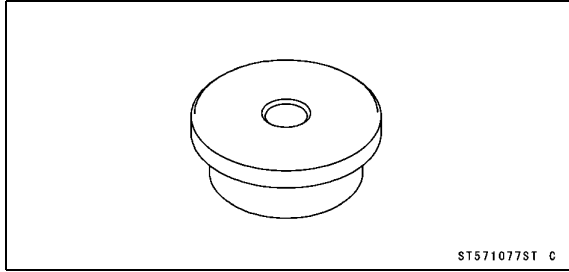
13-4 STEERING

Special Tools

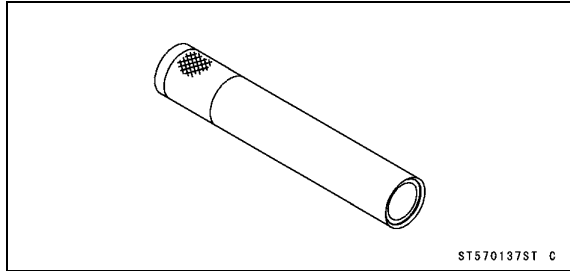
Bearing Puller:
57001-135



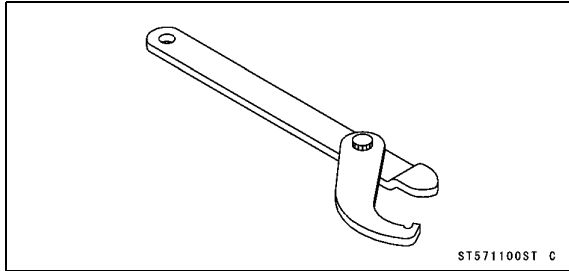
Head Pipe Outer Race Driver, $\phi 54.5$:
57001-1077



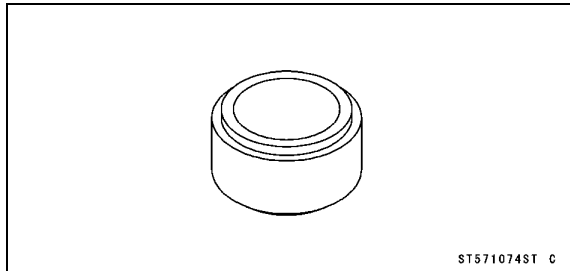
Steering Stem Bearing Driver:
57001-137



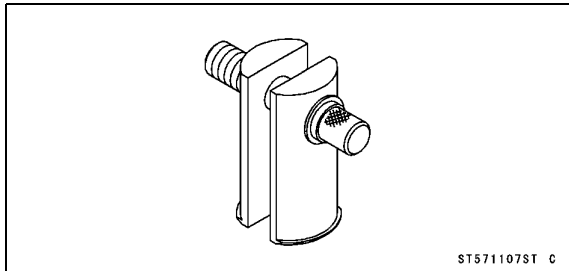
Steering Stem Nut Wrench:
57001-1100



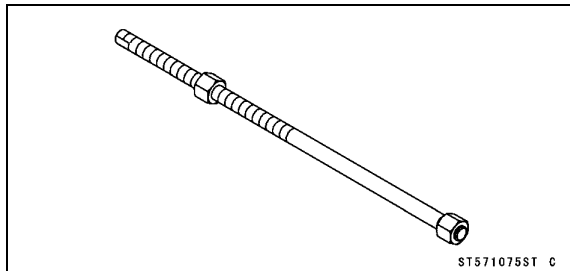
Steering Stem Bearing Driver Adapter, $\phi 34.5$:
57001-1074



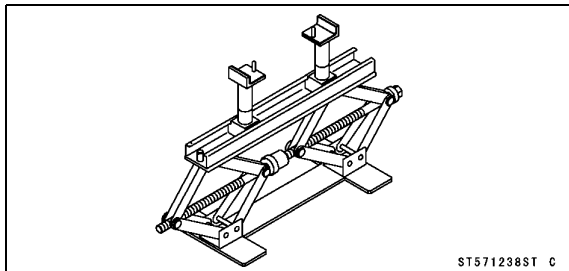
Head Pipe Outer Race Remover ID > 37 mm:
57001-1107



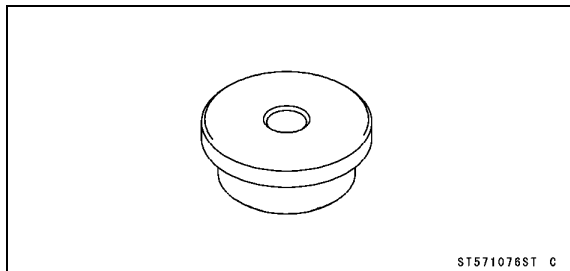
Head Pipe Outer Race Press Shaft:
57001-1075



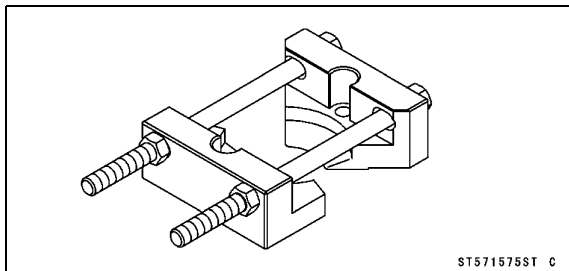
Jack:
57001-1238



Head Pipe Outer Race Driver, $\phi 51.5$:
57001-1076



Bearing Puller:
57001-1575



Steering

Steering Inspection

- Refer to the Steering Inspection in the Periodic Maintenance chapter.

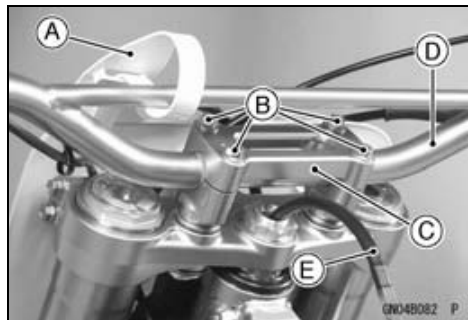
Steering Adjustment

- Refer to the Steering Adjustment in the Periodic Maintenance chapter.

Steering Stem, Stem Bearing Removal

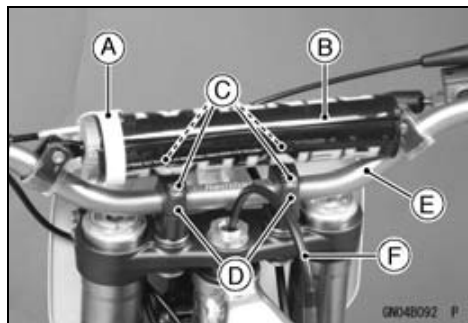
KX250-R1:

- Remove:
 - Front Wheel (see Wheels/Tires chapter)
 - Number Plate [A]
 - Handlebar Holder Bolts [B]
 - Handlebar Holder (Upper) [C]
 - Handlebar [D] (see Handlebar Removal)
- Pull out the breather hose [E].

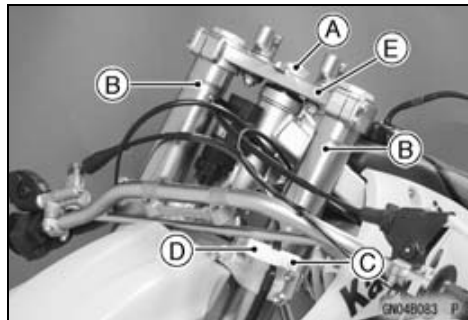


KX250R6F ~:

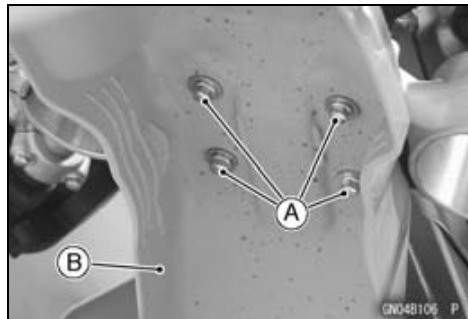
- Remove:
 - Front Wheel (see Wheels/Tires chapter)
 - Number Plate [A]
 - Pad [B]
 - Handlebar Holder Bolts [C]
 - Handlebar Holder (Upper) [D]
 - Handlebar [E] (see Handlebar Removal)
- Pull out the breather hose [F].



- Loosen the steering stem head nut [A]
- Remove:
 - Front Forks [B] (see Suspension chapter)
 - Brake Hose Clamp Bolt [C]
 - Brake Hose Clamp [D]
- Remove the steering stem head nut and washer.
- Remove the steering stem head [E].



- Remove:
 - Front Fender Bolts [A]
 - Front Fender [B]

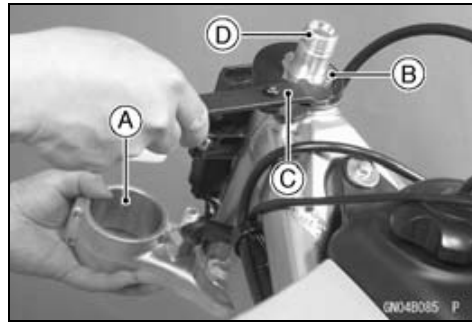


13-6 STEERING

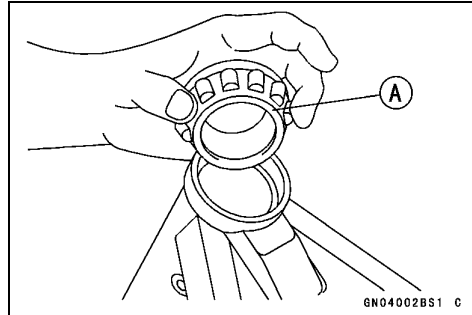
Steering

- Pushing up on the stem base [A], and remove the steering stem nut [B], with the steering stem nut wrench [C], then remove the steering stem [D] and stem base.

Special Tool - Steering Stem Nut Wrench: 57001-1100



- Take off the upper stem bearing inner race (tapered roller bearing) [A].

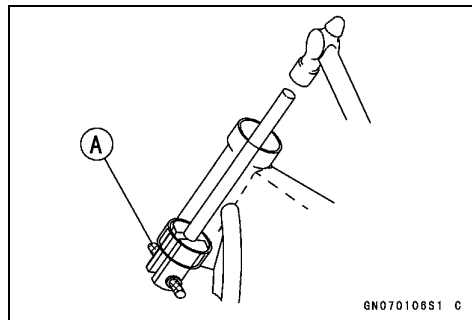


- Drive out the bearing outer races from the head pipe.
- Remove the outer races pressed into the head pipe, using the head pipe outer race remover [A], and hammer the head pipe outer race remover to drive it out.

Special Tool - Head Pipe Outer Race Remover: 57001-1107

NOTE

○ If either steering stem bearing is damaged, it is recommended that both the upper and lower bearing (including outer races) should be replaced with new ones.

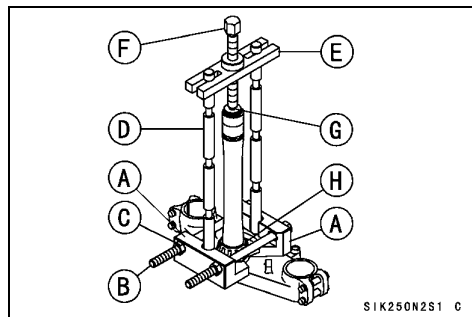


- Remove the lower stem bearing inner race (tapered roller bearing) [A] with its grease seal from the stem using bearing pullers.

Special Tools - Bearing Puller: 57001-135

Bearing Puller: 57001-1575

- Assemble the bearing puller (57001-1575).
- Insert the each half-split base [A] under the bottom of bearing inner race and connect the both bases by tightening the bolts [B] and nuts [C].
- Assemble the parts of the bearing puller (57001-135) as shown in the figure.
 - Stud Bolts [D]
 - Arm [E]
 - Center Bolt [F]
 - Adapter [G]
- Turn the center bolt by a wrench and pull the bearing inner race.



NOTE

○ Tighten evenly two bases by the two bolts.

Steering

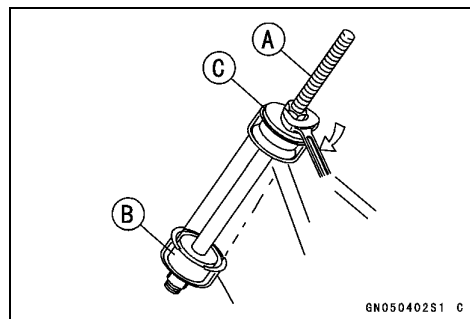
Steering Stem, Stem Bearing Installation

- Replace the bearing outer race with new ones.
- Apply grease to the outer races, and drive them into the head pipe at the same time using the head pipe outer race press shaft [A] and the drivers.

Special Tools - Head Pipe Outer Race Press Shaft: 57001-1075

Head Pipe Outer Race Driver, $\phi 51.5$: 57001-1076 [B]

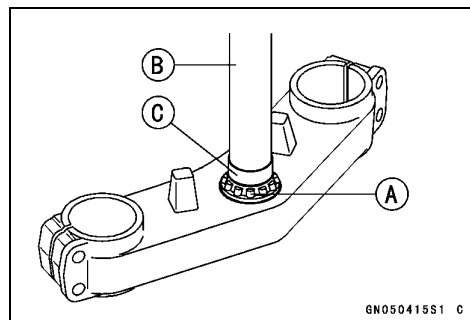
Head Pipe Outer Race Driver, $\phi 54.5$: 57001-1077 [C]



- Replace the lower inner races with new ones.
- Apply grease to the lower tapered roller bearing [A], and drive it onto the stem using the steering stem bearing driver [B] and adapter [C].

Special Tools - Steering Stem Bearing Driver: 57001-137

Steering Stem Bearing Driver Adapter, $\phi 34.5$: 57001-1074

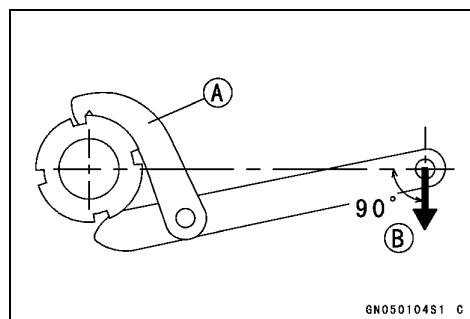


- Apply grease to the upper inner race, and install it in the head pipe.
- Install the stem through the head pipe and upper bearing, and hand-tighten the nut while pushing up on the stem base.
- Install the stem head and washer, and tighten the stem head nut lightly.
- Settle the bearing in place as follows;
 - Tighten the stem nut to 39 N·m (4.0 kgf·m, 29 ft·lb) of torque. (To tighten the steering stem nut to the specified torque, hook the wrench [A] on the stem nut, and pull the wrench at the hole by 22.2 kg force [B] in the direction shown.)

Special Tool - Steering Stem Nut Wrench: 57001-1100

- Check that there is no play and the steering stem turns smoothly without rattles. If not, the steering stem bearings may be damaged.
- Again back out the stem nut a fraction of a turn until it turns lightly.
- Turn the stem nut lightly clockwise until it just becomes hard to turn. Do not overtighten, or the steering will be too tight.

Torque - Steering Stem Nut: 4.9 N·m (0.5 kgf·m, 43 in·lb)



13-8 STEERING

Steering

- Install the front fork (see the Suspension chapter).

NOTE

○ *Tighten the fork upper clamp bolts first, next the stem head nut, last the fork lower clamp bolt.*

Torque - Steering Stem Head Nut: 98 N·m (10.0 kgf·m, 72 ft·lb)

Front Fork Clamp Bolts (Upper, Lower): 20 N·m (2.0 kgf·m, 14.5 ft·lb)

NOTE

○ *Tighten the two clamp bolts alternately two times to ensure even tightening torque.*

- Install the parts removed (see the appropriate chapter).

WARNING

Do not impede the handlebar turning by routing the cables, wires and hoses improperly (see the Appendix chapter).

- Check and Adjust:
 - Steering
 - Front Brake
 - Clutch Cable
 - Throttle Cable

Steering Maintenance

Stem Bearing Lubrication

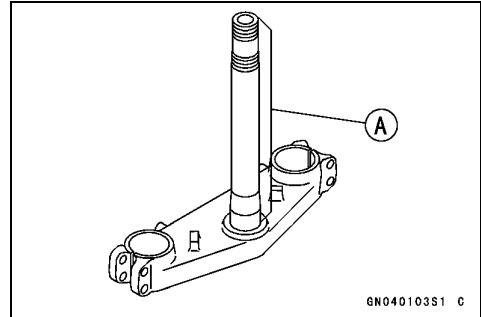
- Refer to the Stem Bearing Lubrication in the Periodic Maintenance chapter.

Stem Bearing Wear, Damage

- Using a high flash-point solvent, wash the upper and lower tapered rollers in the cages, and wipe the upper and lower outer races, which are press-fitted into the frame head pipe, clean off grease and dirt.
- Visually check the outer race and the rollers.
- ★ Replace the bearing assembly if it show damage.

Stem Warp

- Whenever the steering stem is removed, or if the steering cannot be adjusted for smooth action, check the steering stem for straightness.
- ★ If the steering stem shaft is bent [A], replace the steering stem.



13-10 STEERING

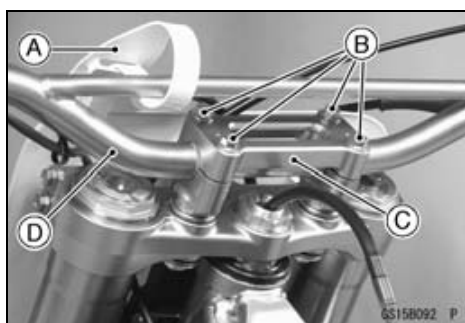
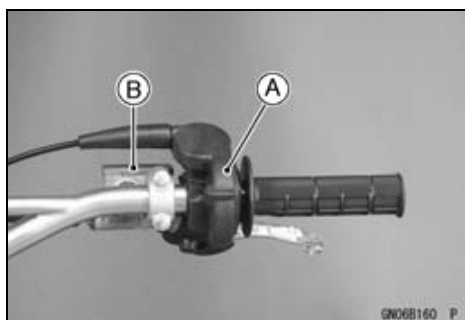
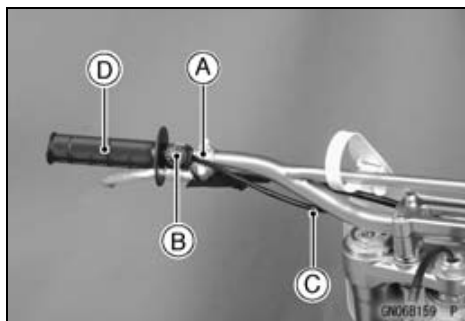
Handlebar

Handlebar Removal (KX250-R1)

- Remove:
 - Clutch Holder [A] (see Clutch chapter)
 - Engine Stop Switch [B]
 - Clamp [C] (Discard)
 - Left Handlebar Grip [D]

- Remove:
 - Throttle Grip Assy [A] (see Fuel System chapter)
 - Master Cylinder [B] (see Brakes chapter)

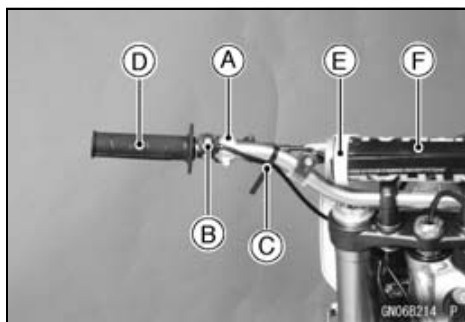
- Remove:
 - Number Plate [A]
 - Handlebar Holder Bolts [B]
 - Handlebar Holder (Upper) [C]
 - Handlebar [D]



Handlebar Removal (KX250-R6F ~)

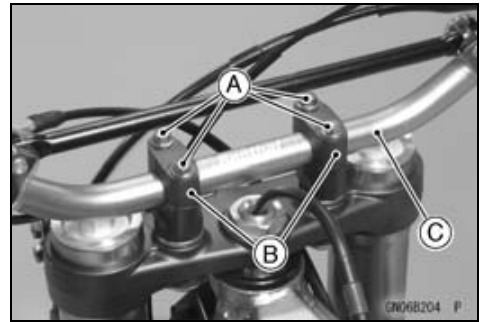
- Remove:
 - Clutch Holder [A] (see Clutch chapter)
 - Engine Stop Switch [B]
 - Clamp [C] (Discard)
 - Left Handlebar Grip [D]
 - Number Plate [E]
 - Pad [F]

- Remove:
 - Throttle Grip Assy (see Fuel System chapter)
 - Master Cylinder (see Brakes chapter)



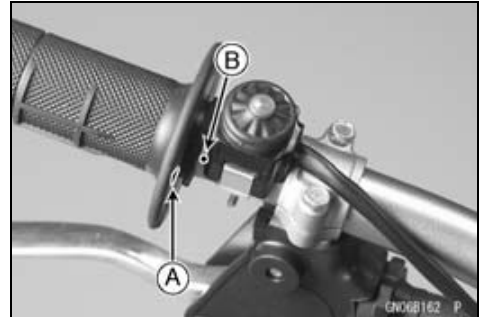
Handlebar

- Remove:
 - Handlebar Holder Bolts [A]
 - Handlebar Holders (Upper) [B]
 - Handlebar [C]

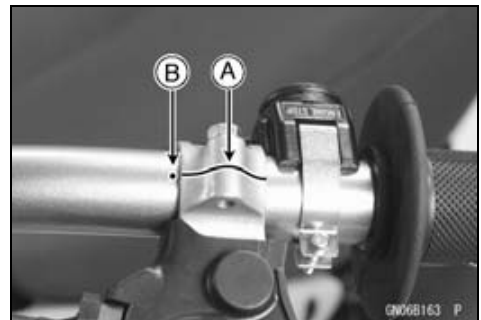


Handlebar Installation (KX250-R1)

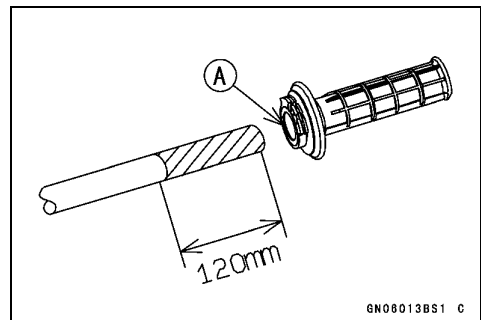
- Apply adhesive cement to the inside of the left handlebar grip.
- Install the left handlebar grip so that the arrow [A] on the grip point to the punch mark [B] on the handlebar.



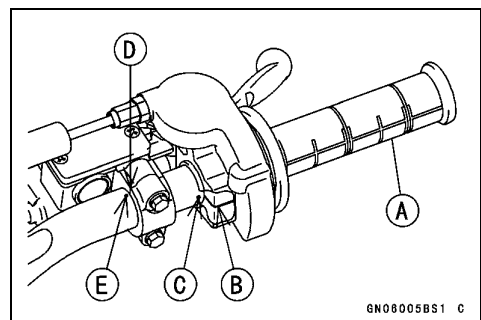
- Install the clutch holder so that the parting line [A] of the holder with punch mark [B] on the handlebar.



- Apply grease to the throttle cable upper end and clutch cable upper end.
- Apply a 2 stroke oil to the throttle grip inner wall [A].



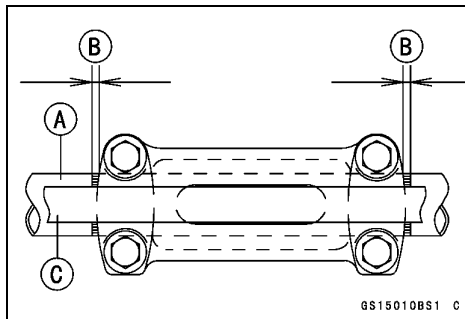
- Install the throttle grip assy so that the grip [A] is in as far as it will go.
- Position the throttle grip assy so that the horizontal parting line [B] of the throttle case with punch mark [C] on the handlebar.
- Install the master cylinder so that the vertical parting line [D] of the front master cylinder clamps with punch mark [E] on the handlebar.



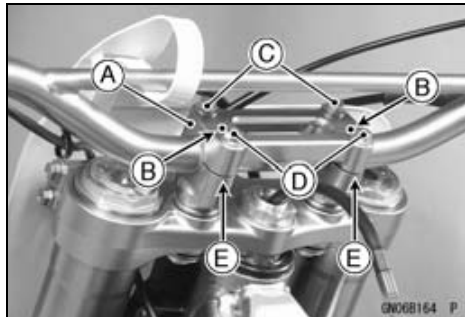
13-12 STEERING

Handlebar

- Install the handlebar [A] on the handlebar holder as shown.
 - Same Length [B]
 - Bridge Bar [C]



- Install the handlebar holder (see Steering Adjustment in the Periodic Maintenance chapter).
- Mount the handlebar holder [A] so that the marks [B] on the clamp points toward rear.
- First tighten the front clamp bolts [C], then, tighten the rear clamp bolts [D]. After tightening the bolts, a clearance [E] will be created behind the clamp.

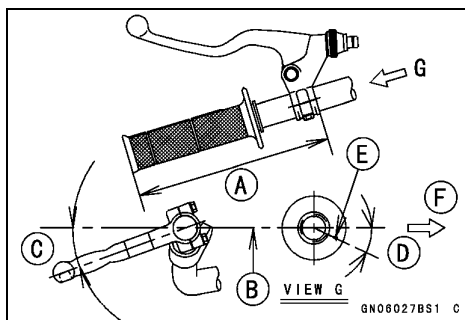


Torque - Handlebar Holder Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)

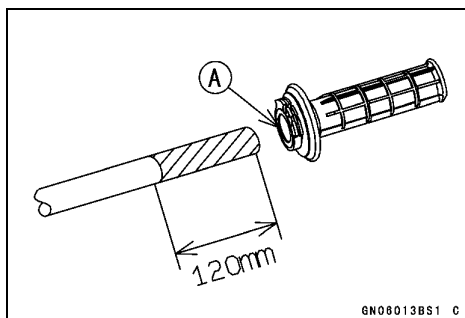
- Install the number plate.

Handlebar Installation (KX250R6F ~)

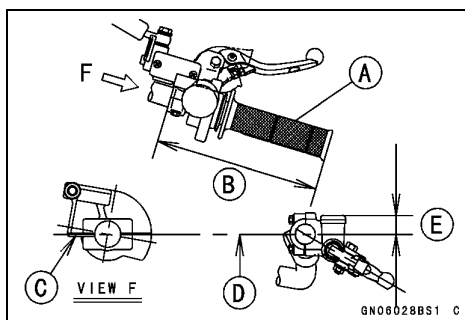
- Apply adhesive cement to the inside of the left handlebar grip.
- Install the left handlebar grip and clutch holder as shown.
 - 180 mm (7.09 in.) [A]
 - Frame Horizontal Line [B]
 - 15° ~ 25° [C]
 - 20° ~ 30° [D]
 - Arrow Mark [E]
 - Front [F]



- Apply grease to the throttle cable upper end and clutch cable upper end.
- Apply a 2 stroke engine oil to the throttle grip inner wall [A].

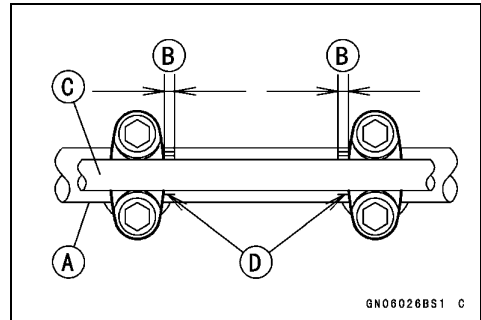


- Install the throttle grip assembly so that the grip [A] is in as far as it will go.
 - 185 mm (7.28 in.) [B]
- Position throttle grip assembly so that the horizontal parting line [C] of the throttle case is parallel the frame horizontal line [D] as shown.
- Install the master cylinder so that the reserve tank cap align [E] to the frame horizontal line as shown.



Handlebar

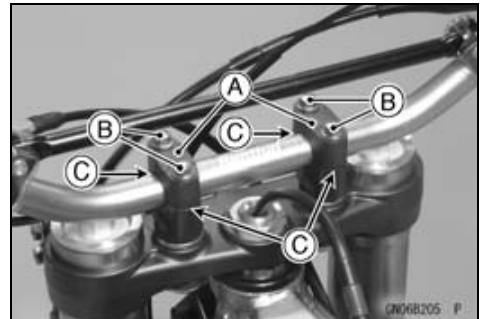
- Install the handlebar [A] on the handlebar holder as shown.
 - Same Length [B]
 - Bridge Bar [C]
 - Protrusion of Graduation [D]



- Install the handlebar holders upeer. [A] with handlebar.
 - Tighten the front and rear bolts [B] of the handlebar clamps equally.
 - ★ If the handlebar clamps are correctly installed, there will be same amount of gap [C] on the front and rear side of the clamp after the bolts tightening.

Torque - Handlebar Holder Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)

- Install:
 - Pad
 - Number Plate



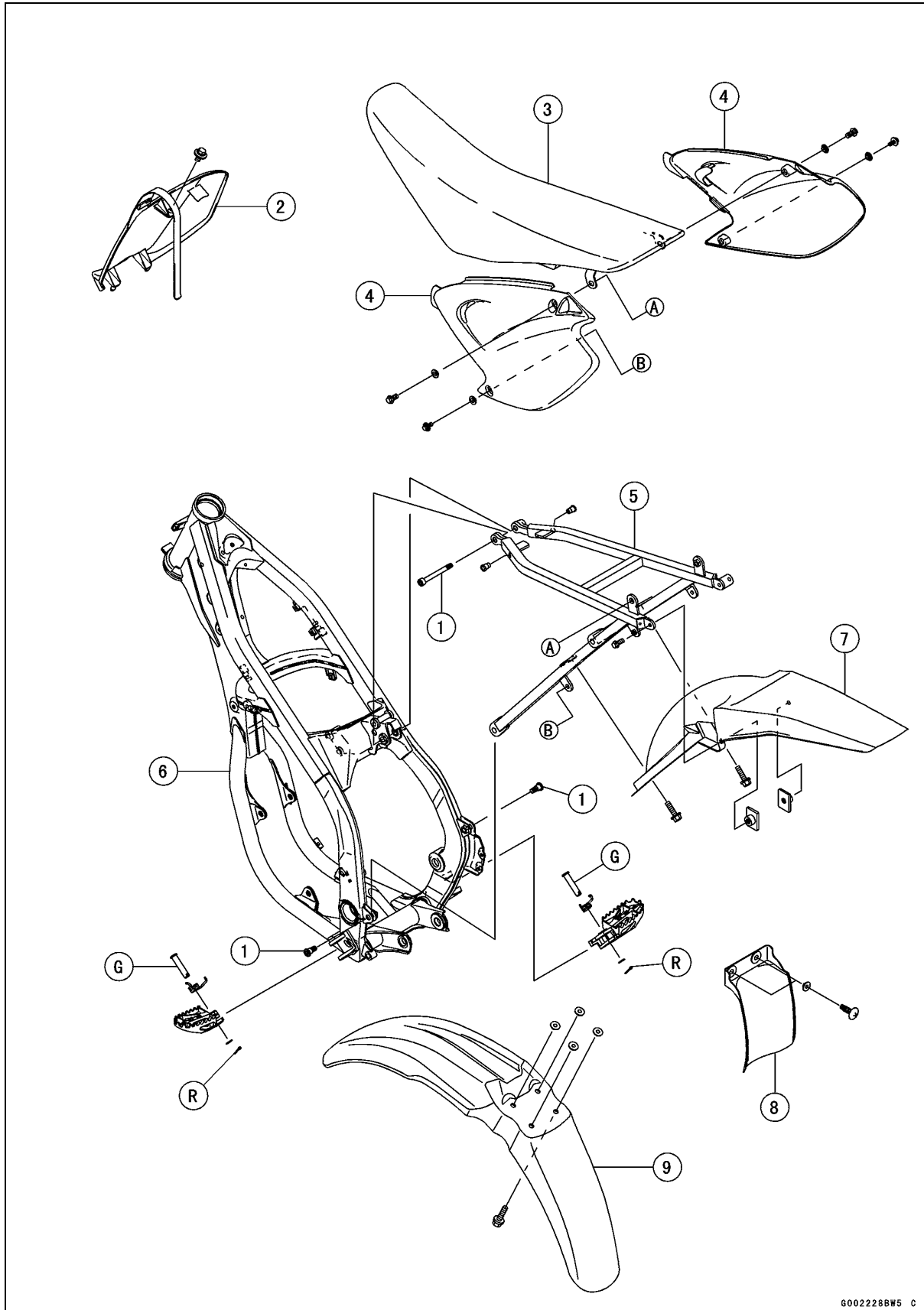
Frame

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14-2 FRAME

Exploded View



G00228BWS C

Exploded View

No.	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Rear Frame Mounting Bolt	34	3.5	25	

- 2. Number Plate
- 3. Seat
- 4. Side Covers
- 5. Rear Frame
- 6. Frame
- 7. Rear Fender
- 8. Rear Flap
- 9. Front Fender
- G: Apply grease.
- R: Replacement Parts

14-4 FRAME

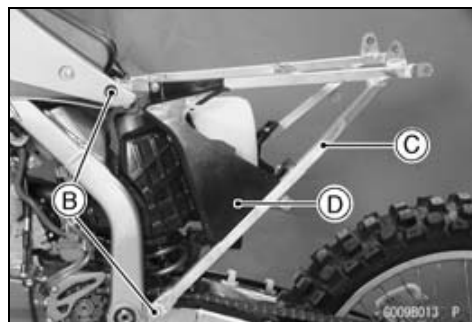
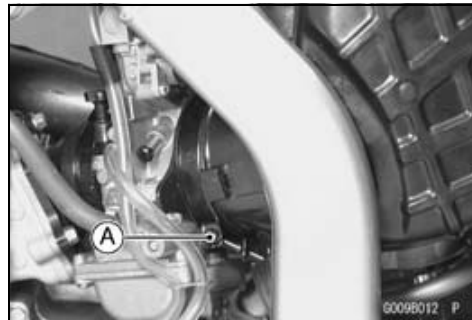
Frame

Frame Inspection

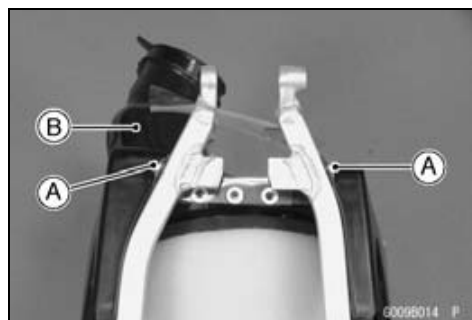
- Refer to the Frame Inspection in the Periodic Maintenance chapter.

Rear Frame Removal

- Remove:
 - Seat (see Seat Removal)
 - Right & Left Side Cover (see Side Cover Removal)
 - Muffler (see Engine Top End chapter)
 - Rear Fender (see Fender Removal)
 - Rear Flap (see Flap Removal)
- Unscrew the air cleaner duct clamp screw [A].
- Unscrew the rear frame mounting bolts [B].
- Remove the rear frame [C] with air cleaner housing [D].



- Remove:
 - Bolts [A]
 - Air Cleaner Housing [B]



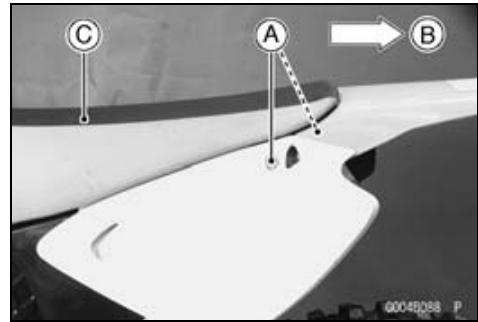
Rear Frame Installation

- Install the air cleaner housing.
- Tighten the rear frame mounting bolts.
 - Torque - Rear Frame Mounting Bolts: 34 N·m (3.5 kgf·m, 25 ft·lb)**
- Install the removal parts.

Seat

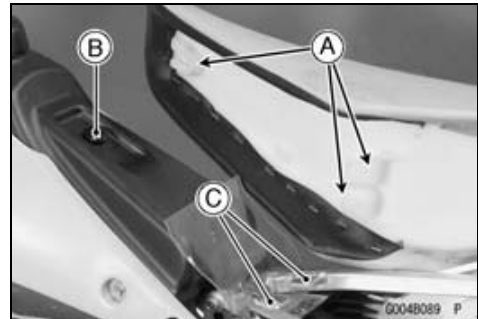
Seat Removal

- Unscrew the bolts [A].
- Pull [B] the seat [C] out from the back.



Seat Installation

- Fit the hooks [A] of the seat under the flange collar [B] and brackets [C].

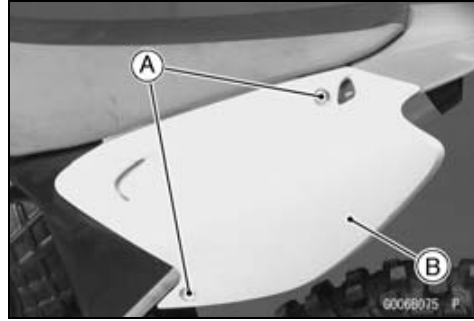


14-6 FRAME

Side Cover

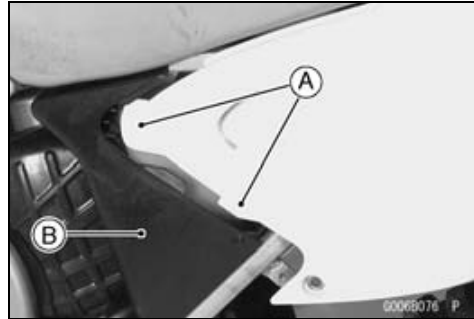
Side Cover Removal

- Unscrew the bolts [A] and remove the side cover [B].



Side Cover Installation

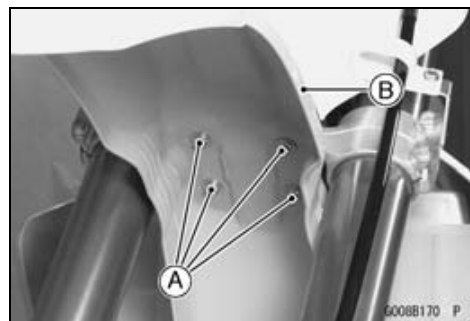
- Insert the tabs [A] of the cover into the air cleaner housing [B].



Fender

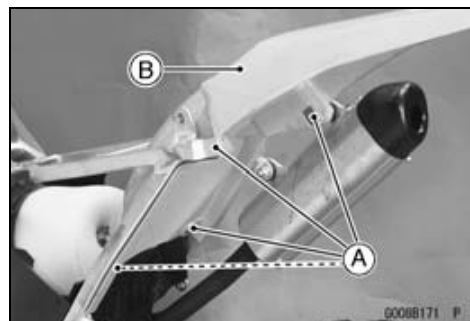
Front Fender Removal

- Unscrew the bolts [A] and remove the front fender [B].



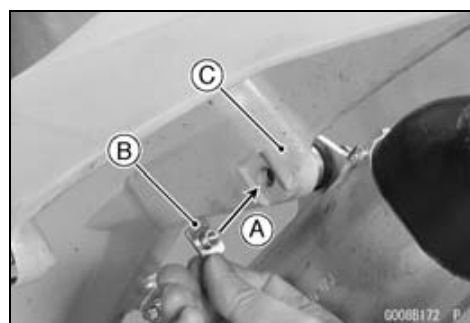
Rear Fender Removal

- Remove:
 - Seat (see this chapter)
 - Side Covers (see this chapter)
- Unscrew the bolts [A] and remove the rear fender [B].



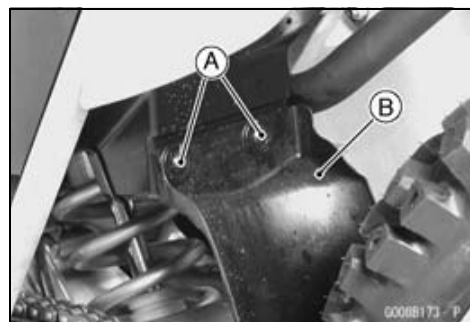
Rear Fender Installation

- Put [A] the nuts [B] (both sides) on the inside of rear fender [C].



Rear Flap Removal

- Unscrew the screws [A] and remove the rear flap [B].



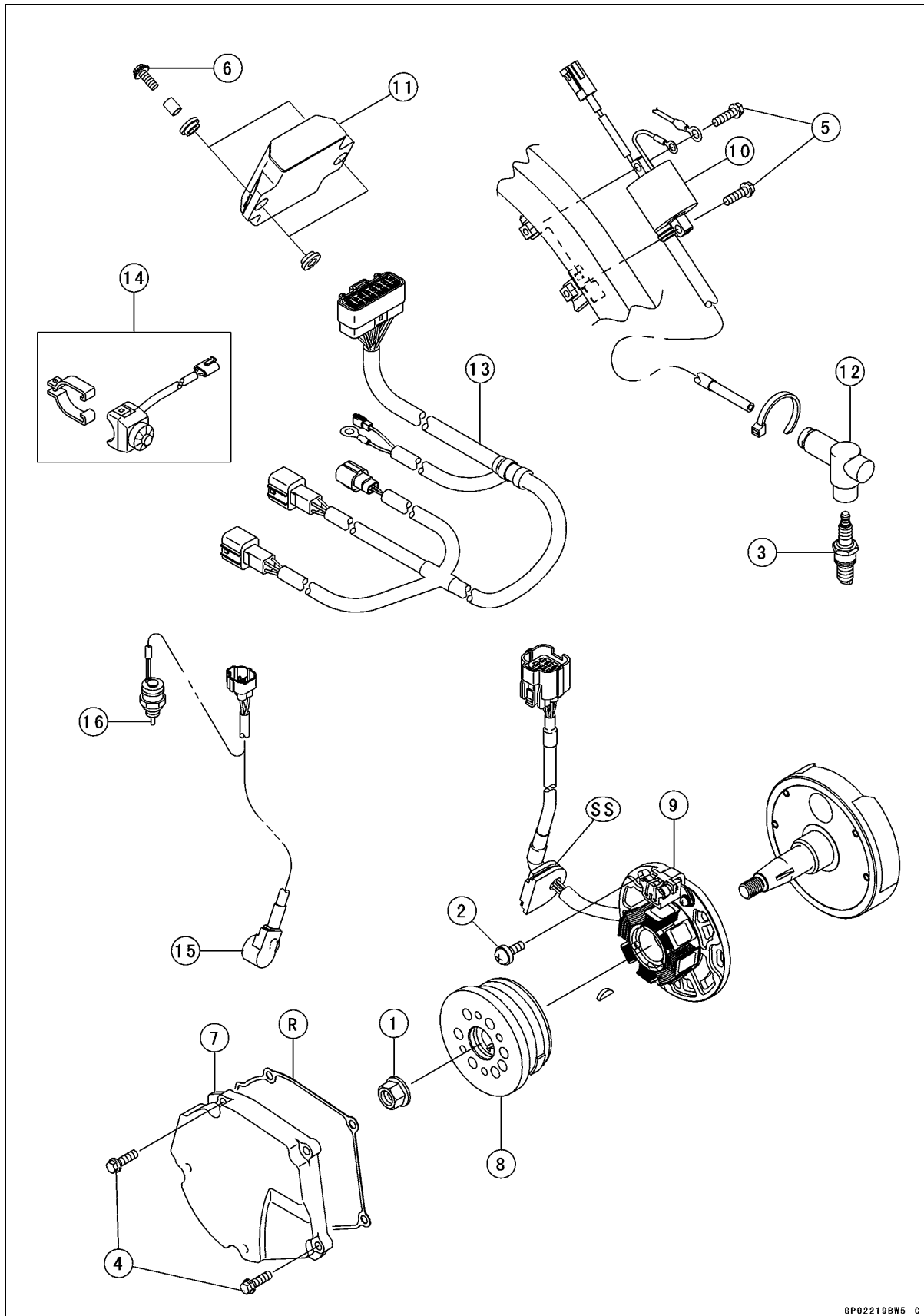
Electrical System

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15-2 ELECTRICAL SYSTEM

Exploded View



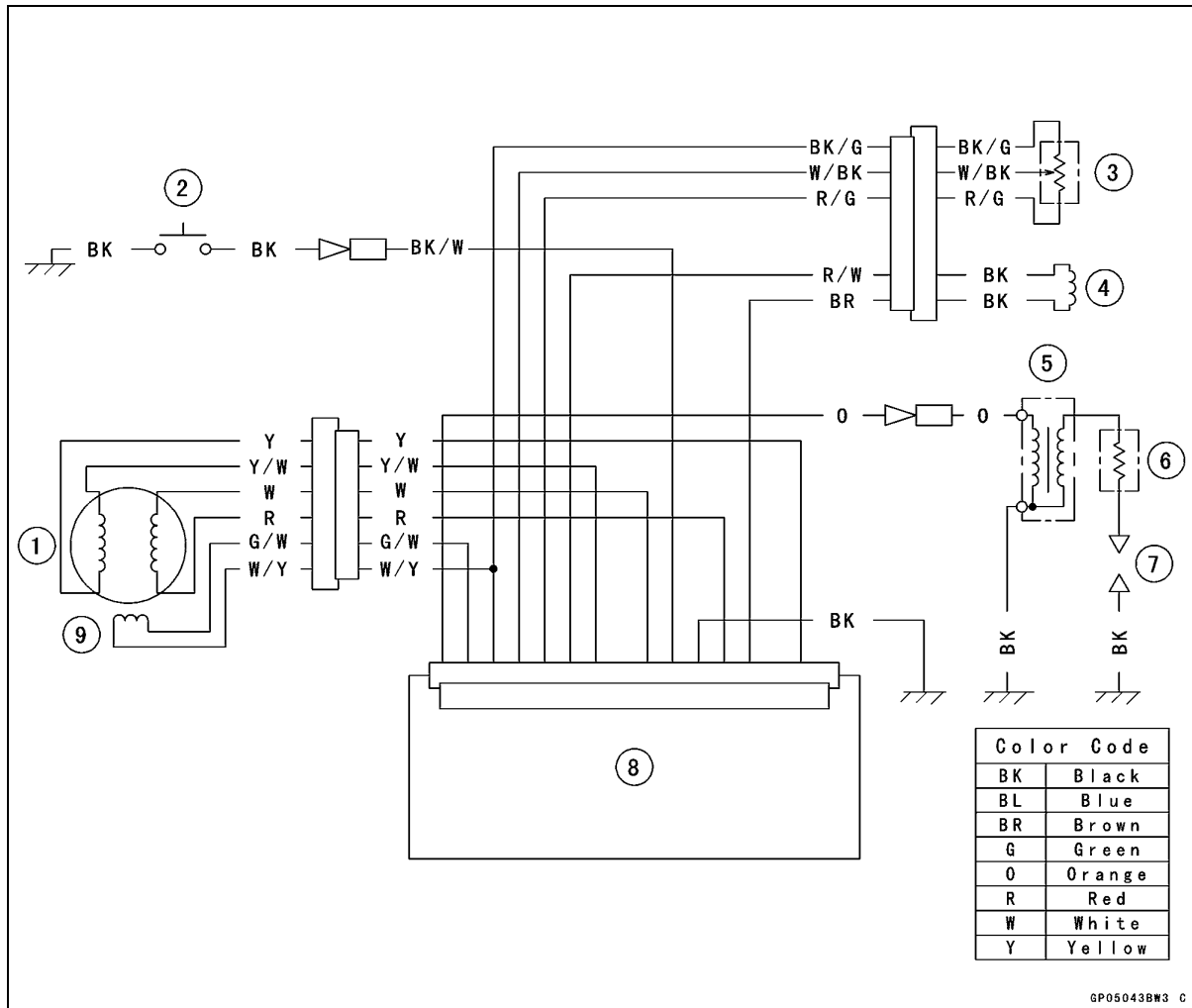
Exploded View

No	Fastener	Torque			Remarks
		N·m	kgf·m	ft·lb	
1	Flywheel Nut	78	8.0	58	
2	Stator Plate Mounting Screw	4.9	0.50	43 in·lb	
3	Spark Plug	26	2.7	20	
4	Magneto Cover Bolts	8.8	0.90	78 in·lb	
5	Ignition Coil Mounting Bolts	8.8	0.90	78 in·lb	
6	C.D.I Unit Mounting Bolts	8.8	0.90	78 in·lb	

- 7. Magneto Cover
- 8. Flywheel Magneto
- 9. Stator
- 10. Ignition Coil
- 11. C.D.I Unit
- 12. Spark Plug Cap
- 13. Main Harness
- 14. Engine Stop Switch
- 15. Throttle Sensor
- 16. Fuel Cut Valve
- R: Replacement Part
- SS: Apply Silicon Sealant.

15-4 ELECTRICAL SYSTEM

Wiring Diagram



1. Magneto
2. Engine Stop Switch
3. Throttle Sensor
4. Fuel Cut Valve
5. Ignition Coil
6. Noise Suppressor
7. Spark Plug
8. C.D.I Unit
9. Crankshaft Sensor

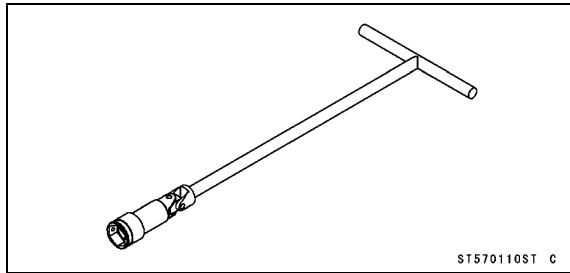
Specifications

Item	Standard
Magneto Crankshaft Sensor Air Gap: Crankshaft Sensor Resistance: Magneto Output Voltage: Magneto Coil Resistance: Regulator/Rectifier: Internal Resistance Output Voltage	0.45 ~ 0.85 mm (0.018 ~ 0.033 in.) KX250-R1, R6F 0.65 ~ 1.05 mm (0.026 ~ 0.041 in.) KX250R7F approx. 240 Ω at 20°C (68°F) in the text in the text in the text 14.7 \pm 0.5 V
Ignition System Ignition Timing: (Disconnect the throttle sensor lead) Ignition Coil: 3 Needle Arcing Distance Primary Winding Resistance Secondary Winding Resistance Spark Plug: Type Gap C.D.I. Unit Noise Suppressor Resistance	14° BTDC @7 090 r/min (rpm) 7 mm (0.26 in.) or more 0.33 \pm 0.05 Ω (at 20°C) 9.0 \pm 1.35 k Ω (at 20°C) NGK BR8ECMVX 0.7 ~ 0.8 mm (0.026 ~ 0.031 in.) in the text 3.75 ~ 6.25 Ω
Throttle Sensor Input Voltage Output Voltage: (when the throttle valve completely closed). (when the throttle fully opened).	approx. 5 V 0.4 ~ 0.6 V 3.5 ~ 3.7 V
Fuel Cut Valve Resistance Protrusion: When battery is disconnected When battery is connected	49.82 ~ 56.18 at 20°C (68°F) Ω 19.4 ~ 19.6 mm (0.76 ~ 0.77 in.) 21.3 ~ 21.7 mm (0.84 ~ 0.85 in.)

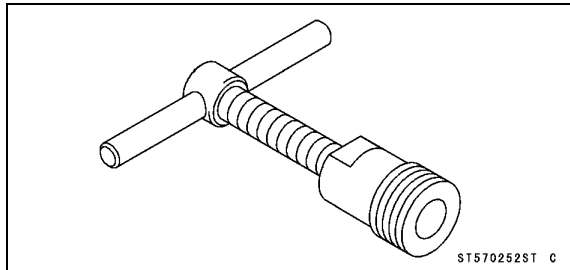
15-6 ELECTRICAL SYSTEM

Special Tools

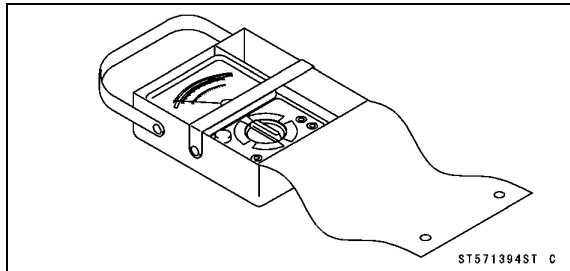
**Spark Plug Wrench, Hex 21:
57001-110**



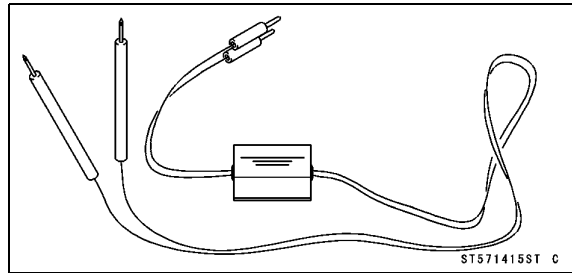
**Flywheel Puller, M12 × 1.75:
57001-252**



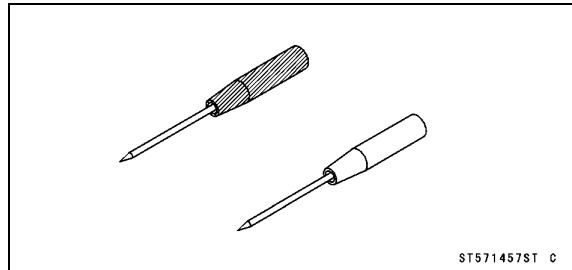
**Hand Tester:
57001-1394**



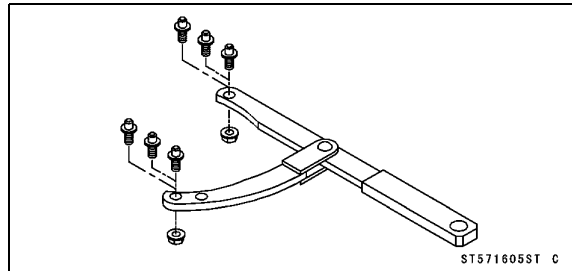
**Peak Volt Adapter:
57001-1415**



**Needle Adapter Set:
57001-1457**



**Flywheel & Pulley Holder:
57001-1605**



Precautions

There are numbers of important precautions that are musts when servicing electrical systems. Learn and observe all the rules below.

- The electrical parts should never be struck sharply, as with a hammer, or allowed to fall on a hard surface. Such a shock to the parts can damage them.
- Troubles may involve one or in some cases all items. Never replace a defective part without determining what CAUSED the failure. If the failure was caused by some other item or items, they too must be repaired or replaced, or the new replacement will soon fail again.
- Make sure all connectors in the circuit are clean and tight, and examine wires for signs of burning, fraying, etc. Poor wires and bad connections will affect electrical system operation.
- Measure coil and winding resistance when the part is cold (at room temperature).

Safety Instructions:

WARNING

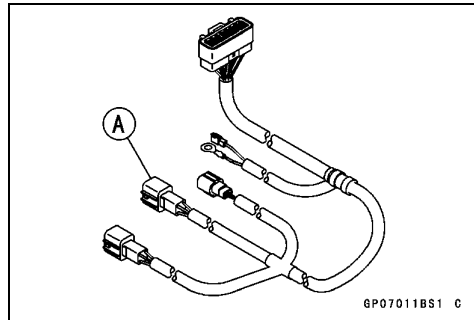
The ignition system produces extremely high voltage. Do not touch the spark plug, ignition coil, or high tension lead while the engine is running, or you could receive a severe electrical shock.

15-8 ELECTRICAL SYSTEM

Electrical Wiring

Wiring Inspection

- Visually inspect the wiring for signs of burning, fraying, etc.
- ★ If any wiring is poor, replace the damaged wiring.
- Pull each connector [A] apart and inspect it for corrosion, dirt, and damage.
- ★ If the connector is corroded or dirty, clean it carefully. If it is damaged, replace it.
- Check the wiring for continuity.
- Use the wiring diagram to find the ends of the lead which is suspected of being a problem.
- Connect an ohmmeter between the ends of the leads.
- Set the meter to the $\times 1 \Omega$ range, and lead the meter.
- ★ If the meter does not read 0Ω the lead is defective. Replace the lead or the wiring harness if necessary.



Ignition Timing

Ignition Timing Adjustment

- Remove the magneto cover.
- Check to see if the center mark of the three marks [A] on the magneto stator is aligned with the mark [B] on the crankcase.
- ★ If the marks are not aligned, loosen the magneto stator screws [C] and turn the magneto stator [D].
- Tighten the screws securely.

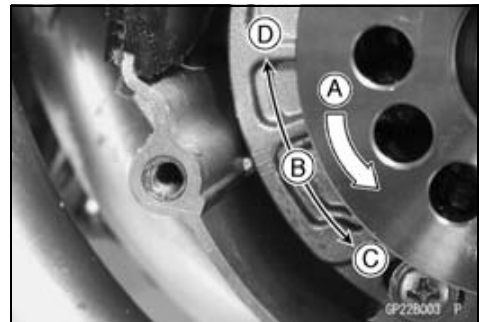
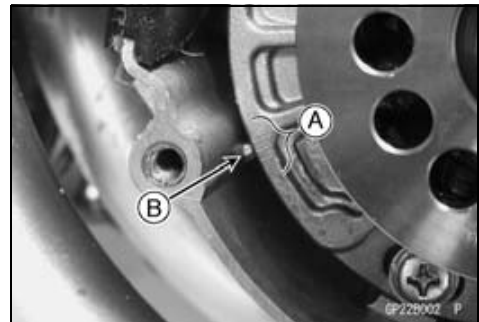
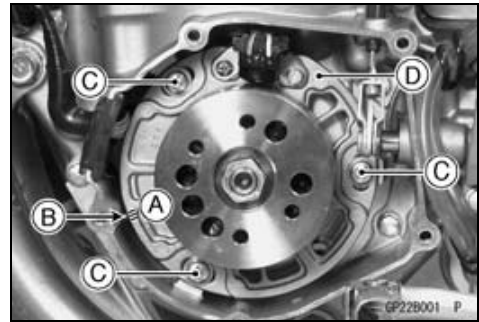
Torque - Stator Plate Mounting Screws: 4.9 N·m (0.5 kgf·m, 43 in·lb)

- Install the magneto cover.

Torque - Magneto Cover Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

The ignition timing can be adjusted for different power band to suit to rider's preference ability.

- Remove the magneto cover.
- Loosen the stator screws.
- Adjust the timing by shifting the stator position within the three lines [A].
- B. Mark on Crankcase



NOTE

○ For best engine performance, it is very important to adjust the ignition timing within the adjustable range just explained.

[A] Crankshaft Rotation

[B] Stator Movement

[C] Retard

[D] Advance

- Tighten the stator screws securely (see Igniting Timing Adjustment).
- Install the magneto cover (see Ignition Timing Adjustment).

Torque - Magneto Cover Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)

- Test ride the motorcycle and readjust the ignition timing if necessary.

15-10 ELECTRICAL SYSTEM

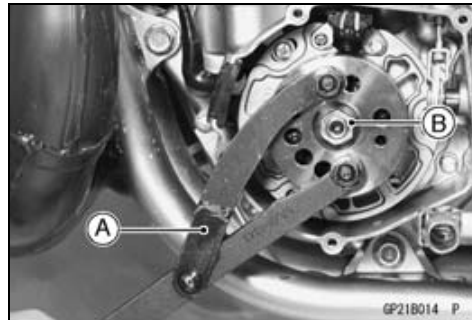
Flywheel Magneto

Flywheel Magneto Removal

- Remove the magneto cover.
- Hold the flywheel steady, with the flywheel holder [A], and remove the flywheel nut [B].

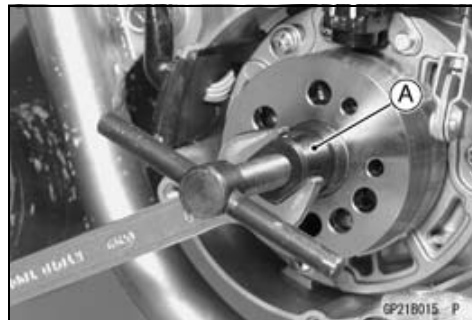
Special Tool - Flywheel & Pulley Holder: 57001-1605

- Remove the flywheel holder.



- Screw the flywheel puller [A] into the flywheel by turning it counterclockwise (left-hand thread).
- Remove the flywheel from the crankshaft by turning in the puller center bolt and tapping the head of the bolt lightly with a hammer, while holding the puller body steady. There is a woodruff key in the crankshaft tapered portion.

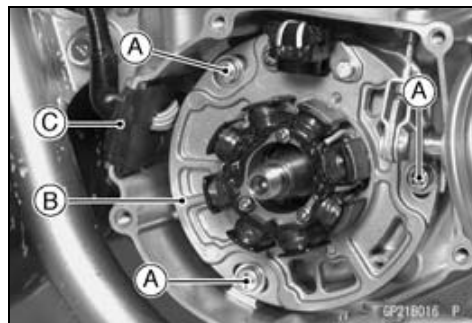
Special Tool - Flywheel Puller, M12 × 1.75: 57001-252



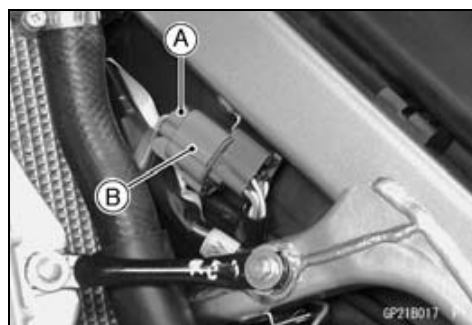
CAUTION

Never strike the grab bar or the flywheel itself. Striking the bar can bend it. If the flywheel is struck, the magnets may lose their magnetism.

- Unscrew the mounting screws [A], and remove the stator plate [B] and the wiring grommet [C].
- Remove the band.



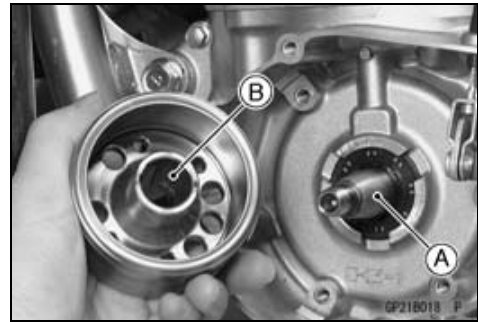
- Remove the left radiator shroud.
- Push down the stopper [A] and remove the magneto lead connector [B] from the frame.
- Disconnect the magneto lead connector.



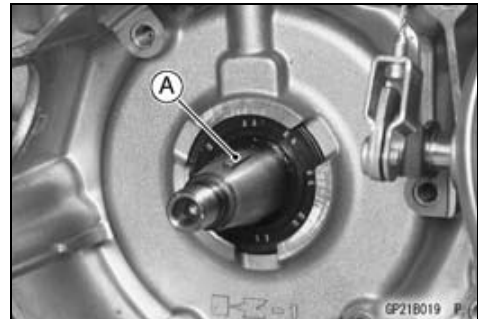
Flywheel Magneto

Flywheel Magneto Installation

- Using a high flash-point solvent, clean off any oil or dirt that may be on the crankshaft taper [A] or in the hole [B] in the flywheel. Dry them with a clean cloth.



- Fit the woodruff key [A] securely in the slot in the crankshaft before installing the stator plate.



- Apply silicone sealant around the circumference of the wiring grommet.
- Set the stator wiring grommet [A] securely in the notch [B] in the left crankshaft half, and route the wires according to the Cable, Harness, Hose Routing section in the Appendix chapter.
- Install the stator plate and tighten it.

Torque - Stator Plate Mounting Screws: 4.9 N·m (0.50 kgf·m, 43 in·lb)

- Holding the flywheel steady, with the flywheel holder, and tighten the flywheel nut.

Special Tool - Flywheel & Pulley Holder: 57001-1605

Torque - Flywheel Nut: 78 N·m (8.0 kgf·m, 58 ft·lb)

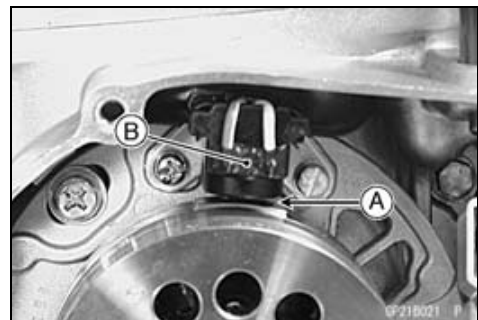
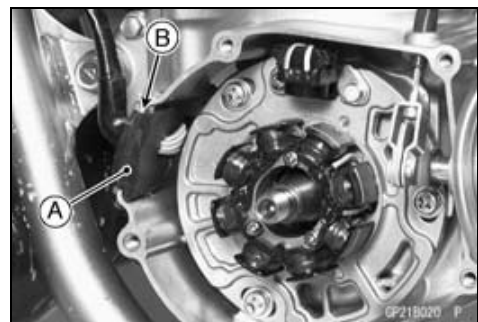
- Measure the crankshaft sensor air gap [A] (Clearance between the flywheel and the crankshaft sensor [B] core.)

Crankshaft Sensor Air Gap

Standard: 0.45 ~ 0.85 mm (0.018 ~ 0.033 in.) KX250-R1, R6F

0.65 ~ 1.05 mm (0.026 ~ 0.041 in.) KX250R7F

- ★ If the gap is incorrect, adjust it (see this chapter).
- Replace the gasket with a new one.
- Connect the magneto lead connector to the main harness.



15-12 ELECTRICAL SYSTEM

Flywheel Magneto

Flywheel Magneto Inspection

- There are three types of magneto problems: short, open (wire burned out), or loss in flywheel magnetism. A short or open in one of the coil wires will result in either a low output, or no output at all. A loss in flywheel magnetism, which may be caused by dropping or hitting the flywheel by leaving it near an electromagnetic field, or just by aging, will result in low output.
- Check the magneto output voltage, do the following procedures.
 - Push down the stopper [A] and remove the magneto lead connector [B] from the frame.
 - Connect the hand tester [A] to the connector [B] as shown in the table 1 using the needle adapter set [C]
 - Start the engine.
 - Run it at the rpm given in the table 1.
 - Note the voltage readings (total 2 measurements).

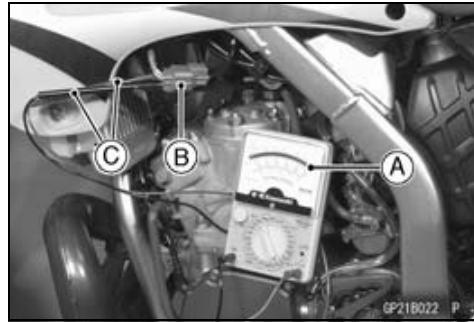
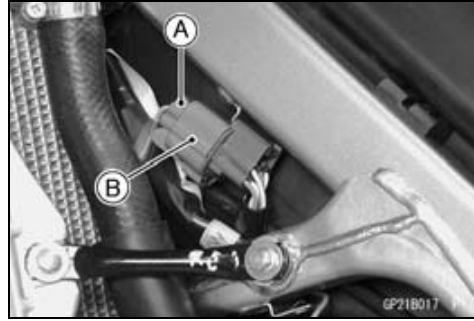
Special Tool - Needle Adapter Set: 57001-1457

Table 1 Magneto Output Voltage

Tester Range	Connections		Reading @4 000 rpm
	Tester (+) to	Tester (-) to	
250 V AC	White lead	Red lead	59 V or more
50 V AC	Yellow/White lead	Yellow lead	16 V or more

- ★ If the output voltage shows the value in the table, the magneto operates properly.
- ★ If the output voltage shows a much higher than the value in the table, the regulator/rectifier is damaged. A much lower reading than that given in the table indicates that the magneto is defective.
- To check the stator coil resistance as follows.
 - Stop the engine.
 - Disconnect the auxiliary leads.
 - Connect the hand tester as shown in the table 2.
 - Note the readings (total 2 measurement).

Tester Range	Connections		Reading
	Tester (+) to	Tester (-) to	
× 1 Ω	White lead	Red lead	10 ~ 30 Ω
	Yellow/White lead	Yellow lead	1 ~ 4 Ω



Flywheel Magneto

- ★ If there is more resistance than shown in the table, or no hand tester reading (infinity) the stator has an open lead and must be replaced. Much less than this resistance means the stator is shorted, and must be replaced.
- Using the highest resistance range of the hand tester, measure the resistance between each leads and chassis ground.
- ★ Any hand tester reading less than infinity (∞) indicates a short, necessitating stator replacement.
- ★ If the stator coils have normal resistance, but the voltage check showed the magneto to be defective; then the rotor magnets have probably weakened, and the rotor must be replaced.

Special Tool - Hand Tester: 57001-1394

Regulator/Rectifier Removal

○ Regulator/rectifier is built in the C.D.I. unit (see C.D.I. Unit Removal in this chapter).

Regulator/Rectifier Inspection

- Remove the C.D.I. unit.
- Regulator/Rectifier is built in the C.D.I. unit.
- Set the hand tester $\times 100 \Omega$ range, measure the internal resistance in both directions between the terminals.

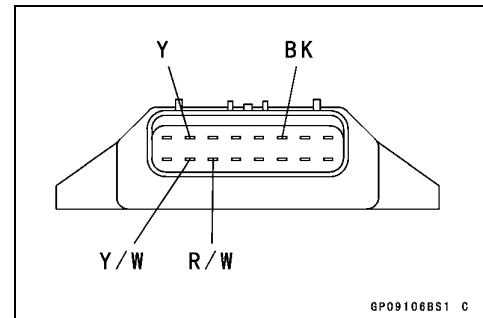
Special Tool - Hand Tester: 57001-1394

- ★ If the reading is not specified value, replace the C.D.I. unit.

Terminal		Standard Value
Tester (+) Lead	Tester (-) Lead	
Y/W	BK	7.5 ~ 30 Ω
Y	BK	7.5 ~ 30 Ω
BK	Y/W	∞
BK	Y	∞
R/W	Y/W	8.5 ~ 34 Ω
R/W	Y	8.5 ~ 34 Ω
Y/W	R/W	∞
Y	R/W	∞

CAUTION

Use only Hand Tester 57001-1394 for this test. An ohmmeter other than the Hand Tester may show different readings. If a megger or a meter with a large-capacity battery is used, the regulator will be damaged.



15-14 ELECTRICAL SYSTEM

Ignition System

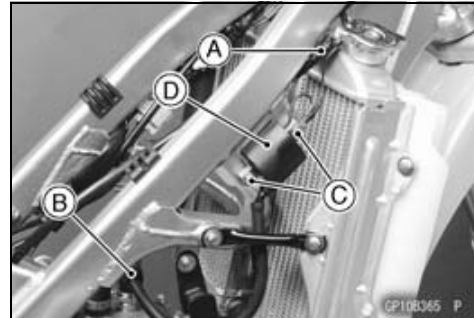
Safety Instructions

⚠ WARNING

The ignition system produces extremely high voltage. Do not touch the spark plug, ignition coil, or high tension lead while the engine is running, or you could receive a severe electrical shock.

Ignition Coil Removal

- Remove:
 - Seat
 - Radiator Shrouds
 - Fuel Tank
- Disconnect the ignition coil primary lead [A].
- Pull the plug cap [B] off the spark plug.
- Unscrew the mounting bolts [C], and remove the ignition coil [D].

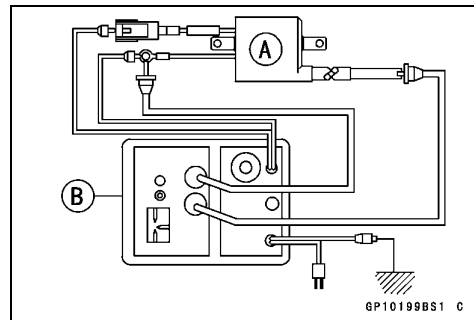


Ignition Coil Inspection

Measuring arcing distance

The most accurate test for determining the condition of the ignition coil is made by measuring arcing distance using the coil tester for the 3-needle method.

- Remove the ignition coil.
- Connect the ignition coil (with the spark plug cap left installed on the high tension lead) [A] to the tester [B], and measure the arcing distance.



⚠ WARNING

To avoid extremely high voltage shocks, do not touch the ignition coil or lead.

- ★ If the distance reading is less than the specified value, the ignition coil or spark plug cap is defective.

3 Needle Arcing Distance

Standard: 7 mm (0.26 in.) or more

- To determine which part is defective, measure the arcing distance again with the spark plug cap removed from the ignition coil lead.
- ★ If the arcing distance is subnormal as before, the trouble is with the ignition coil itself. If the arcing distance is now normal, the trouble is with the spark plug cap.

Ignition System

Measuring Coil Resistance

If the arcing tester is not available, the coil can be checked for a broken or badly shorted winding with an ohmmeter. However, an ohmmeter cannot detect layer shorts and shorts resulting from insulation breakdown under high voltage.

- Remove the ignition coil.
- Measure the primary winding resistance [A].
 - Connect an ohmmeter between the coil terminals.
 - Set the meter to the $\times 1 \Omega$ range, and read the meter.
- Measure the secondary winding resistance [B].
 - Pull the spark plug cap off the lead.
 - Connect an ohmmeter between the high tension lead and the ground lead terminal.
 - Set the meter to the $\times 1 \text{ k}\Omega$ range, and read the meter.
- ★ If the meter does not read as specified, replace the coil.
- ★ If the meter reads as specified, the ignition coil windings are probably good. However, if the ignition system still does not perform as it should after all other components have been checked, test replace the coil with one known to be good.

Ignition Coil Winding Resistance

Primary windings: $0.33 \pm 0.05 \Omega$ (at 20°C)

Secondary windings: $9.0 \pm 1.35 \text{ k}\Omega$ (at 20°C)

- Check the high tension lead for visible damage.
- ★ If the high tension lead is damaged, replace the coil.

Spark Plug Cleaning and Inspection

- Refer to the Spark Plug Cleaning and Inspection in Periodic Maintenance chapter.

Spark Plug Gap Inspection

- Refer to the Spark Plug Gap Inspection in Periodic Maintenance chapter.

C.D.I Unit Removal

- Remove the number plate.
- Disconnect the main harness connector [A].
- Unscrew the mounting bolt [B] and remove the C.D.I Unit [C].

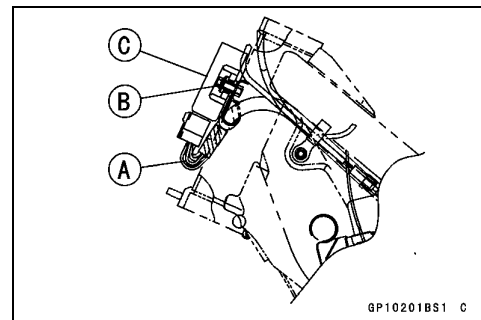
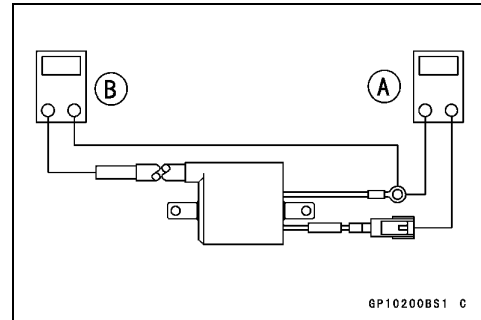
C.D.I Unit Inspection

CAUTION

When inspecting the C.D.I. unit observe the following to avoid damage to the C.D.I. unit.

Do not disconnect the C.D.I. unit while the engine is running.

This may damage the C.D.I. unit.



15-16 ELECTRICAL SYSTEM

Ignition System

Ignition Coil Primary Peak Voltage Check

- Disconnect the spark plug cap from mounting the spark plug.
- Connect the good spark plug [A] to the spark plug cap, then touch the engine with the spark plug.

NOTE

- Measure the voltage with each lead connected correctly. The correct value may not be obtained if disconnected.
 - Maintain the correct value of compression pressure for the cylinder. (Be sure to measure the voltage with the spark plug install to the cylinder head.)
 - The correct value may not be obtained if disconnected.
- Connect the peak voltage adapter [B] between the terminal of primary lead (orange) and ground connection of the unit with the lead of the ignition coil [C] connected.

Special Tools - Peak Voltage Adapter: 57001-1415
Type: KEK-54-9-B

Connection

Adapter Positive → **Ground Lead [D]**

Adapter Negative → **Orange Lead [E]**

C.D.I Unit [F]

Needle Adapter [G]

Special Tool - Needle Adapter Set: 57001-1457

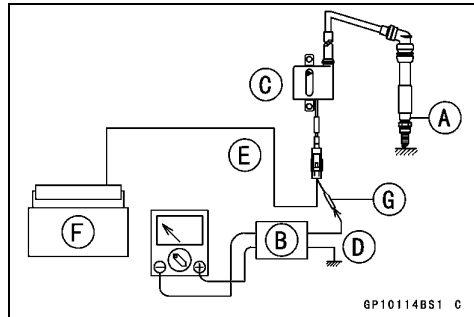
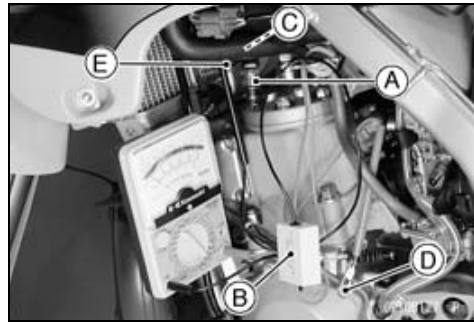
- Shift the gear to the neutral position, then free the engine stop switch.
- Crank the engine by kicking the pedal several times to measure the peak voltage of the primary ignition coil.

Peak Voltage: 150 V or above

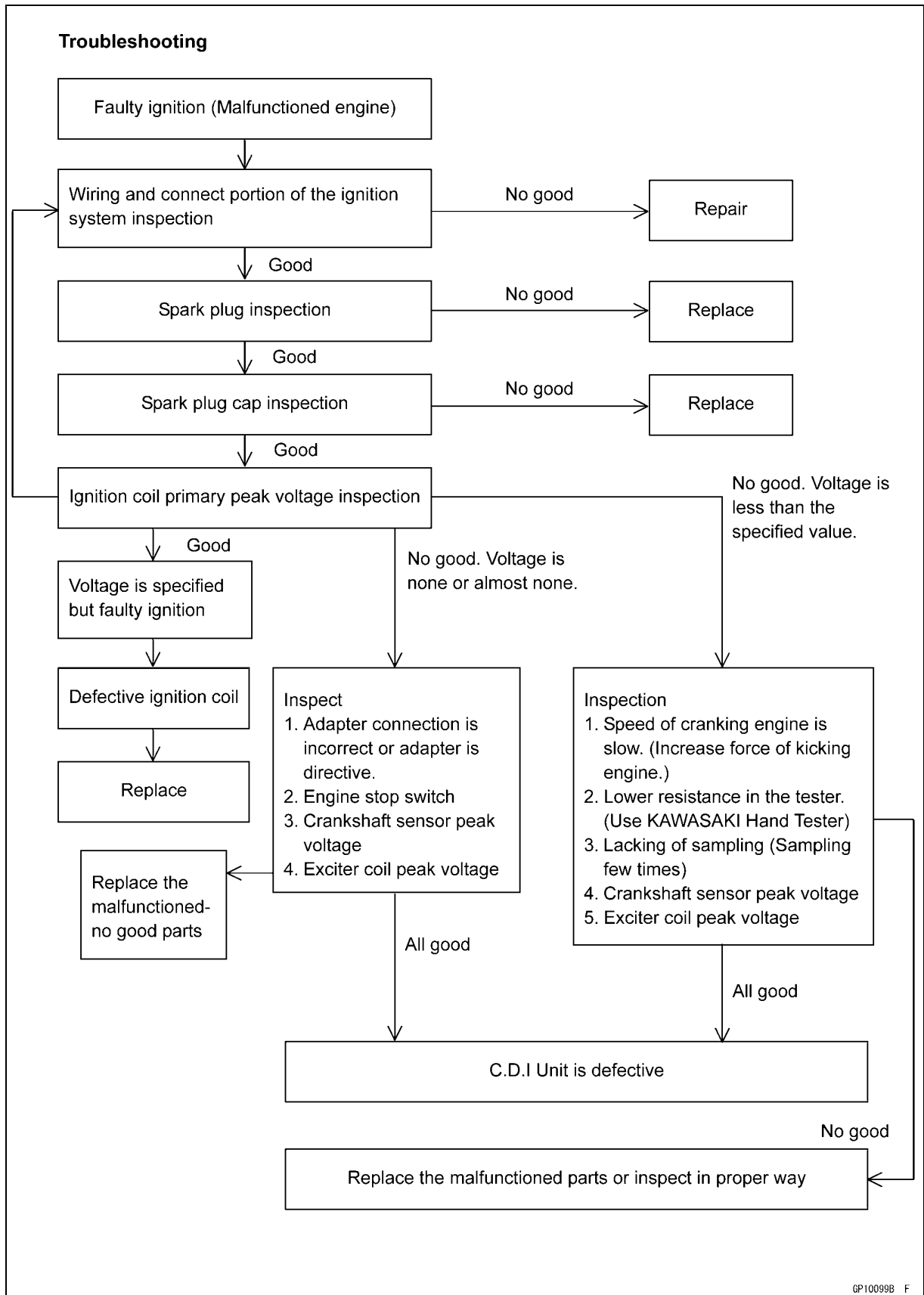
⚠ WARNING

Do not touch the metal portion of the probe in case of measuring the voltage, or you may receive a serious electric shock.

- ★ If the voltage is less than the specified value, see the next page.



Ignition System



15-18 ELECTRICAL SYSTEM

Ignition System

Crankshaft Sensor Peak Voltage Check

- To check the peak voltage, do the following procedures.
- Disconnect the connector of the magneto lead connector from the main harness.

NOTE

- Measure the voltage with each lead connected correctly. The correct value may not be obtained if disconnected.
 - Maintain the correct value of compression pressure for the cylinder (Be sure to measure the voltage with the spark plug installed to the cylinder head).
 - The correct value may not be obtained if disconnected.
- Connect the peak voltage adapter [A] of the tester to the terminals of the magneto lead connector [B].

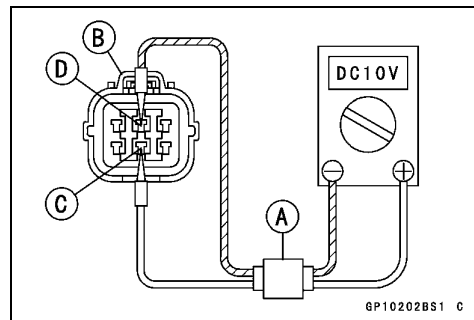
Special Tools - Peak Voltage Adapter: 57001-1415
Type: KEK-54-9-B

Connection

- Adapter Positive** → Green/White Lead [C]
- Adapter Negative** → White/Yellow Lead [D]

- Crank the engine by kicking the pedal several times to measure the peak voltage of the crankshaft sensor.

Peak Voltage: 1.6 V or above



⚠ WARNING

Do not touch the metal portion of the probe in case of measuring the voltage, or you may receive a serious electric shock.

- ★ If the voltage is less than the specified, check the crankshaft sensor.

Ignition System

Exciter Coil Peak Voltage Check

- Disconnect the connector of the magneto lead connector from the main harness.
- To check the peak voltage, do the following procedures.

NOTE

- Measure the voltage with each lead connected correctly. The correct value may not be obtained if disconnected.
 - Maintain the correct value of compression pressure for the cylinder (Be sure to measure the voltage with the spark plug installed to the cylinder head).
 - The correct value may not be obtained if disconnected.
- Connect the peak voltage adapter [A] of the tester to the terminals of the magneto lead connector [B].

Special Tools - Peak Voltage Adapter: 57001-1415
Type: KEK-54-9-B

Connection

Adapter Positive → White Lead [C]

Adapter Negative → Red Lead [D]

- Crank the engine by kicking the pedal several times to measure the peak voltage of the exciter coil.

Peak Voltage: 16 V or above

- ★ If the voltage is less than the specified, check the exciter coil.

Fuel Cut Valve Operation Check

- Disconnect the carburetor lead connector [A].
- Set the tester to the DC25V range, and connect it to the carburetor lead of the main harness side.

Connections

Tester Positive → Red/White Lead [B]

Tester Negative → Brown Lead [C]

- Start the engine.
- Run it at the rpm given below.

Fuel Cut Valve Operate Revolutions

Standard: 8 100 rpm

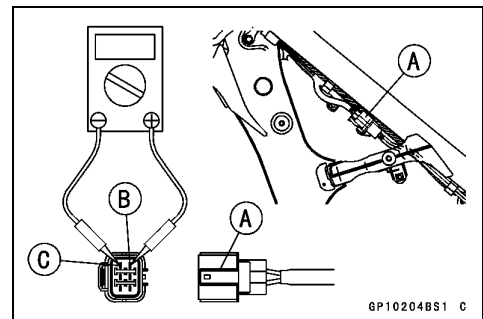
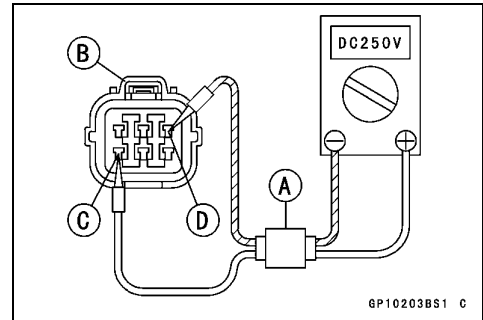
- Read the tester, running the engine at the specified revolution.

Fuel Cut Valve Operation Voltage:

When engine is specified revolutions or above: DC 12 V

When engine is less than specified revolutions: 0 V

- ★ If the tester does not read as specified, check the magneto.
- ★ If the magneto has normal functions, replace the C.D.I. Unit.



15-20 ELECTRICAL SYSTEM

Ignition System

Throttle Sensor Output/Input Voltage Check

NOTE

○If the variable rheostat is available, refer to throttle sensor inspection.

- Remove the carburetor lead connector.
- Connect the needle adapter set [A] to the carburetor lead connector [B].

Special Tool - Needle Adapter Set: 57001-1457

- Set the tester [C] to the DC 10 V range, and connect it to the needle adapter set.

Hand Tester (+) → Red/Green Lead

Hand Tester (-) → Black/Green Lead

- Start the engine.
- Check the sensor input voltage with the engine running.

Throttle Sensor Input Voltage

Standard: approx. 5 V

- ★ If it is not within the specified voltage range, check the magneto output voltage. If it has normal functions, replace the C.D.I. Unit.

- To check the output voltage, do the following procedures.
 - Connect the needle adapter set [A] to the carburetor lead connector [B].

Special Tool - Needle Adapter Set: 57001-1457

- Connect the hand tester [C] to the needle adapter set.
- Connect the hand tester as follows.

Hand Tester (+) → White/Black Lead

Hand Tester (-) → Black/Green Lead

- Remove the spark plug.
- Crank the engine by kicking the pedal several times to measure the throttle sensor output voltage with the throttle valve completely closed.

Throttle Sensor Output Voltage

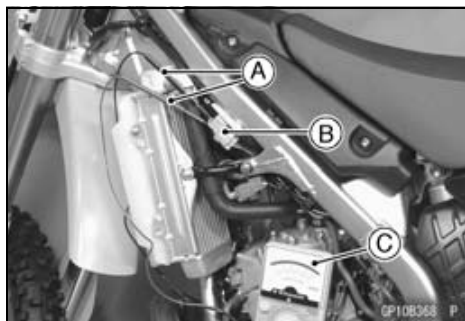
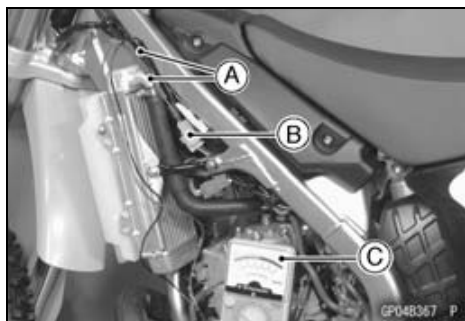
Standard: 0.4 ~ 0.6 V (when throttle valve is completely closed.)

- ★ If it is not within the specified voltage range, adjust the throttle sensor position (see Throttle Sensor Position Adjustment).
- ★ If it is within specified voltage, go to next test.
- Crank the engine by kicking the pedal several times to measure the throttle sensor output voltage with the throttle fully opened.

Throttle Sensor Output Voltage (when the throttle fully opened)

Standard: 3.5 ~ 3.7 V

- ★ If it is not within the specified voltage, replace the throttle sensor.



Ignition System

Engine Stop Switch Electric Current Check

- Disconnect the engine stop switch lead.
- Start the engine.
- Ground the stop switch lead of the main harness side while the engine is running.
- ★ If does not stop the engine, replace the C.D.I Unit.

Crankshaft Sensor Inspection

- Remove:
Magneto Lead Connector (see Flywheel Magneto Inspection).
- Set the hand tester [A] to the $\times 100 \Omega$ range and connect it to the Green/White [B] and White/Yellow [C] Leads in the connector.

Special Tool - Hand Tester: 57001-1394

- ★ If there is more resistance than the specified value, the coil has an open lead and must be replaced. Much less than this resistance means the coil is shorted, and must be replaced.

Crankshaft Sensor Resistance: approx. 240Ω at 20°C (68°F)

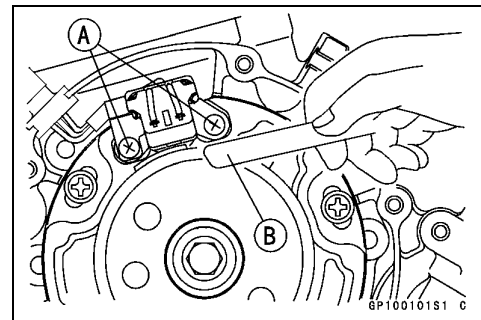
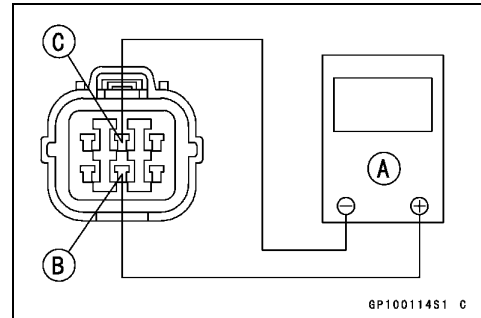
- Using the highest resistance range of the tester, measure the resistance between the crankshaft sensor leads and chassis ground.
- ★ Any tester reading less than infinity (∞) indicates a short, necessitates replacement of the crankshaft sensor assembly.

Crankshaft Sensor Air Gap Adjustment

- Loosen the crankshaft sensor screws [A].
- Insert a thickness gauge [B] between the crankshaft sensor core and the timing plate.

**Thickness Gauge: 0.65 mm (0.026 in.) KX250-R1, R6F
0.85 mm (0.033 in.) KX250R7F**

- While pressing the crankshaft sensor toward the magneto flywheel, tighten the coil screws and remove the thickness gauge.
- Check the air gap (see Flywheel Magneto Installation).
- ★ If the air gap is not within the specified range, readjust the gap.



15-22 ELECTRICAL SYSTEM

Throttle Sensor

Throttle Sensor Inspection

NOTE

- If the variable rheostat is not available, refer to throttle sensor output/input voltage check in the C.D.I Unit inspection.
- When inspecting the throttle sensor the throttle valve of the carburetor shall be completely closed and remain the throttle cable connected.
- Remove the carburetor (see Fuel System chapter).
- Connect the carburetor lead connector [A] with the battery [B], variable rheostat [C] and hand testers [D] as shown.
Variable Rheostat (+) → R/G Lead Terminal [E]
Hand Tester (+) → W/BK Lead terminal [F]
Hand Tester (−) → BK/G Lead terminal [G]
- Check the sensor input voltage.

Throttle Sensor Input Voltage

Standard: around 5 V

- Check the sensor output voltage with the throttle valve is completely closed.

Throttle Sensor Output Voltage

Standard: 0.4 ~ 0.6 V (when the throttle valve completely closed.)

- ★ If it is not within the specified voltage, adjust the throttle sensor position (see Throttle Sensor Position Adjustment).
- ★ If it is within specified voltage, go to next test.
- Check the sensor output voltage with the throttle fully opened.

Throttle sensor Output Voltage

Standard: 3.5 ~ 3.7 V (When throttle fully opened.)

- ★ If it is not within the specified voltage, replace the sensor.

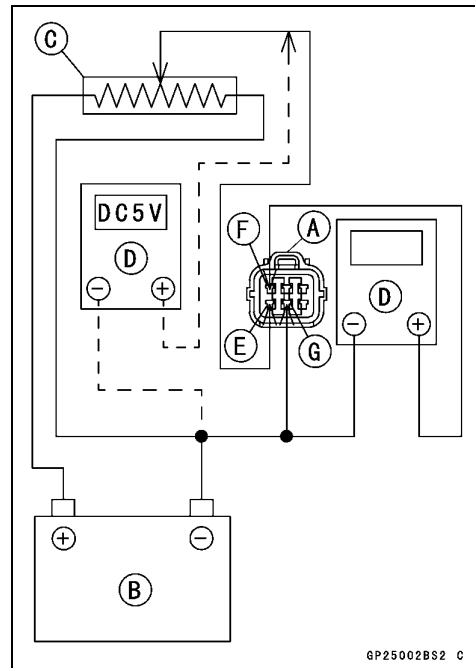
Throttle Sensor Position Adjustment

- Remove the carburetor.
- Check the throttle valve is completely closed.
- Loosen the throttle sensor mounting bolt [A].
- Connect the carburetor lead connector with the battery, variable rheostat and handtesters in the same manner as specified in the throttle sensor Inspection.
- Adjust the position of the sensor until the output voltage is within the specified voltage range.

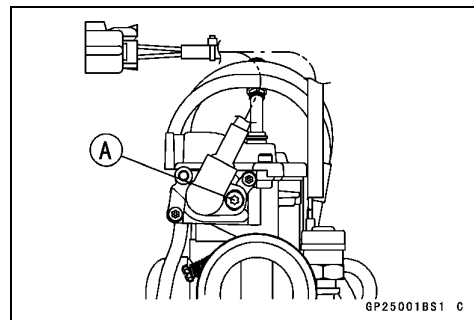
Throttle Sensor Output Voltage

Standard: 0.4 ~ 0.6 V (when throttle valve is completely closed.)

- If it is not within the specified voltage range, replace the sensor.



GP25002BS2 C



GP25001BS1 C

Fuel Cut Valve

Fuel Cut Valve Removal

⚠ WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Turn the ignition switch OFF. Do not smoke. Make sure the area is well-ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

- Disconnect the carburetor lead connector.
- Remove the carburetor.
- Drain the fuel from the float bowl removing the drain plug. After draining, install the drain plug securely.
- Loosen the fuel cut valve [A] and remove it.

Fuel Cut Valve Installation

- Installation is reverse of removal.

Fuel Cut Valve Inspection

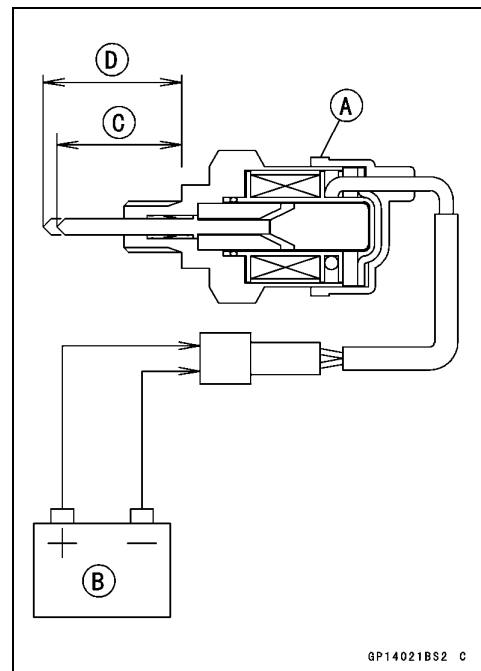
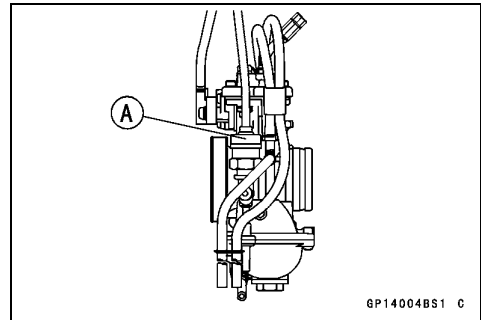
- Remove the fuel cut valve [A].
- Connect and disconnect one 12 V battery [B] to the carburetor lead connector as shown. The valve rod moves.
- ★ If the protrusion exceeds the standard (too long or too short), the valve is defective and must be replaced.

Testing Fuel Cut Valve

Standard Protrusion

When battery is disconnected [C] 19.4 ~ 19.6 mm (0.76 ~ 0.77 in.)

When battery is connected [D] 21.3 ~ 21.7 mm (0.84 ~ 0.85 in.)



Appendix

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16-2 APPENDIX

Troubleshooting Guide

NOTE

○This is not an exhaustive list, giving every possible cause for each problem listed. It is meant simply as a rough guide to assist the troubleshooting for some of the more common difficulties.

Engine Doesn't Start, Starting Difficulty

Engine won't turn over

- Cylinder, piston seizure
- Crankshaft seizure
- Connecting rod small end seizure
- Connecting rod big end seizure
- Transmission gear or bearing seizure
- Kick shaft return spring broken
- Kick ratchet gear not engaging

No fuel flow

- No fuel in tank
- Fuel tap turned off
- Tank cap air vent obstructed
- Fuel tap clogged
- Fuel line clogged
- Float valve clogged
- Fuel cut valve left close

Engine flooded

- Float level too high
- Float valve worn or stuck open
- Starting technique faulty
(when flooded, kick with the throttle fully open to allow more air to reach the engine.)

No spark; spark weak

- Spark plug dirty, broken, or maladjusted
- Spark plug cap or high tension wiring trouble
- Spark plug cap not in good contact
- Spark plug incorrect
- C.D.I Unit trouble
- Ignition coil trouble
- Ignition coil resistor open
- Flywheel magneto damaged
- Wiring shorted or open

Fuel/air mixture incorrect

- Idle adjusting screw maladjusted
- Slow jet or air passage clogged
- Air cleaner clogged, poorly sealed, or missing
- Starter jet clogged

Compression Low

- Spark plug loose
- Cylinder head not sufficiently tightened down
- Cylinder, piston worn
- Piston ring bad (worn, weak, broken, or sticking)

- Piston ring/groove clearance excessive
- Cylinder head gasket damaged
- Cylinder head warped
- Cylinder base gasket damaged
- Reed valve damaged
- Cylinder nut loose

Poor Running at Low Speed

Spark weak

- Spark plug dirty, broken, or maladjusted
- Spark plug cap or high tension wiring trouble
- Spark plug cap shorted or not in good contact
- Spark plug incorrect
- C.D.I Unit trouble
- Ignition coil trouble
- Flywheel magneto damaged
- Ignition coil lead or C.D.I Unit lead not in good contact

Fuel/air mixture incorrect

- Idle adjusting screw maladjusted
- Slow jet or air passage clogged
- Air cleaner clogged, poorly sealed, or missing
- Starter plunger stuck open
- Float level too high or too low
- Fuel tank air vent obstructed
- Fuel cut valve won't fully open
- Carburetor holder loose
- Air cleaner duct loose

Compression Low

- Spark plug loose
- Cylinder head not sufficiently tightened down
- Cylinder, piston worn
- Piston ring bad (worn, weak, broken, or sticking)
- Piston ring/groove clearance excessive
- Cylinder head gasket damaged
- Cylinder head warped
- Cylinder base gasket damaged
- Reed valve damaged
- Cylinder nut loose

Kips ports stuck open

- KIPS exhaust valve stuck open (valve seizure, or carbon accumulation)
- KIPS exhaust valves assembled incorrectly
- Exhaust advancer spring damaged
- Exhaust valve operating rod seizure
- Rod (for KIPS) seized in cylinder

Other

- C.D.I Unit trouble
- Transmission oil viscosity too high
- Brake dragging

Troubleshooting Guide

Poor Running or No Power at High Speed

Firing incorrect

- Spark plug dirty, damaged, or maladjusted
- Spark plug cap or high tension wiring damaged
- Spark plug cap shorted or not in good contact
- Spark plug incorrect
- C.D.I Unit trouble
- Ignition coil trouble
- Flywheel magneto damaged
- Ignition coil lead or C.D.I Unit lead not in good contact

Fuel/air mixture incorrect

- Main jet clogged or wrong size
- Jet needle or needle jet worn
- Jet needle clip in wrong position
- Float level too high or too low
- Fuel cut valve won't fully open
- Air jet or air passage clogged
- Air cleaner clogged, poorly sealed, or missing
- Starter plunger stuck open
- Fuel to carburetor insufficient
- Water or foreign matter in fuel
- Fuel tank air vent obstructed
- Carburetor holder loose
- Air cleaner duct loose
- Fuel tap clogged
- Fuel line clogged

Compression low

- Spark plug loose
- Cylinder head not sufficiently tightened down
- Cylinder, piston worn
- Piston ring bad (worn, weak, broken, or sticking)
- Piston ring/and clearance excessive
- Cylinder head gasket damaged
- Cylinder head warped
- Cylinder base gasket damaged
- Reed valve damaged
- Cylinder nut loose

Engine rpm will not rise properly

- Starter plunger stuck open
- Float level too high or too low
- Main jet clogged
- Throttle valve does not fully open
- Air cleaner clogged
- Muffler clogged
- Water or foreign matter in fuel
- Cylinder exhaust port clogged
- Brake dragging
- Clutch slipping
- Overheating
- Transmission oil level too high

- Transmission oil viscosity too high
- Crankshaft bearing worn or damaged

KIPS ports stuck closed

- KIPS ports stuck closed
- KIPS exhaust valves stuck closed (valve seizure, or carbon accumulation)
- KIPS exhaust valves assembled incorrectly
- KIPS ports clogged (carbon accumulation)
- Rod (for KIPS) seized in cylinder

Knocking

- Carbon built up in combustion chamber
- Fuel poor quality or incorrect
- Spark plug incorrect
- C.D.I Unit trouble

Overheating

Firing incorrect

- Spark plug dirty, broken, or maladjusted
- Spark plug incorrect
- C.D.I Unit trouble

Fuel/air mixture incorrect

- Main jet clogged or wrong size
- Fuel level in carburetor float bowl too low
- Fuel cut valve won't fully open
- Carburetor holder loose
- Air cleaner poorly sealed, or missing
- Air cleaner duct poorly sealed
- Air cleaner clogged

Compression high

- Carbon built up in combustion chamber

Engine load faulty

- Brake dragging
- Clutch slipping
- Transmission oil level too high
- Transmission oil viscosity too high

Lubrication inadequate

- Transmission oil level too low
- Transmission oil poor quality or incorrect

Coolant incorrect

- Coolant level too low
- Coolant deteriorated

Cooling system component incorrect

- Radiator clogged
- Radiator cap trouble
- Water pump not rotating

Clutch Operation Faulty

Clutch slipping

- No clutch lever play
- Clutch cable maladjusted
- Clutch inner cable catching
- Friction plate worn or warped
- Steel plate worn or warped
- Clutch spring broken or weak
- Clutch release mechanism trouble
- Clutch hub or housing unevenly worn

Clutch not disengaging properly

- Clutch lever play excessive

16-4 APPENDIX

Troubleshooting Guide

- Clutch plate warped or too rough
- Clutch spring tension uneven
- Transmission oil deteriorated
- Transmission viscosity too high
- Transmission oil level too high
- Clutch housing frozen on drive shaft
- Clutch release mechanism trouble

Gear Shifting Faulty

Doesn't into gear; shift pedal doesn't return

- Clutch not disengaging
- Shift fork bent or seized
- Gear stuck on the shaft
- Gear positioning lever binding
- Shift return spring weak or broken
- Shift return spring pin loose
- Shift mechanism arm spring broken
- Shift mechanism arm broken
- Shift drum broken

Jumps out of gear

- Shift fork worn
- Gear groove worn
- Gear dogs and/or dog holes worn
- Shift drum groove worn
- Gear positioning lever spring weak or broken
- Shift fork guide pin worn
- Drive shaft, output shaft, and/or gear splines worn

Overshifts

- Gear positioning lever spring weak or broken
- Shift mechanism arm spring broken

Abnormal Engine Noise

Knocking

- C.D.I Unit trouble
- Carbon built up in combustion chamber
- Fuel poor quality or incorrect
- Spark plug incorrect
- Overheating

Piston slap

- Cylinder/piston clearance excessive
- Cylinder, piston worn
- Connecting rod bent
- Piston pin, piston pin hole worn

Other noise

- Connecting rod small end clearance excessive
- Connecting rod big end clearance excessive
- Piston ring worn, broken or stuck
- Piston seizure or damaged
- Cylinder head gasket leaking
- Exhaust pipe leaking at cylinder head connection

- Crankshaft runout excessive
- Engine mounts loose
- Crankshaft bearing worn
- Primary gear worn or chipped

Abnormal Drive Train Noise

Clutch noise

- Clutch housing/friction plate clearance excessive
- Clutch housing gear/primary gear backlash excessive
- Metal chip jammed in clutch housing gear teeth

Transmission noise

- Crankcase bearing worn or damaged
- Transmission gear worn or chipped
- Metal chip jammed in gear teeth
- Transmission oil insufficient or too thin
- Kick ratchet gear not properly disengaging from kick gear
- Output shaft idle gear worn or chipped

Drive chain noise

- Drive chain adjusted improperly
- Chain worn
- Rear and/or engine sprocket(s) worn
- Chain lubrication insufficient
- Rear wheel misaligned

Abnormal Frame Noise

Front fork noise

- Oil insufficient or too thin
- Spring weak or broken
- Front fork air pressure high

Rear shock absorber noise

- Shock absorber damaged

Disc brake noise

- Pad installed incorrectly
- Pad surface glazed
- Disc warped
- Caliper trouble
- Cylinder damaged

Other noise

- Bracket, nut, bolt, etc. not properly mounted or tightened

Exhaust Smoke

Excessive white smoke

- Throttle cable maladjusted

Brownish smoke

- Air cleaner clogged
- Main jet too large or fallen out
- Starter plunger stuck open
- Float level too high

Troubleshooting Guide

**Handling and/or Stability
Unsatisfactory**
Handlebar hard to turn

- Control Cable routing incorrect
- Wiring routing incorrect
- Steering stem nut too tight
- Bearing ball damaged
- Bearing race dented or worn
- Steering stem bearing lubrication inadequate
- Steering stem bent
- Tire air pressure too low

Handlebar shakes or excessively vibrates

- Tire worn
- Swingarm sleeve or needle bearing damaged
- Rim warped, or not balanced
- Front, rear axle runout excessive
- Wheel bearing worn
- Handlebar holder loose
- Steering stem head nut loose

Handlebar pulls to one side

- Frame bent
- Wheel misalignment
- Swingarm bent or twisted
- Swingarm pivot shaft runout excessive
- Steering maladjusted
- Steering stem bent
- Front fork leg bent

Right/left front fork oil level uneven

Shock absorption unsatisfactory

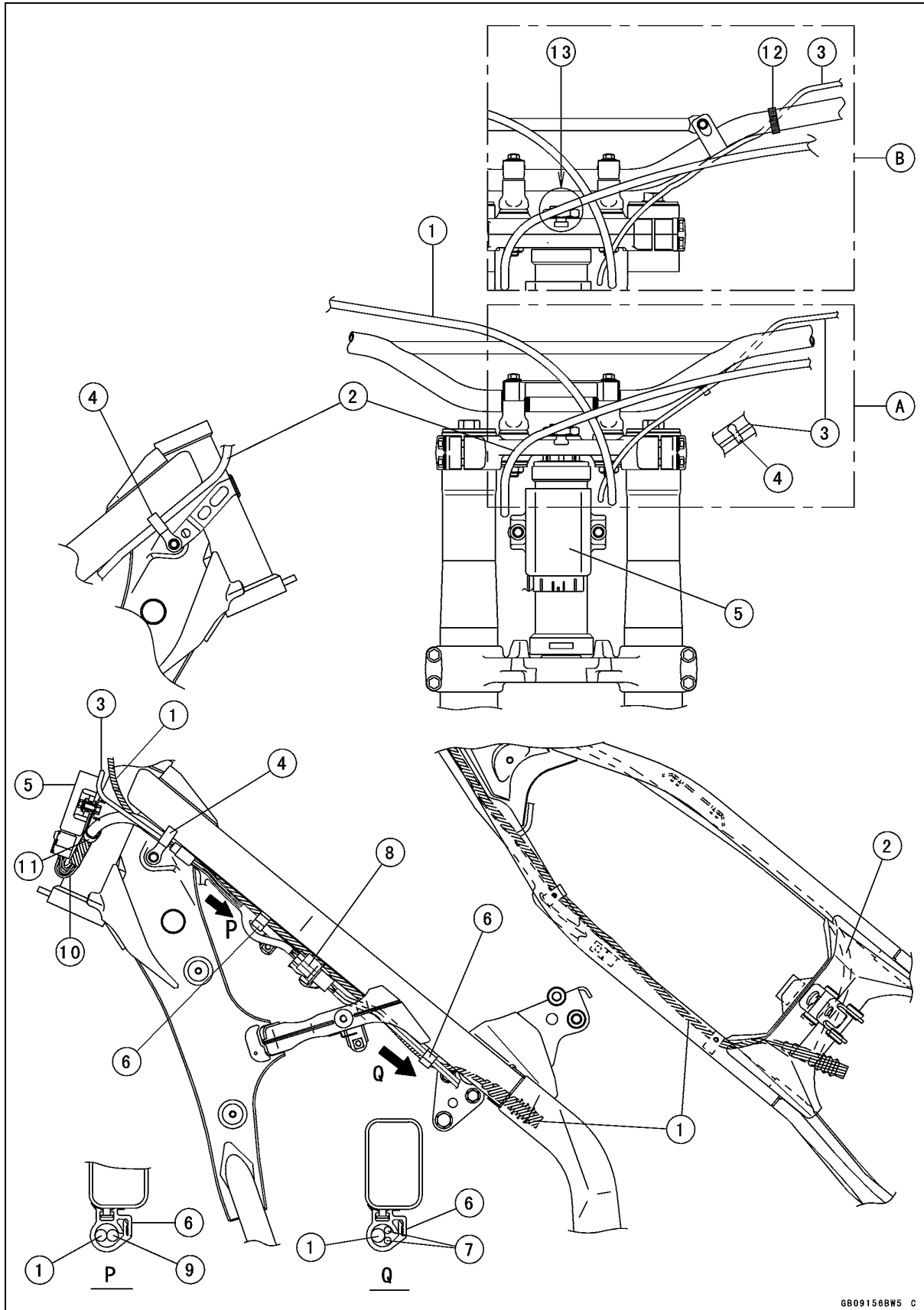
- (Too hard)
- Front fork oil excessive
- Front fork oil viscosity too high
- Front fork leg bent
- Front fork air pressure high
- Tire air pressure too high
- Rear shock absorber maladjusted (Too soft)
- Front fork oil insufficient and/or leaking
- Front fork oil viscosity too low
- Front fork, rear shock absorber spring weak
- Rear shock absorber gas leaking
- Rear shock absorber maladjusted

Brake Doesn't Hold
Disc brake

- Air in the brake line
- Pad or disc worn
- Brake fluid leak
- Disc warped
- Contaminated pads
- Brake fluid deteriorated
- Primary or secondary cup damaged
- Master cylinder scratched inside
- Brake maladjustment (lever or pedal play excessive)

16-6 APPENDIX

Cable, Wire and Hose Routing



Cable, Wire and Hose Routing

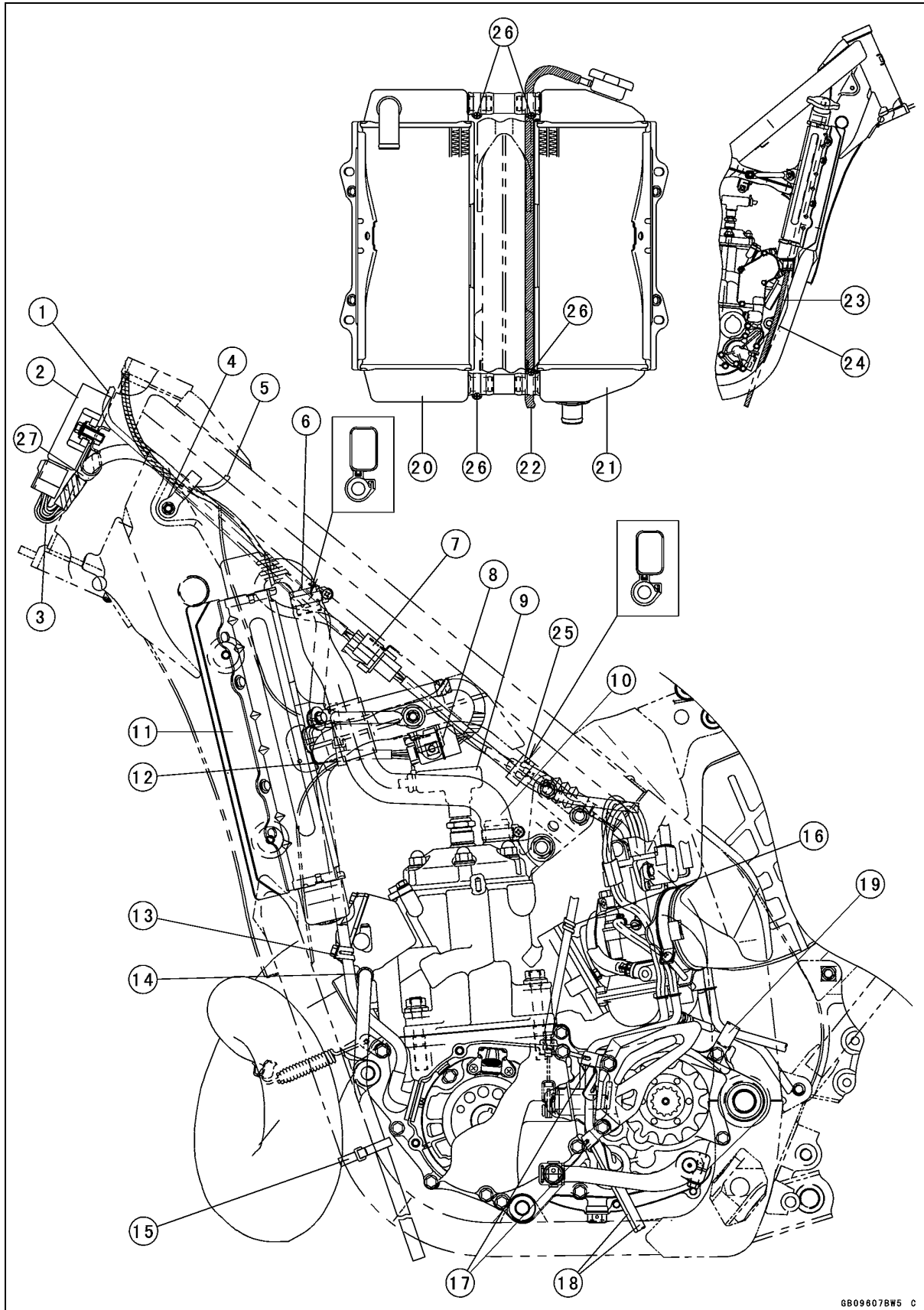
1. Throttle Cable
2. Clutch Cable
3. Engine Stop Switch Lead
4. Clamp
5. CDI Unit
6. Install the clamp to the frame so that its opening side faces outward.
7. Carburetor Leads
8. Carburetor Leads Connector
9. Main Harness
10. Do not slacken.
11. Clamp the main harness as shown.
12. Band
13. Run the clutch cable above the number plate mounting bracket.

A: KX250-R1 Model

B: KX250R6F Model ~

16-8 APPENDIX

Cable, Wire and Hose Routing

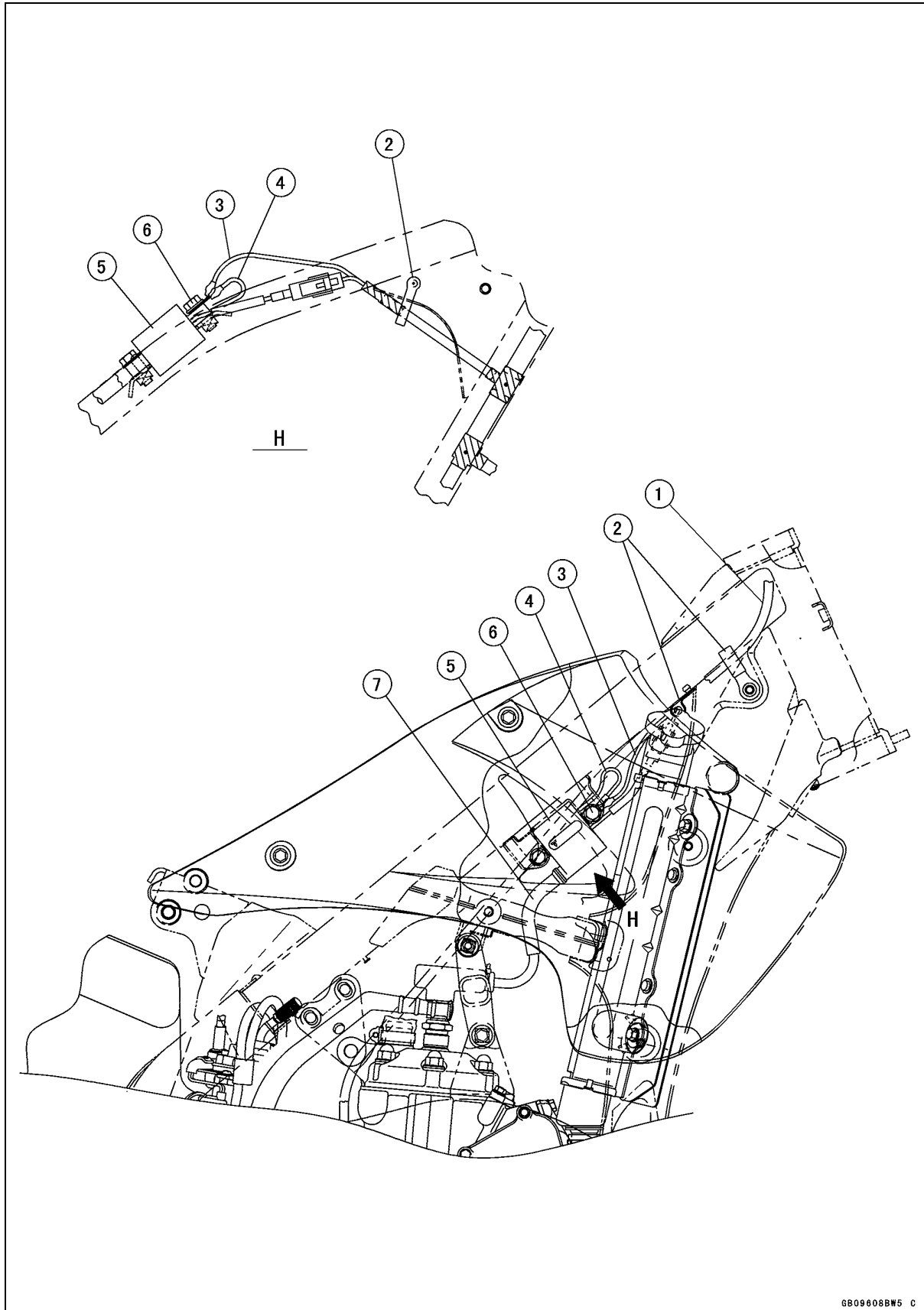


Cable, Wire and Hose Routing

1. To Engine Stop Switch
2. CDI Unit
3. Do not slacken.
4. Clamp the throttle cable, CDI unit leads and engine stop switch leads.
5. To Ignition Coil
6. Clamp the throttle cable. Be careful not to bite cable when installing the fuel tank. Run the main harness under the frame. Install the clamp to the frame so that its opening side faces outward.
7. Carburetor Leads Connector
8. Magneto Leads Connector
9. Spark Plug Cap
10. Cooling Hose
11. Left Radiator
12. Clamp the magneto leads with the band.
13. Clamp the magneto leads.
14. Clamp the hose so that clamp cutting edge faces forwards.
15. Clamp the hose with the band.
16. Clamp the clutch cable.
17. Clamp the air vent hoses with clamps which are installed together with engine sprocket cover and run them along with the engine sprocket cover.
18. Air Vent Hoses
19. Clamp the overflow hose and other hoses.
20. Left Radiator
21. Right Radiator
22. Radiator Overflow Hose
23. Run the radiator overflow hose so that it does not touch the exhaust chamber.
24. Run the radiator overflow hose outside of the engine mount bracket.
25. Install the clamp to the frame so that its opening side faces outward.
26. Clamp
27. clamp the main harness as shown.

16-10 APPENDIX

Cable, Wire and Hose Routing

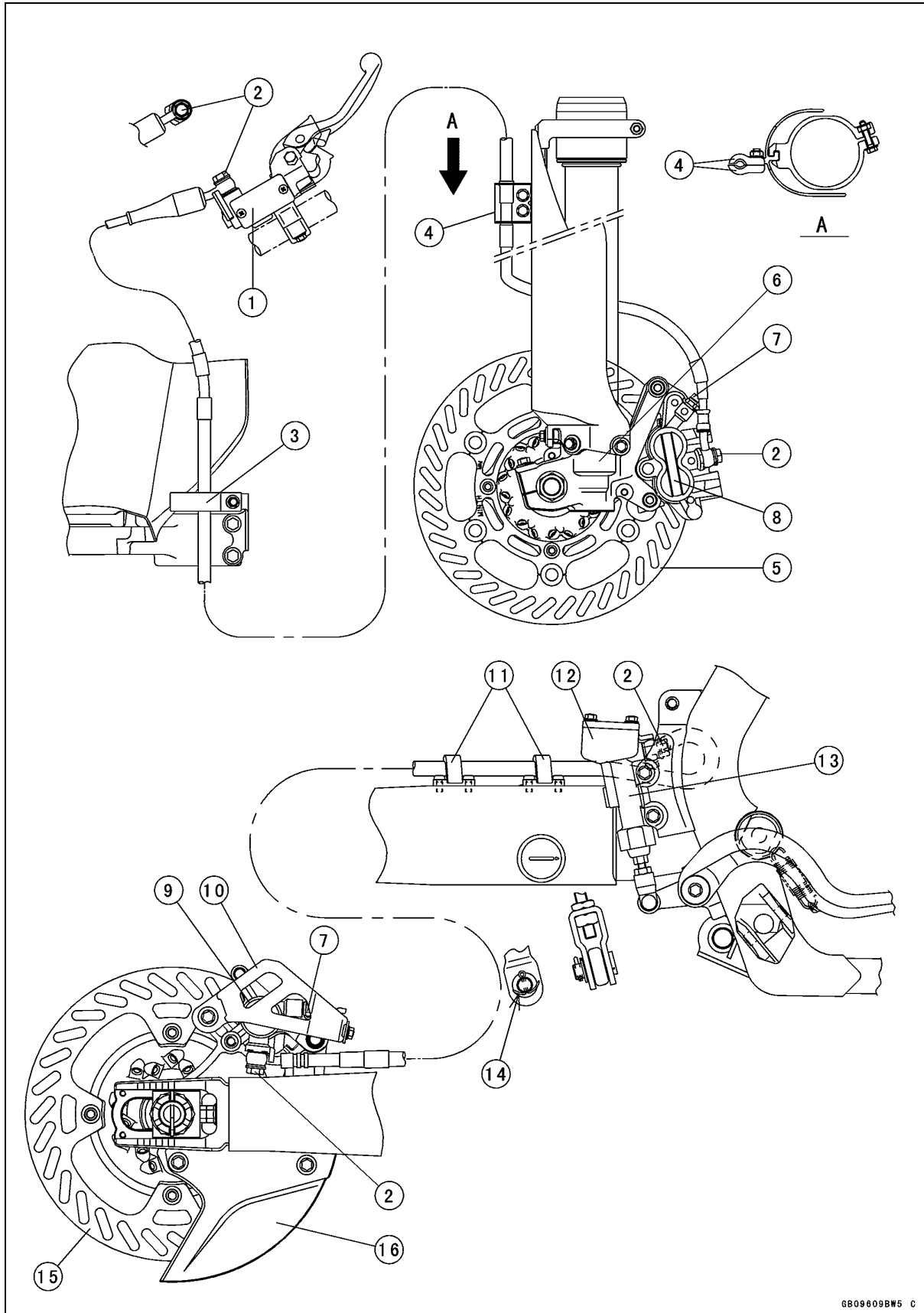


Cable, Wire and Hose Routing

1. Clutch Cable
2. Clamp
3. Main Harness Ground Lead (Outside)
4. Ignition Coil Ground Lead (Inside)
5. Ignition Coil
6. Tighten together with the main harness ground lead and ignition coil ground lead with the ignition coil mounting bolt.
7. Run the ignition coil lead inside of the radiator bracket.

16-12 APPENDIX

Cable, Wire and Hose Routing



GB09609BWS C

Cable, Wire and Hose Routing

1. Front Brake Reservoir
2. Banjo Bolts
3. Clamp
4. Clamp Brackets
5. Front Brake Disc
6. Front Fork Guard
7. Bleed Valves
8. Front Brake Caliper
9. Rear Brake Caliper
10. Caliper Guard
11. Clamps
12. Rear Brake Reservoir
13. Rear Brake Master Cylinder
14. Bend the cotter pin end by along the joint pin.
15. Rear Brake Disc
16. Disk Guard

MODEL APPLICATION

Year	Model	Beginning Frame No.
2005	KX250-R1	JKAKXMRC□5A000001 or JKAKX250RRA000001
2006	KX250R6F	JKAKXMRC□6A006001 or JKAKX250RRA006001
2007	KX250R7F	JKAKXMRC□7A010001 or JKAKX250RRA010001
2008	KX250R8F	JKAKXMRC□8A013001 or JKAKX250RRA013001

□:This digit in the frame number changes from one machine to another.



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