MODEL APPLICATION

Year	Model	Beginning Frame No.
2006	ZX1400A6F	JKBZXNA1□6A000001 JKBZXT40AAA000001 ZXT40A-000001
2006	ZX1400B6F	JKBZXT40ABA000001 ZXT40B-000001

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

Kawasaki
KAWASAKI HEAVY INDUSTRIES, LTD.
Consumer Products & Machinery Company

Part No.99924-1362-01

Printed in Japan

Kawasaki

ZZR 1400
ZZR1400 ABS
Ninja ZX-14

Motorcycle Service Manual

Quick Reference Guide

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	FR	France
AU	Australia	GB	United Kingdom
CA	Canada	MY	Malaysia
CAL	California	US	United States
CH	Switzerland	WVTA	Whole Vehicle Type Approval
DE	Germany		

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

⚠ WARNING

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

CAUTION

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

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

NOTE

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

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

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

General Information

Table of Contents

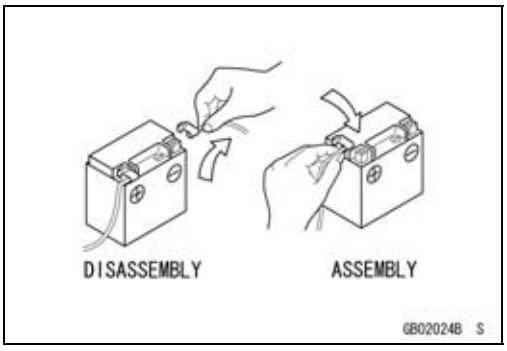
Before Servicing

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.

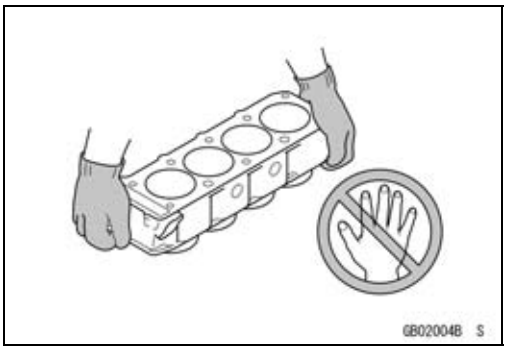
Battery Ground

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.



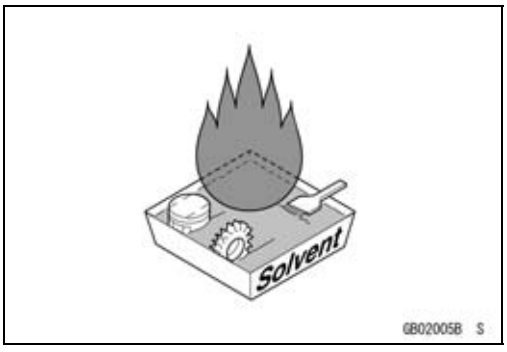
Edges of Parts

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



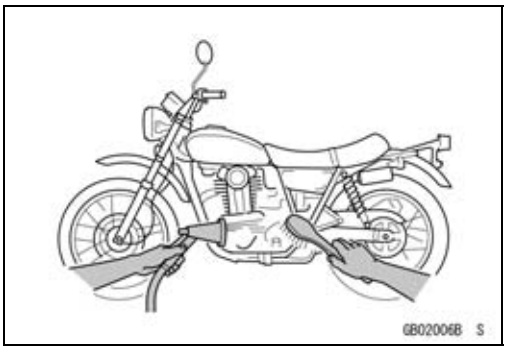
Solvent

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

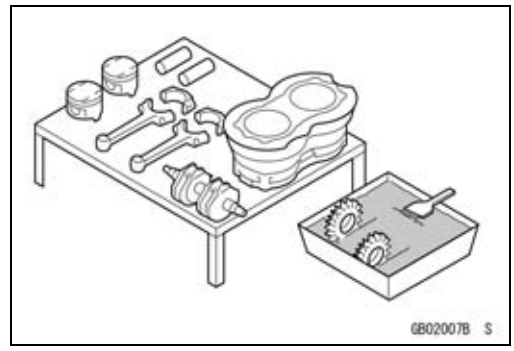
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

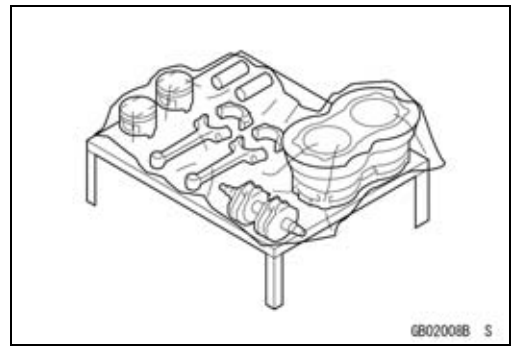
Arrangement and Cleaning of Removed Parts

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.



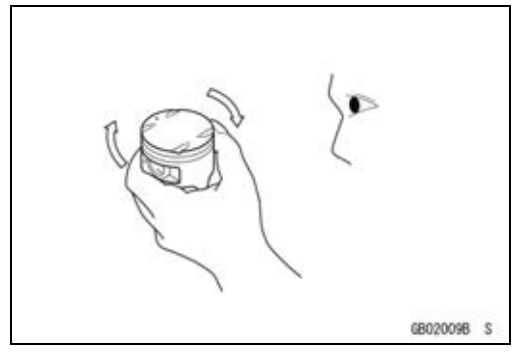
Storage of Removed Parts

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.



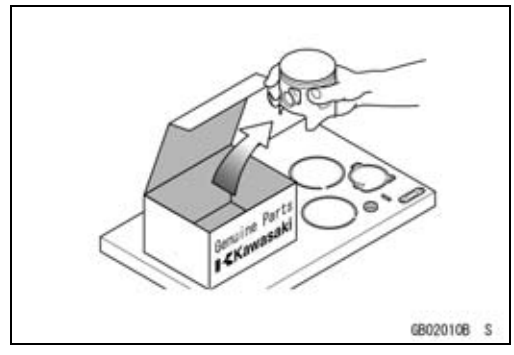
Inspection

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.



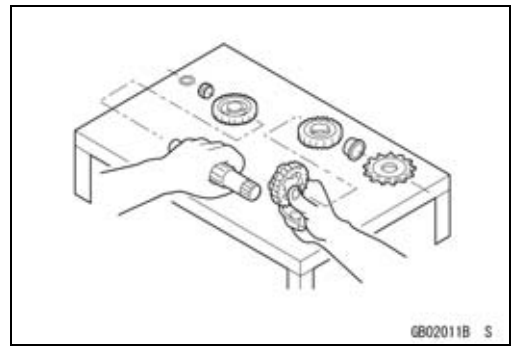
Replacement Parts

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



Assembly Order

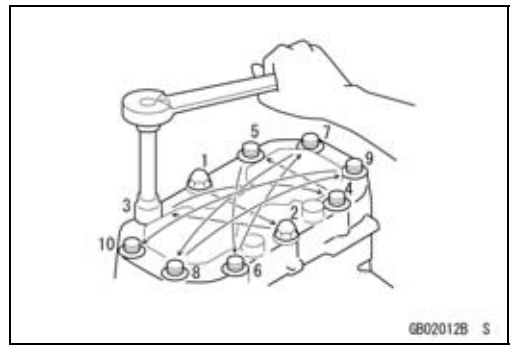
In most cases assembly order is the reverse of disassembly, however, if assembly order is provided in this Service Manual, follow the procedures given.



Before Servicing

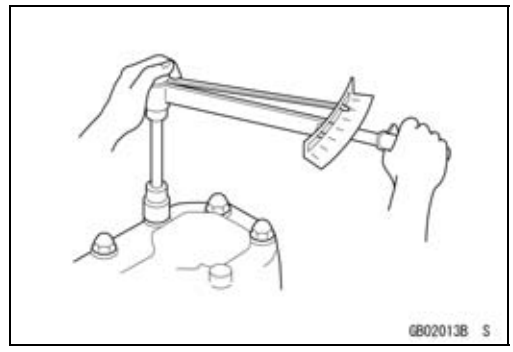
Tightening Sequence

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.



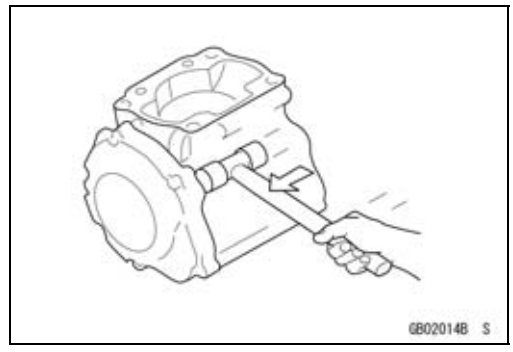
Tightening Torque

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.



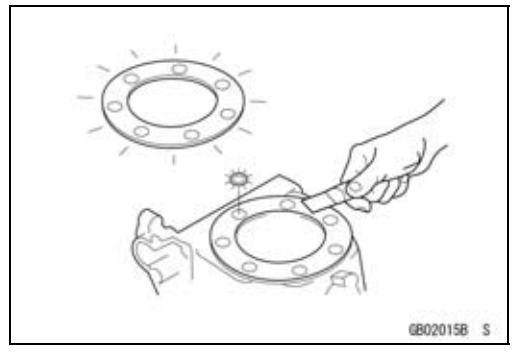
Force

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.



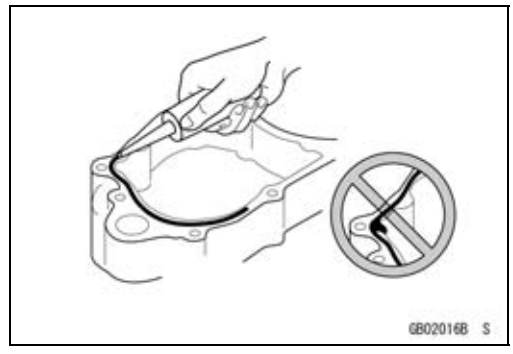
Gasket, O-ring

Hardening, shrinkage, or damage of both gaskets and O-rings after disassembly can reduce sealing performance. Remove the 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

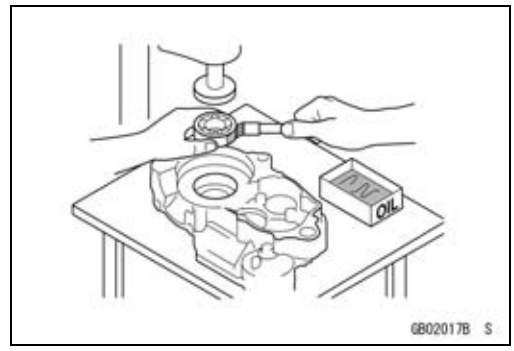
For applications that require Liquid Gasket or a Non-permanent Locking Agent, clean the surfaces so that no oil residue remains before applying liquid gasket or non-permanent locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Before Servicing

Press

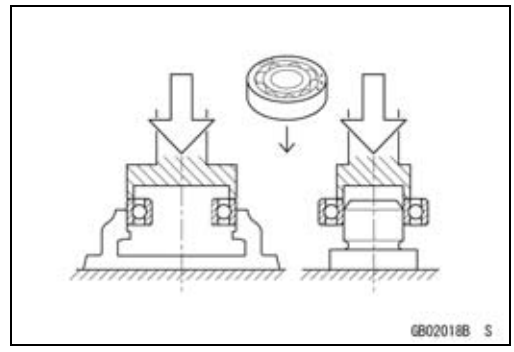
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



Ball Bearing and Needle Bearing

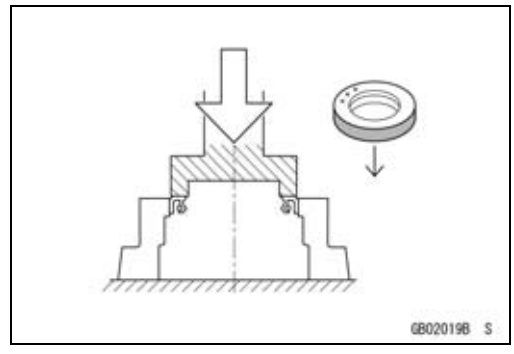
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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

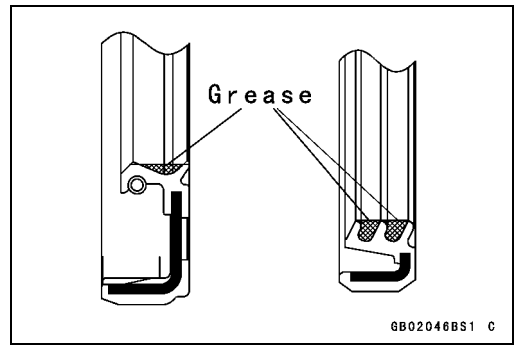


Oil Seal, Grease Seal

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.

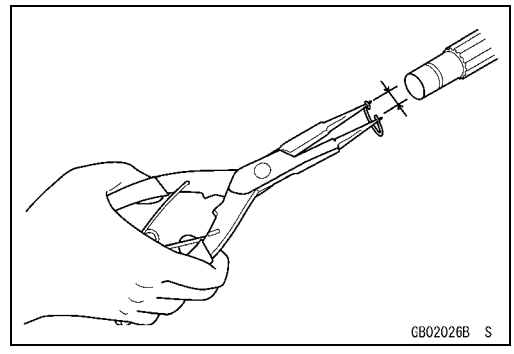


Apply specified grease to the lip of seal before installing the seal.



Circlips, Cotter Pins

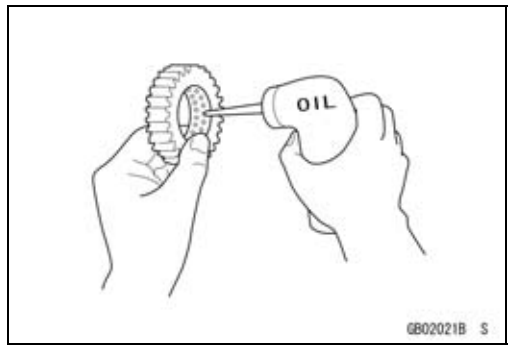
Replace the circlips or cotter pins that were removed with new ones. Take care not to open the clip excessively when installing to prevent deformation.



Before Servicing

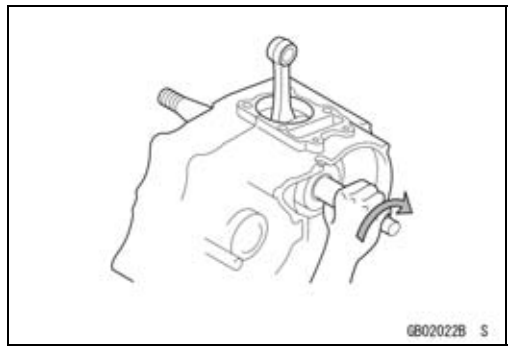
Lubrication

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.



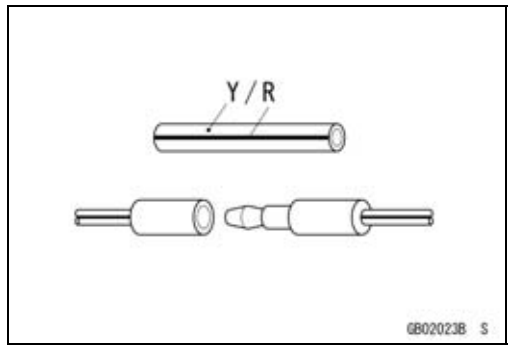
Direction of Engine Rotation

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).



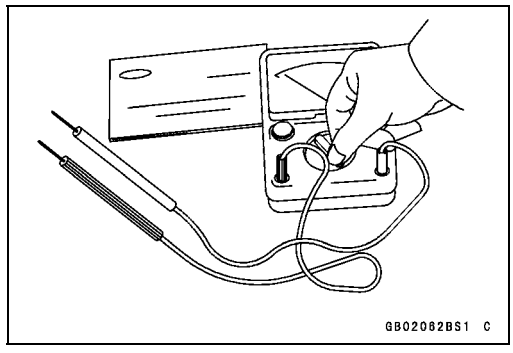
Electrical Wires

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.

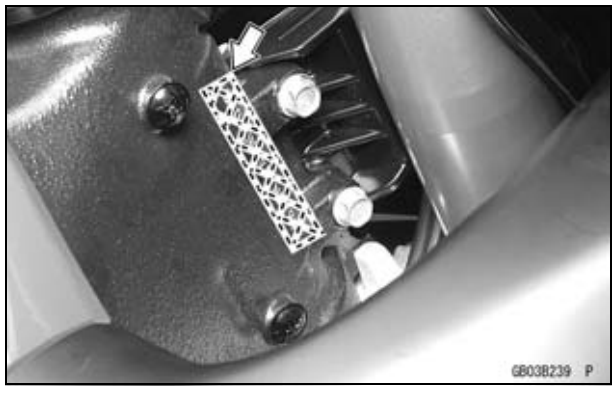


Model Identification

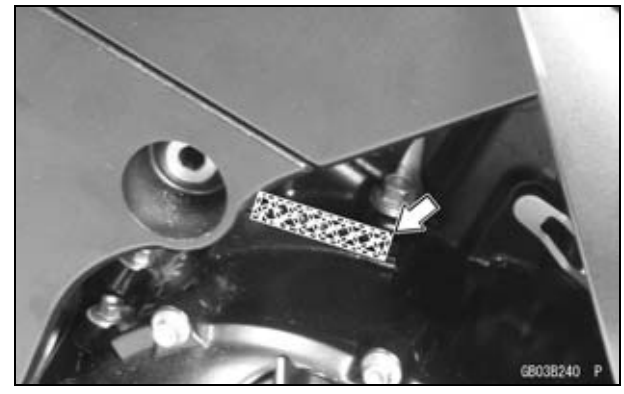
ZX1400A6F (Europe) Left Side View

ZX1400A6F (Europe) Right Side View

Frame Number



Engine Number



Model Identification

ZX1400A6F (United States and Canada) Left Side View

ZX1400A6F (United States and Canada) Right Side View

Model Identification

ZX1400A6F (Malaysia) Left Side View

ZX1400A6F (Malaysia) Right Side View

Model Identification

ZX1400B6F (Europe) Left Side View

ZX1400B6F (Europe) Right Side View

Model Identification

ZX1400B6F (Malaysia) Left Side View

ZX1400B6F (Malaysia) Right Side View

General Specifications

Items	ZX1400A6F, ZX1400B6F
Dimensions	
Overall Length	2 170 mm (85.4 in.)
Overall Width	760 mm (29.9 in.)
Overall Height	1 170 mm (46.1 in.)
Wheelbase	1 460 mm (57.4 in.)
Road Clearance	125 mm (4.9 in.)
Seat Height	800 mm (31.5 in.)
Dry Mass:	
ZX1400A6F	215 kg (474 lb)
ZX1400B6F	218 kg (481 lb)
Curb Mass:	
Front	
ZX1400A6F	125 kg (276 lb)
ZX1400B6F	126 kg (278 lb)
Rear	
ZX1400A6F	127 kg (280 lb)
ZX1400B6F	129 kg (284 lb)
Fuel Tank Capacity	22 L (5.8 US gal)
Performance	
Minimum Turning Radius	3.1 m (10.2 ft)
Engine	
Type	4-stroke, DOHC, 4-cylinder
Cooling System	Liquid-cooled
Bore and Stroke	84.0 × 61.0 mm (3.3 × 2.4 in.)
Displacement	1 352 cm³ (82.5 cu in.)
Compression Ratio	12.0 : 1
Maximum Horsepower	140.0 kW (190 PS) @9 500 r/min (rpm), (FR) 78.2 kW (106 PS) @8 500 r/min (rpm), (MY) 132.6 kW (180 PS) @9 000 r/min (rpm), (CA, CAL, US) – – –
Maximum Torque	154 N·m (15.7 kgf·m, 114 ft·lb) @7 500 r/min (rpm), (FR) 114 N·m (11.6 kgf·m, 84 ft·lb) @4 500 r/min (rpm), (MY) 147.4 N·m (15.0 kgf·m, 109 ft·lb) @7 500 r/min (rpm), (CA), (CAL), (US) – – –
Carburetion System	FI (Fuel injection), MIKUNI 44EIDW × 4
Starting System	Electric starter
Ignition System	Battery and coil (transistorized)
Timing Advance	Electronically advanced (digital igniter in ECU)
Ignition Timing	From 10° BTDC @1 100 r/min (rpm)
Spark Plug	NGK CR9EIA-9
Cylinder Numbering Method	Left to right, 1-2-3-4
Firing Order	1-2-4-3

General Specifications

Items	ZX1400A6F, ZX1400B6F
Valve Timing:	
Inlet:	
Open	41° (BTDC)
Close	71° (ABDC)
Duration	292°
Exhaust:	
Open	64° (BBDC)
Close	34° (ATDC)
Duration	278°
Lubrication System	Forced lubrication (wet sump with cooler)
Engine Oil:	
Type	API SE, SF or SG API SH, SJ or SL with JASO MA
Viscosity	SAE10W-40
Capacity	4.5 L (4.8 US qt)
Drive Train	
Primary Reduction System:	
Type	Gear
Reduction Ratio	1.541 (94/61)
Clutch Type	Wet multi disc
Transmission:	
Type	6-speed, constant mesh, return shift
Gear Ratios:	
1st	2.625 (42/16)
2nd	1.947 (37/19)
3rd	1.545 (34/22)
4th	1.333 (32/24)
5th	1.154 (30/26)
6th	1.036 (29/28)
Final Drive System:	
Type	Chain drive
Reduction Ratio	2.412 (41/17)
Overall Drive Ratio	3.849 @Top gear
Frame	
Type	Press, backbone
Caster (Rake Angle)	23°
Trail	94 mm (3.7 in.)
Front Tire:	
Type	Tubeless
Size	120/70 ZR17 M/C (58 W)
Rear Tire:	
Type	Tubeless
Size	190/50 ZR17 M/C (73 W)

General Specifications

Items	ZX1400A6F, ZX1400B6F
Rim Size:	
Front	17 × 3.50
Rear	17 × 6.00
Front Suspension:	
Type	Telescopic fork (upside-down)
Wheel Travel	117 mm (4.6 in.)
Rear Suspension:	
Type	Swingarm (uni-trak)
Wheel Travel	122 mm (4.8 in.)
Brake Type:	
Front	Dual discs
Rear	Single disc
Electrical Equipment	
Battery	12 V 14 Ah
Headlight:	
Type	Semi-sealed beam
Bulb:	
High	12 V 55 W + 65 W (quartz-halogen) × 2
Low	12 V 55 W (quartz-halogen) × 2
Tail/Brake Light	12 V 0.5/4.9 W (LED)
Alternator:	
Type	Three-phase AC
Rated Output	35 A/14 V @5 000 r/min (rpm)

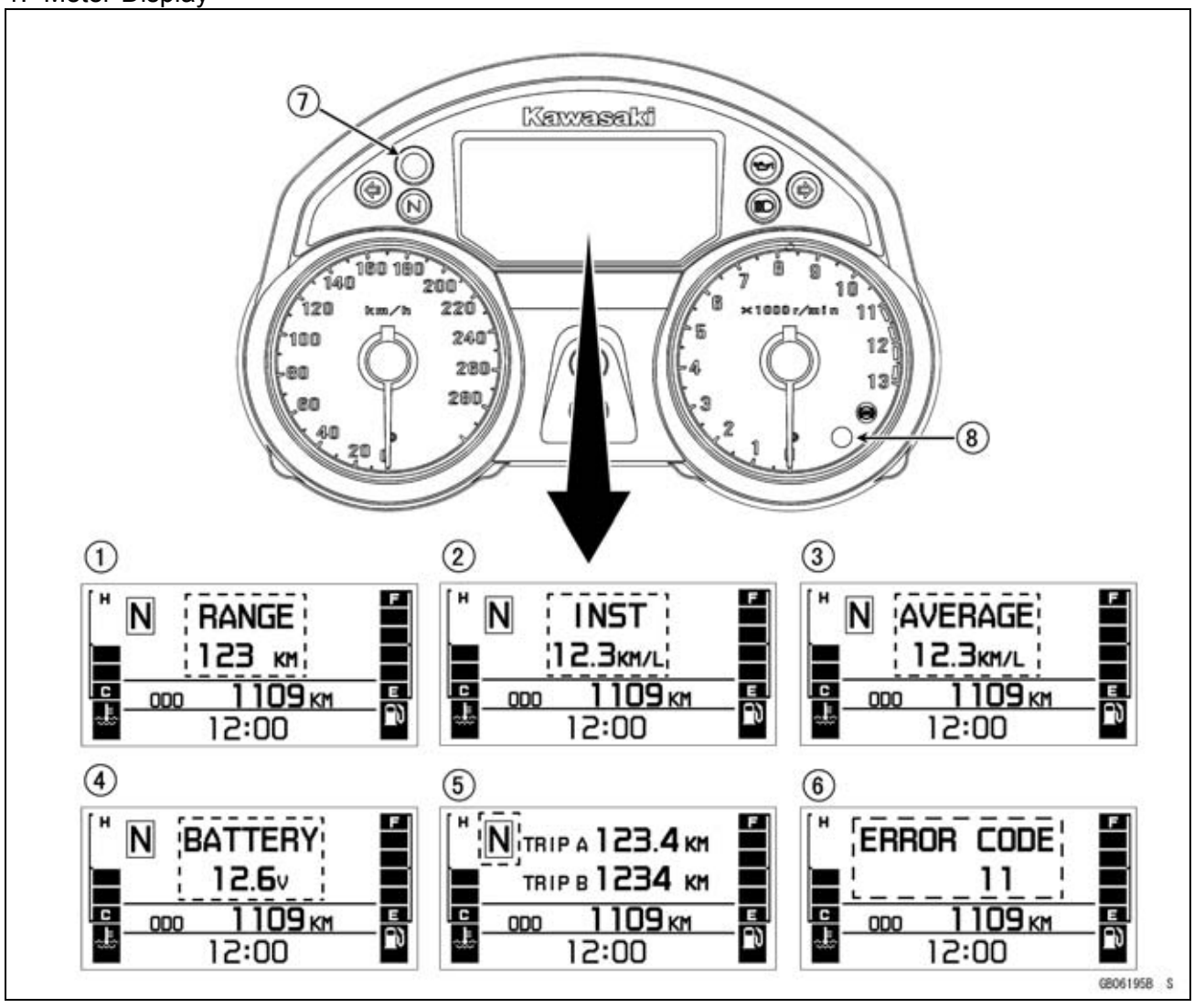
Specifications subject to change without notice, and may not apply to every country.

Technical Information-CAN (Controller Area Network) Communication System

Overview

The CAN communication system is used for transmitting and receiving data that is sent to the meter unit and ECU. A LCD (liquid crystal display) display in the meter unit displays information such as battery voltage, fuel consumption, and service codes in addition to the conventional indicator functions.

1. Meter Display



1. Fuel Mileage Range
2. Fuel Consumption (Current)
3. Fuel Consumption (Average)
4. Battery Voltage
5. Gear Position
6. Service Code
7. Immobilizer Registration
8. Clutch Engagement Timing

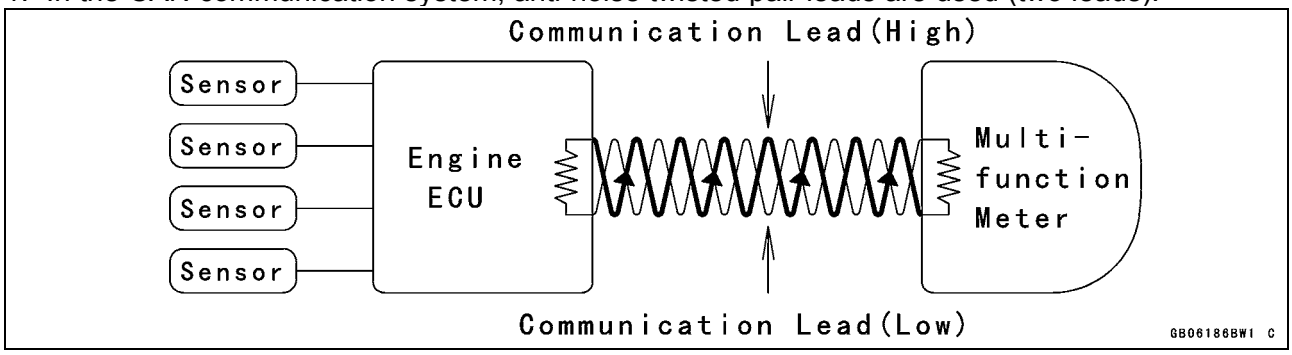
2. CAN is a multi-cast serial bus standard (ISO protocol). Data is transmitted by changing the voltage signal of the two bus leads which are composed of high and low voltage wires twisted together. Since the high-speed ISO standard is used (transmission speeds of up to 500 kbps*), large quantities of data can be transmitted and received in a short period of time.

*bps: bit/sec → the number of signals (0 or 1) transmittable/receivable per second

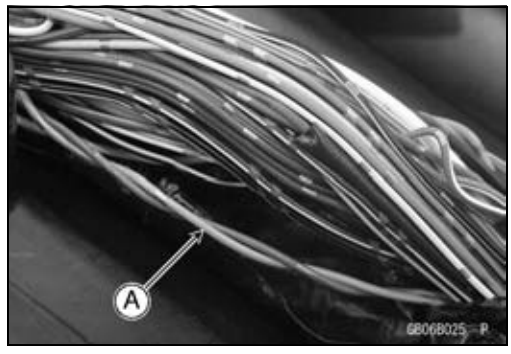
Technical Information-CAN (Controller Area Network) Communication System

Structure and Function

1. In the CAN communication system, anti-noise twisted pair leads are used (two leads).



Twisted Pair Leads [A] (In the main harness)



2. Data is transmitted from the two nodes-the ECU and meter unit-on the CAN bus and does not contain specific bus addresses of either node.

Instead, the content of a data stream, such as engine rpm, is labeled with an identifier that is unique throughout the network. All nodes on the network receive the data and each performs an acceptance test on the identifier to determine if the message (and its data) is relevant to that particular node.

If a message is relevant to a particular node (meter unit), it will be processed and displayed otherwise it is ignored. The unique data identifier also determines the priority of the message. In situations where the two nodes attempt to transmit at the same time, a non-destructive arbitration technique guarantees that the messages are sent in order of importance.

3. The CAN data that is transmitted from the ECU to the meter unit are engine rpm, water temperature, gear position, starter lockout switch, self-diagnosis information and *fuel injected volume. And the data transmitted from the meter to the ECU is vehicle speed.

*Fuel injected volume is converted into the fuel consumption by the meter unit.

Technical Information-CAN (Controller Area Network) Communication System

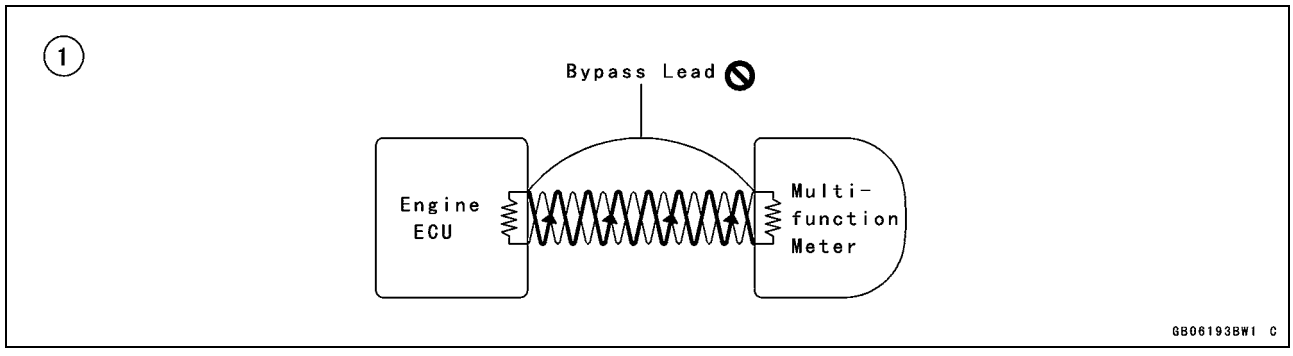
System failure and maintenance

1. Detection of a system failure

When the DFI or immobilizer system fails, the information will be shown on the LCD under the "ignition switch ON" condition.

2. System maintenance

1. Do not add a by-pass lead to the twisted pair lead. This can damage components.



2. Do not modify the twisted pair lead or loosen/tighten the number of twists. Such modifications of the leads can cause the deterioration of the anti-noise characteristics resulting in communication errors.

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

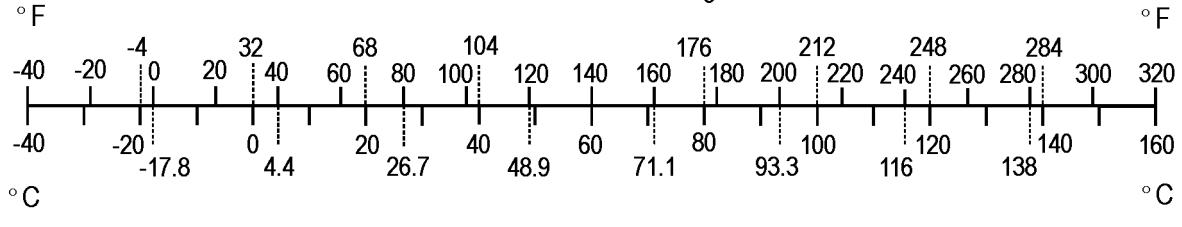
km/h	×	0.6214	=	mph

Units of Power

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

Units of Temperature

$$\frac{9(^\circ C + 40)}{5} - 40 = {}^\circ F \qquad \frac{5(^\circ F + 40)}{9} - 40 = {}^\circ C$$



Periodic Maintenance

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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.**

FREQUENCY / INSPECTION		Whichever comes first ➡ / ⬇ Every	* ODOMETER READING × 1000 km (× 1000 mile) 1 (0.6)	6 (4)	12 (7.5)	18 (12)	24 (15)	30 (20)	36 (24)	See Page
Fuel System										
Throttle control system (play, smooth return, no drag) - inspect		year	●		●		●		●	2-15
Engine vacuum synchronization-inspect					●		●		●	2-15
Idle speed-inspect			●		●		●		●	2-19
Fuel leak (fuel hose and pipe) - inspect		year	●		●		●		●	2-19
Fuel hose and pipe damage-inspect		year	●		●		●		●	2-19
Fuel hose and pipe installation condition-inspect		year	●		●		●		●	2-19
Cooling System										
Coolant level - inspect			●		●		●		●	2-20
Coolant leak (radiator hose and pipe) - inspect		year	●		●		●		●	2-20
Radiator hose damage - inspect		year	●		●		●		●	2-20
Radiator hose installation condition - inspect		year	●		●		●		●	2-20
Evaporative Emission Control System (CAL)										
Evaporative emission control system function - inspect			●	●	●	●	●	●	●	2-21
Air Suction System										
Air suction system damage - inspect					●		●		●	2-21
Engine Top End										
Valve clearance - inspect	US, CA, AU Model						●			2-22
	Other than US, CA, AU Model		Every 42 000 km (26 000 mile)							2-22
Clutch and Drive Train										
Clutch operation (play, disengagement, engagement) - inspect			●		●		●		●	2-27
Clutch fluid level - inspect		6 months	●	●	●	●	●	●	●	2-27
Clutch fluid leak (clutch hose and pipe) - inspect		year	●	●	●	●	●	●	●	2-28
Clutch hose and pipe damage - inspect		year	●	●	●	●	●	●	●	2-28
Clutch hose installation condition - inspect		year	●	●	●	●	●	●	●	2-28
Wheels and Tires										
Tire air pressure - inspect		year			●		●		●	2-29
Wheels/tires damage - inspect					●		●		●	2-29
Tire tread wear abnormal wear - inspect					●		●		●	2-29
Wheel bearing damage - inspect		year			●		●		●	2-30

2-4 PERIODIC MAINTENANCE

Periodic Maintenance Chart

FREQUENCY / INSPECTION	Whichever comes first ➡ / ⬇ Every	* ODOMETER READING × 1000 km (× 1000 mile) 1 (0.6)	6 (4)	12 (7.5)	18 (12)	24 (15)	30 (20)	36 (24)	See Page
Final Drive									
Drive chain lubrication condition - inspect #	Every 600 km (400 mile) after driving in rain								2-30
Drive chain slack - inspect #	Every 1 000 km (600 mile)								2-31
Drive chain wear - inspect #				●		●		●	2-32
Drive chain guide wear - inspect				●		●		●	2-33
Brake System									
Brake fluid leak (brake hose and pipe) - inspect	year	●	●	●	●	●	●	●	2-34
Brake hose and pipe damage - inspect	year	●	●	●	●	●	●	●	2-35
Brake hose installation condition - inspect	year	●	●	●	●	●	●	●	2-35
Brake operation (effectiveness, play, no drag) - inspect	year	●	●	●	●	●	●	●	2-35
Brake fluid level - inspect	6 months	●	●	●	●	●	●	●	2-35
Brake pad wear - inspect #			●	●	●	●	●	●	2-36
Brake light switch operation - inspect		●	●	●	●	●	●	●	2-37
Suspensions									
Front forks/rear shock absorber operation (damping and smooth stroke) - inspect				●		●		●	2-37
Front forks/rear shock absorber oil leak - inspect	year			●		●		●	2-38
Rocker arm operation - inspect				●		●		●	2-38
Tie-rods operation - inspect				●		●		●	2-38
Steering System									
Steering play - inspect	year	●		●		●		●	2-39
Steering stem bearings-lubricate	2 years					●			2-39
Electrical System									
Lights and switches operation - inspect	year			●		●		●	2-41
Headlight aiming - inspect	year			●		●		●	2-44
Sidestand switch operation - inspect	year			●		●		●	2-45
Engine stop switch operation - inspect	year			●		●		●	2-46
Others									
Chassis parts-lubricate	year			●		●		●	2-46
Bolts, nuts and fasteners tightness - inspect		●		●		●		●	2-47

#: 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.

Periodic Maintenance Chart

Periodic Replacement Parts

FREQUENCY / CHANGE/REPLACEMENT	Whichever come first ➡ / Every ⬇	* ODOMETER READING × 1000 km (× 1000 mile) 1 (0.6)	12 (7.5)	18 (12)	24 (15)	36 (24)	48 (30)	See Page
Air cleaner element #	Every 18 000 km (12 000 mile)							2-48
Fuel hose	4 years						●	2-49
Coolant	3 years					●		2-51
Radiator hoses and O-rings	3 years					●		2-53
Engine oil #	year	●	●		●	●	●	2-53
Oil filter	year	●	●		●	●	●	2-54
Brake hose and pipe	4 years						●	2-55
Brake fluid	2 years				●		●	2-57
Rubber parts of brake master cylinder/caliper	4 years						●	2-58
Clutch hose and pipe	4 years						●	2-63
Rubber parts of clutch master cylinder/slave cylinder	4 years						●	2-64
Clutch fluid	2 years				●		●	2-66
Spark plugs			●		●	●	●	2-66

#: 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 to the threads.
L: Apply a non-permanent locking agent to the threads.
M: Apply molybdenum disulfied grease.
MO: Apply molybdenum disulfide grease oil
(mixture of engine oil and molybdenum disulfide grease in a weight ration is 10 : 1).
R: Replacement Parts
S: Tighten the fasteners following the specified sequence.
Si: Apply silicone grease (ex. PBC grease).
SS: Apply silicone sealant.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel System				
Air Cleaner Element Cover Bolts	6.9	0.70	61 in·lb	
Air Cleaner Element Holder Screws	6.9	0.70	61 in·lb	
Bypass Screws	0.2	0.02	1.8 in·lb	
Camshaft Position Sensor Bolt	9.8	1.0	87 in·lb	
Crankshaft Sensor Bolts	5.9	0.60	52 in·lb	L
Delivery Pipe Mounting Screws	5.0	0.51	44 in·lb	
Duct Clamp Bolts	2.0	0.20	18 in·lb	
Front Air Inlet Duct Mounting Bolts	9.8	1.0	87 in·lb	
Fuel Pump Bolts	9.8	1.0	87 in·lb	L, S
Gear Position Switch Lead Clamp Bolts	9.8	1.0	87 in·lb	
Gear Position Switch Screws	2.9	0.30	26 in·lb	L
Inlet Air Pressure Sensor Bracket Screws	3.5	0.36	31 in·lb	
Middle Air Inlet Duct Clamp Bolts	2.9	0.30	26 in·lb	
Middle Air Inlet Duct Mounting Bolts	9.8	1.0	87 in·lb	
Rear Air Inlet Duct Mounting Bolts	9.8	1.0	87 in·lb	
Speed Sensor Bolt	3.9	0.40	35 in·lb	L
Throttle Body Assy Holder Bolts	9.8	1.0	87 in·lb	S
Throttle Body Assy Holder Clamp Bolts	2.0	0.20	18 in·lb	
Vehicle-down Sensor Bolts	5.9	0.60	52 in·lb	
Water Temperature Sensor	25	2.5	18	
Cooling System				
Coolant Drain Plug	12	1.2	106 in·lb	
Coolant Fitting Bolts	8.8	0.90	78 in·lb	L
Oil Cooler Mounting Bolts	12	1.2	106 in·lb	S
Radiator Hose Clamp Screws	2.0	0.20	18 in·lb	
Thermostat Housing Cover Bolts	5.9	0.60	52 in·lb	
Thermostat Housing Mounting Bolts	9.8	1.0	87 in·lb	
Water Pump Cover Bolts	9.8	1.0	87 in·lb	
Water Temperature Sensor	25	2.5	18	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Engine Top End				
Air Suction Valve Cover Bolts	9.8	1.0	87 in·lb	L
Camshaft Cap Bolts	12	1.2	106 in·lb	S
Camshaft Chain Guide Bolts	12	1.2	106 in·lb	S
Camshaft Chain Tensioner Mounting Bolts	9.8	1.0	87 in·lb	
Camshaft Position Sensor Bolt	9.8	1.0	87 in·lb	
Cam Sprocket Mounting Bolts	15	1.5	11	L
Crankshaft Sensor Cover Bolts	9.8	1.0	87 in·lb	L (1)
Cylinder Head Bolts (M6)	12	1.2	106 in·lb	S
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	S
Cylinder Head Bolts (M11, First)	39	4.0	29	MO, S
Cylinder Head Bolts (M11, Final)	71	7.2	52	MO, S
Engine Bracket Bolts (M8)	25	2.5	18	R, S
Front Camshaft Chain Guide Bolt (Upper)	25	2.5	18	
Front Camshaft Chain Guide Bolt (Lower)	12	1.2	106 in·lb	
Front Engine Mounting Bolts (M10)	59	6.0	44	R, S
Muffler Body Mounting Bolts	34	3.5	25	
Spark Plugs	13	1.3	115 in·lb	
Throttle Body Holder Bolts	9.8	1.0	87 in·lb	S
Throttle Body Assy Holder Clamp Bolts	2.0	0.20	18 in·lb	
Water Passage Plugs	20	2.0	15	L
Clutch				
Clutch Cover Bolts	9.8	1.0	87 in·lb	L (1)
Clutch Hose Banjo Bolt	25	2.5	18	
Clutch Hub Nut	135	14	100	R
Clutch Lever Pivot Bolt	1.0	0.10	8.9 in·lb	
Clutch Lever Pivot Bolt Locknut	5.9	0.60	52 in·lb	
Clutch Master Cylinder Bleed Valve	7.8	0.80	69 in·lb	
Clutch Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	S
Clutch Slave Cylinder Bleed Valve	7.8	0.80	69 in·lb	
Clutch Slave Cylinder Bolts	–	–	–	L
Clutch Spring Bolts	8.8	0.90	78 in·lb	
Oil Filler Cap	–	–	–	Hand -tighten
Engine Lubrication System				
Engine Oil Drain Bolt	30	3.0	22	
Holder Mounting Bolt	35	3.6	26	L
Oil Cooler Mounting Bolts	12	1.2	106 in·lb	S
Oil Filter	31	3.2	23	G, R
Oil Pan Bolts	9.8	1.0	87 in·lb	
Oil Pan Plate Bolts	9.8	1.0	87 in·lb	L
Oil Passage Plug	20	2.0	15	L
Oil Pressure Relief Valve	15	1.5	11	L

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Oil Pressure Switch	15	1.5	11	SS
Oil Pressure Switch Terminal Bolt	1.5	0.15	13 in·lb	G
Oil Pump Cover Bolts	9.8	1.0	87 in·lb	
Engine Removal/Installation				
Adjusting Collars	25	2.5	18	M
Engine Bracket Bolts (M8)	25	2.5	18	S, R
Engine Mounting Nuts (M12)	59	6.0	44	S
Front Engine Mounting Bolts (M10)	59	6.0	44	S, R
Subframe Bolts	23	2.3	17	R
Crankshaft/Transmission				
Balancer Shaft Clamp Bolts	9.8	1.0	87 in·lb	
Balancer Shaft Clamp Lever Bolts	25	2.5	18	
Bearing Position Plate Screws	4.9	0.50	43 in·lb	L
Breather Cover Bolts	9.8	1.0	87 in·lb	
Breather Plate Screws	9.8	1.0	87 in·lb	L
Connecting Rod Big End Nuts	see the text	←	←	←
Crankcase Bolts (M6, L = 25 mm)	12	1.2	106 in·lb	S
Crankcase Bolts (M6, L = 40 mm)	12	1.2	106 in·lb	S
Crankcase Bolt (M6, L = 50 mm)	12	1.2	106 in·lb	S
Crankcase Bolt (M6, L = 65 mm)	12	1.2	106 in·lb	S
Crankcase Bolts (M7, L = 45 mm)	20	2.0	15	S
Crankcase Bolt (M7, L = 50 mm)	20	2.0	15	S
Crankcase Bolts (M7, L = 60 mm)	20	2.0	15	S
Crankcase Bolts (M7, L = 65 mm)	20	2.0	15	S
Crankcase Bolt (M7, L = 85 mm)	20	2.0	15	S
Crankcase Bolt (M7, L = 110 mm)	20	2.0	15	S
Crankcase Bolts (M8, L = 70 mm)	27	2.8	20	S
Crankcase Bolts (M8, L = 80 mm)	27	2.8	20	S
Crankcase Bolts (M10, L = 90 mm)	47	4.8	35	MO, S
Crankcase Bolts (M10, L = 120 mm)	47	4.8	35	MO, S
Drive Shaft Cover Bolts	25	2.5	18	L
Gear Positioning Lever Bolt	12	1.2	106 in·lb	
Gear Position Switch Lead Clamp Bolt	9.8	1.0	87 in·lb	
Gear Position Switch Screws	2.9	0.30	26 in·lb	L
Oil Passage Plugs	20	2.0	15	L
Shift Drum Bearing Holder Screws	4.9	0.50	43 in·lb	L
Starter Clutch Shaft Bolt	9.8	1.0	87 in·lb	L
Starter Clutch Shaft Plate Bolt	9.8	1.0	87 in·lb	L
Shift Drum Cam Holder Bolt	12	1.2	106 in·lb	L
Shift Shaft Return Spring Pin	29	3.0	21	L
Timing Rotor Bolt	39	4.0	29	
Torque Limiter Bolt	25	2.5	18	L

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Wheels/Tires				
Front Axle Clamp Bolts	20	2.0	15	AL
Front Axle Nut	127	13.0	94	
Rear Axle Nut	127	13.0	94	
Final Drive				
Chain Guide Bolt	12	1.2	106 in·lb	L
Chain Guide Bolts	9.8	1.0	87 in·lb	L
Engine Sprocket Cover Bolts	9.8	1.0	87 in·lb	
Engine Sprocket Nut	125	13.0	92	MO
Rear Axle Nut	127	13.0	94	
Rear Sprocket Nuts	69	7.0	51	
Speed Sensor Bolt	3.9	0.40	35 in·lb	L
Stud Bolts	14.7	1.5	11	L
Brakes				
Bleed Valves	7.8	0.80	69 in·lb	
Brake Hose Banjo Bolts	25	2.5	18	
Brake Lever Pivot Bolt	1.0	0.10	9 in·lb	Si
Brake Lever Pivot Bolt Locknut	5.9	0.60	52 in·lb	
Brake Pedal Bolt	8.8	0.90	78 in·lb	
Brake Pipe Joint Nuts (ZX1400B Models)	18	1.8	13	
Front Brake Disc Mounting Bolts	27	2.8	20	L
Front Brake Light Switch Screw	1.2	0.12	11 in·lb	
Front Brake Pad Pins	17.2	1.8	13	
Front Brake Reservoir Cap Stopper Screw	1.2	0.12	11 in·lb	
Front Caliper Assembly Bolts	27	2.8	20	L
Front Caliper Mounting Bolts	34	3.5	25	
Front Master Cylinder Bleed Valve	7.8	0.80	69 in·lb	
Front Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	S
Rear Brake Disc Mounting Bolts	27	2.5	18	L
Rear Brake Pad Pin	17.2	1.8	13	
Rear Caliper Assembly Bolts	37	3.8	27	L
Rear Caliper Mounting Bolts	25	2.5	18	
Rear Master Cylinder Mounting Bolts	25	2.5	18	
Rear Master Cylinder Push Rod Locknut	17.2	1.8	13	
Suspension				
Front Axle Clamp Bolts	20	2.0	15	AL
Front Fork Bottom Allen Bolts	23	2.3	17	L
Front Fork Clamp Bolts (Upper)	20	2.0	15	
Front Fork Clamp Bolts (Lower)	30	3.1	22	AL
Front Fork Top Plugs	22	2.2	16	
Piston Rod Nuts	28	2.9	21	
Rear Shock Absorber Nut (Upper)	34	3.5	25	
Rear Shock Absorber Nut (Lower)	34	3.5	25	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Swingarm Pivot Adjusting Collar	20	2.0	15	
Swingarm Pivot Adjusting Collar Locknut	98	10.0	72	
Swingarm Pivot Shaft Nut	108	11.0	80	
Tie-Rod Nuts	59	6.0	44	
Uni-Trak Rocker Arm Nut	34	3.5	25	
Steering				
Front Fork Clamp Bolts (Upper)	20	2.0	15	
Front Fork Clamp Bolts (Lower)	30	3.1	22	AL
Handlebar Bolts	34	3.5	25	L
Handlebar Holder Bolts	25	2.5	18	AL
Steering Stem Head Nut	78	8.0	58	
Steering Stem Nut	23	2.3	17	
Switch Housing Screws	3.5	0.36	31 in·lb	
Frame				
Center Stand Bolts	44	4.5	32	
Front Footpeg Bracket Bolts	25	2.5	18	
Grab Rail Mounting Bolts	25	2.5	18	
Rear Fender Mounting Screws	1.2	0.12	11 in·lb	
Rear Footpeg Bracket Bolts	25	2.5	18	
Rear Frame Bolts	44	4.5	32	L
Rear Frame Pipe Bolts	44	4.5	32	
Rear Frame Pipe Nuts	44	4.5	32	
Seat Lock Bracket Screws	1.2	0.12	11 in·lb	
Sidestand Bolt	44	4.5	32	
Sidestand Bracket Bolts	49	5.0	36	L
Sidestand Switch Bolt	8.8	0.90	78 in·lb	L
Windshield Mounting Bolts	0.42	0.043	3.7 in·lb	
Electrical System				
Alternator Cover Bolts	9.8	1.0	87 in·lb	
Alternator Lead Holding Plate Bolts	8.3	0.85	73 in·lb	L
Alternator Rotor Bolt (First)	69	7.0	51	S
Alternator Rotor Bolt (Final)	110	11.2	81	S
Camshaft Position Sensor Bolt	9.8	1.0	87 in·lb	
Crankshaft Sensor Bolts	5.9	0.60	52 in·lb	L
Crankshaft Sensor Cover Bolts	9.8	1.0	87 in·lb	L (1)
Engine Ground Terminal Bolt	9.8	1.0	87 in·lb	
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	
Fuel Level Sensor Bolts	6.9	0.70	61 in·lb	L
Gear Position Switch Lead Clamp Bolts	9.8	1.0	87 in·lb	
Gear Position Switch Screws	2.9	0.30	26 in·lb	L
Headlight Mounting Screws	1.2	0.12	11 in·lb	
Left Switch Housing Screws	3.5	0.36	31 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Licence Plate Light Cover Mounting Screws	0.9	0.09	8 in·lb	
Licence Plate Light Mounting Screws	1.2	0.12	11 in·lb	
Rear Turn Signal Light Mounting Screws	1.2	0.12	11 in·lb	
Regulator Rectifier Bolts	9.8	1.0	87 in·lb	
Right Switch Housing Screws	3.5	0.36	31 in·lb	
Sidestand Switch Bolt	8.8	0.90	78 in·lb	L
Spark Plugs	13	1.3	115 in·lb	
Speed Sensor Bolt	3.9	0.40	34 in·lb	L
Starter Lockout Switch Screw	0.7	0.07	6 in·lb	
Starter Motor Cable Mounting Bolt	3.9	0.40	34 in·lb	
Starter Motor Cable Terminal Nut	5.9	0.60	52 in·lb	
Starter Motor Mounting Bolts	9.8	1.0	87 in·lb	
Starter Motor Terminal Locknut	6.9	0.70	61 in·lb	
Starter Motor Through Bolts	3.4	0.35	30 in·lb	
Stator Coil Bolts	12	1.2	106 in·lb	
Tail/Brake Light Mounting Screws	1.2	0.12	11 in·lb	
Water Temperature Sensor	25	2.5	18	

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 ~ 33	165 ~ 240

Specifications

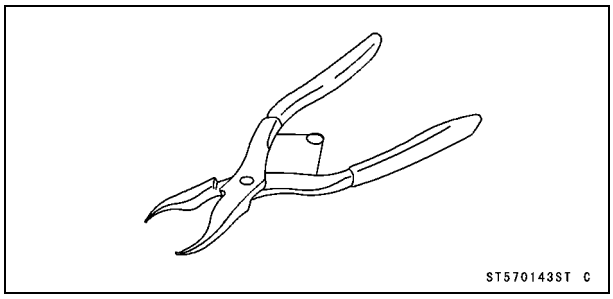
Item	Standard	Service Limit
Fuel System		
Throttle Grip Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	– – –
Idle Speed	1 100 ±50 r/min (rpm)	– – –
Throttle Body Vacuum	39 ±1.33 kPa (293 ±10 mmHg) at idle speed	– – –
Air Cleaner Element	Viscous paper element	– – –
Cooling System		
Coolant:		
Type (Recommended)	Permanent type antifreeze	– – –
Color	Green	– – –
Mixed Ratio	Soft water 50%, coolant 50%	– – –
Freezing Point	–35°C (–31°F)	– – –
Total Amount	3.4 L (3.6 US qt)	– – –
Engine Top End		
Valve Clearance:		
Exhaust	0.22 ~ 0.27 mm (0.0087 ~ 0.0106 in.)	– – –
Inlet	0.15 ~ 0.20 mm (0.0059 ~ 0.0079 in.)	– – –
Clutch		
Clutch Fluid:		
Grade	DOT4	– – –
Clutch Lever Free Play	Non-adjustable	– – –
Engine Lubrication System		
Engine Oil:		
Type	API SE, SF or SG	– – –
	API SH, SJ or SL with JASO MA	
Viscosity	SAE 10W-40	– – –
Capacity	3.7 L (3.9 US qt) (when filter is not removed)	– – –
	4.1 L (4.3 US qt) (when filter is removed)	– – –
	4.5 L (4.8 US qt) (when engine is completely dry)	– – –
Level	Between upper and lower level lines (Wait 2 ~ 3 minutes after idling or running)	– – –
Wheels/Tires		
Tread Depth:		
Front	3.8 mm (0.15 in.)	1 mm (0.04 in.), (AT, CH, DE) 1.6 mm (0.06 in.)
Rear	4.8 mm (0.19 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: 290 kPa (2.9 kgf/cm², 42 psi)	– – –
Rear	Up to 180 kg (397 lb) load: 290 kPa (2.9 kgf/cm², 42 psi)	– – –

Specifications

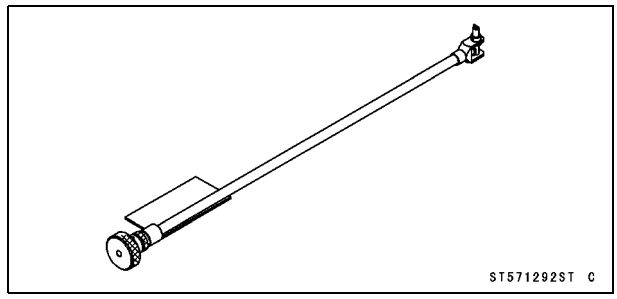
Item	Standard	Service Limit
Final Drive		
Drive Chain Slack	32 ~ 38 mm (1.3 ~ 1.5 in.)	– – –
Drive Chain Wear (20-link Length)	317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)	323 mm (12.7 in.)
Standard Chain:		
Make	DAIDO	– – –
Type	DID50ZVM4 GC&B	– – –
Link	116 links	– – –
Brakes		
Brake Fluid:		
Grade	DOT4	– – –
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

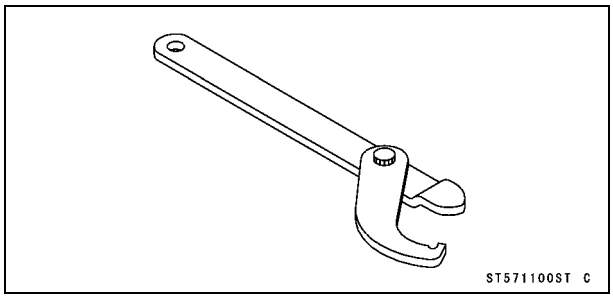
Inside Circlip Pliers:
57001-143



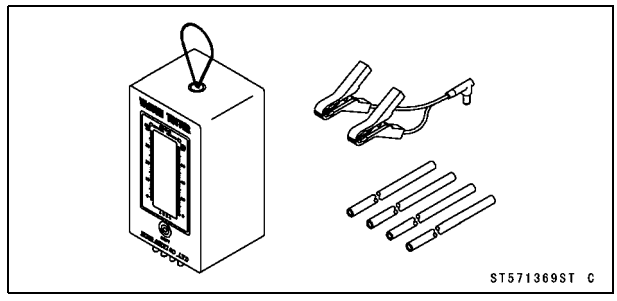
Pilot Screw Adjuster, C:
57001-1292



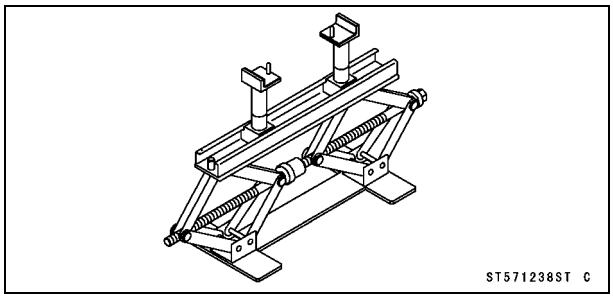
Steering Stem Nut Wrench:
57001-1100



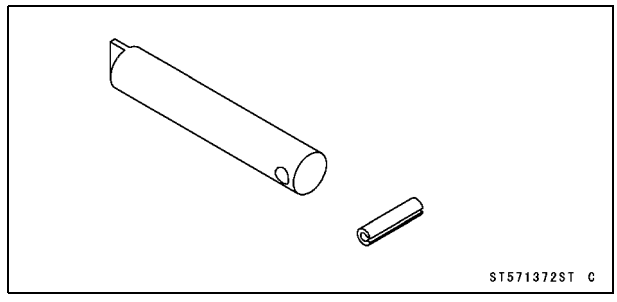
Vacuum Gauge:
57001-1369



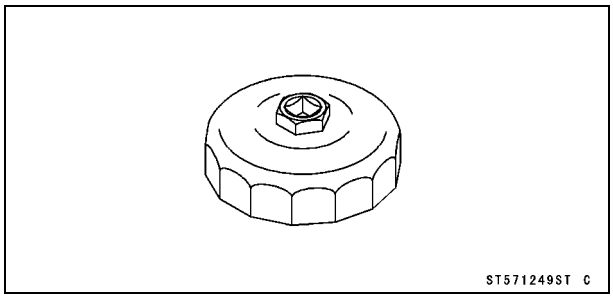
Jack:
57001-1238



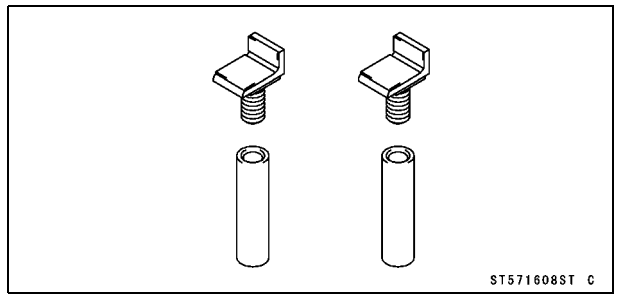
Pilot Screw Adjuster Adapter, ϕ5:
57001-1372



Oil Filter Wrench:
57001-1249



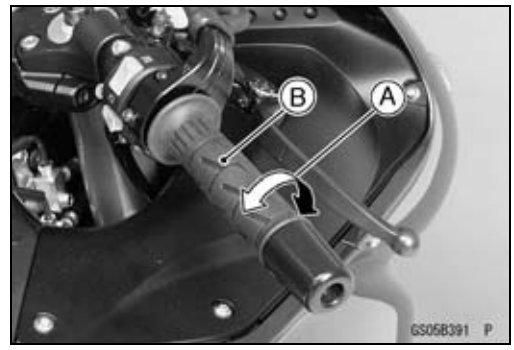
Jack Attachment:
57001-1608



Maintenance Procedure

Fuel System (DFI)

Throttle Control System Inspection



- Check the throttle grip free play [A].

★If the free play is incorrect, adjust the throttle cables.

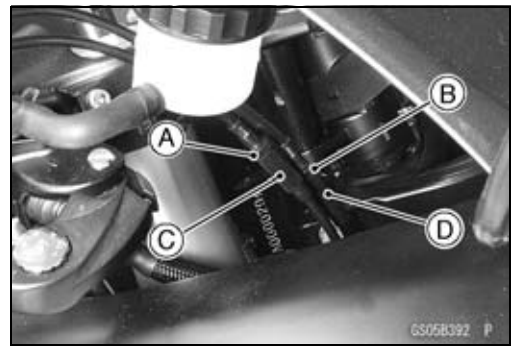
Throttle Grip Free Play
Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)

- Check that the throttle grip [B] moves smoothly from full open to close, and the throttle closes quickly and completely by the return spring in all steering positions.

★If the throttle grip does not return properly, check the throttle cables 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 increases, check the throttle cable free play and the cable routing.



★If necessary, adjust the throttle cable as follows.

- Loosen the locknuts [A] [B].
- Screw both throttle cable adjusters [C] [D] to give the throttle grip plenty of play.
- Turn the decelerator cable adjuster [C] until 2 ~ 3 mm (0.08 ~ 0.12 in.) of throttle grip play is obtained.
- Tighten the locknut [A].
- Turn the accelerator cable adjuster [D] until 2 ~ 3 mm (0.08 ~ 0.12 in.) of throttle grip play is obtained.
- Tighten the locknut [B].

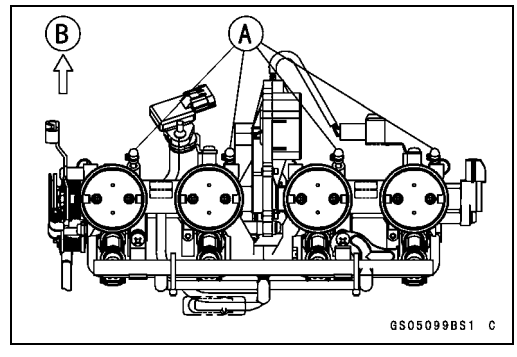
★If the free play cannot be adjusted with the adjusters, replace the cable.

Engine Vacuum Synchronization Inspection

NOTE

○*These procedures are explained on the assumption that the inlet and exhaust systems of the engine are in good condition.*

- Situate the motorcycle so that it is vertical.
- Remove:
  Fuel Tank Cover (see Fuel Tank Removal in the Fuel System (DFI) chapter)
  Left and Right Middle Fairings (see Middle Fairing Removal in the Frame chapter)
- Pull off the rubber caps [A] from the fittings of each throttle body.
  Front [B]



Maintenance Procedure

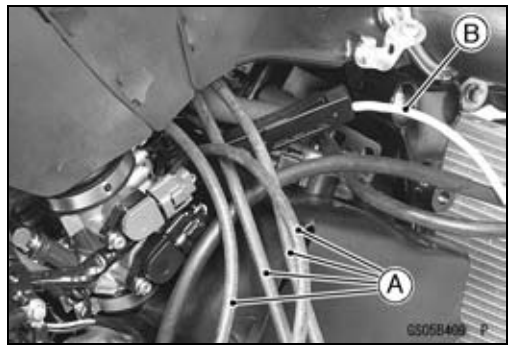
- For the California Model, pull off the vacuum hoses [A].

- Pull off the air switching valve hose [A] from the air cleaner housing.
- Plug the air switching valve hose end and air cleaner housing hole.

- Connect a vacuum gauge (special tool) and hoses [A] to the fittings on the throttle body.

  Special Tool - Vacuum Gauge: 57001-1369

- Connect a highly accurate tachometer [B] to one of the stick coil primary leads.



- Start the engine and warm it up thoroughly.
- Check the idle speed, using a highly accurate tachometer [A].

★If the idle speed is out of the specified range, adjust it with the adjust screw.

CAUTION
Do not measure the idle speed by the tachometer of the meter unit.

- While idling the engine, inspect the throttle body vacuum, using the vacuum gauge [B].

Throttle Body Vacuum
Standard: 39 ±1.33 kPa (293 ±10 mmHg) at Idle Speed
1 100 ±50 r/min (rpm)

Maintenance Procedure

★If any vacuum is not within specifications, first synchronize the balance of the left (#1, #2 throttle valves) and right (#3, #4 throttle valves) assemblies.

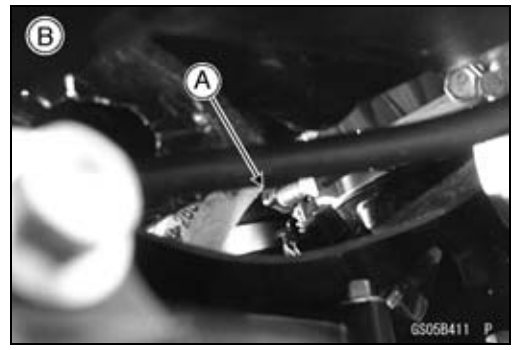
Example:
#1: 260 mmHg
#2: 290 mmHg
#3: 250 mmHg
#4: 270 mmHg

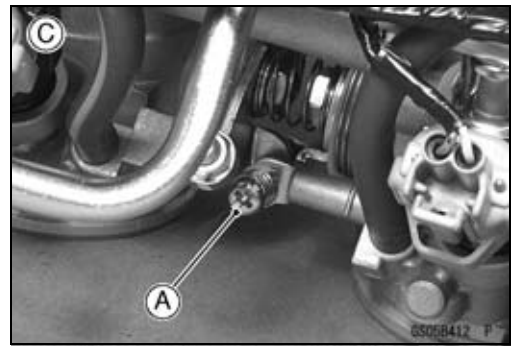
● With the engine at the correct idle speed, equalize higher vacuum of #1 or #2 (for example 290 mmHg) to higher vacuum of #3 or #4 (for example 270 mmHg) by turning the center adjusting screw [A].

Right Side View [B]

○In this photo [C], the throttle body has been removed for clarity.

Special Tool - Pilot Screw Adjuster, C: 57001-1292
Pilot Screw Adjuster Adapter, ϕ5: 57001 -1372





NOTE

○*After adjustment, the final vacuum measurement between the highest throttle valves may not be 290 mmHg (for example). The goal is to have the highest two vacuums between the left (#1 and #2) and right (#3 and #4) banks be the same and be within the service limits.*

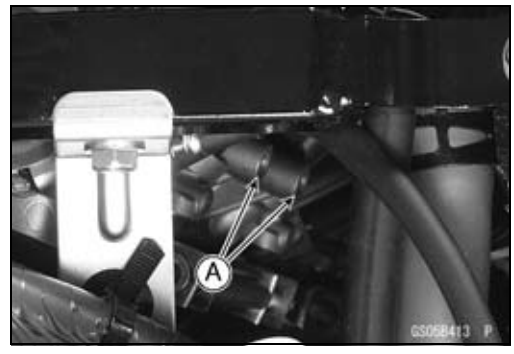
● Open and close the throttle after each measurement, and adjust the idle speed as necessary.
● Once the throttle valves have been synchronized, inspect output voltage of the main throttle sensor to ensure proper operation (procedure is explained at the end of this section).

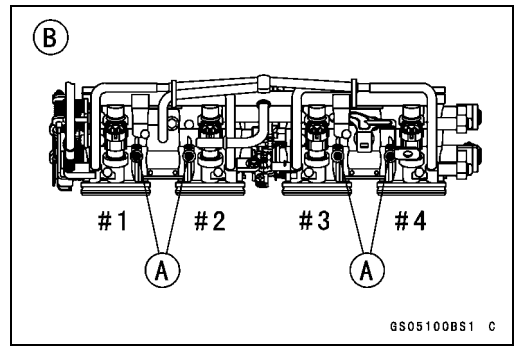
★If a value of measured vacuum pressure is out of the specified range after synchronization, adjust the bypass screws [A].

Special Tool - Pilot Screw Adjuster, C: 57001-1292
Pilot Screw Adjuster Adapter, ϕ5: 57001 -1372

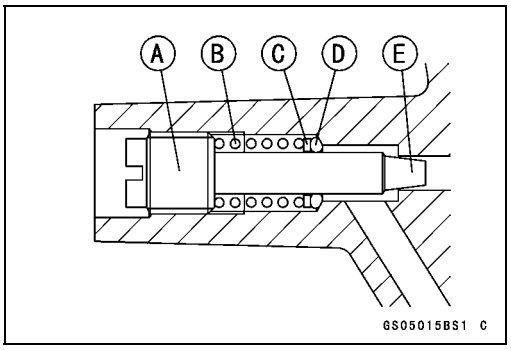
Rear View [B]

● Adjust lower vacuum between #1 and #2 to higher vacuum of #1 and #2.
● Adjust the lower vacuum between #3 and #4 to higher vacuum of #3 and #4.
● Open and close the throttle valves after each measurement, and adjust the idle speed as necessary.
● Check the vacuums as before.
★If all vacuums are within the specification range, finish the engine vacuum synchronization.
★If any vacuum cannot be adjusted within the specification, remove the bypass screws #1 ~ #4 and clean them.





Maintenance Procedure



- Turn in the bypass screw [A] with counting the number of turns until it seals fully but not tightly. Record the number of turns.

Torque - Bypass Screw: 0.2 N·m (0.02 kgf·m, 1.8 in·lb)

CAUTION

Do not over tighten them. They could be damaged, requiring replacement.

- Remove:
  Bypass Screw
  Spring [B]
  Washer [C]
  O-ring [D]
- Check the bypass screw and its hole for carbon deposits.

★If any carbons accumulate, wipe the carbons off from the bypass screw and the hole, using a cotton pad penetrated with a high-flash point solvent.

- Replace the O-ring with a new one.
- Check the tapered portion [E] of the bypass screw for wear or damage.

★If the bypass screw is worn or damaged, replace it.

- Turn in the bypass screw until it seats fully but not tightly.

Torque - Bypass Screw: 0.2 N·m (0.02 kgf·m, 1.8 in·lb)

- Back out the same number of turns counted when first turned in. This is to set the screw to its original position.

NOTE

○*A throttle body has different "turns out" of the bypass screw for each individual unit. On setting the bypass screw, use the "turns out" determined during disassembly.*

- Repeat the same procedure for other bypass screws.
- Repeat the synchronization.

★If the vacuums are correct, check the output voltage of the main throttle sensor (see Output Voltage Inspection of Main Throttle Sensor in the Fuel System (DFI) chapter).

Main Throttle Sensor Output Voltage
Connections to ECU
Meter (+) → Y/W lead (terminal 26)
Meter (–) → BR/BK lead (terminal 34)

Standard: DC 0.63 ~ 0.65 V (at idle throttle opening)

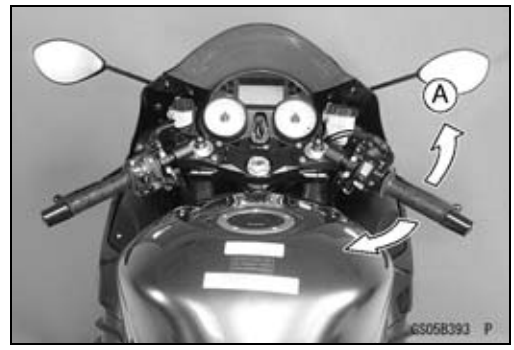
★If the output voltage is out of the range, check the throttle input voltage of the main throttle sensor (see Input Voltage Inspection in the Main Throttle Sensor section in the Fuel System (DFI) chapter).

- Remove the vacuum gauge hoses and install the rubber caps on the original position.
- For the California Model, install the vacuum hoses.

○Route the vacuum hoses according to Cable, Wire, and Hose Routing section in the Appendix chapter. Refer to the diagram of the evaporative emission control system in the Fuel System (DFI) chapter too.

Maintenance Procedure

Idle Speed Inspection



- Start the engine and warm it up thoroughly.
- With the engine idling, turn the handlebar to both sides [A].

★If handlebar movement changes the idle speed, the throttle cables may be improperly adjusted or incorrectly routed, or damaged. Be sure to correct any of these conditions before riding (see Cable, Wire, and Hose Routing section in the Appendix chapter).

⚠ WARNING

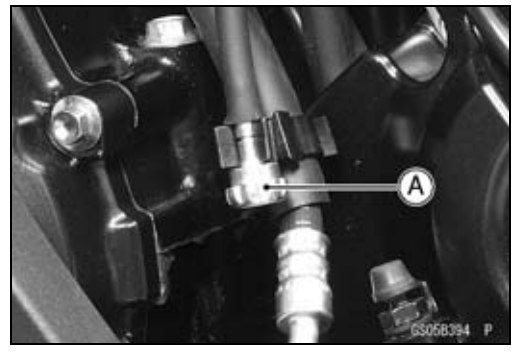
Operation with improperly adjusted, incorrectly routed, or damaged cables could result in an unsafe riding condition.

- Check the idle speed.

★If the idle speed is out of specified range, adjust it.

Idle Speed
Standard: 1 100 ±50 r/min (rpm)

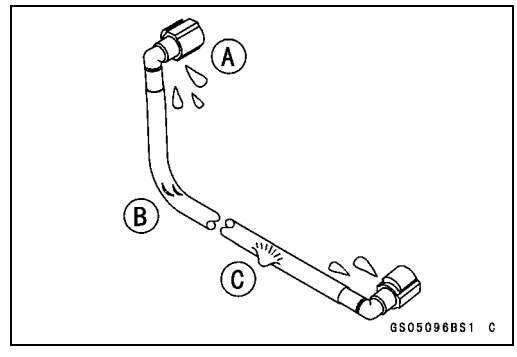
Idle Speed Adjustment



- Start the engine and warm it up thoroughly.
- Turn the adjusting screw [A] until the idle speed is correct.

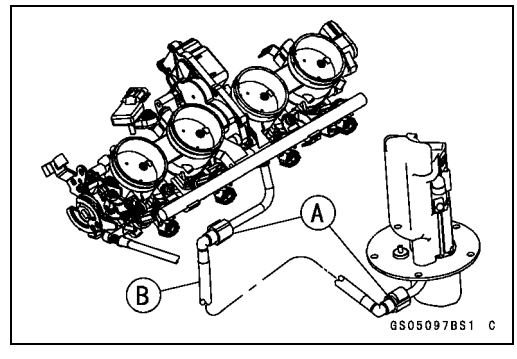
○Open and close the throttle a few times to make sure that the idle speed is within the specified range. Readjust if necessary.

Fuel Hose Inspection (fuel leak, damage, installation condition)



○If the motorcycle is not properly handled, the high pressure inside the fuel line can cause fuel to leak [A] or the hose to burst. Remove the fuel tank (see Fuel Tank Removal in the Fuel System (DFI) chapter) and left middle fairing (see Middle Fairing Removal in the Frame chapter), and check the fuel hose.

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

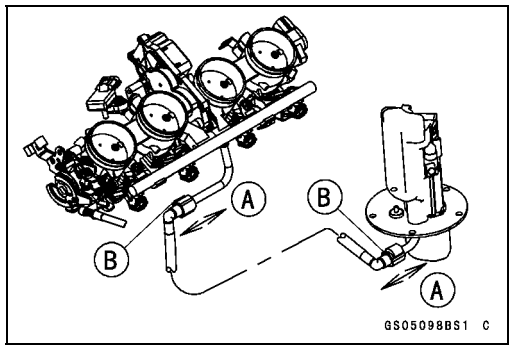


- Check that the hoses are routed according to Cable, Wire, and Hose Routing section in the Appendix chapter.

★Replace the hose if it has been sharply bent or kinked.
Hose Joints [A]
Fuel Hose [B]

Maintenance Procedure

● Check that the hose joints are securely connected.
○Push and pull [A] the hose joint [B] back and forth more than two times, and make sure it is locked.
★If it does not locked, reinstall the hose joint.



⚠ WARNING

Make sure the hose joint is installed correctly on the delivery pipe by sliding the joint, or the fuel could leak.

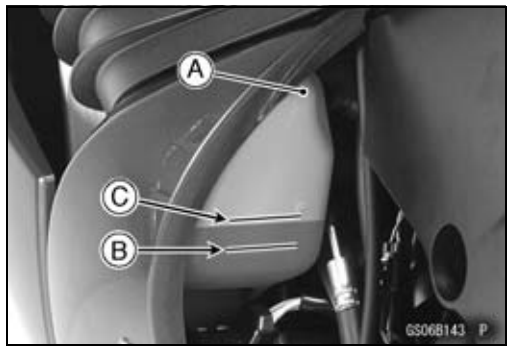
Cooling System

Coolant Level Inspection

NOTE

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

● Check the coolant level in the reserve tank [A] with the motorcycle held perpendicular (Do not use the sidestand).
★If the coolant level is lower than the "L" level line [B], unscrew the reserve tank cap and add coolant to the "F" level line [C].
"L": low
"F": full



CAUTION

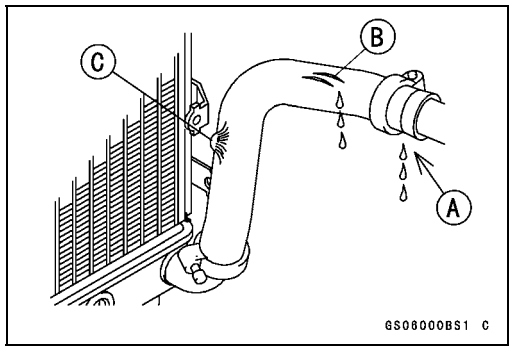
For refilling, add the specified mixture of coolant and soft water. Adding water alone dilutes the coolant and degrades its anticorrosion properties. The diluted coolant can attack the aluminum engine parts. In an emergency, soft water alone can be added. But the diluted coolant must be returned to the correct mixture ratio within a few days.
If coolant must be added often or the reservoir tank has run completely dry, there is probably leakage in the cooling system. Check the system for leaks.
Coolant ruins painted surfaces. Immediately wash away any coolant that spills on the frame, engine, wheels or other painted parts.

Radiator Hose and Pipe Inspection

(Coolant leak, damage, Installation Condition)

○The high pressure inside the radiator hose can cause coolant to leak [A] 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 [B] or bulges [C] are noticed.
● Check that the hoses are securely connected and clamps are tightened correctly.

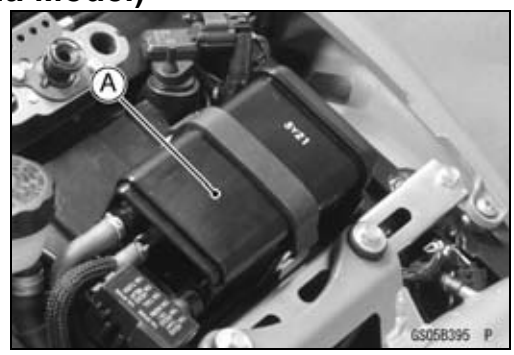
Torque - Radiator Hose Clamp Screws: 2.0 N·m (0.20 kgf·m, 18 in·lb)



Maintenance Procedure

Evaporative Emission Control System (California Model)

Evaporative Emission Control System Inspection



- Inspect the canister as follows.

○Remove the seat (see Seat Removal in the Frame chapter).

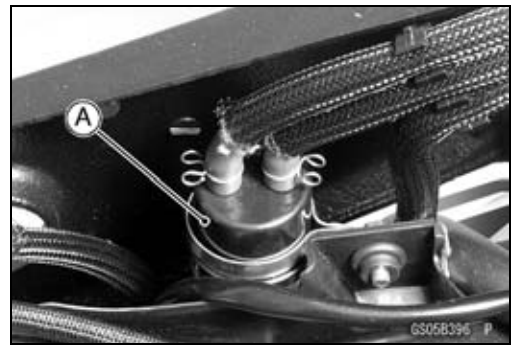
○Remove the canister [A], and disconnect the hoses from the canister.

○Visually inspect the canister for cracks or other damage.

★If the canister has any cracks or bad damage, replace it with a new one.

NOTE

○*The canister is designed to work well through the motorcycle's life without any maintenance if it is used under normal conditions.*



- Check the liquid/vapor separator as follows.

○Remove the fuel tank (see Fuel Tank Removal in the Fuel System (DFI) chapter).

○Disconnect the hoses from the separator, and remove the separator [A] from the motorcycle right side.

○Visually inspect the separator for cracks and other damage.

★If the separator has any cracks or damage, replace it with a new one.

○To prevent the gasoline from flowing into or out of the canister, hold the separator perpendicular to the ground.

- Check the hoses of the evaporative emission control system as follows.

○Check that the hoses are securely connected and clips are in position.

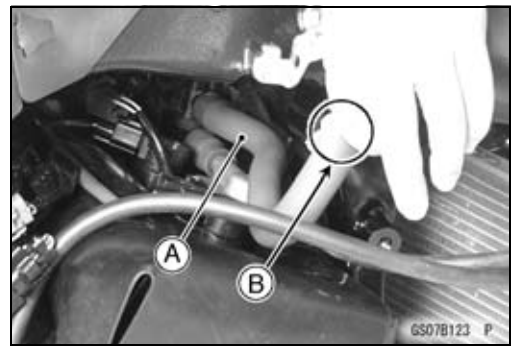
○Replace any kinked, deteriorated or damaged hoses.

○Route the hoses according to Cable, Wire, and Hose Routing section in the Appendix chapter. Refer to the diagram of the evaporative emission control system in the Fuel System (DFI) chapter too.

○When installing the hoses, avoid sharp bending, kinking, flattening or twisting, and route the hoses with a minimum of bending so that the emission flow will not be obstructed.

Air Suction System

Air Suction System Damage Inspection



- Remove the right middle fairing (see Middle Fairing Removal in the Frame chapter).
- Pull the air switching vale hose [A] out of the air cleaner housing.
- Start the engine and run it at idle speed.
- Plug [B] the air switching valve hose end with your finger and feel vaccum pulsing in the hose.

★If there is no vaccum pulsation, check the hose line for leak. If there is no leak, check the air switching valve (see Air Switching Valve Unit Test in the Electrical System chapter) or air suction valve (see Air Suction Valve Inspection in the Engine Top End chapter).