MODEL APPLICATION

Year	Model	Beginning Frame No.
2011	ZX1000GB	JKAZXCG1□BA000001 JKAZXT00GGA000001
2011	ZX1000HB	JKAZXCH1□BA000001 JKAZXT00GHA000001
2012	ZX1000GC	JKAZXCG1□CA013001 JKAZXT00GGA013001
2012	ZX1000HC	JKAZXCH1□CA003001 JKAZXT00GHA013001
2013	ZX1000GD	JKAZXCG1□DA021001 JKAZXT00GGA021001
2013	ZX1000HD	JKAZXCH1□DA006001 JKAZXT00GHA021001

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

Kawasaki
KAWASAKI HEAVY INDUSTRIES, LTD.
Motorcycle & Engine Company

Part No.99924-1442-03

Printed in Japan

Kawasaki

Z1000SX
Z1000SX ABS
Ninja 1000
Ninja 1000 ABS

Motorcycle Service Manual

Quick Reference Guide

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

LIST OF ABBREVIATIONS

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

COUNTRY AND AREA CODES

AT	Austria	PH	Philippines
AU	Australia	SEA-B1	Southeast Asia B1 (with Evaporative Emission Control System)
BR	Brazil	SEA-B2	Southeast Asia B2
CA	Canada	US	United States
CAL	California	WVTA (FULL H)	WVTA Model with Honeycomb Catalytic Converter (Full Power)
CH	Switzerland	GB WVTA (FULL H)	WVTA Model with Honeycomb Catalytic Converter (Left Side Traffic, Full Power)
DE	Germany	WVTA (78.2 H)	WVTA Model with Honeycomb Catalytic Converter (78.2 Kw Power)
GB	United Kingdom		

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.

For the duration of the warranty period, we recommend that all repairs and scheduled maintenance be performed in accordance with this service manual. Any owner maintenance or repair procedure not performed in accordance with this manual may void the warranty.

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 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

○ *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..... 1-10
Unit Conversion Table 1-13

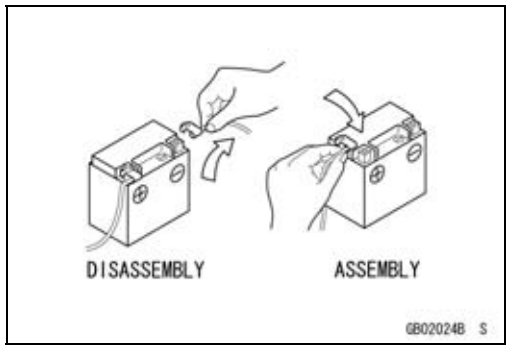
Before Servicing

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.

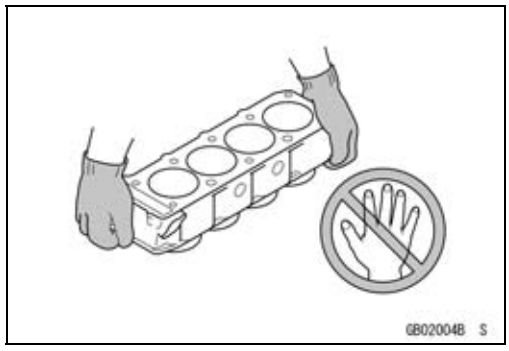
Battery Ground

Before completing any service on the motorcycle, disconnect the battery cables from the battery to prevent the engine from accidentally turning over. Disconnect the ground cable (–) first and then the positive (+). When completed with the service, first connect the positive (+) cable to the positive (+) terminal of the battery then the negative (–) cable to the negative terminal.



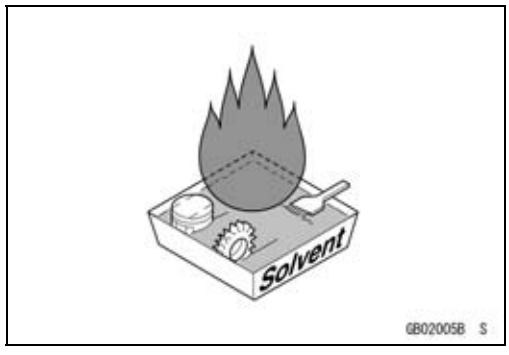
Edges of Parts

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



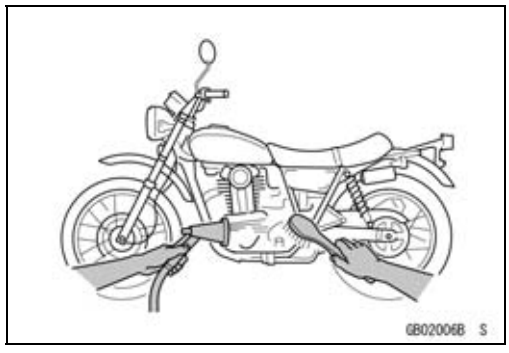
Solvent

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



Cleaning Vehicle before Disassembly

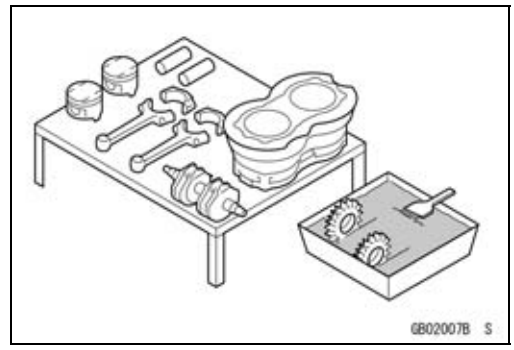
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

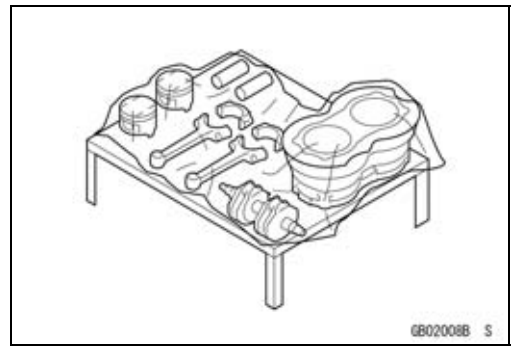
Arrangement and Cleaning of Removed Parts

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.



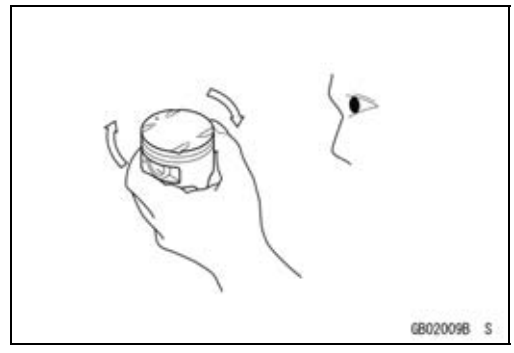
Storage of Removed Parts

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.



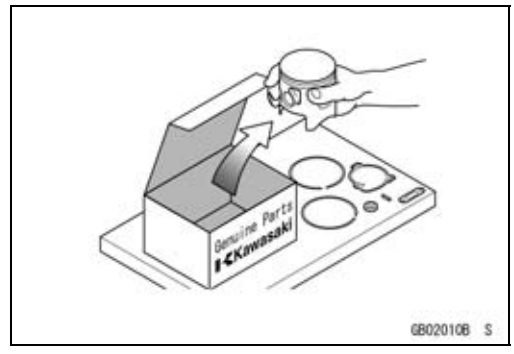
Inspection

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.



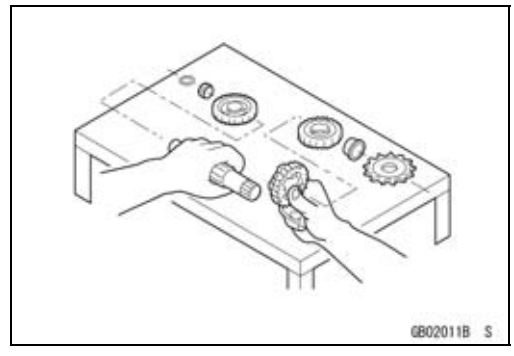
Replacement Parts

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

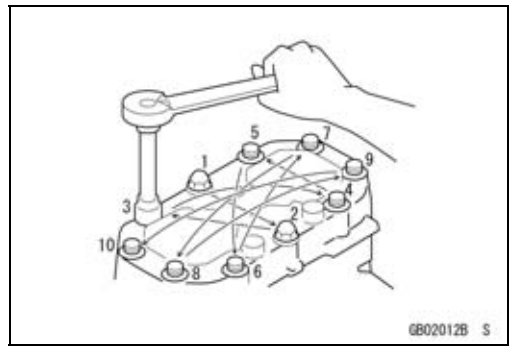
In most cases assembly order is the reverse of disassembly, however, if assembly order is provided in this Service Manual, follow the procedures given.



Before Servicing

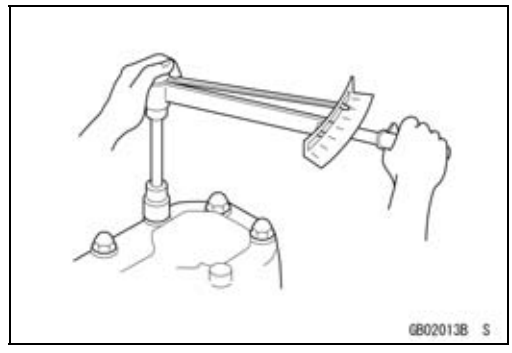
Tightening Sequence

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.



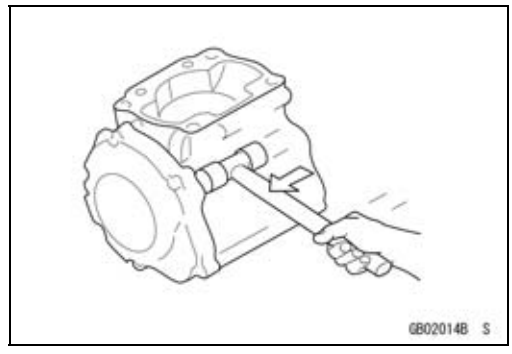
Tightening Torque

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.



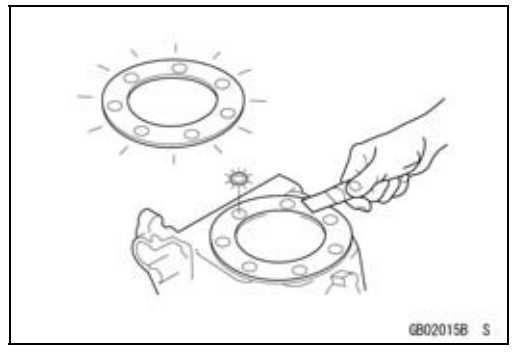
Force

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.



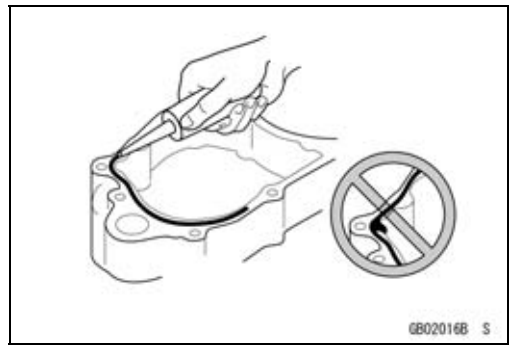
Gasket, O-ring

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 the new gaskets and replace the used O-rings when re-assembling.



Liquid Gasket, Non-permanent Locking Agent

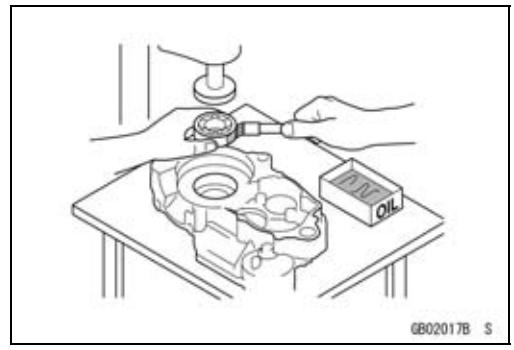
For applications that require Liquid Gasket or a Non-permanent Locking Agent, clean the surfaces so that no oil residue remains before applying liquid gasket or non-permanent locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Before Servicing

Press

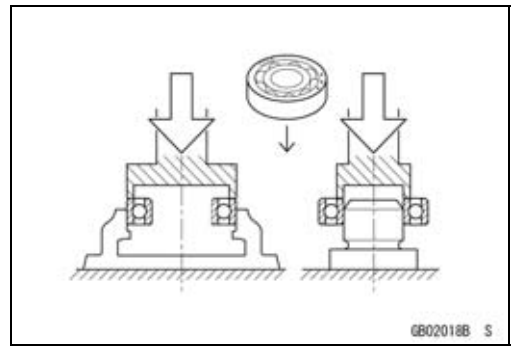
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



Ball Bearing and Needle Bearing

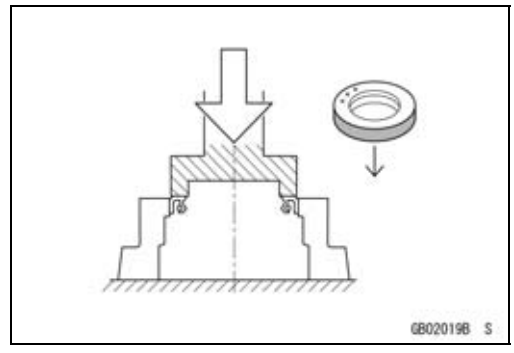
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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

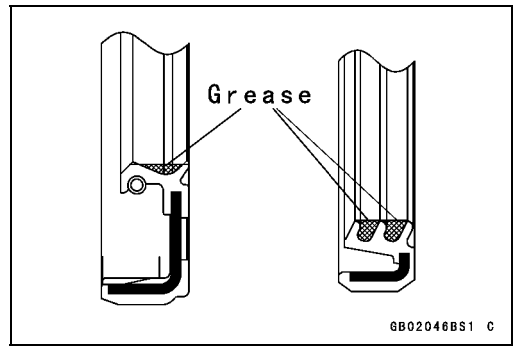


Oil Seal, Grease Seal

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.

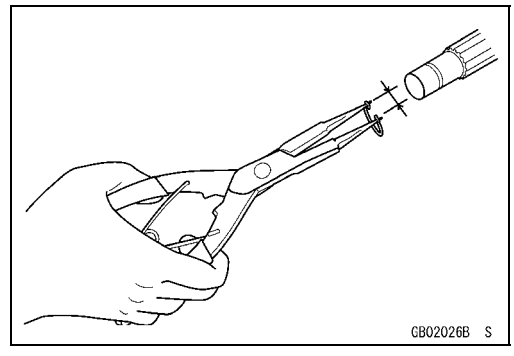


Apply specified grease to the lip of seal before installing the seal.



Circlips, Cotter Pins

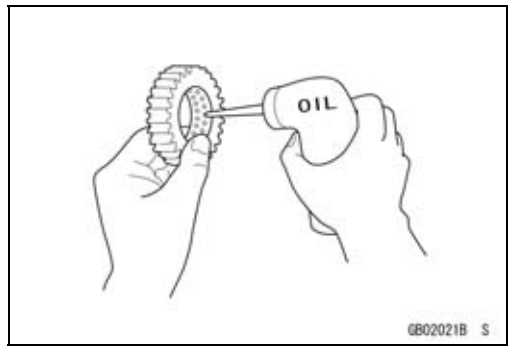
Replace the circlips or cotter pins that were removed with new ones. Take care not to open the clip excessively when installing to prevent deformation.



Before Servicing

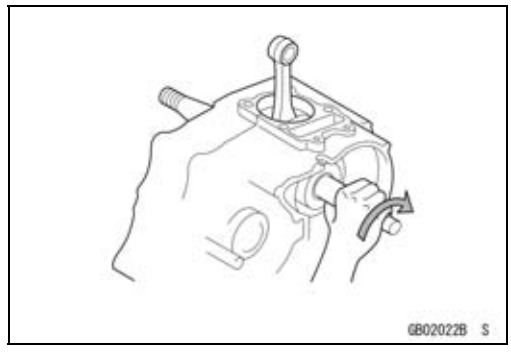
Lubrication

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.



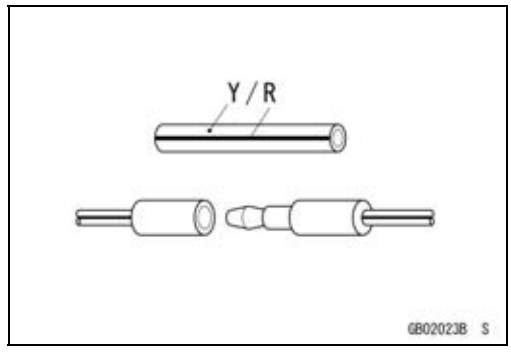
Direction of Engine Rotation

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).



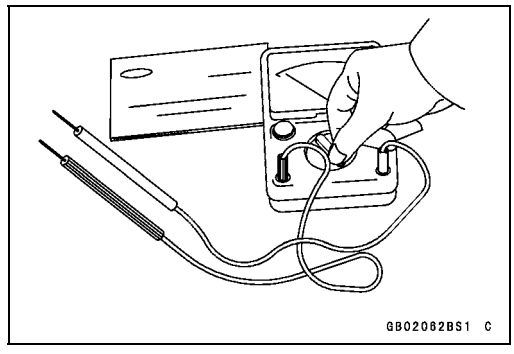
Electrical Wires

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

ZX1000GB (United States and Canada) Left Side View

ZX1000GB (United States and Canada) Right Side View

Frame Number

Engine Number

Model Identification

ZX1000GB (Europe) Left Side View

ZX1000GB (Europe) Right Side View

Model Identification

ZX1000HB Left Side View

ZX1000HB Right Side View

General Specifications

Items	ZX1000GB ~ GD/HB ~ HD
Dimensions	
Overall Length	2 105 mm (82.87 in.)
Overall Width	790 mm (31.1 in.)
Overall Height/High Position	1 170 mm (40.06 in.)/1 230 mm (48.43 in.)
Wheelbase	1 445 mm (56.89 in.)
Road Clearance	135 mm (5.31 in.)
Seat Height	820 mm (32.28 in.)
Curb Mass:	
ZX1000G	228 kg (503 lb)
ZX1000H	231 kg (509 lb)
Front:	
ZX1000G	117 kg (258 lb)
ZX1000H	118 kg (260 lb)
Rear:	
ZX1000G	111 kg (245 lb)
ZX1000H	113 kg (249 lb)
Fuel Tank Capacity	19 L (5.0 US gal.)
Performance	
Minimum Turning Radius	3.1 m (10.1 ft)
Engine	
Type	4-stroke, DOHC, 4-cylinder
Cooling System	Liquid-cooled
Bore and Stroke	77.0 × 56.0 mm (3.03 × 2.20 in.)
Displacement	1 043 cm³ (63.64 cu in.)
Compression Ratio	11.8 : 1
Maximum Horsepower	101.5 kW (138 PS) @9 600 r/min (rpm) (SEA-B1/B2) 100 kW (136 PS) @9 000 r/min (rpm) (WVTA (78.2 H)) 78.2 kW (106 PS) @9 100 r/min (rpm) (CA, US) – – –
Maximum Torque	110 N·m (11.2 kgf·m, 81.1 ft·lb) @7 800 r/min (rpm) (WVTA (78.2 H)) 95 N·m (9.7 kgf·m, 70 ft·lb) @7 500 r/min (rpm) (CA, US) – – –
Carburetion System	FI (Fuel Injection) KEIHIN TTK38 × 4
Starting System	Electric starter
Ignition System	Battery and coil (transistorized)
Timing Advance	Electronically advanced (digital igniter)
Ignition Timing	From 10° BTDC @1 100 r/min (rpm) to 40.2° BTDC @5 200 r/min (rpm)
Spark Plug	NGK CR9EIA-9
Cylinder Numbering Method	Left to right, 1-2-3-4
Firing Order	1-2-4-3
Valve Timing:	
Intake:	
Open	31° BTDC
Close	65° ABDC

General Specifications

Items	ZX1000GB ~ GD/HB ~ HD
Duration	276°
Exhaust:	
Open	58° BBDC
Close	18° ATDC
Duration	256°
Lubrication System	Forced lubrication (wet sump)
Engine Oil:	
Type	API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2
Viscosity	SAE 10W-40
Capacity	4.0 L (4.2 US qt)
Drive Train	
Primary Reduction System:	
Type	Gear
Reduction Ratio	1.627 (83/51)
Clutch Type	Wet multi disc
Transmission:	
Type	6-speed, constant mesh, return shift
Gear Ratios:	
1st	2.600 (39/15)
2nd	1.950 (39/20)
3rd	1.600 (24/15)
4th	1.389 (25/18)
5th	1.238 (26/21)
6th	1.136 (25/22)
Final Drive System:	
Type	Chain drive
Reduction Ratio	2.733 (41/15)
Overall Drive Ratio	5.055 @Top gear
Frame	
Type	Tubular, diamond
Caster (Rake Angle)	24.5°
Trail	102 mm (4.02 in.)
Front Tire:	
Type	Tubeless
Size	120/70 ZR17 M/C (58W)
Rim Size	J17M/C × MT3.50
Rear Tire:	
Type	Tubeless
Size	190/50 ZR17 M/C (73W)
Rim Size	J17M/C × MT6.00
Front Suspension:	
Type	Telescopic fork (upside-down)
Wheel Travel	120 mm (4.72 in.)

General Specifications

Items	ZX1000GB ~ GD/HB ~ HD
Rear Suspension:	
Type	Swingarm
Wheel Travel	138 mm (5.43 in.)
Brake Type:	
Front	Dual discs
Rear	Single disc
Electrical Equipment	
Battery	12 V 8 Ah
Headlight:	
Type	Semi-sealed beam
High Beam	12 V 55 W
Low Beam	12 V 55 W
Tail/Brake Light	LED
Alternator:	
Type	Three-phase AC

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

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/cm²
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cmHg
kgf/cm²	×	98.07	=	kPa
kgf/cm²	×	14.22	=	psi
cmHg	×	1.333	=	kPa

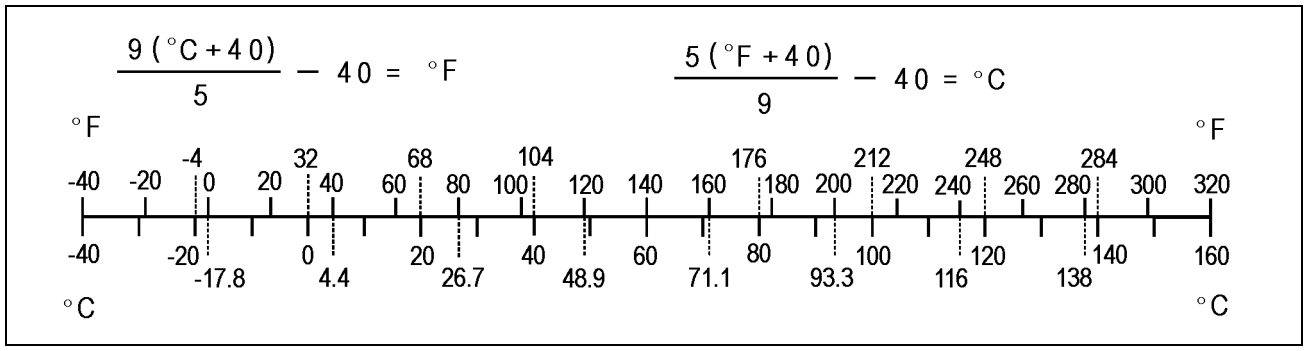
Units of Speed:

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

Table of Contents

Periodic Maintenance Chart 2-3
Torque and Locking Agent 2-7
Specifications 2-13
Special Tools 2-15
Periodic Maintenance Procedures 2-17
  Fuel System (DFI) 2-17
    Throttle Control System Inspection 2-17
    Engine Vacuum Synchronization Inspection 2-17
    Idle Speed Inspection 2-21
    Idle Speed Adjustment 2-22
    Fuel Hose Inspection (fuel leak, damage, installation condition) 2-22
    Evaporative Emission Control System (CAL and SEA-B1 Models) Inspection 2-23
  Cooling System 2-24
    Coolant Level Inspection 2-24
    Radiator Hose and Pipe Inspection (coolant leak, damage, installation condition) 2-24
  Engine Top End 2-24
    Valve Clearance Inspection 2-24
    Valve Clearance Adjustment 2-26
    Air Suction System Damage Inspection 2-29
  Clutch 2-30
    Clutch Operation Inspection 2-30
  Wheels/Tires 2-31
    Air Pressure Inspection 2-31
    Wheel/Tire Damage Inspection 2-31
    Tire Tread Wear Inspection 2-31
    Wheel Bearing Damage Inspection 2-32
  Final Drive 2-33
    Drive Chain Lubrication Condition Inspection 2-33
    Drive Chain Slack Inspection 2-33
    Drive Chain Slack Adjustment 2-34
    Wheel Alignment Inspection 2-34
    Wheel Alignment Adjustment 2-34
    Drive Chain Wear Inspection 2-35
    Chain Guide Wear Inspection 2-35
  Brakes 2-36
    Brake Fluid Leak (Brake Hose and Pipe) Inspection 2-36
    Brake Hose and Pipe Damage and Installation Condition Inspection 2-37
    Brake Operation Inspection 2-37
    Brake Fluid Level Inspection 2-37
    Brake Pad Wear Inspection 2-38
    Brake Light Switch Operation Inspection 2-39
  Suspension 2-40
    Front Forks/Rear Shock Absorber Operation Inspection 2-40
    Front Fork Oil Leak Inspection 2-40
    Rear Shock Absorber Oil Leak Inspection 2-40
    Rocker Arm Operation Inspection 2-40
    Tie-Rod Operation Inspection 2-41
  Steering 2-41
    Steering Play Inspection 2-41
    Steering Play Adjustment 2-41

Steering Stem Bearing Lubrication 2-43
Electrical System 2-44
Lights and Switches Operation Inspection 2-44
Headlight Aiming Inspection 2-46
Sidestand Switch Operation Inspection 2-47
Engine Stop Switch Operation Inspection 2-48
Others 2-49
Chassis Parts Lubrication 2-49
Bolts, Nuts and Fasteners Tightness Inspection 2-51
Replacement Parts 2-52
Air Cleaner Element Replacement 2-52
Fuel Hose Replacement 2-52
Coolant Change 2-54
Radiator Hose and O-ring Replacement 2-57
Engine Oil Change 2-58
Oil Filter Replacement 2-58
Brake Hose Replacement 2-59
Brake Fluid Change 2-60
Master Cylinder Rubber Parts Replacement 2-62
Caliper Rubber Parts Replacement 2-63
Spark Plug Replacement 2-67

Periodic Maintenance Chart

The scheduled maintenance must be done in accordance with this chart to keep the motorcycle in good running condition.**The initial maintenance is vitally important and must not be neglected.**

Periodic Inspection

FREQUENCY / ITEM		Whichever comes first ➡ / ⬇ Every	* ODOMETER READING × 1 000 km (× 1 000 mile) 1 (0.6)	6 (3.75)	12 (7.5)	18 (11.25)	24 (15)	30 (18.75)	36 (22.5)	See Page
Fuel System										
Throttle control system (play, smooth return, no drag) - inspect		year	●		●		●		●	2-17
Engine vacuum synchronization - inspect					●		●		●	2-17
Idle speed - inspect			●		●		●		●	2-21
Fuel leak (fuel hose and pipe) - inspect		year	●		●		●		●	2-22
Fuel hose and pipe damage - inspect		year	●		●		●		●	2-22
Fuel hose and pipe installation condition - inspect		year	●		●		●		●	2-22
Evaporative emission control system function (CAL), (SEA-B1) - inspect			●	●	●	●	●	●	●	2-23
Cooling System										
Coolant level - inspect			●		●		●		●	2-24
Coolant leak (water hose and pipe) - inspect		year	●		●		●		●	2-24
Water hose damage - inspect		year	●		●		●		●	2-24
Water hose installation condition - inspect		year	●		●		●		●	2-24
Engine Top End										
Valve clearance - inspect	US, CA, CAL Model						●			2-24
	Other than US, CA, CAL Models		Every 42 000 km (26 250 mile)							2-24
Air suction system damage - inspect					●		●		●	2-29
Clutch										
Clutch operation (play, disengagement, engagement) - inspect			●		●		●		●	2-30
Wheels and Tires										
Tire air pressure - inspect		year			●		●		●	2-31
Wheel/tire damage - inspect					●		●		●	2-31
Tire tread wear, abnormal wear - inspect					●		●		●	2-31
Wheel bearing damage - inspect		year			●		●		●	2-32

2-4 PERIODIC MAINTENANCE

Periodic Maintenance Chart

FREQUENCY / ITEM	Whichever comes first ➡ / Every ⬇	* ODOMETER READING × 1 000 km (× 1 000 mile) 1 (0.6)	6 (3.75)	12 (7.5)	18 (11.25)	24 (15)	30 (18.75)	36 (22.5)	See Page
Final Drive									
Drive chain lubrication condition - inspect #	Every 600 km (400 mile)								2-33
Drive chain slack - inspect #	Every 1 000 km (600 mile)								2-33
Drive chain wear - inspect #				●		●		●	2-35
Drive chain guide wear - inspect				●		●		●	2-35
Brakes									
Brake fluid leak (brake hose and pipe) - inspect	year	●	●	●	●	●	●	●	2-36
Brake hose and pipe damage - inspect	year	●	●	●	●	●	●	●	2-37
Brake hose and pipe installation condition - inspect	year	●	●	●	●	●	●	●	2-37
Brake operation (effectiveness, play, no drag) - inspect	year	●	●	●	●	●	●	●	2-37
Brake fluid level - inspect	6 months	●	●	●	●	●	●	●	2-37
Brake pad wear - inspect #			●	●	●	●	●	●	2-38
Brake light switch operation - inspect		●	●	●	●	●	●	●	2-39
Suspension									
Front forks/rear shock absorber operation (damping and smooth stroke) - inspect				●		●		●	2-40
Front forks/rear shock absorber oil leak - inspect	year			●		●		●	2-40
Rocker arm operation - inspect				●		●		●	2-40
Tie-rods operation - inspect				●		●		●	2-41
Steering									
Steering play - inspect	year	●		●		●		●	2-41
Steering stem bearings - lubricate	2 years					●			2-43
Electrical System									
Lights and switches operation - inspect	year			●		●		●	2-44
Headlight aiming - inspect	year			●		●		●	2-46
Sidestand switch operation - inspect	year			●		●		●	2-47
Engine stop switch operation - inspect	year			●		●		●	2-48
Others									
Chassis parts - lubricate	year			●		●		●	2-49
Bolts and nuts tightness - inspect		●		●		●		●	2-51

Periodic Maintenance Chart

#: Service more frequently when operating in severe conditions; dusty, wet, muddy, high speed or frequent starting/stopping.
*: For higher odometer readings, repeat at the frequency interval established here.

2-6 PERIODIC MAINTENANCE

Periodic Maintenance Chart

Periodic Replacement Parts

FREQUENCY / ITEM	Whichever comes first ➡ / Every ⬇	* ODOMETER READING × 1 000 km (× 1 000 mile)					See Page
		1 (0.6)	12 (7.5)	24 (15)	36 (22.5)	48 (30)	
Air cleaner element # - replace	Every 18 000 km (11 250 mile)						2-52
Fuel hose - replace	5 years						2-52
Coolant - change	3 years				●		2-54
Radiator hose and O-ring - replace	3 years				●		2-57
Engine oil # - change	year	●	●	●	●	●	2-58
Oil filter - replace	year	●	●	●	●	●	2-58
Brake hose - replace	4 years					●	2-59
Brake fluid - change	2 years			●		●	2-60
Rubber parts of master cylinder and caliper - replace	4 years					●	2-62, 2-63
Spark plug - replace			●	●	●	●	2-67

#: Service more frequently when operating in severe conditions; dusty, wet, muddy, high speed or frequent starting/stopping.

*: For higher odometer readings, repeat at the frequency interval established here.

Torque and Locking Agent

The following tables list the tightening torque for the major fasteners requiring use of a non-permanent locking agent or silicone sealant etc.

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.
MO: Apply molybdenum disulfide oil solution.
(mixture of the engine oil and molybdenum disulfide grease in a weight ratio 10 : 1)
R: Replacement Parts
S: Follow the specified tightening sequence.
Si: Apply silicone grease (ex. PBC grease).
SS: Apply silicone sealant.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel System (DFI)				
Upper Air Cleaner Housing Screws	1.1	0.11	9.7 in·lb	
Throttle Body Assy Holder Clamp Bolts	2.9	0.30	26 in·lb	
Air Cleaner Duct Clamp Bolts	2.0	0.20	18 in·lb	
Delivery Pipe Assy Mounting Screws	3.4	0.35	30 in·lb	
Oxygen Sensor (Equipped Models)	44	4.5	32	
Intake Air Temperature Sensor Mounting Screw	1.2	0.12	11 in·lb	
Water Temperature Sensor	30	3.0	22	
Exhaust Butterfly Valve Actuator Pulley Bolt	5.0	0.51	44 in·lb	
Exhaust Butterfly Valve Actuator Mounting Screws	1.2	0.12	11 in·lb	
Fuel Pump Bolts	9.8	1.0	87 in·lb	L
Cooling System				
Hot Windshield Mounting Bolts	9.8	1.0	87 in·lb	
Coolant By-pass Fitting Bolt	8.8	0.90	78 in·lb	L
Thermostat Housing Bolts	5.9	0.60	52 in·lb	L
Radiator (Water) Hose Clamp Screws	2.9	0.30	26 in·lb	
Water Pipe Bolts	12	1.2	106 in·lb	L
Water Pump Impeller Bolt	9.8	1.0	87 in·lb	
Water Pump Cover Bolts	11	1.1	97 in·lb	
Coolant Drain Bolt	11	1.1	97 in·lb	
Engine Top End				
Air Suction Valve Cover Bolts	9.8	1.0	87 in·lb	L
Spark Plugs	13	1.3	115 in·lb	
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	S
Hot Windshield Mounting Bolts	9.8	1.0	87 in·lb	
Camshaft Sprocket Bolts	15	1.5	11	L
Front Camshaft Chain Guide Bolt (Upper)	25	2.5	18	
Rear Camshaft Chain Guide Bolt	25	2.5	18	
Front Camshaft Chain Guide Bolt (Lower)	12	1.2	106 in·lb	
Throttle Body Assy Holder Bolts	12	1.2	106 in·lb	L

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Cylinder Head Bolts (M6)	12	1.2	106 in·lb	S
Upper Camshaft Chain Guide Bolts	12	1.2	106 in·lb	S
Plugs	19.6	2.0	14	L
Camshaft Cap Bolts	12	1.2	106 in·lb	S
Cylinder Head Bolts (M10) (First)	20	2.0	15	S, MO
Cylinder Head Bolts (M10) (Final)	54	5.5	40	S, MO
Camshaft Chain Tensioner Mounting Bolts	11	1.1	97 in·lb	
Camshaft Chain Tensioner Cap Bolt	20	2.0	15	
Exhaust Butterfly Valve Actuator Pulley Bolt	5.0	0.51	44 in·lb	
Exhaust Butterfly Valve Actuator Bolts	1.2	0.12	11 in·lb	
Muffler Body Mounting Bolts	34	3.5	25	
Premuffler Chamber Mounting Bolt	34	3.5	25	
Muffler Body Clamp Bolts	21	2.1	15	
Clutch				
Clutch Lever Assembly Clamp Bolts	7.8	0.80	69 in·lb	S
Clutch Cover Bolts	9.8	1.0	87 in·lb	
Oil Filler Plug	2.0	0.20	18 in·lb	
Clutch Spring Bolts	9.0	0.90	80 in·lb	
Clutch Hub Nut	135	13.8	99.6	R
Engine Lubrication System				
Oil Filler Plug	2.0	0.20	18 in·lb	
Oil Cooler Bolts	12	1.2	106 in·lb	
Oil Passage Plug	20	2.0	15	L
Radiator (Water) Hose Clamp Screws	3.0	0.31	27 in·lb	
Oil Pressure Switch	15	1.5	11	SS
Oil Pressure Relief Valve	15	1.5	11	L
Oil Filter	17	1.7	13	G, R
Oil Filter Pipe	25	2.5	18	L
Oil Pan Bolts	12	1.2	106 in·lb	S
Engine Oil Drain Bolt	29	3.0	21	
Engine Removal/Installation				
Upper Engine Bracket Bolts	44	4.5	32	S
Lower Engine Bracket Bolts	59	6.0	44	S
Upper Adjusting Collar	5.0	0.51	44 in·lb	S
Upper Engine Mounting Bolt (L = 65)	44	4.5	32	S
Upper Adjusting Collar Locknut	49	5.0	36	S
Upper Engine Mounting Bolt (L = 40)	44	4.5	32	S
Lower Engine Mounting Nut	44	4.5	32	S
Lower Adjusting Collar Locknut	49	5.0	36	S
Middle Engine Bracket Bolts	25	2.5	18	L, S
Middle Engine Mounting Nut	44	4.5	32	S
Lower Adjusting Collar	9.8	1.0	87 in·lb	S

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Crankshaft/Transmission				
Balancer Shaft Clamp Bolt	9.8	1.0	87 in·lb	
Balancer Shaft Lever Bolt	25	2.5	18	L
Breather Side Plate Bolt	5.9	0.60	52 in·lb	L
Connecting Rod Big End Nuts	see the text	←	←	MO
Breather Plate Bolts	9.8	1.0	87 in·lb	L
Shift Drum Bearing Holder Bolts	12	1.2	106 in·lb	L
Oil Passage Plugs	20	2.0	15	L
Oil Passage Plug	9.8	1.0	87 in·lb	
Starter Motor Clutch Bolts	12	1.2	106 in·lb	L
Crankcase Bolts (M7)	20	2.0	15	S
Crankcase Bolts (M9)	42	4.2	31	S, MO
Crankcase Bolts (M6)	20	2.0	15	S
Crankcase Bolts (M8)	27	2.8	20	S
Gear Positioning Lever Bolt	12	1.2	106 in·lb	
Shift Drum Cam Bolt	12	1.2	106 in·lb	L
Neutral Switch	15	1.5	11	
Shift Shaft Return Spring Pin	39	4.0	29	L
Shift Pedal Mounting Bolt	25	2.5	18	
Wheels/Tires				
Front Axle Clamp Bolt	20	2.0	15	AL
Front Axle	108	11.0	79.7	
Rear Axle Nut	98	10	72	
Final Drive				
Engine Sprocket Nut	125	12.7	92.2	MO
Drive Chain Guide Bolts	9.8	1.0	87 in·lb	
Speed Sensor Mounting Bolt	6.9	0.70	61 in·lb	L
Chain Adjuster Clamp Bolts	64	6.5	47	
Rear Sprocket Nuts	59	6.0	44	
Brakes				
Front Master Cylinder Reservoir Cap Stopper Screw	1.2	0.12	11 in·lb	
Brake Lever Pivot Bolt	1.0	0.10	8.8 in·lb	Si
Front Master Cylinder Bleed Valve	5.4	0.55	48 in·lb	
Front Master Cylinder Clamp Bolts	11	1.1	97 in·lb	S
Brake Lever Pivot Bolt Locknut	5.9	0.60	52 in·lb	
Front Brake Light Switch Screw	1.2	0.12	11 in·lb	
Brake Hose Banjo Bolts	25	2.5	18	
Front Caliper Assembly Bolts	22	2.2	16	
Front Caliper Mounting Bolts	34	3.5	25	
Bleed Valves	7.8	0.80	69 in·lb	
Front Brake Pad Pins	15	1.5	11	
Front Brake Disc Mounting Bolts	27	2.8	20	L

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Rear Master Cylinder Mounting Bolts	25	2.5	18	
Brake Pedal Bolt	8.8	0.90	78 in·lb	L
Rear Master Cylinder Push Rod Locknut	17	1.7	12	
Rear Brake Disc Mounting Bolts	27	2.8	20	L
Rear Caliper Mounting Bolts	25	2.5	18	
Brake Pipe Joint Nuts	18	1.8	13	
Rear Brake Disc Mounting Bolts (ABS Equipped Models)	27	2.8	20	L
Suspension				
Upper Front Fork Clamp Bolts	20	2.0	15	
Lower Front Fork Clamp Bolts	25	2.5	18	AL
Piston Rod Nuts	20	2.0	15	
Front Fork Top Plugs	34	3.5	25	
Front Axle Clump Bolts	20	2.0	15	AL
Front Fork Bottom Allen Bolts	35	3.6	26	
Rear Shock Absorber Bolt (Upper)	34	3.5	25	
Tie-rod Nuts	34	3.5	25	R
Rear Shock Absorber Nut (Lower)	34	3.5	25	R
Rocker Arm Nut	34	3.5	25	R
Swingarm Pivot Adjusting Collar Locknut	98	10	72	
Swingarm Pivot Shaft Nut	108	11.0	79.7	
Torque Link Nuts	34	3.5	25	
Steering				
Left Switch Housing Screws	3.5	0.36	31 in·lb	
Upper Front Fork Clamp Bolts	20	2.0	15	
Handlebar Holder Positioning Bolts	9.8	1.0	87 in·lb	
Handlebar Holder Clamp Bolts	25	2.5	18	
Handlebar Bolts	34	3.5	25	L
Right Switch Housing Screws	3.5	0.36	31 in·lb	
Steering Stem Head Bolt	108	11.0	79.7	
Steering Stem Nut	25	2.5	18	
Lower Front Fork Clamp Bolts	25	2.5	18	AL
Frame				
Lower Fairing Upper Assembly Screws	1.2	0.12	11 in·lb	
Lower Fairing Lower Assembly Screws	1.2	0.12	11 in·lb	
Front Fender Mounting Bolts	3.9	0.40	35 in·lb	
Stay Assembly Mounting Bolts	6.9	0.70	61 in·lb	
Stopper Mounting Bolts	4.2	0.42	37 in·lb	L
Rear Frame Bracket Bolts	44	4.5	32	
Front Footpeg Bracket Bolts	25	2.5	18	
Rear Footpeg Bracket Bolts	25	2.5	18	
Rear Frame Bolts	25	2.5	18	L
Sidestand Switch Bolt	8.8	0.90	78 in·lb	L

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Sidestand Bracket Bolts	49	5.0	36	L
Sidestand Bolt	44	4.5	32	
Grab Rail Mounting Bolts	25	2.5	18 ft·lb	
Electrical System				
Switch Housing Screws	3.5	0.36	31 in·lb	
Oxygen Sensor (Equipped Models)	44	4.5	32	
Front Brake Light Switch Screw	1.2	0.12	11 in·lb	
Front Turn Signal Light Mounting Screws	1.2	0.12	11 in·lb	
Licence Plate Light Mounting Screws	1.2	0.12	11 in·lb	
Intake Air Temperature Sensor Mounting Screw	1.2	0.12	11 in·ib	
Spark Plugs	13	1.3	115 in·lb	
Crankshaft Sensor Cover Bolts	12	1.2	106 in·lb	
Water Temperature Sensor	30	3.0	22	
Timing Rotor Bolt	39	4.0	29	
Crankshaft Sensor Bolts	5.9	0.60	52 in·lb	
Starter Motor Cable Terminal Nut	5.9	0.60	52 in·lb	
Starter Motor Terminal Locknut	11	1.1	97 in·lb	
Starter Motor Mounting Bolts	9.8	1.0	87 in·lb	
Alternator Rotor Bolt	155	15.8	114	
Stator Coil Bolts	12	1.2	106 in·ib	L
Starter Motor Through Bolts	4.9	0.50	43 in·lb	
Brush Holder Screw	3.8	0.39	34 in·ib	
Oil Pressure Switch	15	1.5	11	SS
Oil Pressure Switch Terminal Bolt	2.0	0.20	18 in·ib	G
Alternator Cover Bolts	12	1.2	106 in·lb	
Alternator Lead Holding Plate Bolt	12	1.2	106 in·ib	L
Neutral Switch	15	1.5	11	
Engine Ground Cable Terminal Bolt	9.8	1.0	87 in·lb	
Sidestand Switch Bolt	8.8	0.90	78 in·lb	L
Speed Sensor Mounting Bolt	6.9	0.70	61 in·lb	L

Torque and Locking Agent

The table below, relating tightening torque to thread diameter, lists the basic torque for the bolts and nuts. Use this table for only the bolts and nuts which do not require a specific torque value. All of the values are for use with dry solvent-cleaned threads.

Basic Torque for General Fasteners

Threads Diameter (mm)	Torque		
	N·m	kgf·m	ft·lb
5	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in·lb
6	5.9 ~ 7.8	0.60 ~ 0.80	52 ~ 69 in·lb
8	14 ~ 19	1.4 ~ 1.9	10.0 ~ 13.5
10	25 ~ 34	2.6 ~ 3.5	19.0 ~ 25
12	44 ~ 61	4.5 ~ 6.2	33 ~ 45
14	73 ~ 98	7.4 ~ 10.0	54 ~ 72
16	115 ~ 155	11.5 ~ 16.0	83 ~ 115
18	165 ~ 225	17.0 ~ 23.0	125 ~ 165
20	225 ~ 325	23.0 ~ 33.0	165 ~ 240

Specifications

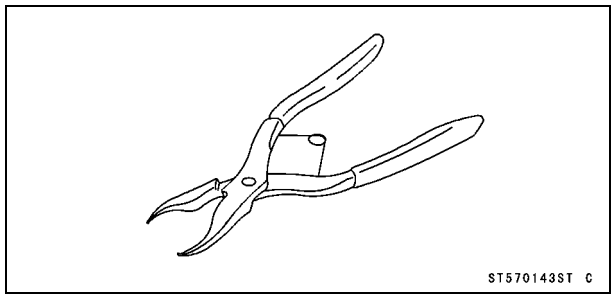
Item	Standard	Service Limit
Fuel System (DFI)		
Throttle Grip Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	– – –
Idle Speed	1 100 ±50 r/min (rpm)	– – –
Bypass Screws (Turn Out)	2 1/2 (for reference)	– – –
Throttle Body Vacuum	40.7 ±1.3 kPa (305 ±10 mmHg) at idle speed	– – –
Air Cleaner Element	Viscous paper element	– – –
Cooling System		
Coolant:		
Type (Recommended)	Permanent type of antifreeze	– – –
Color	Green	– – –
Mixed Ratio	Soft water 50%, Coolant 50%	– – –
Freezing Point	–35°C (–31°F)	– – –
Total Amount	2.9 L (3.1 US qt)	– – –
Engine Top End		
Valve Clearance:		
Exhaust	0.22 ~ 0.31 mm (0.0087 ~ 0.0122 in.)	– – –
Intake	0.15 ~ 0.24 mm (0.0059 ~ 0.0094 in.)	– – –
Clutch		
Clutch Lever Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	– – –
Engine Lubrication System		
Engine Oil:		
Type	API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2	– – –
Viscosity	SAE 10W-40	– – –
Capacity	3.2 L (3.4 US qt) (when filter is not removed)	– – –
	3.8 L (4.0 US qt) (when filter is removed)	– – –
	4.0 L (4.2 US qt) (when engine is completely dry)	– – –
Wheels/Tires		
Tread Depth:		
Front	3.6 mm (0.14 in.)	1 mm (0.04 in.), (AT, CH, DE) 1.6 mm (0.06 in.)
Rear	5.3 mm (0.21 in.)	Up to 130 km/h (80 mph): 2 mm (0.08 in.), Over 130 km/h (80 mph): 3 mm (0.12 in.)
Air Pressure (when Cold):		
Front	Up to 180 kg (397 lb) load: 250 kPa (2.5 kgf/cm², 36 psi)	– – –
Rear	Up to 180 kg (397 lb) load: 290 kPa (2.9 kgf/cm², 42 psi)	– – –
Final Drive		
Drive Chain Slack	20 ~ 30 mm (0.8 ~ 1.2 in.)	– – –

Specifications

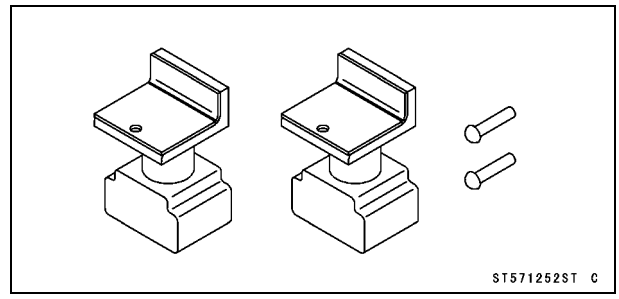
Item	Standard	Service Limit
Drive Chain Wear (20-link Length)	317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)	319 mm (12.56 in.)
Standard Chain:		
Make	ENUMA	– – –
Type	EK525ZX	– – –
Link	112 Links	– – –
Brakes		
Brake Fluid:		
Grade	DOT4	– – –
Brake Pad Lining Thickness:		
Front	4.0 mm (0.16 in.)	1 mm (0.04 in.)
Rear	5.0 mm (0.20 in.)	1 mm (0.04 in.)
Brake Light Timing:		
Front	Pulled ON	– – –
Rear	ON after about 10 mm (0.39 in.) of pedal travel	– – –
Electrical System		
Spark Plug:		
Type	NGK CR9EIA-9	– – –

Special Tools

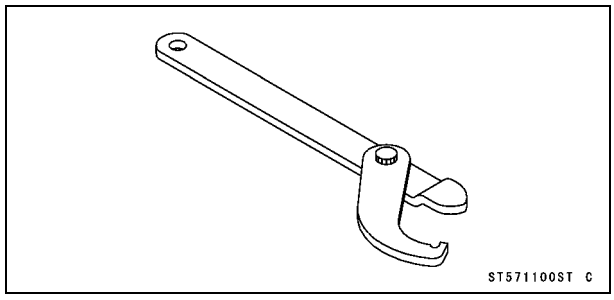
Inside Circlip Pliers:
57001-143



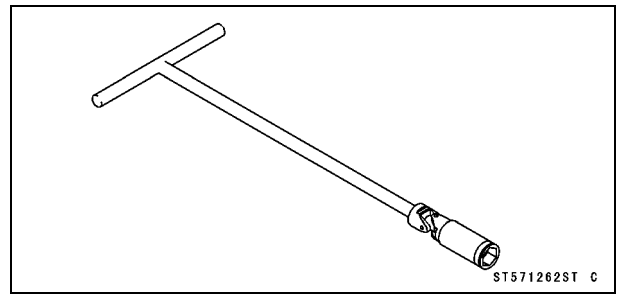
Attachment Jack:
57001-1252



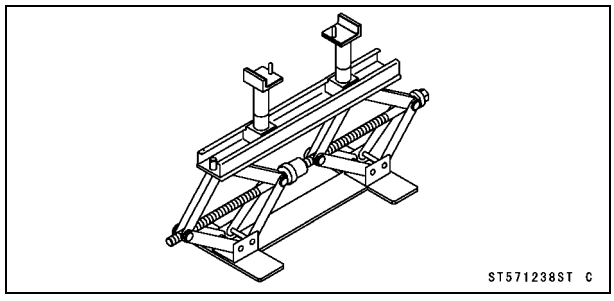
Steering Stem Nut Wrench:
57001-1100



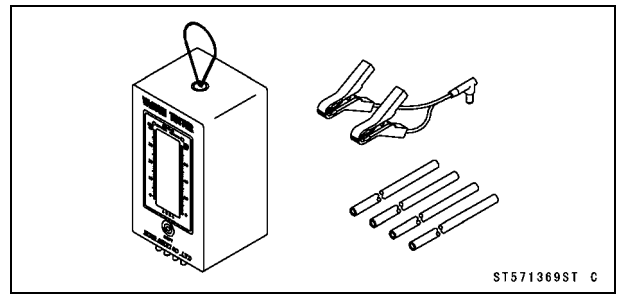
Spark Plug Wrench, Hex 16:
57001-1262



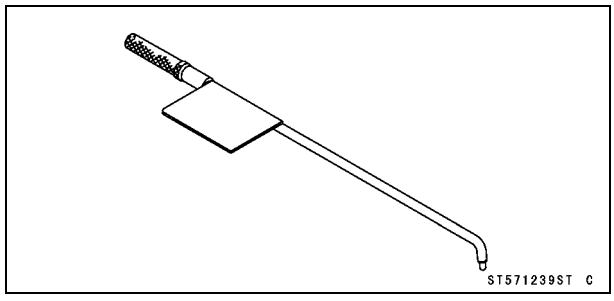
Jack:
57001-1238



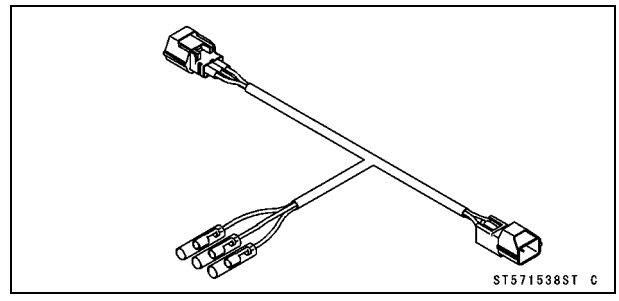
Vacuum Gauge:
57001-1369



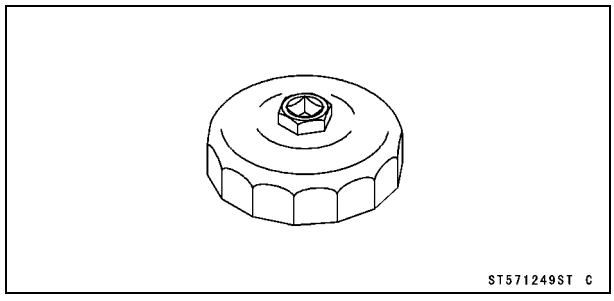
Pilot Screw Adjuster, A:
57001-1239



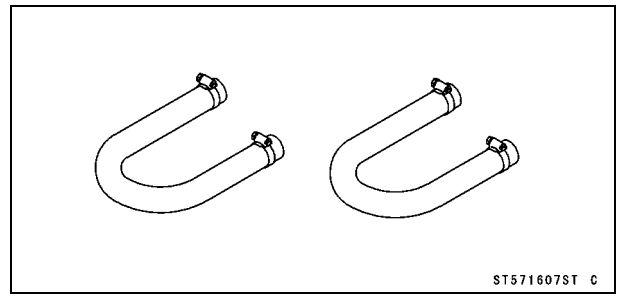
Throttle Sensor Setting Adapter:
57001-1538



Oil Filter Wrench:
57001-1249



Fuel Hose:
57001-1607



Special Tools

Jack Attachment:
57001-1608