

## MODEL APPLICATION

Year	Model	Beginning Frame No.
2006	KX450D6F	JKAKXGDC□6A000001 or JKAKX450DDA000001

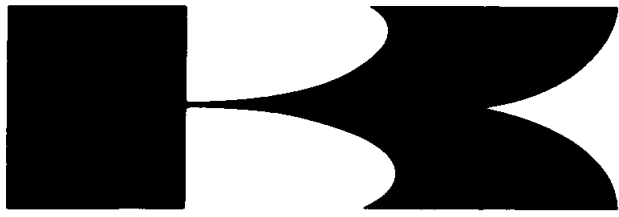
□:This digit in the frame number changes from one machine to another.



KAWASAKI HEAVY INDUSTRIES, LTD.  
Consumer Products & Machinery Company

Part No.99924-1355-01

Printed in Japan



**Kawasaki**

**KX450F**



# **Motorcycle Service Manual**

# Quick Reference Guide

<b>General Information</b>	<b>1</b>
<b>Periodic Maintenance</b>	<b>2</b>
<b>Fuel System</b>	<b>3</b>
<b>Cooling System</b>	<b>4</b>
<b>Engine Top End</b>	<b>5</b>
<b>Engine Right Side</b>	<b>6</b>
<b>Engine Lubrication System</b>	<b>7</b>
<b>Engine Removal/Installation</b>	<b>8</b>
<b>Crankshaft/Transmission</b>	<b>9</b>
<b>Wheels/Tires</b>	<b>10</b>
<b>Final Drive</b>	<b>11</b>
<b>Brakes</b>	<b>12</b>
<b>Suspension</b>	<b>13</b>
<b>Steering</b>	<b>14</b>
<b>Frame</b>	<b>15</b>
<b>Electrical System</b>	<b>16</b>
<b>Appendix</b>	<b>17</b>

## 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	r/min, 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) (mass)	W	watt(s)
h	hour(s)	Ω	ohm(s)
kg	(mass)		
kgf	(force)		
L	liter(s)		

# 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 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 vehicle:

- 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

## Table of Contents

Before Servicing .....	1-2
Model Identification.....	1-7
General Specifications.....	1-8
Unit Conversion Table .....	1-10

# 1-2 GENERAL INFORMATION

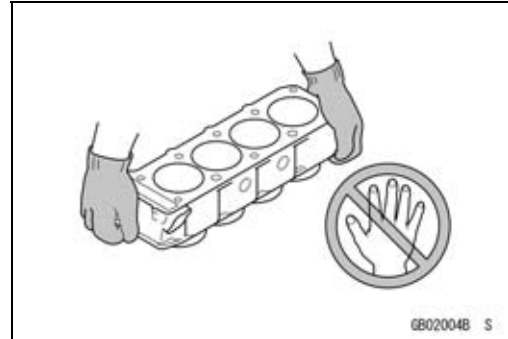
## Before Servicing

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:

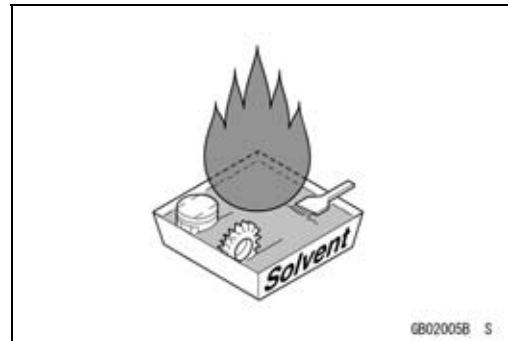
### *Edges of Parts*

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



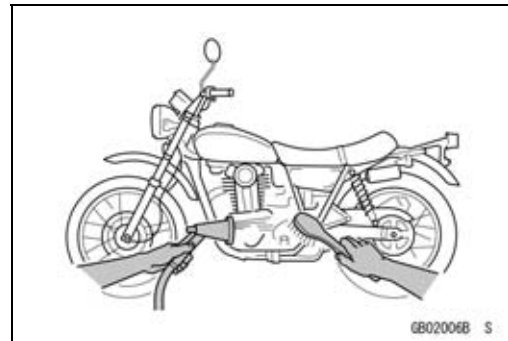
### *Solvent*

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



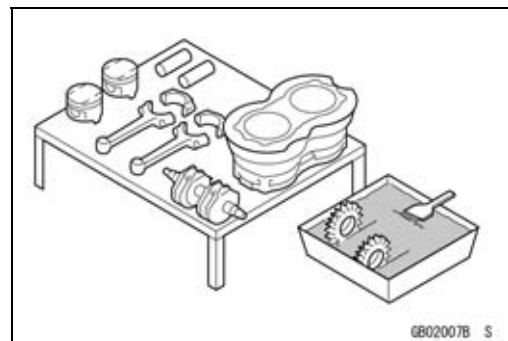
### *Cleaning vehicle before disassembly*

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*

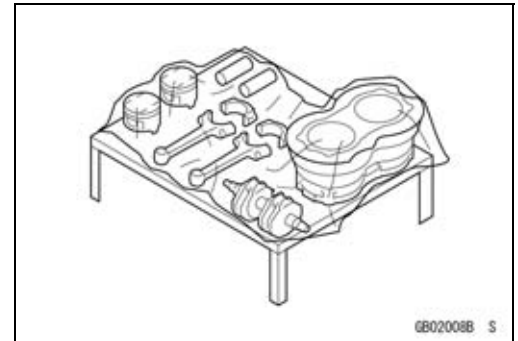
Disassembled parts are easy to confuse. Arrange the parts according to the order the parts were disassembled and clean the parts in order prior to assembly.



## Before Servicing

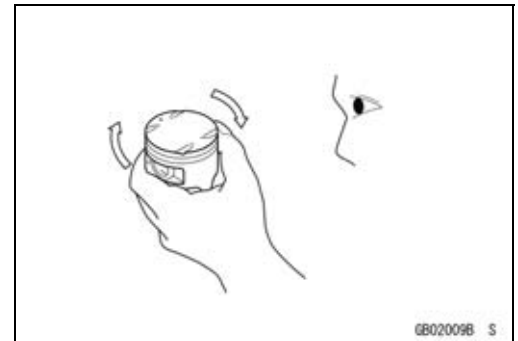
### Storage of Removed Parts

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.



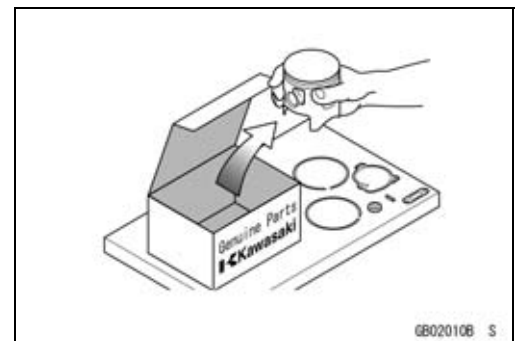
### Inspection

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.



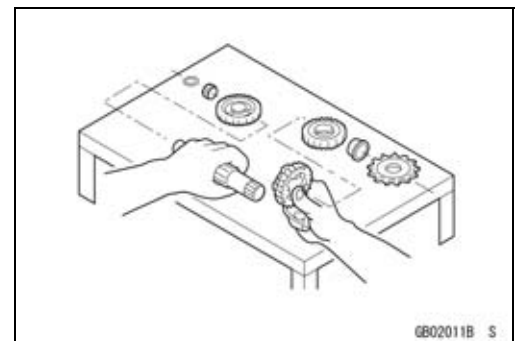
### Replacement Parts

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.



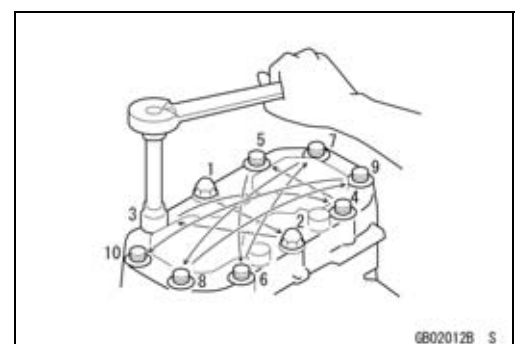
### Assembly Order

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, nuts, 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.





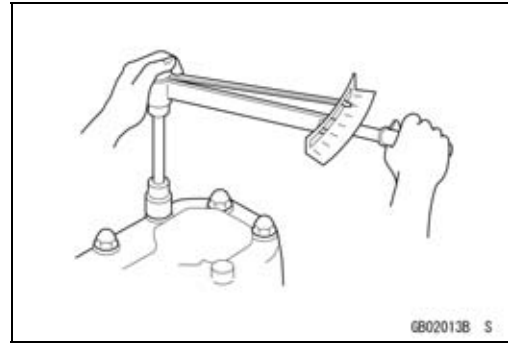
# 1-4 GENERAL INFORMATION

## Before Servicing

### Tightening Torque

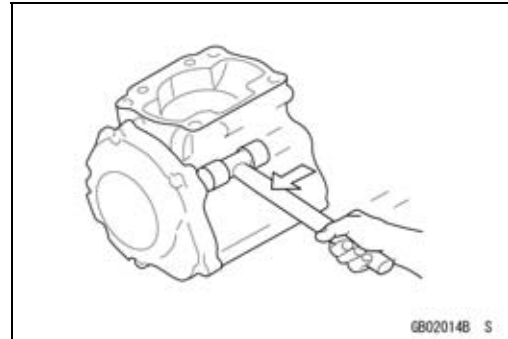
Incorrect torque applied to a bolt, nut, or screw may lead to serious damage. Tighten fasteners to the specified torque using a good quality torque wrench.

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



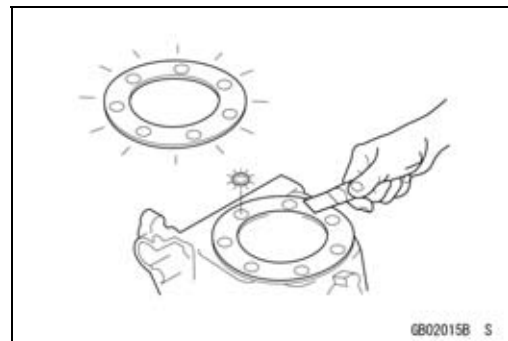
### Force

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.



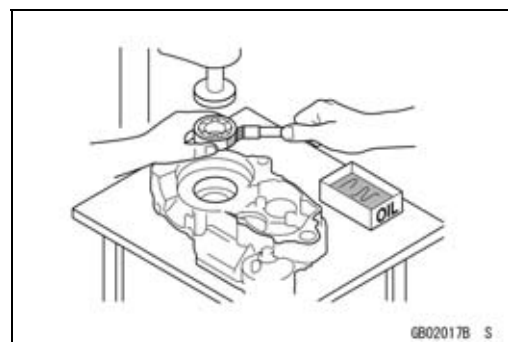
### Liquid Gasket, Non-permanent Locking Agent

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.

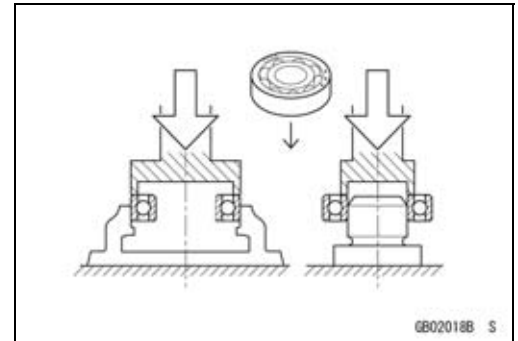


**Before Servicing**

**Ball Bearing and Needle Bearing**

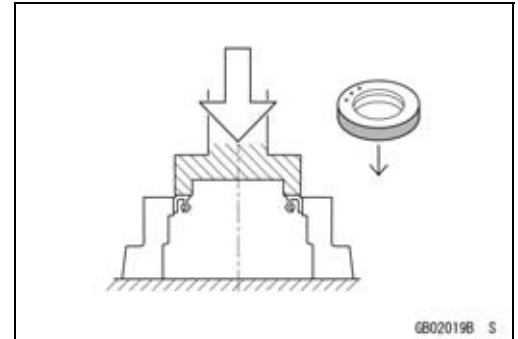
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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

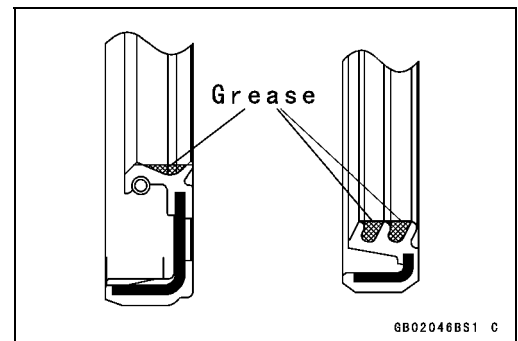


**Oil Seal, Grease Seal**

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.

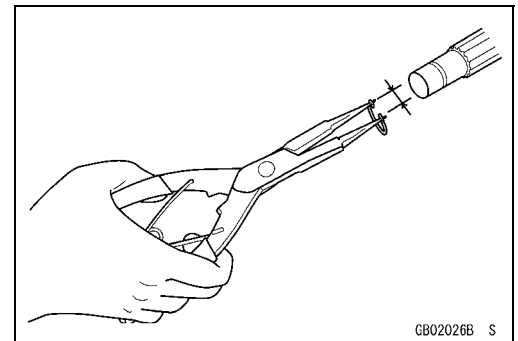


Apply specified grease to the lip of seal before installing the seal.



**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.

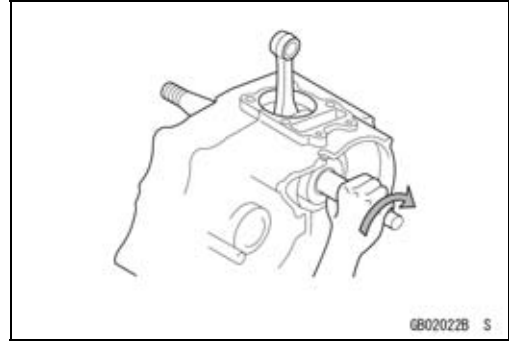


## 1-6 GENERAL INFORMATION

### Before Servicing

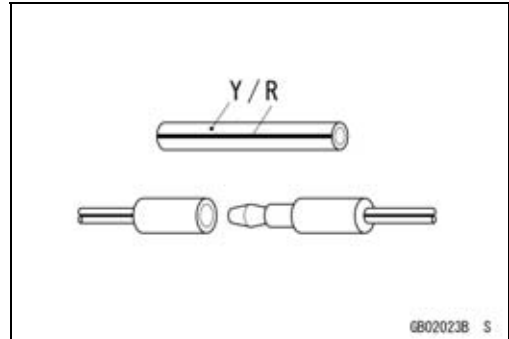
#### *Direction of Engine Rotation*

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).



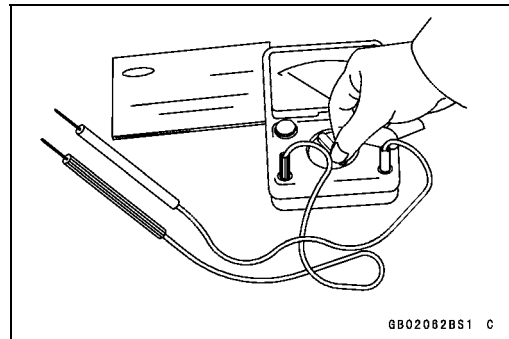
#### *Electrical Wires*

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



#### *Instrument*

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



Model Identification

KX450D6F Left Side View



KX450D6F Right Side View



# 1-8 GENERAL INFORMATION

## General Specifications

Items	KX450D6F
<b>Dimensions</b> Overall Length Overall Width Overall Height Wheelbase Road Clearance Seat Height Dry Mass Fuel Tank Capacity	2 185 mm (86.02 in.) 820 mm (32.3 in.) 1 280 mm (50.39 in.) 1 485 mm (58.46 in.) 345 mm (13.6 in.) 965 mm (38.0 in.) 99.8 kg (220 lb) 7.2 L (1.9 US gal)
<b>Performance</b> Minimum Turning Radius	–
<b>Engine</b> Type Cooling System Bore and Stroke Displacement Compression Ratio Carburetion System Starting System Ignition System Timing Advance Ignition Timing Spark Plug Valve Timing: Inlet: Open Close Duration Exhaust: Open Close Duration Lubrication System Engine Oil: Type Viscosity Capacity	4-stroke, single cylinder, DOHC 4 valve Liquid-cooled 96.0 × 62.1 mm (3.78 × 2.44 in.) 449 cm <sup>3</sup> (27.4 cu in.) 12.0 : 1 Carburetor, KEIHIN FCR40 Primary kick Digital AC-CDI BTDC 10° @1 800 r/min (rpm) NGK CPR8EB-9 BTDC 32° ABDC 72° 284° BBDC 62° ATDC 42° 284° Forced lubrication (semi-dry sump) API SG, SH, SJ or SL with JASO MA SAE 10W-40 1.2 L (1.3 US qt)
<b>Drive Train</b> Primary Reduction System: Type Reduction Ratio Clutch Type Transmission: Type	Gear 2.727 (60/22) Wet, multi disc 4-speed, constant mesh, return shift

**General Specifications**

Items	KX450D6F
Gear ratios: 1st 2nd 3rd 4th Final Drive System: Type Reduction Ratio Overall Drive Ratio	1.800 (27/15) 1.411 (24/17) 1.187 (19/16) 1.000 (19/19) Chain drive 3.4846 (50/13) 10.489 @Top gear
<b>Frame</b> Type Steering Angle Caster (rake angle) Trail Front tire: Size Make/Type Rear tire: Size Make/Type Rim size: Front Rear Front suspension: Type Wheel travel Rear suspension: Type Wheel travel Brake type: Front and Rear Effective disc diameter: Front (effect. dia.) Rear (effect. dia.)	Tubular, semi-double cradle 42° to either side 27.1° 117 mm (4.60 in.) 90/100-21 57M DUNLOP D742F, Tube type 120/80-19 63M DUNLOP D756, Tube type 1.60-21 2.15-19 Telescopic fork (up side down) 315 mm (12.4 in.) Swingarm (New Uni-trak) 315 mm (12.4 in.) Single disc 225 mm (8.86 in.) 215 mm (8.46 in.)

Specifications subject to change without notice, and may not apply to every country.

# 1-10 GENERAL INFORMATION

## 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

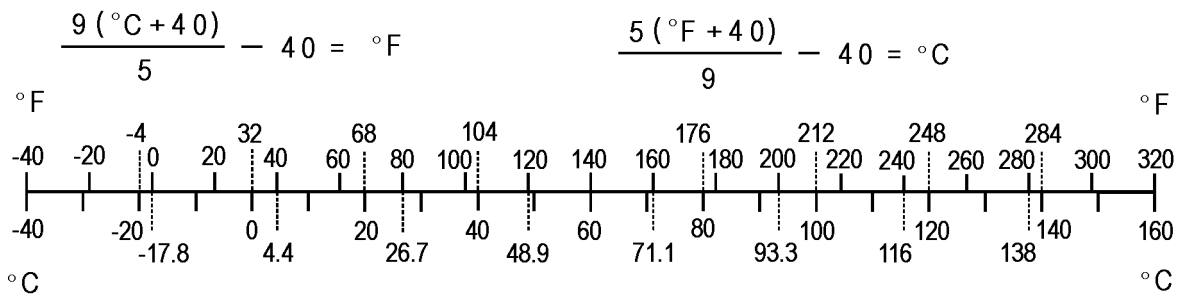
### Units of Volume:

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 Temperature:



### 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 <sup>2</sup>
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cm Hg
kgf/cm <sup>2</sup>	×	98.07	=	kPa
kgf/cm <sup>2</sup>	×	14.22	=	psi
cm Hg	×	1.333	=	kPa

### Units of Speed:

km/h	×	0.6214	=	mph
------	---	--------	---	-----

### Units of Power:

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

# Periodic Maintenance

## Table of Contents

Periodic Maintenance Chart .....	2-3	Crankshaft/Transmission .....	2-28
Torque and Locking Agent.....	2-5	Crankshaft Inspection .....	2-28
Specifications .....	2-9	Wheel/Tires.....	2-28
Special Tools .....	2-11	Air Pressure Inspection/Adjust-	
Periodic Maintenance Procedures.....	2-12	ment .....	2-28
Fuel System.....	2-12	Tires Inspection.....	2-29
Fuel Hose and Connection		Spoke Tightness Inspection.....	2-29
Inspection.....	2-12	Rim Runout Inspection.....	2-30
Throttle Grip Free Play Inspection	2-12	Wheel Bearing Inspection .....	2-30
Throttle Grip Free Play		Final Drive.....	2-31
Adjustment .....	2-12	Drive Chain Slack Inspection .....	2-31
Hot Starter Lever Free Play		Drive Chain Slack Adjustment .....	2-31
Inspection.....	2-13	Drive Chain Wear Inspection .....	2-32
Idle Speed Inspection .....	2-13	Drive Chain Lubrication.....	2-33
Idle Speed Adjustment.....	2-14	Sprocket Wear Inspection.....	2-33
Air Cleaner Element Cleaning and		Rear Sprocket Warp Inspection ...	2-34
Inspection.....	2-14	Brakes.....	2-34
Fuel Inspection.....	2-16	Brake Lever and Pedal Position	
Fuel Tank, Filter and Tap		Adjustment .....	2-34
Cleaning .....	2-17	Brake Fluid Level Inspection.....	2-35
Fuel Tap and Filter Inspection.....	2-17	Brake Fluid Change .....	2-36
Cooling System.....	2-17	Brake Pad Wear Inspection .....	2-38
Coolant Level Inspection.....	2-18	Brake Master Cylinder Cup and	
Coolant Deterioration Inspection..	2-18	Dust Seal Replacement .....	2-38
Radiator Hoses and Connections		Caliper Piston Seal and Dust Seal	
Inspection.....	2-19	Replacement.....	2-40
Engine Top End .....	2-19	Brake Hose and Connection	
Valve Clearance Inspection .....	2-19	Check .....	2-43
Valve Clearance Adjustment.....	2-20	Brake Hose Replacement.....	2-43
Cylinder Head Warp Inspection ...	2-22	Suspension .....	2-44
Cylinder Wear Inspection.....	2-22	Front Fork Inspection .....	2-44
Piston/Cylinder Clearance .....	2-23	Front Fork Oil Change (each fork	
Piston, Piston Ring and Piston		leg) .....	2-44
Pin Replacement.....	2-23	Rear Shock Absorber Inspection .	2-53
Exhaust System Inspection.....	2-23	Rear Shock Absorber Oil Change	2-53
Muffler Baffle Change .....	2-23	Swingarm and Uni-Trak Linkage	
Engine Right Side .....	2-24	Inspection.....	2-58
Clutch Lever Free Play Check ....	2-25	Swingarm and Uni-Track Linkage	
Clutch Lever Free Play		Pivot Lubricate .....	2-58
Adjustment .....	2-25	Steering .....	2-58
Friction and Steel Plates		Steering Inspection .....	2-58
Inspection.....	2-25	Steering Adjustment .....	2-58
Engine Lubrication System.....	2-26	Stem Bearing Lubrication.....	2-60
Engine Oil Change.....	2-26	Frame .....	2-60
Oil Filter Change .....	2-27	Frame Inspection .....	2-60
Breather Hose Inspection .....	2-27	Electrical System .....	2-61



## 2-2 PERIODIC MAINTENANCE

---

Spark Plug Cleaning and Inspection.....	2-61	Nut, Bolt, and Fastener Tightness Inspection.....	2-62
Cable Inspection .....	2-61	Tightness Inspection .....	2-62
Lubrication .....	2-61		

**Periodic Maintenance Chart**

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

OPERATION		FREQUENCY				See Page
		Each race or 2.5 hr	Every 3 races or 7.5 hr	Every 6 races or 15 hr	Every 12 races or 30 hr	
E N G I N E	Spark plug-clean, gap †	•				2-61
	Spark plug-replace		•			2-61
	Clutch cable-adjust	•				2-25
	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
	Engine Oil-change			•		2-26
	Piston and piston ring-replace	Every 6 races				2-23
	Cylinder head, cylinder-inspect			•		2-22
	Piston pin-replace				•	2-23
	Valve clearance-inspect †			•		2-19
	Hot starter cable-adjust	•				2-13
	Oil filter-replace			•		2-27
	Muffler-clean and inspect†	•				2-23
	Muffler Baffle-change			•		2-23
	Kick pedal and shift pedal-clean	•				–
	Engine sprocket-inspect †	•				2-33
	Coolant-check †	•				2-18
Radiator hoses and connections-inspect †	•				2-19	
Crankshaft-inspect			•		2-28	
Breather hose-inspect	•				2-27	
C H A S S I S	Brake adjustment-inspect †	•				2-34
	Brake pad wear-inspect †	•				2-38
	Brake fluid level-inspect †	•				2-35
	Brake fluid-change	Every 2 years				2-36
	Brake master cylinder cup and dust seal-replace	Every 2 years				2-38
	Brake caliper piston seal and dust seal-replace	Every 2 years				2-40
	Brake hoses and pipe-replace	Every 4 years				2-43
	Brake hoses, connections-inspect †	•				2-43
	Spoke tightness and rim runout-inspect †	•				2-29
	Wheel bearing-inspect †	•				2-30
	Frame-inspect and clean	•				2-60
	Drive chain wear-inspect †	•				2-32
Drive chain-inspect and adjust	•				2-31	

## 2-4 PERIODIC MAINTENANCE

### Periodic Maintenance Chart

OPERATION	FREQUENCY				See Page
	Each race or 2.5 hr	Every 3 races or 7.5 hr	Every 6 races or 15 hr	Every 12 races or 30 hr	
Drive chain-lubricate	•				2-33
Wheels/tires-inspect	•				2-28
Rear sprocket-inspect †	•				2-33
Front fork-inspect and clean	•				2-44
Front fork oil-change			•		2-44
Rear shock oil-replace			•		2-53
Cable-inspect	•				2-61
Fuel hose-replace	Every 4 years				2-12
Fuel hose, connections-inspect †	•				2-12
Fuel system-clean		•			2-16
Steering play-inspect †	•				2-58
Steering stem bearing-grease			•		2-60
Swingarm and Uni-Trak linkage pivots-grease		•			2-58
Swingarm and Uni-Trak linkage pivots-inspect †		•			2-58
Nuts, bolts, fasteners-inspect †	•				2-62
Chassis parts-lubricate	•				—

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

**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.

Lh: Left-hand Threads

S: Tighten the fasteners following the specified sequence.

2T: Apply 2-stroke oil.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
<b>Fuel System</b>				
Throttle Pulley Cover Bolt	3.4	0.35	30 in·lb	
Throttle Cable Locknut	6.9	0.70	61 in·lb	
Air Cleaner Duct Clamp Screw	2.0	0.20	18 in·lb	
Air Cleaner Duct Mounting Nuts	3.0	0.31	27 in·lb	
Air Cleaner Duct Mounting Screw	3.0	0.31	27 in·lb	
Air Cleaner Housing Bolts	9.8	1.0	87 in·lb	
<b>Cooling System</b>				
Water Pump Cover Bolts	9.8	1.0	87 in·lb	
Water Pump Impeller Bolt	9.8	1.0	87 in·lb	
Radiator Hose Clamp Screws	1.5	0.15	13 in·lb	
Coolant Drain Plug	6.9	0.70	61 in·lb	
Radiator Mounting Bolts	9.8	1.0	87 in·lb	
Radiator Screen Bolts	9.8	1.0	87 in·lb	
Radiator Shroud Bolts	9.8	1.0	87 in·lb	
<b>Engine Top End</b>				
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	
Cylinder Head Bolts (M10)	59	6.0	44	S, MO
Cylinder Head Bolts (M6)	12	1.2	106 in·lb	S
Camshaft Cap Bolts	9.8	1.0	87 in·lb	S, MO
Camsfaft Sprocket Bolts	12	1.2	106 in·lb	L
Decompressor Plug Plate Bolt	9.8	1.0	87 in·lb	
Radiator Hose Fitting Bolts	9.8	1.0	87 in·lb	
Oil Line Plug	3.0	0.31	27 in·lb	L
Carburetor Holder Clamp Screws	2.0	0.20	18 in·lb	
Plug	20	2.0	15	L
Lower Camshaft Chain Guide Bolt	9.8	1.0	87 in·lb	
Rear Camshaft Chain Guide Bolt	15	1.5	11	
Chain Tensioner Mounting Bolts	9.8	1.0	87 in·lb	
Chain Tensioner Cap	5.0	0.51	44 in·lb	
Cylinder Bolt	12	1.2	106 in·lb	S
Exhaust Pipe Cover Screws	12	1.2	106 in·lb	

## 2-6 PERIODIC MAINTENANCE

### Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Exhaust Pipe Holder Nuts	21	2.1	15	
Muffler Mounting Bolts	21	2.1	15	
<b>Engine Right Side</b>				
Primary Gear Nut	98	10	72	Lh
Shift Drum Cam Bolt	24	2.4	18	L
Clutch Spring Bolts	8.8	0.90	78 in·lb	
Clutch Hub Nut	98	10	72	
Gear Set Lever Nut	8.8	0.90	78 in·lb	
Ratchet Plate Mounting Bolt	9.8	1.0	87 in·lb	S
Ratchet Plate Mounting Screw	6.4	0.65	57 in·lb	S, L
Ratchet Guide Bolt	8.8	0.90	78 in·lb	
Kick Pedal Bolt	25	2.5	18	L
Shift Pedal Bolt	9.8	1.0	87 in·lb	
Clutch Cover Bolts	9.8	1.0	87 in·lb	
Right Engine Cover Bolts	9.8	1.0	87 in·lb	
<b>Engine Lubrication System</b>				
Engine Oil Drain Bolt (M10) (for crank room oil sump)	15	1.5	11	
Engine Oil Drain Bolt (M6) (for transmission room oil sump)	7.0	0.71	62 in·lb	
Oil Pump (Scavenge) Cover Bolts	9.8	1.0	87 in·lb	S
Oil Pump (Feed) Cover Bolts	9.8	1.0	87 in·lb	S
Oil Filter Cover Bolt	9.8	1.0	87 in·lb	
Oil Screen (Feed) Mounting Bolts	9.8	1.0	87 in·lb	
Oil Pressure Relief Valve	15	1.5	11	L
Piston Oil Nozzle	2.9	0.30	26 in·lb	
Breather Fitting	15	1.5	11	L
<b>Engine Removal/Installation</b>				
Engine Mounting Bolt, Nuts	49	5.0	36	
Engine Bracket Bolt, Nuts	29	3.0	21	
Swingarm Pivot Shaft Nut	98	10	72	
<b>Crankshaft/Transmission</b>				
Piston Oil Nozzle	2.9	0.30	26 in·lb	
Crankcase Bolts (M6)	12	1.2	106 in·lb	S
Crankcase Bolts (M7)	15	1.5	1.1	S
Engine Oil Drain Bolt (M10) (for crank room oil sump)	15	1.5	11	
Engine Oil Drain Bolt (M6) (for transmission room oil sump)	7.0	0.71	62	
Bearing Retaining Screw	15	1.5	11	L
Gear Set Lever Nut	8.8	0.90	78 in·lb	
Shift Drum Cam Bolt	24	2.4	17	L
Balancer Weight Mounting Nut	52	5.3	38	

**PERIODIC MAINTENANCE 2-7**

**Torque and Locking Agent**

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Gear Position Switch Screws	2.9	0.30	26 in·lb	L
<b>Wheels/Tires</b>				
Front Axle	79	8.1	58	AL
Front Axle Clamp Bolts	20	2.0	15	
Rear Axle Nut	110	11.2	81.1	
Spoke Nipples	Not less than 2.2	Not less than 0.22	Not less than 19 in·lb	
<b>Final Drive</b>				
Rear Sprocket Nuts	34	3.5	25	
Engine Sprocket Nut	127	13.0	93.7	
Engine Sprocket Cover Bolts	9.8	1.0	87 in·lb	
<b>Brakes</b>				
Brake Lever Pivot Locknut	5.9	0.60	52 in·lb	S
Brake Reservoir Cap Screws	1.5	0.15	13 in·lb	
Brake Lever Pivot Bolt	5.9	0.60	52 in·lb	
Caliper Mounting Bolts (Front)	25	2.5	18	
Brake Hose Banjo Bolts	34	3.5	25	
Front Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	
Rear Master Cylinder Mounting Bolts	10	1.0	89 in·lb	
Rear Master Cylinder Push Rod Locknut	17	1.7	13	
Brake Reservoir Cap Bolts	1.5	0.15	13 in·lb	
Brake Disc Mounting Bolts:				
(Front)	10	1.0	89 in·lb	L
(Rear)	23	2.3	17	L
Caliper Bleed Valves (Front, Rear)	7.8	0.80	69 in·lb	
Caliper Holder Bolt (Rear)	27	2.8	20	
Brake Pad Bolt	17	1.7	13	
Rear Brake Pad Bolt Plug	2.5	0.25	22 in·lb	
Brake Pedal Mounting Bolt	25	2.5	18	L, G
<b>Suspension</b>				
Front Fork Clamp Bolts (Upper)	23	2.3	17	AL
Front Fork Clamp Bolts (Lower)	20	2.0	15	AL
Front Fork Top Plug	30	3.1	22	
Adjuster Assembly	58	5.9	43	L
Base Valve Assembly	28	2.9	21	
Locknut/Adjuster Assembly	29	3.1	21	
Swingarm Pivot Shaft Nut	98	10	72	
Rear Shock Absorber Mounting Nuts:				
(Upper)	39	4.0	29	
(Lower)	34	3.5	25	
Air Bleed Bolt	6.4	0.65	57 in·lb	
Tie-Rod Mounting Nut (Front, Rear)	83	8.5	61	
Rocker Arm Pivot Nut	83	8.5	61	

## 2-8 PERIODIC MAINTENANCE

### Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
<b>Steering</b>				
Steering Stem Head Nut	98	10	72	
Steering Stem Nut	4.9	0.50	43 in·lb	
Handlebar Clamp Bolts	25	2.5	18	2T
<b>Frame</b>				
Rear Frame Mounting Bolts	34	3.5	25	
Upper Footpeg Bracket Bolts	54	5.5	40	L
<b>Electrical System</b>				
Gear Position Switch Screws	2.9	0.30	26 in·lb	L
Flywheel Nut	78	8.0	58	
Stator Bolts	4.0	0.41	35 in·lb	L
Crankshaft Sensor Bolts	7.0	0.71	62 in·lb	
Spark Plug	13	1.3	115 in·lb	
C.D.I. Unit Bolts	9.8	1.0	87 in·lb	
Magneto Cover Bolts	9.8	1.0	87 in·lb	
Breather Fitting	15	1.5	11	L
Ignition Coil Bolts	7.0	0.71	62 in·lb	

### Basic Torque for General Fasteners

Threads dia. (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
<b>Fuel System</b>		
Throttle Grip Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	---
Hot Starter Lever Free Play	0.5 ~ 1.0 mm (0.02 ~ 0.04 in.)	---
Air Cleaner Element Oil	High quality foam air filter oil	---
<b>Cooling System</b>		
Coolant:		
Type (recommended)	Permanent type antifreeze	
Color	Green	
Mixed Ratio	Soft water 50% and coolant 50%	
Freezing Point	-35 °C (-31 °F)	
Total Amount	1.05 L (1.11 US qt)	
<b>Engine Top End</b>		
Valve Clearance:		
Exhaust	0.17 ~ 0.22 mm (0.0067 ~ 0.0087 in.)	---
Inlet	0.10 ~ 0.15 mm (0.0039 ~ 0.0059 in.)	---
Cylinder Head Warp	---	0.05 mm (0.002 in.)
Cylinder Inside Diameter (see text)	96.000 ~ 96.012 mm (3.7795 ~ 3.7800 in.)	96.10 mm (3.783 in.)
Piston/cylinder Clearance	0.020 ~ 0.042 mm (0.00079 ~ 0.0016 in.)	---
<b>Engine Right Side</b>		
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.)	2.6 mm (0.10 in.)
Friction Plate Warp	Not more than 0.15 mm (0.0059 in.)	0.3 mm (0.01 in.)
Steel Plate Warp	Not more than 0.2 mm (0.008 in.)	0.3 mm (0.01 in.)
<b>Engine Lubrication System</b>		
Engine oil:		
Type	Castrol "R4 superbike" 5W-40 or API SG, SH, SJ or SL with JASO MA	
Viscosity	SAE 10W-30, 10W-40, or 10W-50	
Capacity	1.2 L (1.3 US qt)	
<b>Crankshaft/Transmission</b>		
Connecting Rod Big End Side Clearance	0.25 ~ 0.35 mm (0.0098 ~ 0.014 in.)	0.6 mm (0.02 in.)
<b>Wheels/Tires</b>		
Rim Runout:		
Axial	Under 1.0 mm (0.039 in.)	2 mm (0.08 in.)
Radial	Under 1.0 mm (0.039 in.)	2 mm (0.08 in.)
Front and Rear Tires Air Pressure	100 kPa (1.0 kgf/cm <sup>2</sup> , 14 psi)	---
Standard Tire:		
Front:		
Size	90/100-21 57M	---
Make	DUNLOP	
Type	D742F	



## 2-10 PERIODIC MAINTENANCE

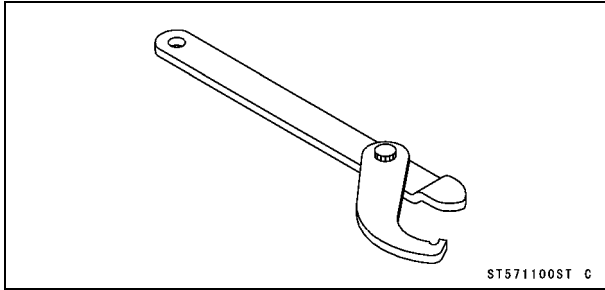
### Specifications

Item	Standard	Service Limit
Rear: Size Make Type	120/80-19 63M DUNLOP D756, Tube	— — —
<b>Final Drive</b> Drive Chain Slack Drive Chain 20 Link Length Rear Sprocket Warp	52 ~ 58 mm (2.0 ~ 2.3 in.) 317.5 ~ 318.2 mm (12.50 ~ 12.53 in.) Under 0.4 mm (0.016 in.)	— — — 323 mm (12.7 in.) 0.5 mm (0.020 in.)
<b>Brakes</b> Brake Lever Free Play Brake Fluid: Type: Front Rear Brake pad lining thickness: Front Rear	(to suit rider)  DOT3 or DOT4 DOT4 3.8 mm (0.15 in.) 6.4 mm (0.25 in.)	— — —  — — — — — — 1 mm (0.04 in.) 1 mm (0.04 in.)
<b>Suspension</b> Fork Oil: Oil Viscosity Oil Quantity: Outer (Outer/Inner Tubes)  Inner (Subtank)	KHL15-10 (KAYABA 01) or equivalent  345 mL (11.7 US oz.) (EUR) 350 mL (11.8 US oz.)  170 mL (5.75 US oz.)	— — — (Adjustable range) 325 ~ 365 mL (11.0 ~ 12.3 US oz.) (EUR) 330 ~ 370 mL (11.2 ~ 12.5 US oz.) — — —
<b>Electrical System</b> Spark Plug Gap	0.8 ~ 0.9 mm (0.03 ~ 0.04 in.)	— — —

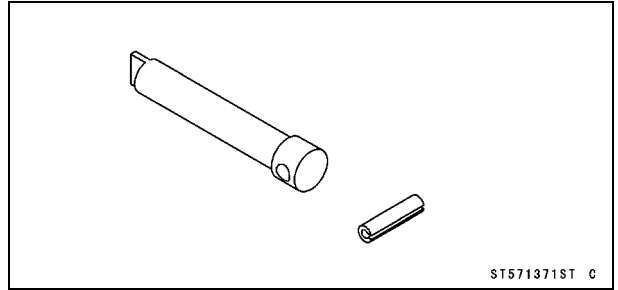
TIR: Total Indicator Readings  
EUR: Europe Model

Special Tools

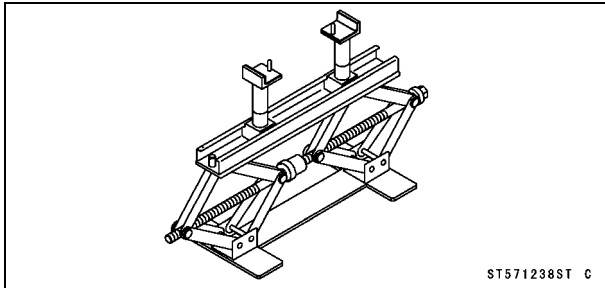
Steering Stem Nut Wrench:  
57001-1100



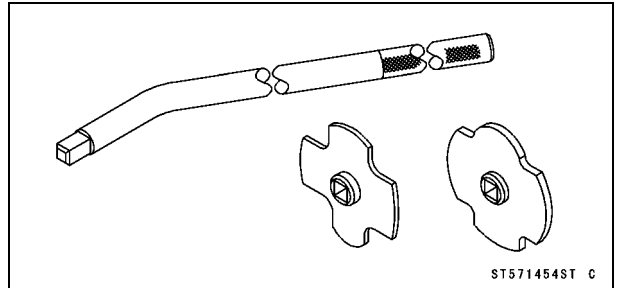
Pilot Screw Adjuster Adapter,  $\phi 4$ :  
57001-1371



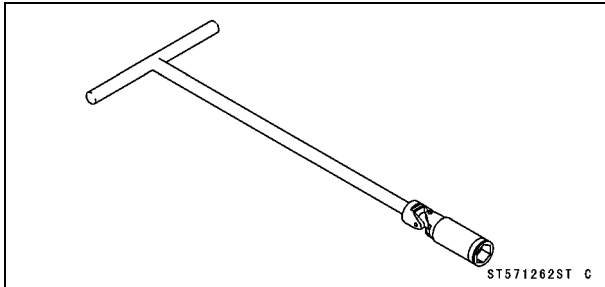
Jack:  
57001-1238



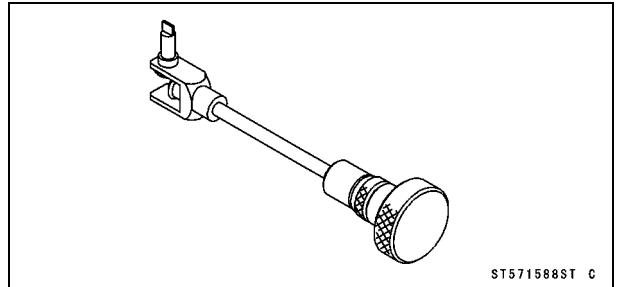
Filler Cap Driver:  
57001-1454



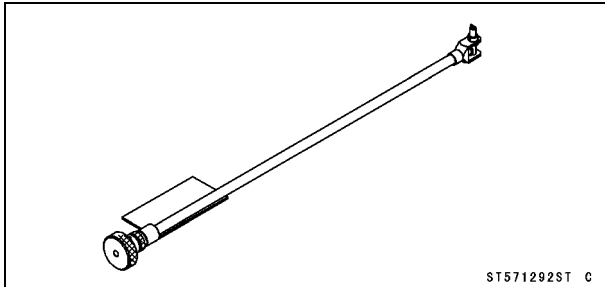
Spark Plug Wrench, Hex 16:  
57001-1262



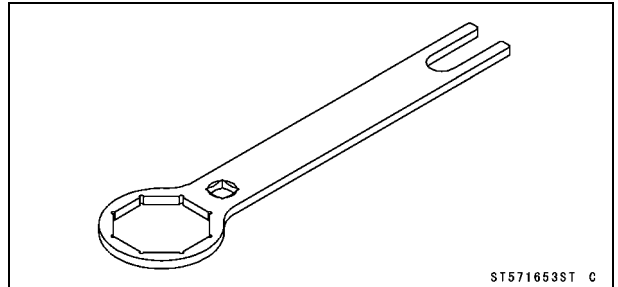
Pilot Screw Adjust, D:  
57001-1588



Pilot Screw Adjuster, C:  
57001-1292



Top Plug Wrench, 49 mm:  
57001-1653



## 2-12 PERIODIC MAINTENANCE

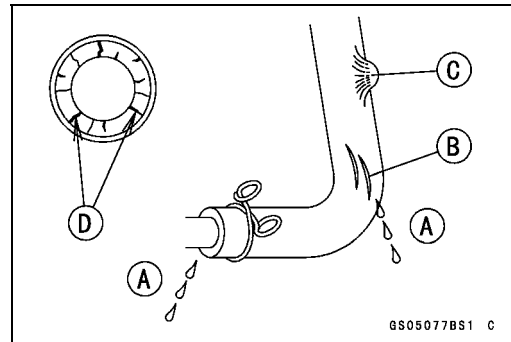
### Periodic Maintenance Procedures

#### Fuel System

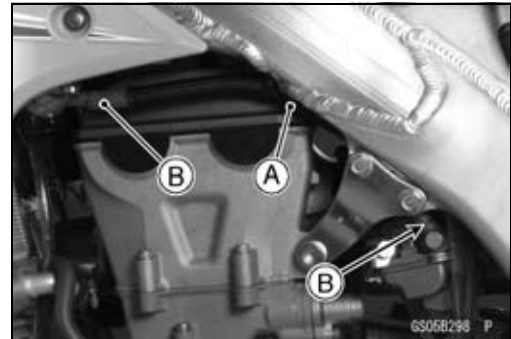
##### Fuel Hose and Connection Inspection

○The fuel hoses are designed to be used throughout the motorcycle's life without any maintenance, however, if the motorcycle is not properly handled, the inside the fuel line can cause fuel to leak [A] or the hose to burst.

- Check the fuel hose.
- ★ Replace the fuel hose if any fraying, cracks [B], bulges [C] or ozonic cracks [D] are noticed.



- Check that the hose [A] are securely connected and clamps [B] are tightened correctly.
- When installing, route the hose according to Cable, Wire, and Hose Routing section in the Appendix chapter.
- When installing the fuel hose, avoid sharp bending, kinking, flattening or twisting, and route the fuel hose 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.



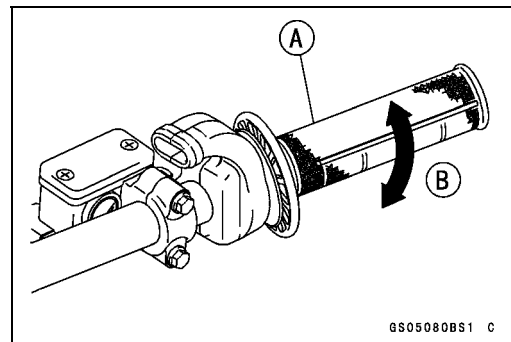
##### Throttle Grip Free Play Inspection

- 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

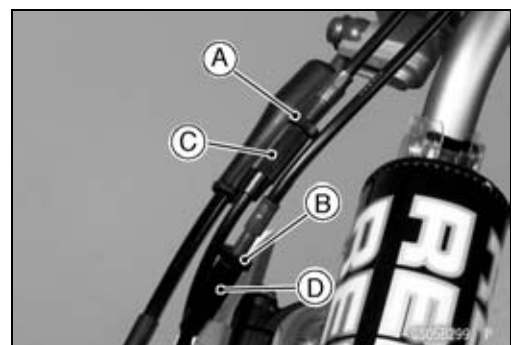
Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)

- 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 Grip Free Play Adjustment

- Loosen the locknuts [A] [B] at the upper end of the throttle cable.
- Screw both throttle cable adjuster [C] [D] to give the throttle grip plenty of play.
- Turn out the decelerator adjuster [C] until there is no play when the throttle grip is completely closed.
- Tighten the locknut [A].
- Turn the accelerator cable adjuster [D] until 2 ~ 3 mm (0.08 ~ 0.12 in.) of throttle grip play is obtained.
- Tighten the locknut [B].



#### ⚠ WARNING

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

**Periodic Maintenance Procedures**

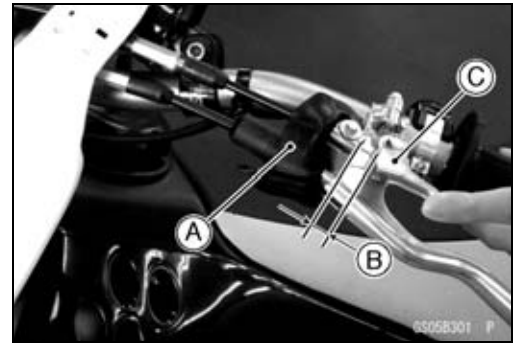
*Hot Starter Lever Free Play Inspection*

- Slide the clutch lever dust cover [A] back.
- Check the hot starter lever play [B] when pulling the start lever [C] lightly.

**Hot Starter Lever Free Play**

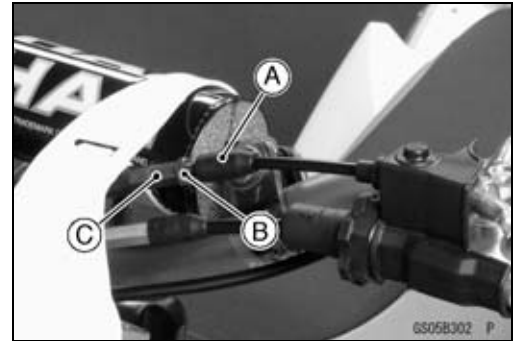
**Standard: 0.5 ~ 1.0 mm (0.02 ~ 0.04 in.)**

★ If the free play is improper, adjust the hot starter cable.



- Slide the adjuster cover [A] back.
- Loosen the locknut [B] and turn the adjuster [C] to obtain the proper lever free play.
- Tighten the locknut securely.
- Check that the hot starter lever moves smoothly from full open to close, and the lever closes quickly and completely in all steering positions by the return spring.

★ If the hot starter lever does not return properly, check the hot starter cable routing, free play and cable damage. Then lubricate the hot starter cable.

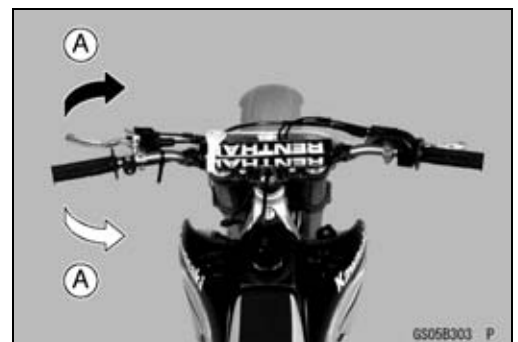


*Idle Speed Inspection*

**CAUTION**

**This motorcycle is designed for competition use only. Therefore, the radiator does not incorporate a coolant reserve tank or cooling fan. Prolonged idling of the engine with no airflow through the radiator can cause coolant loss and engine overheating resulting in possible engine damage. Any riding conditions that increase engine temperature will further reduce idling time before coolant loss occurs. These conditions include high ambient temperature, sandy or muddy terrain, or other conditions causing high engine loads at low speeds. Furthermore, warming the engine up excessively before operation, or leaving idling with the hot engine temperature after operation results in the engine overheating, too.**

- Start the engine and warm it up thoroughly.
  - With the engine idling, turn the handlebar to both sides [A].
- ★ 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 section in the Appendix chapter).



**⚠ WARNING**

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

## 2-14 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- Check the idle speed, using the engine revolution tester [A] for high accuracy.
- ★ If the idle speed is out of specified range, adjust it.

#### Idle Speed:

Standard: 1 800 ±50 r/min (rpm)



#### Idle Speed Adjustment

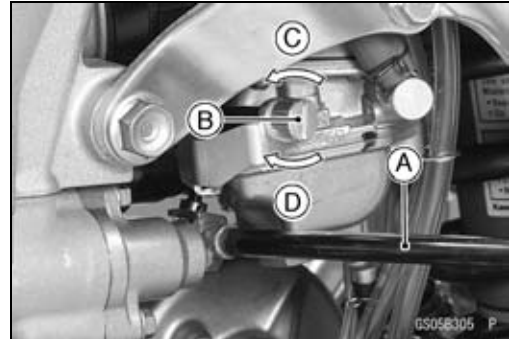
- First, turn in the air screw using the pilot screw adjuster [A], until it seats lightly, and back it out the specified number of turns. (see Specifications Section in the Fuel System chapter)

**Special Tools - Pilot Screw Adjuster, C: 57001-1292**

**(or Pilot Screw Adjuster, D: 57001-1588)**

**Pilot Screw Adjuster Adapter,  $\phi$ 4: 57001-1371**

- Start the engine and warm it up thoroughly.
- Turn the idle adjusting screw [B] until the idle speed is correct.
  - To increase idle speed [C]
  - To decrease idle speed [D]
- Open and close the throttle a few times to make sure that the idle speed is within the specified range. Readjust if necessary.



#### Air Cleaner Element Cleaning and Inspection

##### NOTE

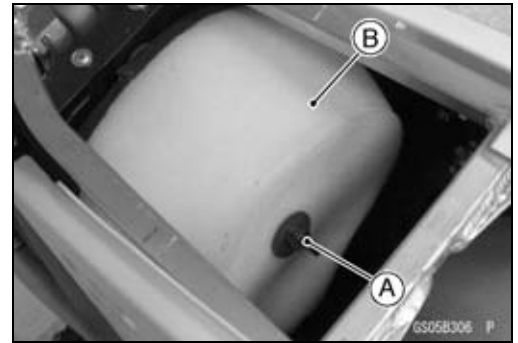
- In dusty areas, the element should be cleaned more frequently than recommended interval.
- After riding through rain or on muddy roads, the element should be cleaned immediately.
- Since repeated cleaning opens the pores of the element, replace it with a new one in accordance with the Periodic Maintenance 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.

**Periodic Maintenance Procedures**

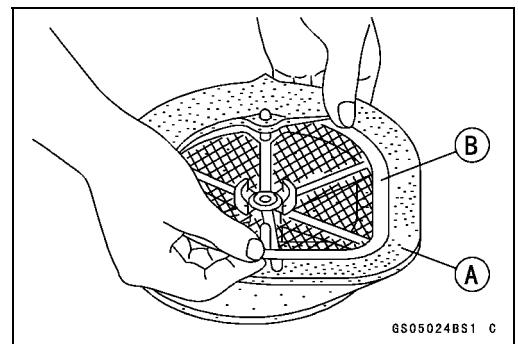
- Remove:
  - Seat (see Seat Removal in the Frame chapter)
  - Wing Bolt [A]
  - Air Cleaner Element [B]
- Stuff a clean, lint-free towel into the carburetor so no dirt is allowed to enter the carburetor.
- Wipe out the inside of the air cleaner housing with a clean damp towel.



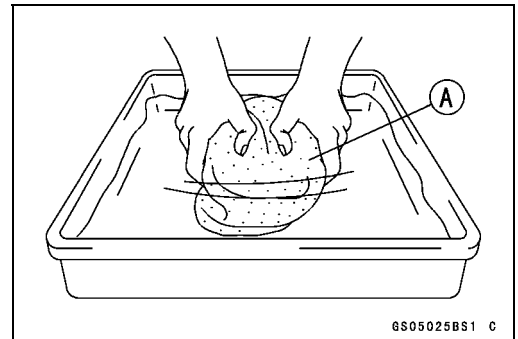
**CAUTION**

**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.**

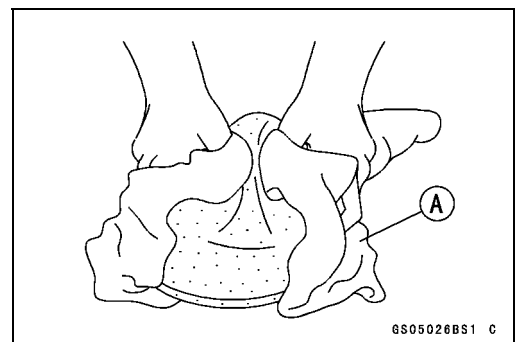
- Separate the element [A] from the frame [B].



- 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.

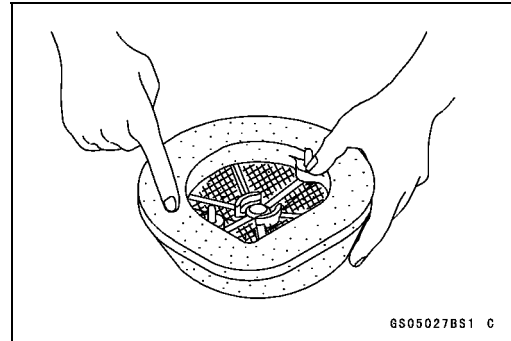


- After cleaning, saturate the element with a high-quality foam-air-filter oil, squeeze out the excess, then wrap it in a clean towel and squeeze it as dry as possible.
- Be careful not to tear the sponge filter.
- Assemble the element.
- Remove the towel from the carburetor.

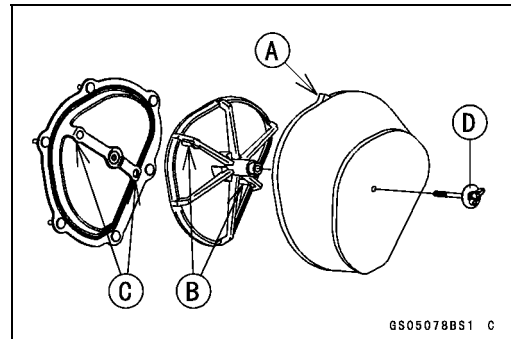
## 2-16 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- 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 (see Seat Installation in the Frame chapter).

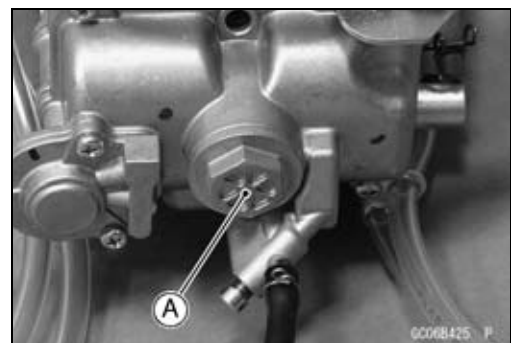


### Fuel Inspection

#### **⚠ 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.**

- Turn the fuel tap to the OFF position.
- Remove the carburetor (see Carburetor Removal in the Fuel System chapter).
- 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 filter, fuel tap and fuel tank.
- Install the drain plug on the float bowl, and tighten it securely.
- Install the carburetor (see Carburetor Installation in the Fuel System chapter).



## Periodic Maintenance Procedures

### Fuel Tank, Filter and Tap Cleaning

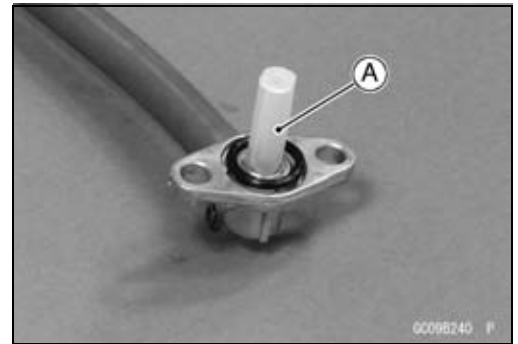
#### **⚠ WARNING**

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 (see Fuel Tank Removal in the Fuel System chapter).
- 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 filter from the tank by taking out the bolts.
- Clean the fuel filter screen in a high-flash point solvent. After cleaning, install the fuel filter.
- Pour high-flash point solvent through the tap in all lever positions.
- Dry the tank, filter and tap with compressed air.
- Install the filter in the fuel tank.
- Install the tap and fuel tank.

### Fuel Tap and Filter Inspection

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



## Cooling System

#### **⚠ 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 wash away any coolant that spills on the wheels.

Since coolant is harmful to the human body, do not use for drinking.



## 2-18 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Coolant Level Inspection

##### NOTE

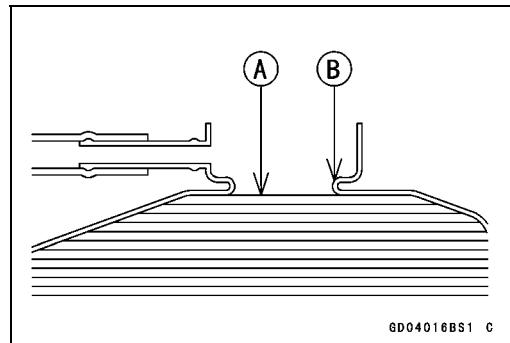
○ Check the level when the engine is cold (room or ambient temperature).

- Lean the motorcycle slightly to the left until the radiator cap is level to the ground 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:

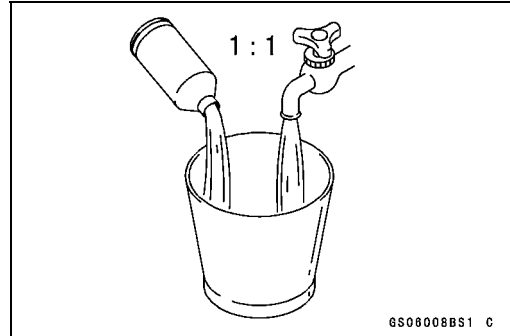
**Permanent type of antifreeze (soft water and ethylene glycol plus corrosion and rust inhibitor chemicals for aluminum engines and radiators)**

#### Water and coolant mixture ratio:

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

#### Total amount:

**1.05 L (1.11 US qt.)**



#### Coolant Deterioration Inspection

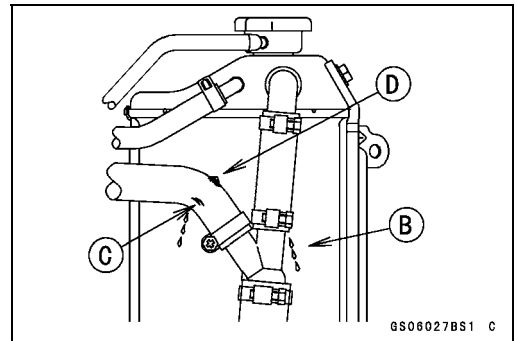
- Visually inspect the coolant.
- ★ If whitish cotton-like wafts are observed, aluminum parts in the cooling system are corroded. If the coolant is brown, iron or steel parts are rusting. In either case, flush the cooling system.
- ★ If the coolant gives off an abnormal smell, check for a cooling system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

**Periodic Maintenance Procedures**

*Radiator Hoses and Connections Inspection*

- The high pressure inside the radiator 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.

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



**Engine Top End**

*Valve Clearance Inspection*

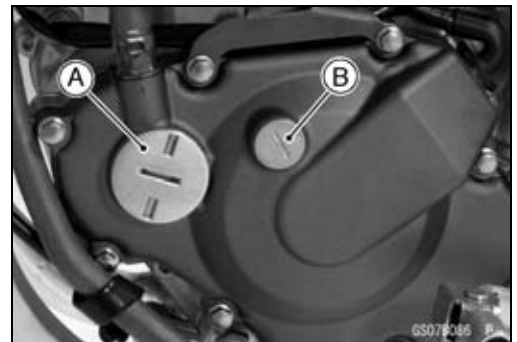
**NOTE**

○Valve clearance must be checked and adjusted when the engine is cold (at room temperature).

- Remove:
  - Cylinder Head Cover (see Cylinder Head Cover Removal in the Engine Top End chapter)
  - Balancer Shaft Cap [A]
  - Timing Inspection Cap [B]

**Special Tool - Filler Cap Driver: 57001-1454**

- First, bring the piston to the top-dead-center of its compression stroke to inspect the valve clearance (the position at the end of the compression stroke), when the cam lobe faces outside of the camshaft.
- Place a wrench over the balancer weight nut and turn it counterclockwise to align the TDC mark [A] with the center of the groove [B] of the inspection hole.



## 2-20 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- Using a thickness gauge [A], measure the clearance between each cam lobe and valve lifter for all four valves.
- For the purpose of adjusting the valve clearances, record the measured values.

**Valve clearance: between cam and valve lifter**

**Standard:**

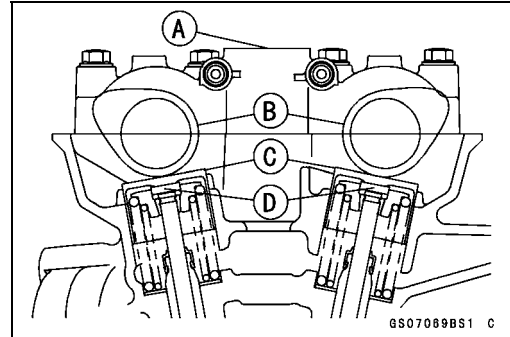
**Exhaust** 0.17 ~ 0.22 mm (0.0067 ~ 0.0087 in.)

**Inlet** 0.10 ~ 0.15 mm (0.0039 ~ 0.0059 in.)

- ★ If the valve clearance is not within the specified range, adjust it.

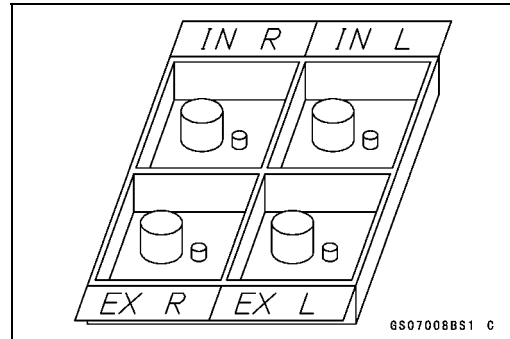
#### Valve Clearance Adjustment

- Remove the camshaft caps [A] (see Camshaft Removal in the Engine Top End chapter).
- Remove the camshafts [B] (see Camshaft Removal in the Engine Top End chapter).
- Remove the valve lifters [C] of the applicable valve.
- Remove the shim [D] from the top of the spring retainer.



#### NOTE

- Mark and record the locations of the valve lifters and shims so that they can be reinstalled in their original positions.



- Clean the shim to remove any dust or oil.
- Measure the thickness of the removed shim [A].
- Select a new shim thickness calculation as follows.

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

[A] Replace Shim Thickness

[B] Measured Valve Clearance

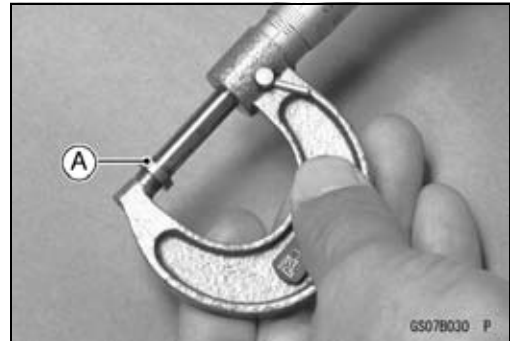
[C] Specified Valve Clearance

[D] Present Shim Thickness

#### Example

$$(0.31 \text{ mm} - 0.10 \sim 0.15 \text{ mm}) + 2.60 \text{ mm} = 2.81 \sim 2.76 \text{ mm}$$

- Exchange the shims for the 2.775 or 2.800 size shim.



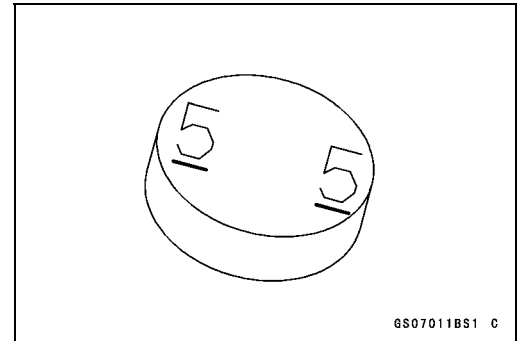
#### CAUTION

**Don't use the shims for another models. This could cause wear of the valve stem end, and valve stem damage.**

Periodic Maintenance Procedures

Adjustment shims

Thick-ness	P/No.	Mark	Thick-ness	P/No.	Mark
2.00	92025-1870	0	2.525	92025-1984	53
2.05	92025-1871	5	2.55	92025-1881	55
2.10	92025-1872	10	2.575	92025-1985	58
2.15	92025-1873	15	2.60	92025-1882	60
2.20	92025-1874	20	2.65	92025-1883	65
2.25	92025-1875	25	2.70	92025-1884	70
2.30	92025-1876	30	2.75	92025-1885	75
2.35	92025-1877	35	2.80	92025-1886	80
2.40	92025-1878	40	2.85	92025-1887	85
2.425	92025-1982	43	2.90	92025-1888	90
2.45	92025-1879	45	2.95	92025-1889	95
2.475	92025-1983	48	3.00	92025-1890	00
2.50	92025-1880	50			



**CAUTION**

**Be sure to remeasure the clearance after selecting a shim. The clearance can be out of the specified range because of the shim tolerance.**

- If there is no valve clearance, use a shim that is a few sizes smaller, and remeasure the valve clearance.
- When installing the shim, face the marked side [A] toward the valve lifter [B]. At this time, apply engine oil to the shim or the valve lifter to keep the shim in place during camshaft installation.

**CAUTION**

**Do not put shim stock under the shim. This may cause the shim to pop out at high rpm, causing extensive engine damage.**  
**Do not grind the shim. This may cause it to fracture, causing extensive engine damage.**

- Apply engine oil to the valve lifter surface and install the lifter.
- Install the camshaft (see Camshaft Installation in the Engine Top End chapter).
- Recheck the valve clearance and readjust if necessary.
- Install the cylinder head cover (see Engine Top End chapter), timing inspection cap, and the balancer weight cap.

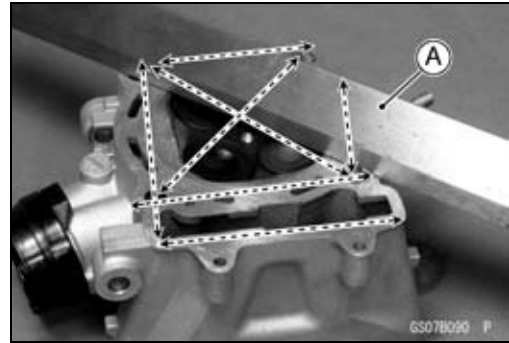


## 2-22 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Cylinder Head Warp Inspection

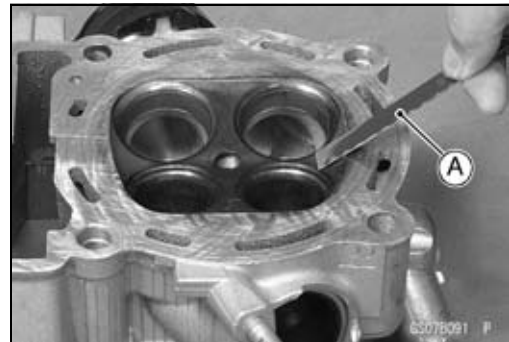
- Remove the cylinder head (see Cylinder Head Removal in the Engine Top End chapter).
- Lay a straightedge [A] across the lower surface of the head at several different points, and measure warp by inserting a thickness gauge between the straightedge and the head.
- ★ If warp exceeds the service limit, repair the mating surface. Replace the cylinder head if the mating surface is badly damaged.



#### Cylinder Head Warp

**Service Limit: 0.05 mm (0.002 in.)**

- Remove the valves (see Valve Removal in the Engine Top End chapter).
- Scrape the carbon out of the combustion chamber and exhaust port with a scraper [A] or a suitable tool.
- Clean the cylinder head, using high-flash point solvent.
- Blow out any particles which may obstruct the oil passage in the cylinder head using compressed air.
- Install the valves (see Valve Installation in the Engine Top End chapter).

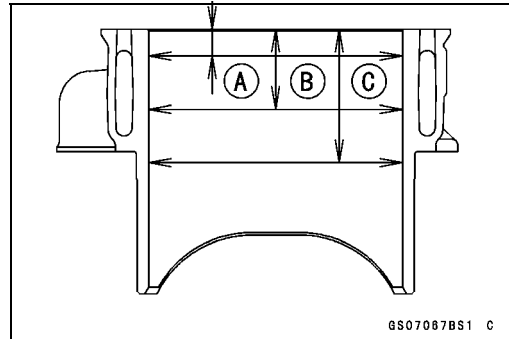


#### Cylinder Wear Inspection

##### 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] 10 mm (0.39 in.)

[B] 30 mm (1.2 in.)

[C] 50 mm (2.0 in.)

#### Cylinder Inside Diameter

**Standard: 96.000 ~ 96.012 mm (3.7795 ~ 3.7800 in.), and less than 0.01 mm (0.0004 in.) difference between any two measurements.**

**Service Limit: 96.10 mm (3.783 in.), or more than 0.05 mm (0.020 in.) difference between any two measurements.**

## 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: 0.020 ~ 0.042 mm (0.00079 ~ 0.0016 in.)**

### *Piston, Piston Ring and Piston Pin Replacement*

- Refer to the Cylinder and Piston Section in Engine Top End chapter.

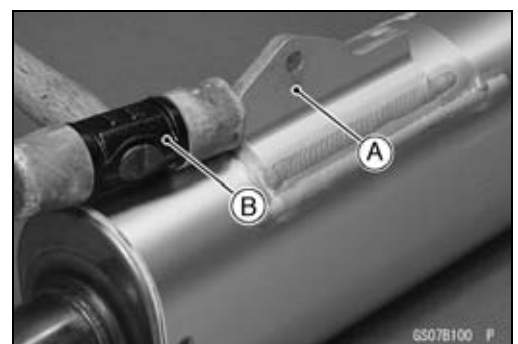
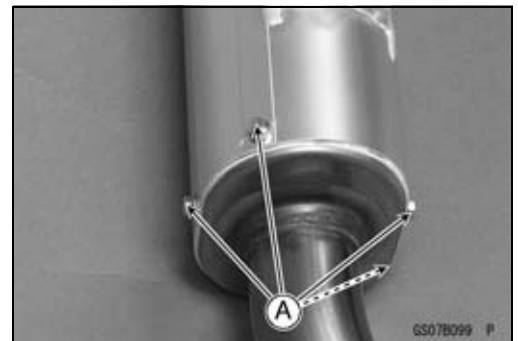
### *Exhaust System Inspection*

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

### *Muffler Baffle Change*

- Remove the muffler (see Muffler Removal in the Engine Top End chapter).
- Remove the muffler pipe bolts [A].

- Tap the bracket [A] of the muffler body with a plastic mallet [B] to separate from the inner pipe.



## 2-24 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- Pull off the old muffler baffle [A].



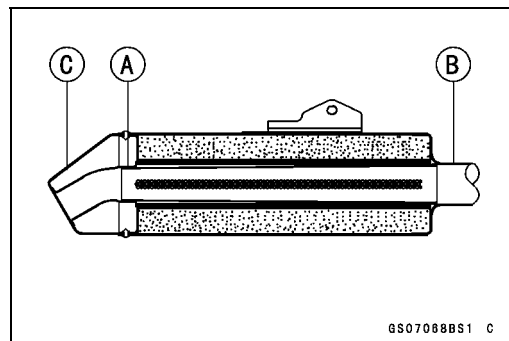
- Install the new muffler baffle [A] into the muffler body [B].

#### NOTE

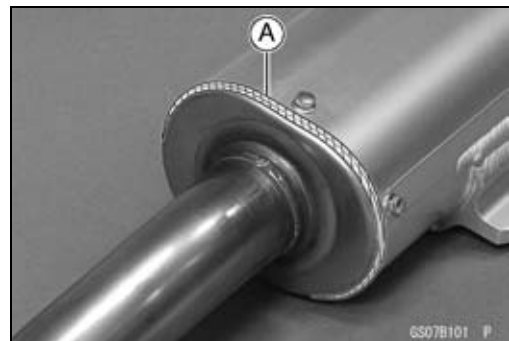
○ When replacing the muffler baffle, first insert the muffler baffle into the muffler body, and align the exhaust hole of the muffler end cover with the muffler baffle hole while turning the muffler baffle. Then, install the inner pipe by pushing the inner pipe into the muffler body with aligning the inner pipe with the exhaust hole.



- Install the end [A] of the inner pipe [B] to the baffle [C].
- Apply a non-permanent locking agent to the pipe mounting bolts.
- Install the muffler body.



- Apply silicone sealant to the circumference [A] of the inner pipe.
- Install the muffler (see Muffler Installation in the Engine Top End chapter).



### Engine Right Side

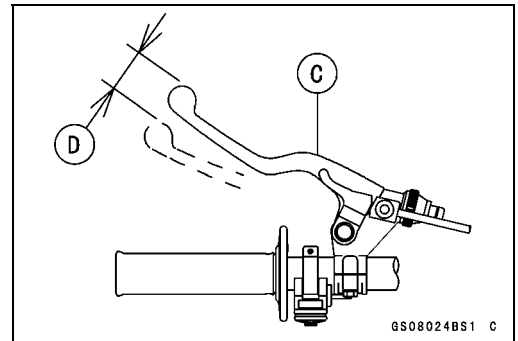
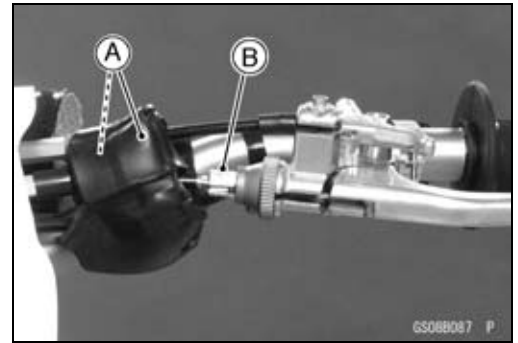
#### WARNING

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

**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*

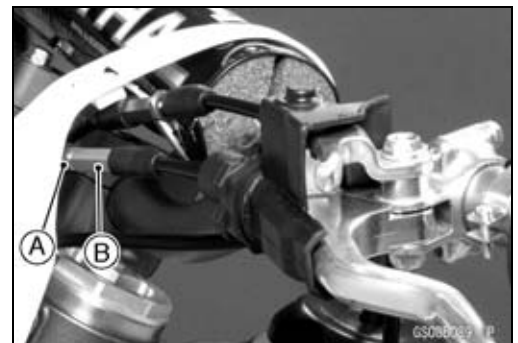
- Slide the clutch lever dust cover out of place.
- Turn the adjuster [A] so that the clutch lever will have 8 ~ 13 mm (0.3 ~ 0.5 in.) of play.

**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.

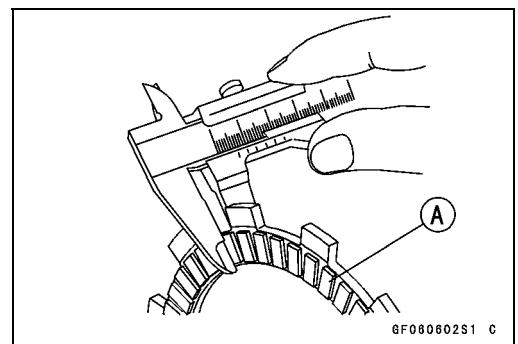


- If it cannot be done, loosen the locknut [A] at the middle of the clutch cable, and turn the adjusting nut [B] so that clutch lever has 8 ~ 13 mm (0.3 ~ 0.5 in.) of play.
- After the adjustment is made, tighten the locknut, and start the engine and check that the clutch does not slip and that it release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



*Friction and Steel Plates Inspection*

- Remove the clutch plates (see Clutch Removal in the Engine Right Side chapter).
- 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 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:** 2.6 mm (0.10 in.)



## 2-26 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- 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.

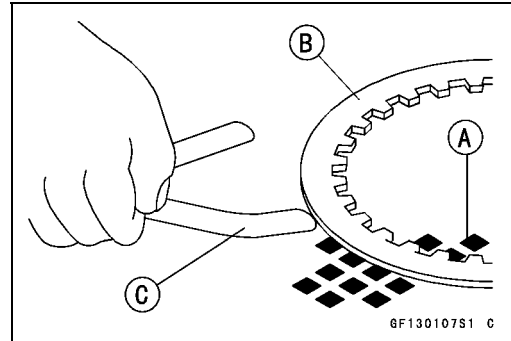
#### Friction and Steel Plates Warp

##### Standard:

Friction Plate	Not more than 0.15 mm (0.0059 in.)
Steel Plate	Not more than 0.2 mm (0.008 in.)

##### Service Limit:

Friction Plate	0.3 mm (0.01 in.)
Steel Plate	0.3 mm (0.01 in.)



## Engine Lubrication System

### Engine Oil Change

- Warm up the engine thoroughly so that the oil will pick up any sediment and drain easily. Then stop the engine.
- Remove the engine oil drain plugs on the bottom of the engine, and let the oil drain completely.
  - Drain Plug (for transmission room oil sump) [A]
  - Drain Plug (for crank oil sump) [B]

#### NOTE

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

- Replace the gaskets at the drain plugs with a new one.
- After the oil has completely drained out, install the drain plugs with the gaskets, and tighten them.

#### Torque - Engine Oil Drain Bolts

Transmission Room Oil Sump: 7.0 N·m (0.71 kgf·m, 62 in·lb)

Crank Room Oil Sump: 15 N·m (1.5 kgf·m, 11 ft·lb)

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

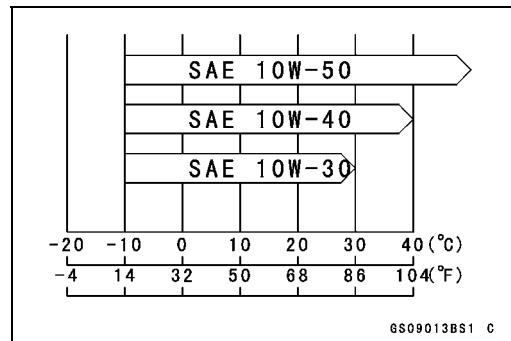
#### Recommended Engine

Type	Castrol "R4 Superbike" 5W-40 or API SG, SH, SJ or SL with JASO MA
Viscosity	SAE 10W-30, 10W-40, 10W-50
Capacity	0.96 L (1.01 US qt.) (when filter is not removed) 0.98 L (1.03 US qt.) (when filter is removed) 1.2 L (1.3 US qt.) (when engine is completely dry)

#### NOTE

○ The oil viscosity may need to be changed to accommodate atmospheric conditions in your riding area.

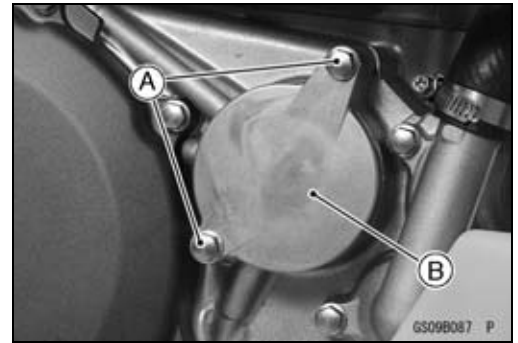
- Check the oil level (see Engine Oil Level Inspection in the Engine Lubrication System chapter).



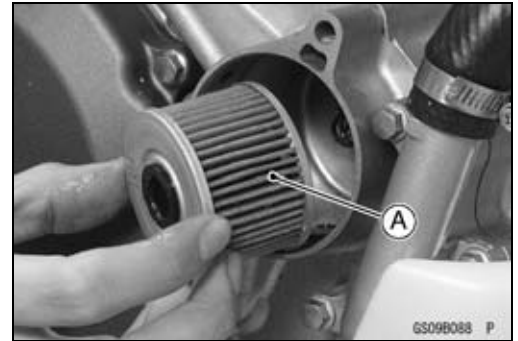
**Periodic Maintenance Procedures**

*Oil Filter Change*

- Drain:  
Engine Oil (see Engine Oil Change)
- Remove:  
Oil Filter Cover Bolts [A]  
Oil Filter Cover [B]



- Remove the Oil Filter [A].



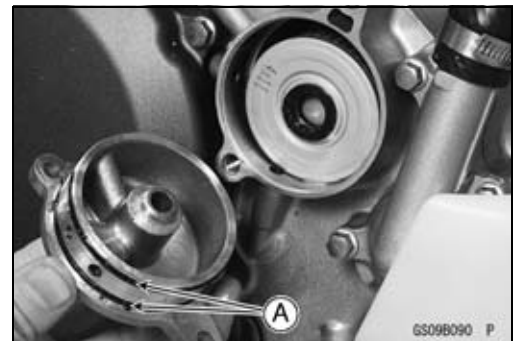
- Install the spring [A] to the right engine cover.
- Apply grease to the grommet [B].
- Be sure to install the filter with the grommet facing outside as shown.

**CAUTION**

**Inside out installation stop oil flow, causing engine seizure.**

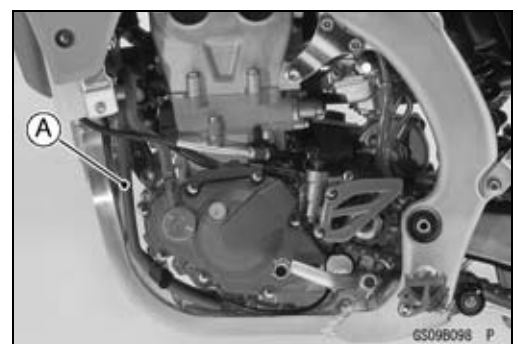


- Replace the oil filter cover O-ring [A] with a new one.
  - Replace the oil filter with a new one.
  - Apply grease to the O-rings.
  - Install the oil filter cover.
- Torque - Oil Filter Cover Bolt: 9.8 N·m (1.0 kgf·m, 87 in·lb)**
- Pour in the specified type and amount of oil (see Engine Oil Change).



*Breather Hose Inspection*

- Be certain that the breather hose are routed without being flattened or kinked and is connected correctly.
- ★ If it is not, correct it.
- Inspect the breather hose [A] for damage or signs of deterioration.
- This hose should not be hard and brittle, nor should be soft swollen.
- ★ Replace it if any cracks or swelling is noticed.



## 2-28 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Crankshaft/Transmission

##### *Crankshaft Inspection*

##### **Connecting Rod Big End Side Clearance**

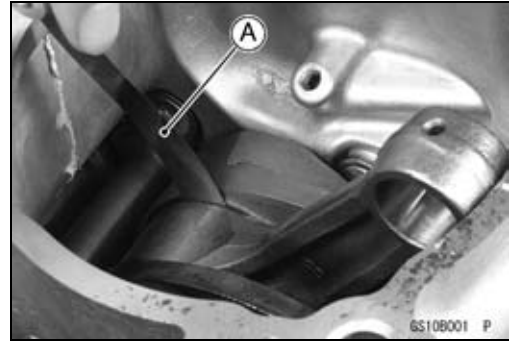
- Remove the cylinder head (see Cylinder Head Removal in the Engine Top End chapter).
- Remove the cylinder (see Cylinder Removal in the Engine Top End chapter).
- Remove the piston (see Piston Removal in the Engine Top End chapter).
- Measure the connecting rod big end side clearance at right side of big end using a thickness gauge [A].

##### **Connecting Rod Big End Side Clearance**

**Standard:** 0.25 ~ 0.35 mm (0.0098 ~ 0.014 in.)

**Service Limit:** 0.6 mm (0.02 in.)

- ★ If the clearance exceeds the service limit, replace the crankshaft assembly.
- Make sure that the crankshaft rotates smoothly after assembling the engine.

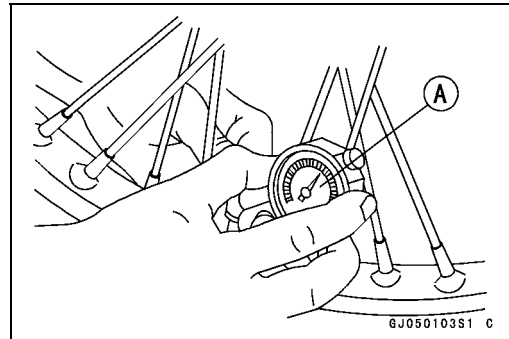


#### Wheel/Tires

##### *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 <sup>2</sup> , 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 <sup>2</sup> , 14 psi)

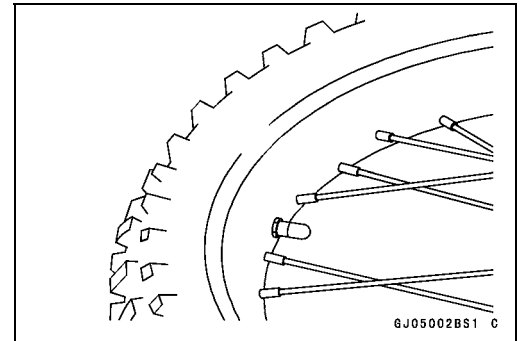


**Periodic Maintenance Procedures**

*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:** 90/100-21 57M
- Make:** DUNLOP
- Type:** D742F, Tube

**Rear:**

- Size:** 120/80-19 63M
- Make:** DUNLOP
- Type:** D756, Tube

*Spoke Tightness Inspection*

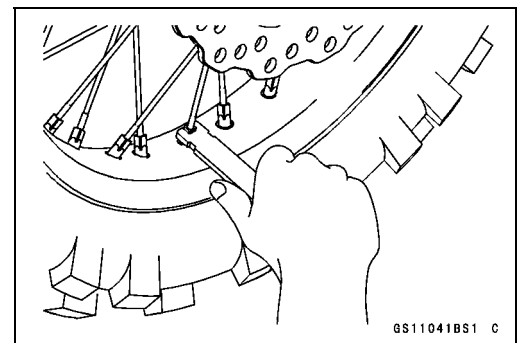
- Check that all the spokes are tightened evenly.
- ★ If spoke tightness is uneven or loose, tighten the spoke nipples evenly.

**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.**



## 2-30 PERIODIC MAINTENANCE

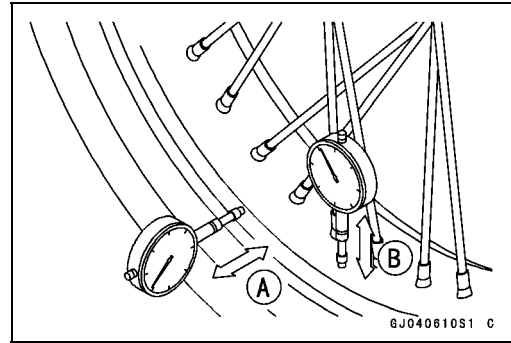
### Periodic Maintenance Procedures

#### 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**            **under 1.0 mm (0.039 in.)**

**Radial**          **under 1.0 mm (0.039 in.)**

**Service Limit:**

**Axial**            **2 mm (0.08 in.)**

**Radial**          **2 mm (0.08 in.)**

#### Wheel Bearing Inspection

- Raise the front/rear wheel off the ground.
- Special Tool - Jack: 57001-1238**
- Spin the wheel lightly, and check for roughness, binding or noise.
  - ★ If roughness, binding, abnormal noise is found, replace the hub bearing.
- 
- Turn the handlebar until the handlebar doesn't move to either side.
  - The wheel edge is moved to one direction gripping the edge of the wheel by both hands and the play of the wheel bearing is checked.
  - ★ If the play is found, replace the bearing.



Periodic Maintenance Procedures

Final Drive

Drive Chain Slack Inspection

- Raise the rear wheel off the ground, rotate the rear wheel to find the place where the chain is tightest (because it wears unevenly).
- Check the wheel alignment (see Wheel Alignment Inspection in the Final Drive chapter), and adjust it if necessary (see Drive Chain Slack Adjustment).

**NOTE**

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

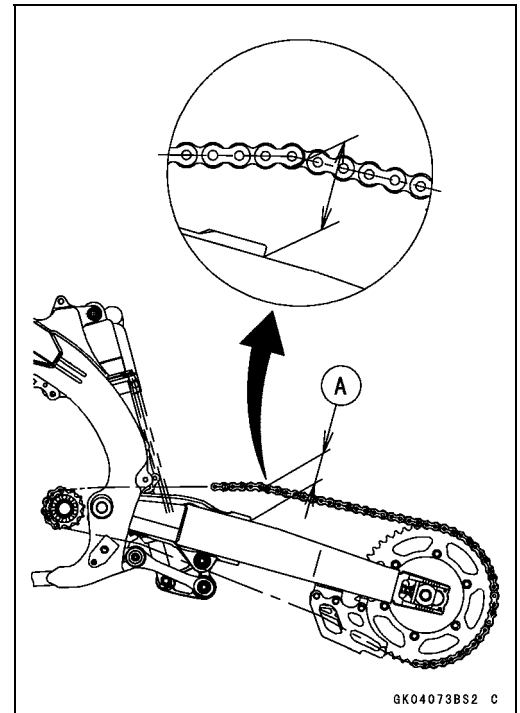
- Rotate the rear wheel to find the position where the chain is tightest.
- Measure the space (chain slack) [A] between the chain and the swingarm at the rear of the chain slipper as shown.
- ★ If the drive chain slack exceeds the standard, adjust it.

**Chain Slack**

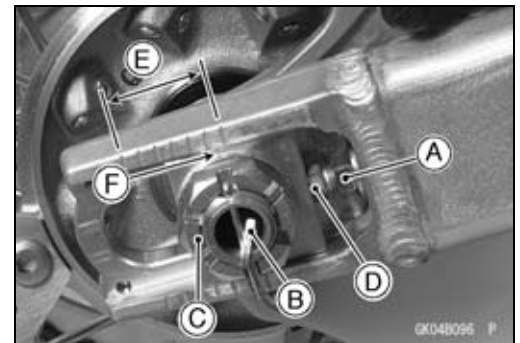
Standard: 52 ~ 58 mm (2.0 ~ 2.3 in.)

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, back out 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 both chain adjusting bolts 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.



GK04073BS2 C

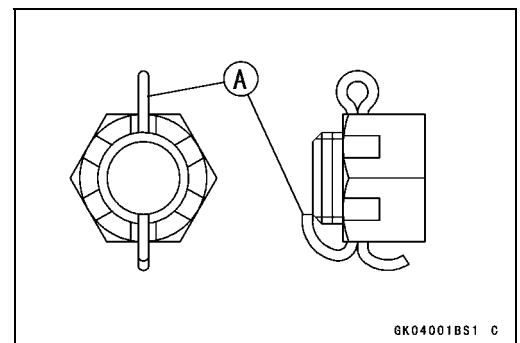


GK048095 P

**⚠ WARNING**

**Misalignment of the wheel result in abnormal wear and may result in an unsafe riding condition.**

- Tighten both chain adjuster locknuts securely.
- Tighten the axle nut.
- Torque - Rear Axle Nut: 110 N·m (11.2 kgf·m, 81.1 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.



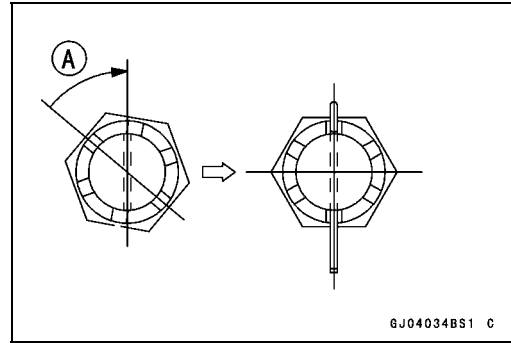
GK04001BS1 C

## 2-32 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### 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 [A] up to next alignment.
- It should be within 30 degree.
- Loosen one and tighten again when the slot goes past the nearest hole.



#### **⚠ 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.

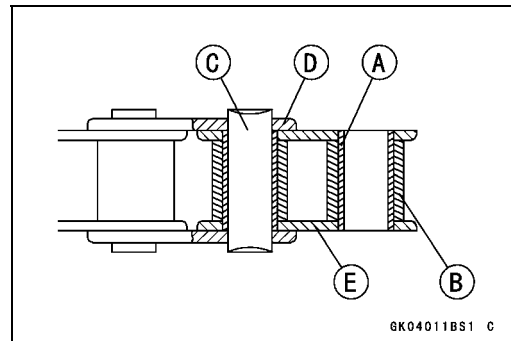
#### NOTE

- 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 58 ~ 68 mm (2.28 ~ 2.68 in.) of slack whenever necessary.

#### 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



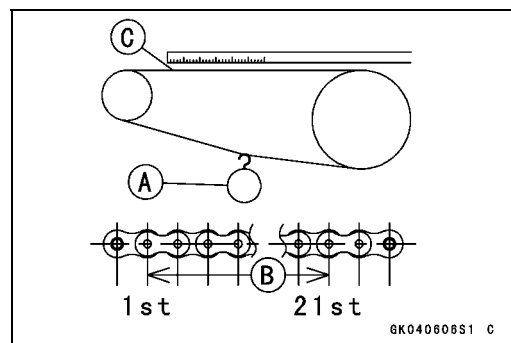
- Stretch the chain taut by hanging a 98 N (10 kgf, 20 lb) weight [A] on the chain.
- Measure the length of 20 links [B] on the straight part [C] of the chain from the pin center of the 1st pin to the pin center of the 21st pin. Since the chain may wear unevenly, take measurements at several places.

#### Chain 20-link Length

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

**Service Limit:** 323 mm (12.7 in.)

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



Periodic Maintenance Procedures

**⚠ WARNING**

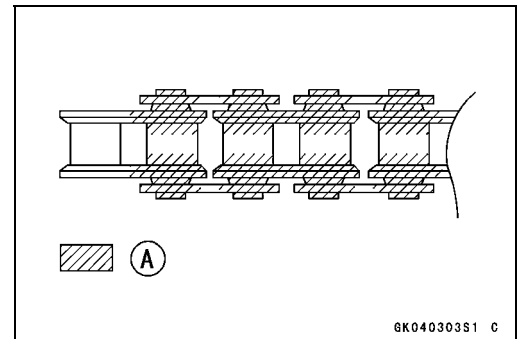
If the drive chain wear exceeds the service limit, replace the chain or an unsafe riding condition may result. A chain that breaks or jumps off the sprockets could snag on the engine sprocket or lock the rear wheel, severely damaging the motorcycle and causing it to go out of control.

**Standard Chain**

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

*Drive Chain Lubrication*

- The chain should be lubricated with a lubricant which will both prevent the exterior from rusting and also absorb shock and reduce friction in the interior of the chain.
- ★ If the chain is especially dirty, it should be washed in diesel oil or kerosene, and afterward soaked in a heavy oil. Shake the chain while it is in the oil so that oil will penetrate to the inside of each roller.
- An effective, good quality lubricant specially formulated for chains is best for regular chain lubrication.
- 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]

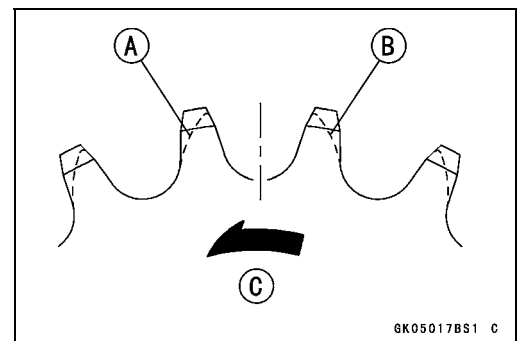


*Sprocket Wear Inspection*

- 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

**NOTE**

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





## 2-34 PERIODIC MAINTENANCE

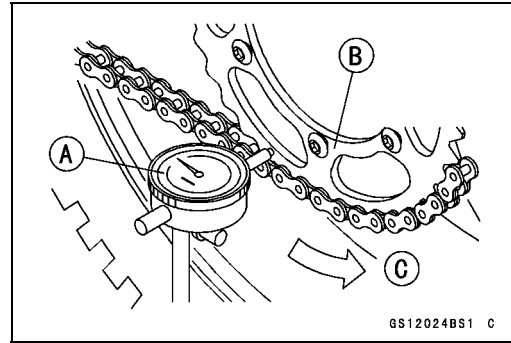
### Periodic Maintenance Procedures

#### 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 Warp

**Standard: Under 0.4 mm (0.016 in.)**

**Service Limit: 0.5 mm (0.02 in.)**

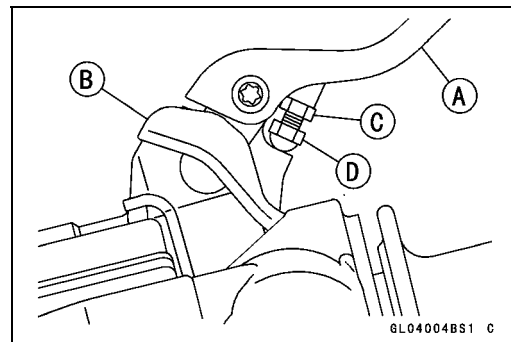
## Brakes

### 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.**

- 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

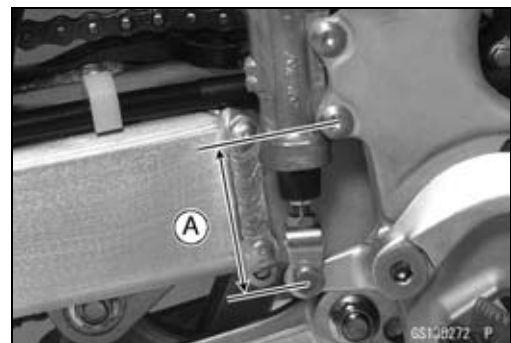
○ Usually it is not necessary to adjust the pedal position, but always adjust it when the master cylinder is disassembled or pedal position is incorrect.

- Measure the length indicated in the figure.

#### Length [A]

**Standard: 68.5 ±1 mm (3.09 ±0.04 in.)**

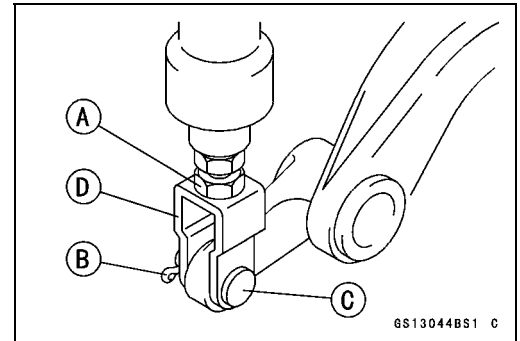
- ★ If it is not specified length, the brake pedal may be deformed or incorrectly installed.
- ★ If it is not within the specified length, adjust the push rod in the master cylinder as follows.



**Periodic Maintenance Procedures**

- Loosen the push rod locknut [A].
- Replace the cotter pin with a new one.
- Remove:
  - Cotter Pin [B]
  - Washer
  - Joint Pin [C]
- Turn the bracket [D] to obtain the specified length.
- Tighten the locknut.

**Torque - Rear Master Cylinder Push Rod Locknut: 17 N·m (1.7 kgf·m, 13 ft·lb)**



**Brake Fluid Level Inspection**

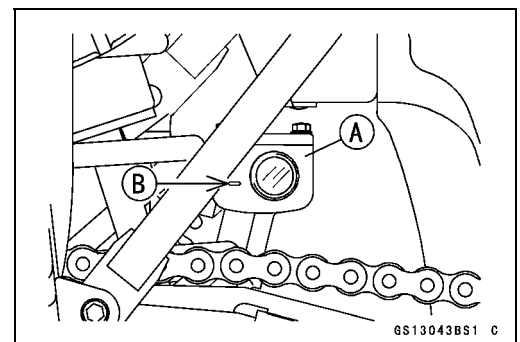
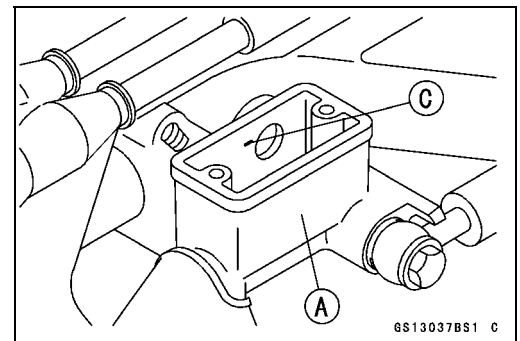
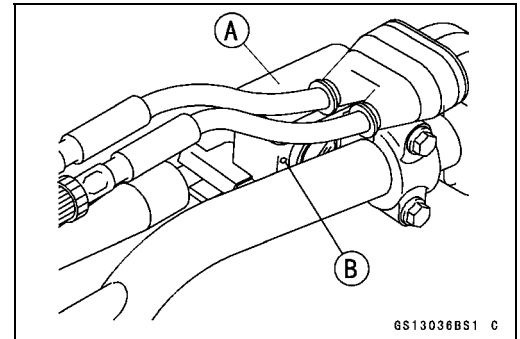
- Check the brake fluid level in the front or rear brake reservoir [A].

**NOTE**

○ Hold the reservoir horizontal when checking brake fluid level.

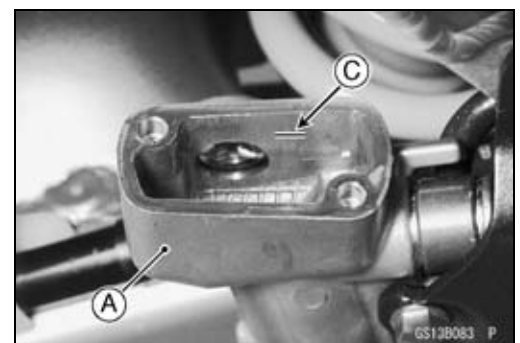
- The front or rear reservoir must be kept above the lower level line [B].
- If the fluid level in front or rear reservoir is lower than the lower level line, fill the reservoir to the upper level line. Inside the reservoir is stopped end showing the upper level line [C].

**Torque - 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.**



## 2-36 PERIODIC MAINTENANCE

### 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:**

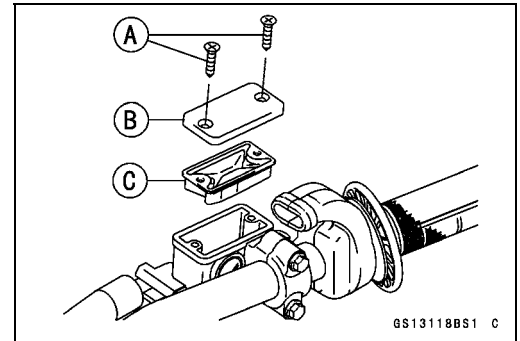
- |              |                     |
|--------------|---------------------|
| <b>Front</b> | <b>DOT3 or DOT4</b> |
| <b>Rear</b>  | <b>DOT4</b>         |

Periodic Maintenance Procedures

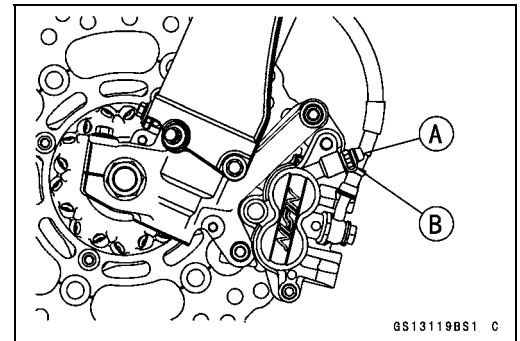
**NOTE**

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

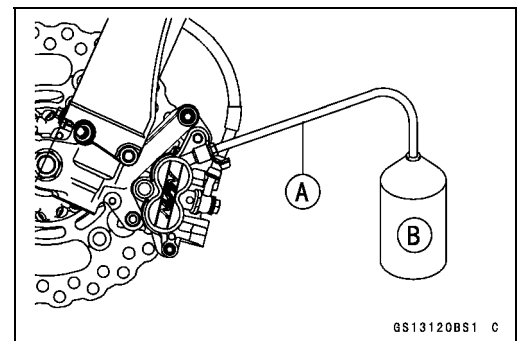
- Level the brake fluid reservoir.
- Remove the screws [A], reservoir cap [B] and diaphragm [C].



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



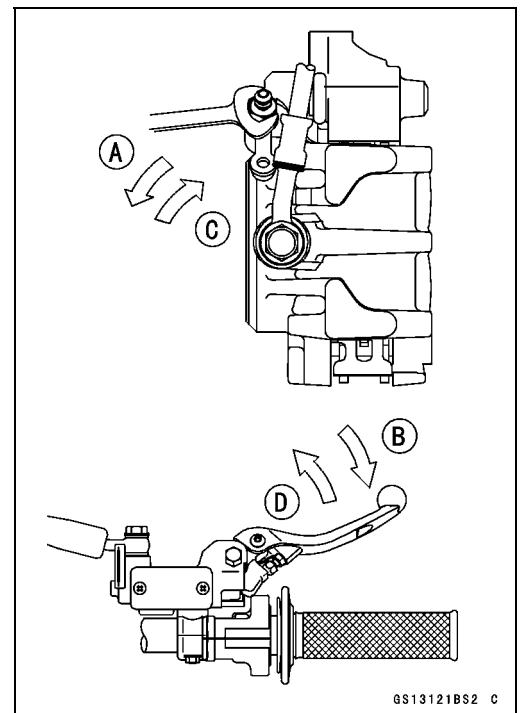
- Attach a clear plastic hose [A] to the bleed valve on the caliper, and run the other end of the hose into a container [B].



- 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.



## 2-38 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- Remove the clear plastic hose.
- Tighten the bleed valves, and install the rubber caps.  
**Torque - Caliper Bleed Valve: 7.8 N·m (0.80 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 (see Bleeding the Brake Line in the Brakes chapter).

#### **⚠ 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*

- Remove the brake pad (see Brake Pad Removal in Brakes chapter).
- 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.

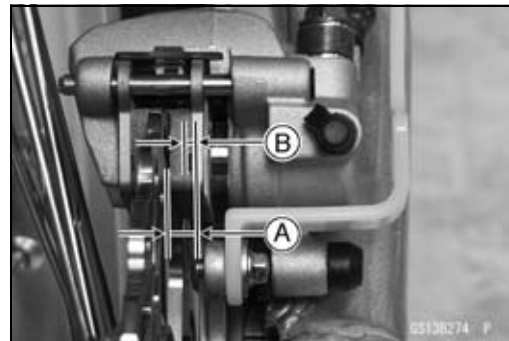
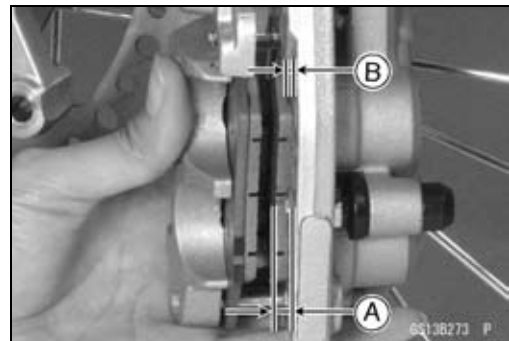
#### Lining Thickness

##### Standard:

Front	3.8 mm (0.15 in.)
Rear	6.4 mm (0.25 in.)

##### Service Limit:

Front	1 mm (0.04 in.)
Rear	1 mm (0.04 in.)

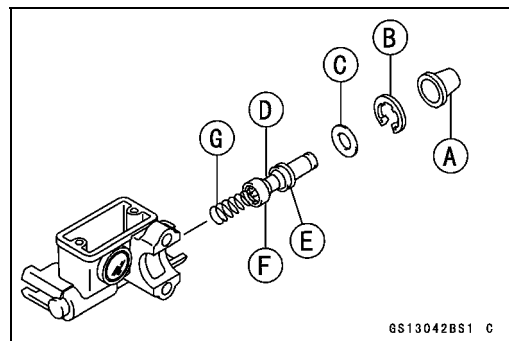


#### *Brake Master Cylinder Cup and Dust Seal Replacement*

- Remove the front master cylinder (see Front Master Cylinder Removal in the Brakes 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].



Periodic Maintenance Procedures

**CAUTION**

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

- Remove the rear master cylinder (see Rear Master Cylinder Removal in the Brakes 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.

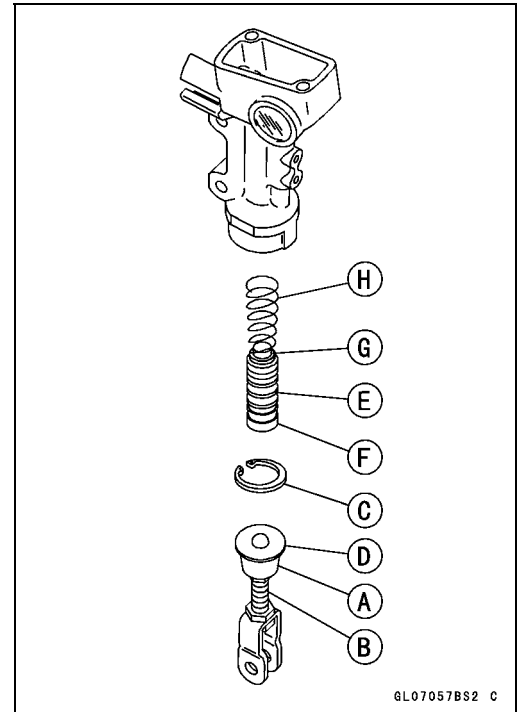
**CAUTION**

**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.**

- 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 (0.60 kgf·m, 52 in·lb)**

**Brake Lever Pivot Bolt Locknut: 5.9 N·m (0.60 kgf·m, 52 in·lb)**



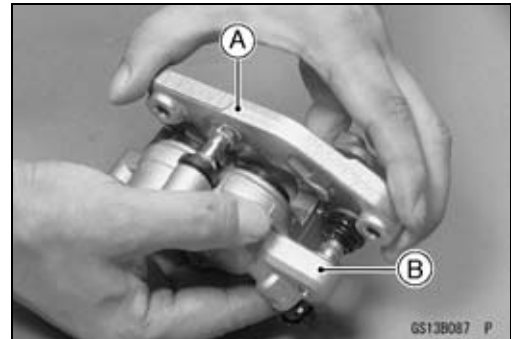
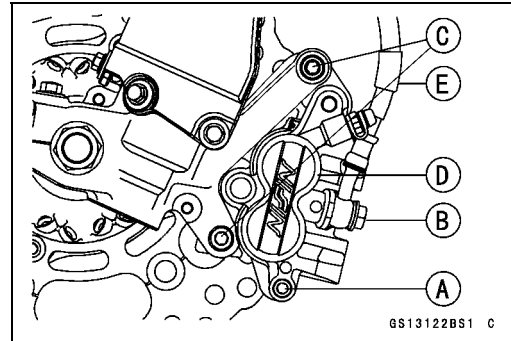
GL07057BS2 C

## 2-40 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Caliper Piston 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 Front Caliper Removal in the Brakes chapter)
  - Brake Pads (see Brake Pad Removal in the 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.



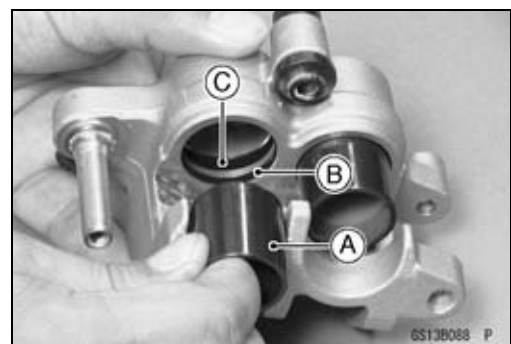
#### **⚠ WARNING**

**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.**

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

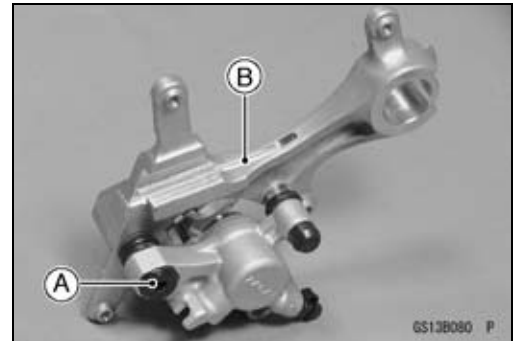
#### **NOTE**

- 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 Brake Pad Removal in the Brakes chapter).
- Pump the brake lever until the pistons come out of the cylinders, and then disassembly the caliper.

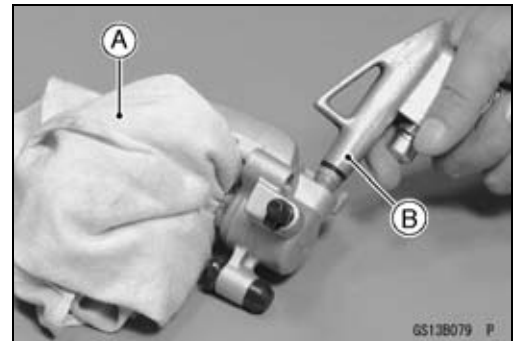


**Periodic Maintenance Procedures**

- Remove the rear caliper (see Caliper Removal in the Brakes chapter).
- Remove the pads (see Brake Pad Removal in the Brakes chapter).
- Separate the caliper holder [B] from the caliper [A].



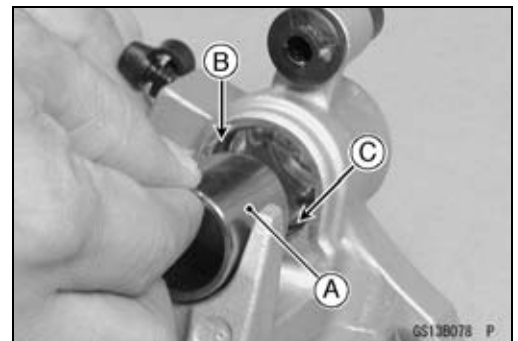
- Using compressed air, remove the piston.
  - Cover the caliper opening with a clean, heavy cloth [A].
  - Remove the piston by lightly applying compressed air [B] to where the brake line fits into the caliper.



**⚠ 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.



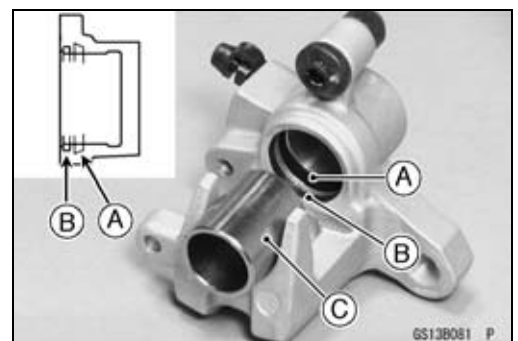
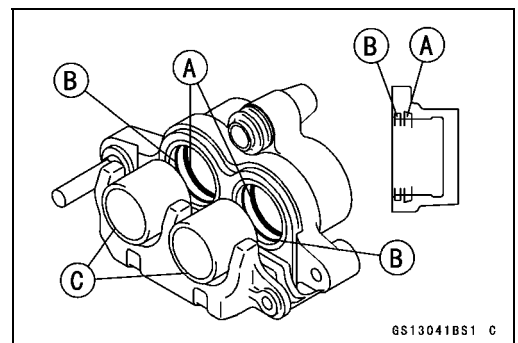
**CAUTION**

**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)**

- 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.

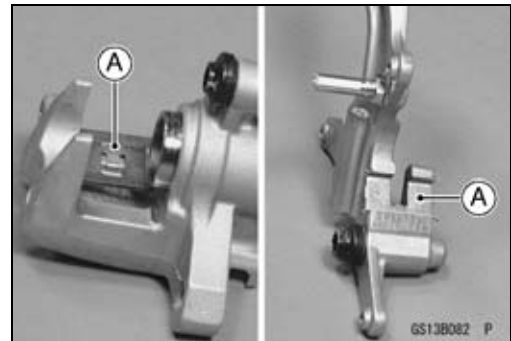
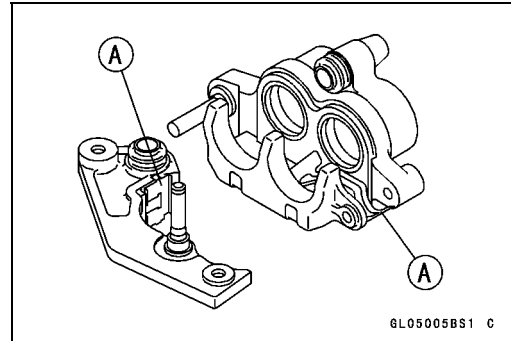




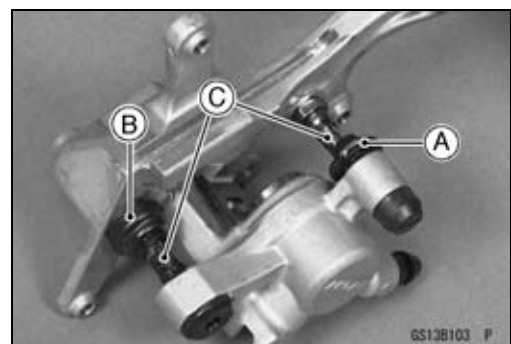
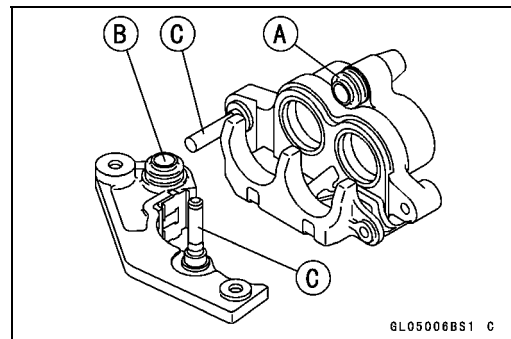
## 2-42 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

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



- Replace the shaft rubber friction boot [A] and dust boot [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).

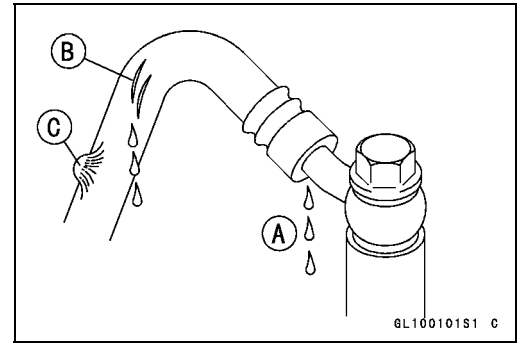


- Install the pads (see Brake Pad Installation in the Brakes chapter).
- Install the caliper (see Caliper Installation in the Brakes chapter).
- Wipe up any spilled brake fluid on the caliper with wet cloth.

**Periodic Maintenance Procedures**

*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.

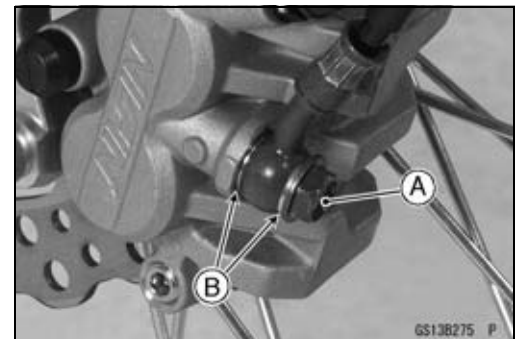


*Brake Hose Replacement*

**CAUTION**

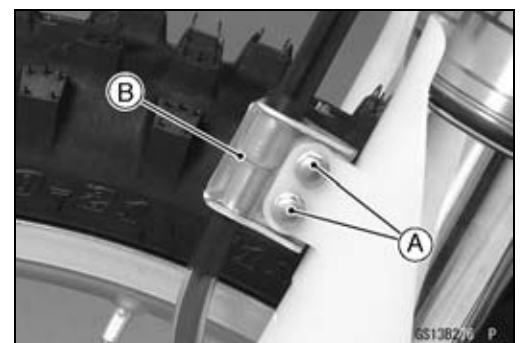
**Brake fluid quickly ruins painted surfaces; any spilled fluid should be completely washed away immediately.**

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



**For Front Brake**

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

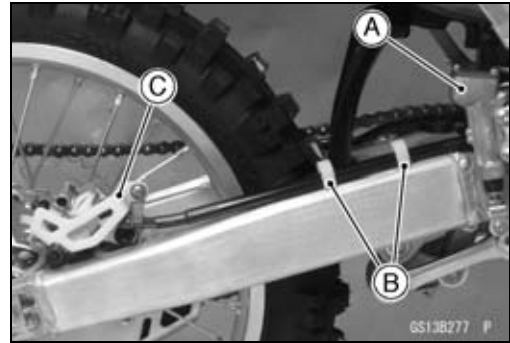


## 2-44 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### For Rear Brake

- Remove:
  - Master Cylinder [A]
  - Hose Clamps [B]
  - Caliper Cover [C]
- 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: 34 N·m (3.5 kgf·m, 25 ft·lb)**
- Fill the brake line after installing the brake hose (see Brake Fluid Changing).



#### Suspension

##### Front Fork Inspection

- Holding the brake lever, pump the front fork back and forth manually 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.**

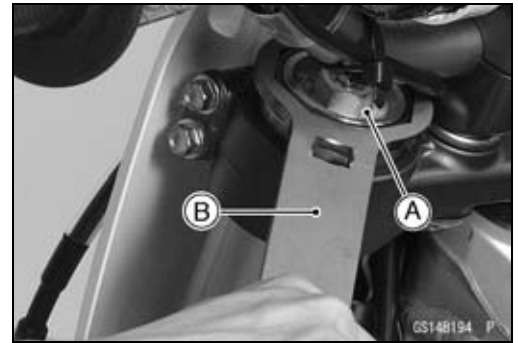
##### Front Fork Oil Change (each fork leg)

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

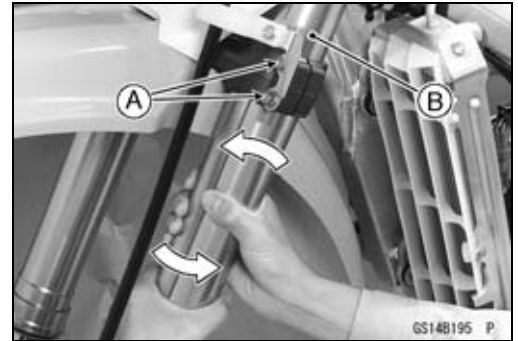


**Periodic Maintenance Procedures**

- Loosen the fork top plug [A].  
**Special Tool - Top Plug Wrench, 49 mm: 57001-1653 [B]**
- Remove:  
 Front Wheel (see Front Wheel Removal in the Wheels/Tires chapter)  
 Front Brake Caliper (see Caliper Removal in the Brakes chapter)  
 Brake Hose Clamps (see Brake Hose Replacement)



- Loosen the front fork lower clamp bolts [A].
- Remove the front fork.
- With a twisting motion, work the fork leg [B] down and out.



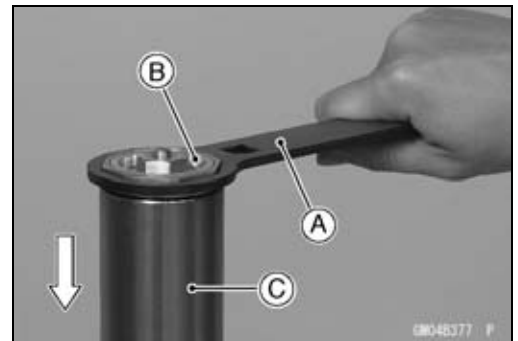
**NOTE**

○ 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.

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

- Using the top plug wrench [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, 49 mm: 57001-1653**



## 2-46 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

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

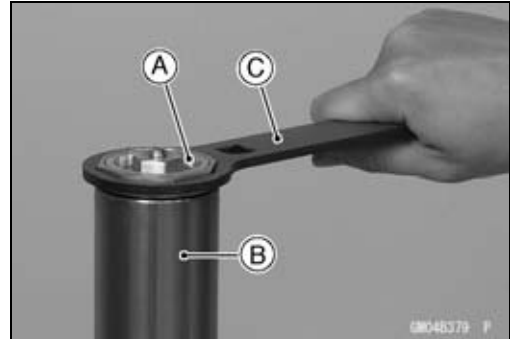
#### NOTE

○ 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 top plug wrench [C].

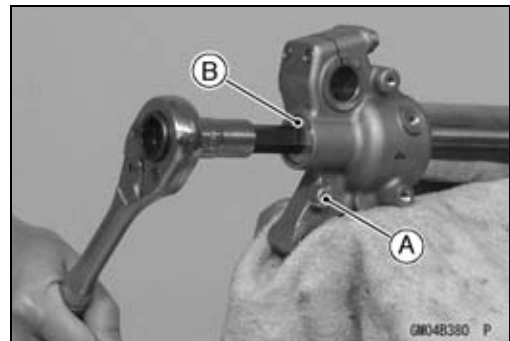
Special Tool - Top Plug Wrench, 49 mm: 57001-1653



- 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.

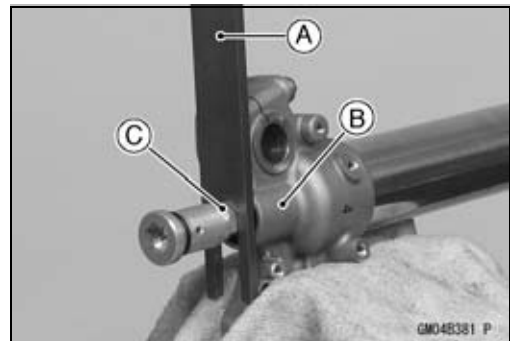


- Compress the outer tube by hands and install the top plug wrench [A] between the axle holder bottom [B] and locknut [C].

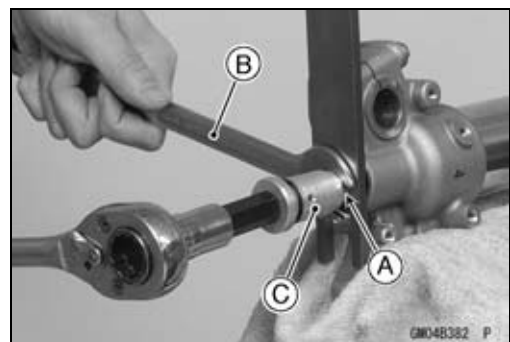
Special Tool - Top Plug Wrench, 49 mm: 57001-1653

#### ⚠ 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.

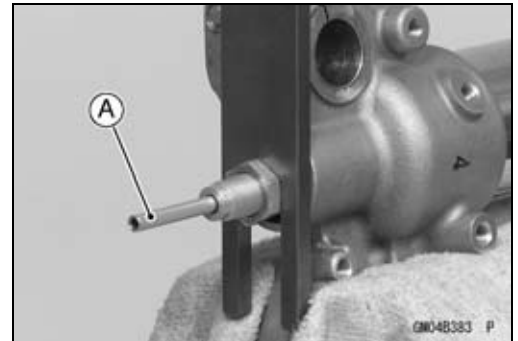


- Hold the locknut [A] with a wrench [B] and remove the adjuster assembly [C].



Periodic Maintenance Procedures

- Remove the push rod [A].

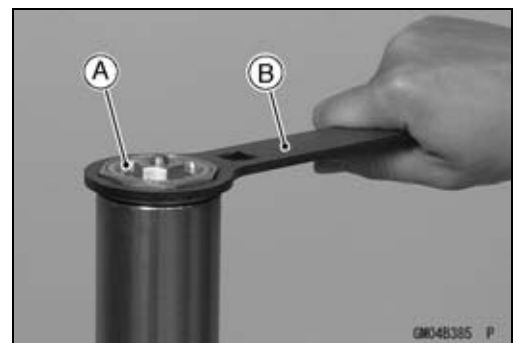
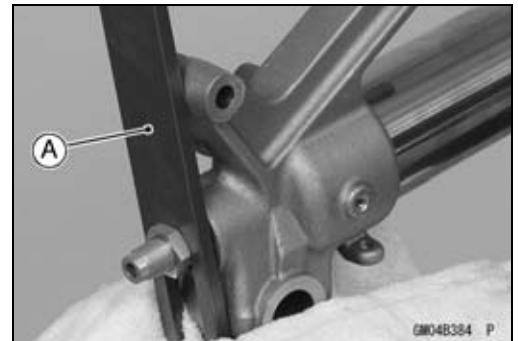


- With the outer tube compressed by hands, remove the top plug wrench [A].

**CAUTION**

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

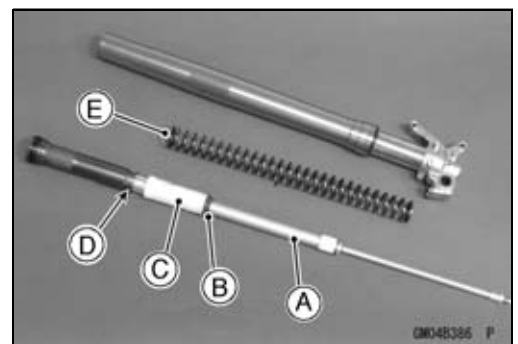
- Remove the fork leg from the vise.
- Loosen the fork top plug (subtank) [A] with the top plug wrench [B].  
Special Tool - Top Plug Wrench, 49 mm: 57001-1653 [B]



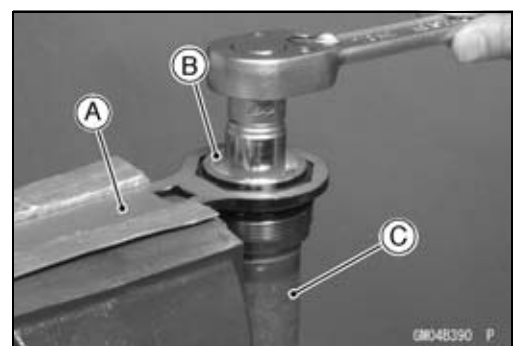
- Remove:  
Cylinder Unit [A]  
Spring Seat [B]  
Spacer [C]  
Washer [D]  
Fork Spring [E]

**CAUTION**

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



- Holding the top plug wrench [A] with a vise, loosen the base valve assembly [B] on the subtank [C].  
Special Tool - Top Plug Wrench, 49 mm: 57001-1653



## 2-48 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- 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.

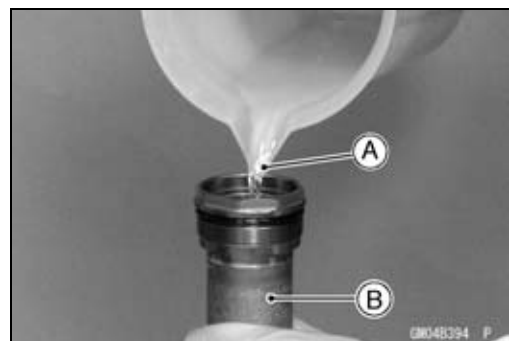
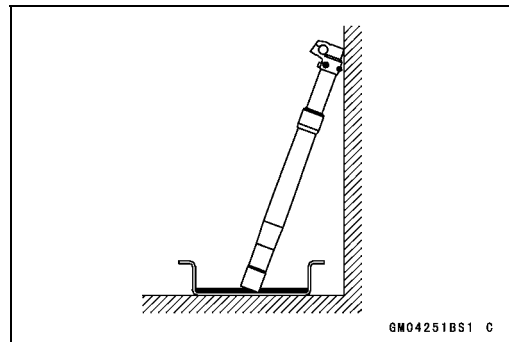
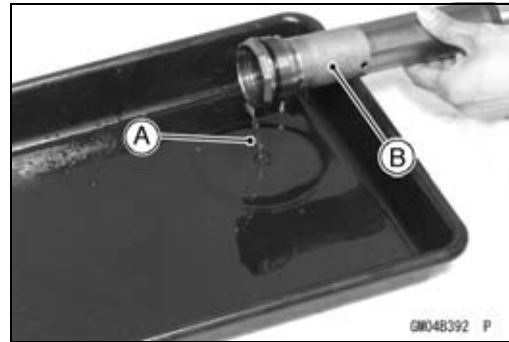
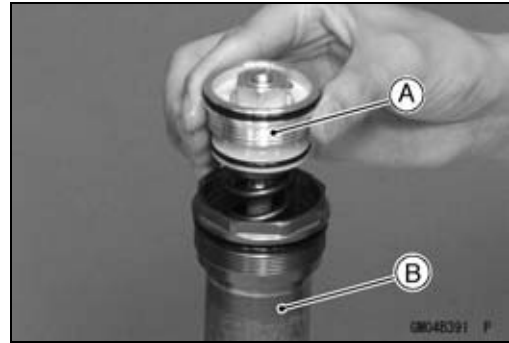
- With the piston rod in fully compressed position, pour the specified amount of fork oil [A].

**Recommended Oil: KHL15-10 (KAYABA01) or equivalent**

**Recommended Quantity: 170 ml (5.75 US oz.)**

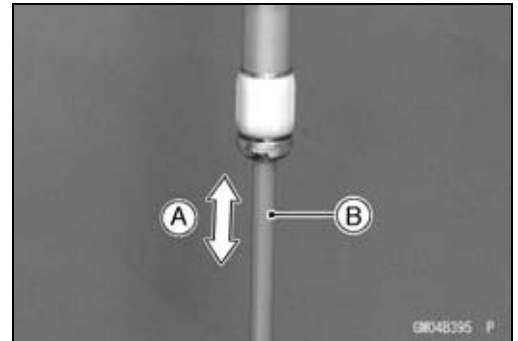
#### NOTE

- *Plug the two oil holes on the subtank [B] with fingers.*

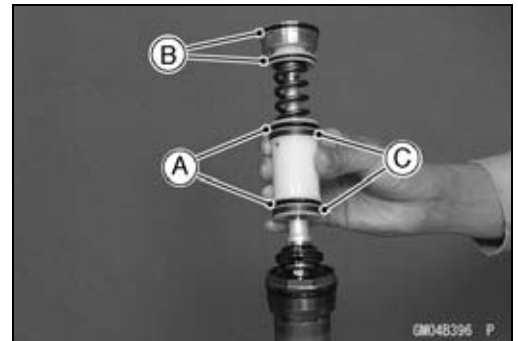


**Periodic Maintenance Procedures**

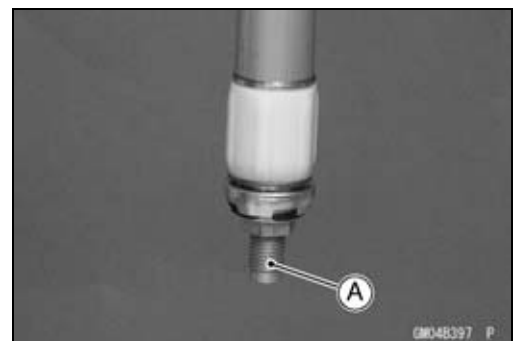
- Pump [A] the piston rod [B] slowly several times to expel air.



- 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 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.

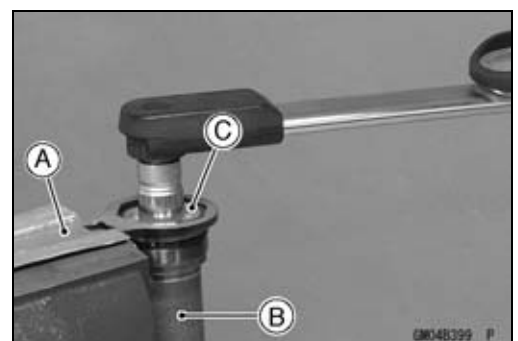


**NOTE**

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



- Holding the top plug wrench [A] with a vise.
  - Special Tool - Top Plug Wrench, 49 mm: 57001-1653**
- Holding the subtank [B] with the top plug wrench, torque the base valve assembly [C].
  - Torque - Base Valve Assembly: 28 N·m (2.9 kgf·m, 21 ft·lb)**





## 2-50 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

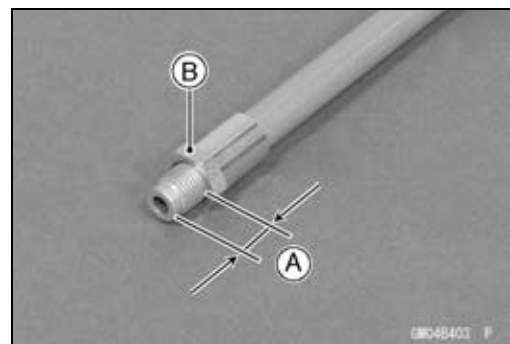
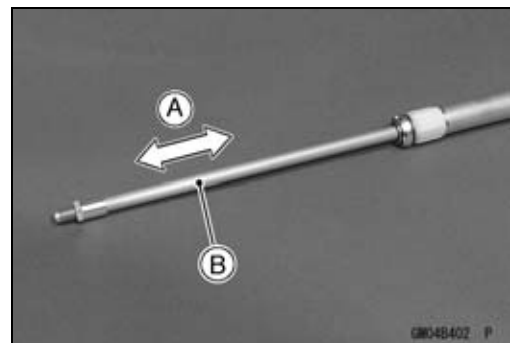
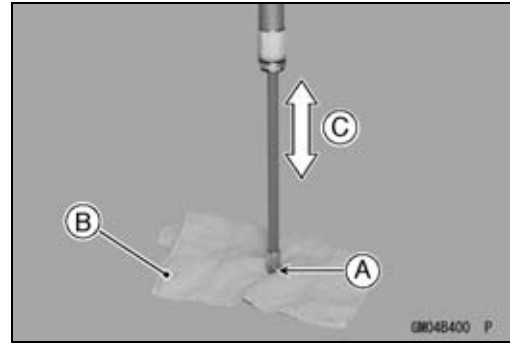
- Protect the piston rod end [A] with a rag [B] to prevent fork damage.
- Discharge the extra oil off the cylinder unit by pumping [C] the piston rod to full stroke.

#### 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.**

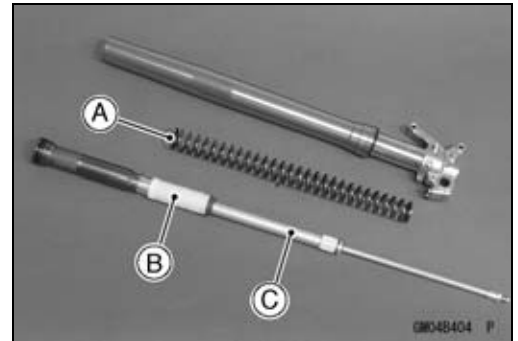
#### NOTE

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



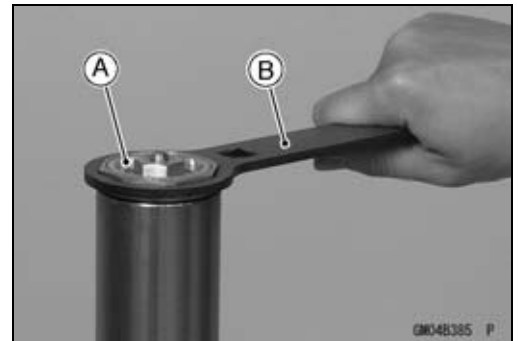
**Periodic Maintenance Procedures**

- Completely wipe of the fork oil from the spring [A], spacer [B] and cylinder unit [C].
- Insert above-mentioned parts into the fork.



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

**Special Tool - Top Plug Wrench, 49 mm: 57001-1653 [B]**



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

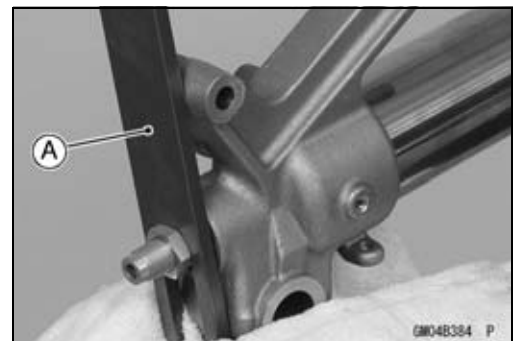
**⚠ WARNING**

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

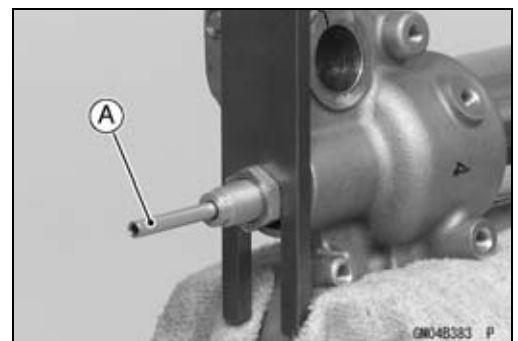
- Compress the outer tube by hands and install the top plug wrench [A] between the axle holder bottom and locknut.
- Special Tool - Top Plug Wrench, 49 mm: 57001-1653**

**⚠ 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.**



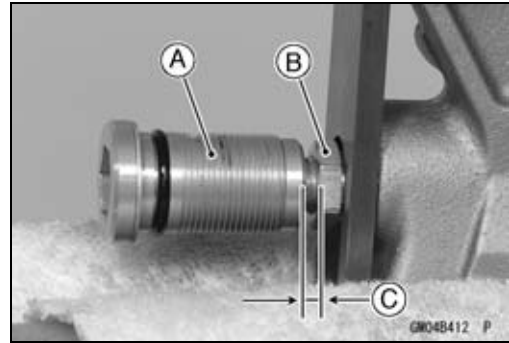
- Insert the push rod [A] into the piston rod.



## 2-52 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

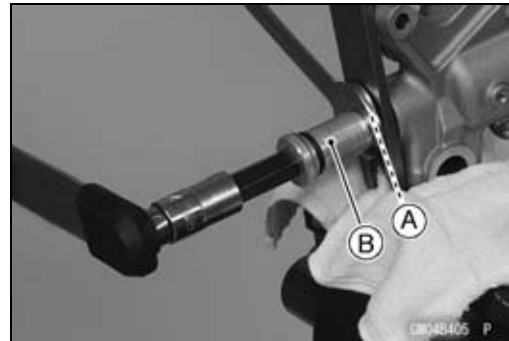
- Replace the O-ring and gasket on the adjuster assembly with new ones and apply specified fork oil to the O-ring.
- Slowly turn the adjuster assembly [A] clockwise until resistance is felt and check the clearance between the locknut [B] and adjuster assembly to provide more than 1 mm (0.04 in.) [C].



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

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

- With the outer tube compressed by hands, remove the top plug wrench.



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

**Torque - Adjuster Assembly: 58 N·m (5.9 kgf·m, 43 ft·lb)**



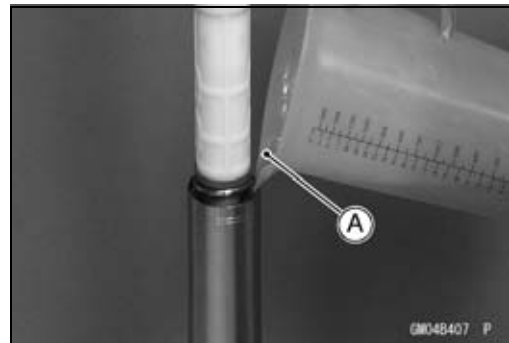
- Loosen and remove the fork top plug (subtank) from the outer tube and slowly slide down the outer tube.

**Special Tool - Top Plug Wrench, 49 mm: 57001-1653**

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

**Recommended Oil: KHL15-10 (KAYABA01) or equivalent**

**Recommended Quantity: 345 mL (11.7 US oz.)  
(EUR) 350 mL (11.8 US oz.)**

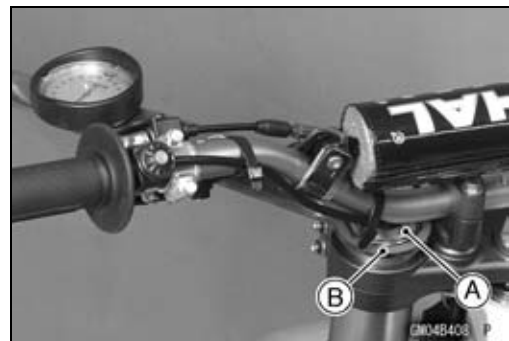


- Raise the outer tube and temporarily tighten the fork top plug (subtank).

**Special Tool - Top Plug Wrench, 49 mm: 57001-1653 [B]**

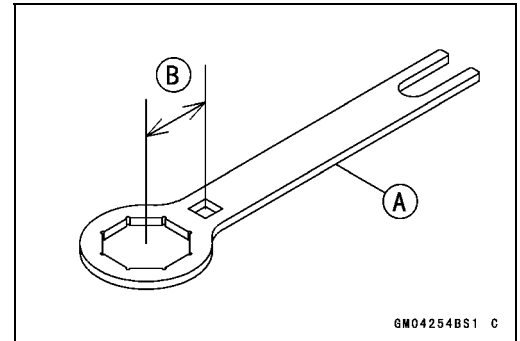
- After installing the front fork, torque the top plug [A].

**Special Tool - Top Plug Wrench, 49 mm: 57001-1653**



**Periodic Maintenance Procedures**

The torque of fork top plug is specified to **30 N·m (3.1 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 [**27 N·m (2.8 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 [**27 N·m (2.8 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.
- Remove the rear frame (see Rear Frame Removal in the Frame chapter).
- 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 Rear Shock Absorber Removal in the Suspension chapter).
- Remove the shock absorber spring (see Spring Replacement in the Suspension chapter).
- Point the valve [A] away from you. slowly release nitrogen gas pressure by pushing down the valve core with a screw driver.



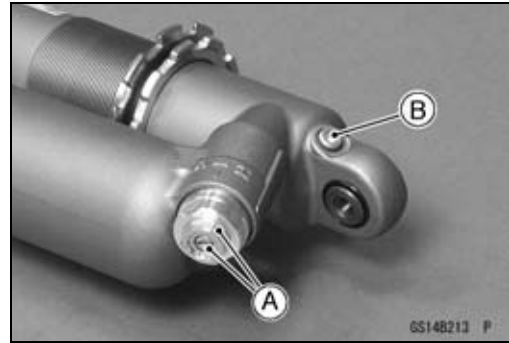
**⚠ WARNING**

**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.**

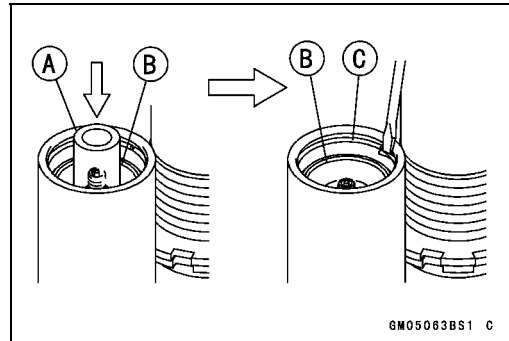
## 2-54 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

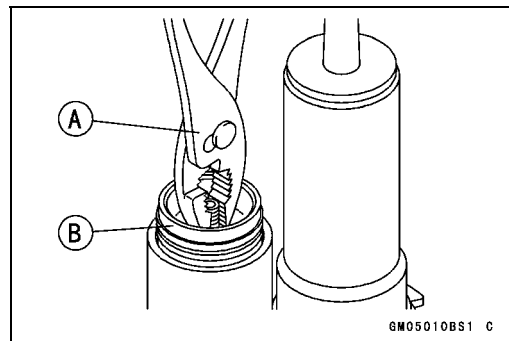
- Adjust the gas reservoir damping adjusters [A] to the softest position.
- Remove the air bleed bolt [B] and pump the rear shock to drain the oil out the rear shock body.
- Install the air bleed bolt.



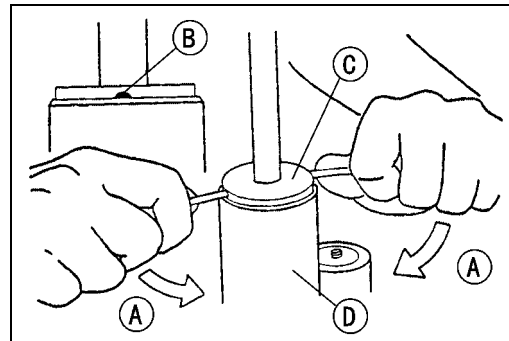
- Using the suitable tool [A] and press, push the reservoir cap [B] in 10 mm (0.39 in.).
- Remove the circlip [C] from the gas reservoir.



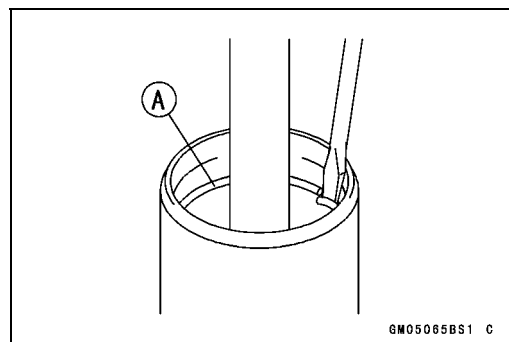
- Pull the gas reservoir cap [B] out of the gas reservoir using the pliers [A].



- 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].

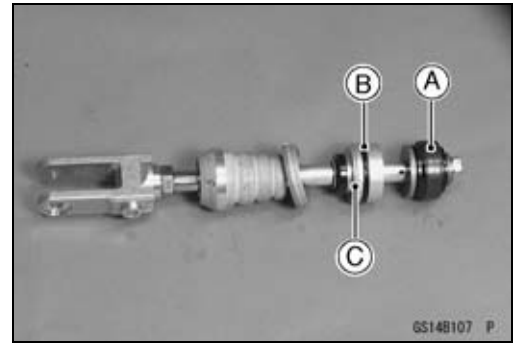


- Slide the stop up the top of the piston rod then lightly tap around the seal with a suitable rod and mallet, and push the seal assembly 10 mm (0.39 in.) down.
- Remove the circlip [A].
- Lightly move the piston rod back and forth, and pull out the piston rod assembly.
- Pour the oil out of the rear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

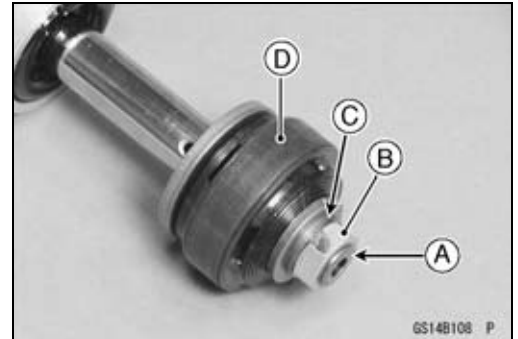


**Periodic Maintenance Procedures**

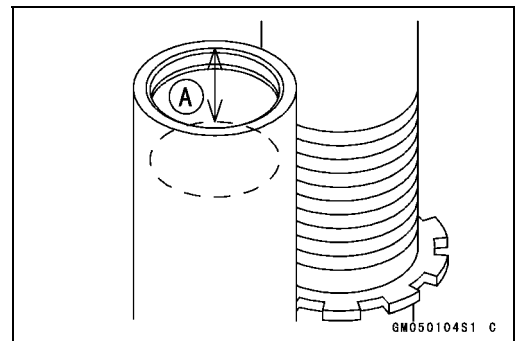
- Visually inspect the piston [A], O-ring [B], and oil seal assy [C].
- If the piston, O-ring and oil seal assy are badly scored, rusty or damaged, replace them.



- 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.



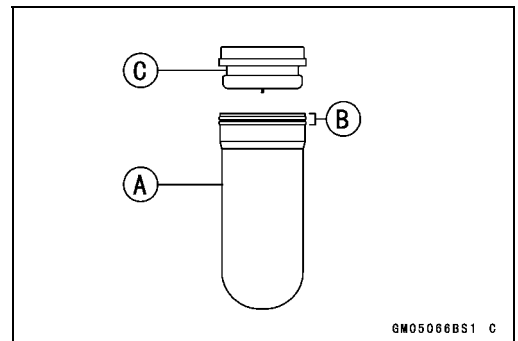
- Pour KYB K2-C (SAE 5W or Bel-Ray SE2 #40) oil into the gas reservoir to 60 ~ 70 mm (2.63 ~ 2.76 in.) [A] from the gas reservoir upper end.



- 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.**

## 2-56 PERIODIC MAINTENANCE

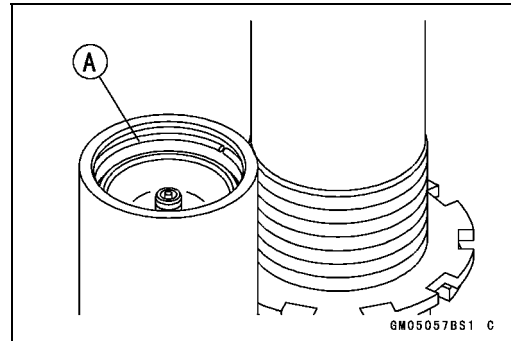
### Periodic Maintenance Procedures

- 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.

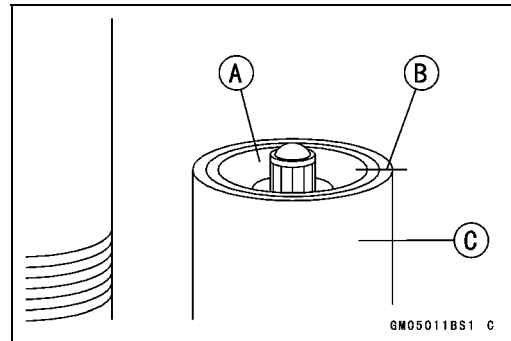
- Mount the circlip [A] in the groove in the gas reservoir.



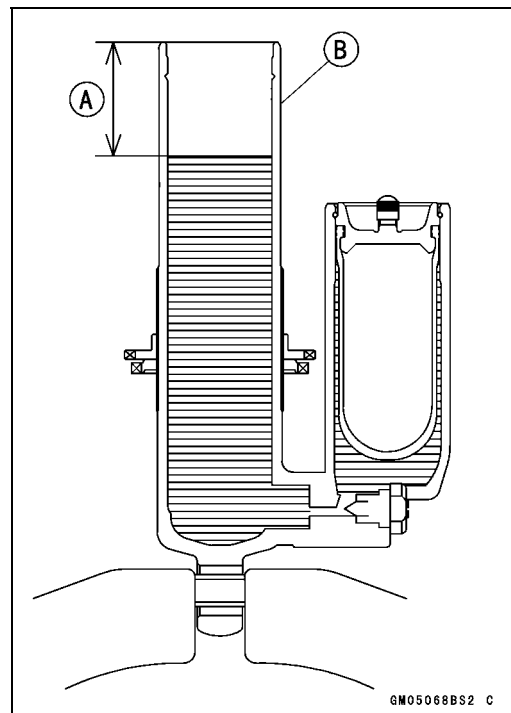
- Pull up the gas reservoir cap [A] against the circlip. The end of the gas reservoir cap must align [B] with the end of the gas reservoir [C].

#### ⚠ 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.

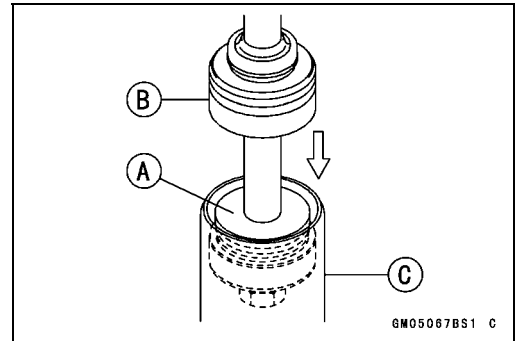


- Pour KYB K2-C (SAE 5W or Bel-Ray SE2 #40) oil into the rear shock body to 55 mm (1.77 in.) [A] from the lower end of the rear shock body [B].

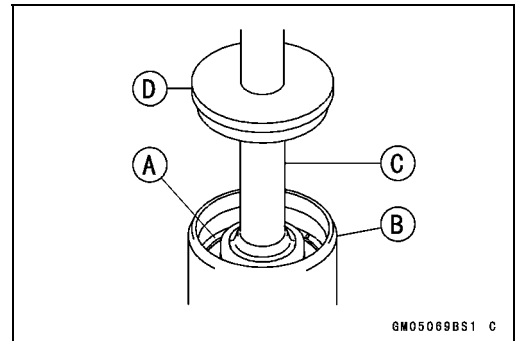


Periodic Maintenance Procedures

- 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**

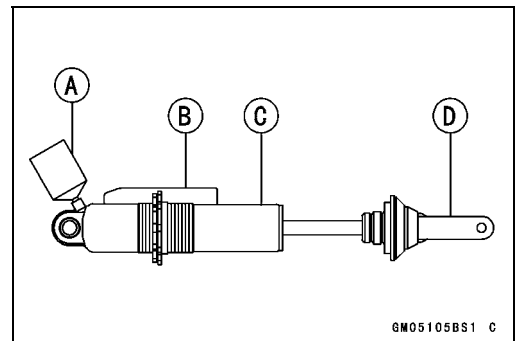
**If the circlip is not a certain fit in the groove in the rear shock body, the piston rod assembly may come out of the shock absorber when injecting the nitrogen gas or riding the motorcycle.**

- 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 bleed 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 piston rod [D] in and out.
- Install the air bleed bolt securely.

**Torque - Air Bleed Bolt: 6.4 N·m (0.65 kgf·m, 57 in·lb)**

- Fully extend the push rod assembly.



- Inject nitrogen gas to a pressure of 50 kPa (0.5 kgf/cm<sup>2</sup>, 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/cm<sup>2</sup>, 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.



## 2-58 PERIODIC MAINTENANCE

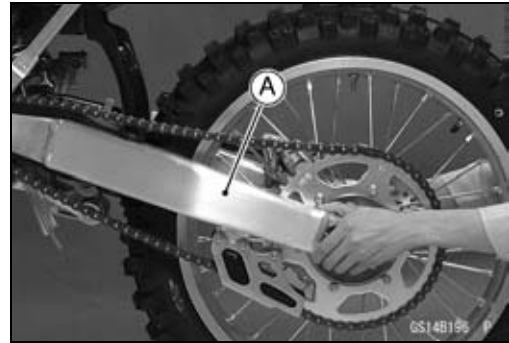
### Periodic Maintenance Procedures

#### *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.

### 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.



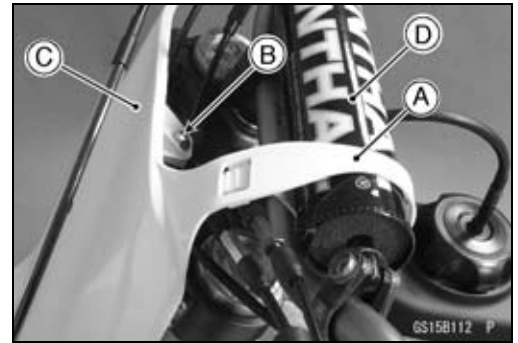
#### *Steering Adjustment*

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

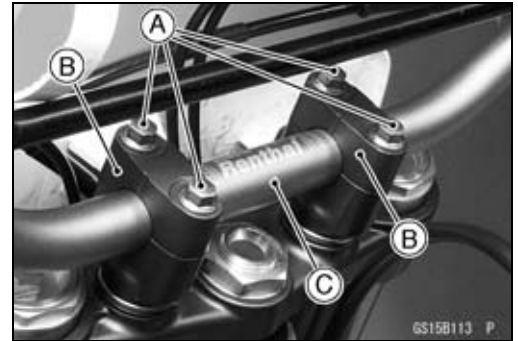
**Special Tool - Jack: 57001-1238**

**Periodic Maintenance Procedures**

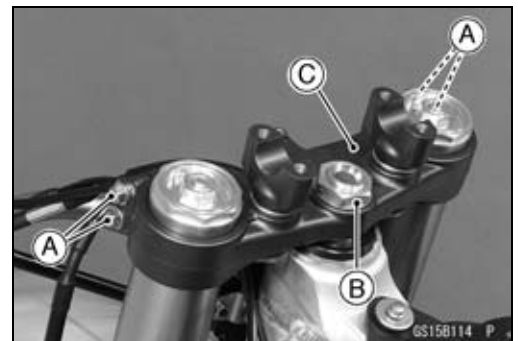
- Slide the holder belt [A] out off.
- Remove number plate bolt [B] and number plate [C].
- Remove the handlebar pad [D].



- Remove:  
 Handlebar Clamp Bolts [A]  
 Handlebar Clamps [B]  
 Handlebar [C]



- 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 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 kgf·m, 72 ft·lb)**  
**Upper Front Fork Clamp Bolts: 23 N·m (2.3 kgf·m, 17 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.

## 2-60 PERIODIC MAINTENANCE

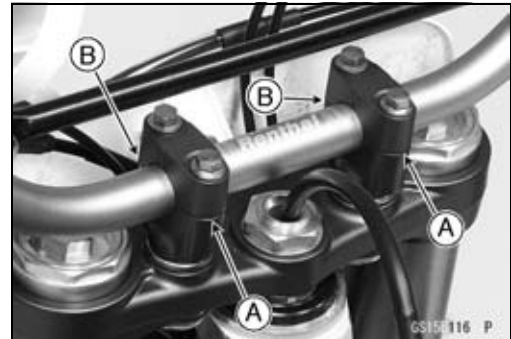
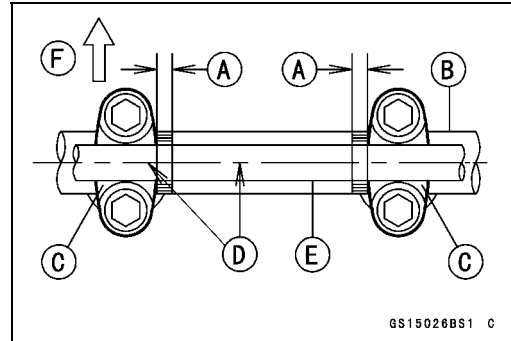
### Periodic Maintenance Procedures

- Install the handlebar [B] on the handlebar holder so that the protruded scales of the both side adjust to the same width [A].
- Apply 2-stroke oil to the threads of the handlebar clamp bolts.
- Install the handlebar clamp so that center [D] of the handlebar clamp [C] and handlebar bridge [E] align.

**Torque - Handlebar Clamp Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)**

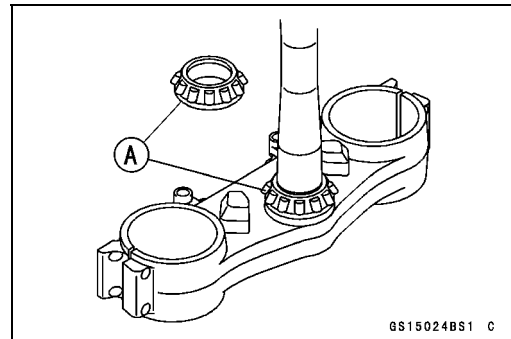
Front [F]

- After tighten, make sure space [A] [B] of the ahead and back are same width.
- Install the handlebar pad and number plate.



#### Stem Bearing Lubrication

- Remove the steering stem (see Steering Stem, Stem Bearing Removal in the 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 Adjustment).



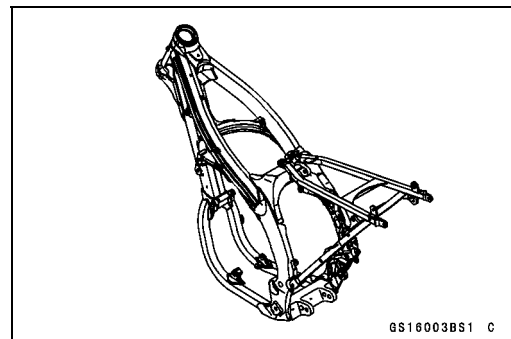
### Frame

#### 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.**

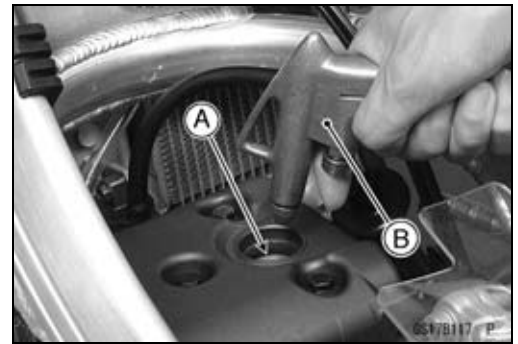


**Periodic Maintenance Procedures**

**Electrical System**

*Spark Plug Cleaning and Inspection*

- Remove:
  - Seat (see Seat Removal in the Frame chapter)
  - Fuel Tank (see Fuel Tank Removal in the Fuel System chapter)
  - Spark Plug Cap
- Clean the plug hole [A], using the compressed air [B].

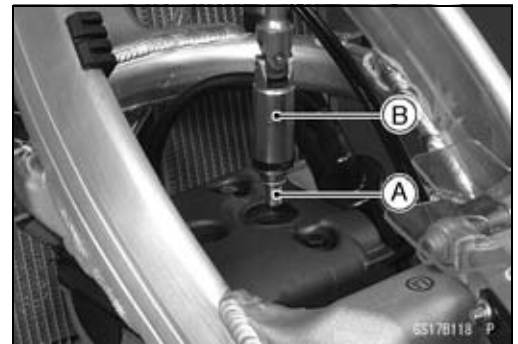


- Remove the spark plug [A], using the spark plug wrench [B].

**Special Tool - Spark Plug Wrench: 57001-1262**

**Owner's Tool - Spark Plug Wrench, 16 mm: 92110-0005**

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

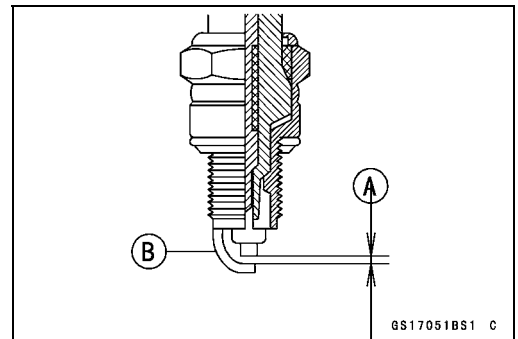


- Measure the gap [A] with a wire-type thickness gauge.
- ★ If the gap is incorrect, carefully bend the side electrode [B] with a suitable tool to obtain the correct gap.

**Spark Plug Gap**

**Standard: 0.8 ~ 0.9 mm (0.03 ~ 0.04 in.)**

- Install the spark plug.
- Torque - Spark Plug: 13 N·m (1.3 kgf·m, 115 in·lb)**



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



**Cable Inspection**

*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**

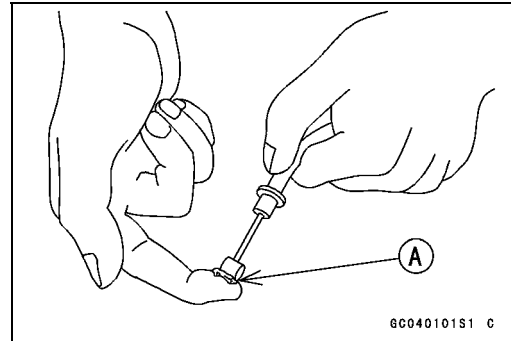
○ Whenever the vehicle has been operated under wet or rainy conditions, or especially after using a high-pressure water spray, perform the general lubrication.

## 2-62 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

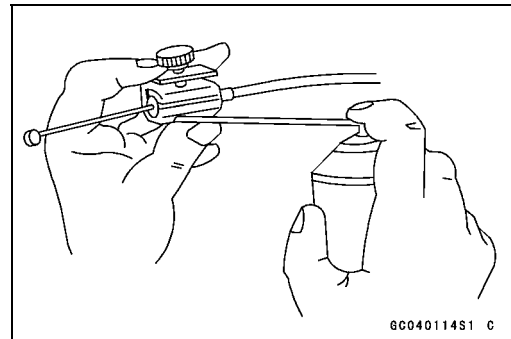
#### Points: Lubricate with Grease.

- Clutch Inner Cable Upper and Lower Ends [A]
- Hot Start Inner Cable Upper End
- Throttle Inner Cable Upper End

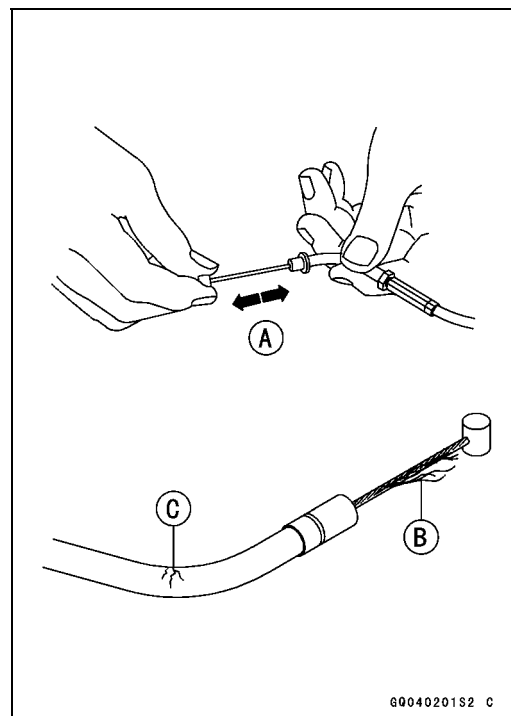


#### Cables: Lubricate with Rust Inhibitor.

- Throttle Cables
- Clutch Cable
- Hot Starter Cable



- 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.



### Nut, Bolt, and Fastener Tightness Inspection

#### Tightness Inspection

- Check the tightness of the bolts and nuts listed here in accordance with the Periodic Maintenance Chart. 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).

---

## Periodic Maintenance Procedures

---

- ★ If there are loose fasteners, retorque them to the specified torque following the specified tightening sequence. Refer to the Torque and Locking Agent section of the General Information chapter for torque specifications. 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
- Front Axle Clamp Bolt
- Rear Axle Nut Cotter Pin
- Rear Axle Nut

#### Final Drive:

- Chain Adjuster Locknut
- Rear Sprocket Nuts

#### Brakes:

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

#### Suspension:

- Front Fork Clamp Bolts
- Front Fender Bolts
- Rear Shock Absorber Mounting Bolts, Nuts
- Swingarm Pivot Nut

#### Steering:

- Steering Stem Head Bolt
- Handlebar Clamp Bolts

#### Engine:

- Throttle Cable Adjuster Locknuts
- Engine Mounting Bolts, Nuts
- Shift Pedal Bolt
- Muffler Mounting Bolts
- Exhaust Pipe Holder Nuts
- Muffler Clamp Bolt
- Clutch Cable Adjuster Locknut
- Clutch Lever Pivot Nut

#### Others:

- Footpeg Cotter Pins
- Rear Frame Bolts

# Fuel System

## Table of Contents

Exploded View .....	3-2
Specifications .....	3-6
Special Tool .....	3-7
Throttle Grip and Cable .....	3-8
Free Play Inspection .....	3-8
Free Play Adjustment .....	3-8
Throttle Cable Replacement .....	3-8
Throttle Cable Lubrication .....	3-9
Throttle Cable Inspection .....	3-9
Hot Starter Cable Removal .....	3-10
Hot Starter Cable Installation .....	3-10
Hot Starter Lever Free Play Inspection .....	3-10
Hot Starter Lever Free Play Adjustment .....	3-11
Hot Starter Cable Lubrication .....	3-11
Hot Starter Cable Inspection .....	3-11
Carburetor .....	3-12
Idle Speed Inspection .....	3-12
Idle Speed Adjustment .....	3-12
Service Fuel Level Inspection .....	3-12
Service Fuel Level Adjustment .....	3-13
Carburetor Removal .....	3-14
Carburetor Installation .....	3-16
Fuel Inspection .....	3-17
Carburetor Disassembly .....	3-17
Carburetor Cleaning .....	3-21
Carburetor Inspection .....	3-21
Carburetor Assembly .....	3-23
Air Cleaner .....	3-28
Air Cleaner Housing Removal .....	3-28
Air Cleaner Housing Installation .....	3-28
Element Removal .....	3-28
Element Installation .....	3-29
Element Cleaning and Inspection .....	3-29
Fuel Tank .....	3-30
Fuel Tank Removal .....	3-30
Fuel Tank Installation .....	3-30
Fuel Filter Removal .....	3-30
Fuel Filter Installation .....	3-30
Fuel Tank, Filter and Tap Cleaning .....	3-31
Fuel Tap and Filter Inspection .....	3-31



**Download the full PDF manual instantly.**

**Our customer service e-mail:**

**[aservicemanualpdf@yahoo.com](mailto:aservicemanualpdf@yahoo.com)**