MODEL APPLICATION

Year	Model	Beginning Frame No.
2013	ZX636ED	JKBZXJE1□DA000001 JKBZX636EEA000001
2013	ZX636FD	JKBZXJF1□DA000001 JKBZX636EFA000001

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

Kawasaki
KAWASAKI HEAVY INDUSTRIES, LTD.
Motorcycle & Engine Company

Part No.99924-1462-01

Printed in Japan

Kawasaki

Ninja ZX-6R
Ninja ZX-6R ABS

Motorcycle Service Manual

Quick Reference Guide

LIST OF ABBREVIATIONS

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

COUNTRY AND AREA CODES

AT	Austria	GB	United Kingdom
AU	Australia	ID	Indonesia
BR	Brazil	SEA	Southeast Asia
CA	Canada	US	United States
CAL	California	WVTA (FULL H)	WVTA Model with Honeycomb Catalytic Converter (Full Power)
CH	Switzerland	GB WVTA (FULL H)	WVTA Model with Honeycomb Catalytic Converter (Left Side Traffic Full Power)
DE	Germany	WVTA (78.2 H)	WVTA Model with Honeycomb Catalytic Converter (Restricted Power)
EUR	Europe		

Foreword

This manual is designed primarily for use by trained mechanics in a properly equipped shop. However, it contains enough detail and basic information to make it useful to the owner who desires to perform his own basic maintenance and repair work. A basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily. Whenever the owner has insufficient experience or doubts his ability to do the work, all adjustments, maintenance, and repair should be carried out only by qualified mechanics.

In order to perform the work efficiently and to avoid costly mistakes, read the text, thoroughly familiarize yourself with the procedures before starting work, and then do the work carefully in a clean area. Whenever special tools or equipment are specified, do not use makeshift tools or equipment. Precision measurements can only be made if the proper instruments are used, and the use of substitute tools may adversely affect safe operation.

For the duration of the warranty period, we recommend that all repairs and scheduled maintenance be performed in accordance with this service manual. Any owner maintenance or repair procedure not performed in accordance with this manual may void the warranty.

To get the longest life out of your vehicle.

- Follow the Periodic Maintenance Chart in the Service Manual.
- Be alert for problems and non-scheduled maintenance.
- Use proper tools and genuine Kawasaki Motorcycle parts. Special tools, gauges, and testers that are necessary when servicing Kawasaki motorcycles are introduced by the Service Manual. Genuine parts provided as spare parts are listed in the Parts Catalog.
- Follow the procedures in this manual carefully. Don't take shortcuts.
- Remember to keep complete records of maintenance and repair with dates and any new parts installed.

How to Use This Manual

In this manual, the product is divided into its major systems and these systems make up the manual's chapters. The Quick Reference Guide shows you all of the product's system and assists in locating their chapters. Each chapter in turn has its own comprehensive Table of Contents.

For example, if you want stick 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 Stick Coil section.

Whenever you see symbols, heed their instructions! Always follow safe operating and maintenance practices.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

This manual contains four more symbols which will help you distinguish different types of information.

NOTE

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

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

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

General Information

Table of Contents

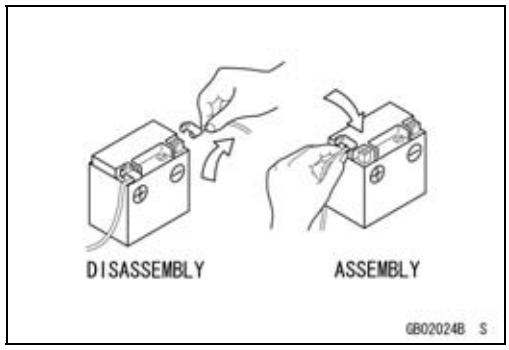
Before Servicing

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

Especially note the following.

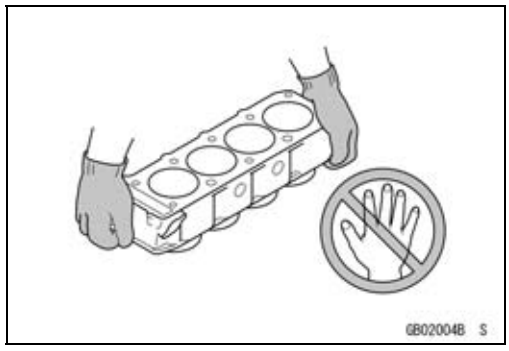
Battery Ground

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



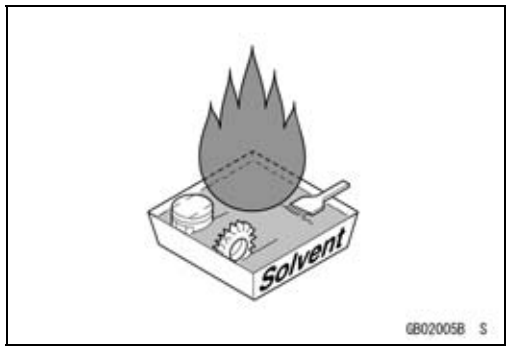
Edges of Parts

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



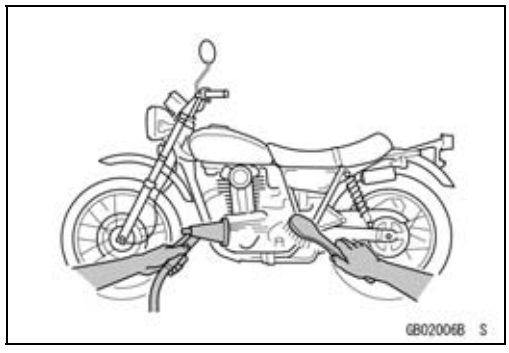
Solvent

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



Cleaning Vehicle before Disassembly

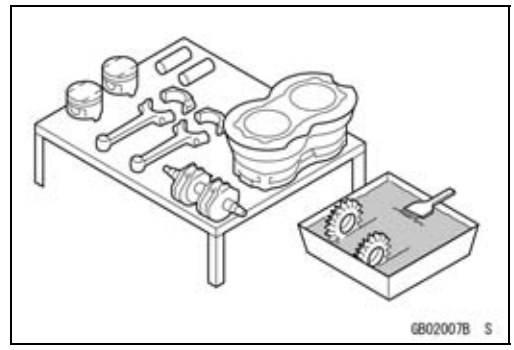
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

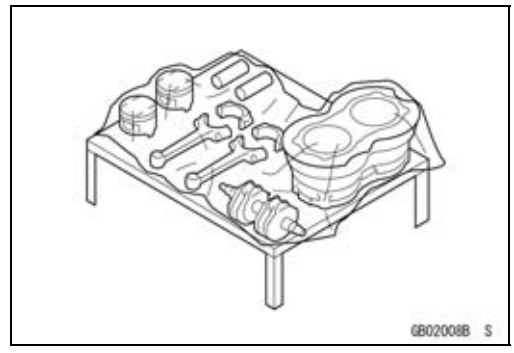
Arrangement and Cleaning of Removed Parts

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.



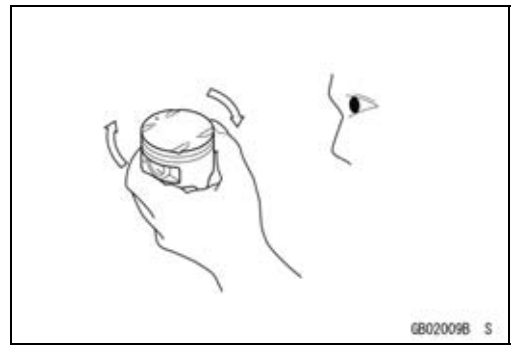
Storage of Removed Parts

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.



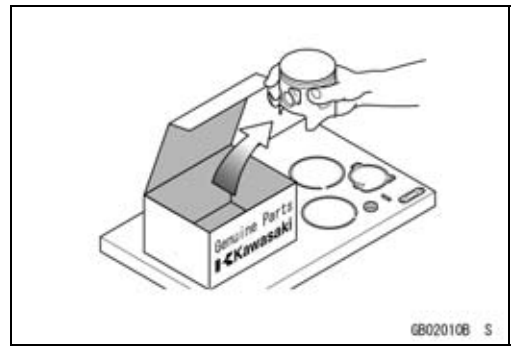
Inspection

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.



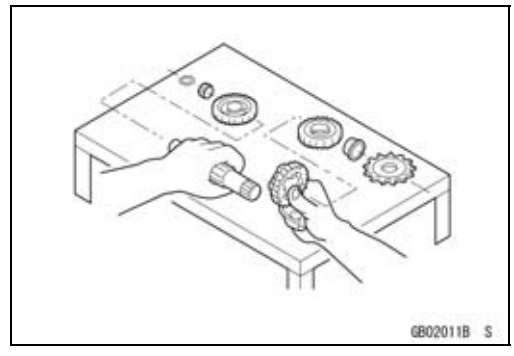
Replacement Parts

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



Assembly Order

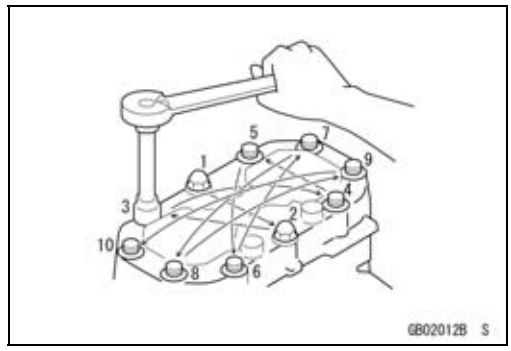
In most cases assembly order is the reverse of disassembly, however, if assembly order is provided in this Service Manual, follow the procedures given.



Before Servicing

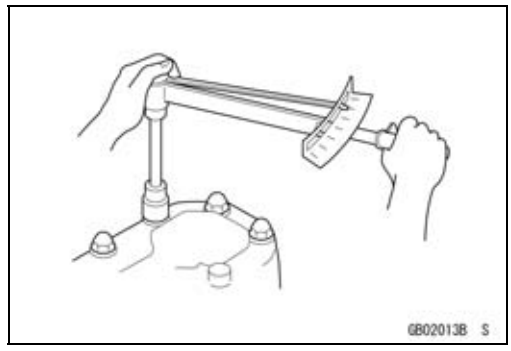
Tightening Sequence

Generally, when installing a part with several bolts, nuts, or screws, start them all in their holes and tighten them to a snug fit. Then tighten them according to the specified sequence to prevent case warpage or deformation which can lead to malfunction. Conversely when loosening the bolts, nuts, or screws, first loosen all of them by about a quarter turn and then remove them. If the specified tightening sequence is not indicated, tighten the fasteners alternating diagonally.



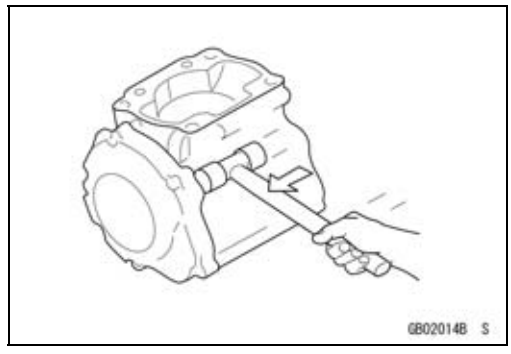
Tightening Torque

Incorrect torque applied to a bolt, nut, or screw may lead to serious damage. Tighten fasteners to the specified torque using a good quality torque wrench.



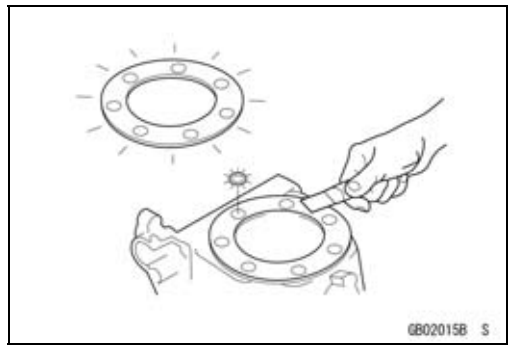
Force

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



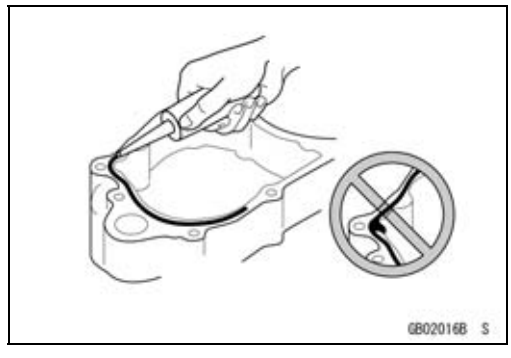
Gasket, O-ring

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



Liquid Gasket, Non-permanent Locking Agent

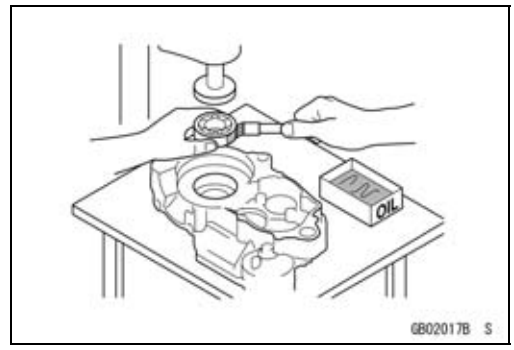
For applications that require Liquid Gasket or a Non-permanent Locking Agent, clean the surfaces so that no oil residue remains before applying liquid gasket or non-permanent locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Before Servicing

Press

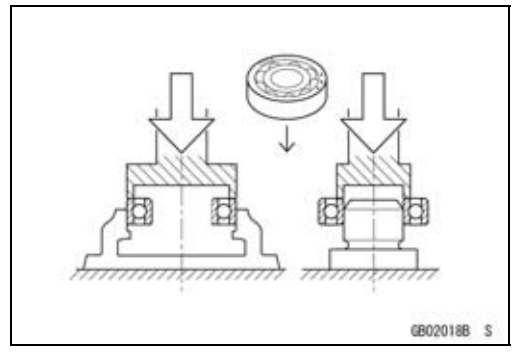
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



Ball Bearing and Needle Bearing

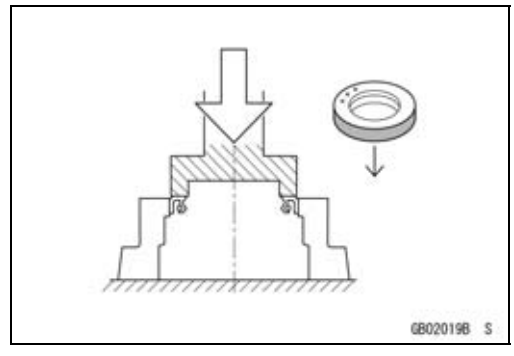
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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

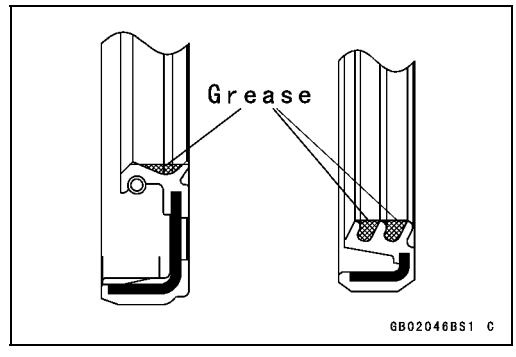


Oil Seal, Grease Seal

Do not remove pressed oil or grease seals unless removal is necessary. Replace with new ones whenever removed. Press new oil seals with manufacture and size marks facing out. Make sure the seal is aligned properly when installing.

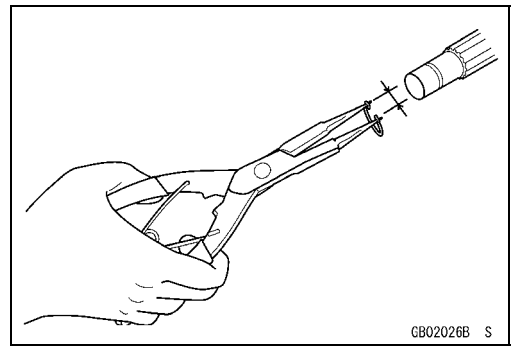


Apply specified grease to the lip of seal before installing the seal.



Circlips, Cotter Pins

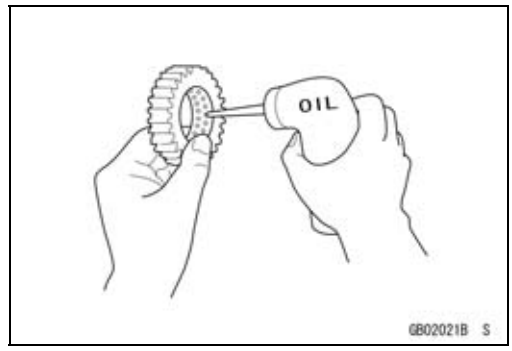
Replace the circlips or cotter pins that were removed with new ones. Take care not to open the clip excessively when installing to prevent deformation.



Before Servicing

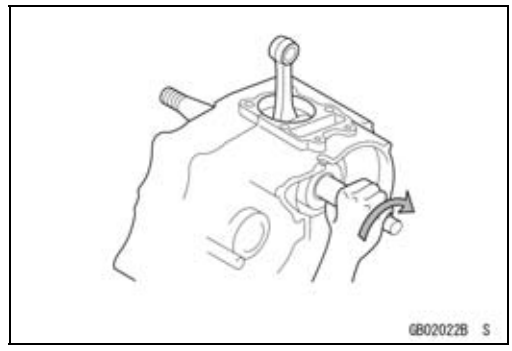
Lubrication

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



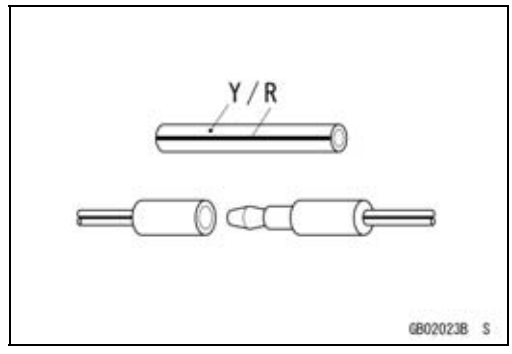
Direction of Engine Rotation

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



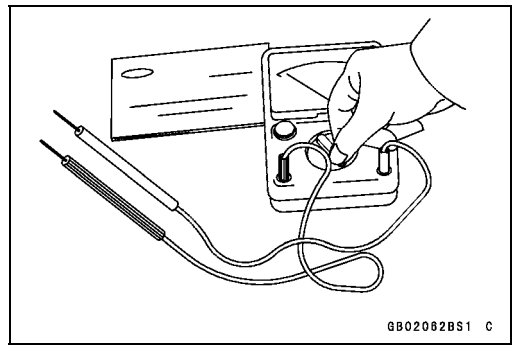
Electrical Wires

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



Instrument

Use a meter that has enough accuracy for an accurate measurement. Read the manufacture's instructions thoroughly before using the meter. Incorrect values may lead to improper adjustments.



Model Identification

ZX636ED (US and CA Models) Left Side View

ZX636ED (US and CA Models) Right Side View

Model Identification

ZX636ED (EUR Models) Left Side View

ZX636ED (EUR Models) Right Side View

Model Identification

ZX636FD (EUR Models) Left Side View

ZX636FD (EUR Models) Right Side View

Frame Number

Engine Number

General Specifications

Items	ZX636ED/FD
Dimensions	
Overall Length	2 085 mm (82.09 in.)
Overall Width	705 mm (27.8 in.)
Overall Height	1 115 mm (43.90 in.)
Wheelbase	1 395 mm (54.92 in.)
Road Clearance	130 mm (5.12 in.)
Seat Height	830 mm (32.7 in.)
Curb Mass:	
ZX636ED	192 kg (423 lb)
ZX636FD	194 kg (428 lb)
Front:	
ZX636ED	98 kg (216 lb)
ZX636FD	99 kg (218 lb)
Rear:	
ZX636ED	94 kg (207 lb)
ZX636FD	95 kg (209 lb)
Fuel Tank Capacity	17 L (4.5 US gal)
Performance	
Minimum Turning Radius	3.4 m (11.2 ft)
Engine	
Type	4-stroke, DOHC, 4-cylinder
Cooling System	Liquid-cooled
Bore and Stroke	67.0 × 45.1 mm (2.64 × 1.78 in.)
Displacement	636 cm³ (38.8 cu in.)
Compression Ratio	12.9:1
Maximum Horsepower	96.4 kW (131 PS) at 13 500 r/min (rpm), (WVTA (78.2 H)) 78.2 kW (106 PS) at 13 500 r/min (rpm), (SEA) 95.0 kW (129 PS) at 13 000 r/min (rpm), (CA), (CAL), (US) – – –
Maximum Torque	71 N·m (7.2 kgf·m, 52 ft·lb) at 11 500 r/min (rpm), (WVTA (78.2 H)) 61 N·m (6.2 kgf·m, 45 ft·lb) at 10 800 r/min (rpm), (CA), (CAL), (US) – – –
Carburetion System	FI (Fuel Injection), KEIHIN TTK38 × 4
Starting System	Electric starter
Ignition System	Battery and coil (transistorized)
Timing Advance	Electronically advanced (IC igniter in ECU)
Ignition Timing	From 12.5° BTDC at 1 300 r/min (rpm) to 36.4° BTDC at 4 800 r/min (rpm)
Spark Plug	NGK CR9E
Cylinder Numbering Method	Left to right, 1-2-3-4
Firing Order	1-2-4-3

General Specifications

Items	ZX636ED/FD
Valve Timing:	
Intake:	
Open	44° (BTDC)
Close	67° (ABDC)
Duration	291°
Exhaust:	
Open	58° (BBDC)
Close	20° (ATDC)
Duration	258°
Lubrication System	Forced lubrication (wet sump with oil cooler)
Engine Oil:	
Type	API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2
Viscosity	SAE 10W-40
Capacity	3.6 L (3.8 US qt)
Drive Train	
Primary Reduction System:	
Type	Gear
Reduction Ratio	1.900 (76/40)
Clutch Type	Wet multi disc
Transmission:	
Type	6-speed, constant mesh, return shift
Gear Ratios:	
1st	2.846 (37/13)
2nd	2.200 (33/15)
3rd	1.850 (37/20)
4th	1.600 (32/20)
5th	1.421 (27/19)
6th	1.300 (26/20)
Final Drive System:	
Type	Chain drive
Reduction Ratio	2.688 (43/16)
Overall Drive Ratio	6.638 at Top gear
Frame	
Type	Tubular, diamond
Caster (Rake Angle)	23.5°
Trail	101 mm (3.98 in.)
Front Tire:	
Type	Tubeless
Size	120/70ZR17 M/C (58 W)
Rim Size	J17M/C × MT3.50
Rear Tire:	
Type	Tubeless
Size	180/55ZR17 M/C (73 W)
Rim Size	J17M/C × MT5.50

General Specifications

Items	ZX636ED/FD
Front Suspension:	
Type	Telescopic fork (upside-down)
Wheel Travel	120 mm (4.72 in.)
Rear Suspension:	
Type	Swingarm (uni-trak)
Wheel Travel	134 mm (5.28 in.)
Brake Type:	
Front	Dual discs
Rear	Single disc
Electrical Equipment	
Battery	12 V 8 Ah
Headlight:	
Type	Semi-sealed beam
Bulb:	
High	12 V 55 W (quartz-halogen)
Low	12 V 55 W (quartz-halogen)
Tail/Brake Light	LED
Alternator:	
Type	Three-phase AC
Rated Output	26 A/14 V at 5 000 r/min (rpm)

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

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

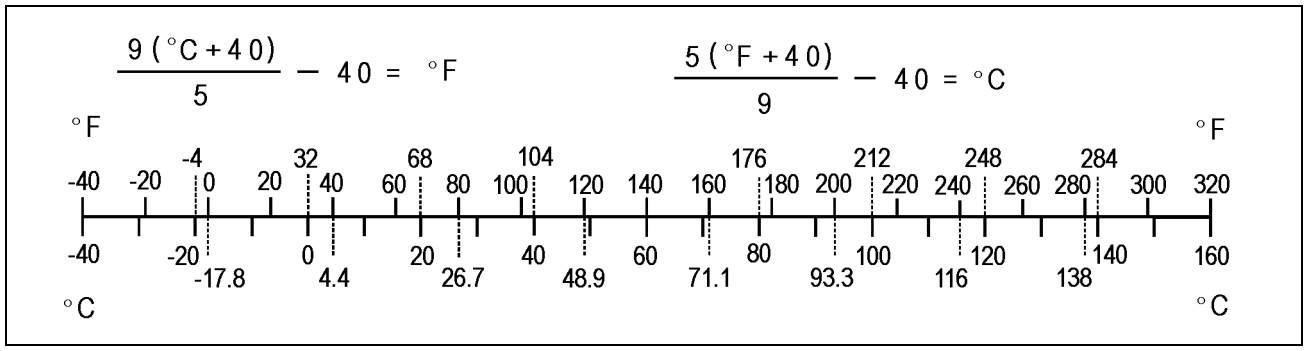
Units of Speed:

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:



Periodic Maintenance

Table of Contents

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

*A: Service at number of years shown or indicated odometer reading intervals, whichever comes first.
*B: For higher odometer readings, repeat at the frequency interval established here.
*C: Service more frequently when operating in severe conditions: dusty, wet, muddy, high speed, or frequent starting/stopping.
○: Emission Related Item
Q: Inspection
: Change or Replace
: Lubrication

	Items	year (*A)	Odometer Reading (*B) × 1 000 km (× 1 000 mile) 1 (0.6)	6 (3.8)	12 (7.6)	18 (11.4)	24 (15.2)	See Page
Fuel System								
○	Air cleaner element (*C)							2-14
○	Idle speed		Q		Q		Q	2-15
○	Throttle control system (play, smooth return, no drag)	Q:1	Q		Q		Q	2-15
○	Engine vacuum synchronization				Q		Q	2-16
	Fuel system	Q:1	Q		Q		Q	2-19
	Fuel hose	:5						2-20
○	Evaporative emission control system (CAL Model)			Q	Q	Q	Q	2-22
Cooling System								
	Coolant level		Q		Q		Q	2-23
	Cooling system	Q:1	Q		Q		Q	2-23
	Coolant, water hoses and O-rings	:3	: every 36 000 km (22 500 mile)					2-23, 2-26
Engine Top End								
○	Valve clearance (US and CA Models)						Q	2-27
	Valve clearance (Other than US and CA Models)		Q: every 42 000 km (26 250 mile)					2-27
○	Air suction system				Q		Q	2-30
Clutch								
	Clutch operation (play, engagement, disengagement)		Q		Q		Q	2-31
Engine Lubrication System								
	Engine oil and oil filter (*C)	:1						2-32, 2-33
Wheels and Tires								
	Tire air pressure	Q:1			Q		Q	2-34
	Wheels and tires	Q:1			Q		Q	2-34

Periodic Maintenance Chart

	Items	year (*A)	Odometer Reading (*B) × 1 000 km (× 1 000 mile) 1 (0.6)	6 (3.8)	12 (7.6)	18 (11.4)	24 (15.2)	See Page
	Wheel bearing damage	Q:1			Q		Q	2-35
Final Drive								
	Drive chain lubrication condition (*C)		Q: every 600 km (400 mile)					2-36
	Drive chain slack (*C)		Q: every 1 000 km (600 mile)					2-36
	Drive chain wear (*C)				Q		Q	2-38
	Drive chain guide wear				Q		Q	2-39
Brakes								
	Brake system	Q:1	Q	Q	Q	Q	Q	2-39
	Brake fluid level	Q:0.5	Q	Q	Q	Q	Q	2-40
	Brake fluid (front and rear)	:2						2-41
	Brake hose/rubber parts of brake master cylinder and caliper	:4	: every 48 000 km (30 000 mile)					2-43, 2-46, 2-47
	Brake pad wear (*C)			Q	Q	Q	Q	2-51
	Brake light switch operation		Q	Q	Q	Q	Q	2-51
Suspension								
	Suspension system	Q:1			Q		Q	2-52
Steering								
	Steering play	Q:1	Q		Q		Q	2-53
	Steering stem bearings	:2						2-55
Electrical System								
	Electrical system	Q:1			Q		Q	2-56
○	Spark plugs							2-61
Others								
	Chassis parts	:1						2-61
	Condition of bolts, nuts and fasteners		Q		Q		Q	2-62

Torque and Locking Agent

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

Letters used in the “Remarks” column mean:
AL: Tighten the two clamp bolts alternately two times to ensure even tightening torque.
G: Apply grease.
L: Apply a non-permanent locking agent.
M: Apply molybdenum disulfide grease.
MO: Apply molybdenum disulfide oil solution.
(mixture of the engine oil and molybdenum disulfide grease in a weight ratio 10:1)
R: Replacement Parts
S: Follow the specified tightening sequence.
Si: Apply silicone grease.
SS: Apply silicone sealant.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel System (DFI)				
Air Cleaner Housing Assembly Screws	1.2	0.12	11 in·lb	
Air Cleaner Housing Clamp Bolts	2.0	0.20	18 in·lb	
Air Intake Duct Mounting Bolts	9.8	1.0	87 in·lb	L
Air Intake Duct Assembly Screws	1.5	0.15	13 in·lb	
Crankshaft Sensor Bolts	5.9	0.60	52 in·lb	
Delivery Pipe Assy Mounting Screws	3.43	0.35	30 in·lb	
Exhaust Butterfly Valve Actuator Mounting Screws	4.3	0.44	38 in·lb	
Exhaust Butterfly Valve Actuator Pulley Bolt	4.9	0.50	43 in·lb	
Fuel Pump Bolts	9.8	1.0	87 in·lb	L, S
Gear Position Switch Screws	2.9	0.30	26 in·lb	L
Intake Air Temperature Sensor Screw	1.2	0.12	11 in·lb	
Oxygen Sensor (Equipped Models)	25	2.5	18	
Throttle Body Assy Holder Bolts	12	1.2	106 in·lb	L
Throttle Body Assy Holder Clamp Bolts	2.9	0.30	26 in·lb	
Throttle Cable Holder Plate Bolt	3.9	0.40	35 in·lb	L
Throttle Case Screws	3.5	0.36	31 in·lb	
Water Temperature Sensor	12	1.2	106 in·lb	
Cooling System				
Coolant By-pass Fitting Bolt	8.8	0.90	78 in·lb	L
Coolant Drain Bolt (Cylinder)	9.8	1.0	87 in·lb	
Coolant Drain Bolt (Water Pump)	8.8	0.90	78 in·lb	
Heat Insulation Plate Bolt	3.9	0.40	35 in·lb	L
Impeller Bolt	9.8	1.0	87 in·lb	
Oil Cooler Mounting Bolts	20	2.0	15	
Radiator Upper Bolts	9.8	1.0	87 in·lb	
Thermostat Housing Cover Bolts	5.9	0.60	52 in·lb	
Water Hose Clamp Screws	3.0	0.31	27 in·lb	
Water Hose Fitting Bolts	9.8	1.0	87 in·lb	
Water Pump Cover Bolts	12	1.2	106 in·lb	L
Water Temperature Sensor	12	1.2	106 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Engine Top End				
Air Suction Valve Cover Bolts	9.8	1.0	87 in·lb	L
Breather Hose Fitting	15	1.5	11	L
Camshaft Cap Bolts	12	1.2	106 in·lb	S
Camshaft Chain Tensioner Cap Bolt	20	2.0	15	
Camshaft Chain Tensioner Mounting Bolts	11	1.1	97 in·lb	
Camshaft Sprocket Bolts	15	1.5	11	L
Coolant Drain Bolt (Cylinder)	9.8	1.0	87 in·lb	
Cylinder Head Bolts (M9)	see the text	←	←	MO, S
Cylinder Head Bolts (M6)	12	1.2	106 in·lb	S
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	S
Exhaust Butterfly Valve Actuator Mounting Screws	4.3	0.44	38 in·lb	
Exhaust Butterfly Valve Actuator Pulley Bolt	4.9	0.50	43 in·lb	
Exhaust Butterfly Valve Cable Locknuts	5.0	0.51	44 in·lb	
Front Camshaft Chain Guide Bolt (Lower)	12	1.2	106 in·lb	
Front Camshaft Chain Guide Bolt (Upper)	25	2.5	18	
Muffler Body Mounting Bolt	25	2.5	18	
Premuffler Chamber Bracket Bolt	40	4.1	30	
Premuffler Chamber Mounting Bolt	40	4.1	30	
Muffler Body End Cover Bolts	7.0	0.71	62 in·lb	L
Spark Plugs	13	1.3	115 in·lb	
Starter Clutch Bolt Cap	2.9	0.30	26 in·lb	
Throttle Body Assy Holder Bolts	12	1.2	106 in·lb	L
Throttle Body Assy Holder Clamp Bolts	2.9	0.30	26 in·lb	
Timing Inspection Cap	2.9	0.30	26 in·lb	
Upper Camshaft Chain Guide Bolts	12	1.2	106 in·lb	S
Water Passage Plugs	19.6	2.00	14.5	L
Clutch				
Clutch Cover Bolts (M6, L = 40 mm)	9.8	1.0	87 in·lb	
Clutch Cover Bolts (M6, L = 25 mm)	9.8	1.0	87 in·lb	
Clutch Hub Nut	135	13.8	100	R
Clutch Lever Clamp Bolts	7.8	0.80	69 in·lb	S
Clutch Stopper Bolts	8.8	0.90	78 in·lb	
Oil Filler Plug	–	–	–	Hand-tighten
Engine Lubrication System				
Air Bleed Bolt	9.8	1.0	87 in·lb	
Engine Oil Drain Bolt	29	3.0	21	
Impeller Bolt	9.8	1.0	87 in·lb	
Oil Cooler Mounting Bolts	20	2.0	15	
Oil Cooler/Oil Filter Case Mounting Bolts	20	2.0	15	L
Oil Filter	17	1.7	13	G, R
Oil Filter Guard Bolts	4.0	0.41	35 in·lb	L

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Oil Filter Holder Bolt	25	2.5	18	L
Oil Jet Nozzles	2.9	0.30	26 in·lb	
Oil Pan Bolts	9.8	1.0	87 in·lb	S
Oil Passage Plug	17	1.7	13	
Oil Passage Plugs (Taper)	20	2.0	15	L
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
Oil Pump Drive Gear Bolt	9.8	1.0	87 in·lb	L
Water Pump Cover Bolts	12	1.2	106 in·lb	L
Engine Removal/Installation				
Adjusting Collar Locknuts	49	5.0	36	S
Adjusting Collars	9.8	1.0	87 in·lb	S, (M)
Left Front Engine Mounting Bolt	44	4.5	32	S
Lower Engine Mounting Nut	44	4.5	32	R, S
Middle Engine Mounting Nut	44	4.5	32	R, S
Right Front Engine Mounting Bolt	44	4.5	32	S
Crankshaft/Transmission				
Bearing Holder Screws	4.9	0.50	43 in·lb	L
Breather Hose Fitting	15	1.5	11	L
Breather Plate Bolts	9.8	1.0	87 in·lb	L
Connecting Rod Big End Nuts	see the text	←	←	MO
Crankcase Bolt (M8, L = 90 mm)	27	2.8	20	S
Crankcase Bolts (M8, L = 95 mm)	31	3.2	23	MO, S
Crankcase Bolts (M8, L = 75 mm)	27	2.8	20	S
Crankcase Bolts (M6, L = 68 mm)	12	1.2	106 in·lb	S
Crankcase Bolts (M6, L = 50 mm)	12	1.2	106 in·lb	
Gear Position Switch Screws	2.9	0.30	26 in·lb	L
Gear Positioning Lever Bolt	12	1.2	106 in·lb	
Idle Gear Cover Bolts	9.8	1.0	87 in·lb	
Oil Jet Nozzles	2.9	0.30	26 in·lb	
Oil Passage Nozzle	4.9	0.50	43 in·lb	
Oil Passage Plug	17	1.7	13	
Oil Passage Plugs (Taper)	20	2.0	15	L
Race Holder Screws	4.9	0.50	43 in·lb	L
Shift Drum Cam Holder Bolt	12	1.2	106 in·lb	L
Shift Pedal Mounting Bolt	25	2.5	18	L
Shift Shaft Return Spring Pin	28	2.9	21	L
Starter Clutch Bolt	49	5.0	36	
Starter Clutch Cover Bolt (L = 20 mm)	9.8	1.0	87 in·lb	
Starter Clutch Cover Bolts (L = 30 mm)	9.8	1.0	87 in·lb	
Transmission Case Bolt (M6)	9.8	1.0	87 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Transmission Case Bolts (M8)	20	2.0	15	
Wheels/Tires				
Front Axle Clamp Bolts	20	2.0	15	AL
Front Axle	127	13.0	93.7	
Rear Axle Nut	127	13.0	93.7	
Final Drive				
Chain Guide Bolts	12	1.2	106 in·lb	L
Engine Sprocket Cover Bolts (L = 45 mm)	9.8	1.0	87 in·lb	
Engine Sprocket Cover Bolts (L = 55 mm)	9.8	1.0	87 in·lb	
Engine Sprocket Cover Damper Screws	3.0	0.31	27 in·lb	
Engine Sprocket Nut	147	15.0	108	MO
Rear Axle Nut	127	13.0	93.7	
Rear Sprocket Nuts	59	6.0	44	R
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	8.9 in·lb	Si
Brake Lever Pivot Bolt Locknut	5.9	0.60	52 in·lb	
Brake Pedal Mounting Bolt	34	3.5	25	L
Front Brake Disc Mounting Bolts	27	2.8	20	L
Front Brake Light Switch Screw	1.2	0.12	11 in·lb	
Front Brake Pad Pins	17	1.7	13	
Front Brake Reservoir Cap Stopper Screw	1.2	0.12	11 in·lb	
Front Caliper Mounting Bolts	34	3.5	25	
Brake Pipe Banjo Bolts (L = 20.8 mm) (KIBS Equipped Models)	23	2.3	17	
Brake Pipe Banjo Bolt (L = 32.3 mm) (KIBS Equipped Models)	23	2.3	17	
Brake Pipe Joint Nuts (KIBS Equipped Models)	18	1.8	13	
Front Master Cylinder Bleed Valve	5.4	0.55	48 in·lb	
Front Master Cylinder Clamp Bolts	11	1.1	97 in·lb	S
Rear Brake Disc Mounting Bolts	27	2.8	20	L
Rear Master Cylinder Mounting Bolts	25	2.5	18	
Rear Master Cylinder Push Rod Locknut	17	1.7	13	
Rear Brake Pad Pin	17	1.7	13	
Rear Brake Pad Pin Plug	2.45	0.25	22 in·lb	
Rear Caliper Pin Bolt	27	2.8	20	Si
Suspension				
Front Axle Clamp Bolts	20	2.0	15	AL
Front Fork Top Plugs	35	3.6	26	
Lower Front Fork Clamp Bolts	23	2.3	17	AL
Lower Rear Shock Absorber Nut	34	3.5	25	R
Piston Rod Guide Case	90	9.2	66	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Rear Shock Absorber Bracket Nut	59	6.0	44	
Swingarm Pivot Adjusting Collar Locknut	98	10.0	72	
Swingarm Pivot Shaft	20	2.0	15	
Swingarm Pivot Shaft Nut	108	11.0	79.7	
Tie-Rod Nuts	59	6.0	44	R
Rocker Arm Bolt	34	3.5	25	
Upper Front Fork Clamp Bolts	20	2.0	15	
Upper Rear Shock Absorber Nut	34	3.5	25	R
Steering				
Handlebar Clamp Bolts	25	2.5	18	
Handlebar Positioning Bolts	9.8	1.0	87 in·lb	L
Left Switch Housing Screws	3.5	0.36	31 in·lb	
Lower Front Fork Clamp Bolts	23	2.3	17	AL
Right Switch Housing Screws	3.5	0.36	31 in·lb	
Steering Stem Head Bolt	78	8.0	58	L
Steering Stem Nut	27	2.8	20	
Throttle Case Screws	3.5	0.36	31 in·lb	
Upper Front Fork Clamp Bolts	20	2.0	15	
Frame				
Front Fender Mounting Bolts	3.9	0.40	35 in·lb	
Front Footpeg Bracket Bolts	25	2.5	18	L
Rear Footpeg Bracket Bolts	25	2.5	18	
Rear Frame Bolts (M10)	44	4.5	32	L
Rear Frame Bolts (M8)	25	2.5	18	L
Sidestand Bolt	29	3.0	21	S
Sidestand Bracket Bolts	49	5.0	36	L
Sidestand Switch Bolt	8.8	0.90	78 in·lb	L
Sidestand Nut	44	4.5	32	R, S
Windshield Mounting Bolts	0.42	0.043	3.7 in·lb	
Electrical System				
Alternator Cover Bolts	9.8	1.0	87 in·lb	
Alternator Lead Holding Plate Bolt	9.8	1.0	87 in·lb	L
Alternator Rotor Bolt	155	15.8	114	
Crankshaft Sensor Bolts	5.9	0.60	52 in·lb	
Engine Ground Cable Terminal Bolt	9.8	1.0	87 in·lb	
Front Brake Light Switch Screw	1.2	0.12	11 in·lb	
Front Turn Signal Light Mounting Screw	1.2	0.12	11 in·lb	
Fuel Pump Bolts	9.8	1.0	87 in·lb	L, S
Gear Position Switch Screws	2.9	0.30	26 in·lb	L
Left Switch Housing Screws	3.5	0.36	31 in·lb	
License Plate Light Cover Screws	1.0	0.10	8.9 in·lb	
License Plate Light Mounting Nuts	3.5	0.36	31 in·lb	
Meter Unit Mounting Screws	1.2	0.12	11 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Oil Pressure Switch	15	1.5	11	SS
Oil Pressure Switch Terminal Bolt	1.5	0.15	13 in·lb	G
Oxygen Sensor (Equipped Models)	25	2.5	18	
Regulator/Rectifier Bracket Screws	1.2	0.12	11 in·lb	
Right Switch Housing Screws	3.5	0.36	31 in·lb	
Sidestand Switch Bolt	8.8	0.90	78 in·lb	L
Spark Plugs	13	1.3	115 in·lb	
Starter Clutch Bolt Cap	2.9	0.30	26 in·lb	
Starter Clutch Cover Bolt (L = 20 mm)	9.8	1.0	87 in·lb	
Starter Clutch Cover Bolts (L = 30 mm)	9.8	1.0	87 in·lb	
Starter Motor Cable Terminal Bolt	2.9	0.30	26 in·lb	
Starter Motor Mounting Bolts	9.8	1.0	87 in·lb	
Stator Coil Bolts	12	1.2	106 in·lb	L
Water Temperature Sensor	12	1.2	106 in·lb	

The table below, relating tightening torque to thread diameter, lists the basic torque for the bolts and nuts. Use this table for only the bolts and nuts which do not require a specific torque value. All of the values are for use with dry solvent-cleaned threads.

Basic Torque for General Fasteners

Threads Diameter (mm)	Torque		
	N·m	kgf·m	ft·lb
5	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in·lb
6	5.9 ~ 7.8	0.60 ~ 0.80	52 ~ 69 in·lb
8	14 ~ 19	1.4 ~ 1.9	10 ~ 13.5
10	25 ~ 34	2.6 ~ 3.5	19 ~ 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	23.0 ~ 33.0	165 ~ 240

Specifications

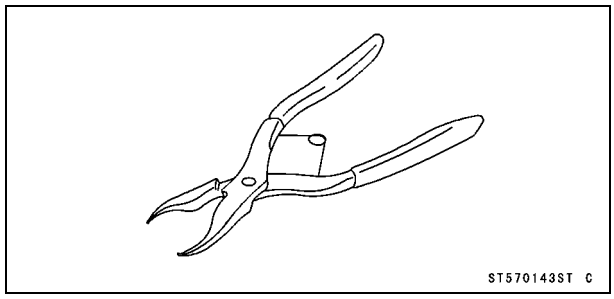
Item	Standard	Service Limit
Fuel System (DFI)		
Throttle Grip Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	– – –
Idle Speed	1 300 ±50 r/min (rpm)	– – –
Throttle Body Vacuum	33.4 ±1.33 kPa (251 ±10 mmHg) at idle speed	– – –
Bypass Screws (Turn Out)	0 ~ 2 1/2 (for reference)	– – –
Air Cleaner Element	Viscous paper element	– – –
Cooling System		
Coolant:		
Type (Recommended)	Permanent type of antifreeze	– – –
Color	Green	– – –
Mixed Ratio	Soft water 50%, coolant 50%	– – –
Freezing Point	–35°C (–31°F)	– – –
Total Amount	2.5 L (2.6 US qt)	– – –
Engine Top End		
Valve Clearance:		
Exhaust	0.24 ~ 0.31 mm (0.0094 ~ 0.0122 in.)	– – –
Intake	0.13 ~ 0.19 mm (0.0051 ~ 0.0075 in.)	– – –
Clutch		
Clutch Lever Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	– – –
Engine Lubrication System		
Engine Oil:		
Type	API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2	– – –
Viscosity	SAE 10W-40	– – –
Capacity	2.8 L (3.0 US qt) (when filter is not removed)	– – –
	3.1 L (3.3 US qt) (when filter is removed)	– – –
	3.6 L (3.8 US qt) (when engine is completely dry)	– – –
Level	Between upper and lower level lines (Wait 2 ~ 3 minutes after idling or running)	– – –
Wheels/Tires		
Tread Depth:		
Front	3.6 mm (0.14 in.)	1 mm (0.04 in.) (AT, CH, DE) 1.6 mm (0.06 in.)
Rear	5.1 mm (0.20 in.)	Up to 130 km/h (80 mph): 2 mm (0.08 in.) Over 130 km/h (80 mph): 3 mm (0.12 in.)
Air Pressure (when Cold):		
Front	Up to 180 kg (397 lb) load: 250 kPa (2.50 kgf/cm², 36 psi)	– – –
Rear	Up to 180 kg (397 lb) load: 290 kPa (2.90 kgf/cm², 42 psi)	– – –

Specifications

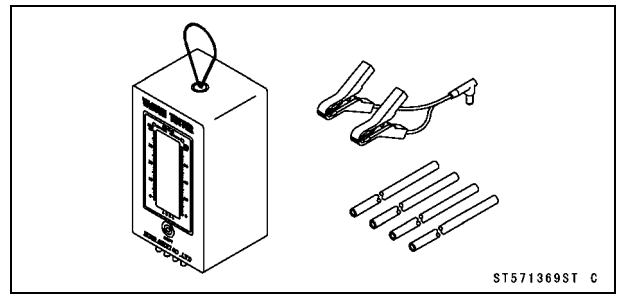
Item	Standard	Service Limit
Final Drive		
Drive Chain Slack	30 ~ 40 mm (1.2 ~ 1.6 in.)	– – –
Drive Chain Wear (20-link Length)	317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)	319 mm (12.6 in.)
Standard Chain:		
Make	ENUMA	– – –
Type	EK520RMX/3D	– – –
Link	112 links	– – –
Brakes		
Brake Fluid:		
Grade	DOT4	– – –
Brake Pad Lining Thickness:		
Front	4.0 mm (0.16 in.)	1 mm (0.04 in.)
Rear	5.0 mm (0.20 in.)	1 mm (0.04 in.)
Brake Light Timing:		
Front	Pulled ON	– – –
Rear	On after about 10 mm (0.39 in.) of pedal travel	– – –
Electrical System		
Spark Plug:		
Type	NGK CR9E	– – –
Gap	0.7 ~ 0.8 mm (0.028 ~ 0.031 in.)	– – –

Special Tools

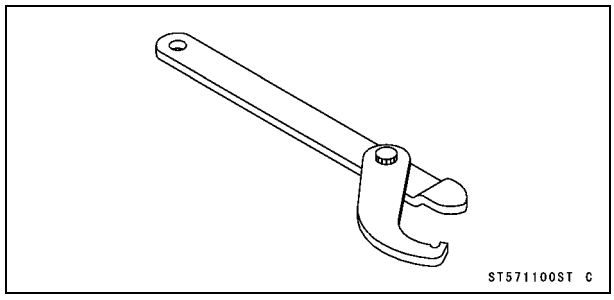
Inside Circlip Pliers:
57001-143



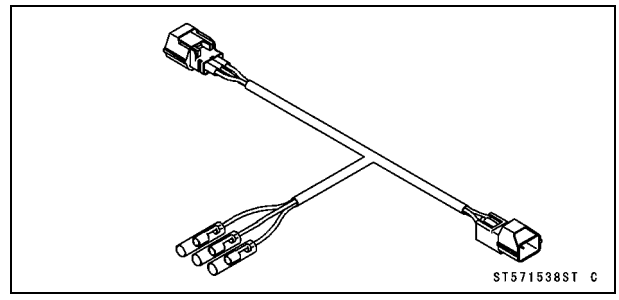
Vacuum Gauge:
57001-1369



Steering Stem Nut Wrench:
57001-1100



Throttle Sensor Setting Adapter:
57001-1538



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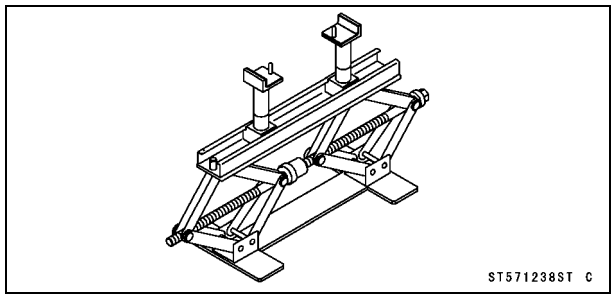

Extension Tube:
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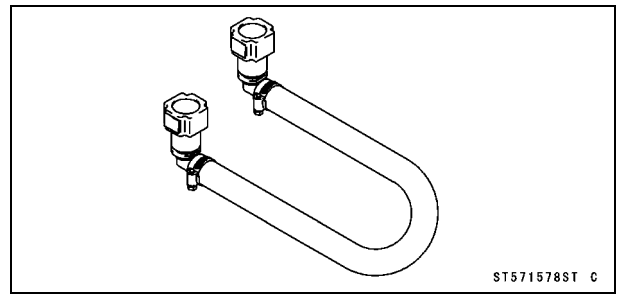

Oil Filter Wrench:
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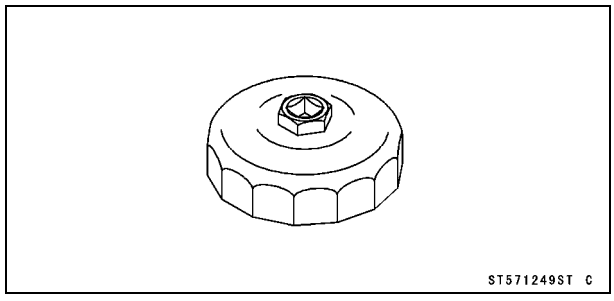

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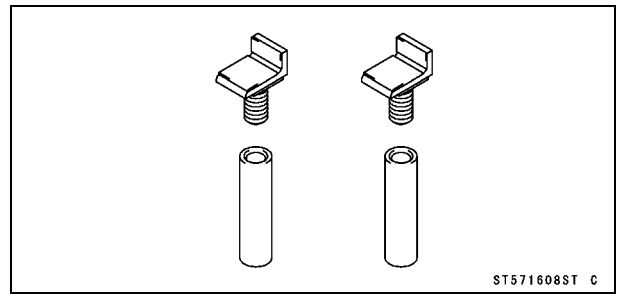
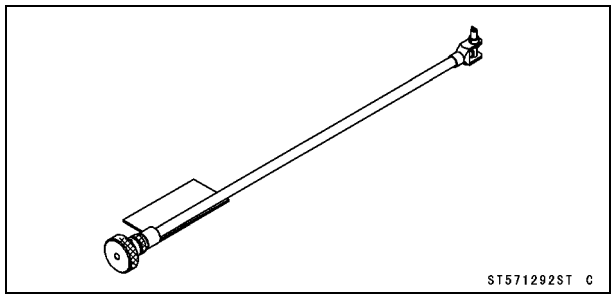


Pilot Screw Adjuster, C:
57001-1292



Periodic Maintenance Procedures

Fuel System (DFI)

Air Cleaner Element Replacement

NOTE

○*In dusty areas, the element should be replaced more frequently than the recommended interval.*

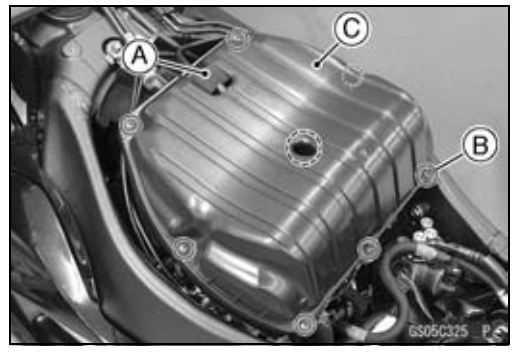
⚠ WARNING

If dirt or dust is allowed to pass through into the throttle body assy, the throttle may become stuck, possibly causing accident. Replace the air cleaner element according to the maintenance chart.

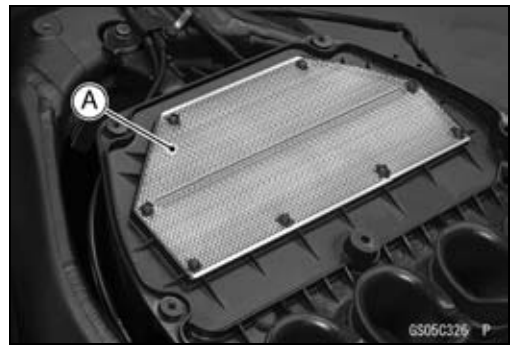
NOTICE

If dirt gets through into the engine, excessive engine wear and possibly engine damage will occur.

- Remove the fuel tank (see Fuel Tank Removal in the Fuel System (DFI) chapter).
- Disconnect the intake air temperature sensor lead connector [A].
- Remove:
  Screws [B]
  Upper Air Cleaner Housing [C]



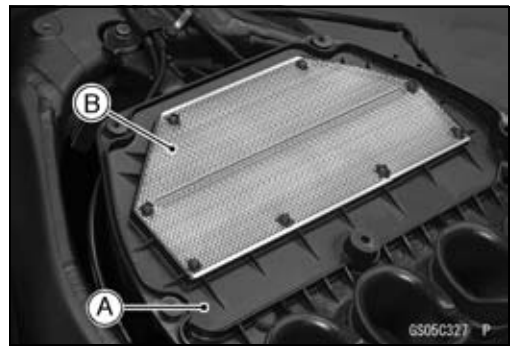
- Discard the air cleaner element [A].



- Install a new element [A] so that the screen side [B] faces upward.

NOTICE

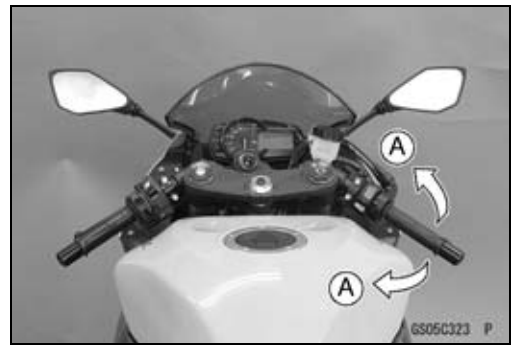
Use only the recommended air cleaner element (Kawasaki part number 11013-0036). Using another air cleaner element will wear the engine prematurely or lower the engine performance.



- Install the upper air cleaner housing (see Air Cleaner Housing Assembly in the Fuel System (DFI) chapter).

Periodic Maintenance Procedures

Idle Speed Inspection



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

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

⚠ WARNING

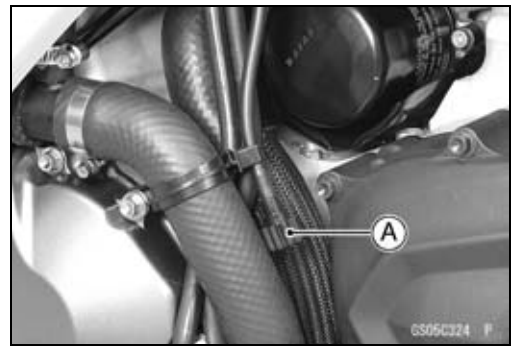
Operation with improperly adjusted, incorrectly routed or damaged cables could result in an unsafe riding condition. Follow the service manual to be make sure to correct any of these conditions.

- Check the idle speed.

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

Idle Speed
Standard: 1 300 ±50 r/min (rpm)

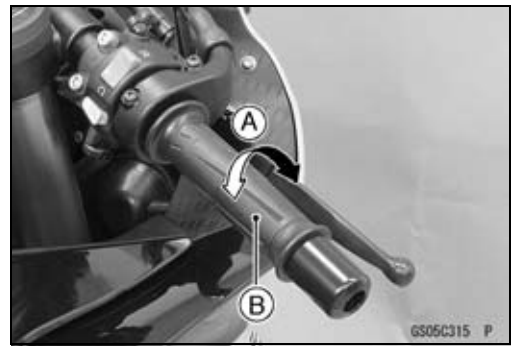
Idle Speed Adjustment



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

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

Throttle Control System Inspection



- Check the throttle grip free play [A].

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

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

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

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

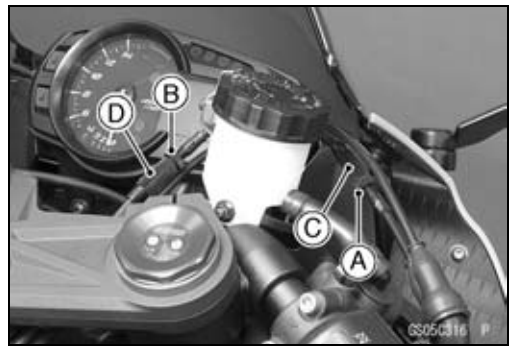
- Run the engine at the idle speed, and turn the handlebar all the way to the right and left to ensure that the idle speed does not change.

★If the idle speed increases, check the throttle cable free play and the cable routing.

Periodic Maintenance Procedures

★If necessary, adjust the throttle cable as follows.
- Loosen the locknuts [A] [B].
- Screw both throttle cable adjusters [C] [D] to give the throttle grip plenty of play.
- Turn the decelerator cable adjuster [C] until it has no play when the throttle grip is completely closed.
- Tighten the locknut [A].
- Turn the accelerator cable adjuster [D] until 2 ~ 3 mm (0.08 ~ 0.12 in.) of throttle grip play is obtained.
- Tighten the locknut [B].

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



Engine Vacuum Synchronization Inspection

NOTE

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

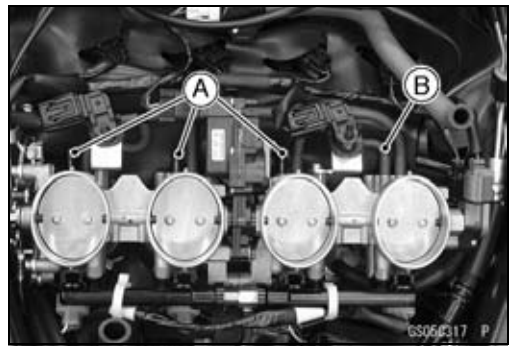
- Situate the motorcycle so that it is vertical.
- Remove:

  Fuel Tank (see Fuel Tank Removal in the Fuel System (DFI) chapter)

  Air Cleaner Housing (see Air Cleaner Housing Removal in the Fuel System (DFI) chapter)

  Fuel Hose (see Fuel Hose Replacement)

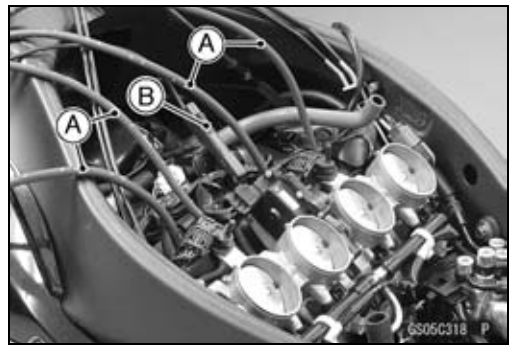
- Pull off the rubber caps [A] and vacuum hose [B] from the fittings of each throttle body.
- For the CAL Model, pull off the vacuum hoses.



- Connect a vacuum gauge and hoses [A] (Special Tool: 57001-1369) to the fittings on the throttle body.

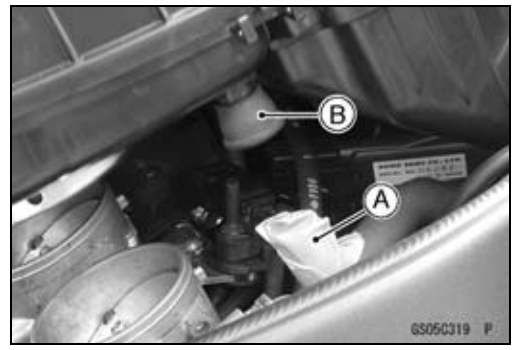
  Special Tool - Vacuum Gauge: 57001-1369

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



Periodic Maintenance Procedures

● Plug the air switching valve hose end [A] and air cleaner housing fitting [B].



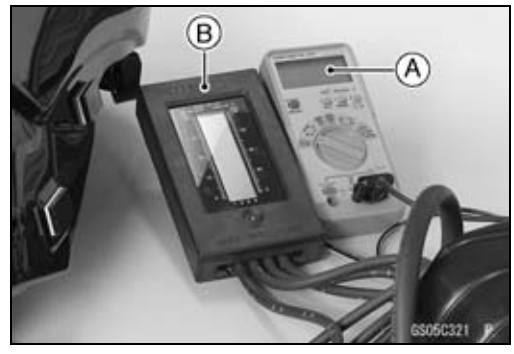
● Install the air cleaner housing (see Air Cleaner Housing Installation in the Fuel System (DFI) chapter).
● Connect the following parts temporarily.
Fuel Pump Lead Connector [A]
Extension Tube [B]

Special Tool - Extension Tube: 57001-1578

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

Idle Speed
Standard: 1 300 ±50 r/min (rpm)

★If the idle speed is out of the specified range, adjust it with the adjusting screw (see Idle Speed Adjustment).



NOTICE

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

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

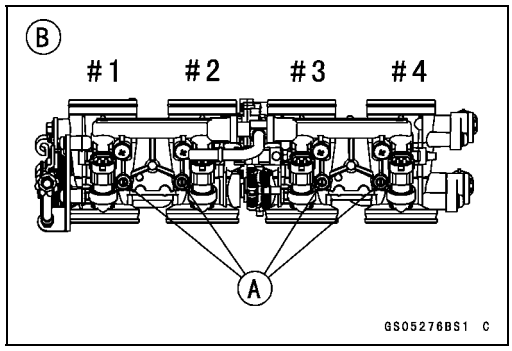
Throttle Body Vacuum
Standard: 33.4 ±1.33 kPa (251 ±10 mmHg) at idle speed

Periodic Maintenance Procedures

★If any vacuum is not within specifications, adjust the bypass screws [A].
View from Rear [B]

Special Tool - Pilot Screw Adjuster, C [C]: 57001-1292

- Adjust the each vacuum (#1 ~ #4) to the standard value.
- Open and close the throttle valves after each measurement.



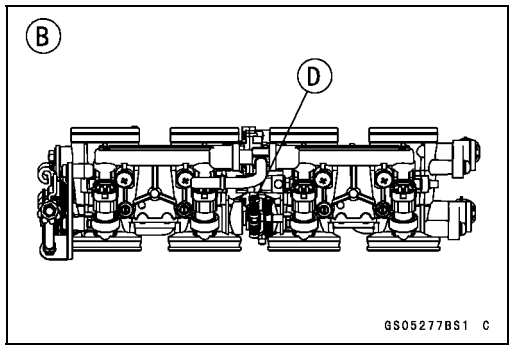
NOTE

○*Do not turn the center adjusting screw [D].*

- Check the vacuums as before.

★If all vacuums are within the specification range, finish the engine vacuum synchronization.

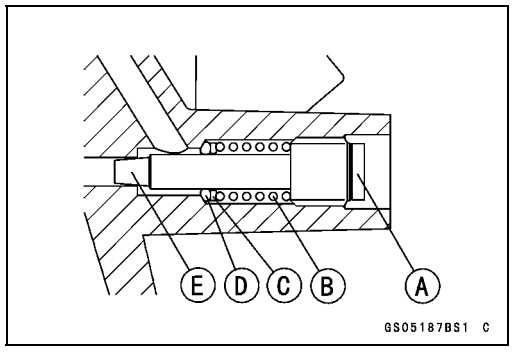
★If any vacuum can not be adjusted within the specification, replace the bypass screws #1 ~ #4 with new ones, refer to the following procedure.



- Remove the throttle body assy (see Throttle Body Assy Removal in the Fuel System (DFI) chapter).
- Turn in the bypass screw [A] with counting the number of turns until it seals fully but not tightly. Record the number of turns.
- Remove:
  Bypass Screw
  Spring [B]
  Washer [C]
  O-ring [D]
- Check the bypass screw hole in the throttle body for carbon deposits.

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

- Replace the bypass screw, spring, washer and O-ring as a set.
- Turn in the bypass screw until it seats fully but not tightly.



NOTICE

Do not over-tighten the bypass screw. The tapered portion [E] of the bypass screw could be damaged.

Periodic Maintenance Procedures

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

NOTE

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

● Repeat the same procedure for other bypass screws.
● Repeat the synchronization.
★If the vacuums are correct, check the output voltage of the main throttle sensor (see Main Throttle Sensor Output Voltage Inspection in the Self-Diagnosis System chapter).

Special Tool - Throttle Sensor Setting Adapter: 57001 -1538

Main Throttle Sensor Output Voltage
Connections to Adapter:
Degital Meter (+) → R (sensor Y/W) lead
Degital Meter (–) → BK (sensor G) lead

Standard: DC 1.02 ~ 1.06 V at idle throttle opening

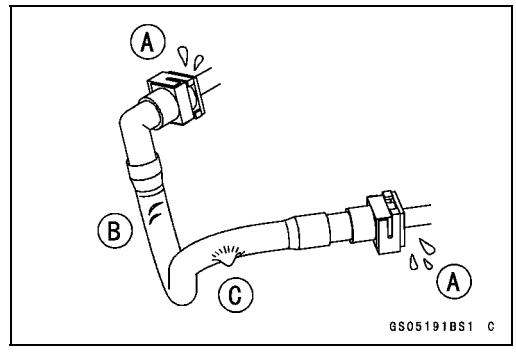
★If the output voltage is out of the standard, check the input voltage of the main throttle sensor (see Main Throttle Sensor Input Voltage Inspection in the Self-Diagnosis System chapter).

● Remove the vacuum gauge hoses and install the rubber caps and vacuum hose on the original position.
● For CAL Model, install the vacuum hoses.
○Run the vacuum hose according to Cable, Wire, and Hose Routing section in the Appendix chapter.
● Install the removed parts (see appropriate chapters).

Fuel System

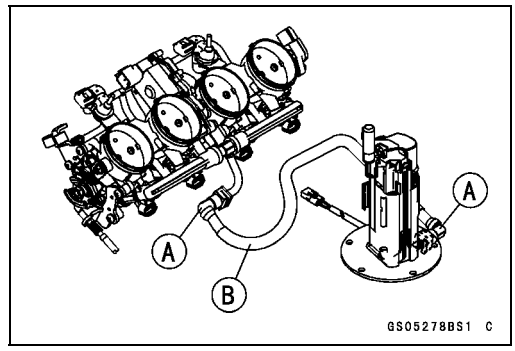
Fuel Hose Inspection (fuel leak, damage, installation condition)

○If the motorcycle is not properly handled, the high pressure inside the fuel line can cause fuel to leak [A] or the hose to burst. Remove the fuel tank (see Fuel Tank Removal in the Fuel System (DFI) chapter) and check the fuel hoses.
★Replace the fuel hose if any fraying, cracks [B] or bulges [C] are noticed.



Periodic Maintenance Procedures

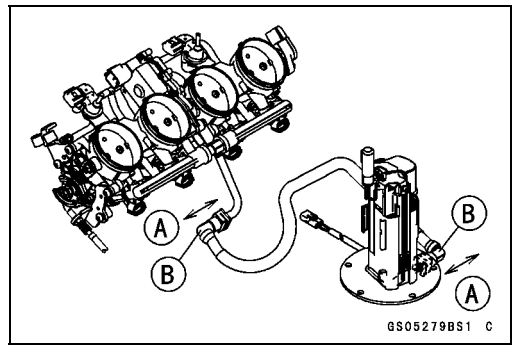
● Check that the fuel hose is routed according to Cable, Wire, and Hose Routing section in the Appendix chapter.
★Replace the hose if it has been sharply bent or kinked.
Hose Joints [A]
Fuel Hose [B]



● Check that the fuel hose joints are securely connected.
○Push and pull [A] the fuel hose joint [B] back and forth more than two times, and make sure it is locked.

⚠ WARNING

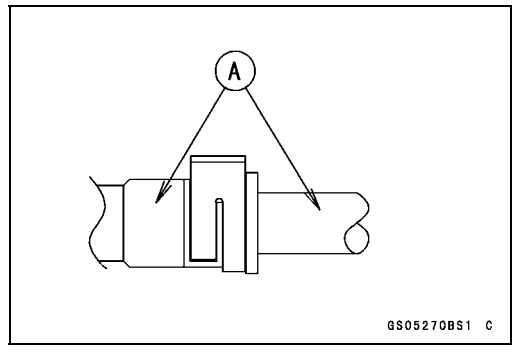
Leaking fuel can cause a fire or explosion resulting in serious burns. Make sure the hose joint is installed correctly on the delivery pipe by sliding the joint.



★If it does not locked, reinstall the hose joint.

Fuel Hose Replacement

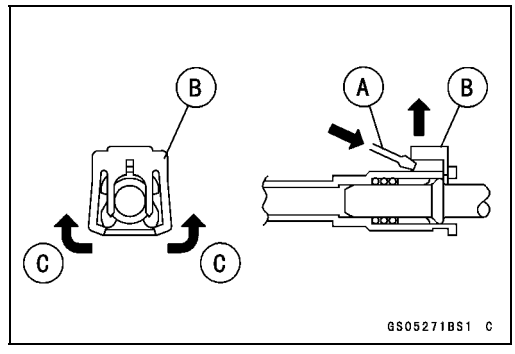
● Remove the fuel tank (see Fuel Tank Removal in the Fuel System (DFI) chapter).
● Be sure to place a piece of cloth around the fuel hose joint.
● Wipe off the dirt of the surface [A] around the connection using a cloth or a soft brush.



When removing with standard tip screwdriver
● Insert the standard tip screwdriver [A] into slit on the joint lock [B].
● Turn the driver to disconnect the joint lock.
When removing with fingers
● Open and push up [C] the joint lock with your fingers.

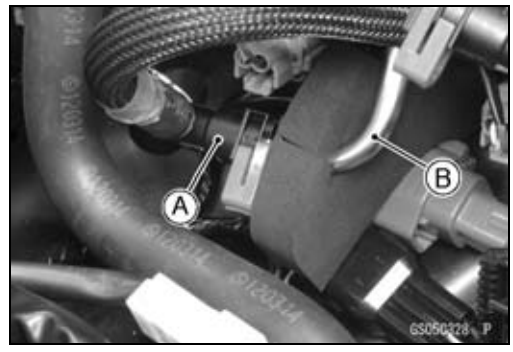
NOTICE

Prying or excessively widening the joint lock ends for fuel hose removal will permanently deform the joint lock, resulting in a loose or incomplete lock that may allow fuel to leak and create the potential for a fire explosion. To prevent fire or explosion from a damaged joint lock, do not pry or excessively widen the joint lock ends when removing the fuel hose. The joint lock has a retaining edge that locks around the housing.



Periodic Maintenance Procedures

● Pull the fuel hose joint [A] out of the delivery pipe [B].

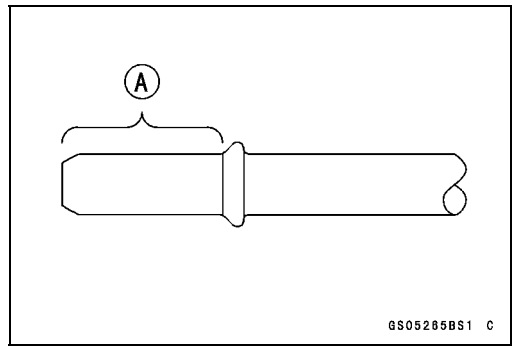


⚠ WARNING

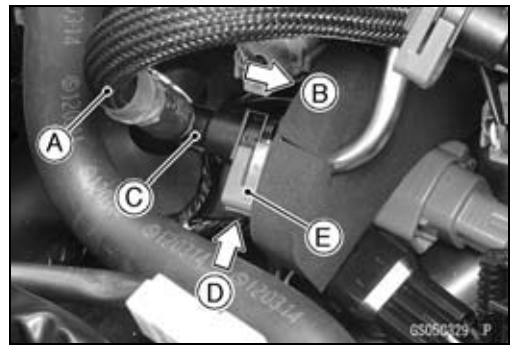
Fuel is flammable and explosive under certain conditions and can cause severe burns. Be prepared for fuel spillage; any spilled fuel must be completely wiped up immediately. When the fuel hose is disconnected, fuel spills out from the hose and the pipe. Cover the hose connection with a clean shop towel to prevent fuel spillage.

● Clean the delivery pipe.
● Cover the delivery pipe with the vinyl bag to keep it clean.

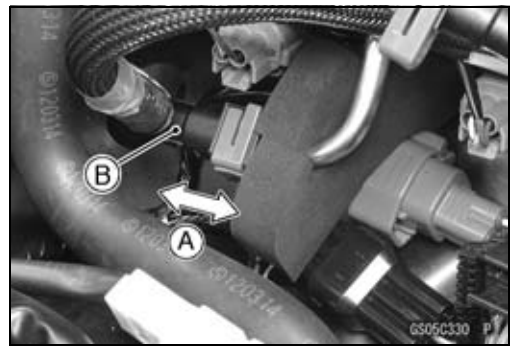
● Remove the vinyl bag on the pipe.
● Check that there are no flaws, burrs, and adhesion of foreign materials on the delivery pipe [A].



● Replace the fuel hose [A] with a new one.
● Run the fuel hose correctly (see Cable, Wire, and Hose Routing section in the Appendix chapter).
● Insert [B] the fuel hose joint [C] straight onto the delivery pipe until the hose joint clicks.
● Push [D] the joint lock [E].



● Push and pull [A] the fuel hose joint [B] back and forth more than two times and make sure it is locked and does not come off.



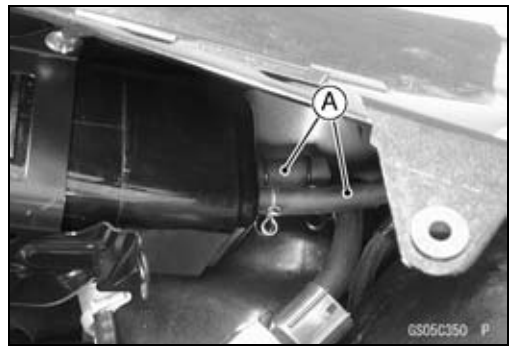
⚠ WARNING

Leaking fuel can cause a fire or explosion resulting in severe burns. Make sure the fuel hose joint is installed correctly on the delivery pipe and that it doesn't leak.

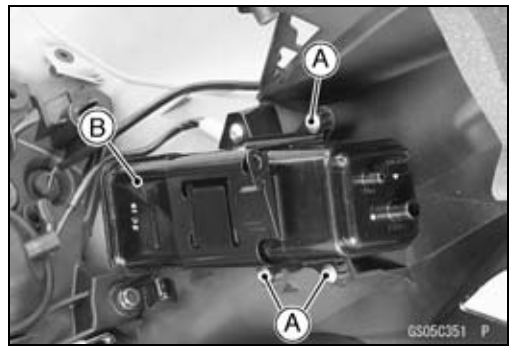
★If it comes off, reinstall the hose joint.
● Install the fuel tank (see Fuel Tank Installation in the Fuel System (DFI) chapter).
● Start the engine and check the fuel hose for leaks.

Periodic Maintenance Procedures

Evaporative Emission Control System Inspection (CAL Model)



● Inspect the canister as follows.
○Remove the purge valve from the canister bracket (see Purge Valve Removal/Installation in the Self-Diagnosis System chapter).
○Disconnect the hoses [A].



○Remove:
Upper Fairing Assembly (see Upper Fairing Assembly Removal in the Frame chapter)
Screws [A]
○Visually inspect the canister [B] for cracks or other damage.
★If the canister has any cracks or bad damage, replace it with a new one.

NOTE

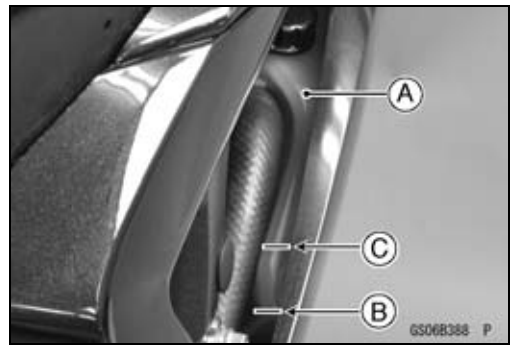
○*The canister is designed to work well through the motorcycle's life without any maintenance if it is used under normal conditions.*

● Inspect the purge valve (see Purge Valve Inspection in the Self-Diagnosis System chapter).
○Check that the hoses are securely connected and clips are in position.
○Replace any kinked, deteriorated or damaged hoses.
○Run the hoses according to Cable, Wire, and Hose Routing section in the Appendix chapter.
○When installing the hoses, avoid sharp bending, kinking, flattening or twisting, and run the hoses with a minimum of bending so that the emission flow will not be obstructed.

Periodic Maintenance Procedures

Cooling System

Coolant Level Inspection



NOTE

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

● Check the coolant level in the reserve tank [A] with the motorcycle held perpendicular (Do not use the sidestand).

★If the coolant level is lower than the "L" level line [B], remove the upper fairing assembly (see Upper Fairing Assembly Removal in the Frame chapter), and then unscrew the reserve tank cap and add coolant to the "F" level line [C].

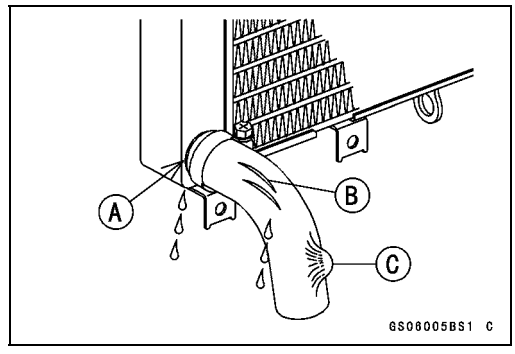
"L": Low
"F": Full

NOTICE

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

Cooling System

Water Hose and Pipe Inspection (coolant leak, damage, installation condition)



○The high pressure inside the radiator hose can cause coolant to leak [A] or the hose to burst if the line is not properly maintained.

● Visually inspect the hoses for signs of deterioration. Squeeze the hoses. A hose should not be hard and brittle, nor should it be soft or swollen.

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

● Check that the hoses are securely connected and clamps are tightened correctly.

Torque - Water Hose Clamp Screws: 3.0 N·m (0.31 kgf·m, 27 in·lb)

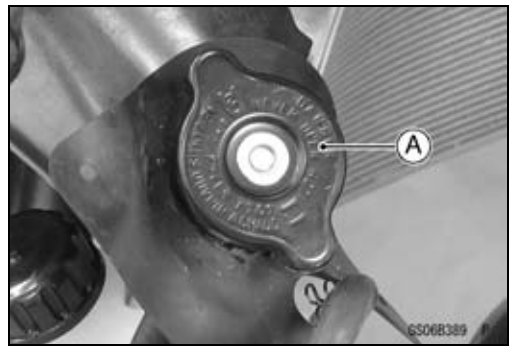
Coolant Change

⚠ WARNING

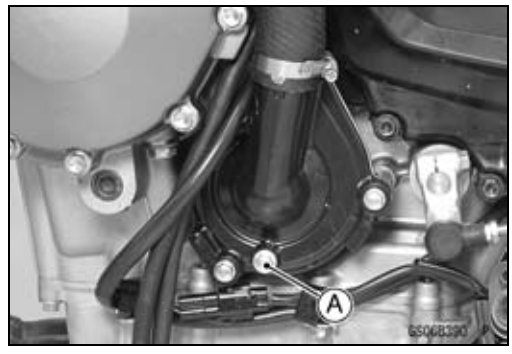
Coolant can be extremely hot and cause severe burns, is toxic and very slippery. Do not remove the radiator cap or attempt to change the coolant when the engine is hot; allow it cool completely. Immediately wipe any spilled coolant from tires, frame, engine or other painted parts. Do not ingest coolant.

Periodic Maintenance Procedures

● Remove:
Upper Fairing Assembly (see Upper Fairing Assembly Removal in the Frame chapter)
Radiator Cap [A]
○Remove the radiator cap in two steps. First turn the cap counterclockwise to the first stop. Then push and turn it further in the same direction and remove the cap.

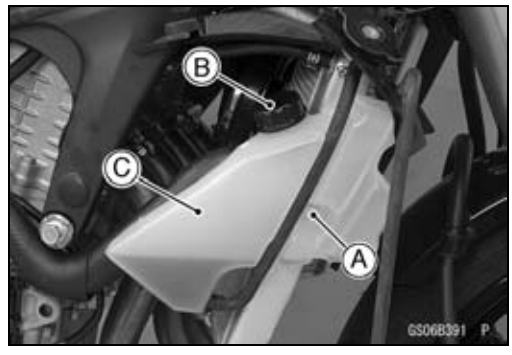


● Place a container under the drain bolt [A] of the water pump cover.
● Drain the coolant from the radiator by removing the drain bolt.



● Remove:
Bolt [A]
Cap [B]
● Pour the coolant into a container.
● Install the coolant reserve tank [C] and tighten the bolt.
● Tighten the drain bolt with new gasket.

Torque - Coolant Drain Bolt (Water Pump): 8.8 N·m (0.90 kgf·m, 78 in·lb)

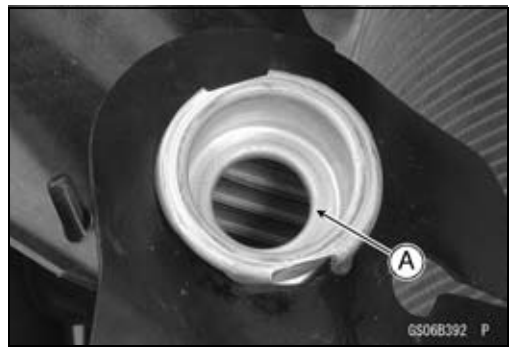


● Fill the radiator up to the radiator filler neck [A] with coolant, and install the radiator cap.

NOTE

○*Pour in the coolant slowly so that it can expel the air from the engine and radiator.*

● Fill the reserve tank up to the "F" level line with coolant, and install the cap (see Coolant Level Inspection).



NOTICE

Soft or distilled water must be used with the antifreeze (see below for antifreeze) in the cooling system.
If hard water is used in the system, it causes scales accumulation in the water passages, and considerably reduces the efficiency of the cooling system.