

Product: 2006 Kawasaki ZZR 1400/ZZR1400ABS/Ninja ZX-14 Motorcycle Service Repair Workshop Manual

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ZZR 1400

ZZR1400 ABS

Ninja ZX-14

Kawasaki



Motorcycle Service Manual

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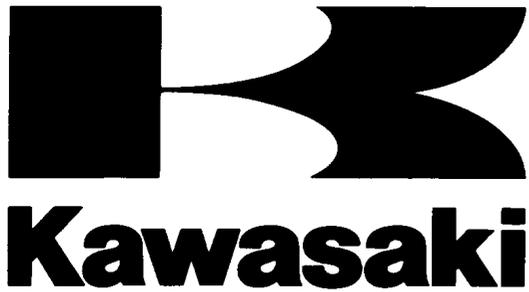
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Quick Reference Guide

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

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



**ZZR 1400
ZZR1400 ABS
Ninja ZX-14**

Motorcycle Service Manual

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

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

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

LIST OF ABBREVIATIONS

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

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		

EMISSION CONTROL INFORMATION

To protect the environment in which we all live, Kawasaki has incorporated crankcase emission (1) and exhaust emission (2) control systems in compliance with applicable regulations of the United States Environmental Protection Agency and California Air Resources Board. Additionally, Kawasaki has incorporated an evaporative emission control system (3) in compliance with applicable regulations of the California Air Resources Board on vehicles sold in California only.

1. Crankcase Emission Control System

This system eliminates the release of crankcase vapors into the atmosphere. Instead, the vapors are routed through an oil separator to the inlet side of the engine. While the engine is operating, the vapors are drawn into combustion chamber, where they are burned along with the fuel and air supplied by the fuel injection system.

2. Exhaust Emission Control System

This system reduces the amount of pollutants discharged into the atmosphere by the exhaust of this motorcycle. The fuel, ignition, and exhaust systems of this motorcycle have been carefully designed and constructed to ensure an efficient engine with low exhaust pollutant levels.

The exhaust system of this model motorcycle manufactured primarily for sale in California includes a catalytic converter system.

3. Evaporative Emission Control System

Vapors caused by fuel evaporation in the fuel system are not vented into the atmosphere. Instead, fuel vapors are routed into the running engine to be burned, or stored in a canister when the engine is stopped. Liquid fuel is caught by a vapor separator and returned to the fuel tank.

The Clean Air Act, which is the Federal law covering motor vehicle pollution, contains what is commonly referred to as the Act's "tampering provisions".

"Sec. 203(a) The following acts and the causing thereof are prohibited...

(3)(A) for any person to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title prior to its sale and delivery to the ultimate purchaser, or for any manufacturer or dealer knowingly to remove or render inoperative any such device or element of design after such sale and delivery to the ultimate purchaser.

(3)(B) for any person engaged in the business of repairing, servicing, selling, leasing, or trading motor vehicles or motor vehicle engines, or who operates a fleet of motor vehicles knowingly to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title following its sale and delivery to the ultimate purchaser..."

NOTE

○The phrase "remove or render inoperative any device or element of design" has been generally interpreted as follows.

1. Tampering does not include the temporary removal or rendering inoperative of devices or elements of design in order to perform maintenance.
2. Tampering could include.
 - a. Maladjustment of vehicle components such that the emission standards are exceeded.
 - b. Use of replacement parts or accessories which adversely affect the performance or durability of the motorcycle.
 - c. Addition of components or accessories that result in the vehicle exceeding the standards.
 - d. Permanently removing, disconnecting, or rendering inoperative any component or element of design of the emission control systems.

WE RECOMMEND THAT ALL DEALERS OBSERVE THESE PROVISIONS OF FEDERAL LAW, THE VIOLATION OF WHICH IS PUNISHABLE BY CIVIL PENALTIES NOT EXCEEDING \$10 000 PER VIOLATION.

TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED

Federal law prohibits the following acts or the causing thereof. (1) The removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below.

- Replacement of the original exhaust system or muffler with a component not in compliance with Federal regulations.
- Removal of the muffler(s) or any internal portion of the muffler(s).
- Removal of the air box or air box cover.
- Modifications to the muffler(s) or air inlet system by cutting, drilling, or other means if such modifications result in increased noise levels.

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

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1-2 GENERAL INFORMATION

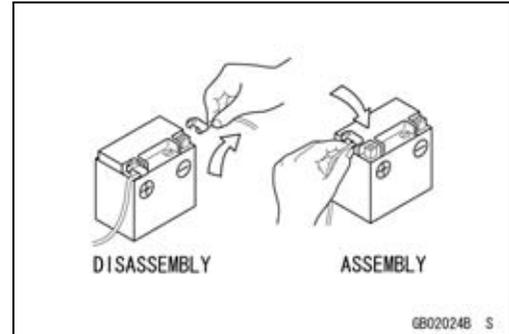
Before Servicing

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

Especially note the following.

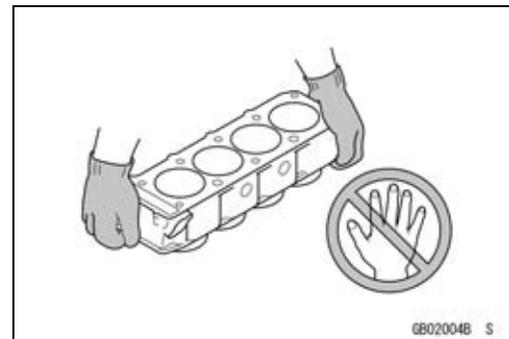
Battery Ground

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.



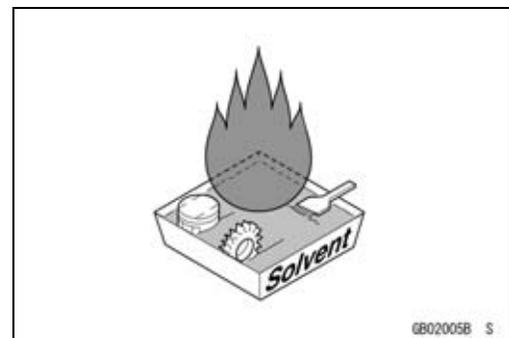
Edges of Parts

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



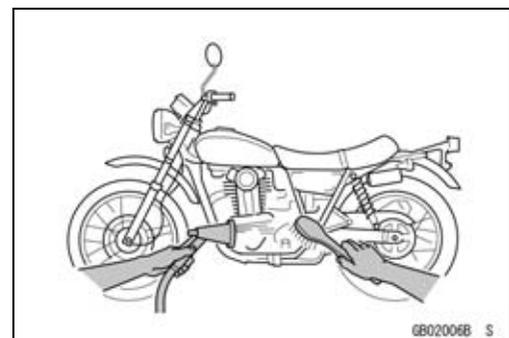
Solvent

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



Cleaning vehicle before disassembly

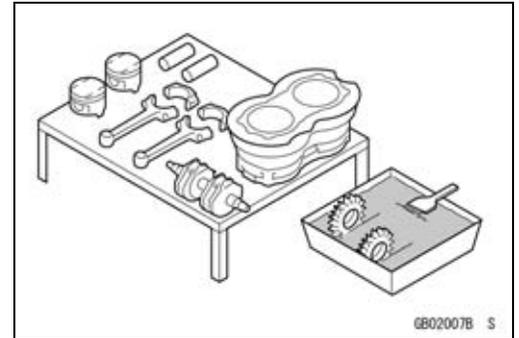
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

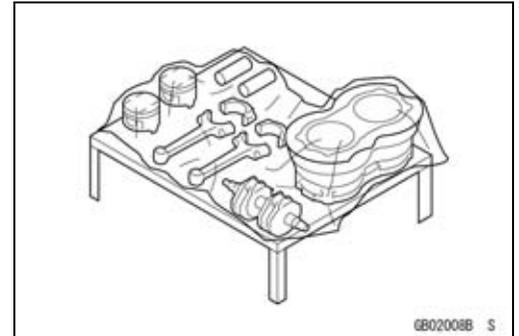
Arrangement and Cleaning of Removed Parts

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.



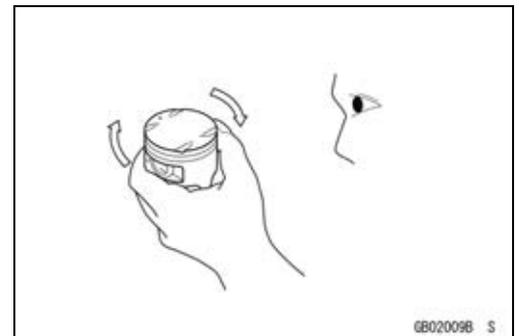
Storage of Removed Parts

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.



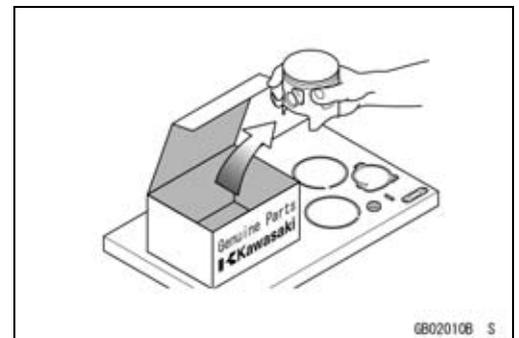
Inspection

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.



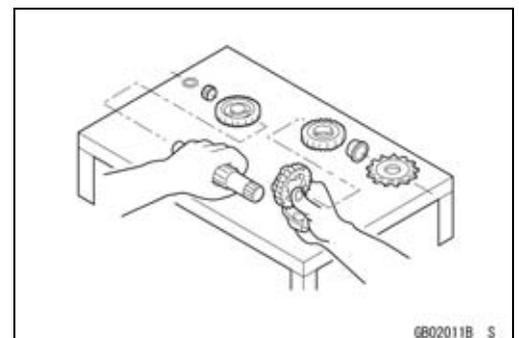
Replacement Parts

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.

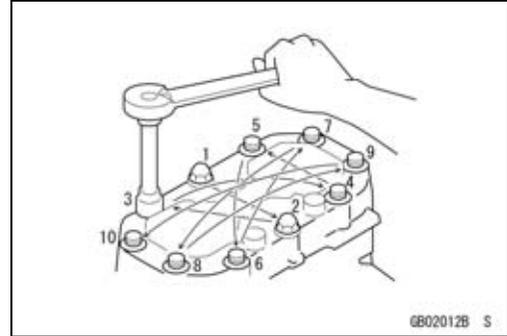


1-4 GENERAL INFORMATION

Before Servicing

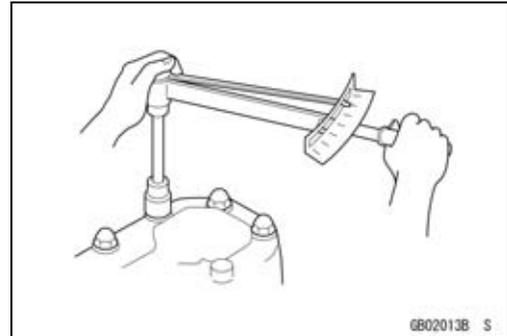
Tightening Sequence

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.



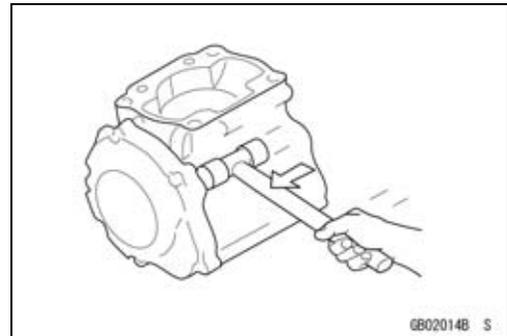
Tightening Torque

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.



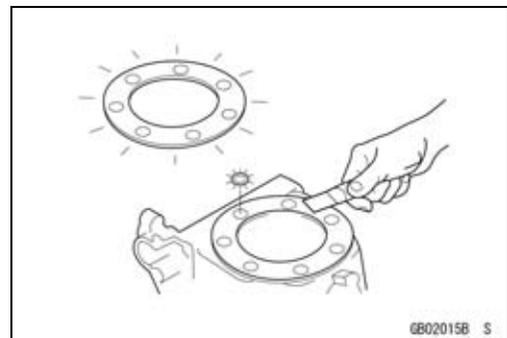
Force

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

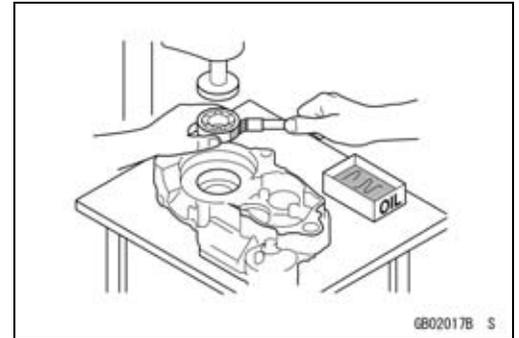
For applications that require Liquid Gasket or a Non-permanent Locking Agent, clean the surfaces so that no oil residue remains before applying liquid gasket or non-permanent locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Before Servicing

Press

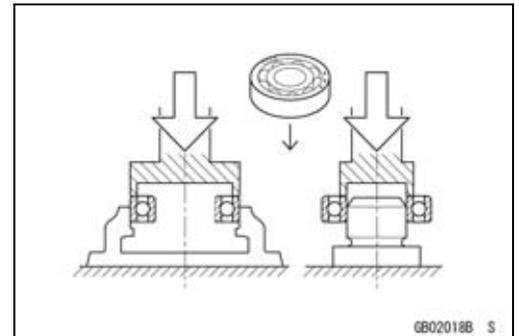
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



Ball Bearing and Needle Bearing

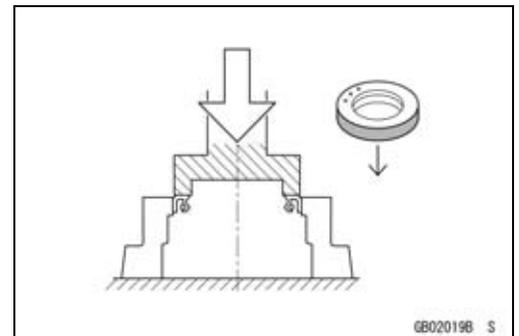
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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

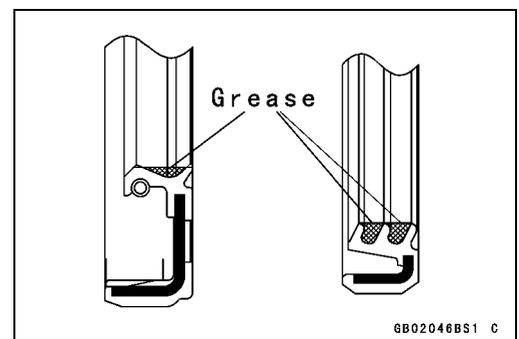


Oil Seal, Grease Seal

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.

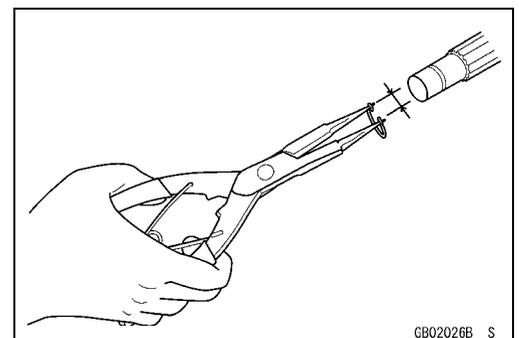


Apply specified grease to the lip of seal before installing the seal.



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.

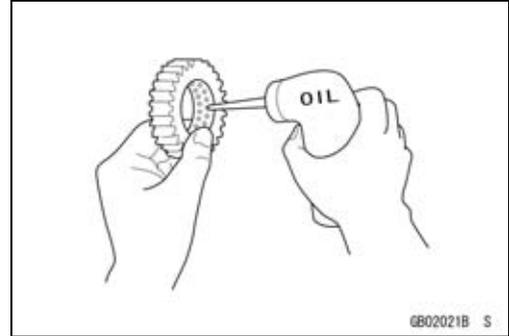


1-6 GENERAL INFORMATION

Before Servicing

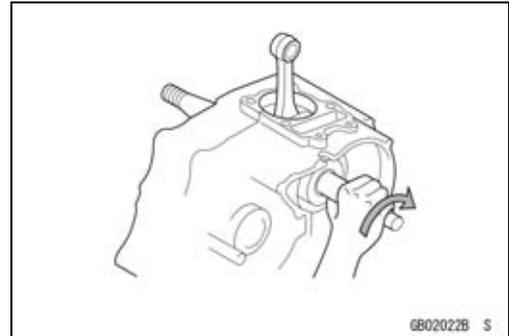
Lubrication

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.



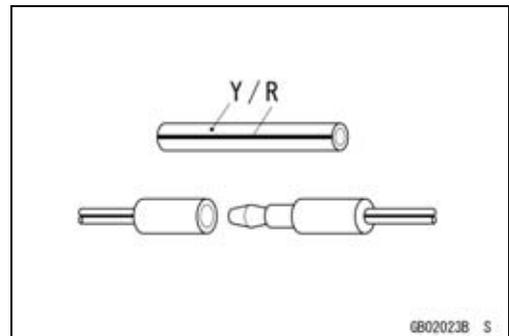
Direction of Engine Rotation

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).



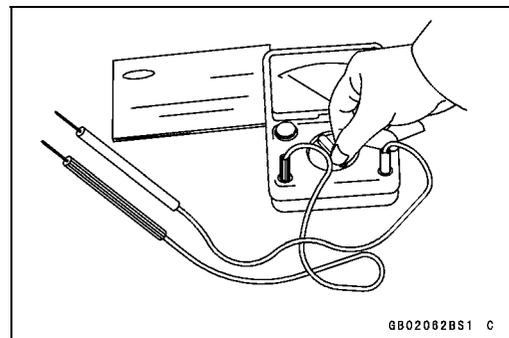
Electrical Wires

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 manufacturer's instructions thoroughly before using the meter. Incorrect values may lead to improper adjustments.



Model Identification

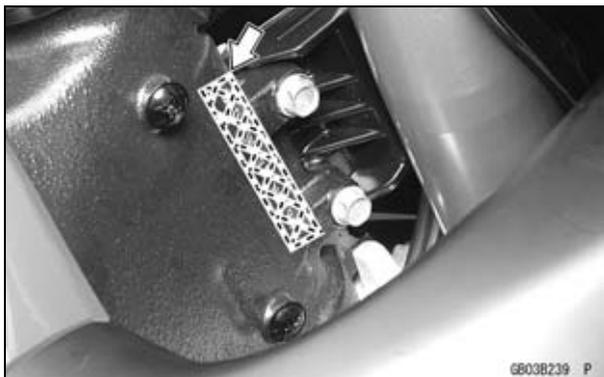
ZX1400A6F (Europe) Left Side View



ZX1400A6F (Europe) Right Side View



Frame Number



Engine Number



1-8 GENERAL INFORMATION

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



68038243 P

ZX1400A6F (Malaysia) Right Side View



68038244 P

1-10 GENERAL INFORMATION

Model Identification

ZX1400B6F (Europe) Left Side View



ZX1400B6F (Europe) Right Side View



Model Identification

ZX1400B6F (Malaysia) Left Side View



ZX1400B6F (Malaysia) Right Side View



1-12 GENERAL INFORMATION

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

1-14 GENERAL INFORMATION

General Specifications

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

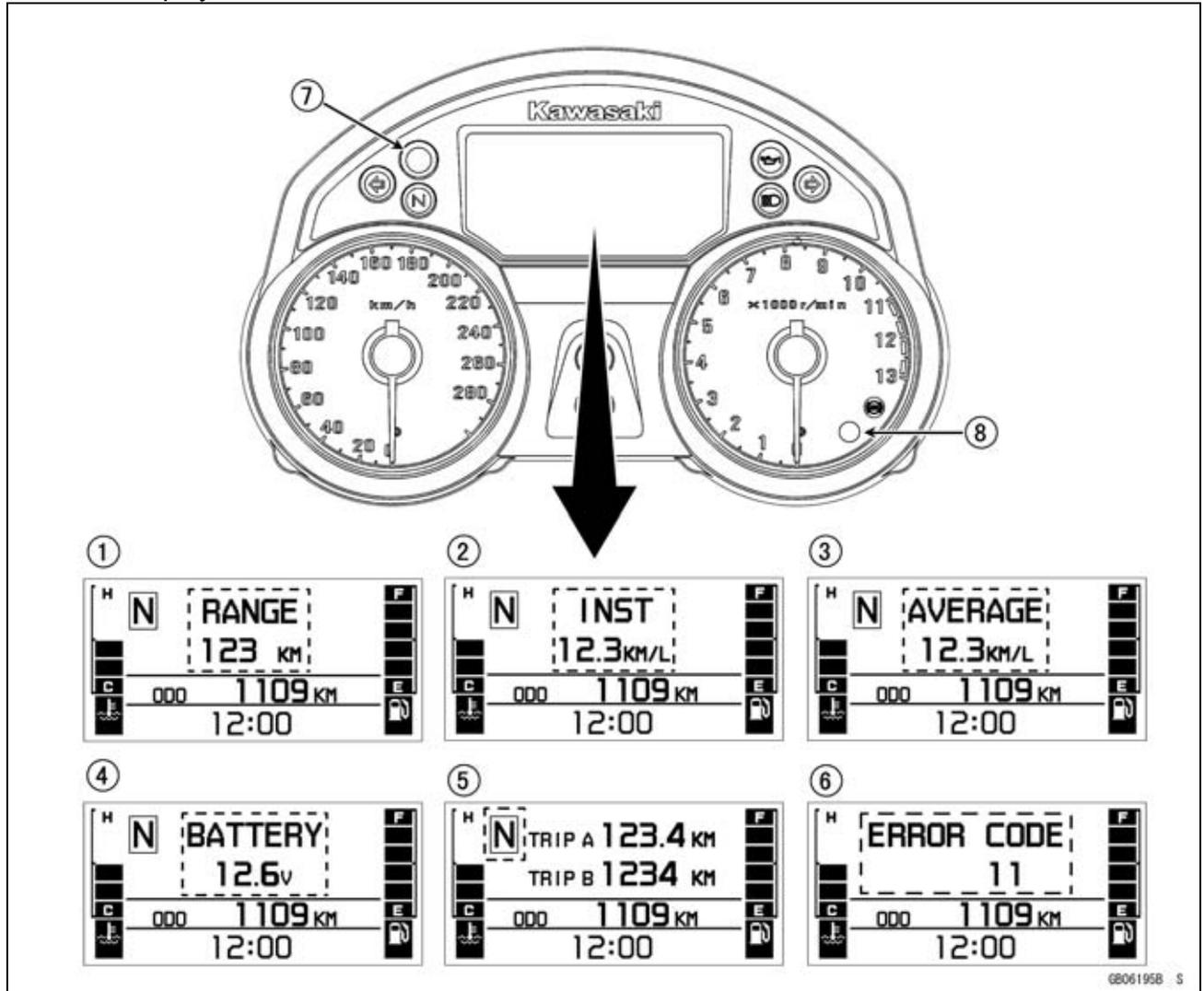
Specifications subject to change without notice, and may not apply to every country.

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 | 5. Gear Position |
| 2. Fuel Consumption (Current) | 6. Service Code |
| 3. Fuel Consumption (Average) | 7. Immobilizer Registration |
| 4. Battery Voltage | 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.

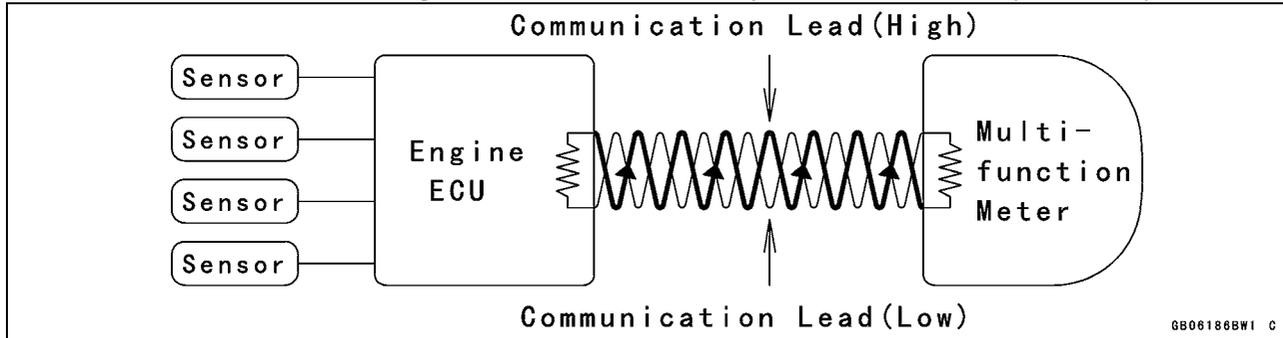
*bps: bit/sec → the number of signals (0 or 1) transmittable/receivable per second

1-16 GENERAL INFORMATION

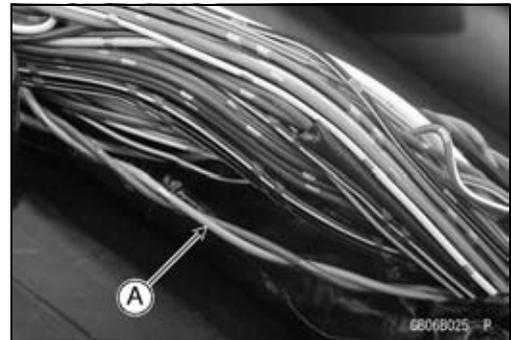
Technical Information-CAN (Controller Area Network) Communication System

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

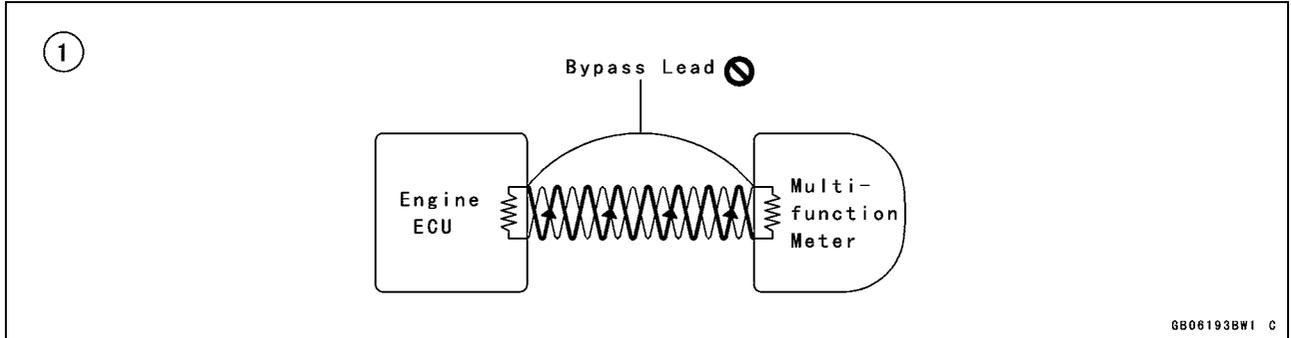
System failure and maintenance

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.

1-18 GENERAL INFORMATION

Unit Conversion Table

Prefixes for Units

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

Units of Mass

kg	×	2.205	=	lb
g	×	0.03527	=	oz

Units of Volume

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

Units of Force

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

Units of Length

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

Units of Torque

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

Units of Pressure

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

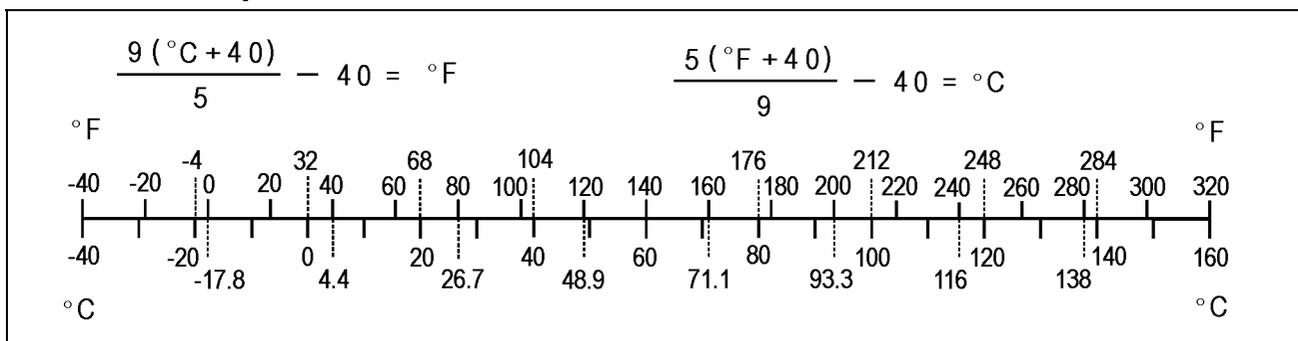
Units of Speed

km/h	×	0.6214	=	mph
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Units of Power

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

Units of Temperature



Periodic Maintenance

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