

MODEL APPLICATION

Year	Model	Beginning Frame No.
2005	ZX636-C1	JKBZXJC1□5A000001 JKBZX636CCA000001 ZX636C-000001
2006	ZX636C6F	JKBZXJC1□6A030001 JKBZX636CCA030001 ZX636C-030001
2006	ZX636D6F	JKBZXJD1□6A000001

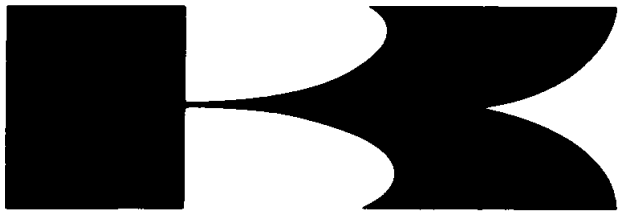
□: This digit in the frame number changes from one machine to another.



KAWASAKI HEAVY INDUSTRIES, LTD.
Consumer Products & Machinery Company

Part No.99924-1345-03

Printed in Japan



Kawasaki

Ninja ZX-6R



Motorcycle Service Manual

Quick Reference Guide

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LIST OF ABBREVIATIONS

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

Read OWNER'S MANUAL before operating.

Foreword

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

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

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

To get the longest life out of your vehicle.

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

How to Use This Manual

In this manual, the product is divided into its major systems and these systems make up the manual's chapters. The Quick Reference

Guide shows you all of the product's system and assists in locating their chapters. Each chapter in turn has its own comprehensive Table of Contents.

For example, if you want ignition coil information, use the Quick Reference Guide to locate the Electrical System chapter. Then, use the Table of Contents on the first page of the chapter to find the Ignition Coil section.

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

WARNING

This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury, or loss of life.

CAUTION

This caution symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

This manual contains four more symbols (in addition to WARNING and CAUTION) which will help you distinguish different types of information.

NOTE

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

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

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

General Information

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1-2 GENERAL INFORMATION

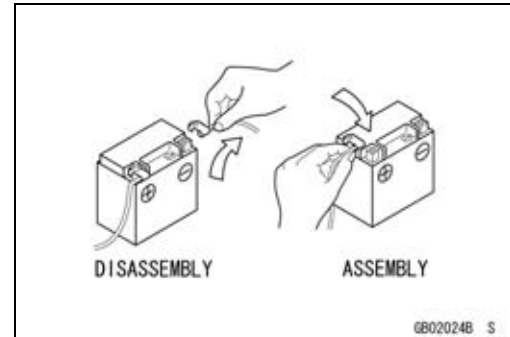
Before Servicing

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

Especially note the following.

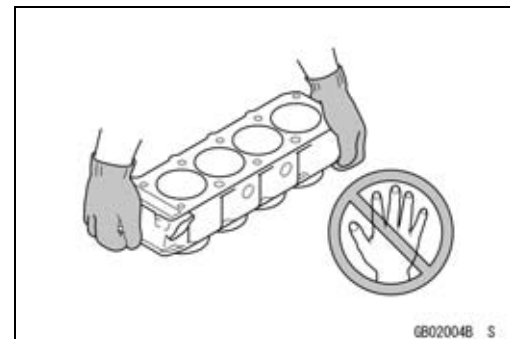
Battery Ground

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



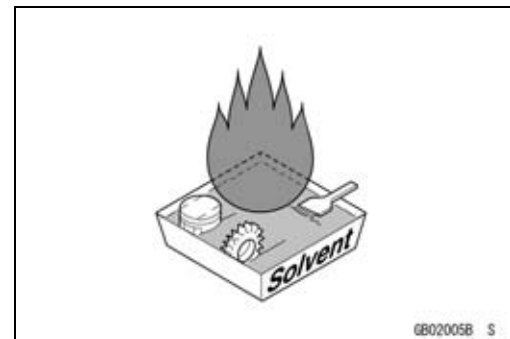
Edges of Parts

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



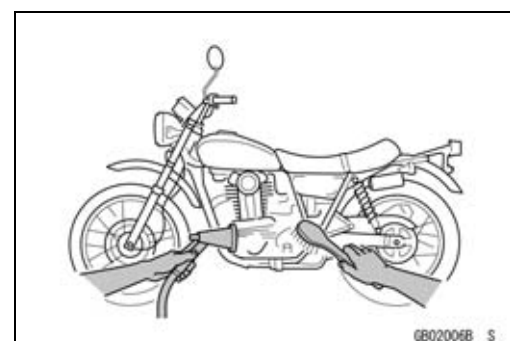
Solvent

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



Cleaning vehicle before disassembly

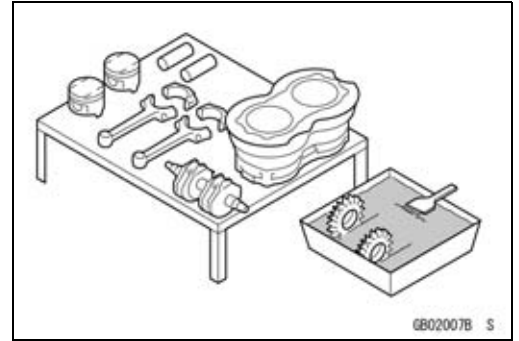
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

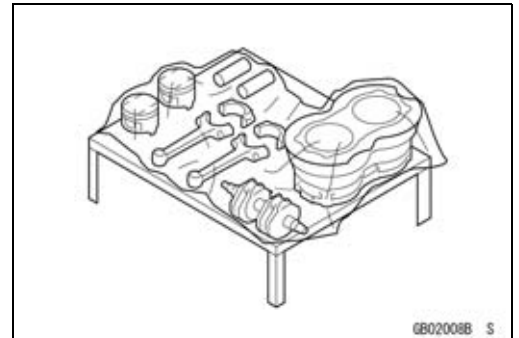
Arrangement and Cleaning of Removed Parts

Disassembled parts are easy to confuse. Arrange the parts according to the order the parts were disassembled and clean the parts in order prior to assembly.



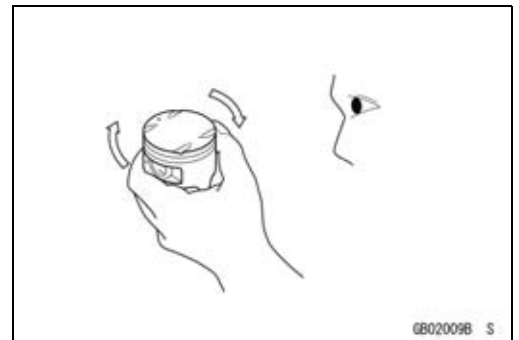
Storage of Removed Parts

After all the parts including subassembly parts have been cleaned, store the parts in a clean area. Put a clean cloth or plastic sheet over the parts to protect from any foreign materials that may collect before re-assembly.



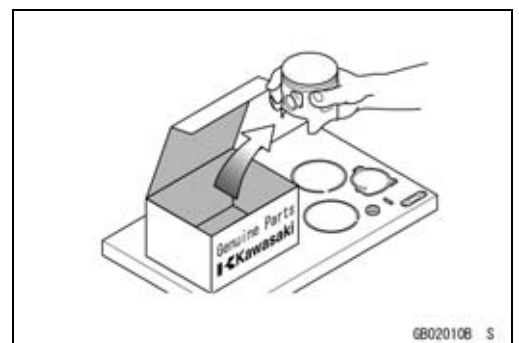
Inspection

Reuse of worn or damaged parts may lead to serious accident. Visually inspect removed parts for corrosion, discoloration, or other damage. Refer to the appropriate sections of this manual for service limits on individual parts. Replace the parts if any damage has been found or if the part is beyond its service limit.



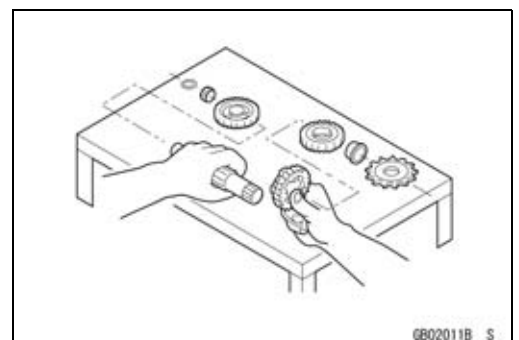
Replacement Parts

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



Assembly Order

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

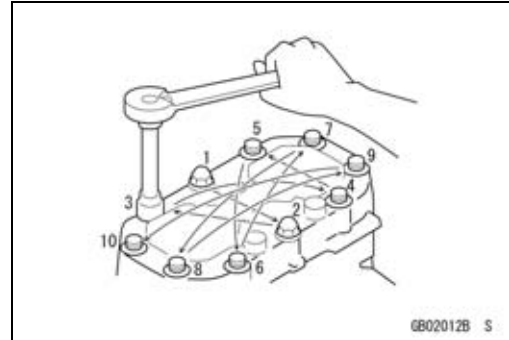


1-4 GENERAL INFORMATION

Before Servicing

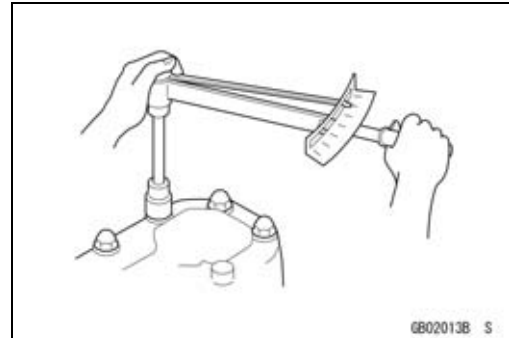
Tightening Sequence

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



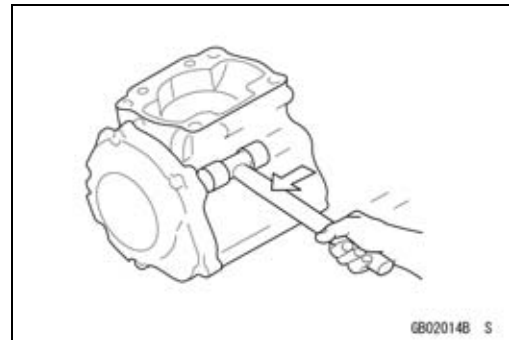
Tightening Torque

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



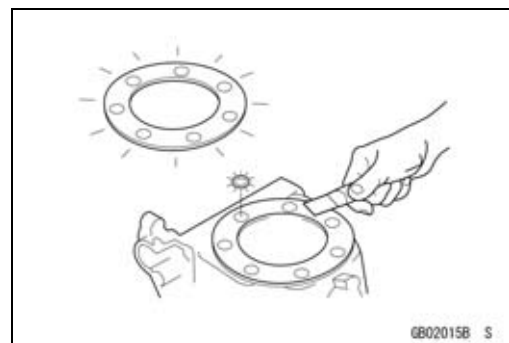
Force

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



Gasket, O-ring

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



Liquid Gasket, Non-permanent Locking Agent

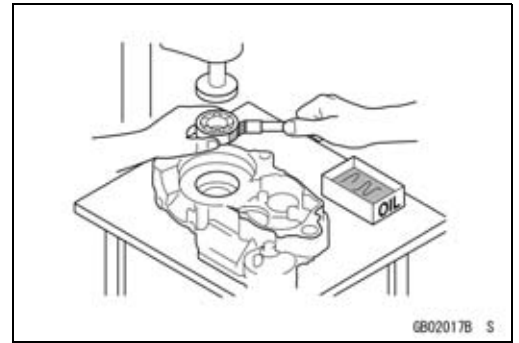
For applications that require Liquid Gasket or a Non-permanent Locking Agent, clean the surfaces so that no oil residue remains before applying liquid gasket or non-permanent locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Before Servicing

Press

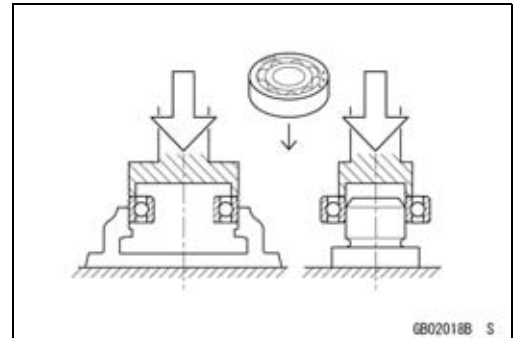
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



Ball Bearing and Needle Bearing

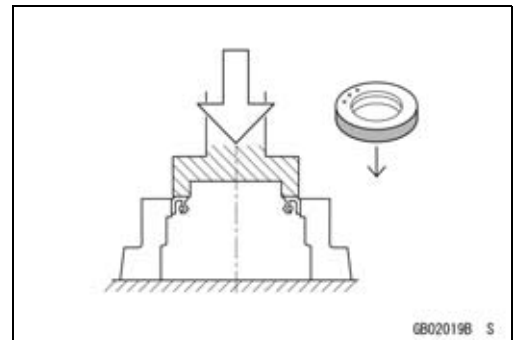
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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

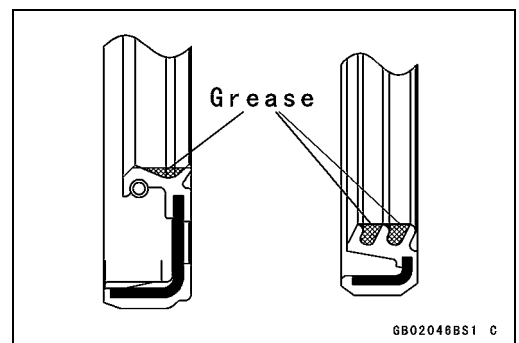


Oil Seal, Grease Seal

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

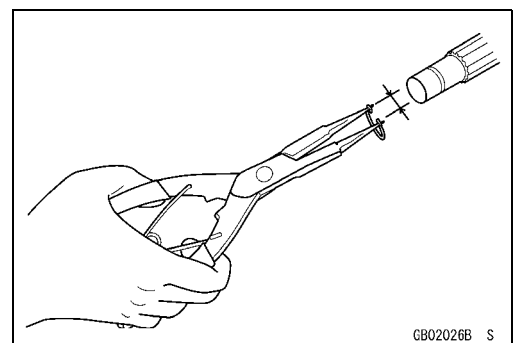


Apply specified grease to the lip of seal before installing the seal.



Circlips, Cotter Pins

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



1-6 GENERAL INFORMATION

Before Servicing

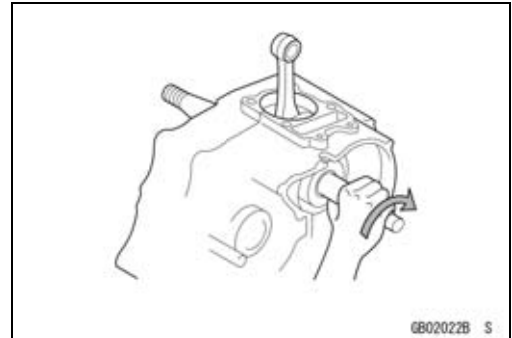
Lubrication

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



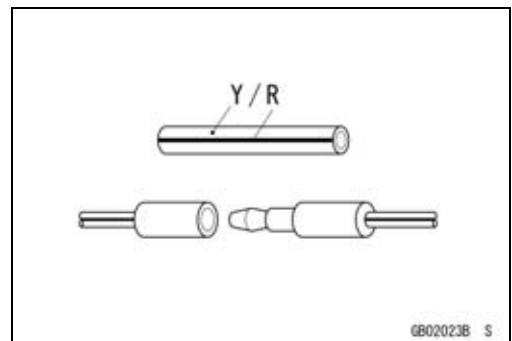
Direction of Engine Rotation

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



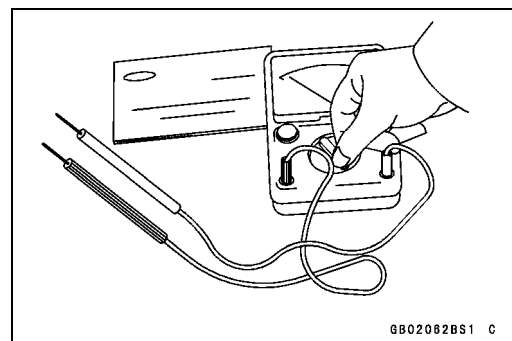
Electrical Wires

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



Instrument

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



Model Identification

ZX636-C1 ~ (Europe) Left Side View



68038157 P

ZX636-C1 ~ (Europe) Right Side View



68038158 P

1-8 GENERAL INFORMATION

Model Identification

ZX636-C1 ~ (US and Canada) Left Side View



ZX636-C1 ~ (US and Canada) Right Side View



Model Identification

ZX636D6F (US and Canada) Left Side View



ZX636D6F (US and Canada) Right Side View



1-10 GENERAL INFORMATION

General Specifications

Items	ZX636-C1 ~, ZX636D6F (Ninja ZX-6R)
Dimensions Overall Length Overall Width Overall Height Wheelbase Road Clearance Seat Height Dry Mass Curb Mass: Front Rear Fuel Tank Capacity	2 065 mm (81.3 in.) 715 mm (28.1 in.) 1 110 mm (43.7 in.) 1 390 mm (54.7 in.) 120 mm (4.7 in.) 820 mm (32.3 in.) 164 kg (362 lb) 95 kg (209 lb) 97 kg (214 lb) 17 L (4.5 US gal)
Performance Minimum Turning Radius	3.3 m (10.8 ft)
Engine Type Cooling System Bore and Stroke Displacement Compression Ratio Maximum Horsepower Maximum Torque Carburetion System Starting System Ignition System Timing Advance Ignition Timing Spark Plug Cylinder Numbering Method Firing Order Valve Timing: Inlet: Open Close Duration Exhaust: Open Close	4-stroke, DOHC, 4-cylinder Liquid-cooled 68.0 × 43.8 mm (2.7 × 1.7 in.) 636 mL (38.8 cu in.) 12.9 : 1 95.5 kW (130 PS) @14 000 r/min (rpm), (FR) 78.2 kW (106 PS) @13 000 r/min (rpm), (MY) 90.8 kW (123 PS) @12 500 r/min (rpm), (CA), (CAL), (US) – – – 70.5 N·m (7.1 kgf·m, 52 ft·lb) @11 500 r/min (rpm), (FR) 63 N·m (6.4 kgf·m, 46 ft·lb) @11 500 r/min (rpm), (CA), (CAL), (US) – – – FI (Fuel injection) Primary: KEIHIN TTK 38 × 4 Secondary: KEIHIN Multihole (3 holes) × 4 Electric starter Battery and coil (transistorized) Electronically advanced (digital igniter in ECU) From 12.5° BTDC @1 300 r/min (rpm) to 35° BTDC @4 600 r/min (rpm) NGK CR9E Left to right, 1-2-3-4 1-2-4-3 59° BTDC 81° ABDC 320° 61° BBDC 31° ATDC

General Specifications

Items	ZX636-C1 ~, ZX636D6F (Ninja ZX-6R)
Duration Lubrication System Engine Oil: Type Viscosity Capacity	272° Forced lubrication (wet sump with cooler) 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 1.891 (87/46) Wet multi disc 6-speed, constant mesh, return shift 2.923 (38/13) 2.055 (37/18) 1.666 (35/21) 1.450 (29/20) 1.272 (28/22) 1.153 (30/26) Chain drive 2.866 (43/15) 6.255 @Top gear
Frame Type Caster (Rake Angle) Trail Front Tire: Type Size Rear Tire: Type Size Rim Size: Front Rear Front Suspension: Type Wheel Travel Rear Suspension: Type Wheel Travel	Tubular, diamond 25° 106 mm (4.2 in.) Tubeless 120/65 ZR17 M/C (56 W) Tubeless 180/55 ZR17 M/C (73 W) 17 x 3.50 17 x 5.50 Telescopic fork (upside-down) 120 mm (4.7 in.) Swingarm (uni-trak) 135 mm (5.3 in.)

1-12 GENERAL INFORMATION

General Specifications

Items	ZX636-C1 ~, ZX636D6F (Ninja ZX-6R)
Brake Type: Front Rear	Dual discs Single disc
Electrical Equipment Battery Headlight: Type Bulb: High Low Tail/Brake Light Alternator: Type Rated Output	12 V 8 Ah Semi-sealed beam 12 V 55 W (quartz-halogen) x 2 12 V 55 W (quartz-halogen) 12 V 0.5/4.1 W (LED) Three-phase AC 22.5 A/14 V @5 000 r/min (rpm)

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

CA: Canada Model

CAL: California Model

FR: France Model

MY: Malaysia Model

US: United States Model

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/cm ²
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cmHg

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

Units of Speed

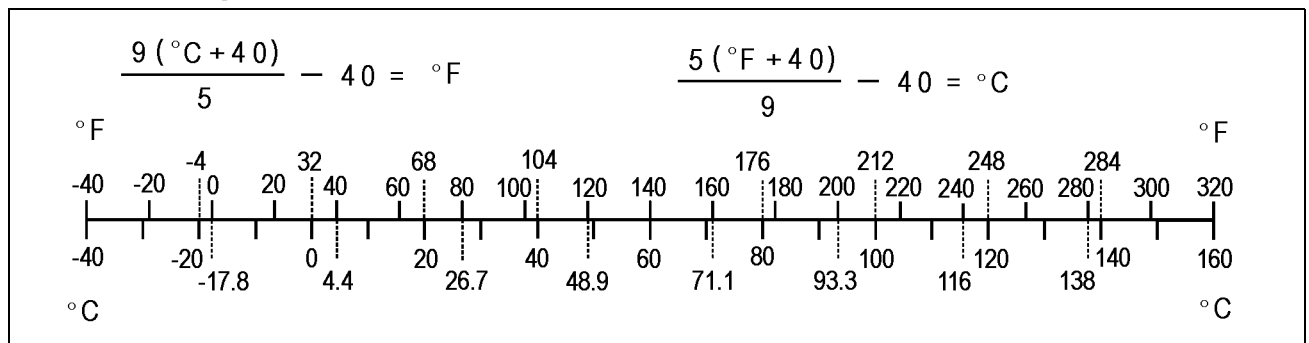
km/h	×	0.6214	=	mph
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Units of Power

kW	×	1.360	=	PS
kW	×	1.341	=	HP

PS	×	0.7355	=	kW
PS	×	0.9863	=	HP

Units of Temperature



Periodic Maintenance

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PERIODIC MAINTENANCE 2-3

Periodic Maintenance Chart (United States, Canada Model)

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

INSPECTION	FREQUENCY	* ODOMETER READING × 1 000 km (× 1 000 mile)							See Page
	Whichever comes first ↓ Every	1 (0.6)	6 (4)	12 (7.5)	18 (12)	24 (15)	30 (20)	36 (24)	
Fuel System									
Throttle control system (play, smooth return, no drag)-inspect	year	●		●		●		●	2-18
Engine vacuum synchronization-inspect				●		●		●	2-18
Idle speed-inspect		●		●		●		●	2-22
Fuel leak (fuel hose and pipe)-inspect	year	●		●		●		●	2-22
Fuel hose and pipe damage-inspect	year	●		●		●		●	2-22
Fuel hose and pipe installation condition-inspect	year	●		●		●		●	2-22
Evaporative Emission Control System (CAL)									
Evaporative emission control system function-inspect		●	●	●	●	●	●	●	2-23
Cooling System									
Coolant level-inspect		●		●		●		●	2-24
Coolant leak (radiator hose and pipe)-inspect	year	●		●		●		●	2-24
Radiator hose damage-inspect	year	●		●		●		●	2-24
Radiator hose installation condition -inspect	year	●		●		●		●	2-24
Engine Top End									
Valve clearance-inspect						●			2-25
Air Suction System									
Air suction system damage-inspect				●		●		●	2-29
Clutch									
Clutch operation (play, disengagement, engagement)-inspect		●		●		●		●	2-29
Wheels and Tires									
Tire air pressure-inspect	year			●		●		●	2-30
Wheel/tire damage-inspect				●		●		●	2-30
Tire tread wear, abnormal wear-inspect				●		●		●	2-30
Wheel bearing damage-inspect	year			●		●		●	2-31
Drive Train									
Drive chain lubrication condition-inspect #	Every 600 km (400 mile)								2-32
Drive chain slack-inspect #	Every 1 000 km (600 mile)								2-32
Drive chain wear-inspect #				●		●		●	2-34
Drive chain guide wear-inspect				●		●		●	2-35

2-4 PERIODIC MAINTENANCE

Periodic Maintenance Chart (United States, Canada Model)

INSPECTION	FREQUENCY	* ODOMETER READING							See Page
		Whichever comes first ↓ Every	1 (0.6)	6 (4)	12 (7.5)	18 (12)	24 (15)	30 (20)	
Brake System									
Brake fluid leak (brake hose and pipe)-inspect	year	●	●	●	●	●	●	●	2-35
Brake hose and pipe damage-inspect	year	●	●	●	●	●	●	●	2-35
Brake pad wear-inspect #			●	●	●	●	●	●	2-36
Brake hose installation condition-inspect	year	●	●	●	●	●	●	●	2-35
Brake fluid level-inspect	6 months	●	●	●	●	●	●	●	2-36
Brake operation (effectiveness, play, no drag)-inspect	year	●	●	●	●	●	●	●	2-35
Brake light switch operation-inspect		●	●	●	●	●	●	●	2-36
Suspensions									
Front forks/rear shock absorber operation (damping and smooth stroke)-inspect				●		●		●	2-37
Front forks/rear shock absorber oil leak-inspect	year			●		●		●	2-38
Rocker arm operation-inspect				●		●		●	2-38
Tie-Rods operation-inspect				●		●		●	2-38
Steering System									
Steering play-inspect	year	●		●		●		●	2-39
Steering stem bearings-lubricate	2 years					●			2-40
Electrical System									
Spark plug condition – inspect				●		●		●	2-40
Lights and switches operation-inspect	year			●		●		●	2-42
Headlight aiming-inspect	year			●		●		●	2-44
Side stand switch operation-inspect	year			●		●		●	2-45
Engine stop switch operation-inspect	year			●		●		●	2-46
Others									
Chassis parts-lubricate	year			●		●		●	2-47
Bolts and nuts tightness-inspect		●		●		●		●	2-48

*: For higher odometer readings, repeat at the frequency interval established here.

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

CAL: California Model

PERIODIC MAINTENANCE 2-5

Periodic Maintenance Chart (United States, Canada Model)

Periodic Replacement Parts

CHANGE/REPLACE ITEM	FREQUENCY	* ODOMETER READING					See Page
	Whichever come first ↓ Every	1 (0.6)	12 (7.5)	24 (15)	36 (24)	48 (30)	
Air cleaner element #	Every 18 000 km (12 000 mile)						2-50
Fuel hose	4 years					●	2-50
Coolant	3 years				●		2-52
Radiator hose and O-ring	3 years				●		2-54
Engine oil #	year	●	●	●	●	●	2-55
Oil filter	year	●	●	●	●	●	2-55
Brake hose and pipe	4 years					●	2-56
Brake fluid	2 years			●		●	2-56
Rubber parts of master cylinder and caliper	4 years					●	2-58, 2-59
Spark plug			●	●	●	●	2-62

*: For higher odometer readings, repeat at the frequency interval established here.

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

PERIODIC MAINTENANCE 2-7

Periodic Maintenance Chart (Other than United States, Canada Model)

FREQUENCY	Whichever comes first ↓	* ODOMETER READING × 1 000 km (× 1 000 mile)							See Page
		1 (0.6)	6 (4)	12 (7.5)	18 (12)	24 (15)	30 (20)	36 (24)	
INSPECTION									
Brake hose and pipe damage-inspect	year	●	●	●	●	●	●	●	2-35
Brake pad wear-inspect #			●	●	●	●	●	●	2-36
Brake hose installation condition-inspect	year	●	●	●	●	●	●	●	2-35
Brake fluid level-inspect	6 months	●	●	●	●	●	●	●	2-36
Brake operation (effectiveness, play, no drag)-inspect	year	●	●	●	●	●	●	●	2-35
Brake light switch operation-inspect		●	●	●	●	●	●	●	2-36
Suspensions									
Front forks/rear shock absorber operation (damping and smooth stroke)-inspect				●		●		●	2-37
Front forks/rear shock absorber oil leak-inspect	year			●		●		●	2-38
Rocker arm operation-inspect				●		●		●	2-38
Tie-Rods operation-inspect				●		●		●	2-38
Steering System									
Steering play-inspect	year	●		●		●		●	2-39
Steering stem bearings-lubricate	2 years					●			2-40
Electrical System									
Spark plug condition – inspect				●		●		●	2-40
Lights and switches operation-inspect	year			●		●		●	2-42
Headlight aiming-inspect	year			●		●		●	2-44
Side stand switch operation-inspect	year			●		●		●	2-45
Engine stop switch operation-inspect	year			●		●		●	2-46
Others									
Chassis parts-lubricate	year			●		●		●	2-47
Bolts and nuts tightness-inspect		●		●		●		●	2-48

*: For higher odometer readings, repeat at the frequency interval established here.

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

2-8 PERIODIC MAINTENANCE

Periodic Maintenance Chart (Other than United States, Canada Model)

Periodic Replacement Parts

CHANGE/REPLACE ITEM	FREQUENCY	* ODOMETER READING × 1 000 km (× 1 000 mile)					See Page
	Whichever come first ↓ Every	1 (0.6)	12 (7.5)	24 (15)	36 (24)	48 (30)	
Air cleaner element #	Every 18 000 km (12 000 mile)						2-50
Fuel hose	4 years					●	2-50
Coolant	3 years				●		2-52
Radiator hose and O-ring	3 years				●		2-54
Engine oil #	year	●	●	●	●	●	2-55
Oil filter	year	●	●	●	●	●	2-55
Brake hose and pipe	4 years					●	2-56
Brake fluid	2 years			●		●	2-56
Rubber parts of master cylinder and caliper	4 years					●	2-58, 2-59
Spark plug			●	●	●	●	2-62

*: For higher odometer readings, repeat at the frequency interval established here.

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

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 to the threads.

L: Apply a non-permanent locking agent to the threads.

MO: Apply molybdenum disulfide grease oil solution.

R: Replacement Parts

S: Follow the specified tightening sequence.

Sl: Apply silicone grease.

SS: Apply silicone sealant.

Fastener	Torque			Remarks
	N-m	kgf-m	ft-lb	
Fuel System				
Air Cleaner Housing Clamp Bolts	2.0	0.20	17 in-lb	
Air Cleaner Housing Mounting Bolt	6.9	0.70	61 in-lb	
Air Inlet Duct Mounting Bolts	6.9	0.70	61 in-lb	L
Canister Bracket Mounting Bolt (M6)	6.9	0.70	61 in-lb	
Canister Bracket Mounting Bolt (M5)	0.4	0.04	4 in-lb	
Camshaft Position Sensor Bolt	12	1.2	104 in-lb	
Crankshaft Sensor Bolts	5.9	0.60	52 in-lb	
Delivery Pipe Mounting Screws (Nozzle Assy)	3.4	0.35	30 in-lb	
Delivery Pipe Mounting Screws (Throttle Body)	3.4	0.35	30 in-lb	
Exhaust Butterfly Valve Actuator Mounting Bolts	6.9	0.70	61 in-lb	
Exhaust Butterfly Valve Actuator Pulley Bolt	4.9	0.50	43 in-lb	
Fuel Hose Mounting Screw	4.9	0.50	43 in-lb	
Fuel Pump Bolts	9.8	1.0	87 in-lb	L, S
Nozzle Assy Mounting Bolts	6.9	0.70	61 in-lb	
Separator Bracket Mounting Bolt	0.8	0.08	7 in-lb	
Throttle Body Assembly Holder Clamp Bolts	3.0	0.30	27 in-lb	
Throttle Body Holder Bolts	12	1.2	104 in-lb	L
Throttle Cable Holder Bolt	3.9	0.40	35 in-lb	
Vehicle-down Sensor Bolts	5.9	0.60	52 in-lb	
Water Temperature Sensor	25	2.5	18	SS
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	
Coolant Reserve Tank Mounting Bolts	6.9	0.70	61 in-lb	
Impeller Bolt	9.8	1.0	87 in-lb	
Oil Cooler Mounting Bolts	12	1.2	104 in-lb	S
Radiator Bracket Mounting Bolt	6.9	0.70	61 in-lb	
Radiator Lower Bolt	6.9	0.70	61 in-lb	
Radiator Upper Bolt	12	1.2	104 in-lb	
Thermostat Housing Cover Bolts	5.9	0.60	52 in-lb	
Water Hose Clamp Screws	2.0	0.20	17 in-lb	

2-10 PERIODIC MAINTENANCE

Torque and Locking Agent

Fastener	Torque			Remarks
	N-m	kgf-m	ft-lb	
Water Hose Fitting Bolts	12	1.2	104 in-lb	
Water Pump Cover Bolts	12	1.2	104 in-lb	L
Water Temperature Sensor	25	2.5	18	SS
Engine Top End				
Air Suction Valve Cover Bolts	12	1.2	104 in-lb	L
Camshaft Cap Bolts	12	1.2	104 in-lb	S
Camshaft Chain Tensioner Cap Bolt	20	2.0	15	
Camshaft Chain Tensioner Mounting Bolts	11	1.1	97 in-lb	
Cam Sprocket Mounting Bolts	15	1.5	11	L
Coolant Drain Bolt (Cylinder)	9.8	1.0	87 in-lb	
Crankshaft Sensor Cover Bolts	9.8	1.0	87 in-lb	L (1)
Cylinder Head Bolts (M9)	39	4.0	29	MO, S
Cylinder Head Bolts (M6)	12	1.2	104 in-lb	S
Cylinder Head Cover Bolts	9.8	1.0	87 in-lb	
Exhaust Butterfly Valve Actuator Mounting Bolts	6.9	0.70	61 in-lb	
Exhaust Butterfly Valve Actuator Pulley Bolt	4.9	0.50	43 in-lb	
Exhaust Butterfly Valve Cable Adjuster Locknuts	6.9	0.70	61 in-lb	
Exhaust Butterfly Valve Cable Locknuts	6.9	0.70	61 in-lb	
Exhaust Butterfly Valve Cover Bolt	6.9	0.70	61 in-lb	
Exhaust Pipe Clamp Bolt	17	1.7	12	
Exhaust Pipe Manifold Holder Nuts	17	1.7	12	
Exhaust Pipe Mounting Bolt	25	2.5	18	
Front Camshaft Chain Guide Bolt (Lower)	12	1.2	104 in-lb	
Front Camshaft Chain Guide Bolt (Upper)	25	2.5	18	
Muffler Body Clamp Bolt	17	1.7	12	
Muffler Body Mounting Bolts	25	2.5	18	
Muffler Rear Cover Bolts	6.9	0.70	61 in-lb	
Muffler Upper Cover Bolts	6.9	0.70	61 in-lb	
Rear Camshaft Chain Guide Bolt	25	2.5	18	
Spark Plugs	13	1.3	113 in-lb	
Throttle Body Assy Holder Clamp Bolts	2.9	0.30	26 in-lb	
Throttle Body Holder Bolts	12	1.2	104 in-lb	L
Water Passage Plug (Left)	20	2.0	15	L
Water Passage Plugs (Upper)	20	2.0	15	L
Clutch				
Clutch Cover Bolt (M6, L = 50 mm)	12	1.2	104 in-lb	
Clutch Cover Bolt (M6, L = 40 mm)	12	1.2	104 in-lb	L (1)
Clutch Cover Bolts (M6, L = 30 mm)	12	1.2	104 in-lb	L (1)
Clutch Hub Nut	135	14	100	R
Clutch Lever Clamp Bolts	7.8	0.80	69 in-lb	S
Clutch Spring Bolts	8.8	0.90	78 in-lb	
Oil Filler Plug	1.5	0.15	13 in-lb	
Sub Clutch Hub Bolts	25	2.5	18	L

PERIODIC MAINTENANCE 2-11

Torque and Locking Agent

Fastener	Torque			Remarks
	N-m	kgf-m	ft-lb	
Engine Lubrication System				
Coolant Drain Bolt (Water Pump)	8.8	0.90	78 in-lb	
Engine Oil Drain Bolt	29	3.0	22	
Impeller Bolt	9.8	1.0	87 in-lb	
Oil Cooler Mounting Bolts	12	1.2	104 in-lb	S
Oil Filter	31	3.2	23	EO, R
Oil Filter Mounting Bolt	25	2.5	18	L
Oil Jet Nozzle Bolts	6.9	0.70	61 in-lb	L
Oil Pan Bolts	9.8	1.0	87 in-lb	
Oil Pan Clamp Bolt	9.8	1.0	87 in-lb	
Oil Passage Plug (Left Side)	20	2.0	15	L
Oil Passage Plug (Right Side)	15	1.5	11	
Oil Pipe 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	
Water Hose Clamp Screws	2.0	0.20	17 in-lb	
Water Pump Cover Bolts	12	1.2	104 in-lb	L
Engine Removal/Installation				
Adjusting Collar Locknut	49	5.0	36	S
Lower Engine Mounting Bolt	10	1.0	87 in-lb	S
Lower Engine Mounting Nut	44	4.5	33	S
Middle Engine Mounting Bolt	10	1.0	87 in-lb	S
Middle Engine Mounting Nut	44	4.5	33	S
Upper Engine Mounting Bolts	44	4.5	33	S
Crankshaft/Transmission				
Breather Plate Bolts	5.9	0.60	52 in-lb	L
Connecting Rod Big End Nuts	see the text	←	←	←
Crankcase Bolts (M8)	31	3.2	23	MO, S
Crankcase Bolts (M7, L = 38 mm)	27	2.8	20	S
Crankcase Bolt (M7, L = 70 mm)	20	2.0	14	S
Crankcase Bolts (M6, L = 65 mm)	12	1.2	104 in-lb	S
Crankcase Bolts (M6, L = 50 mm)	12	1.2	104 in-lb	S
Crankcase Bolts (M6, L = 38 mm)	12	1.2	104 in-lb	S
Crankcase Bolt (M6, L = 95 mm)	12	1.2	104 in-lb	S
Crankcase Bolt (M6, L = 85 mm)	12	1.2	104 in-lb	S
Crankcase Bolt (M6, L = 35 mm)	12	1.2	104 in-lb	S
Neutral Switch	15	1.5	11	L
Gear Positioning Lever Bolt	12	1.2	104 in-lb	
Harness Clamp Bolt	8.8	0.90	78 in-lb	L
Oil Passage Plug (Left Side)	20	2.0	15	L
Oil Passage Plug (Right Side)	15	1.5	11	
Oil Pressure Switch	15	1.5	11	SS

2-12 PERIODIC MAINTENANCE

Torque and Locking Agent

Fastener	Torque			Remarks
	N-m	kgf-m	ft-lb	
Oil Pressure Switch Terminal Bolt	1.5	0.15	13 in-lb	
Plate Screws	5.9	0.60	52 in-lb	L
Shift Drum Bearing Holder Bolts	12	1.2	104 in-lb	L
Shift Drum Cam Holder Bolt	12	1.2	104 in-lb	L
Shift Lever Bolt	6.9	0.70	61 in-lb	
Shift Pedal Mounting Bolt	25	2.5	18	
Shift Shaft Return Spring Pin	28	2.9	21	L
Tie-Rod Locknuts	6.9	0.70	61 in-lb	
Wheels/Tires				
Front Axle Clamp Bolts	20	2.0	15	AL
Front Axle Nut	127	13	94	
Rear Axle Nut	127	13	94	
Final Drive				
Engine Sprocket Cover Bolts	6.9	0.70	61 in-lb	
Engine Sprocket Nut	125	13	92	MO
Rear Axle Nut	127	13	94	
Rear Sprocket Nuts	59	6.0	43	
Chain Cover Bolts	4.9	0.50	43 in-lb	
Engine Sprocket Cover Socket Bolt	15	1.5	11	L
Brakes				
Bleed Valves	7.8	0.80	69 in-lb	
Brake Hose Banjo Bolts	34	3.5	25	
Brake Lever Pivot Bolt	1.0	0.10	9 in-lb	SI
Brake Lever Pivot Bolt Locknut	5.9	0.60	52 in-lb	
Brake Pedal Bolt	8.8	0.90	78	
Front Brake Light Switch Screw	1.2	0.12	10 in-lb	
Front Brake Reservoir Cap Stopper Screw	1.2	0.12	10 in-lb	
Front Brake Disc Mounting Bolts	27	2.8	20	L
Front Brake Pad Pins	15	1.5	11	
Front Caliper Assembly Bolts	22	2.2	16	
Front Caliper Mounting Bolts	34	3.5	25	
Front Master Cylinder Bleed Valve	5.9	0.60	52 in-lb	
Front Master Cylinder Clamp Bolts	8.8	0.90	78 in-lb	S
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	
Suspension				
Front Axle Clamp Bolts	20	2.0	15	AL
Front Fork Bottom Allen Bolts	35	3.5	26	L
Front Fork Clamp Bolts (Lower)	25	2.5	18	AL
Front Fork Clamp Bolts (Upper)	20	2.0	15	
Front Fork Top Plugs	35	3.5	26	

PERIODIC MAINTENANCE 2-13

Torque and Locking Agent

Fastener	Torque			Remarks
	N-m	kgf-m	ft-lb	
Piston Rod Nuts	20	2.0	15	
Rear Shock Absorber Bracket Nut	59	6.0	43	
Rear Shock Absorber Nut (Lower)	34	3.5	25	
Rear Shock Absorber Nut (Upper)	34	3.5	25	
Swingarm Pivot Adjusting Collar	20	2.0	15	
Swingarm Pivot Adjusting Collar Locknut	98	10	72	
Swingarm Pivot Shaft Nut	108	11	81	
Tie-Rod Nuts	59	6.0	43	
Uni-Trak Rocker Arm Nut	34	3.5	25	
Steering				
Front Fork Clamp Bolts (Lower)	25	2.5	18	AL
Front Fork Clamp Bolts (Upper)	20	2.0	15	
Handlebar Bolts	25	2.5	18	
Handlebar Position Bolts	9.8	1.0	87 in-lb	L
Steering Stem Head Nut	78	8.0	58	
Steering Stem Nut	20	2.0	15	
Switch Housing Screws	3.5	0.36	31 in-lb	
Frame				
Air Inlet Duct Mounting Bolts	6.9	0.70	61	L
Front Fender Mounting Bolts	3.9	0.40	35 in-lb	
Front Footpeg Bracket Bolts	25	2.5	18	
Rear Footpeg Bracket Bolts	25	2.5	18	
Rear Frame Bolts	59	6.0	44	L (2)
Side Stand Bolt	44	4.5	32	G
Side Stand Bracket Bolts	49	5.0	36	L
Side Stand Switch Bolt	8.8	0.90	78 in-lb	L
Side Stand Switch Bracket Bolt	3.9	0.40	35 in-lb	L
Windshield Mounting Bolts	0.4	0.04	4 in-lb	
Electrical System				
Alternator Cover Bolts	12	1.2	104 in-lb	
Alternator Lead Holding Plate Bolts	6.9	0.70	61 in-lb	L
Alternator Rotor Bolt	110	11	81	
Camshaft Position Sensor Bolt	12	1.2	104 in-lb	
Crankshaft Sensor Bolts	5.9	0.60	52 in-lb	
Crankshaft Sensor Cover Bolts	9.8	1.0	87 in-lb	L (1)
Engine Ground Lead Terminal Bolt	9.8	1.0	87 in-lb	
Front Brake Light Switch Screw	1.2	0.12	10 in-lb	
Front Turn Signal Light Lens Screws	1.0	0.10	9 in-lb	
Front Turn Signal Light Mounting Screws	1.2	0.12	10 in-lb	
Headlight Mounting Screws	1.2	0.12	10 in-lb	
Licence Light Assembly Screws	0.9	0.09	8 in-lb	
Licence Light Mounting Screws	1.2	0.12	10 in-lb	
Meter Mounting Screws	1.2	0.12	10 in-lb	

2-14 PERIODIC MAINTENANCE

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Neutral Switch	15	1.5	11	L
Rear Turn Signal Light Lens Screws	1.0	0.10	9 in·lb	
Rear Turn Signal Light Mounting Screws	1.2	0.12	10 in·lb	
Regulator/Rectifier Bolts	6.9	0.70	61 in·lb	
Side Stand Switch Bolt	8.8	0.90	78 in·lb	L
Side Stand Switch Bracket Bolt	3.9	0.40	35 in·lb	L
Spark Plugs	13	1.3	113 in·lb	
Speed Sensor Bolt	12	1.2	104 in·lb	
Stator Coil Bolts	12	1.2	104 in·lb	L
Starter Motor Cable Terminal Bolt	2.7	0.28	24 in·lb	
Starter Motor Clutch Bolts	34	3.5	25	L
Starter Motor Mounting Bolts	11	1.1	97 in·lb	
Starter Relay Cable Terminal Bolts	3.9	0.40	35 in·lb	
Switch Housing Screws	3.5	0.36	31 in·lb	
Tail/Brake Light Mounting Bolts	4.0	0.40	35 in·lb	
Timing Rotor Bolt	45	4.5	33	
Vehicle-down Sensor Bolts	5.9	0.60	52 in·lb	
Water Temperature Sensor	25	2.5	18	SS

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	27.3 ±1.3 kPa (205 ±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	2.6 L (2.7 US qt)	- - -
Engine Top End		
Valve Clearance:		
Exhaust	0.22 ~ 0.31 mm (0.0087 ~ 0.0122 in.)	- - -
Inlet	0.11 ~ 0.19 mm (0.0043 ~ 0.0075 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)	- - -
Wheels/Tires		
Tread Depth:		
Front	BRIDGESTONE: 3.6 mm (0.14 in.)	1 mm (0.04 in.), (AT, CH, DE) 1.6 mm (0.06 in.)
Rear	BRIDGESTONE: 5.8 mm (0.23 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 (2.5 kgf/cm ² , 36 psi)	- - -
Rear	Up to 180 kg (397 lb) load: 290 kPa (2.9 kgf/cm ² , 42 psi)	- - -

2-16 PERIODIC MAINTENANCE

Specifications

Item	Standard	Service Limit
Final Drive		
Drive Chain Slack	30 ~ 35 mm (1.2 ~ 1.4 in.)	---
Drive Chain Wear (20-link Length)	317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)	323 mm (12.7 in.)
Standard Chain:		
Make	ENUMA	---
Type	EK520MVXL	---
Link	110 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 Gap	0.7 ~ 0.8 mm (0.028 ~ 0.031 in.)	---

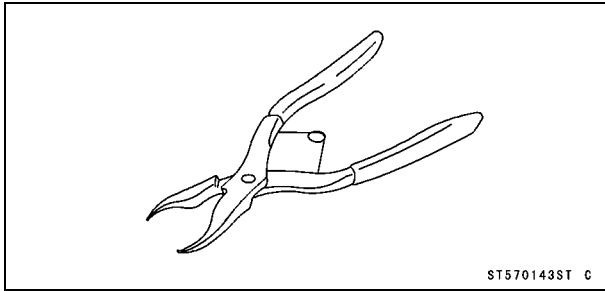
AT: Austria

CH: Switzerland

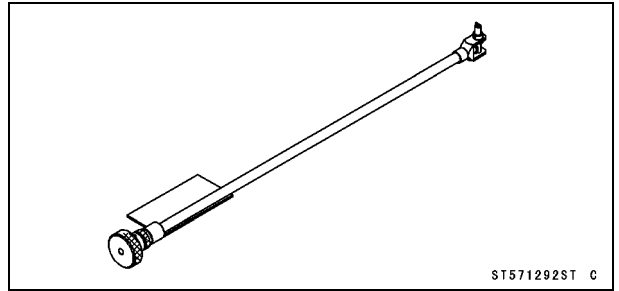
DE: Germany

Special Tools

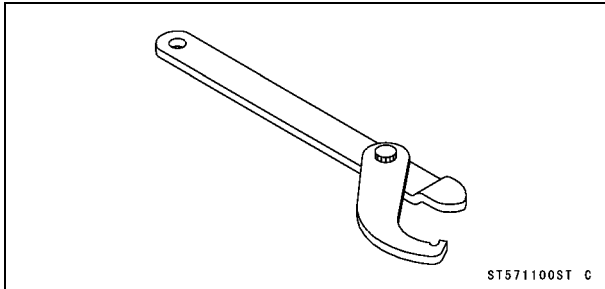
Inside Circlip Pliers:
57001-143



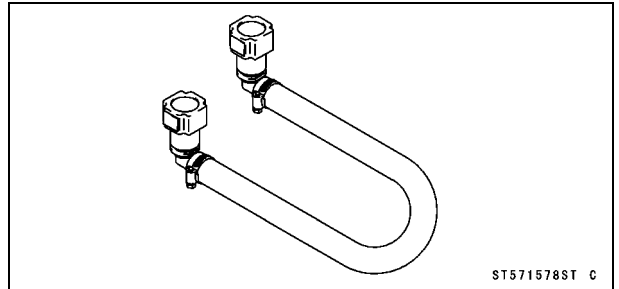
Pilot Screw Adjuster, C:
57001-1292



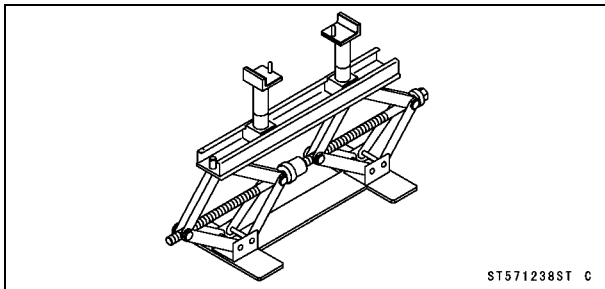
Steering Stem Nut Wrench:
57001-1100



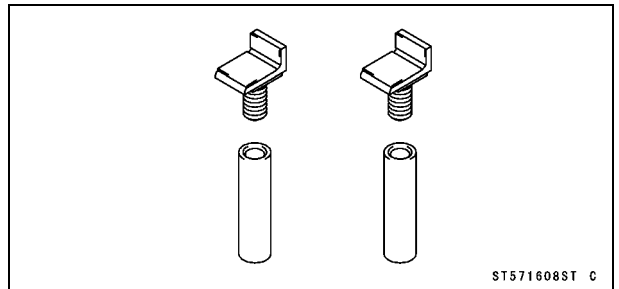
Extension Tube:
57001-1578



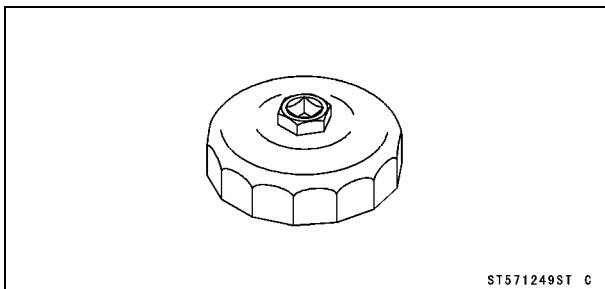
Jack:
57001-1238



Jack Attachment:
57001-1608



Oil Filter Wrench:
57001-1249



2-18 PERIODIC MAINTENANCE

Maintenance Procedure

Fuel System (DFI)

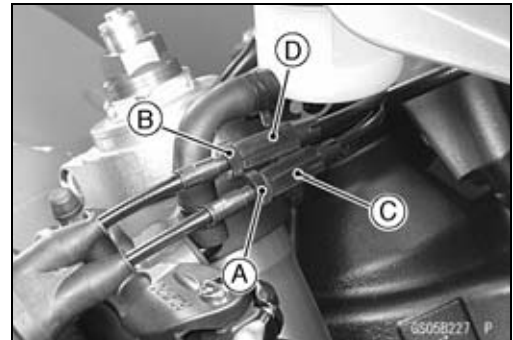
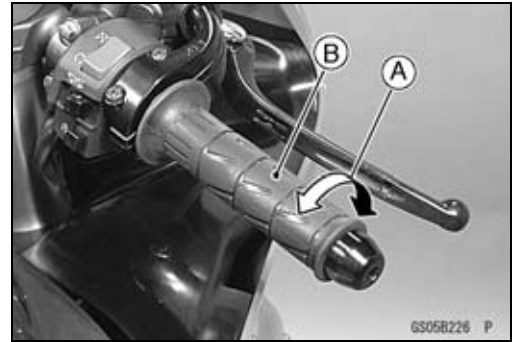
Throttle Control System Inspection

- 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.
- ★ 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 2 ~ 3 mm (0.08 ~ 0.12 in.) of throttle grip play is obtained.
- 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 cannot be adjusted with the adjusters, replace the cable.

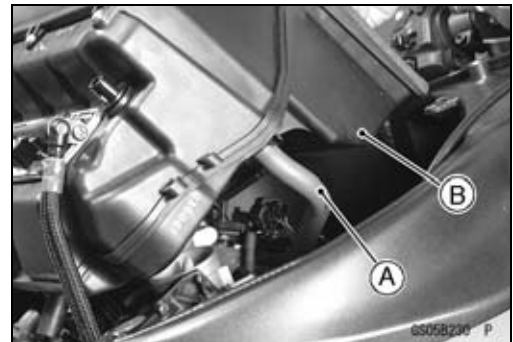


Engine Vacuum Synchronization Inspection

NOTE

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

- Situate the motorcycle so that it is vertical.
- Remove the fuel tank (see Fuel Tank Removal in the Fuel System (DFI) chapter).
- Pull off the vacuum hoses and the rubber cap(s) from the right fitting of each throttle body.
- Pull off the vacuum switch valve hose (thick) [A] from the air cleaner housing [B].

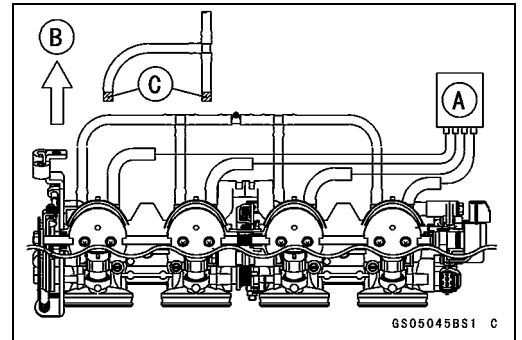


CAUTION

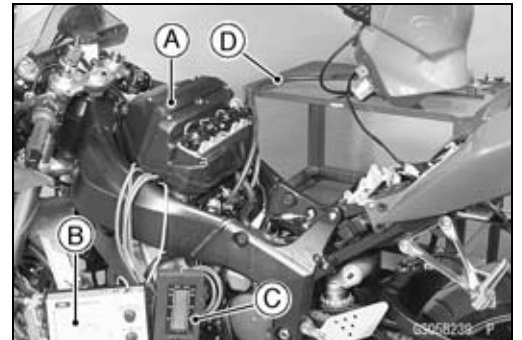
Do not remove the inlet air pressure sensor hoses on the left fitting of each throttle body.

Maintenance Procedure

- Connect a commercially available vacuum gauge [A] to these right fittings of the throttle body as shown.
Front [B]
- Connect a highly accurate tachometer to one of the stick coil primary leads.
- Plug:
Vacuum Switch Valve Hose (Thick) and its Air Cleaner Housing Hole
Vacuum Switch Valve Vacuum Hose Ends [C]



- Install:
Air Cleaner Housing [A] (see Air Cleaner Housing Removal in the Fuel System (DFI) chapter)
Tachometer [B]
Vacuum Gauge [C]
 - Connect:
Extension Tube [D]
- Special Tool - Extension Tube: 57001-1578**
- Start the engine and warm it up thoroughly.
 - Check the idle speed.
 - Open and close the throttle.
 - ★ If the idle speed is out of the specified range, adjust it.



CAUTION

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

- While idling the engine, inspect the engine vacuum, using the vacuum gauge [B].

Engine Vacuum

**Standard: 27.3 ±1.333 kPa (205 ±10 mmHg) at Idle
Speed 1 300 ±50 r/min (rpm)**

2-20 PERIODIC MAINTENANCE

Maintenance Procedure

★ If any vacuum is not within the specifications, first synchronize the balance of the left (#1, #2) and right (#3, #4) assemblies.

Example:

#1: 165 mmHg

#2: 190 mmHg

#3: 170 mmHg

#4: 200 mmHg

- With the engine at the correct idle speed, equalize the highest vacuum of #3 and #4 (example 200 mmHg) to the highest vacuum of #1 and #2 (example 190 mmHg) by turning the center adjusting screw [A].

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

Front [B]

NOTE

○ After adjustment, the final vacuum measurement between the lowest throttle valves may not be 205 mmHg (in this example). The goal is to have the lower two vacuums between the left (#1 and #2) and right (#3 and #4) banks be the same.

- Open and close the throttle after each measurement and adjust the idle speed as necessary.
- Once the throttle valves have been synchronized, inspect the main throttle sensor's output voltage to ensure proper operation (procedure is at the end of this section).

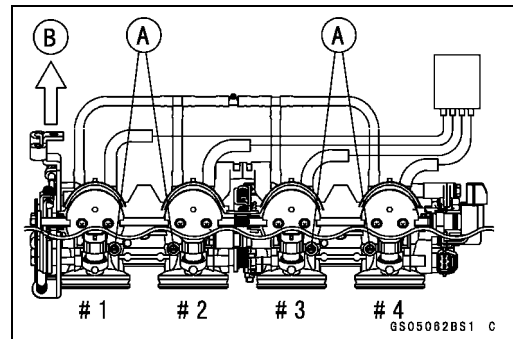
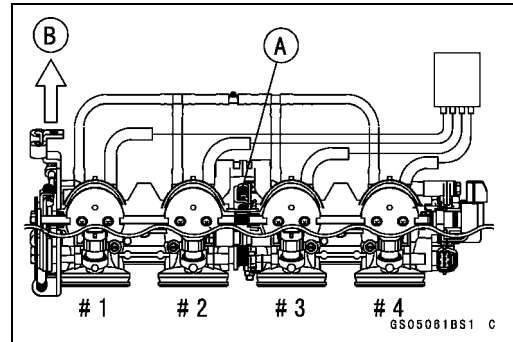
★ If any one vacuum measurement is out of the standard measurement after left and right synchronization, turn in the bypass screws [A] until it seats fully but not tightly.

Front [B]

CAUTION

Do not over tighten them. They could be damaged, requiring replacement.

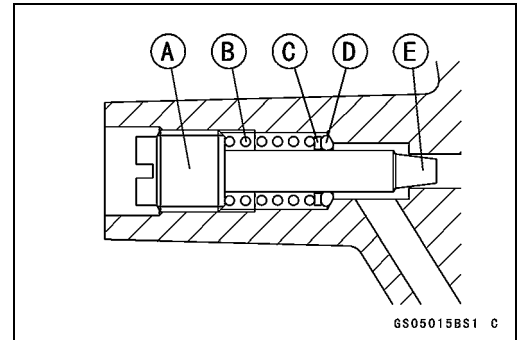
- Turn out the bypass screw of the higher vacuum between #1 and #2 to the lower vacuum.
- Turn out the bypass screw of the higher vacuum between #3 and #4 to the lower vacuum.
- Open and close the throttle valves after each measurement and adjust the idle speed as necessary.
- Inspect the vacuums as before.
- ★ If all vacuums are within the specification, finish the engine vacuum synchronization.
- ★ If any vacuum can not be adjusted within the specification, remove the bypass screws #1 ~ #4 and clean them.



Maintenance Procedure

- Remove the bypass screw [A], spring [B], washer [C] and O-ring [D].
- Check the bypass screw and its hole for carbon deposits.
- ★ If any carbon accumulates, wipe the carbon off the bypass screw and the hole, using a cotton pad penetrated with a high-flash point solvent.
- Replace the O-ring with a new one.
- Check the tapered portion [E] of the bypass screw for wear or damage.
- ★ If the bypass screw is worn or damaged, replace it.
- Turn in the bypass screw until it seats fully but not tightly.

- 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 Output Voltage Inspection of the Main Throttle Sensor in the Fuel System (DFI) chapter).

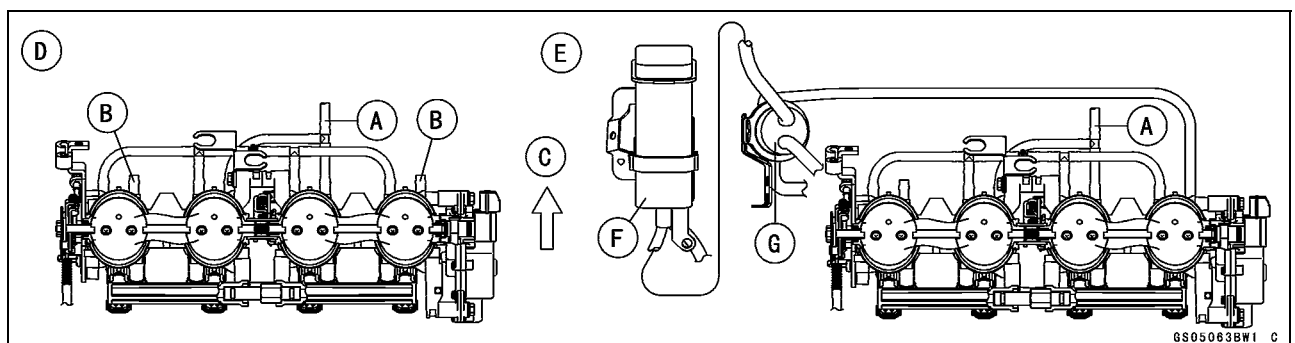


**Main Throttle Sensor Output Voltage
Connections to ECU**

- Meter (+) → Y/W lead (terminal 7)
- Meter (-) → BR/BK lead (terminal 28)

Standard: 1.02 ~ 1.06 V DC (at idle throttle opening)

- ★ If the output voltage is out of the range, check the throttle input voltage (see Input Voltage Inspection of the Main Throttle Sensor in the Fuel System (DFI) chapter).
- Remove the vacuum gauge hoses and install the vacuum hoses [A] and rubber caps [B] on the original position as shown.
 - Front [C]
 - Except California Model [D]
 - California Model [E]
 - Separator [F]
 - Canister [G]



2-22 PERIODIC MAINTENANCE

Maintenance Procedure

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 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.

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

Idle Speed

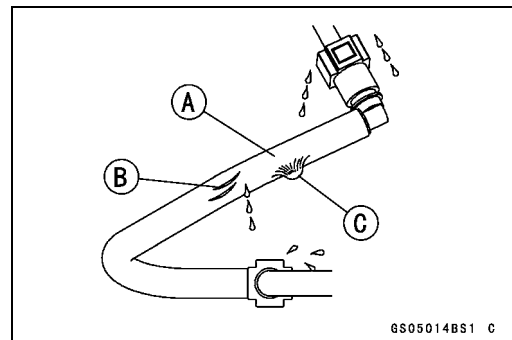
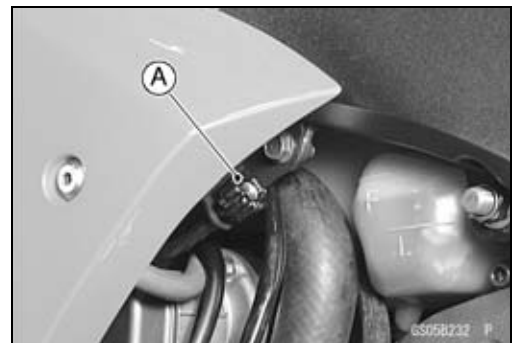
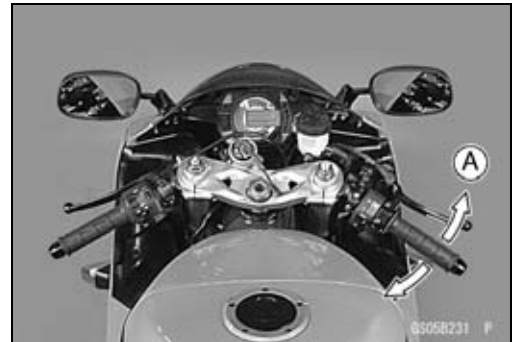
Standard: 1 300 ±50 r/min (rpm)

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.

Fuel Hose Damage and Installation Condition Inspection

- The motorcycle is not properly handled, the high pressure inside the fuel line can cause fuel to leak or the hose to burst. Remove the fuel tank (see Fuel Tank Removal in the Fuel System (DFI) chapter) and check the fuel hose [A].
- ★ Replace the fuel hose if any fraying, cracks [B] or bulges [C] are noticed.
- Check that the hose joints are securely connected.
- When installing the fuel hose, avoid sharp bending, kinking, flattening or twisting.
- ★ Replace the hose if it has been sharply bent or kinked.



Maintenance Procedure

Evaporative Emission Control System (California Model)

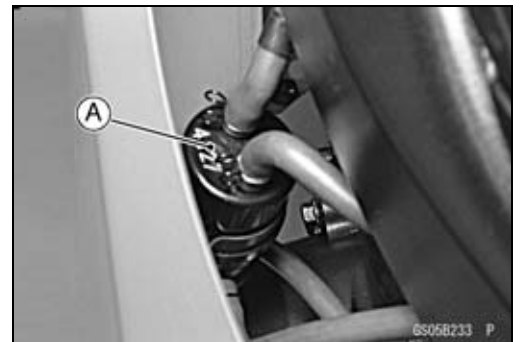
Evaporative Emission Control System Inspection

- Inspect the canister as follows.
- Remove:
 - Left Upper Inner Fairing (see Upper Inner Fairing Removal in the Frame chapter)
- Remove the canister [A], and disconnect the hoses from the canister.
- Visually inspect the canister 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.*
- Check the liquid/vapor separator as follows.
- Remove:
 - Left Center Fairing (see Center Fairing Removal in the Frame chapter)
- Disconnect the hoses from the separator, and remove the separator [A] from the motorcycle left side.
- Visually inspect the separator for cracks and other damage.
- ★ If the separator has any cracks or damage, replace it with a new one.
- To prevent the gasoline from flowing into or out of the canister, hold the separator perpendicular to the ground.
- Check the hoses of the evaporative emission control system as follows.
- Check that the hoses are securely connected and clips are in position.
- Replace any kinked, deteriorated or damaged hoses.
- Route 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 route the hoses with a minimum of bending so that the emission flow will not be obstructed.



2-24 PERIODIC MAINTENANCE

Maintenance Procedure

Cooling System

Coolant Level Inspection

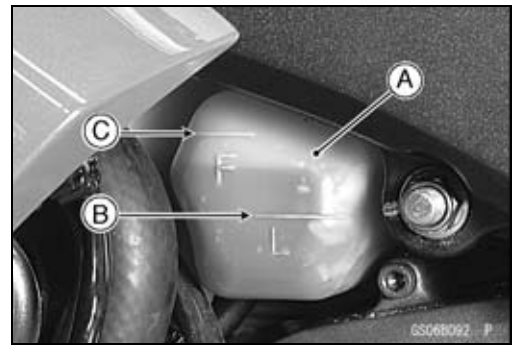
NOTE

○ 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 side stand).
- ★ If the coolant level is lower than the “L” level line [B], unscrew the reserve tank cap and add coolant to the “F” level line [C].

“L”: low

“F”: full



CAUTION

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.

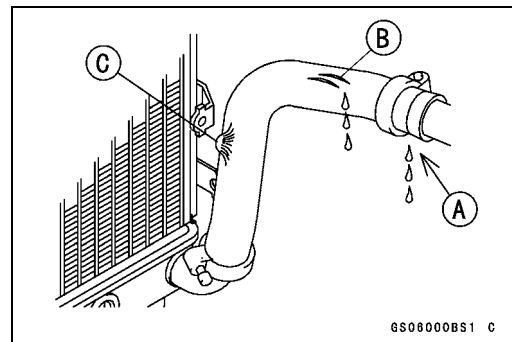
Radiator Hose Damage and Installation Condition Inspection

○ 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 - Radiator Hose Clamp Screws: 2.0 N·m (0.20 kgf·m, 17 in·lb)



Maintenance Procedure

Engine Top End

Valve Clearance Inspection

NOTE

○ *Valve clearance must be checked and adjusted when the engine is cold (at room temperature).*

- Remove:
 - Lower Fairings (see Lower Fairing Removal in the Frame chapter)
 - Crankshaft Sensor Cover (see Crankshaft Sensor Removal in the Electrical System chapter)
 - Cylinder Head Cover (see Cylinder Head Cover Removal in the Engine Top End chapter)
- Position the crankshaft at #1, 4 piston TDC.
 - TDC Mark [A] for #1, 4 Pistons
 - Timing Mark [B] (Crankcase Halves Mating Surface)



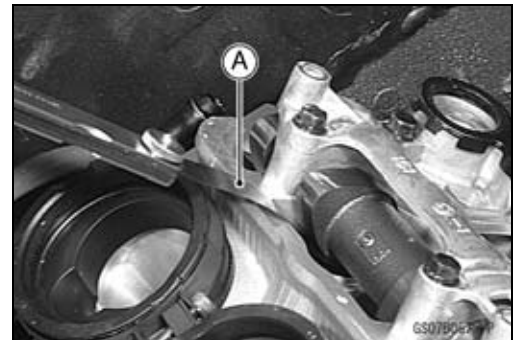
- Using a thickness gauge [A], measure the valve clearance between the cam and the valve lifter.

Valve Clearance

Standard:

Exhaust 0.22 ~ 0.31 mm (0.0087 ~ 0.0122 in.)

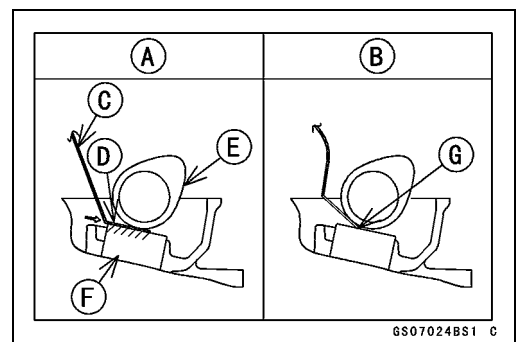
Inlet 0.11 ~ 0.19 mm (0.0043 ~ 0.0075 in.)



NOTE

○ *Thickness gauge is horizontally inserted on the valve lifter.*

- Appropriateness [A]
- Inadequacy [B]
- Thickness Gauge [C]
- Horizontally Inserts [D]
- Cam [E]
- Valve Lifter [F]
- Hits the Valve Lifter Ahead [G]



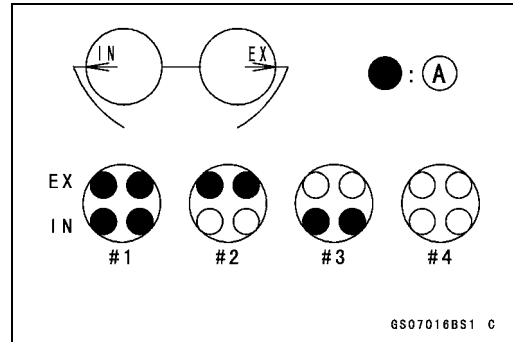
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2-26 PERIODIC MAINTENANCE

Maintenance Procedure

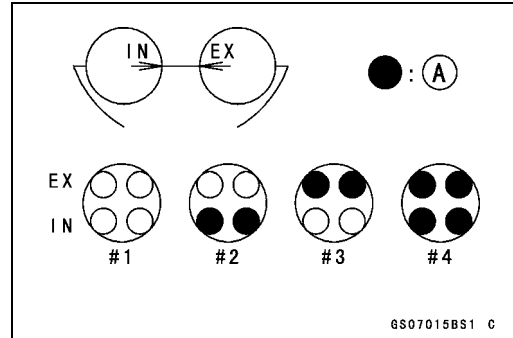
○When positioning #1 piston TDC at the end of the compression stroke.

- Inlet Valve Clearance of #1 and #3 Cylinders
- Exhaust Valve Clearance of #1 and #2 Cylinders
- Measuring Valve [A]



○When positioning #4 piston TDC at the end of the compression stroke.

- Inlet Valve Clearance of #2 and #4 Cylinders
- Exhaust Valve Clearance of #3 and #4 Cylinders
- Measuring Valve [A]



- ★If the valve clearance is not within the specified range, first record the clearance, and then adjust it.

Valve Clearance Adjustment

- To change the valve clearance, remove the camshaft chain tensioner, camshafts and valve lifters (see appropriate chapters). Replace the shim with one of a different thickness.

NOTE

- Mark and record the valve lifter and shim locations so they can be reinstalled in their original positions.
- If there is no clearance, select a shim which is several sizes smaller and then measure the clearance.
- To select a new shim which brings the valve clearance within the specified range, refer to the Valve Clearance Adjustment Charts.
- Apply a thin coat of engine oil to the valve lifter surface and install the lifter.
- Install the camshafts. Be sure to time the camshafts properly (see Camshaft Installation in the Engine Top End chapter).
- Remeasure any valve clearance that was adjusted. Readjust if necessary.

CAUTION

Do not put shim stock under the shim. This may cause the shim to pop out at high rpm, causing extensive engine damage. Do not grind the shim. This may cause it to fracture, causing extensive engine damage.

Maintenance Procedure

VALVE CLEARANCE ADJUSTMENT CHART INLET VALVE

		PRESENT SHIM																				
		← Example																				
PART No. (92180-)	1014	1016	1018	1020	1022	1024	1026	1028	1030	1032	1034	1036	1038	1040	1042	1044	1046	1048	1050	1052	1054	
MARK	50	55	60	65	70	75	80	85	90	95	00	05	10	15	20	25	30	35	40	45	50	
THICKNESS (mm)	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	
VALVE CLEARANCE MEASUREMENT	0.00~0.05	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40
	0.06~0.10	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45
	0.11~0.19	SPECIFIED CLEARANCE/NO CHANGE REQUIRED																				
	0.20~0.24	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	
	0.25~0.29	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50		
	0.30~0.34	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50			
	0.35~0.39	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50				
	0.40~0.44	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50					
	0.45~0.49	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50						
	0.50~0.54	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50							
	0.55~0.59	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50								
	0.60~0.64	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50									
	0.65~0.69	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50										
	0.70~0.74	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50											
	0.75~0.79	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50												
	0.80~0.84	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50													
	0.85~0.89	3.20	3.25	3.30	3.35	3.40	3.45	3.50														
	0.90~0.94	3.25	3.30	3.35	3.40	3.45	3.50															
	0.95~0.99	3.30	3.35	3.40	3.45	3.50																
1.00~1.04	3.35	3.40	3.45	3.50																		
1.05~1.09	3.40	3.45	3.50																			
1.10~1.14	3.45	3.50																				
1.15~1.19	3.50																					

INSTALL THE SHIM OF THIS THICKNESS (mm)

6S07027BW3 C

1. Measure the clearance (when engine is cold).
2. Check present shim size.
3. Match clearance in vertical column with present shim size in horizontal column.
4. Install the shim specified where the lines intersect. This shim will give the proper clearance.

Example:

Present shim is **3.05 mm**.
 Measured clearance is **0.35 mm**.
 Replace **3.05 mm** shim with **3.25 mm** shim.

5. Remeasure the valve clearance and readjust if necessary.

2-28 PERIODIC MAINTENANCE

Maintenance Procedure

VALVE CLEARANCE ADJUSTMENT CHART EXHAUST VALVE

		PRESENT SHIM																				Example			
PART No. (92180-)		1014	1016	1018	1020	1022	1024	1026	1028	1030	1032	1034	1036	1038	1040	1042	1044	1046	1048	1050	1052	1054			
MARK		50	55	60	65	70	75	80	85	90	95	00	05	10	15	20	25	30	35	40	45	50			
THICKNESS (mm)		2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50			
VALVE CLEARANCE MEASUREMENT	0.00~0.02	-	-	-	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25			
	0.03~0.06	-	-	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30			
	0.07~0.11	-	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35			
	0.12~0.16	-	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40			
	0.17~0.21	-	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45			
	0.22~0.31	SPECIFIED CLEARANCE/NO CHANGE REQUIRED																							
	0.32~0.36	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50				
	0.37~0.41	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50					
	0.42~0.46	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50						
	0.47~0.51	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50							
	0.52~0.56	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50								
	0.57~0.61	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50									
	0.62~0.66	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50										
	0.67~0.71	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50											
	0.72~0.76	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50												
	0.77~0.81	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50													
	0.82~0.86	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50														
	0.87~0.91	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50															
	0.92~0.96	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50																
	0.97~1.01	3.20	3.25	3.30	3.35	3.40	3.45	3.50																	
1.02~1.06	3.25	3.30	3.35	3.40	3.45	3.50																			
1.07~1.11	3.30	3.35	3.40	3.45	3.50																				
1.12~1.16	3.35	3.40	3.45	3.50																					
1.17~1.21	3.40	3.45	3.50																						
1.22~1.26	3.45	3.50																							
1.27~1.31	3.50																								

INSTALL THE SHIM OF THIS THICKNESS (mm)

6S07060B#3 C

1. Measure the clearance (when engine is cold).
2. Check present shim size.
3. Match clearance in vertical column with present shim size in horizontal column.
4. Install the shim specified where the lines intersect. This shim will give the proper clearance.

Example:

Present shim is **3.10 mm**.

Measured clearance is **0.40 mm**.

Replace **3.10 mm** shim with **3.20 mm** shim.

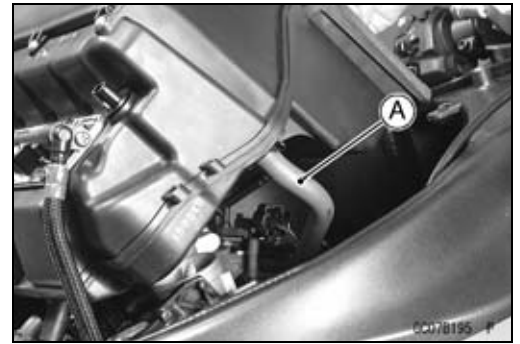
5. Remeasure the valve clearance and readjust if necessary.

Maintenance Procedure

Air Suction System

Air Suction System Damage Inspection

- Pull the vacuum switch valve hose [A] out of the air cleaner.
- Start the engine and run it at idle speed.
- Plug the vacuum switch valve hose end with your finger and feel vacuum pulsing in the hose.
- ★ If there is no vacuum pulsation, check the hose line for leak. If there is no leak, check the vacuum switch valve or air suction valve (see Vacuum Switch Valve Test, Air Suction Valve Inspection in the Engine Top End chapter).



Clutch

Clutch Operation Inspection

- Pull the clutch lever just enough to take up the free play [A].
- Measure the gap between the lever and the lever holder.
- ★ If the gap is too wide, the clutch may not release fully. If the gap is too narrow, the clutch may not engage fully. In either case, adjust it.

Clutch Lever Free Play

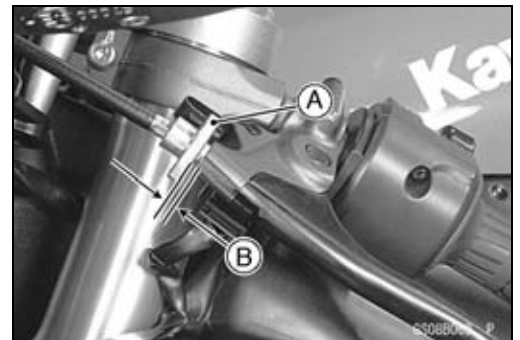
Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)



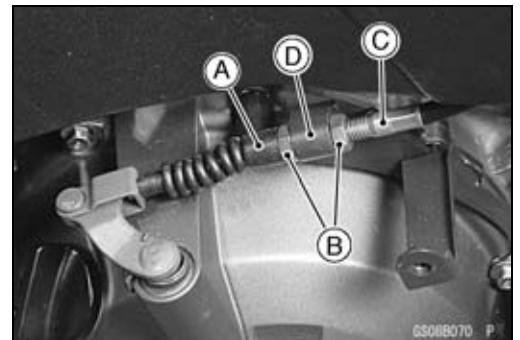
⚠ WARNING

To avoid a serious burn, never touch the engine or exhaust pipe during clutch adjustment.

- Turn the adjuster [A] so that 4 ~ 6 mm (0.16 ~ 0.24 in.) [B] of threads is visible.



- Remove the right center fairing (see Center Fairing Removal in the Frame chapter).
- Slide the dust cover [A] at the clutch cable lower end out of place.
- Loosen both adjusting nuts [B] at the clutch cover as far as they will go.
- Pull the clutch outer cable [C] tight and tighten the adjusting nuts against the bracket [D].
- Slip the rubber dust cover back onto place.
- Turn the adjuster at the clutch lever until the free play is correct.



2-30 PERIODIC MAINTENANCE

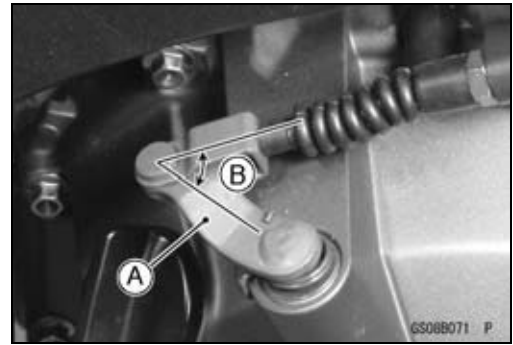
Maintenance Procedure

- Push the release lever [A] toward the front of the motor-cycle until it becomes hard to turn.
- At this time, the release lever should have the proper angle shown.
60° [B]
- ★ If the angle is wrong, check the clutch and release parts for wear.

⚠ WARNING

Be sure that the outer cable end at the clutch lever is fully seated in the adjuster at the clutch lever, or it could slip into place later, creating enough cable play to prevent clutch disengagement.

- After the adjustment, start the engine and check that the clutch does not slip and that it releases properly.



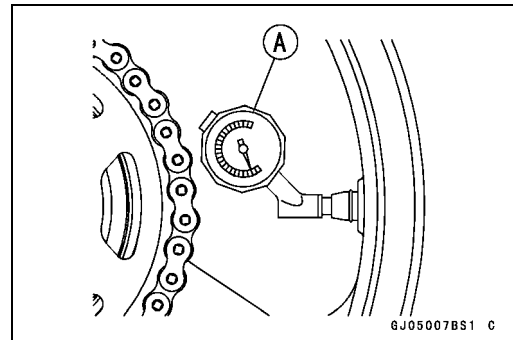
Wheels/Tires

Air Pressure Inspection

- Measure the tire air pressure with an air pressure gauge [A] when the tires are cold (that is, when the motorcycle has not been ridden more than a mile during the past 3 hours).
- Install the air valve cap.
- ★ Adjust the tire air pressure according to the specifications if necessary.

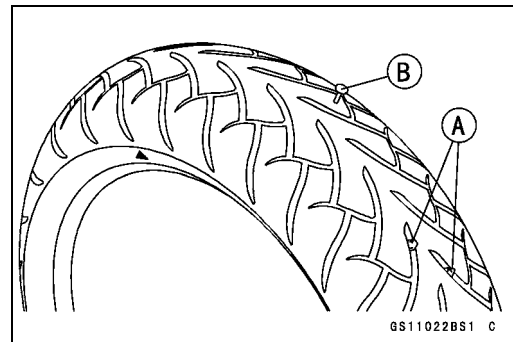
Air Pressure (when Cold)

- Front: Up to 180 kg (397 lb)
250 kPa (2.5 kgf/cm², 36 psi)**
- Rear: Up to 180 kg (397 lb)
290 kPa (2.9 kgf/cm², 42 psi)**



Wheel/Tire Damage Inspection

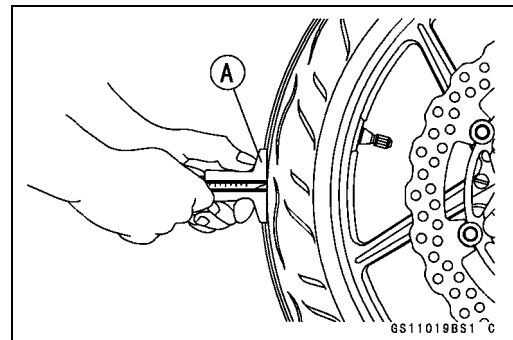
- Remove any imbedded stones [A] or other foreign particles [B] from tread.
- Visually inspect the tire for cracks and cuts, and replace the tire if necessary. Swelling or high spots indicate internal damage, requiring tire replacement.
- Visually inspect the wheel for cracks, cuts and dents damage.
- ★ If any damage is found, replace the wheel if necessary.



Tire Tread Wear Inspection

As the tire tread wears down, the tire becomes more susceptible to puncture and failure. An accepted estimate is that 90% of all tire failures occur during the last 10% of tread life (90% worn). So it is false economy and unsafe to use the tires until they are bald.

- Measure the tread depth at the center of the tread with a depth gauge [A]. Since the tire may wear unevenly, take measurement at several places.
- ★ If any measurement is less than the service limit, replace the tire (see Tire Removal/Installation in the Wheels/Tires chapter).



Maintenance Procedure

Tread Depth

Standard:

Front 3.6 mm (0.14 in.)

Rear 5.8 mm (0.23 in.)

Service Limit:

Front 1 mm (0.04 in.)

(AT, CH, DE) 1.6 mm (0.06 in.)

Rear 2 mm (0.08 in.) (Up to 130 km/h)

3 mm (0.12 in.) (Over 130 km/h)

⚠ WARNING

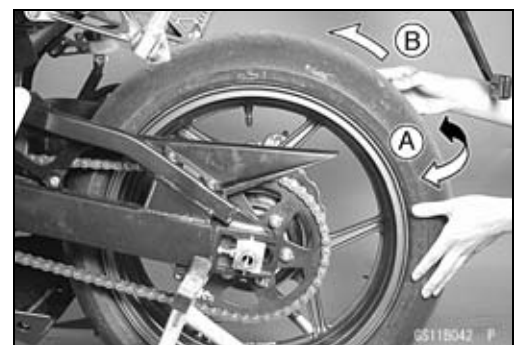
To ensure safe handling and stability, use only the recommended standard tires for replacement, inflated to the standard pressure.

NOTE

- Most countries may have their own regulations a minimum tire tread depth: be sure to follow them.
- Check and balance the wheel when a tire is replaced with a new one.

Wheel Bearing Damage Inspection

- Using a jack and attachment, raise the front wheel off the ground (see Front Wheel Removal in the Wheels/Tires chapter).
 - Turn the handlebar all the way to the right or left.
 - Inspect the roughness of the front wheel bearing by pushing and pulling [A] the wheel.
 - Spin [B] the front wheel lightly, and check for smoothly turn, roughness, binding or noise.
 - ★ If roughness, binding or noise is found, remove the front wheel and inspect the wheel bearing (see Front Wheel Removal, Hub Bearing Inspection in the Wheels/Tires chapter).
- Using a stand, raise the rear wheel off the ground (see Rear Wheel Removal in the Wheels/Tires chapter).
 - Inspect the roughness of the rear wheel bearing by pushing and pulling [A] the wheel.
 - Spin [B] the rear wheel lightly, and check for smoothly turn, roughness, binding or noise.
 - ★ If roughness, binding or noise is found, remove the rear wheel and inspect the wheel bearing (see Rear Wheel Removal, Hub Bearing Inspection in the Wheels/Tires chapter) and coupling (see Coupling Bearing Inspection in the Final Drive chapter).



2-32 PERIODIC MAINTENANCE

Maintenance Procedure

Drive Train

Drive Chain Lubrication Condition Inspection

- If a special lubricant is not available, a heavy oil such as SAE 90 is preferred to a lighter oil because it will stay on the chain longer and provide better lubrication.
- If the chain appears especially dirty, clean it before lubrication.

CAUTION

The O-rings between the side plates seal in the lubricant between the pin and the bushing. To avoid damaging the O-rings and resultant loss of lubricant, observe the following rules.

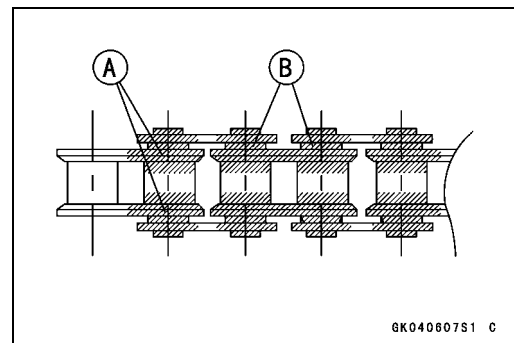
Use only kerosene or diesel oil for cleaning of the O-ring of the drive chain.

Any other cleaning solution such as gasoline or trichloroethylene will cause deterioration and swelling of the O-ring.

Immediately blow the chain dry with compressed air after cleaning.

Complete cleaning and drying the chain within 10 minutes.

- Apply oil to the sides of the rollers so that oil will penetrate to the rollers and bushings. Apply the oil to the O-rings so that the O-rings will be coated with oil.
- Wipe off any excess oil.
 - Oil Applied Areas [A]
 - O-ring [B]



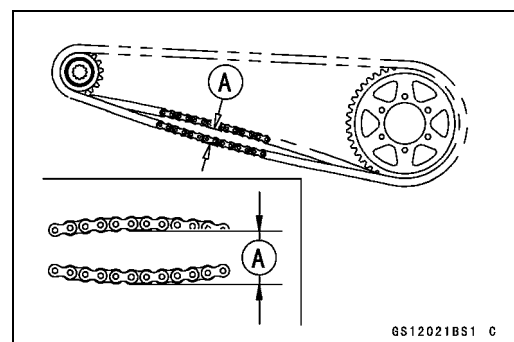
Drive Chain Slack Inspection

NOTE

- Check the slack with the motorcycle setting on its side stand.
- Clean the chain if it is dirty, and lubricate it if it appears dry.
- Check the wheel alignment (see Wheel Alignment Inspection in this chapter).
- Rotate the rear wheel to find the position where the chain is tightest.
- Measure the vertical movement (chain slack) [A] midway between the sprockets.
- ★ If the chain slack exceeds the standard, adjust it.

Chain Slack

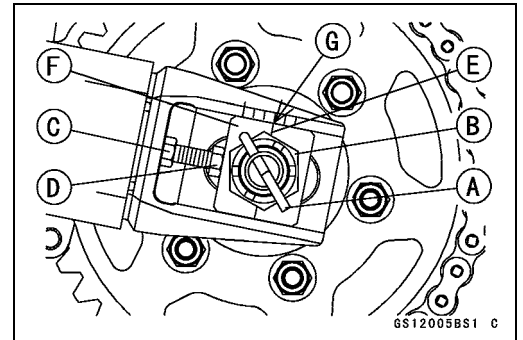
Standard: 30 ~ 35 mm (1.2 ~ 1.4 in.)



Maintenance Procedure

Drive Chain Slack Adjustment

- Remove the cotter pin [A], and loosen the axle nut [B].
- Loosen the both chain adjuster locknuts [C].
- ★ If the chain is too loose, turn out the left and right chain adjuster [D] evenly.
- ★ If the chain is too tight, turn in the left and right chain adjusters evenly, and kick the wheel forward.
- Turn both chain adjusters evenly until the drive chain has the correct amount of slack. To keep the chain and wheel properly aligned, the notch [E] on the left wheel alignment indicator [F] should align with the same swingarm mark or position [G] that the right indicator notch aligns with.



⚠ WARNING

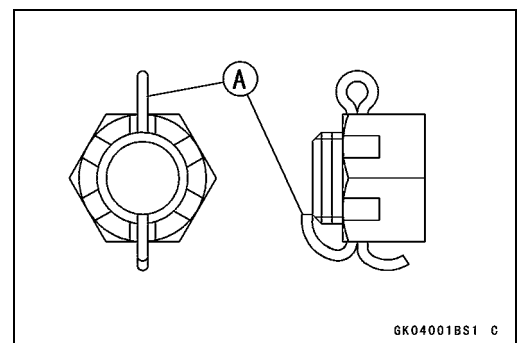
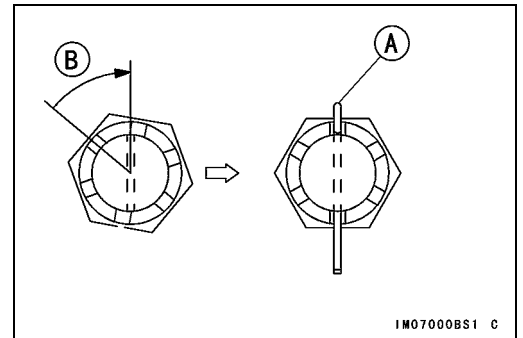
Misalignment of the wheel will result in abnormal wear and may result in an unsafe riding condition.

- Tighten both chain adjuster locknuts securely.
- Tighten the axle nut.
- Torque - Rear Axle Nut: 127 N·m (13 kgf·m, 94 ft·lb)**
- Turn the wheel, measure the chain slack again at the tightest position, and readjust if necessary.
- Insert a new cotter pin into the axle and bend its end securely.
- Insert a new cotter pin [A].

NOTE

- When inserting the cotter pin, if the slots in the nut do not align with the cotter pin hole in the axle, tighten the nut clockwise [B] up to next alignment.
- It should be within 30 degree.
- Loosen once and tighten again when the slot goes past the nearest hole.

- Bend the cotter pin [A] over the nut.



2-34 PERIODIC MAINTENANCE

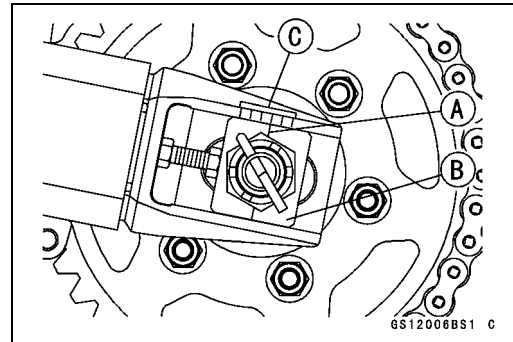
Maintenance Procedure

Wheel Alignment Inspection

- Check that the notch [A] on the left alignment indicator [B] aligns with the same swingarm mark or position [C] that the right alignment indicator notch aligns with.
- ★ If they do not, adjust the chain slack and align the wheel alignment (see Drive Chain Slack Adjustment in this chapter).

NOTE

○ Wheel alignment can be also checked using the straightedge or string method.

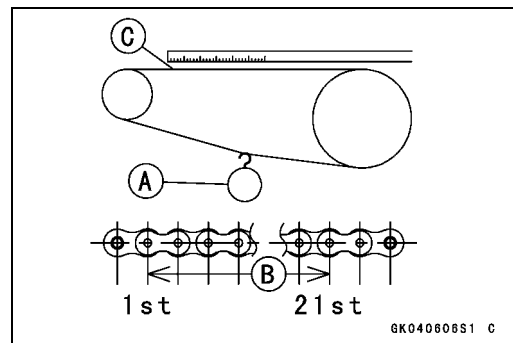


⚠ WARNING

Misalignment of the wheel will result in abnormal wear, and may result in an unsafe riding condition.

Drive Chain Wear Inspection

- Remove:
 - Chain Cover (see Drive Chain Removal in the Final Drive chapter)
- Rotate the rear wheel to inspect the drive chain for damaged rollers, and loose pins and links.
- ★ If there is any irregularity, replace the drive chain.
- ★ Lubricate the drive chain if it appears dry.
- Stretch the chain taut by hanging a 98 N (10 kg, 20 lb) weight [A] on the chain.
- Measure the length of 20 links [B] on the straight part [C] of the chain from the pin center of the 1st pin to the pin center of the 21st pin. Since the chain may wear unevenly, take measurements at several places.
- ★ If any measurements exceed the service limit, replace the chain. Also, replace the front and rear sprockets when the drive chain is replaced.



Drive Chain 20-link Length

Standard: 317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)

Service Limit: 323 mm (12.7 in.)

⚠ WARNING

If the drive chain wear exceeds the service limit, replace the chain or an unsafe riding condition may result. A chain that breaks or jumps off the sprockets could snag on the engine sprocket or lock the rear wheel, severely damaging the motorcycle and causing it to go out of control.

For safety, use only the standard chain. It is an endless type and should not be cut for installation.

Standard Chain

Make: ENUMA

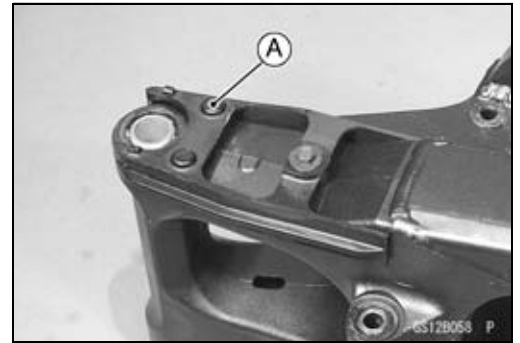
Type: EK520MVXL

Link: 110 links

Maintenance Procedure

Chain Guide Wear Inspection

- Remove:
 - Swingarm (see Swingarm Removal in the Suspension chapter)
- Visually inspect the chain guide [A].
- ★ Replace the chain guide if it shows any signs of abnormal wear or damage.



Brake System

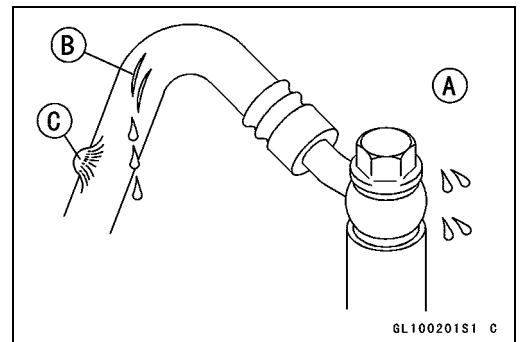
Brake Fluid Leak (Brake Hose and Pipe) Inspection

- Apply the brake lever or pedal and inspect the brake fluid leak from the brake hoses [A] and fittings.
- ★ If the brake fluid leaked from any position, inspect or replace the problem part.



Brake Hose Damage and Installation Condition Inspection

- Inspect the brake hoses and fittings for deterioration, cracks and signs of leakage.
- The high pressure inside the brake line can cause fluid to leak [A] or the hose to burst if the line is not properly maintained. Bend and twist the rubber hose while examining it.
- ★ Replace the hose if any crack [B], bulge [C] or leakage is noticed.
- ★ Tighten any brake hose banjo bolts.



Torque - Brake Hose Banjo Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)

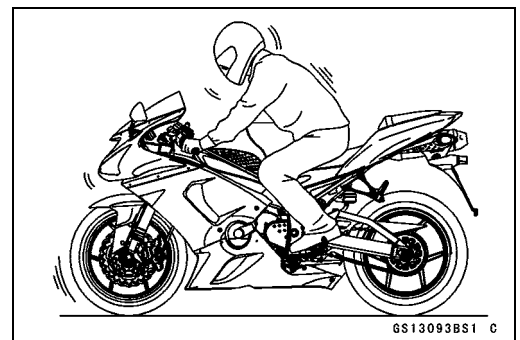
- Inspect the brake hose routing.
- ★ If any brake hose routing is incorrect, route the brake hose according to Cable, Wire, and Hose Routing section in the Appendix chapter.

Brake Operation Inspection

- Inspect the operation of the front and rear brake by running the vehicle on the dry road.
- ★ If the brake operation is insufficiency, inspect the brake system.

⚠ WARNING

When inspecting by running the vehicle, note a surrounding traffic situation enough in the place of safety.



2-36 PERIODIC MAINTENANCE

Maintenance Procedure

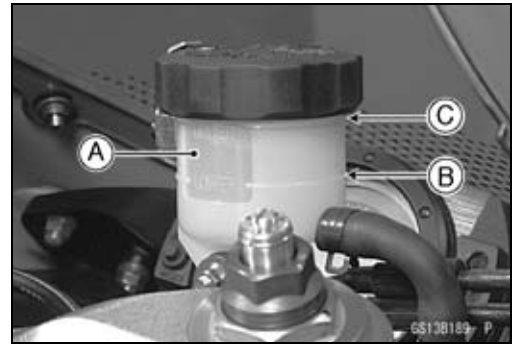
Brake Fluid Level Inspection

- Check that the brake fluid level in the front brake reservoir [A] is above the lower level line [B].

NOTE

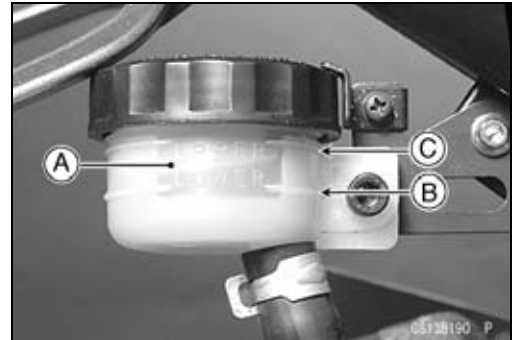
○ Hold the reservoir horizontal by turning the handlebar when checking brake fluid level.

- ★ If the fluid level is lower than the lower level line, fill the reservoir to the upper level line [C].



- Check that the brake fluid level in the rear brake reservoir [A] is above the lower level [B].

- ★ If the fluid level is lower than the lower level line, fill the reservoir to the upper level line [C].



⚠ WARNING

Change the brake fluid in the brake line completely if the brake fluid must be refilled but the type and brand of the brake fluid that is already in the reservoir are unidentified. After changing the fluid, use only the same type and brand of fluid thereafter.

Recommended Disc Brake Fluid

Grade: DOT4

Brake Pad Wear Inspection

- Remove the brake pads (see Front/Rear Brake Pad Removal in the Brakes chapter).
- Check the lining thickness [A] of the pads in each caliper.
- ★ If the lining thickness of either pad is less than the service limit [B], replace both pads in the caliper as a set.

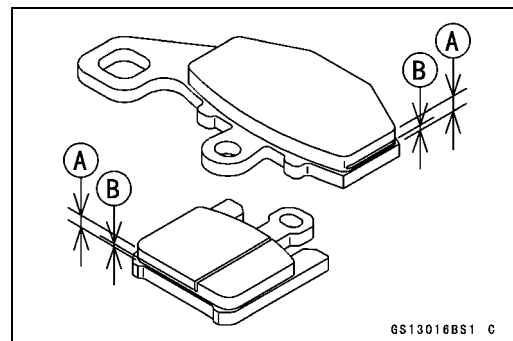
Pad Lining Thickness

Standard:

Front 4.0 mm (0.16 in.)

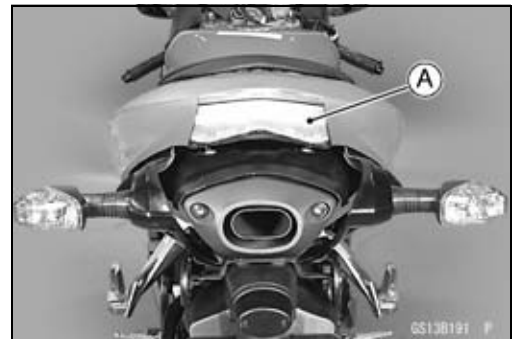
Rear 5.0 mm (0.20 in.)

Service Limit: 1 mm (0.04 in.)



Brake Light Switch Operation Inspection

- Turn on the ignition switch.
- The brake light [A] should go on when the brake lever is applied or after the brake pedal is depressed about 10 mm (0.39 in.).

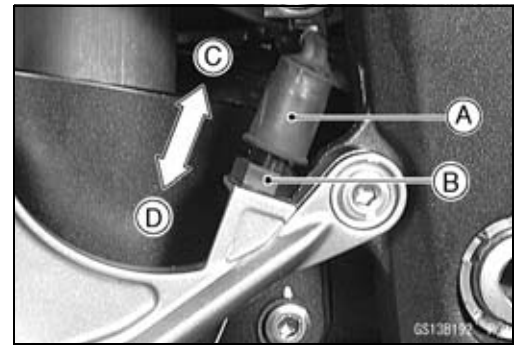


Maintenance Procedure

- ★ If it does not, adjust the brake light switch.
- While holding the switch body, turn the adjusting nut to adjust the switch.
 - Switch Body [A]
 - Adjusting Nut [B]
 - Light sooner as the body rises [C]
 - Light later as the body lowers [D]

CAUTION

To avoid damaging the electrical connections inside the switch, be sure that the switch body does not turn during adjustment.



- ★ If it does not go on, inspect or replace the following items.
 - Battery (see Charging Condition Inspection in the Electrical System chapter)
 - Brake Light (see Tail/Brake Light Removal in the Electrical System chapter)
 - Main Fuse 30 A and Taillight Fuse 10 A (see Fuse Inspection in the Electrical System chapter)
 - Front Brake Light Switch [A] (see Switch Inspection in the Electrical System chapter)
 - Rear Brake Light Switch (see Switch Inspection in the Electrical System chapter)
 - Harness (see Wiring Inspection in the Electrical System chapter)



Suspensions

Front Forks/Rear Shock Absorber Operation Inspection

- Pump the forks down and up [A] 4 or 5 times, and inspect the smooth stroke.
 - ★ If the forks do not smoothly or noise is found, inspect the fork oil level or fork clamps (see Front Fork Oil Change in the Suspension chapter).
-
- Pump the seat down and up [A] 4 or 5 times, and inspect the smooth stroke.
 - ★ If the shock absorber does not smoothly stroke or noise is found, inspect the oil leak or shock absorber clamps (see Rear Shock Absorber Oil Leak Inspection in this chapter).



2-38 PERIODIC MAINTENANCE

Maintenance Procedure

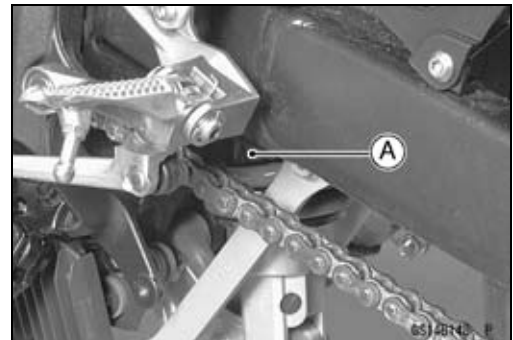
Front Fork Oil Leak Inspection

- Visually inspect the front forks [A] for oil leakage.
- ★ Replace or repair any defective parts, if necessary.



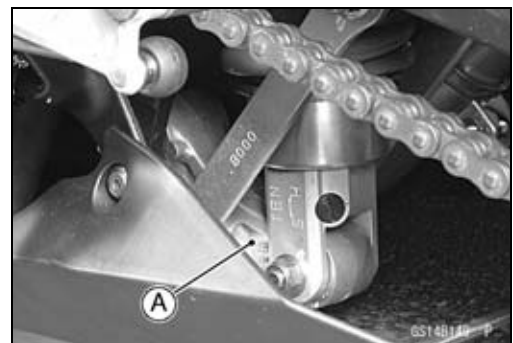
Rear Shock Absorber Oil Leak Inspection

- Visually inspect the shock absorber [A] for oil leakage.
- ★ If the oil leakage is found on it, replace the shock absorber with a new one.



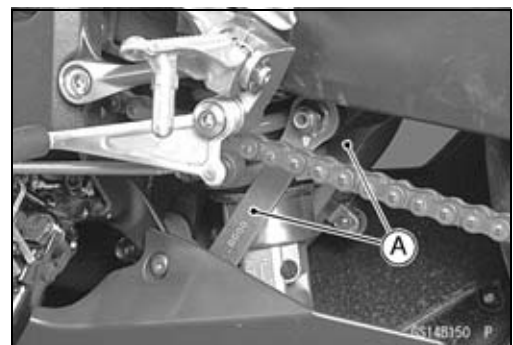
Rocker Arm Operation Inspection

- Remove the lower fairings (see Lower Fairing Removal in the Frame chapter).
- Pump the seat down and up 4 or 5 times, and inspect the smooth stroke.
- ★ If the rocker arm [A] does not smoothly stroke or noise is found, inspect the fasteners and bearings (see Rocker Arm/Tie-Rod Bearing, Sleeve Inspection in the Suspension chapter).



Tie-Rod Operation Inspection

- Remove the lower fairings (see Lower Fairing Removal in the Frame chapter).
- Pump the seat down and up 4 or 5 times, and inspect the smooth stroke.
- ★ If the tie-rods [A] do not smoothly stroke or noise is found, inspect the fasteners and tie-rod bearings (see Rocker Arm/Tie-Rod Bearing, Sleeve Inspection in the Suspension chapter).





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