

## MODEL APPLICATION

Year	Model	Beginning Frame No.
2014	KX85CE	JKBKXFCC□EA000001 JKBKX085CCA000001
2014	KX85DE	JKBKXFDC□EA000001 JKBKX085DDA000001
2014	KX100FE	JKAKXTFC□EA000001

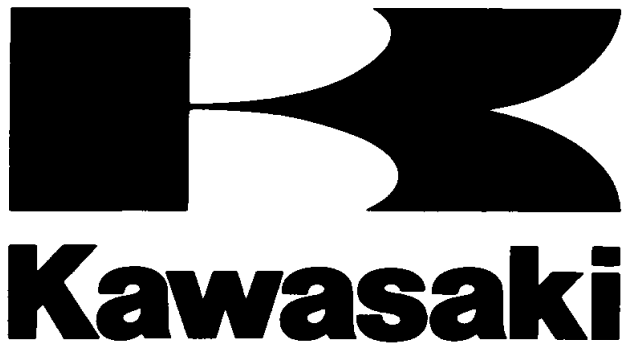
□:This digit in the frame number changes from one machine to another.



KAWASAKI HEAVY INDUSTRIES, LTD.  
Motorcycle & Engine Company

Part No.99924-1470-01

Printed in Japan



**KX85**  
**KX85-II**  
**KX100**



# **Motorcycle** **Service Manual**

# Quick Reference Guide

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## LIST OF ABBREVIATIONS

A	ampere(s)	KIPS	Kawasaki Integrated Powervalve System
ABDC	after bottom dead center	km/h	kilometers per hour
AC	alternating current	L	liter(s)
Ah	ampere hour	lb	pound(s)
ATDC	after top dead center	m	meter(s)
BBDC	before bottom dead center	min	minute(s)
BDC	bottom dead center	mph	miles per hour
BTDC	before top dead center	N	newton(s)
°C	degree(s) Celsius	oz	ounce(s)
CDI	Capacitor Discharge Ignition	Pa	pascal(s)
cmHg	centimeters of mercury	PS	horsepower
cu in.	cubic inch(s)	psi	pound(s) per square inch
DC	direct current	qt	quart(s)
F	farad(s)	r	revolution
°F	degree(s) Fahrenheit	rpm	revolution(s) perminute
ft	foot, feet	s	second(s)
g	gram(s)	TDC	top dead center
gal	gallon(s)	TIR	total indicator reading
h	hour(s)	V	volt(s)
HP	horsepower(s)	W	watt(s)
in.	inch(s)	Ω	ohm(s)

## COUNTRY AND AREA CODES

AU	Australia	EUR	Europe
CA	Canada	US	United States

# 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.

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## 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 symbols, heed their instructions! Always follow safe operating and maintenance practices.

### **DANGER**

**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.

### **WARNING**

**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.

### **NOTICE**

**NOTICE** is used to address practices not related to personal injury.

This manual contains four more symbols which will help you distinguish different types of information.

### **NOTE**

○*NOTE* indicates information that may help or guide you in the operation or service of the vehicle.

- 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

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# 1-2 GENERAL INFORMATION

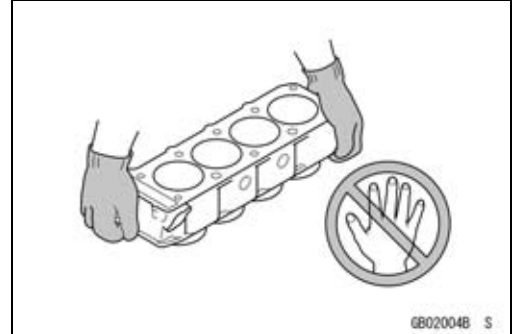
## Before Servicing

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

Especially note the following:

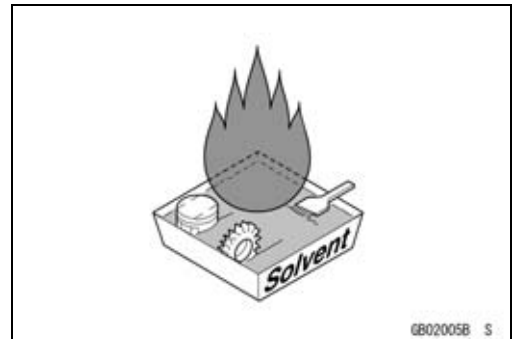
### Edges of Parts

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



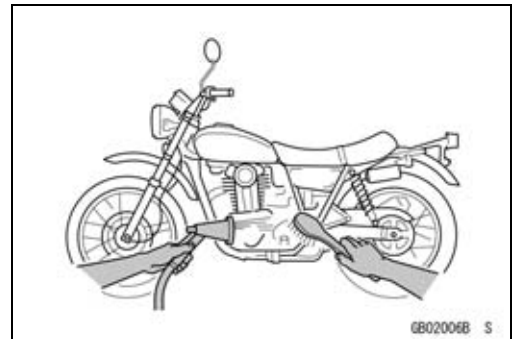
### Solvent

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



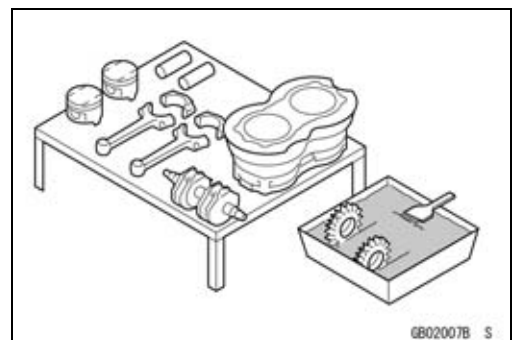
### Cleaning Vehicle before Disassembly

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



### Arrangement and Cleaning of Removed Parts

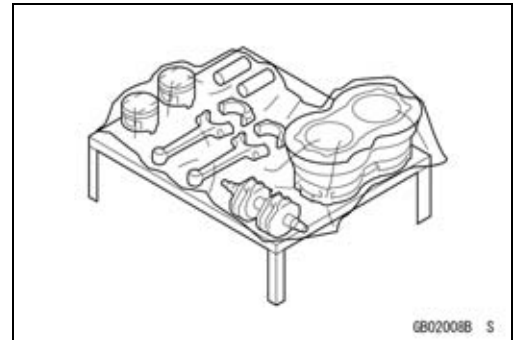
Disassembled parts are easy to confuse. Arrange the parts according to the order the parts were disassembled and clean the parts in order prior to assembly.



**Before Servicing**

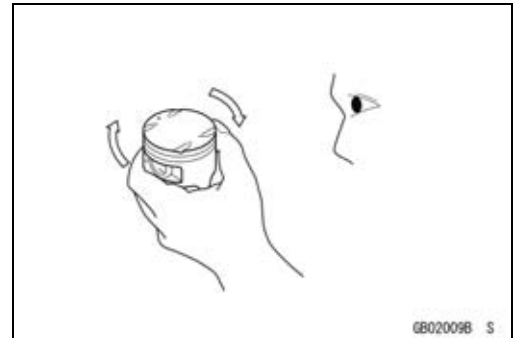
**Storage of Removed Parts**

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



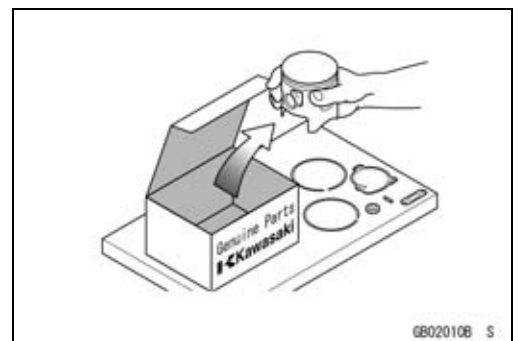
**Inspection**

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



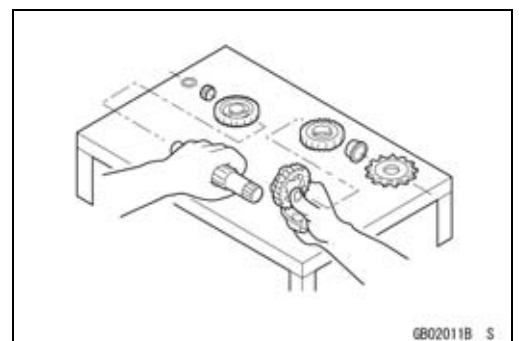
**Replacement Parts**

Replacement parts must be KAWASAKI genuine or recommended by KAWASAKI. Gaskets, O-rings, oil seals, grease seals, circlips, cotter pins or self-locking nuts must be replaced with new ones whenever disassembled.



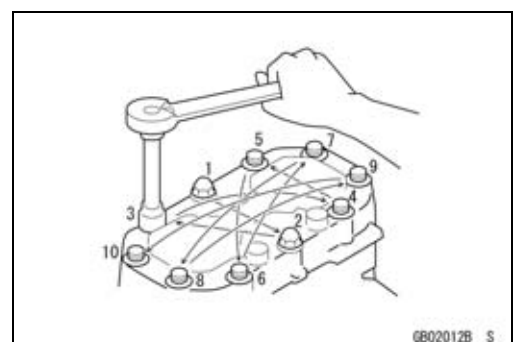
**Assembly Order**

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.





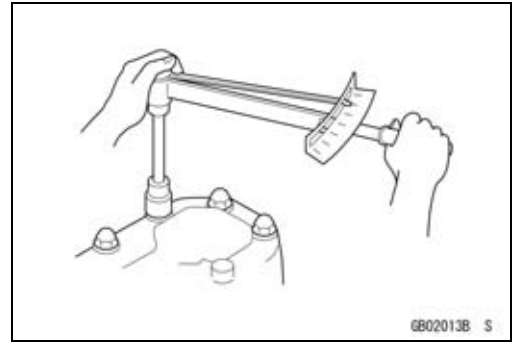
# 1-4 GENERAL INFORMATION

## Before Servicing

### Tightening Torque

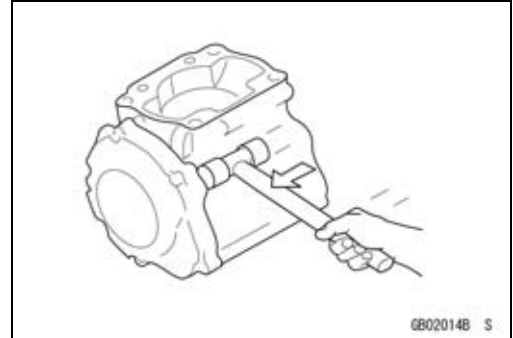
Incorrect torque applied to a bolt, nut, or screw may lead to serious damage. Tighten fasteners to the specified torque using a good quality torque wrench. Often, the tightening sequence is followed twice-initial tightening and final tightening with torque wrench.

All of the tightening torque values are for use with dry, solvent - cleaned threads unless otherwise indicated. If a fastener which should have dry, clean threads gets contaminated with lubricant, etc., applying even the specified torque could damage it.



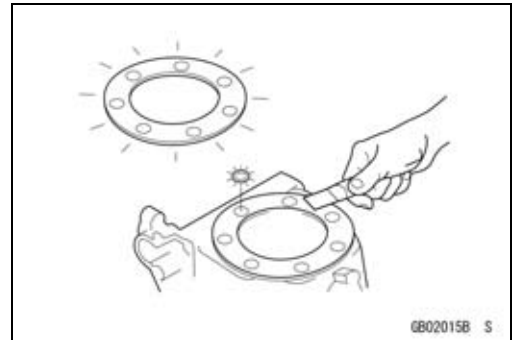
### Force

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.



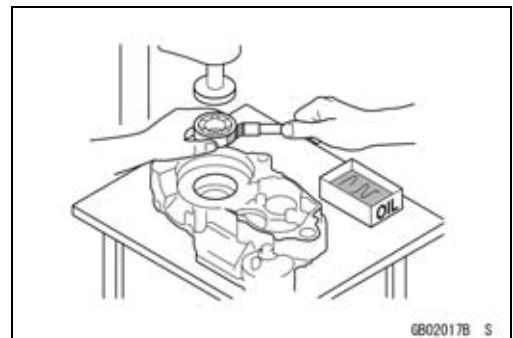
### Liquid Gasket, Non-permanent Locking Agent

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.

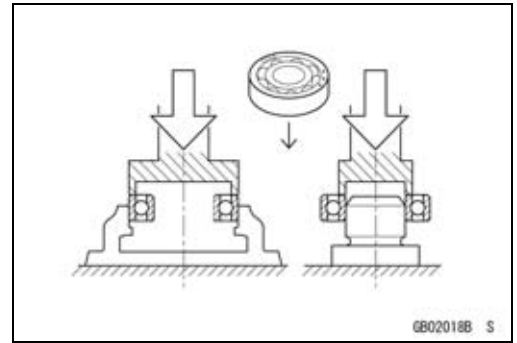


**Before Servicing**

**Ball Bearing and Needle Bearing**

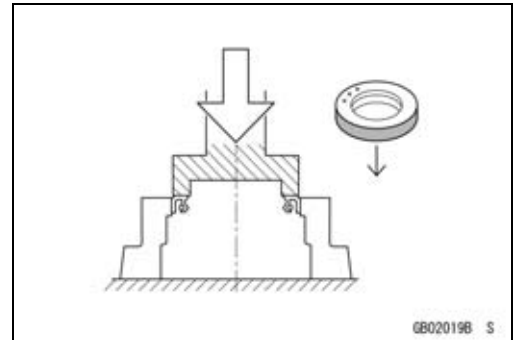
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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

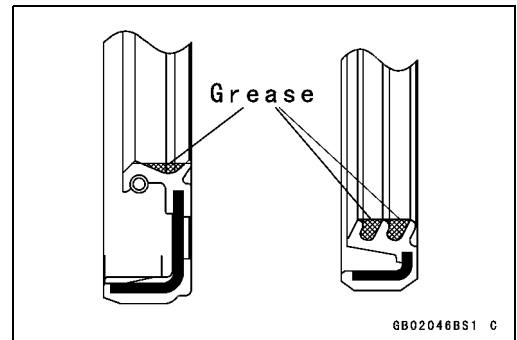


**Oil Seal, Grease Seal**

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.

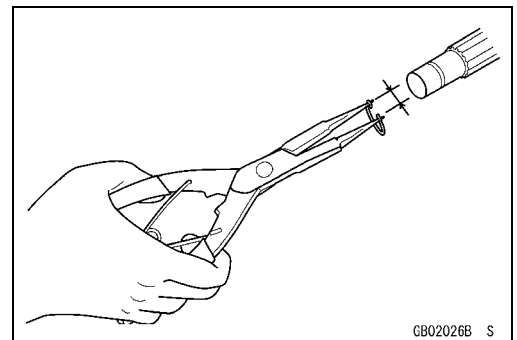


Apply specified grease to the lip of seal before installing the seal.



**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.

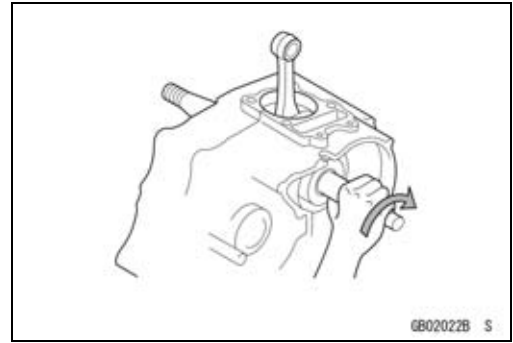


## 1-6 GENERAL INFORMATION

### Before Servicing

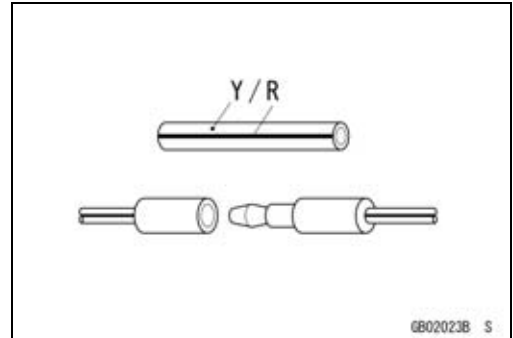
#### ***Direction of Engine Rotation***

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).



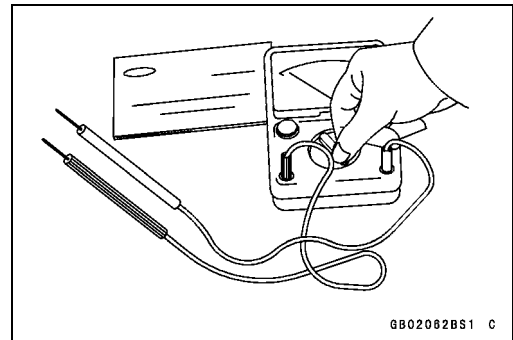
#### ***Electrical Leads***

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



#### ***Instrument***

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



Model Identification

KX85CE Left Side View



6B03B727 P

KX85CE Right Side View



6B03B728 P

# 1-8 GENERAL INFORMATION

## Model Identification

KX85DE Left Side View



68038729 P

KX85DE Right Side View



68038730 P

Model Identification

KX100FE Left Side View



KX100FE Right Side View



Frame Number



Engine Number



# 1-10 GENERAL INFORMATION

## General Specifications

Items	KX85CE	KX85DE
<b>Dimensions</b>		
Overall Length	1 830 mm (72.04 in.)	1 920 mm (75.59 in.)
Overall Width	765 mm (30.1 in.)	←
Overall Height	1 100 mm (43.31 in.)	1 150 mm (45.28 in.)
Wheelbase	1 265 mm (49.80 in.)	1 310 mm (51.57 in.)
Road Clearance	290 mm (11.4 in.)	330 mm (13.0 in.)
Seat Height	830 mm (32.7 in.)	870 mm (34.3 in.)
Curb Mass:	75 kg (165 lb)	77 kg (169 lb)
Front	36 kg (79 lb)	37 kg (82 lb)
Rear	39 kg (86 lb)	40 kg (88 lb)
Fuel Tank Capacity	5 L (1 US qt)	←
<b>Engine</b>		
Type	2-stroke, single cylinder, piston reed valve	←
Cooling System	Liquid-cooled	←
Bore and Stroke	48.5 × 45.8 mm (1.91 × 1.80 in.)	←
Displacement	84 cm <sup>3</sup> (5.1 Cu in.)	←
Compression Ratio	10.9 (Low speed)	←
	9.0 (High speed)	←
Fuel System	Carburetor, KEIHIN PWK28	←
Fuel Type:		
Minimum Octane Rating:		
Research Octane Number (RON)	(AU, EUR) 95	←
Antiknock Index (RON + MON)/2	(US, CA) 90	—
Starting System	Primary kick	←
Ignition System	CDI (Digital)	←
Timing Advance	Electronically advanced	←
Ignition Timing	12° BTDC at 11 320 r/min (rpm)	←
Spark Plug	NGK R6252K-105	←
Terminal	Solid-post	←
Port Timing		
Intake:		
Open	Full open	←
Close	—	—
Scavenging:		
Open	63.8° BBDC	←
Close	63.8° ABDC	←
Duration	127.6°	←
Exhaust:		
Open	79° (Low speed)	←
	93.6° (High speed)	←
Close	79° (Low speed)	←
	93.6° (High speed)	←

General Specifications

Items	KX85CE	KX85DE
Duration	158° (Low speed) 187.2° (High speed)	← ←
Lubrication System	Petrol mix (32 : 1)	←
<b>Drive Train</b>		
Primary Reduction System:		
Type	Gear	←
Reduction Ratio	3.400 (68/20)	←
Clutch Type	Wet, multi disc	←
Transmission:		
Type	6-speed, constant mesh, return shift	←
Gear Ratios:		
1st	2.538 (33/13)	←
2nd	1.875 (30/16)	←
3rd	1.500 (27/18)	←
4th	1.250 (25/20)	←
5th	1.090 (24/22)	←
6th	0.956 (22/23)	←
Final Drive System:		
Type	Chain drive	←
Reduction Ratio	3.571 (50/14)	3.923 (51/13)
Overall Drive Ratio	11.607 at Top gear	12.758 at Top gear
Transmission Oil:		
Type	API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2	←
Viscosity	SAE 10W-40	←
Capacity	0.7 L (0.7 US qt)	←
<b>Frame</b>		
Type	Tubular, semi-double cradle	←
Steering Angle	45° to either side	←
Caster (Rake Angle)	29°	←
Trail	97 mm (3.8 in.)	108 mm (4.25 in.)
Front Wheel:		
Tire Size	70/100-17 40M	70/100-19 42M
Tire Make/Type	DUNLOP MX51F, Tube type	←
Rim Size	17 × 1.40	19 × 1.40
Rear Wheel:		
Tire Size	90/100-14 49M	90/100-16 52M
Tire Make/Type	DUNLOP MX51, Tube type	←
Rim Size	14 × 1.60	16 × 1.85
Front Suspension:		
Type	Telescopic fork (upside down)	←
Wheel Travel	275 mm (10.8 in.)	←



## 1-12 GENERAL INFORMATION

### General Specifications

Items	KX85CE	KX85DE
Rear Suspension:		
Type	Swing arm (Uni-trak)	←
Wheel Travel	275 mm (10.8 in.)	←
Brake Type:		
Front and Rear	Single disc	←
Effective Disc Diameter:		
Front	202 mm (7.95 in.)	←
Rear	150 mm (5.91 in.)	←

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

**General Specifications**

Items	KX100FE
<b>Dimensions</b>	
Overall Length	1 920 mm (75.59 in.)
Overall Width	765 mm (30.1 in.)
Overall Height	1 150 mm (45.28 in.)
Wheelbase	1 310 mm (51.57 in.)
Road Clearance	330 mm (13.0 in.)
Seat Height	870 mm (34.3 in.)
Curb Mass:	77 kg (169 lb)
Front	37 kg (82 lb)
Rear	40 kg (88 lb)
Fuel Tank Capacity	5 L (1 US qt)
<b>Engine</b>	
Type	2-stroke, single cylinder, piston reed valve
Cooling System	Liquid-cooled
Bore and Stroke	52.5 × 45.8 mm (2.07 × 1.80 in.)
Displacement	99 cm <sup>3</sup> (6.0 Cu in.)
Compression Ratio	10.2 (Low speed)
	8.7 (High speed)
Fuel System	Carburetor, KEIHIN PWK28
Fuel Type:	
Minimum Octane Rating:	
Antiknock Index (RON + MON)/2	90
Starting System	Primary kick
Ignition System	CDI (Digital)
Timing Advance	Electronically advanced
Ignition Timing	12° BTDC at 12 640 r/min (rpm)
Spark Plug	NGK R6252K-105
Terminal	Splid-post
Port Timing	
Intake:	
Open	Full open
Close	–
Scavenging:	
Open	62.8° BBDC
Close	62.8° ABDC
Duration	125.6°
Exhaust:	
Open	81.7° (Low speed),
	93.6° (High speed)
Close	81.7° (Low speed),
	93.6° (High speed)
Duration	163.4° (Low speed),
	187.2° (High speed)
Lubrication System	Petrol mix (32:1)

# 1-14 GENERAL INFORMATION

## General Specifications

Items	KX100FE
<p><b>Drive Train</b></p> <p>Primary Reduction System:</p> <p>    Type</p> <p>    Reduction Ratio</p> <p>Clutch Type</p> <p>Transmission:</p> <p>    Type</p> <p>    Gear Ratios</p> <p>        1st</p> <p>        2nd</p> <p>        3rd</p> <p>        4th</p> <p>        5th</p> <p>        6th</p> <p>Final Drive System:</p> <p>    Type</p> <p>    Reduction Ratio</p> <p>    Overall Drive Ratio</p> <p>Transmission Oil:</p> <p>    Type</p> <p>    Viscosity</p> <p>    Capacity</p>	<p>Gear</p> <p>3.400 (68/20)</p> <p>Wet, multi disc</p> <p>6-speed, constant mesh, return shift</p> <p>2.538 (33/13)</p> <p>1.875 (30/16)</p> <p>1.500 (27/18)</p> <p>1.250 (25/20)</p> <p>1.090 (24/22)</p> <p>0.956 (22/23)</p> <p>Chain drive</p> <p>3.923 (51/13)</p> <p>12.758 at Top gear</p> <p>API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2</p> <p>SAE 10W-40</p> <p>0.7 L (0.7 US qt)</p>
<p><b>Frame</b></p> <p>Type</p> <p>Steering Angle</p> <p>Caster (Rake Angle)</p> <p>Trail</p> <p>Front Wheel:</p> <p>    Tire Size</p> <p>    Tire Make/Type</p> <p>    Rim Size</p> <p>Rear Wheel:</p> <p>    Tire Size</p> <p>    Tire Make/Type</p> <p>    Rim Size</p> <p>Front Suspension:</p> <p>    Type</p> <p>    Wheel Travel</p> <p>Rear Suspension:</p> <p>    Type</p> <p>    Wheel Travel</p> <p>Brake Type:</p> <p>    Front and Rear</p>	<p>Tubular, semi double cradle</p> <p>45° to either side</p> <p>29°</p> <p>108 mm (4.25 in.)</p> <p>70/100-19 42M</p> <p>DUNLOP MX51F, Tube type</p> <p>19 × 1.40</p> <p>90/100-16 52M</p> <p>DUNLOP MX51, Tube type</p> <p>16 × 1.85</p> <p>Telescopic fork (upside down)</p> <p>275 mm (10.8 in.)</p> <p>Swingarm (Uni-trak)</p> <p>275 mm (10.8 in.)</p> <p>Single disc</p>

**General Specifications**

<b>Items</b>	<b>KX100FE</b>
Effective Disc Diameter: Front Rear	202 mm (7.95 in.) 150 mm (5.97 in.)

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

# 1-16 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	=	kg
N	×	0.2248	=	lb
kg	×	9.807	=	N
kg	×	2.205	=	lb

### Units of Length:

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

### Units of Torque:

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

### Units of Pressure:

kPa	×	0.01020	=	kgf/cm <sup>2</sup>
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cmHg
kgf/cm <sup>2</sup>	×	98.07	=	kPa
kgf/cm <sup>2</sup>	×	14.22	=	psi
cmHg	×	1.333	=	kPa

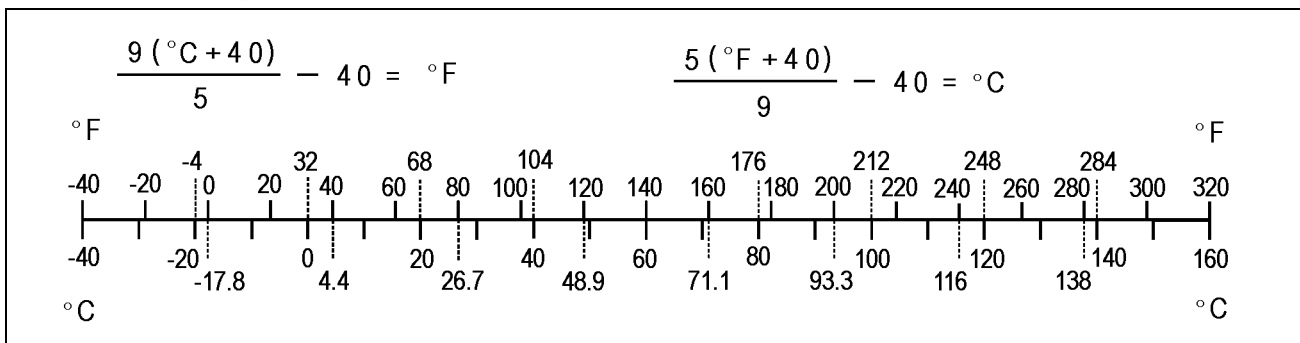
### Units of Speed:

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

### Units of Power:

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

### Units of Temperature:



# Periodic Maintenance

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## 2-2 PERIODIC MAINTENANCE

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## PERIODIC MAINTENANCE 2-3

### 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 (2.5 hr)	Every 3 races (7.5 hr)	Every 5 races (12.5 hr)	Every 10 races (25 hr)	As re-quired		
<b>ENGINE</b>							
Clutch - adjust	●						2-22
Clutch and friction plates - inspect †		●	R				2-23
Throttle cable - adjust	●						2-11
Spark plug - clean/regap †	●	R					2-55
Air cleaner element - clean	●						2-13
Air cleaner element - replace	When damaged						2-13
Carburetor - inspect/adjust	●						2-12
Transmission oil - change		●					2-24
Piston and piston ring - clean/ inspect †		●	R				2-20
Cylinder head and cylinder - inspect		●					2-18, 2-19
Exhaust valves - clean/inspect	●						2-20
Silencer - clean/inspect †	●						2-20
Silencer wool - change		●					2-21
Connecting rod small end bearing - inspect †		●			R		2-20
Kick pedal and shift pedal - clean	●						–
Expansion chamber O-rings - replace		●					2-21
Engine sprocket - inspect †	●						2-30
Coolant - inspect †	●					R	2-16
Radiator hoses, connections - inspect †	●						2-18
Reed valve - inspect †	●						2-16
<b>CHASSIS</b>							
Brake adjustment - inspect †	●						2-32
Brake pad wear - inspect †			●				2-38
Brake fluid level - inspect †		●					2-32
Brake fluid - change	Every 2 years						2-35
Brake master cylinder cups and dust seals - replace	Every 2 years						2-38
Brake caliper piston seals and dust seals - replace	Every 2 years						2-40
Brake hoses, connections - inspect †	●						2-44
Brake hose - replace	Every 4 years						2-44
Spoke tightness and rim runout - inspect †	●						2-27
Drive chain - adjust	●						2-29
Drive chain - lubricate	●						2-30



## 2-4 PERIODIC MAINTENANCE

### Periodic Maintenance Chart

OPERATION	FREQUENCY					See Page
	Each race (2.5 hr)	Every 3 races (7.5 hr)	Every 5 races (12.5 hr)	Every 10 races (25 hr)	As required	
Drive chain wear - inspect †			•			2-28
Chain slipper and guide - replace	When damaged					2-31
Front fork - inspect/clean	•					2-45
Front fork oil - change	1st time after 2 races, then every 5 races					2-45
Nuts, bolts, fasteners - inspect †	•					2-56
Fuel system - clean	•					2-15
Fuel hoses, connections - inspect †	•					2-11
Fuel hose - replace	Every 5 years					2-11
Steering play - inspect †	•					2-53
Steering stem bearing - grease			•			2-54
Rear sprocket - inspect †			•			2-30, 2-31
General lubrication - perform	•					2-55
Wheel bearing - inspect †				•		2-28
Swingarm and Uni-Trak linkage pivots - grease			•			2-53
Swingarm and Uni-Trak linkage pivots - inspect †			•			2-52
Rear shock oil - replace	1st time after 2 races, then every 5 races					2-48

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

R: Replace

**Torque and Locking Agent**

Tighten all bolts and nuts to the proper torque using an accurate torque wrench. If insufficiently tightened, a bolt or nut may become damaged, strip an internal thread, or break and then fall out. The following table lists the tightening torque for the major bolts and nuts, and the parts requiring use of a non-permanent locking agent or silicone grease etc. All of the values are for use with dry solvent - cleaned threads unless otherwise indicated.

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.

G: Apply grease.

L: Apply a non-permanent locking agent.

Lh: Left-hand Threads

R: Replacement Parts

S: Follow the specified tightening sequence.

Si: Apply silicone grease (ex. PBC grease).

2T: Apply 2-stroke oil.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
<b>Fuel System</b>				
Reed Valve Screws	1.0	0.10	8.9 in·lb	
Carburetor Holder Mounting Bolts	9.4	1.0	83 in·lb	
Carburetor Mounting Clamp Screw	1.5	0.15	13 in·lb	
Fuel Tank Screws	12	1.2	106 in·lb	
<b>Cooling System</b>				
Water Hose Clamp Screws	3.0	0.31	27 in·lb	
Coolant Drain Bolt (Cylinder)	8.8	0.90	78 in·lb	
Air Bleeder Bolt	9.4	1.0	83 in·lb	
Water Pump Cover Bolts	9.4	1.0	83 in·lb	
Water Pump Impeller Bolt	8.3	0.85	73 in·lb	
Coolant Drain Bolt (Water Pump)	5.2	0.53	46 in·lb	
<b>Engine Top End</b>				
Cylinder Head Nuts	25	2.5	18	S
Exhaust Valve Cover Screws	3.0	0.31	27 in·lb	
KIPS Cover Bolts	5.2	0.53	46 in·lb	
Exhaust Valve Lever Mounting Bolt	3.9	0.40	35 in·lb	L
Exhaust Valve Plate Bolts	5.9	0.60	52 in·lb	
Cylinder Nuts	25	2.5	18	S
Muffler Body Cover Bolts	8.8	0.90	78 in·lb	L
<b>Engine Right Side</b>				
Clutch Cover Bolts	9.4	1.0	83 in·lb	
Clutch Spring Bolts	9.3	0.95	82 in·lb	
Clutch Hub Nut	88	9.0	65	R
Lever Shaft Assembly Mounting Screw	6.4	0.65	57 in·lb	L
Kick Pedal Bolt	9.4	1.0	83 in·lb	
Lever Shaft Retaining Bolt	5.2	0.53	46 in·lb	
Oil Filler Cap	—	—	—	Hand-tighten
Right Engine Cover Bolts	9.4	1.0	83 in·lb	

## 2-6 PERIODIC MAINTENANCE

### Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Kick Ratchet Guide Bolt	9.4	1.0	83 in·lb	
Kick Ratchet Guide Screw	5.2	0.53	46 in·lb	
Primary Gear Nut	49	5.0	36	Lh
<b>Engine Removal/Installation</b>				
Engine Bracket Mounting Nuts	29	3.0	21	R
Engine Mounting Nuts	29	3.0	21	R
Swingarm Pivot Shaft Nut	69	7.0	51	R
<b>Engine Bottom End/Transmission</b>				
Drive Shaft Bearing Retainer Bolts	9.4	1.0	83 in·lb	
Shift Drum Bearing Retainer Bolts	9.4	1.0	83 in·lb	
Transmission Oil Drain Bolt	20	2.0	15	
Crankshaft Cover Bolts	9.8	1.0	87 in·lb	L
Crankcase Bolts	9.4	1.0	83 in·lb	S
Output Shaft Bearing Retainer Screws	5.2	0.53	46 in·lb	L
Shift Drum Cam Bolt	23	2.3	17	
Gear Positioning Lever Bolt	9.4	1.0	78 in·lb	
Shift Shaft Return Spring Pin	22	2.2	16	L
Shift Pedal Bolt	9.8	1.0	87 in·lb	
<b>Wheels/Tires</b>				
Spoke Nipples	4.0	0.41	35 in·lb	
Front Axle Nut	78	8.0	58	R
Rear Axle Nut	78	8.0	58	R
<b>Final Drive</b>				
Rear Sprocket Nuts	34	3.5	25	R, S
<b>Brakes</b>				
Brake Hose Banjo Bolts	25	2.5	18	
Front Brake Reservoir Cap Screws	1.5	0.15	13 in·lb	
Front Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	S
Brake Lever Pivot Bolt	5.9	0.60	52 in·lb	Si
Brake Lever Pivot Bolt Locknut	5.9	0.60	52 in·lb	
Front Brake Disc Mounting Bolts	9.8	1.0	87 in·lb	L
Bleed Valve	7.8	0.80	69 in·lb	
Front Caliper Mounting Bolts	25	2.5	18	
Brake Hose Banjo Bolts	25	2.5	18	
Rear Master Cylinder Mounting Bolts	9.8	1.0	87 in·lb	
Rear Master Cylinder Push Rod Locknut	17.5	1.78	12.9	
Brake Pedal Bolt	25	2.5	18	G
Rear Caliper Mounting Bolts	25	2.5	18	
Rear Caliper Holder Bolt	22.1	2.25	16.3	L
Rear Brake Pad Pins	17.2	1.75	12.7	
Bleed Valve	7.8	0.80	69 in·lb	
Rear Brake Disc Mounting Bolts	9.8	1.0	87 in·lb	L

## PERIODIC MAINTENANCE 2-7

### Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
<b>Suspension</b>				
Air Pressure Relief Screws	1.3	0.13	12 in·lb	
Front Fork Top Plugs	28	2.9	21	
Front Fork Clamp Bolts (Upper)	20	2.0	15	
Front Fork Clamp Bolts (Lower)	20	2.0	15	AL
Front Fork Push Rod Nuts	15	1.5	11	
Compression Valve Assembly	55	5.6	41	L
Rocker Arm Bracket Bolts	83	8.5	61	G
Rocker Arm Pivot Nut	83	8.5	61	R
Tie-Rod Mounting Nuts	59	6.0	44	R
Compression Damping Adjuster	17.5	1.78	12.9	
Rear Shock Absorber Mounting Bolt (Upper)	39	4.0	29	
Rear Shock Absorber Mounting Bolt (Lower)	39	4.0	29	
Swingarm Pivot Shaft Nut	69	7.0	51	R
<b>Steering</b>				
Handlebar Holder Bolts	25	2.5	18	2T, S
Front Fork Clamp Bolts (Upper)	20	2.0	15	
Steering Stem Head Nut	64	6.5	47	
Handlebar Holder Nuts	34	3.5	25	R
Steering Stem Nut	4.9	0.50	43 in·lb	
Front Fork Clamp Bolts (Lower)	20	2.0	15	AL
<b>Frame</b>				
Rear Frame Pipe Nuts	34	3.5	25	R
<b>Electrical System</b>				
Spark Plug	25.5	2.60	18.8 in·lb	
Stator Coil Plate Mounting Screws	5.2	0.53	46 in·lb	
Flywheel Nut	29	3.0	21	

### Basic Torque for General Fasteners

Threads Diameter (mm)	Torque		
	N·m	kgf·m	ft·lb
5	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in·lb
6	5.9 ~ 7.8	0.60 ~ 0.80	52 ~ 69 in·lb
8	14 ~ 19	1.4 ~ 1.9	10 ~ 13.5
10	25 ~ 34	2.6 ~ 3.5	19 ~ 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	23.0 ~ 33.0	165 ~ 240

## 2-8 PERIODIC MAINTENANCE

### Specifications

Item	Standard	Service Limit
<b>Fuel System</b>		
Throttle Grip Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	---
Air Cleaner Element	Polyurethane foam	---
Air Cleaner Element Oil	High-quality foam air filter oil	---
Red Warp	---	0.2 mm (0.008 in.)
<b>Cooling System</b>		
Coolant:		
Type (Recommended)	Permanent type antifreeze	---
Color	Green	---
Mixed Ratio	Soft water 50%, coolant 50%	---
Freezing Point	-35°C (-31°F)	---
Total Amount	0.57 L (0.60 US qt)	---
<b>Engine Top End</b>		
Cylinder Head Warp	---	0.03 mm (0.001 in.)
Cylinder Inside Diameter (see text):		
KX85C/D	48.505 ~ 48.520 mm (1.9096 ~ 1.9102 in.)	48.60 mm (1.913 in.)
KX100F	52.515 ~ 52.530 mm (2.0675 ~ 2.0681 in.)	52.62 mm (2.072 in.)
Piston/Cylinder Clearance:		
KX85C/D	0.056 ~ 0.066 mm (0.0022 ~ 0.0026 in.)	---
KX100F	0.075 ~ 0.085 mm (0.0030 ~ 0.0033 in.)	---
<b>Clutch</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.)	2.8 mm (0.11 in.)
Friction Plate Warp	0.15 mm (0.0059 in.) or less	0.3 mm (0.01 in.)
Steel Plate Warp	0.15 mm (0.0059 in.) or less	0.3 mm (0.01 in.)
<b>Engine Bottom End/Transmission</b>		
Transmission Oil:		
Type	API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2	---
Viscosity	SAE 10W-40	---
Amount	0.7 L (0.7 US qt)	---
Connecting Rod Big End Side Clearance	0.40 ~ 0.50 mm (0.016 ~ 0.020 in.)	0.7 mm (0.03 in.)
<b>Wheels/Tires</b>		
Rim Runout (with tire installed):		
Axial	TIR 1.0 mm (0.04 in.) or less	TIR 2.0 mm (0.08 in.)
Radial	TIR 1.0 mm (0.04 in.) or less	TIR 2.0 mm (0.08 in.)
Tires Air Pressure (Front/Rear)	100 ~ 125 kPa (1.02 ~ 1.27 kgf/cm <sup>2</sup> , 14.5 ~ 18.1 psi)	---

**Specifications**

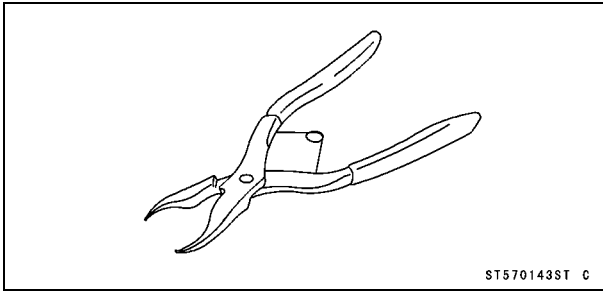
Item	Standard	Service Limit
<b>Standard Tire:</b> Front: Size: KX85C KX85D/KX100F Make Type Rear: Size: KX85C KX85D/KX100F Make Type	   70/100-17 40M 70/100-19 42M DUNLOP MX51F   90/100-14 49M 90/100-16 52M DUNLOP MX51	   --- --- --- ---   --- --- --- ---
<b>Final Drive</b> Drive Chain Slack Drive Chain 20-link Length Rear Sprocket Warp (Runout)	54 ~ 64 mm (2.1 ~ 2.5 in.) 254.0 ~ 254.6 mm (10.00 ~ 10.02 in.) TIR 0.4 mm (0.016 in.) or less	--- 259 mm (10.2 in.) TIR 0.5 mm (0.020 in.)
<b>Brakes</b> Brake Lever Free Play Brake Fluid Type: Front Rear Brake Pad Lining Thickness: Front Rear	Adjustable (to suit rider)  DOT3 or DOT4 DOT4  4.0 mm (0.16 in.) 4.0 mm (0.16 in.)	---  --- ---  1 mm (0.04 in.) 1 mm (0.04 in.)
<b>Suspension</b> Front Fork Suspension Oil: Type Amount  Rear Shock Absorber Suspension Oil: Type Amount	  Kawasaki KHL 15-10 or equivalent 310 ±4 mL (10.5 ±0.1 US oz.)   Kawasaki KHV10-K2C or equivalent 162 mL (5.48 US oz.)	  --- (Adjustable Range) 295 ~ 325 mL (9.97 ~ 11.0 US oz.)   --- ---
<b>Electrical System</b> Spark Plug: Type Gap	 NGK R6252K-105 0.7 ~ 0.8 mm (0.028 ~ 0.031 in.)	 --- ---

## 2-10 PERIODIC MAINTENANCE

### Special Tools

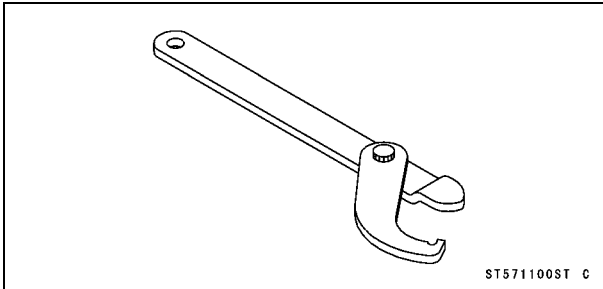
**Inside Circlip Pliers:**

**57001-143**



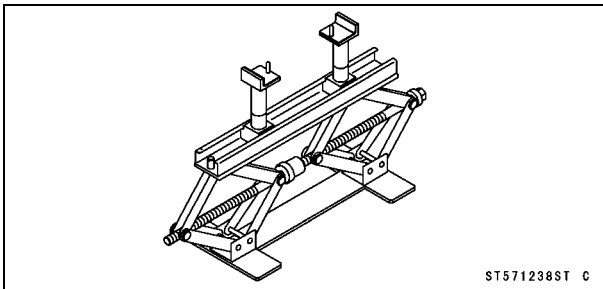
**Steering Stem Nut Wrench:**

**57001-1100**



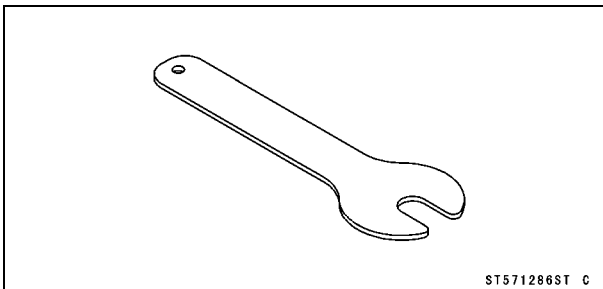
**Jack:**

**57001-1238**



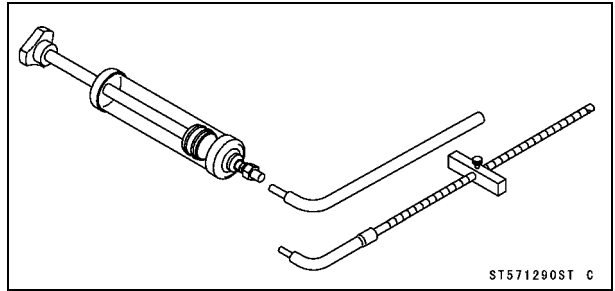
**Fork Spring Holder:**

**57001-1286**



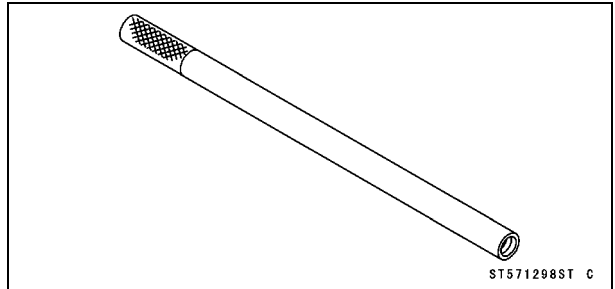
**Fork Oil Level Gauge:**

**57001-1290**



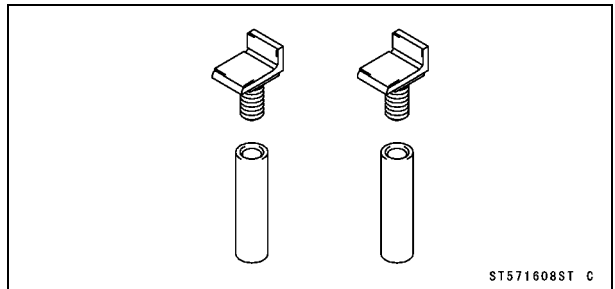
**Fork Piston Rod Puller, M10 × 1.0:**

**57001-1298**



**Jack Attachment:**

**57001-1608**

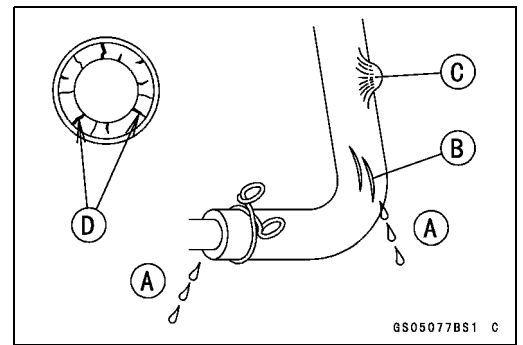


Periodic Maintenance Procedures

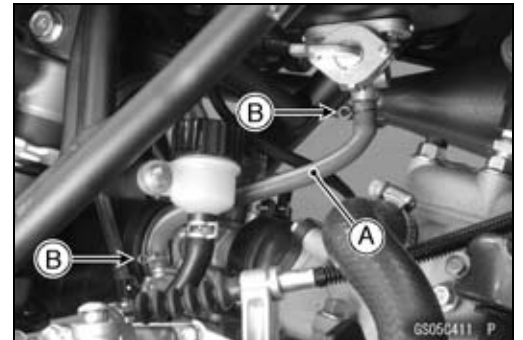
Fuel System

**Fuel Hose and Connection Inspection**

- If the motorcycle is not properly handled, the inside the fuel line can cause fuel to leak [A].
- Check the fuel hose.
- ★ Replace the fuel hose if any fraying, cracks [B], bulges [C] or ozone cracks [D] are noticed.



- Check that the fuel hose [A] is securely connected and clamps [B] are tightened correctly.
- Route the hose according to Cable, Wire, and Hose Routing section in the Appendix chapter.
- 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 fuel hose if it has been sharply bent or kinked.



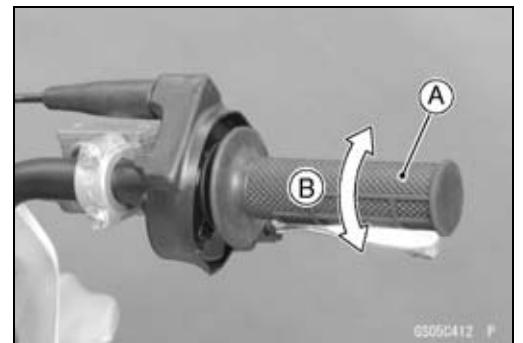
**Throttle Grip (Throttle Cable) Free Play Inspection**

- Check throttle grip free play by lightly turning the throttle grip [A] back and forth [B].

**Throttle Grip Free Play**

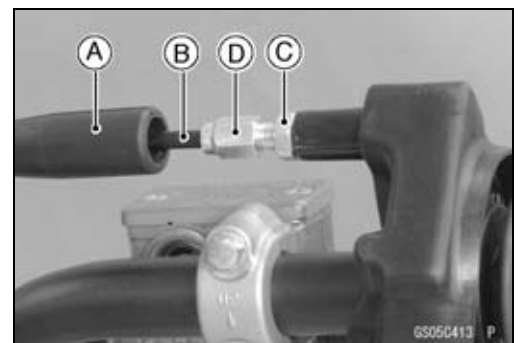
Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)

- ★ If the free play is improper, adjust the throttle cable.
- 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 (Throttle Cable) Free Play Adjustment**

- Pull the rubber boot [A] of the upper end of the throttle cable [B].
- Loosen the locknuts [C] at the upper end of the throttle cable.
- Turn the throttle cable adjuster [D] until 2 ~ 3 mm (0.08 ~ 0.12 in.) of throttle grip play is obtained.
- Tighten the locknut and install the rubber boot.

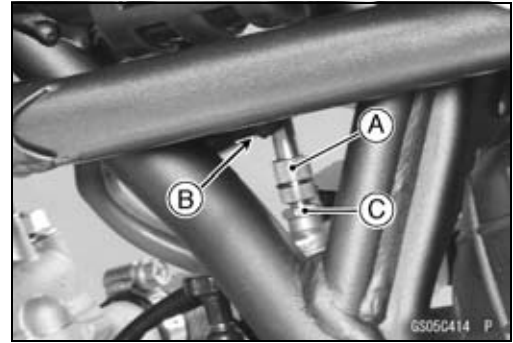




## 2-12 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- ★ If the throttle cable free play cannot be adjusted with the upper end of the throttle cable, use the cable adjuster [A] at the carburetor.
- Pull the rubber boot [B] of the carburetor.
- Loosen the locknuts [C] at the carburetor.
- Turn the throttle cable adjuster until **2 ~ 3 mm (0.08 ~ 0.12 in.)** of throttle grip play is obtained.
- Tighten the locknut and install the rubber boot.



- ★ If the throttle grip free play cannot be adjusted with the adjuster, replace the throttle cable.
- Turn the handlebars from side to side while idling the engine. If idle speed varies, the throttle cable may be poorly routed or it may be damaged.

#### **⚠ WARNING**

**Operation with improperly adjusted, incorrectly routed or damaged cable could result in an unsafe riding condition. Follow the service manual to make sure to correct any of these conditions.**

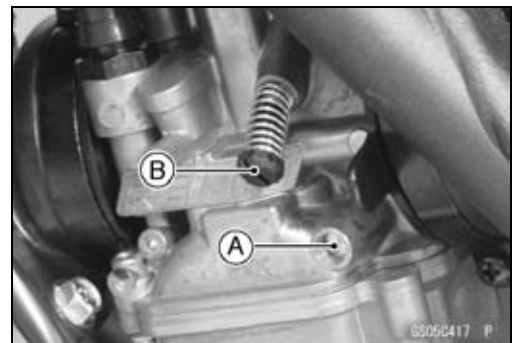
#### **Idle Speed (Carburetor) Adjustment**

- Start the engine and warm it up thoroughly.
- Turn in the air screw [A] until it seats lightly.
- Back it out the specified number of turns.

##### **Air Screw**

##### **Standard:**

<b>KX85C/D</b>	<b>1 1/2 turns out</b>
<b>KX100F</b>	<b>1 7/8 turns out</b>



#### **NOTICE**

**Do not force the air screw beyond the fully seated position, or the adjusting mechanism may be damaged.**

- Turn the idle adjusting screw [B] until the idle speed is correct.
- Open and close the throttle a few times to make sure that the idle speed is within the specified range. Readjust if necessary.
- With the engine idling, turn the handlebars to both sides.
- ★ If handlebars 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, Wire, and Hose Routing section in the Appendix chapter).

#### **⚠ WARNING**

**Operation with improperly adjusted, incorrectly routed or damaged cable could result in an unsafe riding condition. Follow the service manual to make sure to correct any of these conditions.**

**Periodic Maintenance Procedures**

**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**

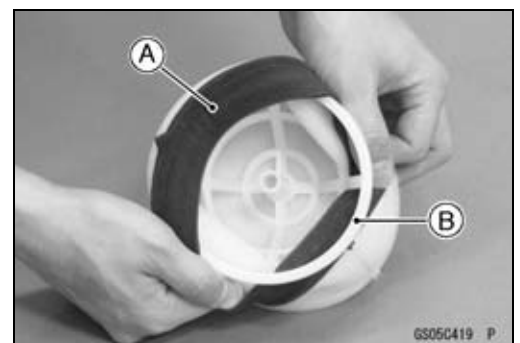
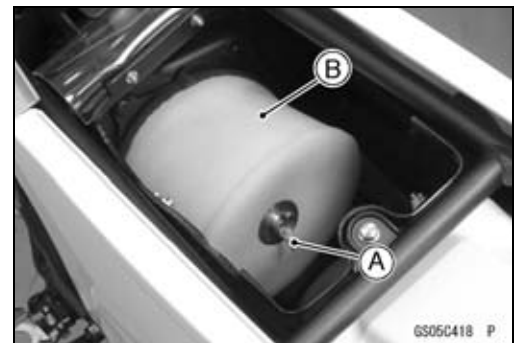
**Gasoline and low flash-point solvents can be flammable and/or explosive and cause severe burns. Clean the element in a well-ventilated area, and take care that there is no spark or flame anywhere near the working areas. Do not use gasoline or low flash-point solvents to clean the element.**

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

**NOTICE**

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

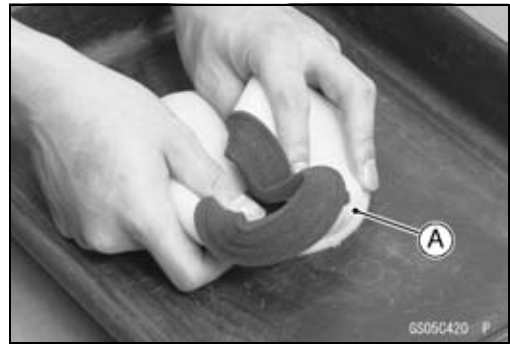
- Separate the element [A] from the frame [B].



## 2-14 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

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



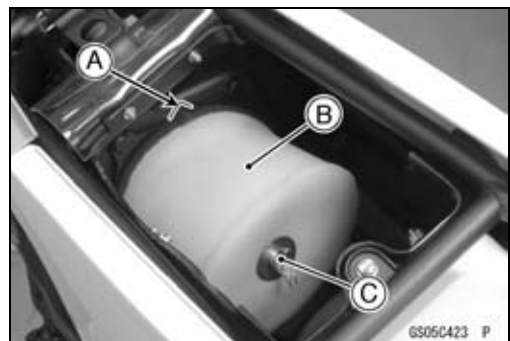
- Squeeze it dry in a clean towel [A]. Do not wring the element [B] or blow it dry; the element can be damaged.
- Check all parts of the element for visible damage.
- ★ If any parts of the element are damaged, replace them.



- 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 air cleaner duct.
- Apply grease [A] to all connections and screw holes in the air cleaner housing and inlet 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.



- Fit the projection [A] of the air cleaner element [B] with the groove of the air cleaner housing.
- Tighten the wing bolt [C].



Periodic Maintenance Procedures

*Fuel System Clean*

**⚠ WARNING**

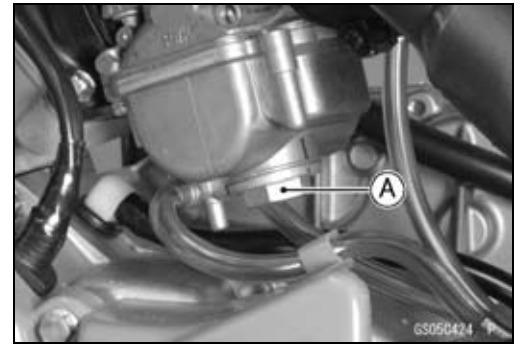
**Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.**

- Turn the fuel tap to the “OFF” position.
- Place a suitable container beneath the carburetor drain plug [A].
- Remove the drain plug from the bottom of the float bowl and check for water or dirt in the fuel.
- ★ If any water or dirt comes out, clean the carburetor, fuel tap and fuel tank.
- Replace the drain plug O-ring with a new one.
- Tighten the drain plug securely.

**⚠ WARNING**

**Gasoline and low flash-point solvents can be flammable and/or explosive and cause severe burns. Clean the tank in a well-ventilated area, and take care that there are no sparks or flame anywhere near the working area. Do not use gasoline or low flash-point solvents to clean the tank.**

- Remove the fuel tank and drain the fuel (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.
- Drain the solvent out of the tank.
- Remove the fuel tap (see Fuel Tap Removal in the Fuel System chapter).
- Clean the fuel tap screen in a high flash-point solvent.
- Pour high flash-point solvent through the tap in all lever positions.
- Dry the tank and tap with compressed air.
- Install:
  - Fuel Tap (see Fuel Tap Installation in the Fuel System chapter)
  - Fuel Tank (see Fuel Tank Installation in the Fuel System chapter)



## 2-16 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Reed Valve Inspection

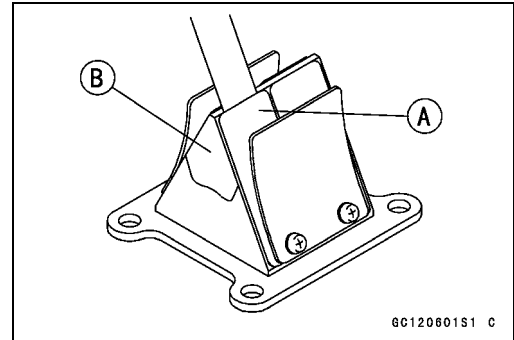
- Remove the reed valve (see Reed Valve Removal in the Fuel System chapter).
- Inspect the reeds for cracks, folds, or other visible damage.
- ★ If there is any doubt as to the condition of a reed, replace the reed valve part with a new one.
- ★ If a reed becomes wavy, replace the valve part with a new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

#### Reed Warp

Service Limit: 0.2 mm (0.008 in.)

Torque - Reed Valve screws: 1.0 N·m (0.10 kgf·m, 8.9 in·lb)

- Install the reed valve (see Reed Valve Installation in the Fuel System chapter).



#### Cooling System

##### **⚠ WARNING**

Coolant can be extremely hot and cause severe burns, is toxic and very slippery. Do not remove the radiator cap or attempt to change the coolant when the engine is hot; allow it cool completely. Immediately wipe any spilled coolant from tires, frame, engine or other painted parts. Do not ingest coolant.

#### Coolant Level Inspection

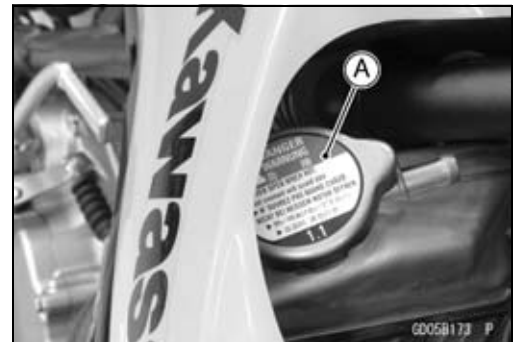
##### **NOTE**

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

- Lean the motorcycle slightly 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].

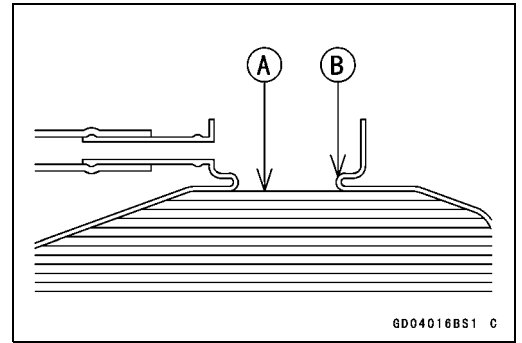
##### **NOTE**

○ 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.



**Periodic Maintenance Procedures**

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



**Recommended Coolant**

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

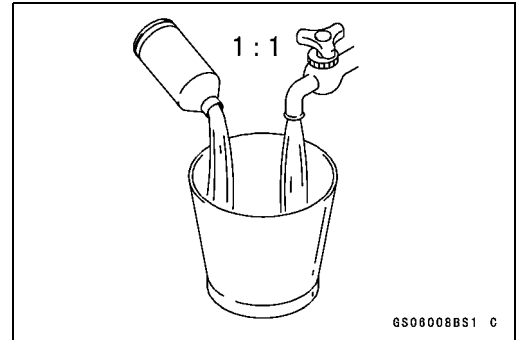
**Water and Coolant Mixture Ratio**

Soft Water: 50%

Antifreeze: 50%

Freezing Point: -35°C (-31°F)

Total Amount: 0.57 L (0.60 US qt.)



**NOTICE**

For refilling, add the specified mixture of coolant and soft water. Adding water alone dilutes the coolant and degrades its anticorrosion properties. The diluted coolant can attack the aluminum engine parts. In an emergency, soft water alone can be added. But the diluted coolant must be returned to the correct mixture ratio within a few days.

- Install the radiator cap.

**NOTE**

○ The radiator cap must be installed in two steps. First turn the cap clockwise to the first stop. Then push down on it and turn it the rest of the way.

**Coolant Deterioration Inspection**

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

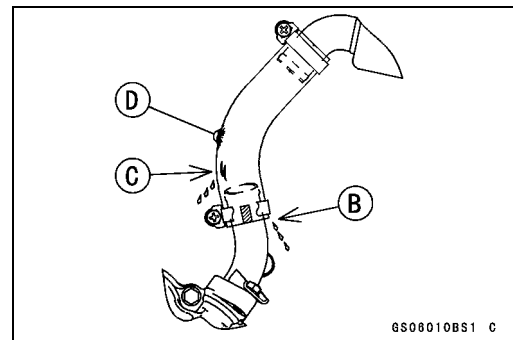
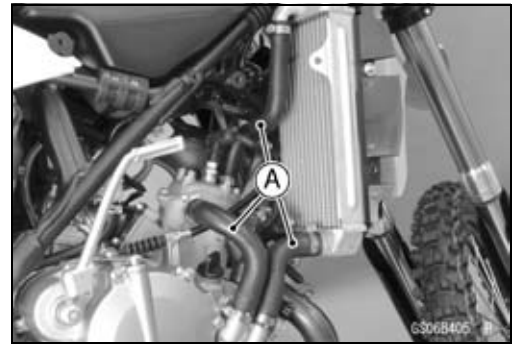
## 2-18 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### **Water Hoses and Connections Inspection**

- Remove the right radiator shroud (see Radiator Removal in the Cooling System chapter).
- The high pressure inside the water hoses [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 - Water Hose Clamp Screws: 3.0 N·m (0.31 kgf·m, 27 in·lb)**



#### **Engine Top End**

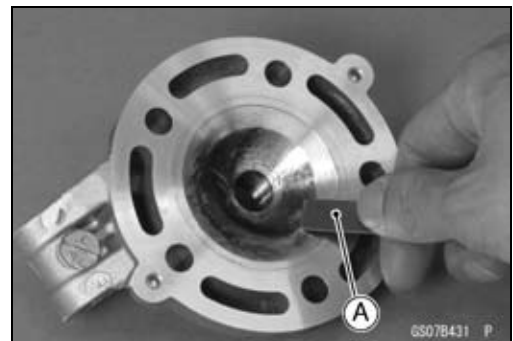
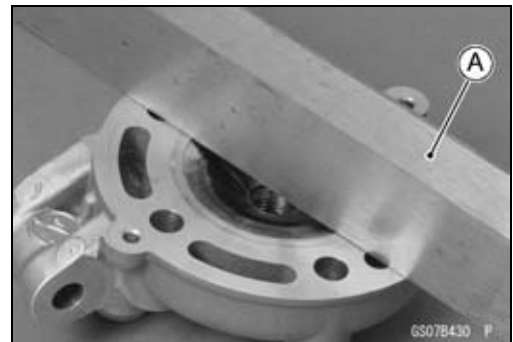
##### **Cylinder Head Warp Inspection**

- Remove:
  - Spark Plug (see Spark Plug Cleaning and Inspection)
  - 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.

##### **Cylinder Head Warp**

**Service Limit: 0.03 mm (0.001 in.)**

- ★ If warp exceeds the service limit, repair the mating surface. Replace the cylinder head if the mating surface is badly damaged.
- Scrape the carbon out of the combustion chamber 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.



**Periodic Maintenance Procedures**

**Cylinder Wear Inspection**

**NOTE**

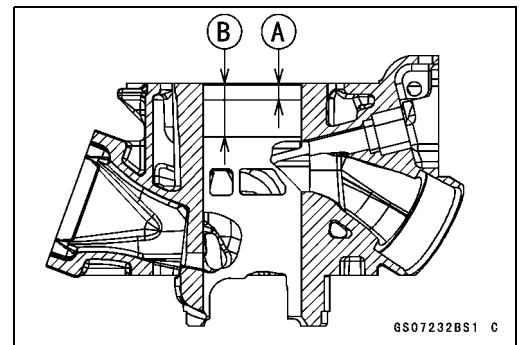
○Measure the cylinder inside diameter when the cylinder is cold (at room temperature).

- 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.
- Take a side-to-side and a front-to-back measurement shown in the figure (total 4 measurements).
- The cylinder wear is uneven in different places.

- 5 mm (0.20 in.) [A]
- 20 mm (0.79 in.) [B]

**Cylinder Inside Diameter**

<b>Standard:</b>	<b>KX85C/D</b>	<b>48.505 ~ 48.520 mm (1.9096 ~ 1.9102 in.), and less than 0.01 mm (0.0004 in.) difference between any two measurements.</b>
	<b>KX100F</b>	<b>52.515 ~ 52.530 mm (2.0675 ~ 2.0681 in.), and less than 0.01 mm (0.0004 in.) difference between any two measurements.</b>
<b>Service Limit:</b>	<b>KX85C/D</b>	<b>48.60 mm (1.913 in.), or more than 0.05 mm (0.020 in.) difference between any two measurements.</b>
	<b>KX100F</b>	<b>52.62 mm (2.072 in.), or more than 0.05 mm (0.020 in.) difference between any two measurements.</b>



- ★ 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.



## 2-20 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

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#### ***Piston/Cylinder Clearance Inspection***

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 be within the standard, 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:**

**KX85C/D** 0.056 ~ 0.066 mm (0.0022 ~ 0.0026 in.)

**KX100F** 0.075 ~ 0.085 mm (0.0030 ~ 0.0033 in.)

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

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

#### ***Exhaust Valve Cleaning and Inspection***

- Remove the exhaust valve (see Exhaust Valve Removal in the Engine Top End chapter).
- Scrape out any carbon and clean the exhaust valves with a high flash-point solvent.
- Check the exhaust valves for signs of damage.
- ★ If necessary, replace them with new ones.
- Install the exhaust valve (see Exhaust Valve Installation in the Engine Top End chapter).

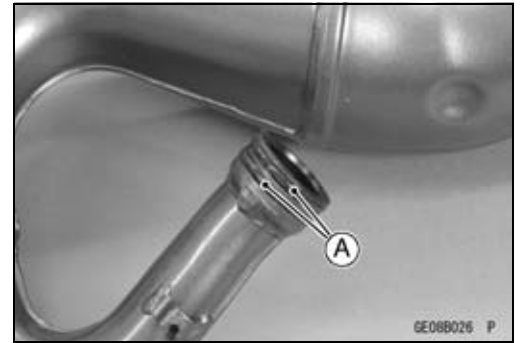
#### ***Exhaust System Inspection***

- The exhaust system, in particular the muffler, 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 muffler, exhaust efficiency is reduced, causing engine performance to drop.
- ★ If the muffler body is badly damaged, dented, cracked or rusted, replace it.
- ★ If the exhaust noise becomes too loud or engine performance drops, replace the baffle.

**Periodic Maintenance Procedures**

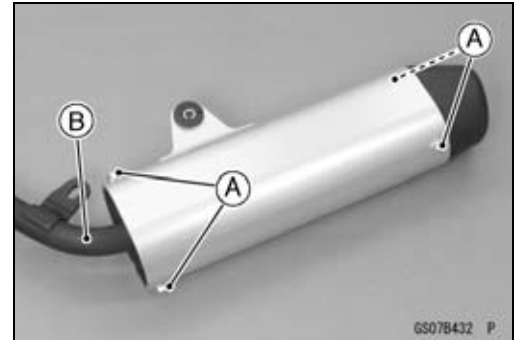
**Expansion Chamber O-rings Replacement**

- Remove the expansion chamber (see Expansion Chamber Removal in the Engine Top End chapter).
- Replace the exhaust gasket and exhaust O-rings [A].
- Apply molybdenum disulfide grease around the exhaust O-rings.
- Install the expansion chamber (see Expansion Chamber Installation in the Engine Top End chapter).

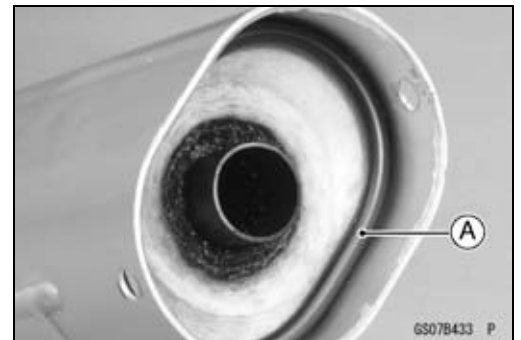


**Silencer Wool Replacement**

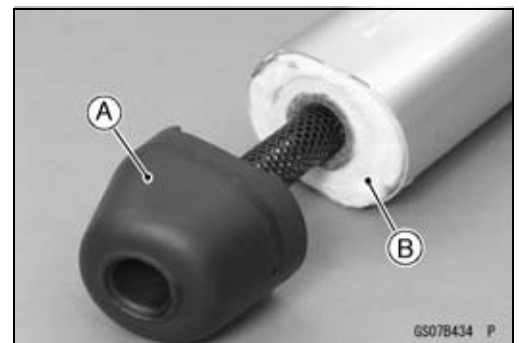
- Remove the muffler (see Muffler Removal/Installation in the Engine Top End chapter).
- Remove the liquid gasket on the silencer, tail pipe and baffle.
- Remove:
  - Muffler Body Cover Bolts [A]
  - Tail Pipe [B]



- Remove the O-ring [A].



- Remove:
  - Baffle [A]
  - Silencer Wool [B]



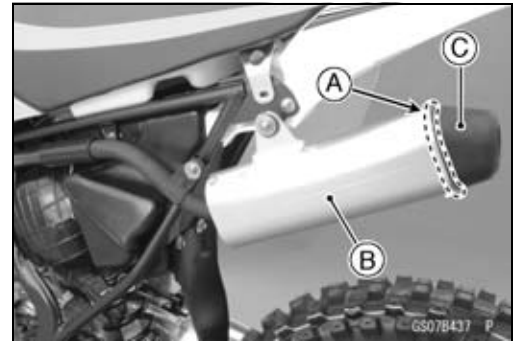
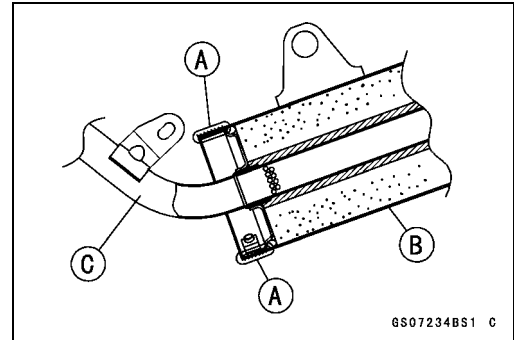
## 2-22 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- Replace the silencer wool and O-ring with new ones.
- Install:
  - Silencer Wool
  - O-ring
- Using a high flash-point solvent, clean off any oil or dirt that may be on the liquid gasket coating area. Dry them with a clean cloth.
- Apply liquid gasket to the joint part [A] of the silencer [B] and tail pipe [C].
- Install the baffle and tail pipe into the silencer.
- Install the muffler (see Muffler Removal/Installation in the Engine Top End chapter).
- Apply a non-permanent locking agent to the muffler body cover bolts, and tighten them.

**Torque - Muffler Body Cover Bolt: 8.8 N·m (0.90 kgf·m, 78 ft·lb)**

- Using a high flash-point solvent, clean off any oil or dirt that may be on the liquid gasket coating area. Dry them with a clean cloth.
- Apply liquid gasket [A] to the joint part of the silencer [B] and baffle [C].



### Engine Right Side

#### Clutch Operation Inspection

##### Clutch Lever (Clutch Cable) Free Play Inspection

- Slide the dust cover [A] out of place.
- Check that the clutch cable upper end is fully seated in the adjusting nut [B].
- Pull the clutch lever [C] lightly, and check the free play [D].

##### Clutch Lever Free Play

**Standard: 8 ~ 13 mm (0.3 ~ 0.5 in.)**

- ★ If the play is too wide, the clutch may not release fully. If the play is too narrow, the clutch may not engage fully. In either case, adjust it.

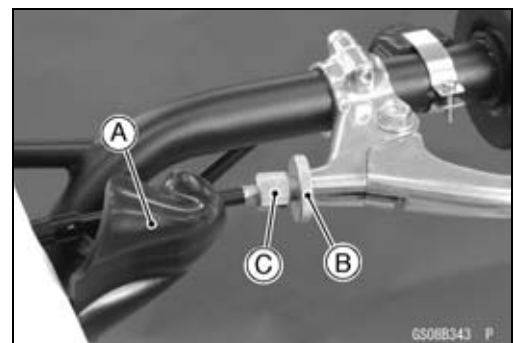
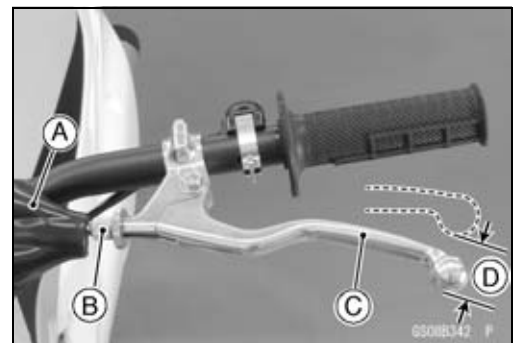
##### Clutch Lever (Clutch Cable) Free Play Adjustment

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

#### **NOTICE**

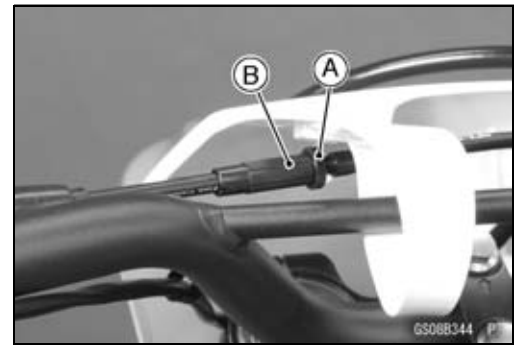
**Be sure that the outer cable end at the clutch lever is fully seated in the adjuster at the clutch lever, or it could slip into the place later, creating enough cable play to prevent clutch disengagement.**

- ★ If the free play can not be adjusted with the clutch cable adjuster, use the adjusting nut.



**Periodic Maintenance Procedures**

- Loosen the locknut [A] at the clutch cable, and turn the adjusting nut [B] so that clutch lever has **8 ~ 13 mm (0.3 ~ 0.5 in.)** of play.
- Tighten the locknut, and start the engine and check that the clutch does not slip and that it release properly.



**Clutch Plates Inspection**

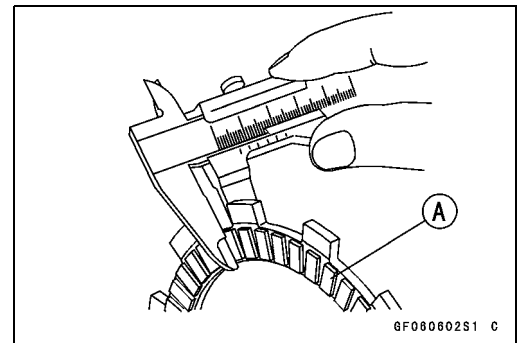
- Remove the clutch plates (see Clutch Removal in the Engine Right Side chapter).
- Visually inspect the friction and steel plates to see if they show signs of seizure, uneven wear or any other damage.
- ★ If any plates show signs of damage, replace the friction plates and steel plates as a set.
- Measure the thickness [A] of the friction plate at several points with vernier calipers.

**Friction Plate Thickness**

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

**Service Limit:** 2.8 mm (0.11 in.)

- ★ If they have worn past the service limit, replace them with new ones.



- Place each friction plate or steel plate [B] on a surface plate [A].
- Measure the gap between the surface plate and each friction plate or steel plate with a thickness gauge [C]. The gap is the amount of friction or steel plate warp.

**Friction and Steel Plates Warp**

**Standard:**

**Friction Plate** 0.15 mm (0.0059 in.) or less

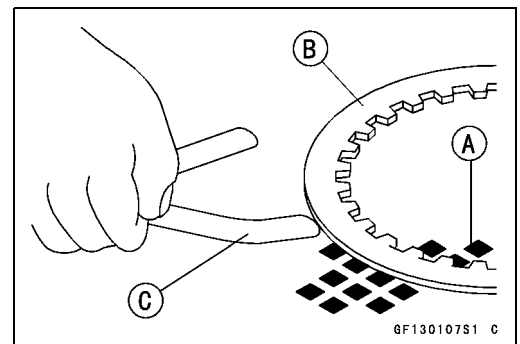
**Steel Plate** 0.15 mm (0.0059 in.) or less

**Service Limit:**

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

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

- ★ If any plate is warped over the service limit, replace it with a new one.



**Engine Lubrication System**

**⚠ WARNING**

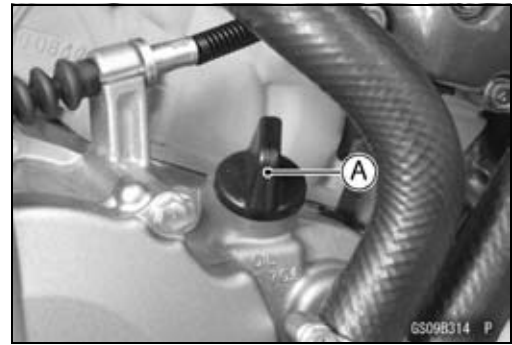
Vehicle operation with insufficient, deteriorated, or contaminated engine oil will cause accelerated wear and may result in engine seizure, accident, and injury. Check the oil level before each use and change the oil and filter according to the periodic maintenance chart.

## 2-24 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Transmission Oil Change

- Warm up the engine thoroughly so that the oil will pick up any sediment and drain easily. Then stop the engine.
- Place an oil pan beneath the engine.
- Remove the oil filler cap [A].



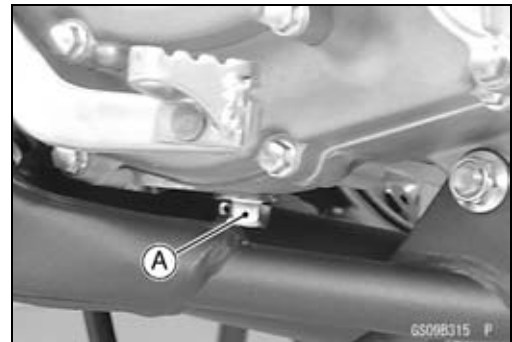
- Remove the transmission oil drain bolt [A] from the bottom of the engine, and let the oil drain completely.

#### NOTE

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

- Replace the drain bolt gasket with a new one.
- Install the drain bolt with the gasket.

**Torque - Transmission Oil Drain Bolt: 20 N·m (2.0 kgf·m, 15 ft·lb)**



- Pour the specified transmission oil.

#### Recommended Transmission Oil

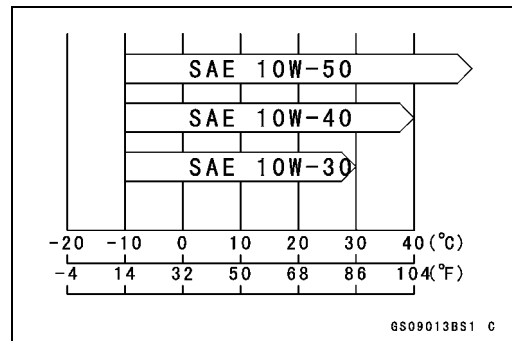
**Type:** API SG, SH, SJ or SL with JASO MA, MA1 or MA2

**Viscosity:** SAE 10W-40

**Amount:** 0.7 L (0.7 US qt.)

- Install the oil filler cap.

**Torque - Oil Filler Cap: Hand-tighten**



#### NOTE

○ Do not add any chemical additive to the oil. Oils fulfilling the above requirements are fully formulated and provide adequate lubrication for the engine and the clutch.

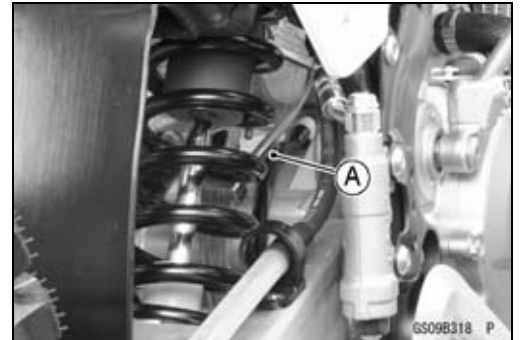
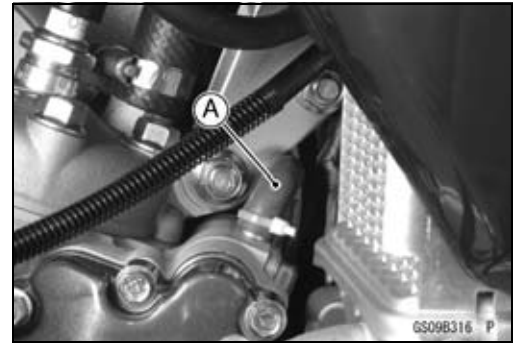
○ The oil viscosity may need to be changed to accommodate atmospheric conditions in your riding area.

- Check the oil level (see Oil Level Inspection in the Engine Bottom End/Transmission chapter).

## Periodic Maintenance Procedures

### **Breather Hoses Inspection**

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



## **Crankshaft/Transmission**

### **Crankshaft Inspection**

- Remove:
  - Cylinder Head (see Cylinder Head Removal in the Engine Top End chapter)
  - Cylinder (see Cylinder Removal in the Engine Top End chapter)
  - Piston (see Piston Removal in the Engine Top End chapter)
- Make sure that the crankshaft rotate smoothly (in the neutral position).
- ★ If the crankshaft will not turn smoothly, check the connecting rod big end side clearance.
- ★ If the connecting rod big end side clearance is good, check the bearings (see Bearing Wear Inspection in the Crankshaft/Transmission chapter).



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

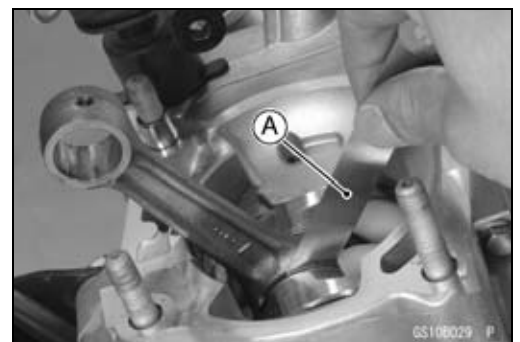
- Measure the connecting rod big end side clearance at right side of big end using a thickness gauge [A].

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

**Standard:** 0.40 ~ 0.50 mm (0.016 ~ 0.020 in.)

**Service Limit:** 0.7 mm (0.03 in.)

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



## 2-26 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Wheels/Tires

##### **Air Pressure Inspection/Adjustment**

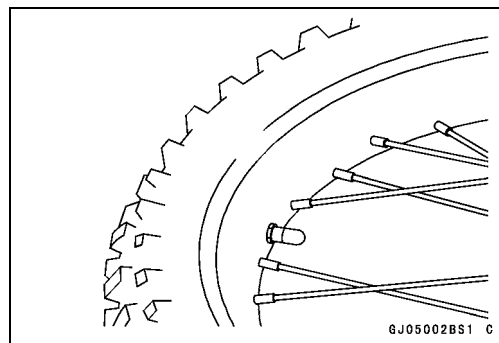
- Using a tire pressure gauge [A], measure the air pressure when the tires are cold.
- Adjust the tire air pressure to suit track conditions and rider preference, but do not stray too far from the recommended pressure.

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.	100 kPa (1.02 kgf/cm <sup>2</sup> , 14.5 psi) ↑
When the track is pebbly or hard, increase the tire pressure to prevent damage or punctures, through the tires will skid more easily.	↓ 125 kPa (1.27 kgf/cm <sup>2</sup> , 18.1 psi)



##### **Tires Inspection**

- Remove any imbedded stones or other foreign particles from the tread.
- ★ Repair or replace with a new one if necessary.
- Visually inspect the tire for cracks and cuts.
- ★ Replace the tire, if any damage are noticed.
- Swelling or high spots indicate internal damage, requiring tire replacement.



#### **⚠ WARNING**

**Some replacement tires may adversely affect handling and cause an accident resulting in serious injury or death. To ensure proper handling and stability, use only the recommended standard tires for replacement, inflated to the standard pressure.**

#### Standard Tires

##### Front:

**Size** 70/100-17 40M (KX85C)  
70/100-19 42M (KX85D/KX100F)

**Make** DUNLOP

**Type** MX51F

##### Rear:

**Size** 90/100-14 49M (KX85C)  
90/100-16 52M (KX85D/KX100F)

**Make** DUNLOP

**Type** MX51

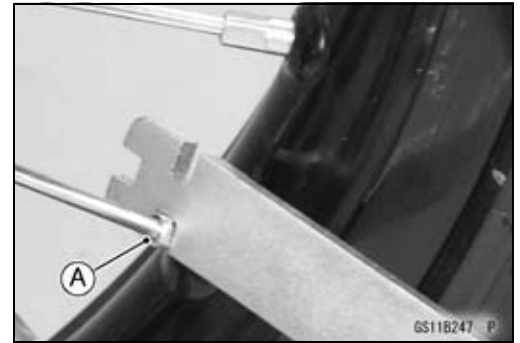
**Periodic Maintenance Procedures**

**Spoke Tightness Inspection**

- Check that all the spokes are adjusted evenly.
- ★ If spoke tightness is uneven or loose, tighten the spoke nipples [A] to the specified torque.

**Torque - Spoke Nipples: 4.0 N·m (0.41 kgf·m, 35 in·lb)**

- Check the rim runout (see Rim Runout Inspection).



**⚠ WARNING**

**A missing spoke places an additional load on the other spokes, which will eventually cause other spokes to break, creating the potential for an accident resulting in serious injury or death. Immediately replace any broken spoke(s).**

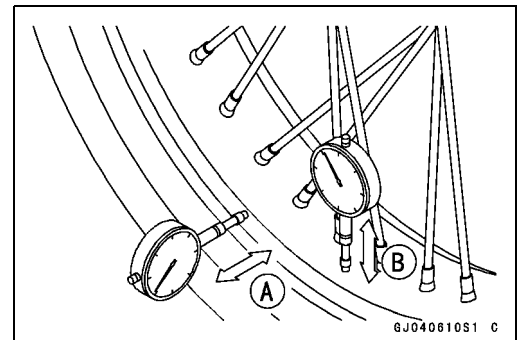
**Rim Runout Inspection**

- Raise the rear wheel off the ground using the jack and attachment.

**Special Tools - Jack: 57001-1238**

**Jack Attachment: 57001-1608**

- Inspect the rim for cracks, dents, bending, or warping.
- ★ If there is any damage to the rim, it must be replaced.
- Set up a dial gauge on the side of the rim and rotate the wheel to measure its axial runout [A].
- The difference between the highest and lowest readings is the amount of runout.
- Set up the dial gauge on the inner circumference of the rim and rotate the wheel to measure its radial runout [B].
- The difference between the highest and lowest readings is the amount of runout.



**Rim Runout (with tire installed)**

**Standard:**

**Axial TIR 1.0 mm (0.04 in.) or less**

**Radial TIR 1.0 mm (0.04 in.) or less**

**Service Limit:**

**Axial TIR 2.0 mm (0.08 in.)**

**Radial TIR 2.0 mm (0.08 in.)**

- ★ If rim runout exceeds the service limit, check the wheel bearings first (see Wheel Bearing Inspection).
- ★ If the problem is not due to the bearings, loosen some spokes and tighten others to change the position of certain portions of the rim.
- ★ If the rim is badly bent, however, it should be replaced.

**NOTE**

- The welding spot of the rim may show excessive runout. Disregard this when measuring rim runout.





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