

Quick Reference Guide

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

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.

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	1-2
Model Identification.....	1-8
General Specifications.....	1-10
Technical Information – Air Inlet System	1-16
Technical Information – New Ignition Interlock Sidestand	1-19
Technical Information – Tail/Brake Lights Employing LED	1-20
Technical Information – KAWASAKI LOW EXHAUST EMISSION SYSTEM	1-22
Unit Conversion Table	1-23

1-2 GENERAL INFORMATION

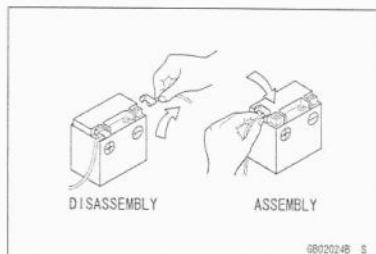
Before Servicing

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:

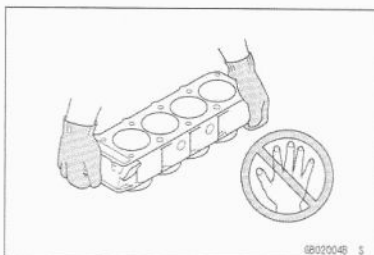
Battery Ground

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



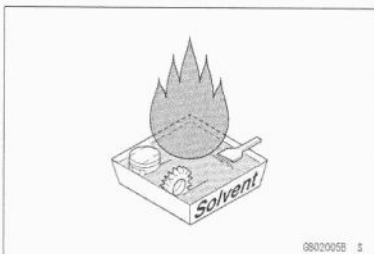
Edges of Parts

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



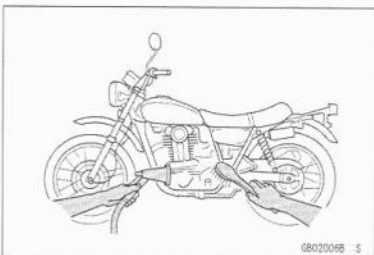
Solvent

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



Cleaning vehicle before disassembly

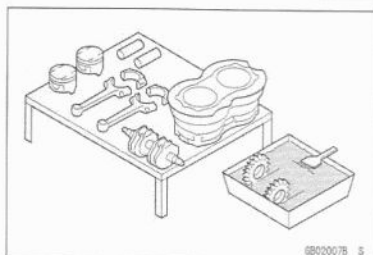
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

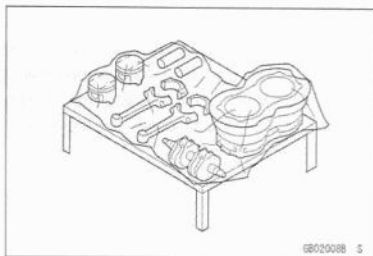
Arrangement and Cleaning of Removed Parts

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.



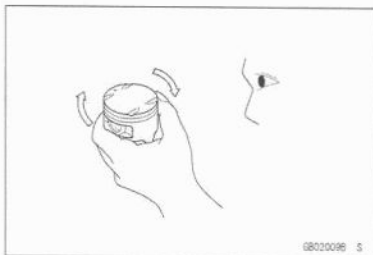
Storage of Removed Parts

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.



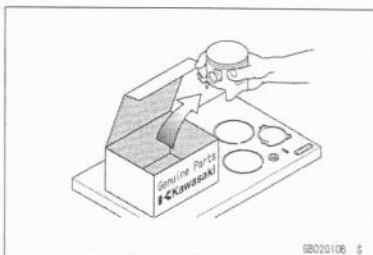
Inspection

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.

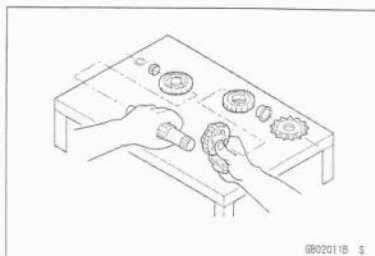


1-4 GENERAL INFORMATION

Before Servicing

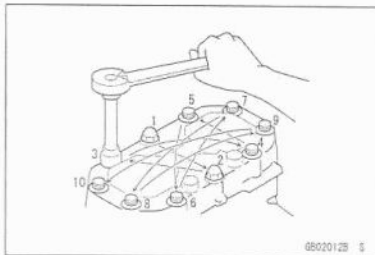
Assembly Order

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



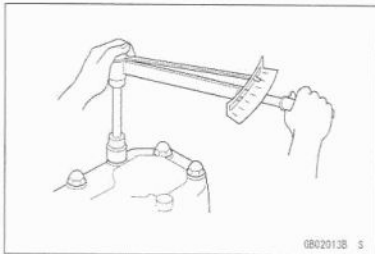
Tightening Sequence

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.



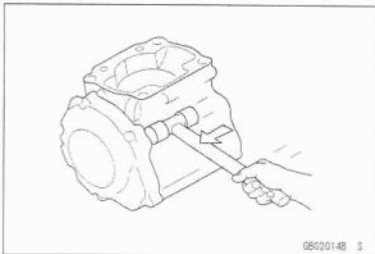
Tightening Torque

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.



Force

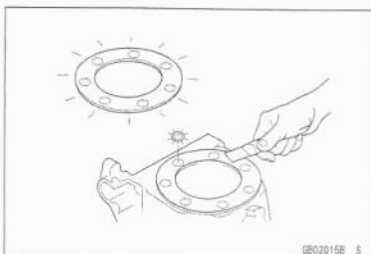
Use common sense during disassembly and assembly, excessive force can cause expensive or hard to repair damage. When necessary, remove screws that have a non-permanent locking agent applied using an impact driver. Use a plastic-faced mallet whenever tapping is necessary.



Before Servicing

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



GB02015B S

Liquid Gasket, Locking Agent

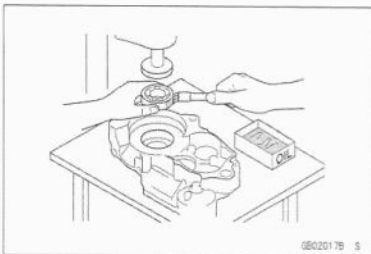
For applications that require Liquid Gasket or a Locking agent, clean the surfaces so that no oil residue remains before applying liquid gasket or locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



GB02016B S

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.

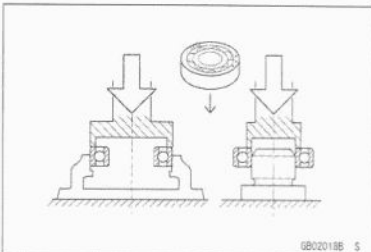


GB02017B S

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.



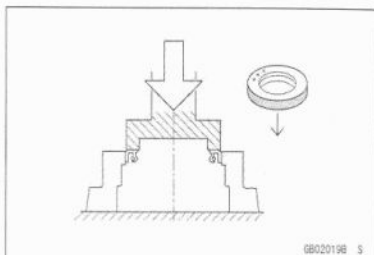
GB02018B S

1-6 GENERAL INFORMATION

Before Servicing

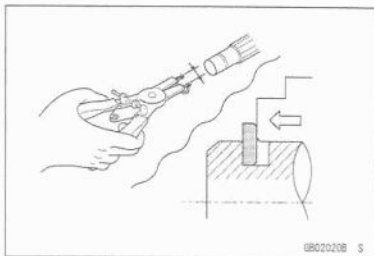
Oil Seal, Grease Seal

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.



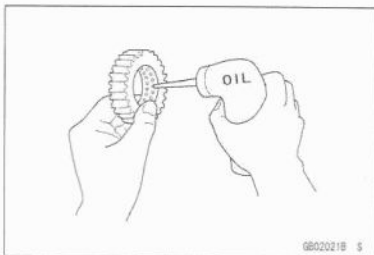
Circlips, Cotter Pins

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.



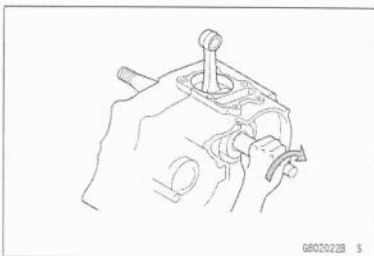
Lubrication

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.



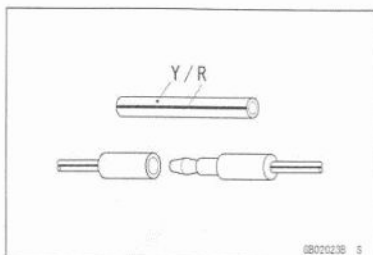
Direction of Engine Rotation

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).



Before Servicing*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.



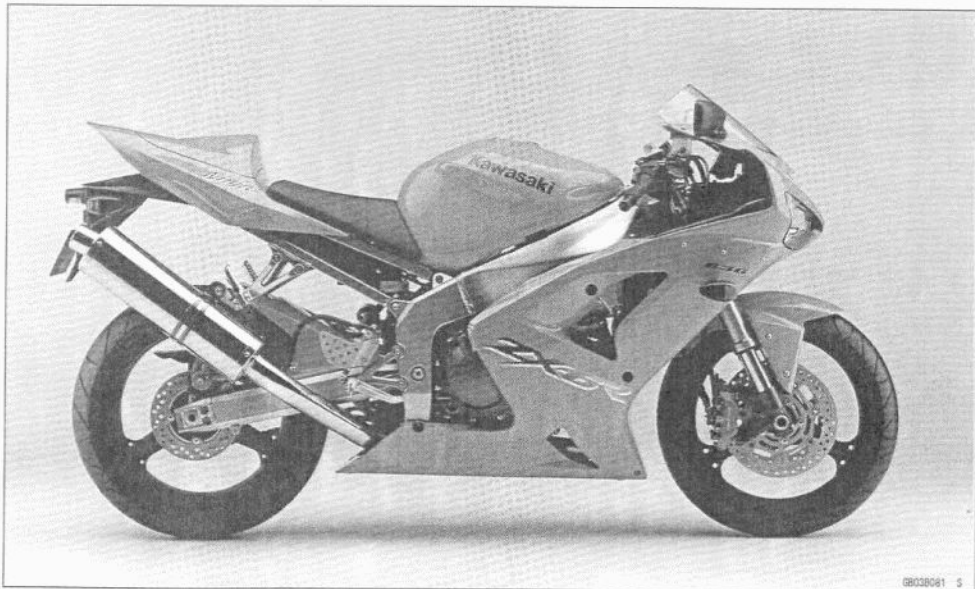
1-8 GENERAL INFORMATION

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:



1-10 GENERAL INFORMATION

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 x 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 x 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
	Close
	Duration
Exhaust	Open
	Close
	Duration
Lubrication system	Forced lubrication (wet sump with cooler)

General Specifications

Items	ZX636-B1 (Ninja ZX-6R)
Engine oil: Type Viscosity Capacity	API SE, SF or SG API SH or SJ with JASO MA SAE10W-40 4.0 L (4.2 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 2.022 (89/44) Wet multi disc 6-speed, constant mesh, return shift Chain drive 2.666 (40/15) 6.223 @Top gear
Frame: Type Caster (rake angle) Trail Front tire: Type Size Rear tire: Type Size Front suspension: Type Wheel travel Rear suspension: Type Wheel travel Brake Type: Front Rear	Tubular, diamond 24.5° 95 mm (3.7 in.) Tubeless 120/65 ZR17 M/C (56W) Tubeless 180/55 ZR17 M/C (73W) Telescopic fork (upside-down) 120 mm (4.7 in.) Swingarm (uni-trak) 135 mm (5.3 in.) Dual discs Single disc
Electrical Equipment: Battery	12 V 8 Ah

1-12 GENERAL INFORMATION

General Specifications

Items	ZX636-B1 (Ninja ZX-6R)
Headlight:	
Type	Semi-sealed beam
Bulb	12 V 55 W (quartz-halogen) × 2
Hi	12 V 55 W (quartz-halogen)
Lo	12 V 0.5/3.8 W (LED)
Tail/brake light	(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 x 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 x 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
Close	55° BTDC
Duration	85° ABDC
Exhaust	320°
Open	62° BBDC
Close	34° ATDC
Duration	276°
Lubrication system	Forced lubrication (wet sump with cooler)

1-14 GENERAL INFORMATION

General Specifications

Items	ZX600-K1 (Ninja ZX-6RR)
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

General Specifications

Items		ZX600-K1 (Ninja ZX-6RR)
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)
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

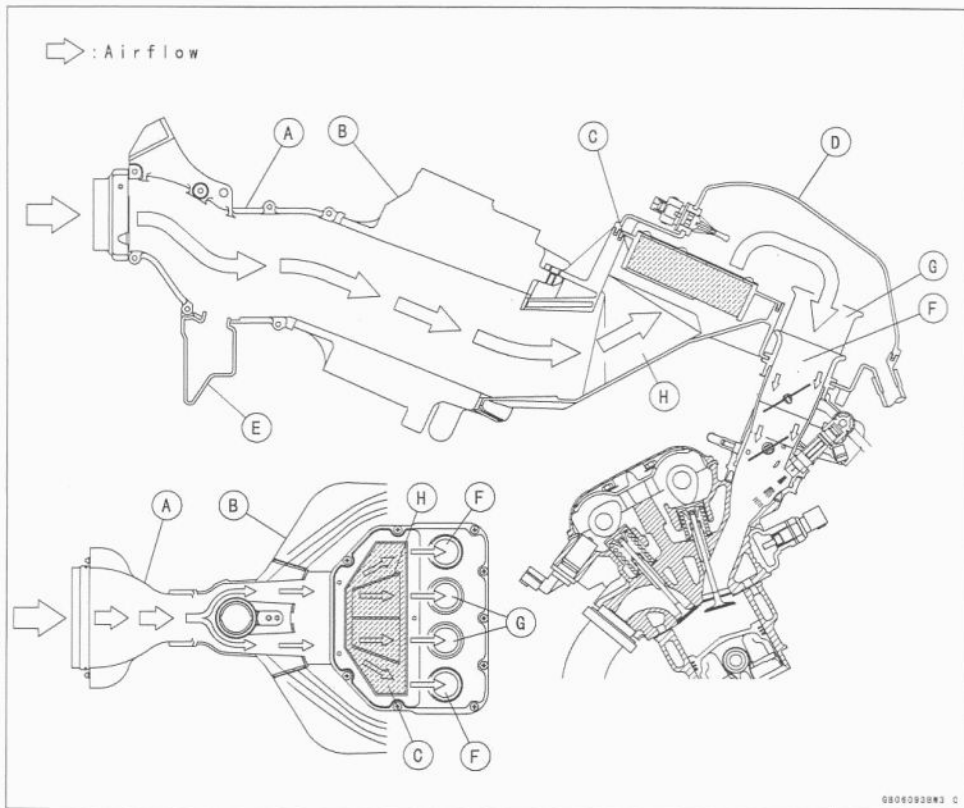
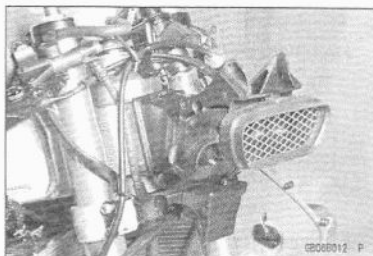
(FR): France Model

1-16 GENERAL INFORMATION

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.



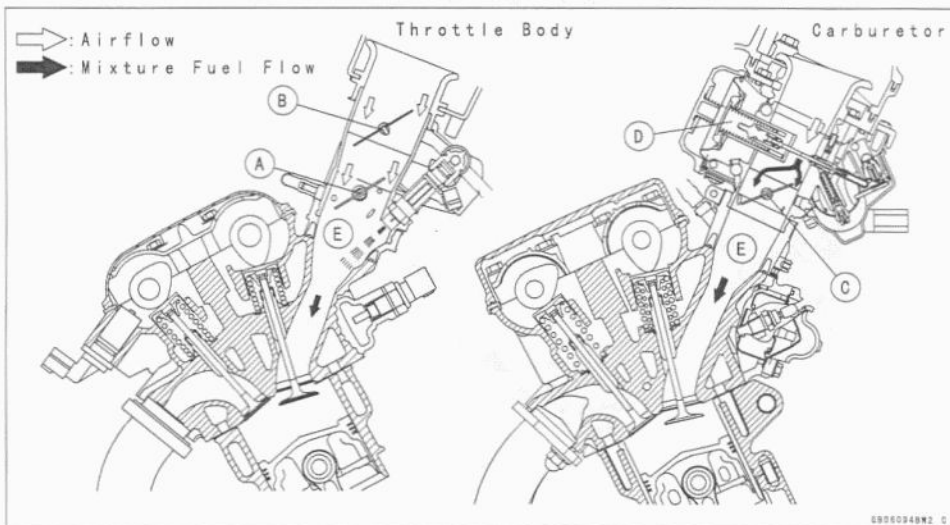
- A. Inlet Duct
- B. Frame
- C. Air Cleaner Element
- D. Air Cleaner Housing

- E. Resonator
- F. Air Duct #1, 4 (Short)
- G. Air Duct #2, 3 (Long)
- H. Guide Vane

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