Kawasaki

Z750

Motorcycle Service Manual

Quick Reference Guide

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.

Kawasaki

Z750

Motorcycle Service Manual

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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)		

Read OWNER'S MANUAL before operating.

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 Special Tool Catalog or 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 preparing this manual, we divided the product into its major systems. These systems became the manual's chapters. All information for a particular system from adjustment through disassembly and inspection is located in a single chapter.

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.

The Periodic Maintenance Chart is located in the Periodic Maintenance chapter. The chart gives a time schedule for required maintenance operations.

If you want spark plug information, for example, go to the Periodic Maintenance Chart first. The chart tells you how frequently to clean and gap the plug. Next, use the Quick Reference Guide to locate the Periodic Maintenance chapter. Then, use the Table of Contents on the first page of the chapter to find the Spark Plug 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

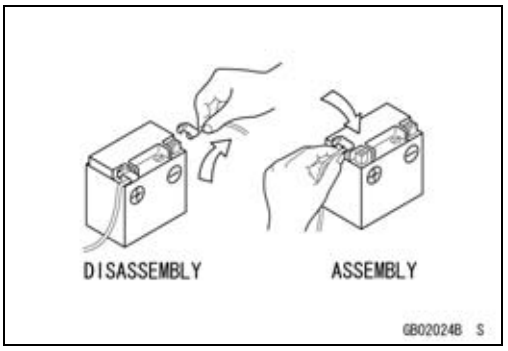
Before Servicing

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:

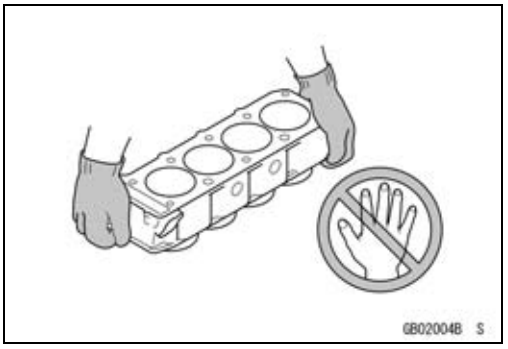
Battery Ground

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



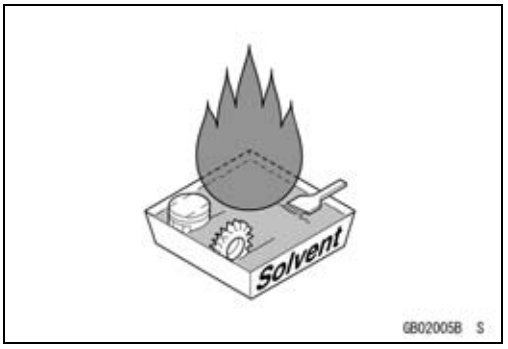
Edges of Parts

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



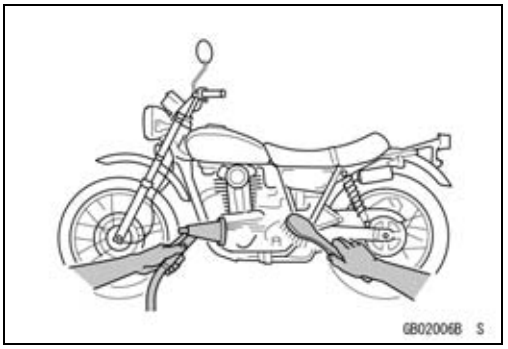
Solvent

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

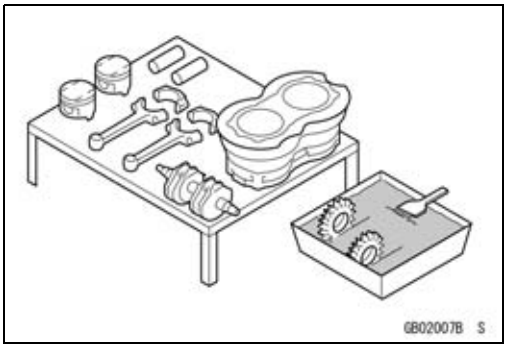
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

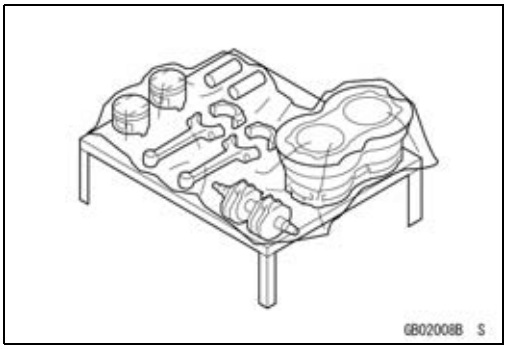
Arrangement and Cleaning of Removed Parts

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.



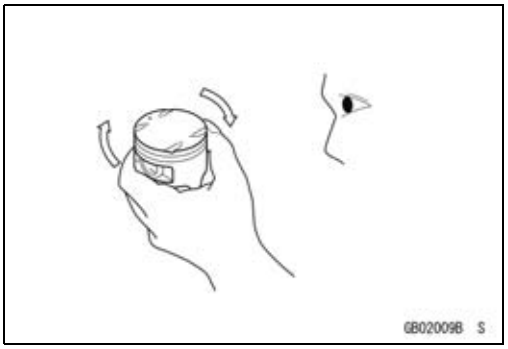
Storage of Removed Parts

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.



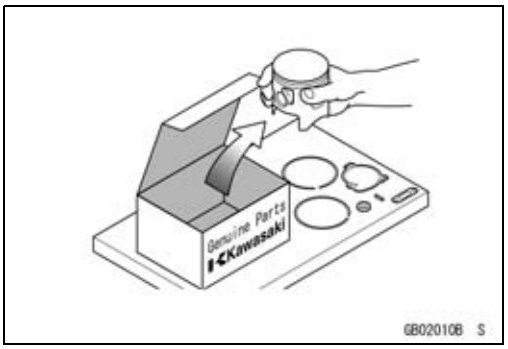
Inspection

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.



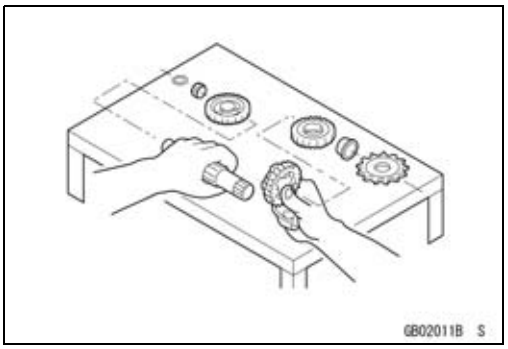
Replacement Parts

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

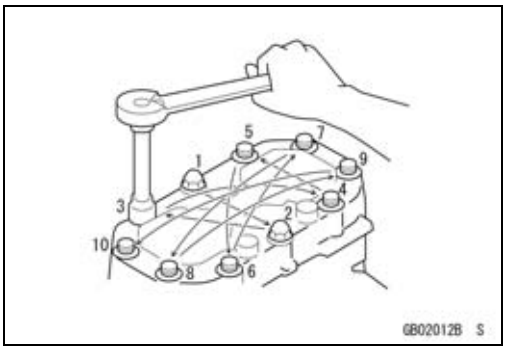
In most cases assembly order is the reverse of disassembly, however, if assembly order is provided in this Service Manual, follow the procedures given.



Before Servicing

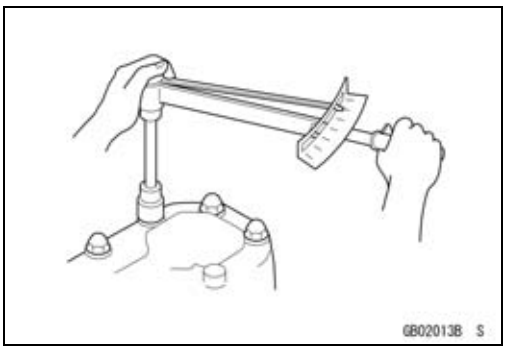
Tightening Sequence

Bolts, nuts, or screws must be tightened according to the specified sequence to prevent case warpage or deformation which can lead to malfunction. If the specified tightening sequence is not indicated, tighten the fasteners alternating diagonally.



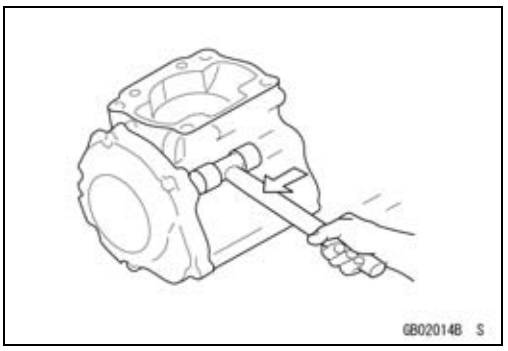
Tightening Torque

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



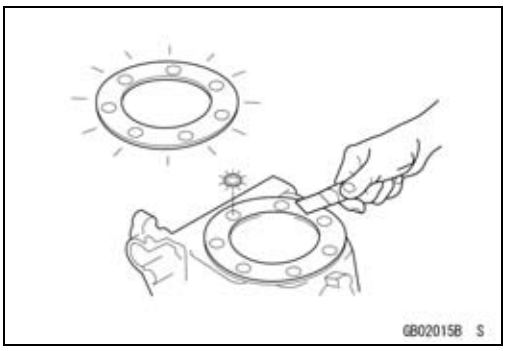
Force

Use common sense during disassembly and assembly, excessive force can cause expensive or hard to repair damage. When necessary, remove screws that have a non -permanent locking agent applied using an impact driver. Use a plastic-faced mallet whenever tapping is necessary.



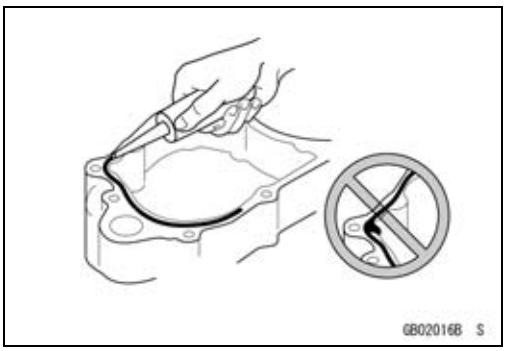
Gasket, O-ring

Hardening, shrinkage, or damage of both gaskets and O-rings after disassembly can reduce sealing performance. Remove old gaskets and clean the sealing surfaces thoroughly so that no gasket material or other material remains. Install new gaskets and replace used O-rings when re-assembling



Liquid Gasket, Locking Agent

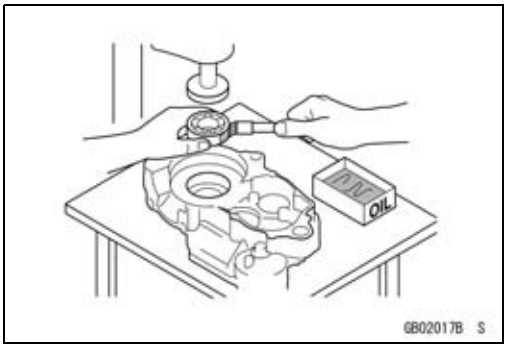
For applications that require Liquid Gasket or a Locking agent, clean the surfaces so that no oil residue remains before applying liquid gasket or locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Before Servicing

Press

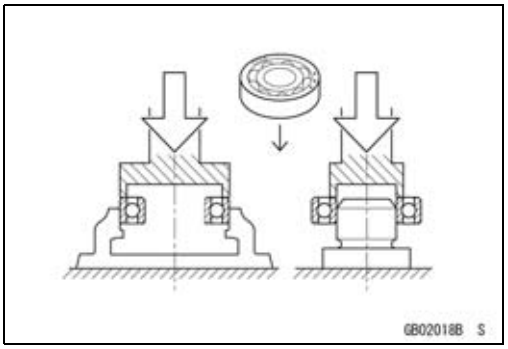
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



Ball Bearing and Needle Bearing

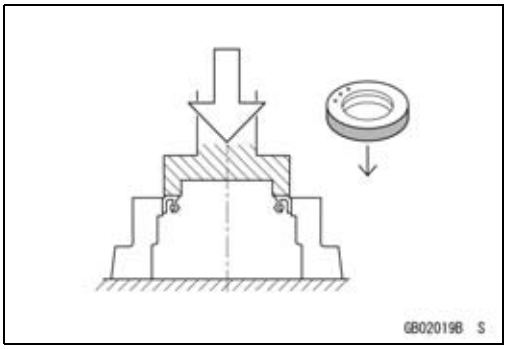
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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



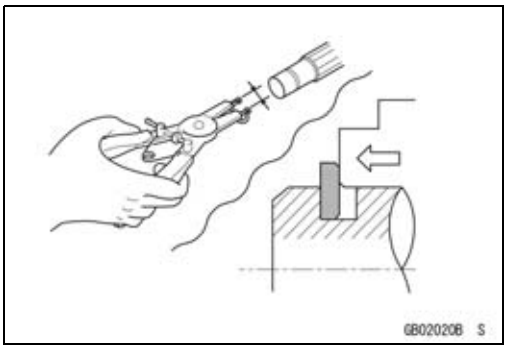
Oil Seal, Grease Seal

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.



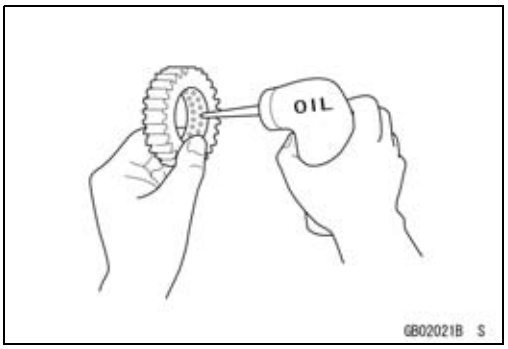
Circlips, Cotter Pins

Replace circlips or cotter pins that were removed with new ones. Install the circlip with its sharp edge facing outward and its chamfered side facing inward to prevent the clip from being pushed out of its groove when loaded. Take care not to open the clip excessively when installing to prevent deformation.



Lubrication

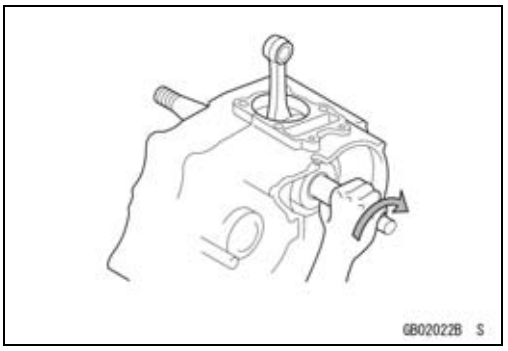
It is important to lubricate rotating or sliding parts during assembly to minimize wear during initial operation. Lubrication points are called out throughout this manual, apply the specific oil or grease as specified.



Before Servicing

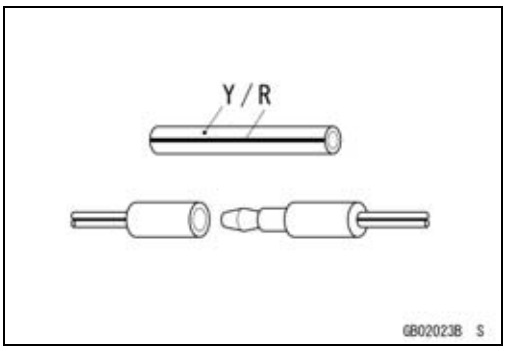
Direction of Engine Rotation

When rotating the crankshaft by hand, the free play amount of rotating direction will affect the adjustment. Rotate the crankshaft to positive direction (clockwise viewed from output side).



Electrical Wires

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



Model Identification

ZR750–J1 Left Side View:

ZR750–J1 Right Side View:

General Specifications

Items		ZR750–J1
Dimensions:		
Overall length		2 080 mm (81.9 in.)
Overall width		780 mm (30.7 in.)
Overall height		1 055 mm (41.5 in.)
Wheelbase		1 425 mm (56.1 in.)
Road clearance		165 mm (6.5 in.)
Seat height		815 mm (32.1 in.)
Dry mass		195 kg (430.0 lb)
Curb mass:	Front	111 kg (244.8 lb)
	Rear	107 kg (235.9 lb)
Fuel tank capacity		18 L (5.0 US gal.)
Performance:		
Minimum turning radius		2.9 m (9.5 ft)
Engine:		
Type		4-stroke, DOHC, 4-cylinder
Cooling system		Liquid-cooled
Bore and stroke		68.4 × 50.9 mm (2.7 × 2.0 in.)
Displacement		748 mL (45.64 cu in.)
Compression ratio		11.3
Maximum horsepower		79 kW (107 PS) @10 500 r/min (rpm), (MY, AU) 80 kW (109 PS) @11 000 r/min (rpm) (HR) 78.2 kW (106 PS) @11 000 r/min (rpm)
Maximum torque		75 N·m (7.6 kgf·m, 55 ft·lb) @8 200 r/min (rpm), (HR) 73 N·m (7.4 kgf·m, 54 ft·lb) @8 200 r/min (rpm)
Carburetion system		FI (Fuel Injection) KEIHIN TTK34 × 4
Starting system		Electric starter
Ignition system		Battery and coil (transistorized)
Timing advance		Electronically advanced (digital igniter)
Ignition timing		From 10° BTDC @1 100 r/min (rpm) to 37° BTDC @5 800 r/min (rpm)
Spark plug		NGK CR9EK or ND U27ETR
Cylinder numbering method		Left to right, 1-2-3-4
Firing order		1-2-4-3
Valve timing:		
Inlet	Open	38° BTDC
	Close	66° ABDC
	Duration	284°
Exhaust	Open	57° BBDC
	Close	31° ATDC
	Duration	268°
Lubrication system		Forced lubrication (wet sump)
Engine oil:		
Type		API SE, SF or SG API SH or SJ with JASO MA

General Specifications

Items		ZR750–J1
Viscosity		SAE 10W-40
Capacity		3.8 L (4.0 US qt)
Drive Train:		
Primary reduction system:		
Type		Gear
Reduction ratio		1.714 (84/49)
Clutch type		Wet multi disc
Transmission:		
Type		6-speed, constant mesh, return shift
Gear ratios:	1st	2.571 (36/14)
	2nd	1.941 (33/17)
	3rd	1.555 (28/18)
	4th	1.333 (28/21)
	5th	1.200 (24/20)
	6th	1.095 (23/21)
Final drive system:		
Type		Chain drive
Reduction ratio		2.867 (43/15)
Overall drive ratio		5.382 @Top gear
Frame:		
Type		Tubular, diamond
Caster (rake angle)		24.5°
Trail		104 mm (4.1 in.)
Front tire:	Type	Tubeless
	Size	120/70 ZR17 M/C (58W)
Rear tire:	Type	Tubeless
	Size	180/55 ZR17 M/C (73W)
Front suspension:	Type	Telescopic fork (upside-down)
	Wheel travel	120 mm (4.7 in.)
Rear suspension:	Type	Swingarm (uni-trak)
	Wheel travel	126 mm (5.0 in.)
Brake Type:	Front	Dual discs
	Rear	Single disc
Electrical Equipment:		
Battery		12 V 8 Ah
Headlight:	Type	Semi-sealed beam
	Bulb	12 V 55 W × 2/55 W (Hi/Lo)
Tail/brake light		12 V 0.5/3.8 W (LED), (CA) 12 V 0.5/5W (LED)
Alternator:	Type	Three-phase AC
	Rated output	24 A/14 V @5 000 r/min (rpm)

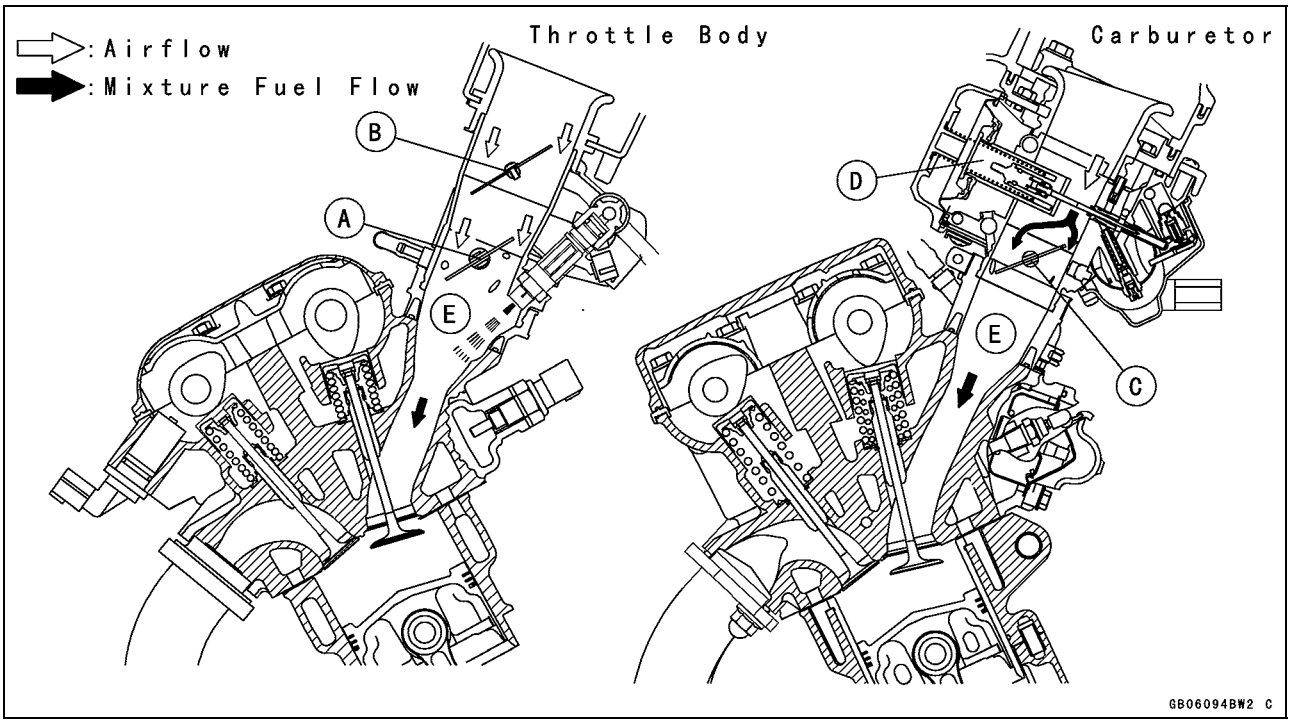
Specifications are subject to change without notice, and may not apply to every country.
(AU): Australia Model
(CA): Canada Model
(MY): Malaysia Model
(HR): with Honeycomb Catalytic Converter Model (Restricted model)

Technical Information – Air Inlet System

Subthrottle Control System

The ZR750–J1 employs large bore throttle bodies to increase power output. However, sudden changes in throttle opening can cause hesitation and jerky throttle response with a single butterfly valve in a large bore. Therefore two throttle valves are placed in each inlet tract, the main throttle valve located closest to the cylinder and a subthrottle valve placed further up the inlet tract. The main throttle valve is operated by the rider when the throttle grip is turned clockwise or counterclockwise, while the subthrottle valve is operated by a stepping motor controlled by the ECU. The subthrottle valve automatically adjusts air inlet to more precisely match engine demand, so that when the main throttle is opened quickly there is no hesitation or jerky response.

The subthrottle valves allow the fuel injection system to provide smooth throttle response, similar to that of a constant velocity carburetor, no matter how quickly the throttle is opened.



A. Main Throttle Valve
B. Subthrottle Valve
C. Throttle Valve
D. Vacuum Piston
E. Inlet Air

Technical Information – Air Inlet System

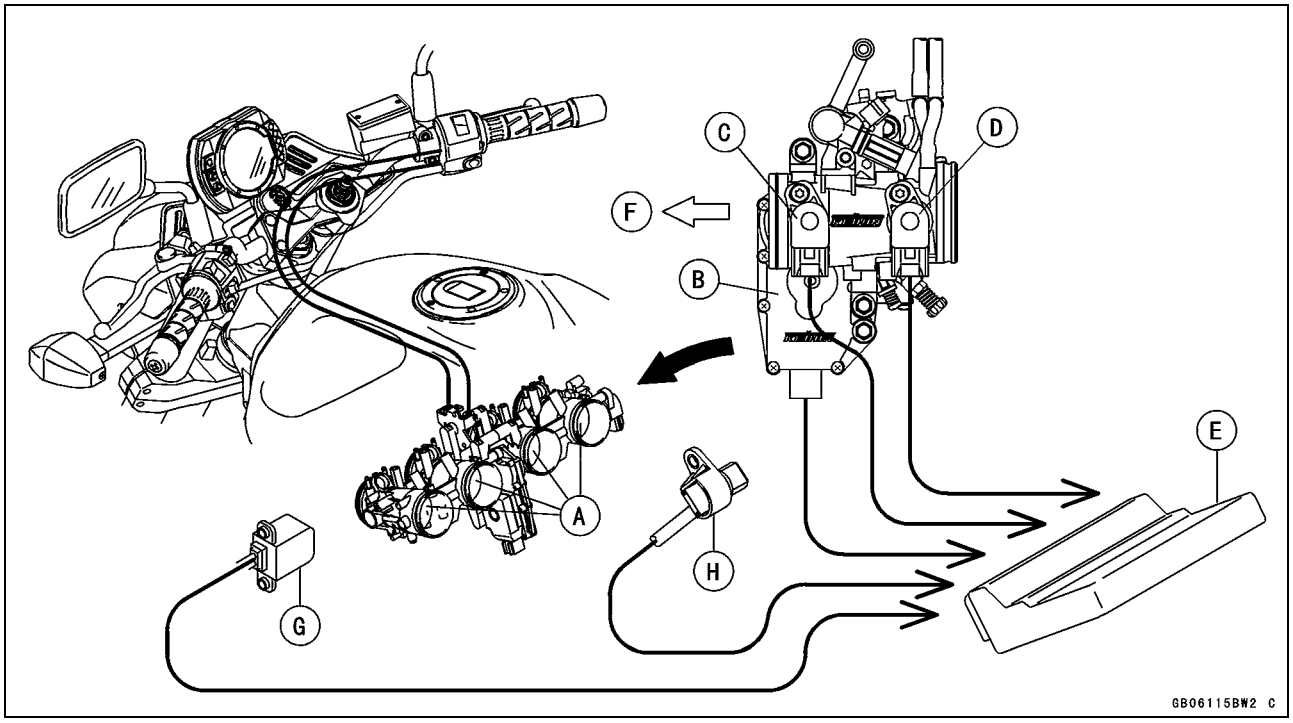
Operation

The subthrottle control system consists of the subthrottle valve, subthrottle valve actuator with a stepping motor built in it, ECU, and subthrottle sensor. The subthrottle valve is built in the each throttle body.

The subthrottle control system operates on the signal supplied from the ECU. The open/close operation of the subthrottle valve is performed by the subthrottle actuator which is controlled by the ECU to change the current direction into the motor of the subthrottle valve actuator.

The subthrottle sensor detects the subthrottle valve actuator movement by measuring voltage and the ECU determines the subthrottle valve angle based on the operation map.

When turning the ignition switch ON, every time the ECU automatically drives the subthrottle valve from fully closed position to fully opened position. The ECU memorizes these positions and turns back the subthrottle valve to the original point to confirm the subthrottle valve idling voltage.



A. Subthrottle Valves
B. Subthrottle Valve Actuator
C. Subthrottle Sensor
D. Main Throttle Sensor
E. ECU (Electric Control Unit)
F. Air Cleaner Side
G. Crankshaft Sensor
H. Speed Sensor

Technical Information – New Ignition Interlock Sidestand

Outline

The New Ignition Interlock Sidestand System applied to ZR750–J1 models that cannot function if gears are engaged and/or the sidestand is not lifted upward even though clutch lever pulled in, which differs from the traditional one. Refer to the tables below as to the engine starts and/or the driving at each condition.

New Ignition Interlock Sidestand System

	Side Stand	Gear Position	Clutch Lever	Engine Start	Engine Run
A	Up	Neutral	Released	Starts	Continue running
B	Up	Neutral	Pulled in	Starts	Continue running
C	Up	In Gear	Released	Doesn't start	Continue running
D	Up	In Gear	Pulled in	Starts	Continue running
E	Down	Neutral	Released	Starts	Continue running
F	Down	Neutral	Pulled in	Starts	Continue running
G	Down	In Gear	Released	Doesn't start	Stops
H	Down	In Gear	Pulled in	*Doesn't start*	*Stops*

Current Ignition Interlock Sidestand System

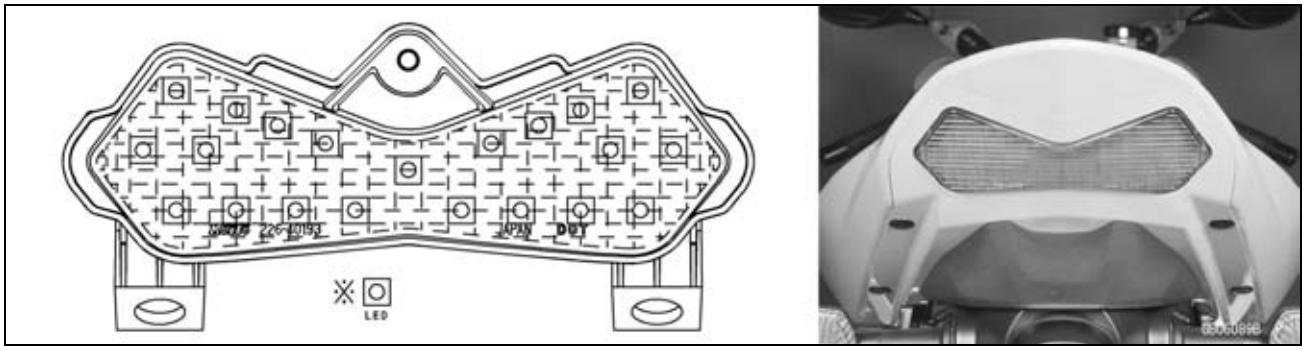
	Side Stand	Gear Position	Clutch Lever	Engine Start	Engine Run
A	Up	Neutral	Released	Starts	Continue running
B	Up	Neutral	Pulled in	Starts	Continue running
C	Up	In Gear	Released	Doesn't start	Continue running
D	Up	In Gear	Pulled in	Starts	Continue running
E	Down	Neutral	Released	Starts	Continue running
F	Down	Neutral	Pulled in	Starts	Continue running
G	Down	In Gear	Released	Doesn't start	Stops
H	Down	In Gear	Pulled in	*Start*	*Continue running*

Technical Information – Tail/Brake Lights Employing LED

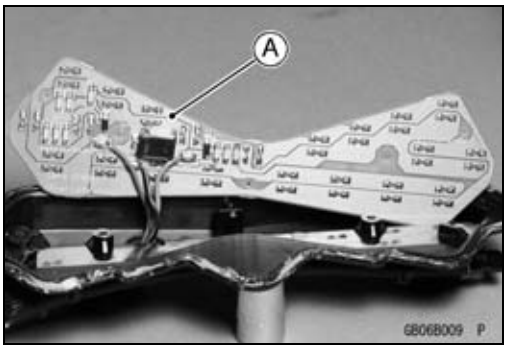
Outline

This model employs a tail/brake light containing 21 Light Emitting Diodes (LED). The LED emits luminous beams over a longer life span than those emitted from a traditional electric heated bulb (more than 5 times longer), uses lower voltage, expends lower wattage (approx. 1/5), and is quicker responsing.

Due Position of LED Installation

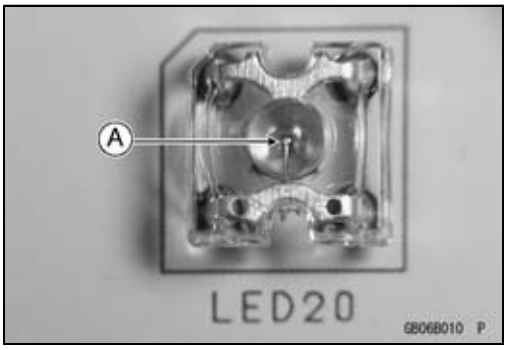


The resistors, the diodes, and the Zener diodes are mounted in the electronic circuits [A] of the LED, which supplies the steady current and voltage to the light.

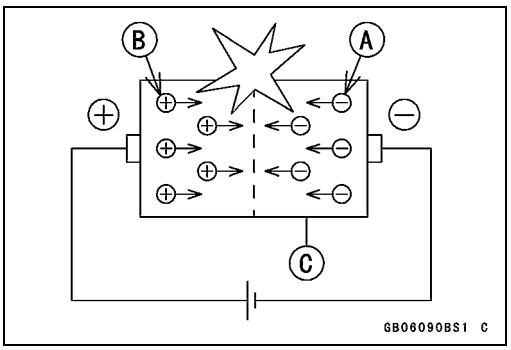


Light Emitting Diode (LED)

The Light Emitting Diode (LED) [A] is an element of semi-conductor diode that converts applied voltage to light.



The LED emits luminous beams by the collision of negative charge electrons [A] and positive charge holes [B] when applied the forward voltage and current to the PN junction diode [C].



Technical Information – Tail/Brake Lights Employing LED

The emitting color differs according to the materials of semi-conductors.

Materials of Semi-Conductor and Emitting Color

Materials of Semi-Conductor	Emitting Color
GaAsP, GaAlAs	Red
GaP	Green
GaN	Blue

Ga: Gallium
As: Arsenic
P: Phosphorus
N: Nitrogen
Al: Aluminum

Technical Information – KAWASAKI LOW EXHAUST EMISSION SYSTEM

Since the emission regulations become more severe, Kawasaki has adopted a type of simplified KAWASAKI LOW EXHAUST EMISSION SYSTEM (KLEEN), which have no catalyst protection system, according to each regulation of different countries.

The muffler with built-in catalyst has the same durability as the conventional muffler, however, do not use leaded gasoline and do not coast with the ignition system OFF. Running the engine without ignition damages catalyst.

Refer to the ZX900E Service Manual (Part No. 99924–1255) for more information about the KLEEN (theory, maintenance, and handling precautions), including the secondary air injection system.

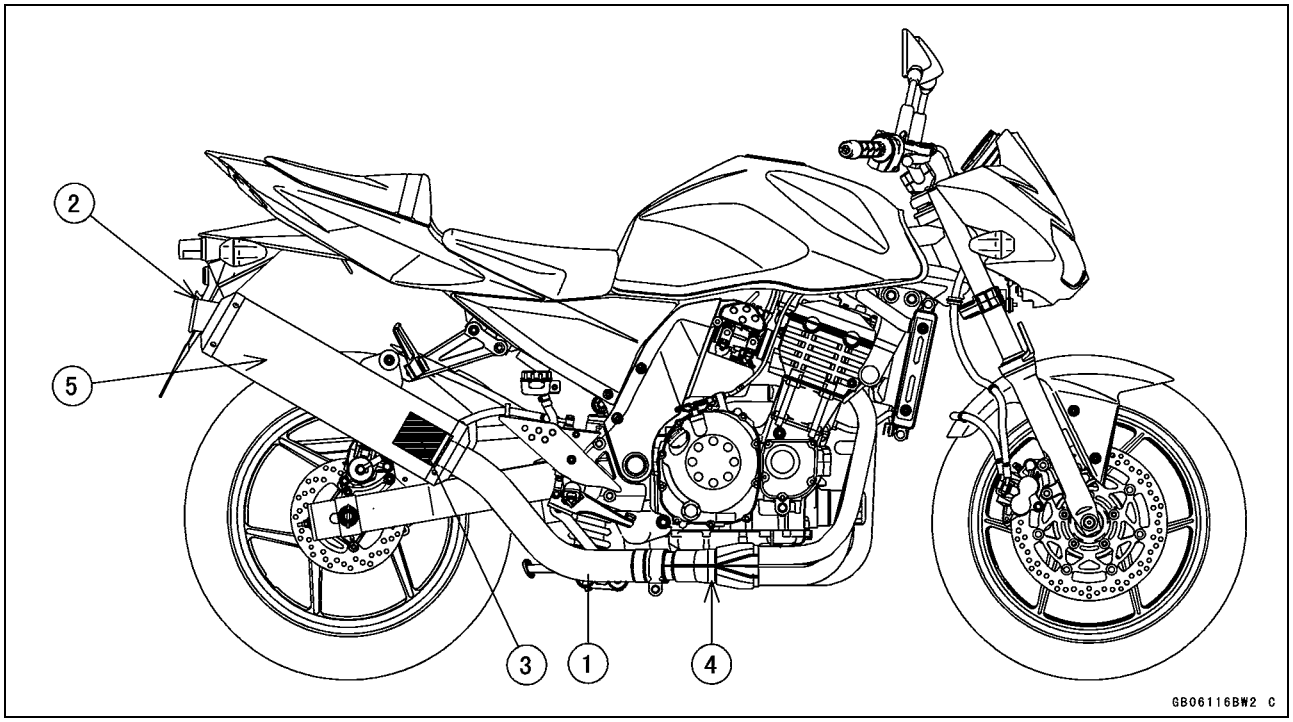
Honeycomb Type Catalytic Converter

○The converter is a three-way catalytic converter, and its surface is covered with alumina upon which platinum and rhodium are applied, and has a cylindrical metallic honeycomb structure made by bending a corrugated sheet and a flat sheet of stainless steel into a spiral of increasing diameter. The honeycomb structure is convenient for the catalytic converter because it has a large surface area but small size to react effectively and has low exhaust resistance. In addition, its inherent strength helps resist vibration, and has simple structure welded directly on the silencer.

○Generally, the temperature of the exhaust gas must be higher than activation temperature, so the converters are installed in the exhaust manifold rear end where the temperature of exhaust gas is still high. And, the converters will be activated even under low load conditions.

○After the exhaust gas is diluted with the secondary air injection, the catalytic converter works well because of rich oxygen to reduce CO, HC, and NO_x. Accordingly, we can keep the exhaust gas emission within regulation.

○This type of converter works more efficiently as a three-way catalytic converter to reduce CO, HC, and NO_x than the pipe type catalytic converter because of its more and denser catalysts.



1. Manifold
2. Silencer
3. Honeycomb Type Catalyst
4. Mark for Manifold
5. Mark for Silencer

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:

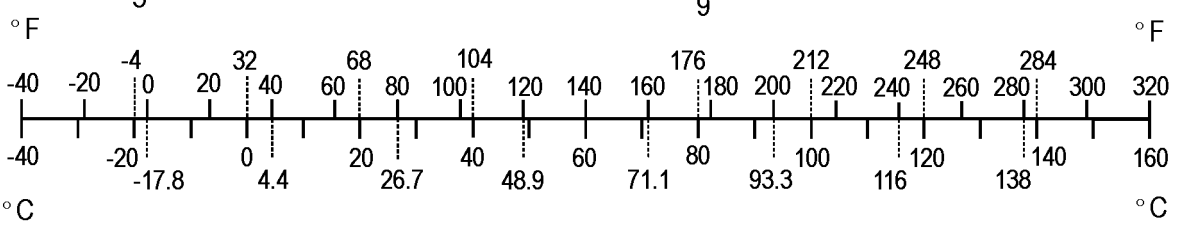
km/h	×	0.6214	=	mph

Units of Power:

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

Units of Temperature:

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



Periodic Maintenance

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2-2 PERIODIC MAINTENANCE

Periodic Maintenance Chart

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

Periodic Inspection:

FREQUENCY	Whichever comes first	* ODOMETER READING km × 1000 (mile × 1000)							
	⬇	1	6	12	18	24	30	36	See
INSPECTION	Every	(0.6)	(4)	(7.5)	(12)	(15)	(20)	(24)	Page
Steering system:									
Steering play - inspect	year	●		●		●		●	2–37
Steering stem bearings - lubricate	2 years					●			2–38
Brake system:									
Brake hoses leak - inspect		●	●	●	●	●	●	●	2–36
Brake hoses damage - inspect		●	●	●	●	●	●	●	2–36
Brake hose installation condition - inspect		●	●	●	●	●	●	●	2–36
Brake operation (effectiveness, play-drag) - inspect	year	●	●	●	●	●	●	●	—
Brake pad wear - inspect #			●	●	●	●	●	●	2–29
Brake fluid level - inspect	6 month	●	●	●	●	●	●	●	2–32
Brake light switch operation - inspect		●	●	●	●	●	●	●	2–29
Wheels and tires:									
Tire air pressure - inspect	year			●		●		●	2–26
Wheels/tires damage - inspect				●		●		●	2–25
Tire tread wear, abnormal wear - inspect				●		●		●	2–25
Wheel bearings damage - inspect	year			●		●		●	—
Suspensions:									
Front forks/rear shock absorber operation (damping and smooth stroke)				●		●		●	—
Front forks/rear shock absorber oil leak - inspect	year			●		●		●	2–37
Rocker arm wear - inspect				●		●		●	—
Rocker arm operation				●		●		●	—
Tie rods operation				●		●		●	—
Drive train:									
Drive chain lubrication condition - inspect #	1 000 km								2–29
Drive chain slack - inspect #	1 000 km								2–27
Drive chain wear - inspect #				●		●		●	2–28
Drive chain guide wear - inspect				●		●		●	—
Electrical system:									
Spark plug condition - inspect				●		●		●	2–39
Lights and switches operation	year			●		●		●	—
Headlight aiming - inspect	year			●		●		●	—
Side stand switch operation	year			●		●		●	—

Periodic Maintenance Chart

FREQUENCY / INSPECTION	Whichever comes first ➡ / Every ⬇	* ODOMETER READING km × 1000 (mile × 1000) 1 (0.6)	6 (4)	12 (7.5)	18 (12)	24 (15)	30 (20)	36 (24)	See Page
Engine stop switch operation	year			●		●		●	—
Fuel system (DFI):									
Air cleaner element - clean #					●				2–18
Throttle control system (play, smooth return, no drag) - inspect	year	●		●		●		●	2–14
Choke operation - inspect	year	●		●		●		●	—
Engine vacuum synchronization - inspect				●		●		●	2–15
Engine vacuum synchronization - adjust		When necessary							2–15
Idle speed - inspect		●		●		●		●	2–15
Fuel hoses leak - inspect		●		●		●		●	2–13
Fuel hoses damage - inspect	year	●		●		●		●	2–13
Fuel hoses installation condition - inspect	year			●		●		●	2–13
Cooling system:									
Coolant level - inspect		●		●		●		●	—
Radiator hoses leak - inspect	year	●		●		●		●	2–20
Radiator hoses damage - inspect	year	●		●		●		●	2–20
Radiator hoses installation condition - inspect	year	●		●		●		●	2–20
Engine top end:									
Air suction system damage - inspect				●		●		●	2–22
Intake/exhaust valve clearance - inspect						●			2–22
Chassis:									
Chassis parts lubricate	year			●		●		●	2–41
Bolts and nuts tightness - inspect		●		●		●		●	2–42

2-4 PERIODIC MAINTENANCE

Periodic Maintenance Chart

Periodic Replacement Parts:

FREQUENCY / CHANGE/REPLACE ITEM	Whichever comes first ⬇ Every	* ODOMETER READING km × 1000 (mile × 1000) ➡ 1 (0.6)	12 (7.5)	24 (15)	36 (24)	48 (30)	See Page
Brake hoses	4 years					●	2–36
Brake fluid (front and rear)	2 years			●		●	2–32
Rubber parts of master cylinder and caliper	4 years					●	2–30
Spark plug			●	●	●	●	2–39
Air cleaner element #					●		2–18
Engine oil #	year	●	●	●	●	●	2–24
Oil filter	year	●	●	●	●	●	2–25
Fuel hoses	4 years					●	2–13
Coolant	3 years				●		2–20
Radiator hoses and O-rings	3 years				●		2–20

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

Throttle control system inspection: Inspection of throttle grip play.

Torque and Locking Agent

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

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.
- **MO:** Apply molybdenum disulfide grease oil solution.
- **O:** Apply oil to the threads and seating surface.
- **R:** Replacement Parts
- **S:** Tighten the fasteners following the specified sequence.
- **Si:** Apply silicone grease (ex. PBC grease).
- **SS:** Apply silicone sealant.

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 dia. (mm)	Torque		
	N·m	kgf·m	ft·lb
5	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in·lb
6	5.9 ~ 7.8	0.60 ~ 0.80	52 ~ 69 in·lb
8	14 ~19	1.4 ~1.9	10.0 ~ 13.5
10	25 ~ 34	2.6 ~ 3.5	19.0 ~ 25
12	44 ~ 61	4.5 ~ 6.2	33 ~ 45
14	73 ~ 98	7.4 ~ 10.0	54 ~ 72
16	115 ~ 155	11.5 ~ 16.0	83 ~ 115
18	165 ~ 225	17.0 ~ 23.0	125 ~ 165
20	225 ~ 325	23 ~ 33	165 ~ 240

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel System:				
Inlet air pressure sensor bolt	12	1.2	104 in·lb	
Water temperature sensor	25	2.5	18	
Vehicle-down sensor bolts	2.0	0.20	17 in·lb	
Camshaft position sensor bolt	12	1.2	104 in·lb	
Camshaft position sensor rotor bolt	12	1.2	104 in·lb	L
Throttle cable plate bolt	6.0	0.60	52 in·lb	
Throttle body assy holder clamp bolts	2.0	0.20	17 in·lb	
Choke link holder screws	2.1	0.21	18 in·lb	
Delivery pipe screws	3.4	0.35	30 in·lb	
Bypass screws	0.2	0.02	1.7 in·lb	
Air cleaner duct holder screws	3.8	0.39	34 in·lb	
Air cleaner housing mounting bolts	9.8	1.0	87 in·lb	
Air cleaner duct clamp bolts	2.0	0.20	17 in·lb	
Air cleaner housing screws	1.2	0.12	10 in·lb	
Air cleaner housing tapping screws	1.2	0.12	10 in·lb	
Speed sensor bolt	6.9	0.70	62 in·lb	L
Fuel pump bolts	9.8	1.0	87 in·lb	L, S
Fuel level sensor bolts	6.9	0.70	62 in·lb	
Cooling System:				
Radiator hose clamp screws	2.0	0.20	17 in·lb	
Radiator fan bolts	8.3	0.85	74 in·lb	
Water pump impeller bolt	9.8	1.0	87 in·lb	
Water pump cover bolts	11	1.1	95 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Water pump drain bolt	11	1.1	95 in·lb	
Water pipe bolts	11	1.1	95 in·lb	
Thermostat housing ground bolt	7.0	0.70	61 in·lb	
Thermostat bracket bolt	7.0	0.70	61 in·lb	
Radiator upper bolts	7.0	0.70	61 in·lb	
Radiator lower bolts	7.0	0.70	61 in·lb	
Radiator screen bolt	7.0	0.70	61 in·lb	
Coolant reserve tank screws	7.0	0.70	61 in·lb	
Radiator fan switch	18	1.8	13	
Water temperature sensor	25	2.5	18	
Engine Top End:				
Air suction valve cover bolts	9.8	1.0	87 in·lb	
Cylinder head cover bolts	9.8	1.0	87 in·lb	S
Camshaft cap bolts	12	1.2	104 in·lb	S
Camshaft chain guide bolts	12	1.2	104 in·lb	S
Cylinder head bolts (M10 new bolts)	54	5.5	40	MO, S (Washer)
Cylinder head bolts (M10 used bolts)	49	5.0	36	MO, S (Washer)
Cylinder head bolts (M6)	12	1.2	104 in·lb	S
Cylinder head jacket plugs	22	2.2	16	L
Throttle body holder bolts	13	1.3	113 in·lb	
Throttle body assy holder clamp bolts	2.0	0.20	17 in·lb	
Camshaft sensor bolt	12	1.2	104 in·lb	
Camshaft sensor rotor bolt	12	1.2	104 in·lb	L
Front camshaft chain guide bolt (upper)	25	2.5	18	
Front camshaft chain guide bolt (lower)	12	1.2	104 in·lb	
Rear camshaft chain guide bolt	25	2.5	18	
Camshaft chain tensioner mounting bolts	11	1.1	95 in·lb	
Camshaft chain tensioner cap bolt	28	2.9	21	
Spark plugs	13	1.3	113 in·lb	
Coolant drain plug (Cylinder)	9.8	1.0	87 in·lb	
Exhaust pipe manifold holder nuts	17	1.7	12	
Muffler body clamp bolt	17	1.7	12	
Muffler body mounting bolt	30	3.0	22	
Crankshaft sensor cover bolts	11	1.1	95 in·lb	
Clutch:				
Clutch lever clamp bolts	7.8	0.80	69 in·lb	
Clutch cover mounting bolts	11	1.1	95 in·lb	
Oil filler plug	1.5	0.15	13 in·lb	
Clutch spring bolts	8.8	0.90	78 in·lb	
Clutch hub nut	135	14	100	R