MODEL APPLICATION

Year	Model	Beginning Frame No.
2003	ZX636–B1	JKBZXJB1□3A000001 or JKBZX636BBA000001
2003	ZX600–K1	JKAZX4K1□3A000001 or JKAZX600KKA000001
2004	ZX636–B2	JKBZXJB1□4A023001 or JKBZX636BBA023001

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

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

Part No.99924-1311-03

Printed in Japan

Kawasaki

Ninja ZX–6R
Ninja ZX-6RR

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)		

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 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

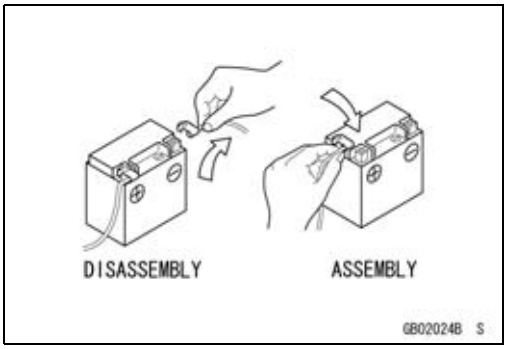
Before Servicing

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:

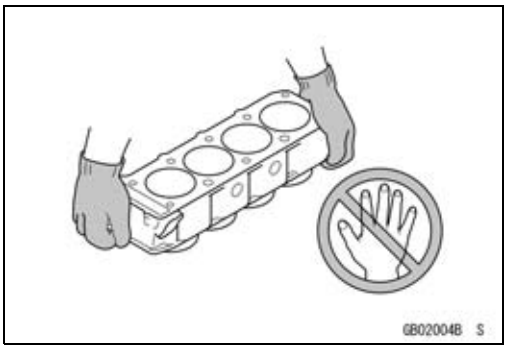
Battery Ground

Before completing any service on the motorcycle, disconnect the battery 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.



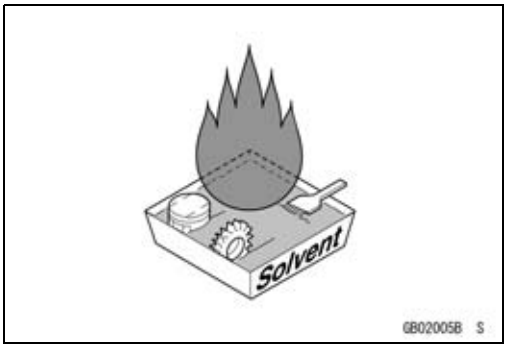
Edges of Parts

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



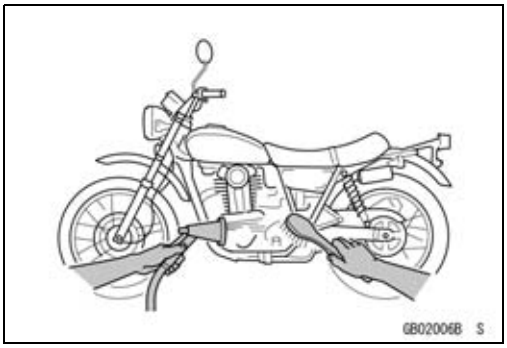
Solvent

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

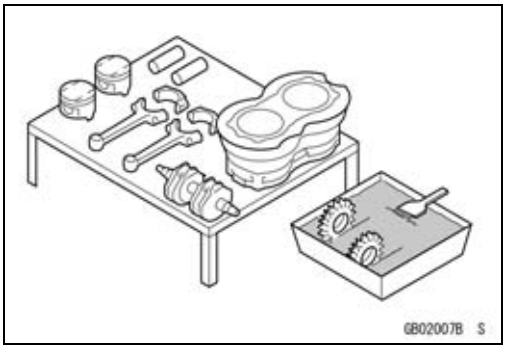
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

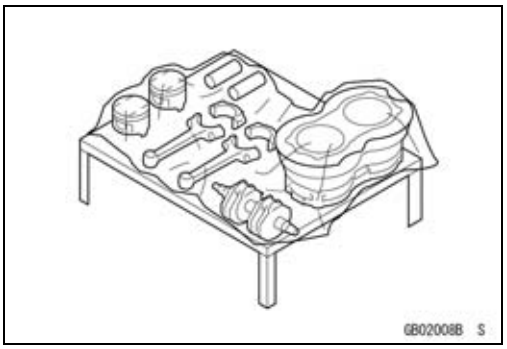
Arrangement and Cleaning of Removed Parts

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.



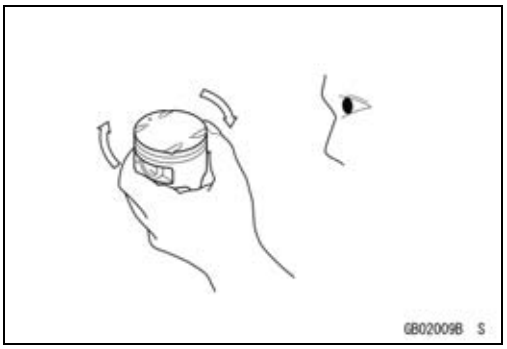
Storage of Removed Parts

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.



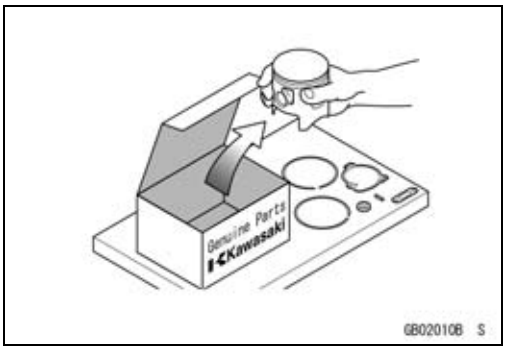
Inspection

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.



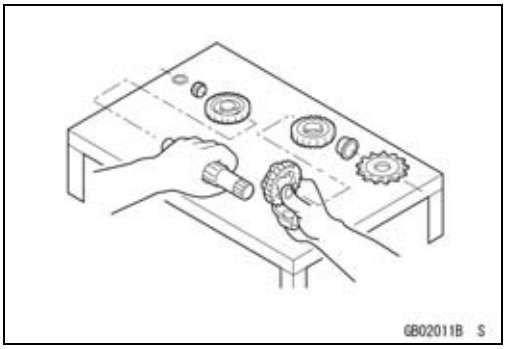
Replacement Parts

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

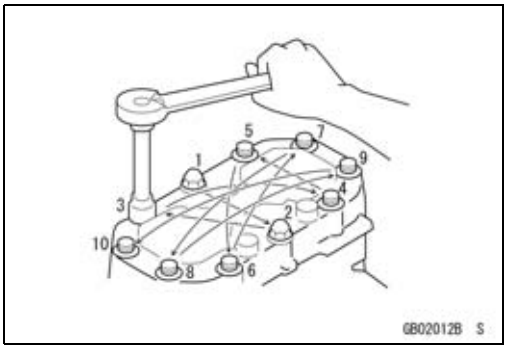
In most cases assembly order is the reverse of disassembly, however, if assembly order is provided in this Service Manual, follow the procedures given.



Before Servicing

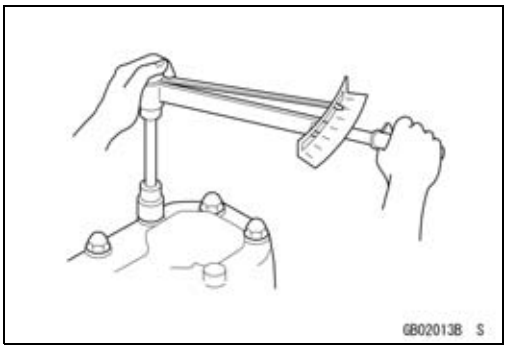
Tightening Sequence

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



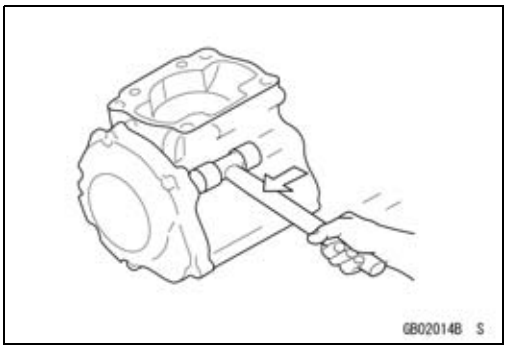
Tightening Torque

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.



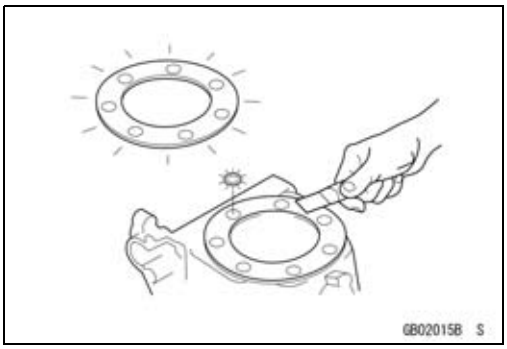
Force

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.



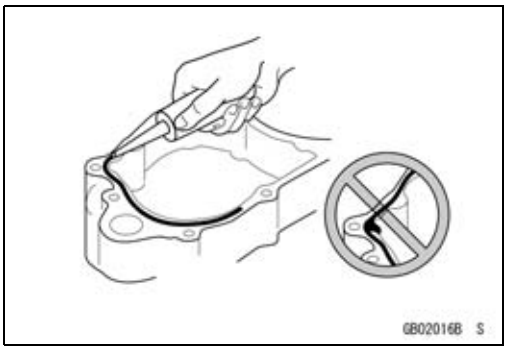
Gasket, Oring

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

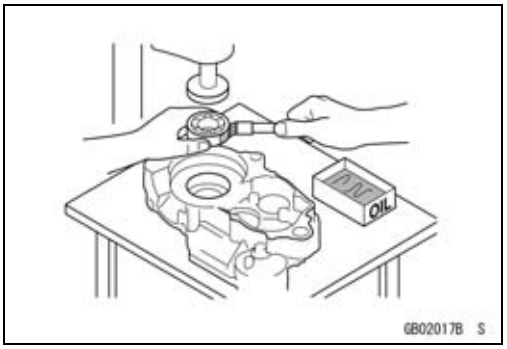
For applications that require Liquid Gasket or a Locking agent, clean the surfaces so that no oil residue remains before applying liquid gasket or locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Before Servicing

Press

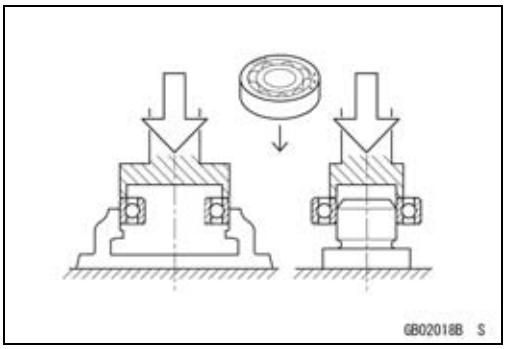
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



Ball Bearing and Needle Bearing

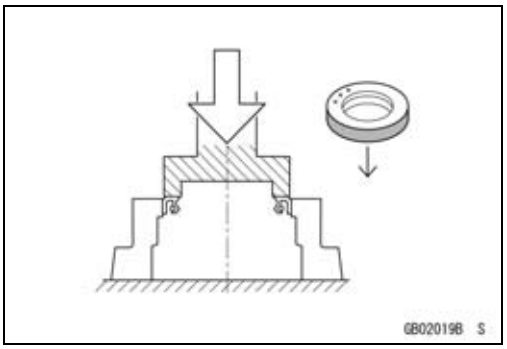
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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



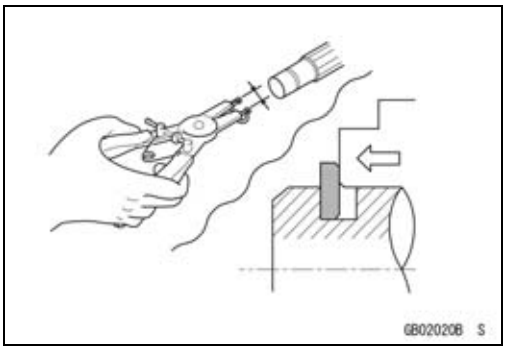
Oil Seal, Grease Seal

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.



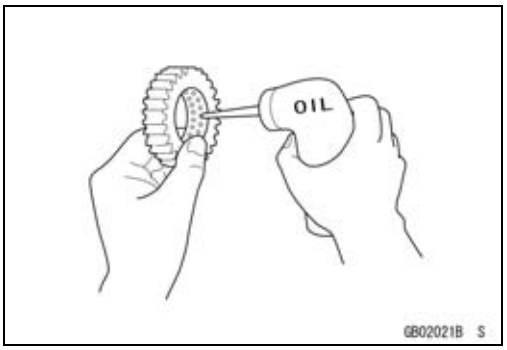
Circlips, Cotter Pins

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

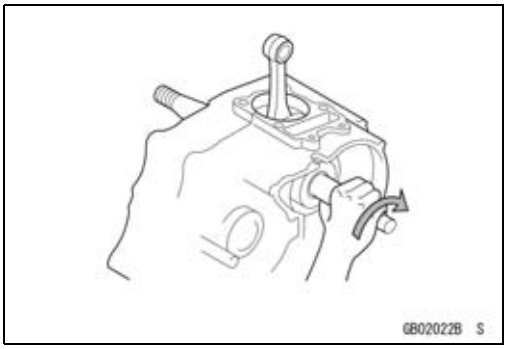
It is important to lubricate rotating or sliding parts during assembly to minimize wear during initial operation. Lubrication points are called out throughout this manual, apply the specific oil or grease as specified.



Before Servicing

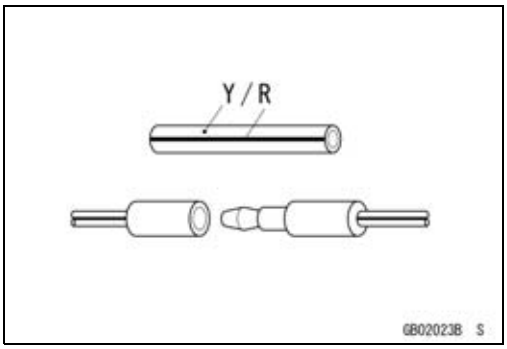
Direction of Engine Rotation

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

ZX636–B1 (Ninja ZX-6R) Left Side View:

ZX636–B1 (Ninja ZX-6R) Right Side View:

Model Identification

ZX600–K1 (Ninja ZX-6RR) Left Side View:

ZX600–K1 (Ninja ZX-6RR) Right Side View:

General Specifications

Items		ZX636-B1 ~ (Ninja ZX-6R)
Dimensions:		
Overall length		2 025 mm (79.7 in.)
Overall width		720 mm (28.3 in.)
Overall height		1 100 mm (43.3 in.)
Wheelbase		1 400 mm (55.1 in.)
Road clearance		130 mm (5.1 in.)
Seat height		825 mm (32.4 in.)
Dry mass		161 kg (1579 N, 355 lb)
Curb mass:	Front	95 kg (932 N, 209 lb)
	Rear	93 kg (912 N, 205 lb)
Fuel tank capacity		18 L (4.76 US gal)
Performance:		
Minimum turning radius		3.3 m (10.8 ft)
Engine:		
Type		4-stroke, DOHC, 4-cylinder
Cooling system		Liquid-cooled
Bore and stroke		68.0 × 43.8 mm (2.6 x 1.7 in.)
Displacement		636 mL (38.8 cu in.)
Compression ratio		12.8
Maximum horsepower		87.0 kW (118 PS) @13 000 r/min (rpm), (AU) 84.2 kW (114 PS) @12 000 r/min (rpm), (FR) 78.2 kW (106 PS) @12 500 r/min (rpm), (US), (CAL), (CA) – – –
Maximum torque		67.0 N·m (6.8 kgf·m, 49 ft·lb) @11 000 r/min (rpm), (US), (CAL), (CA), (FR) – – –
Carburetion system		FI (Fuel Injection), KEIHIN TTK-38 × 4
Starting system		Electric starter
Ignition system		Battery and coil (transistorized)
Timing advance		Electronically advanced (digital igniter in ECU)
Ignition timing		From 12.5° BTDC @1 300 r/min (rpm) to 35° BTDC @4 600 r/min (rpm)
Spark plug		NGK CR9E
Cylinder numbering method		Left to right, 1-2-3-4
Firing order		1-2-4-3
Valve timing:		
Inlet	Open	58° BTDC
	Close	82° ABDC
	Duration	320°
Exhaust	Open	62° BBDC
	Close	34° ATDC
	Duration	276°
Lubrication system		Forced lubrication (wet sump with cooler)

General Specifications

Items		ZX636-B1 ~ (Ninja ZX-6R)
Engine oil:		
Type		API SE, SF or SG
		API SH or SJ with JASO MA
Viscosity		SAE10W-40
Capacity		4.0 L (4.2 US qt)
Drive Train:		
Primary reduction system:		
Type		Gear
Reduction ratio		2.022 (89/44)
Clutch type		Wet multi disc
Transmission:		
Type		6-speed, constant mesh, return shift
Gear ratios:		
	1st	2.923 (38/13)
	2nd	2.055 (37/18)
	3rd	1.722 (31/18)
	4th	1.450 (29/20)
	5th	1.272 (28/22)
	6th	1.153 (30/26)
Final drive system:		
Type		Chain drive
Reduction ratio		2.666 (40/15)
Overall drive ratio		6.223 @Top gear
Frame:		
Type		Tubular, diamond
Caster (rake angle)		24.5°
Trail		95 mm (3.7 in.)
Front tire:	Type	Tubeless
	Size	120/65 ZR17 M/C (56W)
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	135 mm (5.3 in.)
Brake Type:	Front	Dual discs
	Rear	Single disc
Electrical Equipment:		
Battery		12 V 8 Ah
Headlight:		
Type		Semi-sealed beam
Bulb	Hi	12 V 55 W (quartz-halogen) × 2

General Specifications

Items		ZX636-B1 ~ (Ninja ZX-6R)
	Lo	12 V 55 W (quartz-halogen)
Tail/brake light		12 V 0.5/3.8 W (LED)
		(US), (CAL), (CA) 12 V 0.5/5 W (LED)
Alternator:	Type	Three-phase AC
	Rated output	22.5 A / 14 V @5 000 r/min (rpm)

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

(US): United States Model
(CAL): California Model
(CA): Canada Model
(AU): Australia Model
(FR): France Model

General Specifications

Items		ZX600-K1 (Ninja ZX-6RR)
Dimensions:		
Overall length		2 025 mm (79.7 in.)
Overall width		720 mm (28.3 in.)
Overall height		1 100 mm (43.3 in.)
Wheelbase		1 400 mm (55.1 in.)
Road clearance		130 mm (5.1 in.)
Seat height		825 mm (32.4 in.)
Dry mass		161 kg (1579 N, 355 lb)
Curb mass:	Front	95 kg (932 N, 209 lb)
	Rear	93 kg (912 N, 205 lb)
Fuel tank capacity		18 L (4.76 US gal)
Performance:		
Minimum turning radius		3.3 m (10.8 ft)
Engine:		
Type		4-stroke, DOHC, 4-cylinder
Cooling system		Liquid-cooled
Bore and stroke		67.0 × 42.5 mm (2.6 x 1.7 in.)
Displacement		599 mL (36.6 cu in.)
Compression ratio		13.0
Maximum horsepower		83.1 kW (113 PS) @13 200 r/min (rpm), (FR) 78.2 kW (106 PS) @13 000 r/min (rpm), (US), (CAL), (CA) – – –
Maximum torque		64.4 N·m (6.6 kgf·m, 47.5 ft·lb) @12 000 r/min (rpm), (US), (CAL), (CA), (FR) – – –
Carburetion system		FI (Fuel Injection), KEIHIN TTK-38 × 4
Starting system		Electric starter
Ignition system		Battery and coil (transistorized)
Timing advance		Electronically advanced (digital igniter in ECU)
Ignition timing		From 12.5° BTDC @1 300 r/min (rpm) to 35° BTDC @4 600 r/min (rpm)
Spark plug		NGK CR9E
Cylinder numbering method		Left to right, 1-2-3-4
Firing order		1-2-4-3
Valve timing:		
Inlet	Open	55° BTDC
	Close	85° ABDC
	Duration	320°
Exhaust	Open	62° BBDC
	Close	34° ATDC
	Duration	276°
Lubrication system		Forced lubrication (wet sump with cooler)
Engine oil:		
Type		API SE, SF or SG API SH or SJ with JASO MA

General Specifications

Items		ZX600-K1 (Ninja ZX-6RR)
Viscosity		SAE10W-40
Capacity		4.0 L (4.2 US qt)
Drive Train:		
Primary reduction system:		
Type		Gear
Reduction ratio		2.022 (89/44)
Clutch type		Wet multi disc
Transmission:		
Type		6-speed, constant mesh, return shift
Gear ratios:		
	1st	2.923 (38/13)
	2nd	2.055 (37/18)
	3rd	1.722 (31/18)
	4th	1.450 (29/20)
	5th	1.272 (28/22)
	6th	1.153 (30/26)
Final drive system:		
Type		Chain drive
Reduction ratio		2.666 (40/15)
Overall drive ratio		6.223 @Top gear
Frame:		
Type		Tubular, diamond
Caster (rake angle)		24.5°
Trail		95 mm (3.7 in.)
Front tire:	Type	Tubeless
	Size	120/65 ZR17 M/C (56W)
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	135 mm (5.3 in.)
Brake Type:	Front	Dual discs
	Rear	Single disc
Electrical Equipment:		
Battery		12 V 8 Ah
Headlight:		
Type		Semi-sealed beam
Bulb	Hi	12 V 55 W (quartz-halogen) × 2
	Lo	12 V 55 W (quartz-halogen)
Tail/brake light		12 V 0.5/3.8 W (LED)
		(US), (CAL), (CA) 12 V 0.5/5 W (LED)

General Specifications

Items		ZX600-K1 (Ninja ZX-6RR)
Alternator:	Type	Three-phase AC
	Rated output	22.5 A / 14 V @5 000 r/min (rpm)

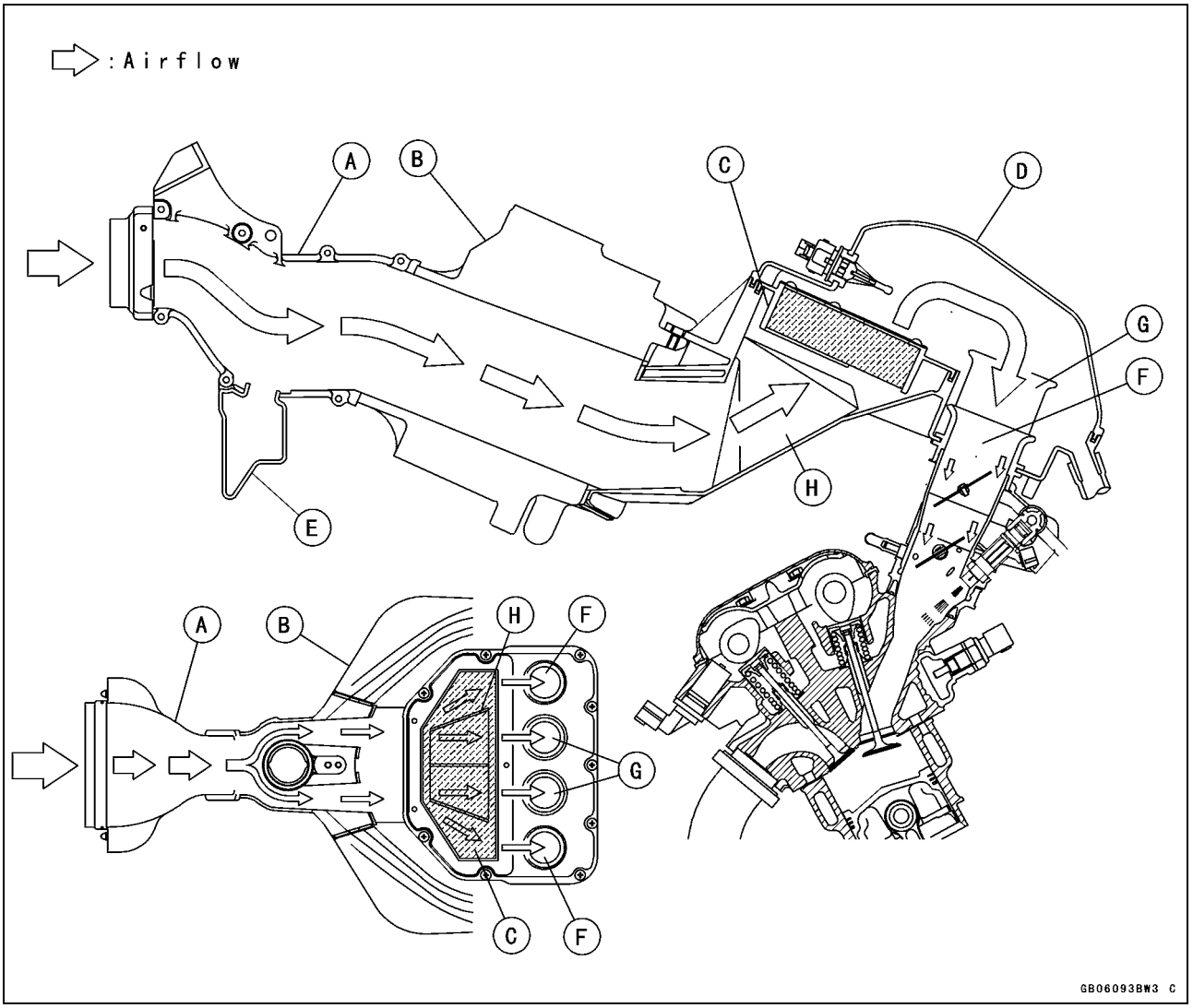
Specifications subject to change without notice, and may not apply to every country.

(US): United States Model
(CAL): California Model
(CA): Canada Model
(FR): France Model

Technical Information – Air Inlet System

Center Ram Air Inlet

The ram air duct was moved from both left and right side to center of the fairing so that incoming air has a straighter path to the airbox, increasing ram air efficiency. The duct was also designed to maintain optimum airflow despite extreme changes in bike attitude, such as during hard acceleration, braking, and cornering. With fewer parts and the duct also acting as the instrument, the new system also cuts weight.



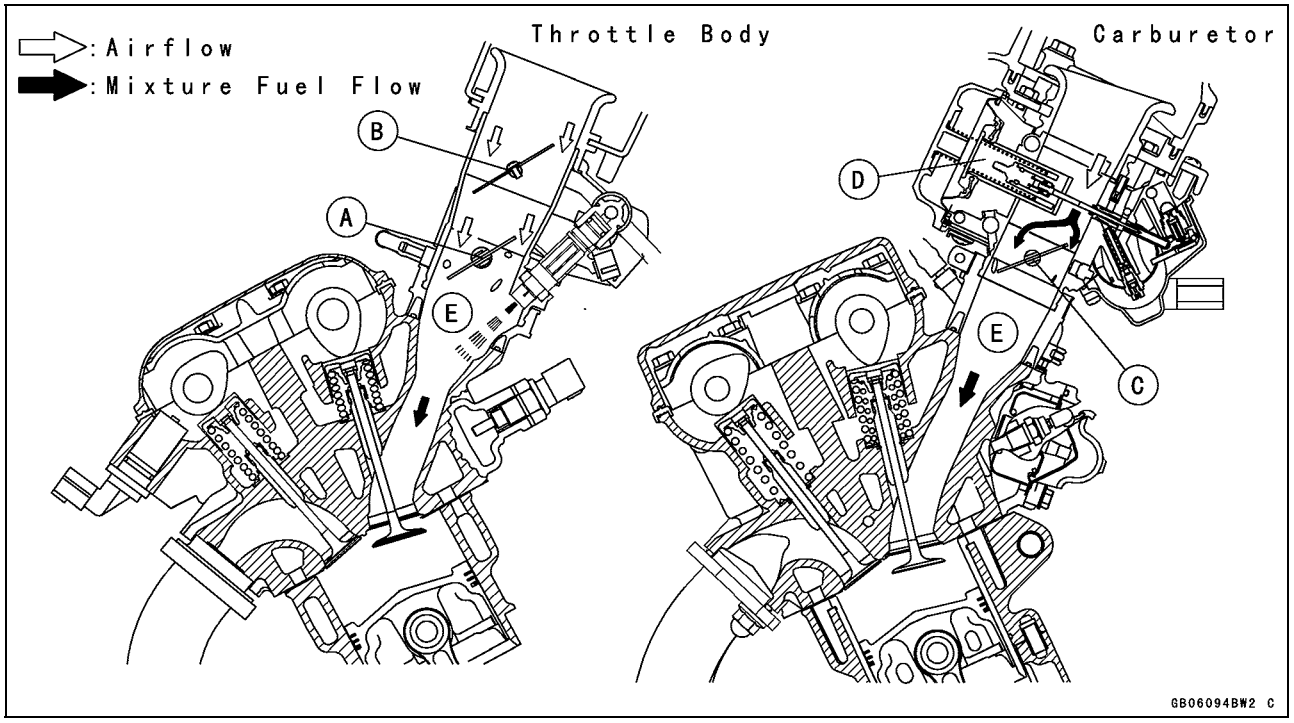
A. Inlet Duct
B. Frame
C. Air Cleaner Element
D. Air Cleaner Housing
E. Resonator
F. Air Duct #1, 4 (Short)
G. Air Duct #2, 3 (Long)
H. Guide Vane

Technical Information – Air Inlet System

Subthrottle Control System

The ZX636–B1 ~ and ZX600–K1 utilize 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, 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

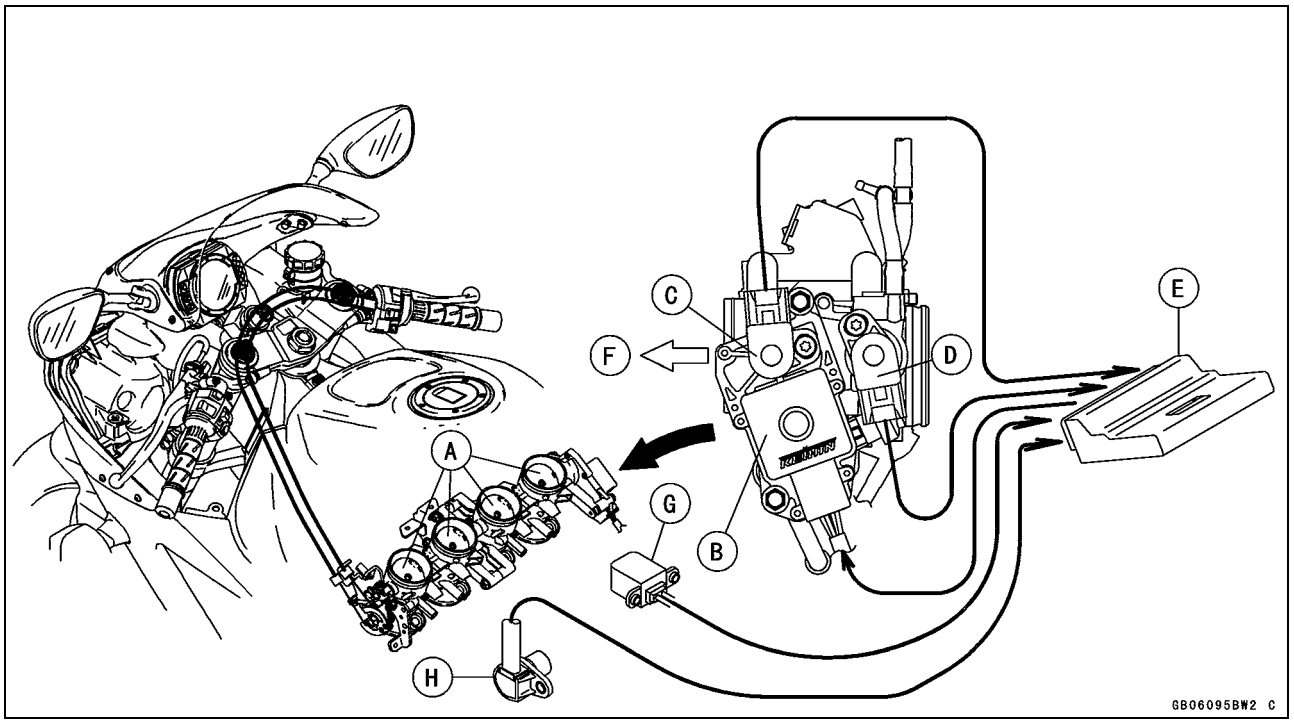
Operation

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 ZX636–B1 ~ and ZX600–K1 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

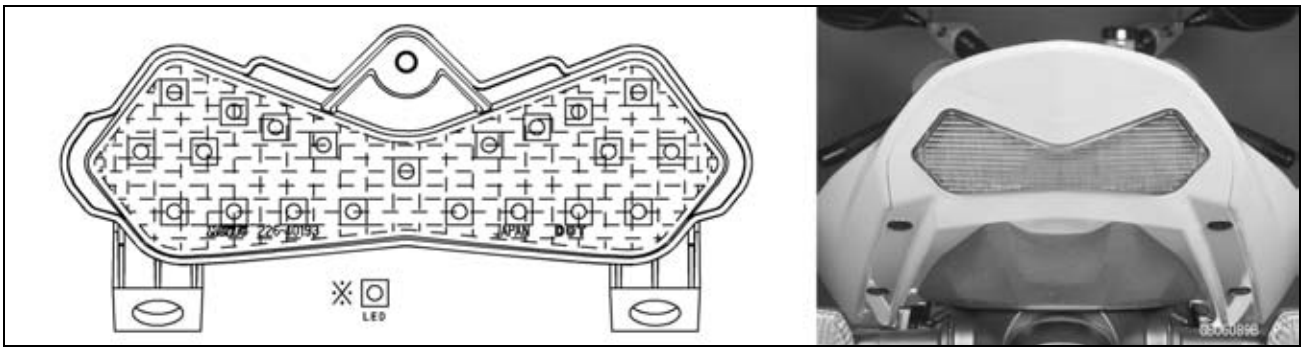
	Side Stand	Gear Position	Clutch Lever	Engine Start	Engine Run
A	Up	Neutral	Released	Starts	Continue running
B	Up	Neutral	Pulled in	Starts	Continue running
C	Up	In Gear	Released	Doesn't start	Continue running
D	Up	In Gear	Pulled in	Starts	Continue running
E	Down	Neutral	Released	Starts	Continue running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

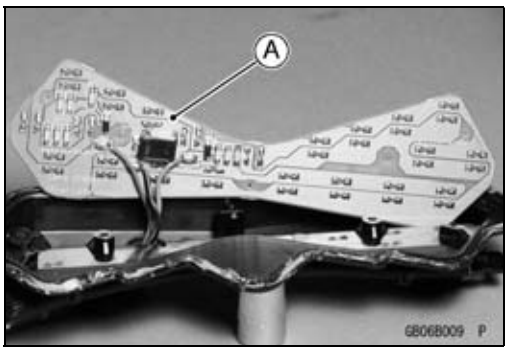
Outline

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

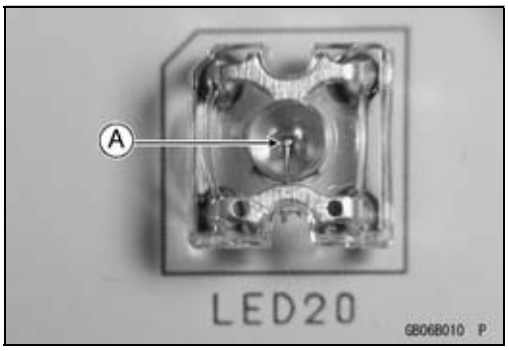


The resistors, the diodes, and the Zener diodes are mounted in the electronic circuits [A] of the LED, which supplies the steady current and voltage to the light.

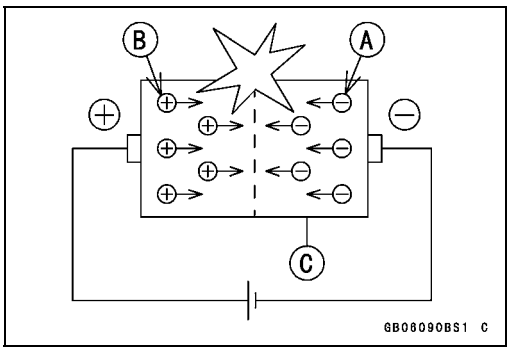


Light Emitting Diode (LED)

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

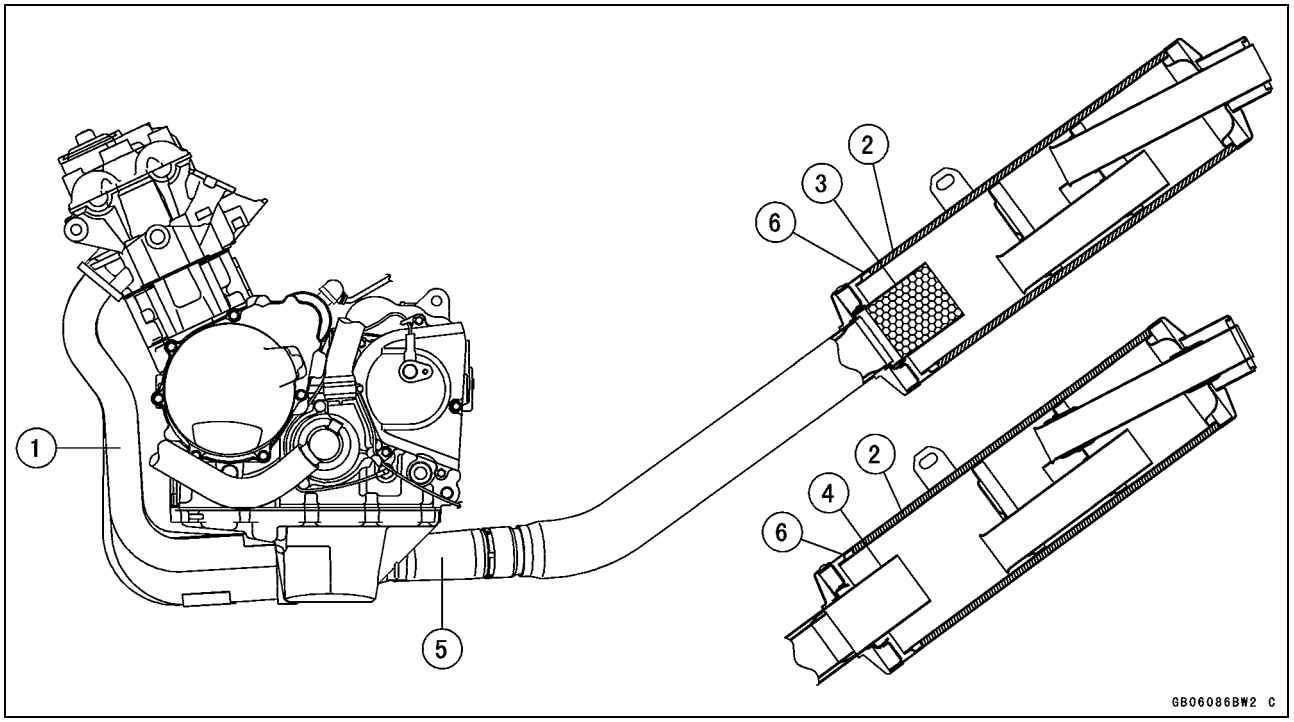
Since the emission regulations become more severe, Kawasaki has adopted a type of simplified KAWASAKI LOW EXHAUST EMISSION SYSTEM (KLEEN), which have no catalyst protection system, according to each regulation of different countries.

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 ZX636A Service Manual (Part No. 99924-1288) 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. Non-Catalyst (Pipe Type)
5. Mark for Manifold
6. 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	=	cm Hg
kgf/cm²	×	98.07	=	kPa
kgf/cm²	×	14.22	=	psi
cm Hg	×	1.333	=	kPa

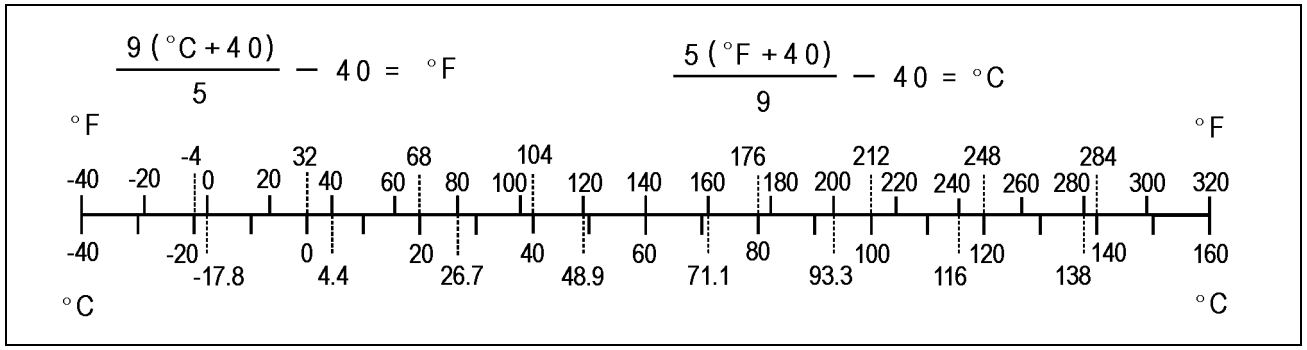
Units of Speed:

km/h	×	0.6214	=	mph

Units of Power:

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

Units of Temperature:



Periodic Maintenance

Table of Contents

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.**

FREQUENCY	Whichever comes first → ↓	* ODOMETER READING 1 000 km (600 mile)	6 000 km (4 000 mile)	12 000 km (7 500 mile)	18 000 km (12 000 mile)	24 000 km (15 000 mile)	30 000 km (20 000 mile)	36 000 km (24 000 mile)	
OPERATION	Every								See Page
Air cleaner element replace #					●			●	2–18
Throttle control system - inspect †		●	●	●	●	●	●	●	2–12
Idle speed - inspect †		●		●		●		●	2–13
Engine vacuum synchronization - inspect †				●		●		●	2–14
Fuel hoses, Connections - inspect †			●	●	●	●	●	●	2–12
Evaporative emission control system (CAL) - inspect †		●	●	●	●	●	●	●	2–19
Cooling hoses, connection - inspect †		●							2–20
Coolant - change	2 years					●			2–20
Air suction valve - inspect †			●	●	●	●	●	●	2–22
Valve clearance - inspect †						●			2–22
Clutch adjustment - inspect †		●	●	●	●	●	●	●	2–27
Engine oil - change #	year	●		●		●		●	2–28
Oil filter - replace		●		●		●		●	2–28
Tire wear - inspect †			●	●	●	●	●	●	2–29
Drive chain wear - inspect †#			●	●	●	●	●	●	2–31
Drive chain - lubricate #	600 km		●	●	●	●	●	●	2–33
Drive chain slack - inspect †#	1000 km	●	●	●	●	●	●	●	2–31
Brake pad wear - inspect †#			●	●	●	●	●	●	2–33
Brake light switch - inspect †		●	●	●	●	●	●	●	2–34
Brake hoses, connections - inspect †			●	●	●	●	●	●	2–40
Brake fluid level - inspect †	month	●	●	●	●	●	●	●	2–35
Brake fluid - change	2 years					●			2–36
Brake master cylinder cup and dust seal - replace	4 years								2–35
Caliper piston seal and dust seal - replace	4 years								2–34

Periodic Maintenance Chart

FREQUENCY	Whichever comes first → ↓	1 000 km (600 mile)	6 000 km (4 000 mile)	12 000 km (7 500 mile)	18 000 km (12 000 mile)	24 000 km (15 000 mile)	30 000 km (20 000 mile)	36 000 km (24 000 mile)	* ODOMETER READING
OPERATION	Every								See Page
Rear shock absorber oil leak - inspect †				●		●		●	2–41
Front fork oil leak - inspect †				●		●		●	2–41
Swingarm pivot, Uni-trak linkage - lubricate				●		●		●	2–41
Steering - inspect †		●	●	●	●	●	●	●	2–42
Steering stem bearing - lubricate	2 years					●			2–43
Spark plug - clean and gap †			●	●	●	●	●	●	2–44
General lubrication - perform				●		●		●	2–44
Nut, bolts, and fasteners tightness - inspect †		●		●		●		●	2–46

: 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.

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

(CAL): California model only

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.
L: Apply a non-permanent locking agent to the threads.
G: Apply grease to the threads.
MO: Apply molybdenum disulfide grease oil solution.
O: Apply oil to the threads and seating surface.
S: Tighten the fasteners following the specified sequence.
SS: Apply silicone sealant.
Si: Apply silicone grease (ex. PBC grease).
R: Replacement parts

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:				
Air Cleaner Housing Mounting Bolt	6.9	0.70	61 in·lb	
Air Inlet Duct Mounting Bolts	6.9	0.70	61 in·lb	
Air Cleaner Housing Holder Clamp Bolts	2.5	0.25	22 in·lb	
Intake Air Pressure Sensor Screw	4.9	0.50	43 in·lb	
Atmospheric Pressure Sensor Screw	4.9	0.50	43 in·lb	
Fuel Delivery Pipe Mounting Screws	3.4	0.35	30 in·lb	
Throttle Body Assembly Holder Clamp Bolts	3.0	0.31	27 in·lb	
Throttle Body Assembly Holder Bolts	12	1.2	106 in·lb	L
Camshaft Position Sensor	12	1.2	106 in·lb	
Water Temperature Sensor	25	2.5	18	SS
Vehicle-Down Sensor	2.0	0.20	17 in·lb	
Speed Sensor Mounting Bolt	3.9	0.40	35 in·lb	L
Crankshaft Sensor Mounting Bolts	5.9	0.60	52 in·lb	
Fuel Pump Bolts	9.8	1.0	87 in·lb	
Cooling System:				
Water Hose Clamp Screws	2.0	0.20	17 in·lb	
Coolant Drain Plug (Water Pump)	8.8	0.90	78 in·lb	
Coolant Drain Plug (Cylinder)	8.8	0.90	78 in·lb	
Radiator Fan Switch	18	1.8	13	
Water Temperature Sensor	25	2.5	18	SS
Water Pump Impeller Bolt	9.8	1.0	87 in·lb	
Water Pump Cover Bolts	12	1.2	104 in·lb	L
Thermostat Housing Cover Bolts	5.9	0.60	52 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Coolant By-pass Fitting	8.8	0.90	78 in·lb	L
Water Hose Fitting Bolts	12	1.2	106 in·lb	
Radiator Mounting Bolts	6.9	0.70	61 in·lb	
Radiator Bracket Mounting Bolts	6.9	0.70	61 in·lb	
Coolant Reserve Tank Mounting Screws	6.9	0.70	61 in·lb	
Oil Cooler Bolt	78	8.0	58	
Water Passage Plugs	20	2.0	14	
Engine Top End:				
Spark Plugs	13	1.3	113 in·lb	
Air Suction Valve Cover Bolts	12	1.2	104 in·lb	L
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	
Camshaft Chain Tensioner Mounting Bolts	9.8	1.0	87 in·lb	
Camshaft Cap Bolts	12	1.2	104 in·lb	
Cylinder Head Bolts: ϕ9	40	4.1	30	S, O (Washer)
ϕ6	12	1.2	104 in·lb	S
Cylinder Head Jacket Plug (Left)	20	2.0	14.5	L
Cylinder Head Jacket Plug (Upper)	20	2.0	14.5	L
Front Camshaft Chain Guide Bolt (Upper)	25	2.5	18	
Throttle Valve Holder Bolts	12	1.2	104 in·lb	
Exhaust Pipe Clamp Bolts	17	1.7	12	
Coolant By-pass Fitting	8.8	0.90	78 in·lb	L
Water Temperature Sensor	25	2.5	18	SS
Camshaft Position Sensor Bolt	12	1.2	104 in·lb	
Camshaft Sprocket Bolts	15	1.5	11	L
Front Camshaft Chain Guide Bolt (Lower)	12	1.2	104 in·lb	
Rear Camshaft Chain Guide Bolt	25	2.5	18	
Camshaft Chain Tensioner Cap Bolt	29	3.0	21	
Water Jacket Drain Bolt	8.8	0.90	78 in·lb	
Exhaust Pipe Manifold Nut	17	1.7	12	
Muffler Body Bolt	30	3.0	22	
Clutch:				
Clutch Cover Bolts	12	1.2	104 in·lb	L(2, Front)
Clutch Spring Bolts	8.8	0.90	78 in·lb	
Clutch Hub Nut	130	13.5	98	R
Clutch Lever Holder Bolts	7.8	0.80	69 in·lb	S
Clutch Sub Hub Bolts	25	2.5	18	L
Engine Lubrication System:				
Oil Filler Plug	1.5	0.15	13 in·lb	
Engine Drain Plug	29	3.0	22	
Oil Filter (Cartridge type)	31	3.2	23	R, O
Oil Cooler Bolt	78	8.0	58	R
Oil Pan Bolts	9.8	1.0	87 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Oil Pipe Holder Bolts	12	1.2	104 in·lb	
Oil Pressure Relief Valve	15	1.5	11	L
Oil Pressure Switch	15	1.5	11	SS
Oil Pressure Switch Terminal Bolt	1.5	0.15	13 in·lb	G
Impeller Bolt	9.8	1.0	87 in·lb	
Oil Passage Plug	15	1.5	11	
Oil Jet Nozzle Bolts	6.9	0.70	61 in·lb	
Cooling Hose Clamp	2.0	0.20	17 in·lb	
Oil Filter Clamp Bolt	5.9	0.60	52 in·lb	
Engine Removal/Installation:				
Engine Mounting Bolts and Nuts	44	4.5	33	S
Engine Mounting Locknuts	49	5.0	36	
Engine Mounting Adjusting Bolts	20	2.0	14	S
Crankshaft/Transmission:				
Breather Plate Bolts	9.8	1.0	87 in·lb	L
Oil Passage Plug (Left)	20	2.0	14.5	L
Oil Passage Plug (Right)	15	1.5	11	
Connecting Rod Big End Nuts	in the text	←	←	
Harness Clamp Bolt	8.8	0.90	78 in·lb	
Timing Rotor Bolt	44	4.5	33	
Oil Pressure Switch	15	1.5	11	SS
Gear Positioning Lever Bolt	9.8	1.0	87 in·lb	
Shift Shaft Return Spring Pin (Bolt)	28	2.9	21	L
Neutral Switch	15	1.5	11	
Shift Drum Bearing Holder Bolt	12	1.2	104 in·lb	
Shift Drum Bearing Holder Screw	4.9	0.50	43 in·lb	L
Shift Drum Cam Holder Bolt	12	1.2	104 in·lb	L
Oil Pipe Holder Bolts	12	1.23	104 in·lb	
Crankshaft Sensor Cover Bolts	9.8	1.0	87 in·lb	L (1)
Oil Jet Nozzle Bolts	6.9	0.70	61 in·lb	L
Starter Motor Clutch Bolt	33	3.4	24	L
Upper Crankcase Bolts (7mm)	20	2.0	14.5	S
Upper Crankcase Bolts (6mm)	12	1.2	104 in·lb	S
Lower Crankcase Bolts (7mm) (Front)	27	2.8	20	S
Lower Crankcase Bolts (7mm) (Rear)	24	2.4	18	S
Lower Crankcase Bolts(6mm)	12	1.2	104 in·lb	S
Wheels/Tires:				
Front Axle Clamp Bolts	20	2.0	14.5	AL
Front Axle Nut	127	13.0	94	
Rear Axle Nut	127	13.0	94	
Final Drive:				
Engine Sprocket Nut	125	13.0	92	MO
Engine Sprocket Cover Bolts	6.9	0.70	61 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Speed Sensor Mounting Bolt	3.9	0.40	35 in·lb	L
Rear Sprocket Nuts	59	6.0	43	
Rear Sprocket Studs	–	–	–	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	6.0	0.61	53 in·lb	
Front Brake Reservoir Cap Stopper Screws	1.2	0.12	10 in·lb	
Front Brake Light Switch Screws	1.2	0.12	10 in·lb	
Front Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	S
Front Caliper Mounting Bolts	34	3.5	25	
Caliper Assembly Bolts (Front)	22	2.2	16	
Front Brake Disc Mounting Bolts	27	2.8	20	L
Rear Brake Disc Mounting Bolts	27	2.8	20	L
Rear Caliper Mounting Bolts	25	2.5	18	
Rear Master Cylinder Mounting Bolts	25	2.5	18	
Rear Master Cylinder Push Rod Locknut	18	1.8	13	
Front Brake Pad Pins	15	1.5	11	
Suspension:				
Front Fork Clamp Bolts (Upper)	20	2.0	14.5	
Front Fork Clamp Bolts (Lower)	20	2.0	14.5	AL
Front Fork Top Plugs	23	2.3	17	
Piston Rod Nut	15	1.5	11	
Front Fork Bottom Allen Bolts	40	4.0	30	L
Front Axle Clamp Bolts	20	2.0	14.5	AL
Rear Shock Absorber Nuts (Upper and Lower)	34	3.5	25	
Rear Shock Absorber Upper Bracket Nut	59	6.0	43	
Swingarm Pivot Shaft Nut	108	11	81	
Uni-Trak				
Rocker Arm Nut	34	3.5	25	
Tie-Rod Nuts	59	6.0	43	
Swingarm Pivot Shaft ZX636	20	2.0	14	
ZX600	25	2.5	18	
Swingarm Pivot Shaft Lock Nut	98	10	72	
Steering:				
Steering Stem Head Nut	78	8.0	58	
Steering Stem Nut	20	2.0	14.5	
Handlebar Bolts	25	2.5	18	
Handlebar Holder Position Bolts	9.8	1.0	87 in·lb	L
Handlebar Weight Screws	–	–	–	L
Handlebar Switch Housing Screws	3.5	0.36	31 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Clutch Lever Holder Bolts	7.8	0.80	69 in·lb	S
Frame:				
Footpeg Holder Bolts	34	3.5	25	L
Side Stand Bolt	44	4.5	32	G
Footpeg Stay Bolts	25	2.5	18	
Side Stand Bracket Bolts	49	5.0	36	
Rear Frame Bolts and Nuts	59	6.0	43	
Side Stand Switch Bolt	8.8	0.90	78 in·lb	L
Wind Shield Mounting Screws	0.40	0.04	3.5 in·lb	
Front Fender Mounting Bolts	3.9	0.40	35 in·lb	
Electrical System:				
Spark Plugs	13	1.3	113 in·lb	
Alternator Rotor Bolt	120	12.0	87	
Stator Coil Bolts	12	1.2	110 in·lb	L
Alternator Lead Holding Plate Bolts	6.9	0.70	61 in·lb	L
Engine Ground Lead Terminal Bolt	9.8	1.0	87 in·lb	
Alternator Cover Bolts	12	1.2	104 in·lb	
Crankshaft Sensor Cover Bolts	9.8	1.0	87 in·lb	L (1)
Crankshaft Sensor Bolts	5.9	0.60	52 in·lb	
Timing Rotor Bolt	44	4.5	33	
Starter Motor Mounting Bolts	9.8	1.0	87 in·lb	L
Handlebar Switch Housing Screws	3.5	0.36	31 in·lb	
Radiator Fan Switch	18	1.8	13	
Water Temperature Sensor	25	2.5	18	L
Oil Pressure Switch	15	1.5	11	SS
Oil Pressure Switch Terminal Bolt	1.5	0.15	13 in·lb	G
Neutral Switch	15	1.5	11	
Front Brake Light Switch Screws	1.2	0.12	10 in·lb	
Side Stand Switch Bolt	8.8	0.90	78 in·lb	L
Tail/Brake Light Mounting Screws	1.2	0.12	12 in·lb	
License Light Mounting Screws	1.2	0.12	12 in·lb	
License Light Mounting Assembly Screws	1.0	0.10	8.7 in·lb	
Camshaft Position Sensor Bolt	12	1.2	106 in·lb	
Fuel Pump Bolt	9.8	1.0	87 in·lb	S

Specifications

Item	Standard	Service Limit
Fuel System:		
Throttle grip free play	2 ~ 3 mm (0.08 ~ 0.12 in.)	– – –
Idle speed	1 300 ± 50 r/min (rpm)	– – –
Throttle body vacuum:		
ZX636B	24 ± 1.3 kPa (180 ± 10 mmHg)	– – –
ZX600K	22 ± 1.3 kPa (165 ± 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	2.4 L (2.5 US qt.)	– – –
Engine Top End:		
Valve clearance:		
Inlet	0.11 ~ 0.19 mm (0.004 ~ 0.008 in.)	– – –
Exhaust	0.22 ~ 0.31 mm (0.009 ~ 0.012 in.)	– – –
Clutch:		
Clutch lever free play	2 ~ 3 mm (0.08 ~ 0.12 in.)	– – –
Engine Lubrication System:		
Engine oil:		
Type	API SE, SF or SG API SH or SJ with JASO MA	– – –
Viscosity	SAE 10W-40	– – –
Capacity	3.4 L (3.6 US qt) (when filter is not removed)	– – –
	3.6 L (3.8 US qt) (when filter is removed)	– – –
	4.0 L (4.2 US qt) (when engine is completely dry)	– – –
Level	Between upper and lower level lines (Wait 2 ~ 3 minutes after idling or running)	– – –
Tires:		
Tread depth:		
Front BRIDGESTONE	3.8 mm (0.15 in.)	1 mm (0.04 in.) (DE, AT, CH) 1.6 mm (0.06 in.)
Front MICHELIN	3.8 mm (0.15 in.)	
Rear BRIDGESTONE	5.8 mm (0.23 in.)	Up to 130 km/h (80 mph): 2 mm (0.08 in.)
Rear MICHELIN	5.6 mm (0.22 in.)	Over 130 km/h (80 mph): 3 mm (0.12 in.)

Specifications

Item	Standard	Service Limit
Air pressure: (when cold)		
Front	Up to 180 kg (397 lb) load: 250 kPa (2.5 kgf/cm², 36 psi)	– – –
Rear	Up to 180 kg (397 lb) load: 290 kPa (2.9 kgf/cm², 42 psi)	– – –
Final Drive:		
Drive chain slack	25 ~ 30 mm (1.0 ~ 1.2 in.)	– – –
Drive chain wear (20-link length)	317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)	323 mm (12.7 in.)
Brakes:		
Brake fluid:		
Grade	DOT4	– – –
Brake pad lining thickness:		
Front	4.0 mm (0.16 in.)	1 mm (0.04 in.)
Rear	5 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 gap	0.7 ~ 0.8 mm (0.028 ~ 0.031 in.)	– – –

AT: Austria
CH: Switzerland
DE: Germany
US: United States