MODEL APPLICATION

Year	Model	Beginning Frame No.
2007	ZX600P7F	JKAZX4P1□7A000001 JKAZX600PPA000001 ZX600P-000001
2008	ZX600P8F	JKAZX4P1□8A035001 JKAZX600PPA035001 ZX600P-035001

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

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

Part No.99924-1382-02

Printed in Japan

Kawasaki

Ninja ZX-6R

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

AU	Australia	WVTA	Whole Vehicle Type Approval
CA	Canada	WVTA (FULL H)	WVTA Model with Honeycomb Catalytic Converter (Full Power)
CAL	California	GB WVTA (FULL H)	WVTA Model with Honeycomb Catalytic Converter (Left Side Traffic Full Power)
EUR	Europe	WVTA (78.2 H):	WVTA Model with Honeycomb Catalytic Converter (78.2 Kw Power)
MY	Malaysia		
US	United States		

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

⚠ WARNING

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

CAUTION

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

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

NOTE

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

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

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

General Information

Table of Contents

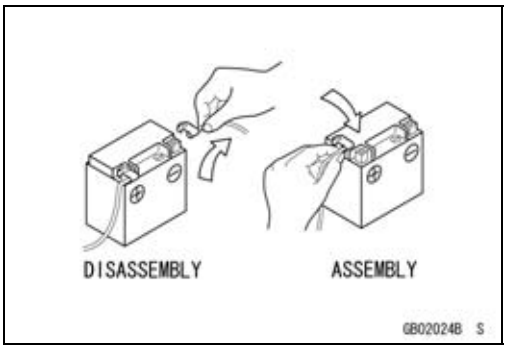
Before Servicing

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

Especially note the following.

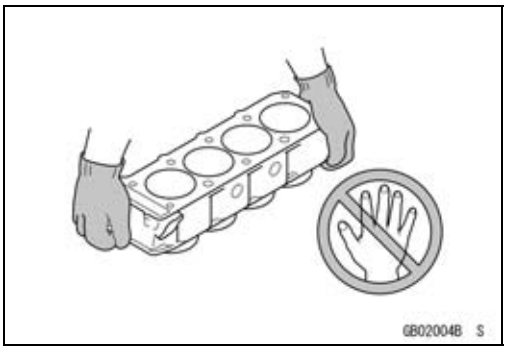
Battery Ground

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



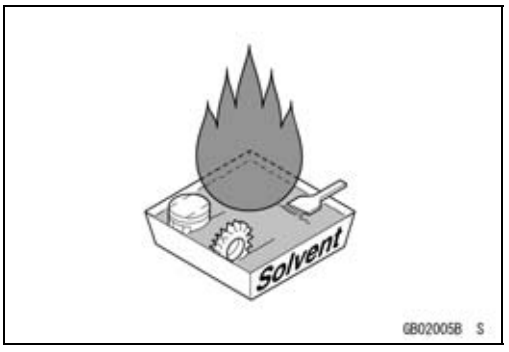
Edges of Parts

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



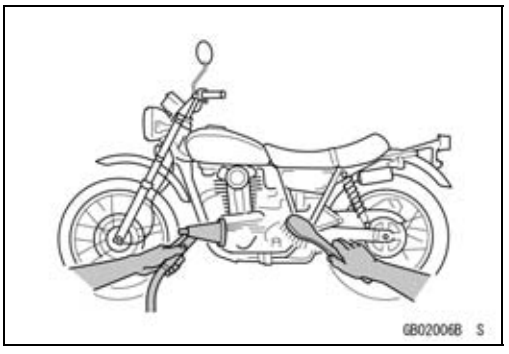
Solvent

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



Cleaning vehicle before disassembly

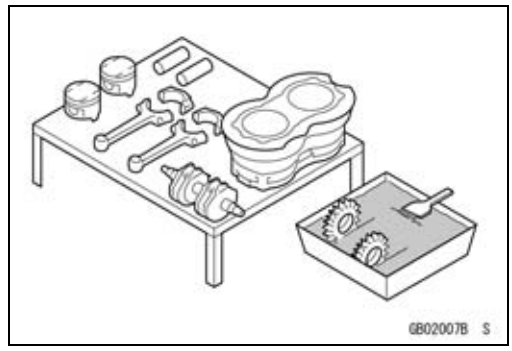
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

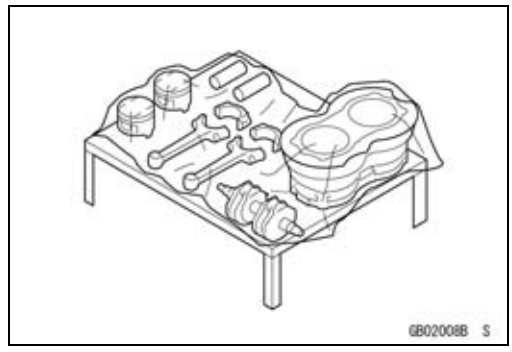
Arrangement and Cleaning of Removed Parts

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



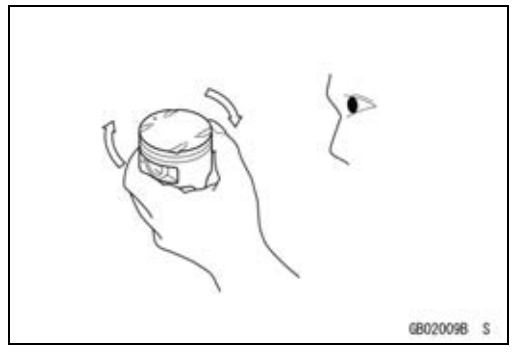
Storage of Removed Parts

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



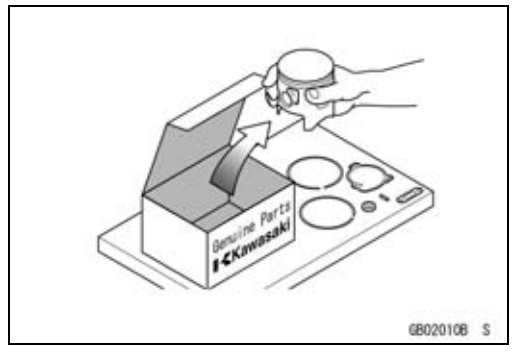
Inspection

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



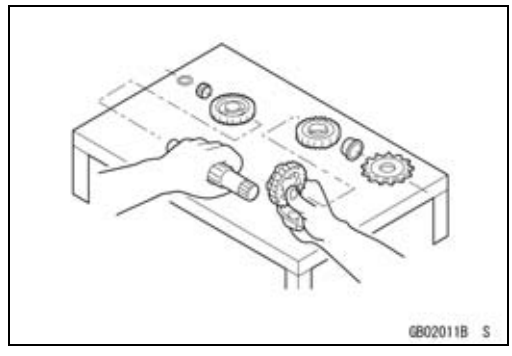
Replacement Parts

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



Assembly Order

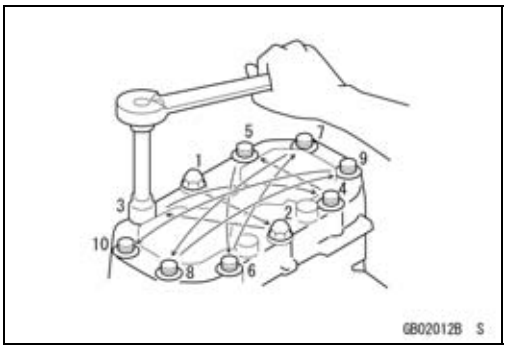
In most cases assembly order is the reverse of disassembly, however, if assembly order is provided in this Service Manual, follow the procedures given.



Before Servicing

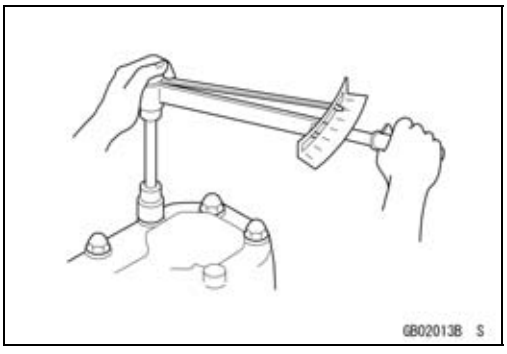
Tightening Sequence

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.



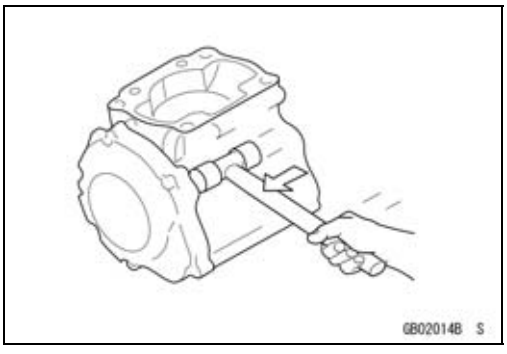
Tightening Torque

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.



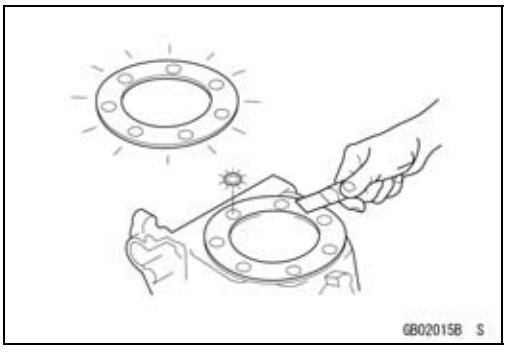
Force

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.



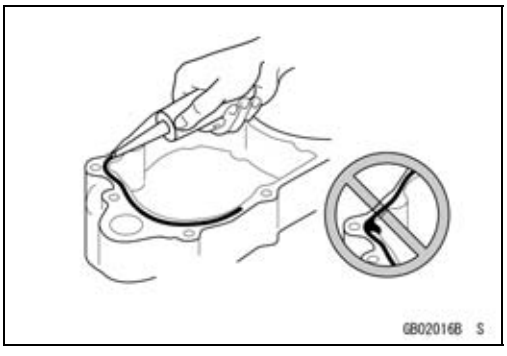
Gasket, O-ring

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

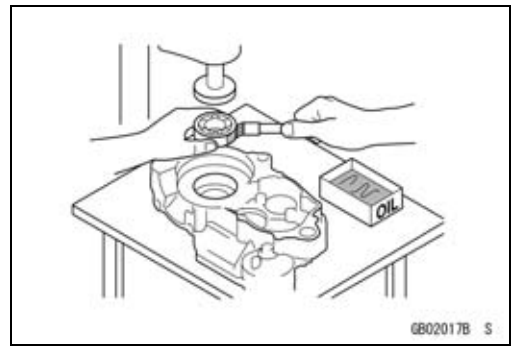
For applications that require Liquid Gasket or a Non-Permanent Locking Agent, clean the surfaces so that no oil residue remains before applying liquid gasket or non-permanent locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Before Servicing

Press

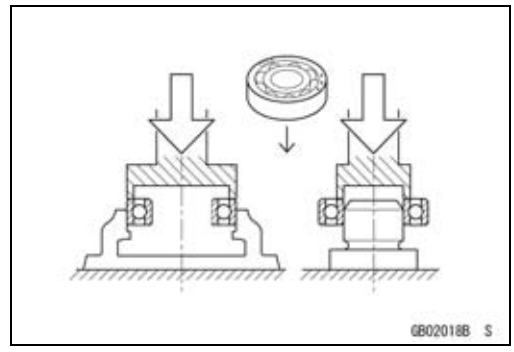
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



Ball Bearing and Needle Bearing

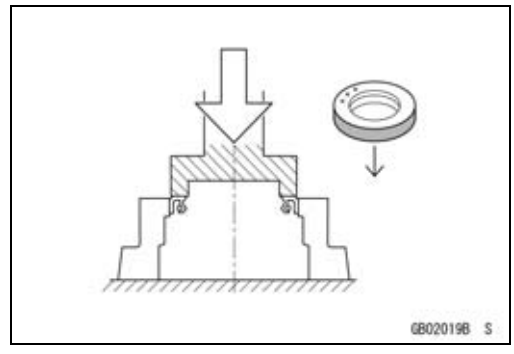
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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

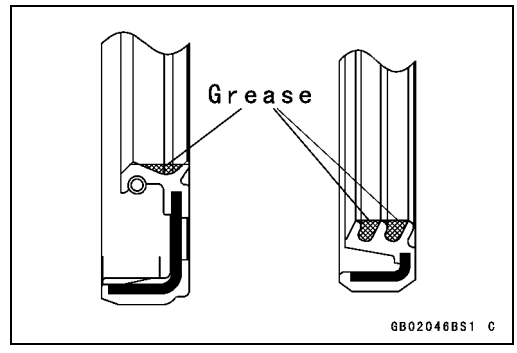


Oil Seal, Grease Seal

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.

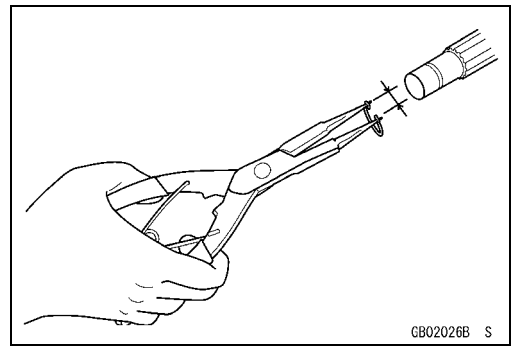


Apply specified grease to the lip of seal before installing the seal.



Circlips, Cotter Pins

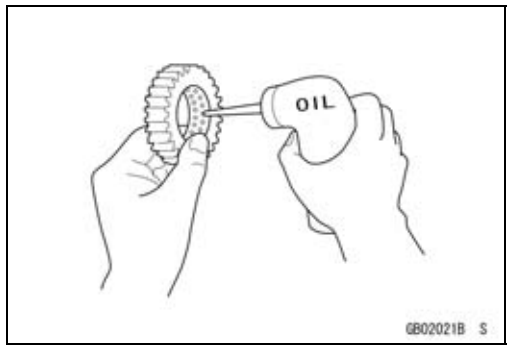
Replace the circlips or cotter pins that were removed with new ones. Take care not to open the clip excessively when installing to prevent deformation.



Before Servicing

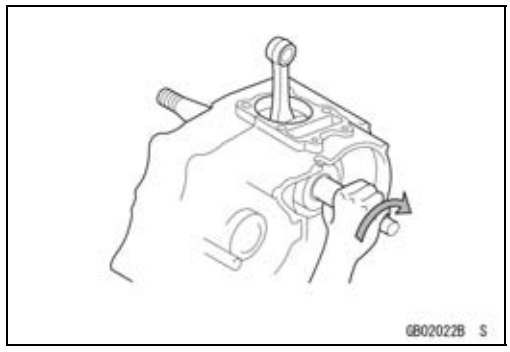
Lubrication

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.



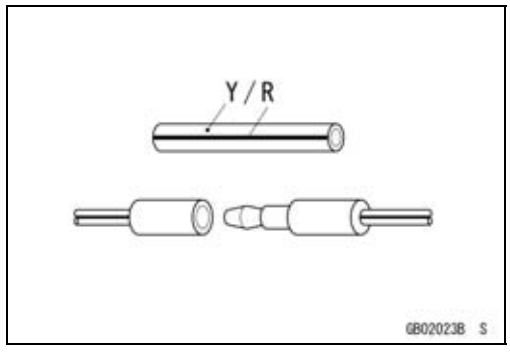
Direction of Engine Rotation

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).



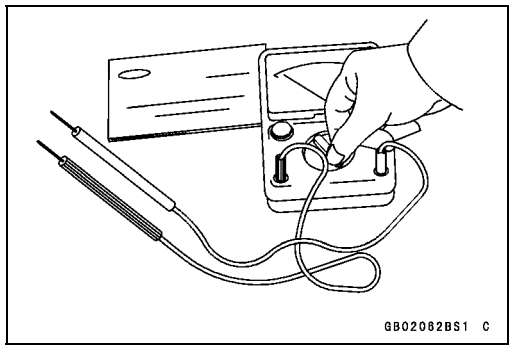
Electrical Wires

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.

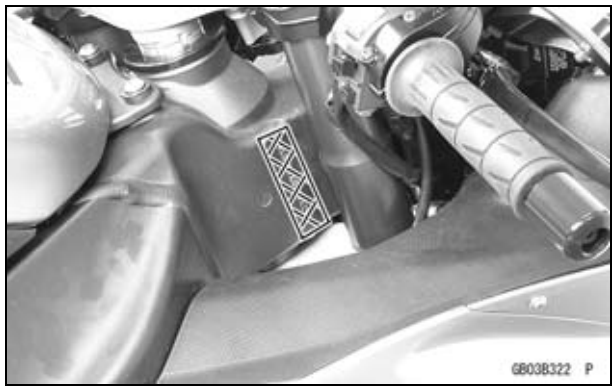


Model Identification

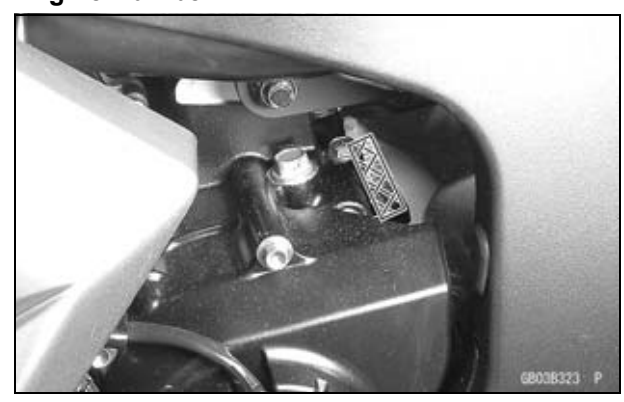
ZX600P7F (Europe) Left Side View

ZX600P7F (Europe) Right Side View

Frame Number



Engine Number



Model Identification

ZX600P7F (US and Canada) Left Side View

ZX600P7F (US and Canada) Right Side View

General Specifications

Items	ZX600P7F ~
Dimensions	
Overall Length	2 105 mm (82.9 in.)
Overall Width	720 mm (28.3 in.)
Overall Height	1 125 mm (44.3 in.)
Wheelbase	1 405 mm (55.3 in.)
Road Clearance	125 mm (4.7 in.)
Seat Height	820 mm (32.3 in.)
Dry Mass	167 kg (368 lb)
Curb Mass:	
Front	101 kg (223 lb)
Rear	99 kg (218 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 × 42.5 mm (2.6 × 1.7 in.)
Displacement	599 mL (36.6 cu in.)
Compression Ratio	13.3 : 1
Maximum Horsepower	91.9 kW (125 PS) @14 000 r/min (rpm), WVTA (78.2 H) 78.2 kW (106 PS) @14 000 r/min (rpm), (MY) 80.0 kW (109 PS) @12 000 r/min (rpm), (CA), (CAL), (US) – – –
Maximum Torque	66.0 N·m (6.7 kgf·m, 49 ft·lb) @11 700 r/min (rpm), WVTA (78.2 H) 58.4 N·m (6.0 kgf·m, 43 ft·lb) @11 700 r/min (rpm), (MY) 64 N·m (6.5 kgf·m, 47 ft·lb) @12 000 r/min (rpm) (CA), (CAL), (US) – – –
Carburetion System	FI (Fuel injection) Primary: KEIHIN TTK 38 × 4 Secondary: KEIHIN Multihole (8 holes) × 4
Starting System	Electric starter
Ignition System	Battery and coil (transistorized)
Timing Advance	Electronically advanced (digital igniter in ECU)
Ignition Timing	From 12.5° BTDC @1 300 r/min (rpm)
Spark Plug	NGK CR9E
Cylinder Numbering Method	Left to right, 1-2-3-4
Firing Order	1-2-4-3
Valve Timing:	
Inlet:	
Open	41° BTDC
Close	67° ATDC
Duration	288°
Exhaust:	
Open	63° BBDC
Close	23° ABDC

General Specifications

Items	ZX600P7F ~
Duration	266°
Lubrication System	Forced lubrication (wet sump with cooler)
Engine Oil:	
Type	API SE, SF or SG API SH, SJ or SL with JASO MA
Viscosity	SAE10W-40
Capacity	3.8 L (4.0 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	2.714 (38/14)
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 @Top gear
Frame	
Type	Tubular, diamond
Caster (Rake Angle)	25°
Trail	110 mm (4.3 in.)
Front Tire:	
Type	Tubeless
Size	120/70 ZR17 M/C (58 W)
Rear Tire:	
Type	Tubeless
Size	180/55 ZR17 M/C (73 W)
Rim Size:	
Front	17 × 3.50
Rear	17 × 5.50
Front Suspension:	
Type	Telescopic fork (upside-down)
Wheel Travel	120 mm (4.7 in.)
Rear Suspension:	
Type	Swingarm (uni-trak)
Wheel Travel	133 mm (5.2 in.)

General Specifications

Items	ZX600P7F ~
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 + 65 W (quartz-halogen)
Low	12 V 55 W (quartz-halogen)
Tail/Brake Light	12 V 0.1/1.6 W (LED)
Alternator:	
Type	Three-phase AC
Rated Output	31 A/14 V @5 000 r/min (rpm)

Specifications 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

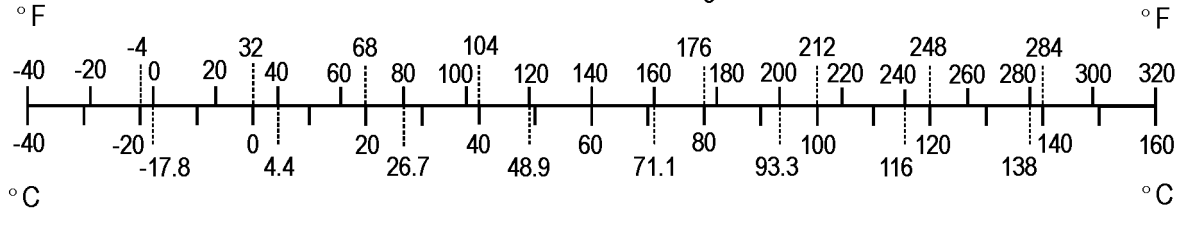
km/h	×	0.6214	=	mph

Units of Power

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

Units of Temperature

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



Periodic Maintenance

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Periodic Maintenance Chart

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

Periodic Inspection

FREQUENCY / ITEM	Whichever comes first ➡ / ⬇ Every	* ODOMETER READING × 1 000 km (× 1 000 mile) 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	●		●		●		●	
Engine vacuum synchronization-inspect				●		●		●	
Idle speed-inspect		●		●		●		●	
Fuel leak (fuel hose and pipe)-inspect	year	●		●		●		●	
Fuel hose and pipe damage-inspect	year	●		●		●		●	
Fuel hose and pipe installation condition-inspect	year	●		●		●		●	
Evaporative emission control system function (California)-inspect		●	●	●	●	●	●	●	
Cooling System									
Coolant level-inspect		●		●		●		●	
Coolant leak (radiator hose and pipe)-inspect	year	●		●		●		●	
Radiator hose damage-inspect	year	●		●		●		●	
Radiator hose installation condition -inspect	year	●		●		●		●	
Engine Top End									
Valve clearance-inspect **(United States and Canada Models)**						●			
Valve clearance-inspect **(Other than United States and Canada Models)**		Every 42 000 km (26 000 mile)							
Air suction system damage-inspect				●		●		●	
Clutch									
Clutch operation (play, disengagement, engagement)-inspect		●		●		●		●	
Wheels and Tires									
Tire air pressure-inspect	year			●		●		●	
Wheel/tire damage-inspect				●		●		●	
Tire tread wear, abnormal wear-inspect				●		●		●	
Wheel bearing damage-inspect	year			●		●		●	
Final Drive									
Drive chain lubrication condition-inspect #	Every 600 km (400 mile)								
Drive chain slack-inspect #	Every 1 000 km (600 mile)								
Drive chain wear-inspect #				●		●		●	
Drive chain guide wear-inspect				●		●		●	

2-4 PERIODIC MAINTENANCE

Periodic Maintenance Chart

FREQUENCY / ITEM	Whichever comes first ➡ / ⬇ Every	* ODOMETER READING × 1 000 km (× 1 000 mile) 1 (0.6)	6 (4)	12 (7.5)	18 (12)	24 (15)	30 (20)	36 (24)	
Brakes									
Brake fluid leak (brake hose and pipe)-inspect	year	●	●	●	●	●	●	●	
Brake hose and pipe damage-inspect	year	●	●	●	●	●	●	●	
Brake pad wear-inspect #			●	●	●	●	●	●	
Brake hose installation condition-inspect	year	●	●	●	●	●	●	●	
Brake fluid level-inspect	6 months	●	●	●	●	●	●	●	
Brake operation (effectiveness, play, no drag)-inspect	year	●	●	●	●	●	●	●	
Brake light switch operation-inspect		●	●	●	●	●	●	●	
Suspension									
Front forks/rear shock absorber operation (damping and smooth stroke)-inspect				●		●		●	
Front forks/rear shock absorber oil leak-inspect	year			●		●		●	
Rocker arm operation-inspect				●		●		●	
Tie-Rods operation-inspect				●		●		●	
Steering									
Steering play-inspect	year	●		●		●		●	
Steering stem bearings-lubricate	2 years					●			
Electrical System									
Lights and switches operation-inspect	year			●		●		●	
Headlight aiming-inspect	year			●		●		●	
Side stand switch operation-inspect	year			●		●		●	
Engine stop switch operation-inspect	year			●		●		●	
Others									
Chassis parts-lubricate	year			●		●		●	
Bolts and nuts tightness-inspect		●		●		●		●	

*: 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 Chart

Periodic Replacement Parts

FREQUENCY / ITEM	Whichever come first ➡ / Every ⬇	* ODOMETER READING × 1 000 km (× 1 000 mile)					
		1 (0.6)	12 (7.5)	24 (15)	36 (24)	48 (30)	
Air cleaner element - replace#	Every 18 000 km (12 000 mile)						
Fuel hose - replace	4 years					●	
Coolant - change	3 years				●		
Radiator hose and O-ring - replace	3 years				●		
Engine oil - change#	year	●	●	●	●	●	
Oil filter - replace	year	●	●	●	●	●	
Brake hose and pipe - replace	4 years					●	
Brake fluid - change	2 years			●		●	
Rubber parts of master cylinder and caliper - replace	4 years					●	
Spark plug - replace			●	●	●	●	

*: 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 oil solution.
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				
Air Cleaner Housing Screws	1.1	0.11	9.7 in·lb	
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	9.8	1.0	87 in·lb	L
Camshaft Position Sensor Bolt	9.8	1.0	87 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 Pump Bolts	9.8	1.0	87 in·lb	L, S
Nozzle Assy Mounting Bolts	6.9	0.70	61 in·lb	
Nozzle Assy Fuel Hose Screw	4.9	0.50	43 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	106 in·lb	L
Throttle Cable Holder Plate Bolt	3.9	0.40	35 in·lb	L
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	20	2.0	15	
Radiator Bracket Mounting Bolt	9.8	1.0	87 in·lb	
Radiator Lower Bolt	6.9	0.70	61 in·lb	
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	2.0	0.20	17 in·lb	
Water Hose Fitting Bolts (Cylinder)	9.8	1.0	87 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Water Pump Cover Bolts	12	1.2	106 in·lb	L
Water Temperature Sensor	25	2.5	18	SS
Engine Top End				
Air Suction Valve Cover Bolts	9.8	1.0	87 in·lb	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	
Cam Sprocket Mounting Bolts	15	1.5	11	L
Cylinder Head Bolts (M9)	39	4.0	29	MO, S
Cylinder Head Bolts (M6)	12	1.2	106 in·lb	S
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	
Exhaust Butterfly Valve Actuator Mounting Nuts	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	13	
Exhaust Manifold Holder Nuts	17	1.7	13	
Exhaust Pipe Mounting Bolt	28	2.8	21	
Exhaust Manifold Holder Studs	–	–	–	(stopped)
Front Camshaft Chain Guide Bolt (Lower)	12	1.2	106 in·lb	
Front Camshaft Chain Guide Bolt (Upper)	25	2.5	18	
Muffler Body Clamp Bolt	17	1.7	12	
Muffler Body Mounting Bolts	28	2.8	21	
Muffler Rear Cover Bolts	6.9	0.70	61 in·lb	
Muffler Slide Cover Bolts	6.9	0.70	61 in·lb	
Muffler Upper Cover Bolts	6.9	0.70	61 in·lb	
Upper Camshaft Chain Guide Bolt	12	1.2	106 in·lb	
Spark Plugs	13	1.3	113 in·lb	
Oxygen Sensors	25	2.5	18	
Throttle Body Assy Holder Clamp Bolts	2.9	0.30	26 in·lb	
Throttle Body Holder Bolts	12	1.2	106 in·lb	L
Water Passage Plugs	20	2.0	15	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	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	
Sub Clutch Hub Bolts	25	2.5	18	L
Engine Lubrication System				
Oil Filler Cap	2.0	0.20	17 in·lb	
Air Bleed Bolt	9.8	1.0	87 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Engine Oil Drain Bolt	29	3.0	22	
Oil Cooler/Oil Filter Case Mounting Bolts	20	2.0	15	L
Oil Pump Gear Bolt	9.8	1.0	87 in·lb	L
Oil Cooler Mounting Bolts	20	2.0	15	
Oil Filter	31	3.2	23	G, R
Oil Filter Guard Bolts	4.0	0.41	35 in·lb	L
Oil Filter Holder Bolt	25	2.5	18	L
Oil Pan Bolts	9.8	1.0	87 in·lb	S
Oil Passage Nozzle	4.9	0.50	43 in·lb	
Oil Passage Plugs (Taper)	20	2.0	15	L
Oil Passage Plug (Left Side)	17	1.7	13	
Oil Pressure Relief Valve	15	1.5	11	L
Oil Pressure Switch	15	1.5	11	SS
Oil Pressure Switch Terminal Bolt	–	–	–	Hand-tighten
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
Adjusting Collar	9.8	1.0	87 in·lb	S
Lower Engine Mounting Nut	44	4.5	33	S
Middle Engine Mounting Bracket Bolt	25	2.5	18	S
Middle Engine Mounting Nut	44	4.5	33	S
Upper Engine Mounting Bolts	44	4.5	33	S
Crankshaft/Transmission				
Breather Plate Bolts	9.8	1.0	87 in·lb	L
Connecting Rod Big End Nuts	see the text	see the text	see the text	MO
Crankcase Bolts (M8) (Lower) (First)	15	1.5	11	MO, S
Crankcase Bolts (M8) (Lower) (Final)	31	3.2	23	MO, S
Crankcase Bolts (M6, L = 50 mm) (Lower)	12	1.2	104 in·lb	S
Gear Position Switch Screws	2.9	0.30	26 in·lb	L
Crankcase Bolt (M8, L = 90 mm) (Upper)	27	2.8	20	S
Crankcase Bolts (M8, L = 75 mm) (Upper)	27	2.8	20	S
Crankcase Bolts (M6, L = 68 mm) (Upper)	12	1.2	104 in·lb	S
Transmission Case Bolts (M8)	20	2.0	15	
Transmission Case Bolts (M6)	9.8	1.0	87 in·lb	
Piston Oil Nozzles	2.9	0.30	26 in·lb	
Gear Positioning Lever Bolt	12	1.2	104 in·lb	
Oil Passage Plugs (Taper Side)	20	2.0	15	L
Oil Passage Plug (Left Side)	17	1.7	13	
Oil Pressure Switch	15	1.5	11	SS
Fitting (breather)	15	1.5	11	L
Oil Passage Nozzle	4.9	0.50	43 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Oil Pressure Switch Terminal Bolt	–	–	–	Hand-tighten
Bearing Holder Screws	4.9	0.50	43 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
Shift Tie-Rod Locknuts	6.9	0.70	61 in·lb	
Starter Clutch Bolt	49	5.0	36	
Starter Clutch Bolt Cap	–	–	–	Hand-tighten
Timing Inspection Cap	–	–	–	Hand-tighten
Starter Clutch Cover Bolts	9.8	1.0	87 in·lb	
Idle Gear Cover Bolts	9.8	1.0	87 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	9.8	1.0	87 in·lb	
Engine Sprocket Nut	125	13	92	MO
Rear Sprocket Nuts	59	6.0	43	
Chain Guide Bolts (Front)	9.8	1.0	87 in·lb	L
Chain Guide Bolt (Rear)	4.9	0.50	43 in·lb	L
Brakes				
Caliper Bleed Valves	7.8	0.80	69 in·lb	
Brake Hose Banjo Bolts	25	2.5	18	
Brake Lever Pivot Bolt	1.0	0.10	9 in·lb	Si
Brake Lever Pivot Bolt Locknut	5.9	0.60	52 in·lb	
Brake Pedal Bolt	8.8	0.90	78 in·lb	
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	17	1.7	13	
Front Caliper Assembly Bolts	27	2.8	20	
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	11	1.1	97 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	34	3.5	25	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Front Fork Clamp Bolts (Lower)	25	2.5	18	AL
Front Fork Clamp Bolts (Upper)	20	2.0	15	
Front Fork Top Plugs	34	3.5	25	
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	S
Swingarm Pivot Adjusting Collar Locknut	98	10	72	S
Swingarm Pivot Shaft Nut	108	11	81	S
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				
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	44	4.5	32	L
Sidestand Bolt	44	4.5	32	G
Sidestand Bracket Bolts	49	5.0	36	L
Sidestand Switch Bolt	8.8	0.90	78 in·lb	L
Windshield Mounting Bolts	0.4	0.04	4 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	16	115	
Camshaft Position Sensor Bolt	9.8	1.0	87 in·lb	
Crankshaft Sensor Bolts	5.9	0.60	52 in·lb	
Cylinder Head Cover Ground Bolt	9.8	1.0	87 in·lb	
Front Brake Light Switch Screw	1.2	0.12	10 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 Plate Light Cover Screws	0.9	0.09	8 in·lb	
Licence Plate Mounting Screws	1.2	0.12	10 in·lb	
Meter Mounting Screws	1.2	0.12	10 in·lb	
Gear Position Switch Screws	2.9	0.30	26 in·lb	L

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
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	
Regulator/Rectifier Bracket Nuts	6.9	0.70	61 in·lb	
Side Stand Switch Bolt	8.8	0.90	78 in·lb	L
Spark Plugs	13	1.3	113 in·lb	
Speed Sensor Bolt	6.9	0.70	61 in·lb	L
Stator Coil Bolts	12	1.2	106 in·lb	L
Starter Motor Cable Terminal Bolt	2.9	0.30	26 in·lb	
Starter Clutch Bolt	49	5.0	36	
Starter Motor Mounting Bolts	9.8	1.0	87 in·lb	
Starter Relay Cable Terminal Bolts	4.0	0.41	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	
Vehicle-down Sensor Bolts	5.9	0.60	52 in·lb	
Water Temperature Sensor	25	2.5	18	SS
Idle Gear Cover Bolts	9.8	1.0	87 in·lb	
Starter Clutch Cover Bolts	9.8	1.0	87 in·lb	
Starter Clutch Bolt Cap	–	–	–	Hand-tighten
Timing Inspection Cap	–	–	–	Hand-tighten

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

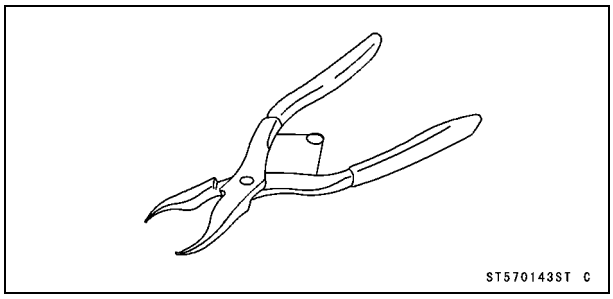
Item	Standard	Service Limit
Fuel System (DFI)		
Throttle Grip Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	– – –
Idle Speed	1 300 ±50 r/min (rpm)	– – –
Throttle Body Vacuum	27.3 ±1.333 kPa (205 ±10 mmHg) at idle speed	– – –
Air Cleaner Element	Viscous paper element	– – –
Cooling System		
Coolant:		
Type (Recommended)	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	0.24 ~ 0.31 mm (0.0094 ~ 0.0122 in.)	– – –
Inlet	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 SE, SF or SG API SH, SJ or SL with JASO MA	– – –
Viscosity	SAE 10W-40	– – –
Capacity	2.9 L (3.1 US qt) (when filter is not removed)	– – –
	3.2 L (3.4 US qt) (when filter is removed)	– – –
	3.8 L (4.0 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: 4.8 mm (0.19 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/cm², 36 psi)	– – –
Rear	Up to 180 kg (397 lb) load: 290 kPa (2.9 kgf/cm², 42 psi)	– – –

Specifications

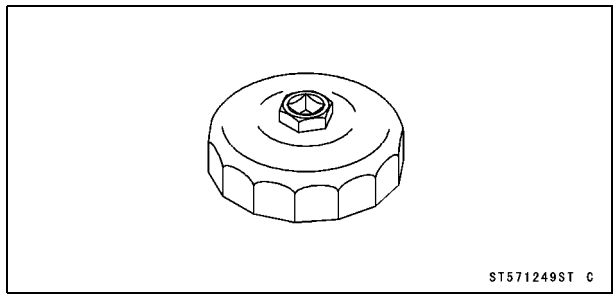
Item	Standard	Service Limit
Final Drive		
Drive Chain Slack	30 ~ 40 mm (1.2 ~ 1.6 in.)	– – –
Drive Chain Wear (20-link Length)	317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)	323 mm (12.7 in.)
Standard Chain:		
Make	ENUMA	– – –
Type	EK520MVXL1	– – –
Link	112 links	– – –
Brakes		
Brake Fluid:		
Grade	DOT4	– – –
Brake Pad Lining Thickness:		
Front	4 mm (0.16 in.)	1 mm (0.04 in.)
Rear	5 mm (0.20 in.)	1 mm (0.04 in.)
Brake Light Timing:		
Front	Pulled ON	– – –
Rear	On after about 10 mm (0.39 in.) of pedal travel	– – –

Special Tools

Inside Circlip Pliers:
57001-143



Oil Filter Wrench:
57001-1249



Steering Stem Nut Wrench:
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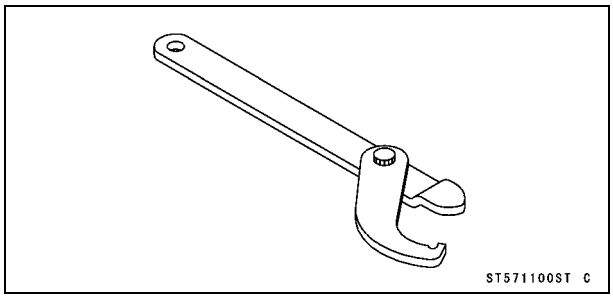
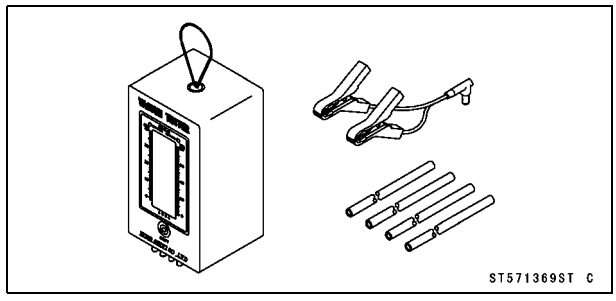
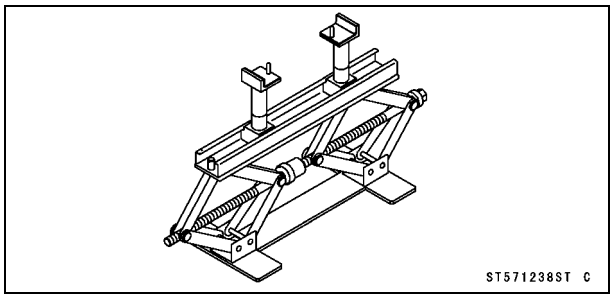


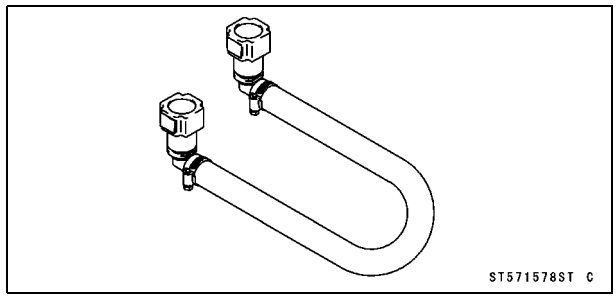
Vacuum Gauge:
57001-1369



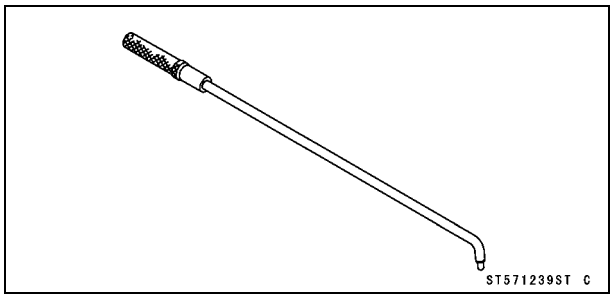
Jack:
57001-1238



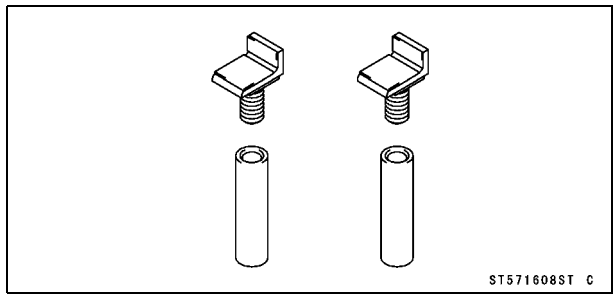
Extension Tube:
57001-1578



Pilot Screw Adjuster, A:
57001-1239



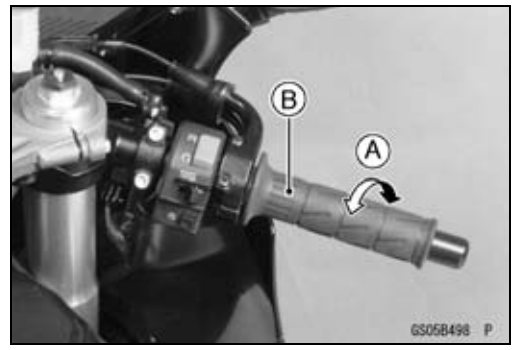
Jack Attachment:
57001-1608



Maintenance Procedure

Fuel System (DFI)

Throttle Control System Inspection

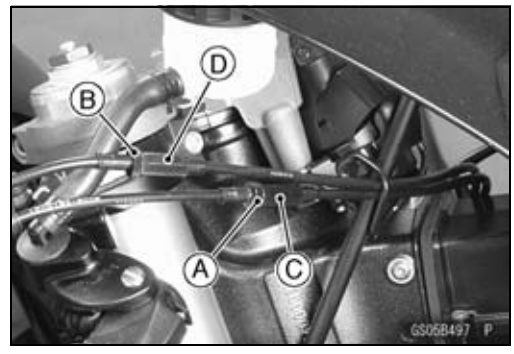


- Check that the throttle grip [B] moves smoothly from full open to close, and the throttle closes quickly and completely by the return spring in all steering positions.

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

- Check the throttle grip free play [A].

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



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

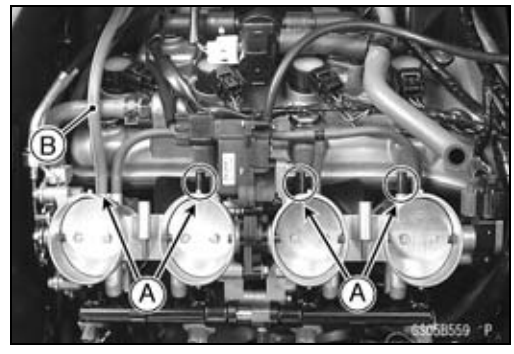
Engine Vacuum Synchronization Inspection

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:
  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 in the Periodic Maintenance chapter)

○When removing the air cleaner housing, do not remove the inlet air pressure sensor hose.



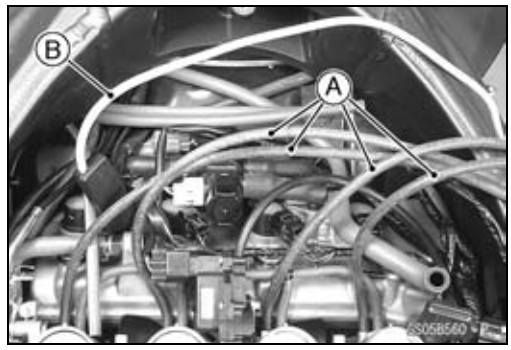
- Pull off the rubber caps [A] from the fittings of each throttle body.
- For the California Model, pull off the vacuum hose [B].

Maintenance Procedure

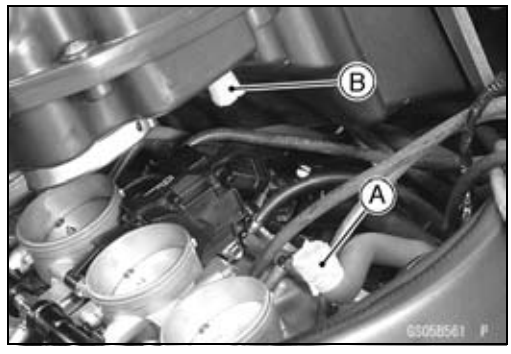
- Connect a vacuum gauge (special tool) and hoses [A] to the fittings on the throttle body.

  Special Tool - Vacuum Gauge: 57001-1369

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

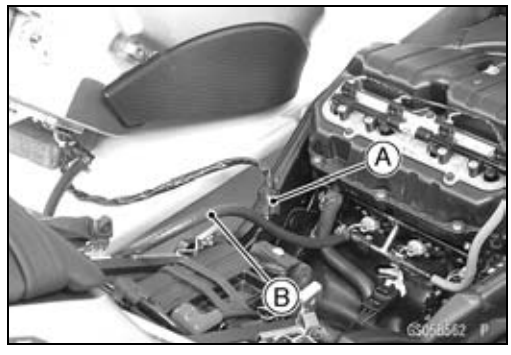


- Plug the air switching valve hose end [A] and air cleaner housing fitting [B].



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

  Special Tool - Extension Tube: 57001-1578



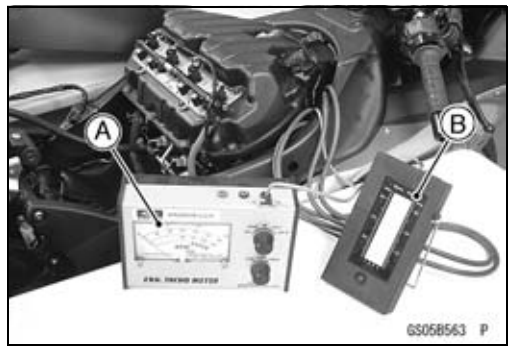
- Start the engine and warm it up thoroughly.
- Check the idle speed, using a highly accurate tachometer [A].

  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).

CAUTION

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



- When idling the engine, inspect the throttle body vacuum, using the vacuum gauge [B].

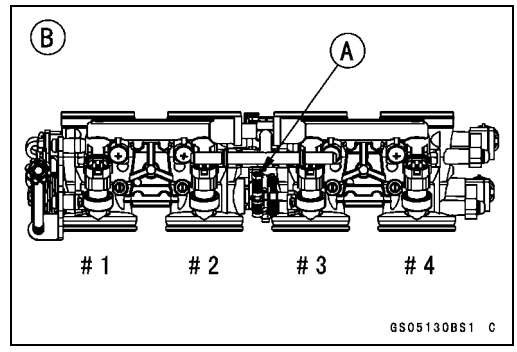
  Engine Vacuum
  Standard: 27.3 ±1.333 kPa (205 ±10 mmHg) at idle speed

Maintenance Procedure

★If any vacuum is not within the specifications, first synchronize the balance of the left (#1, #2 throttle valves) and right (#3, #4 throttle valves) 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].
  Rear View [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 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.
Rear View [B]

Special Tool - Pilot Screw Adjuster, A [C]: 57001-1239

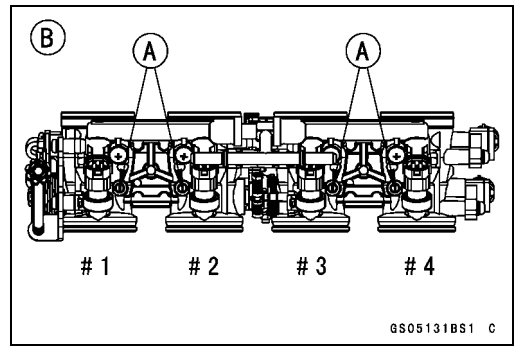
CAUTION

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

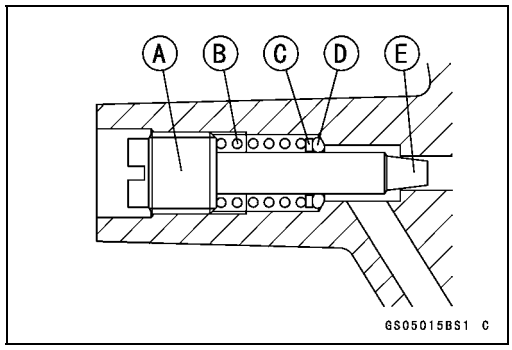
- Turn out the bypass screw of the higher vacuum between #1 and #2 to the lower vacuum.
- Turn out the bypass screw of the higher vacuum between #3 and #4 to the lower vacuum.
- Open and close the throttle valves after each measurement and adjust the idle speed as necessary.
- Inspect the vacuums as 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).

Special Tool - Throttle Sensor Setting Adapter: 57001 -1538

Main Throttle Sensor Output Voltage
Connections to Sensor
Meter (+) → Y/W lead
Meter (–) → BR/BK lead

Standard: DC 1.025 ~ 1.055 V (at idle throttle opening)

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

- Remove the vacuum gauge hoses and install the rubber caps on the original position.
- For the California Model, install the vacuum hose.

○Route the vacuum hose according to Cable, Wire, and Hose Routing section in the Appendix chapter.

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 Idle Speed 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.

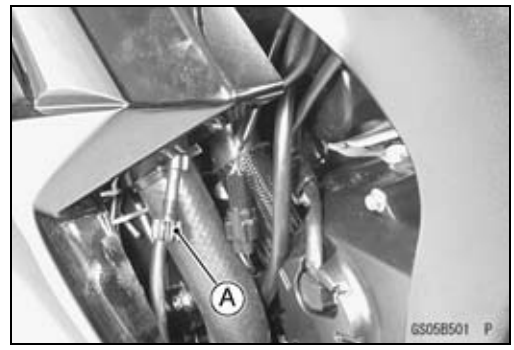
- Check the idle speed.

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

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

Maintenance Procedure

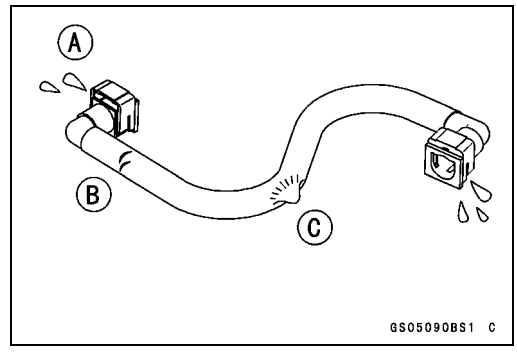
Idle Speed Adjustment



- 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 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 hose.

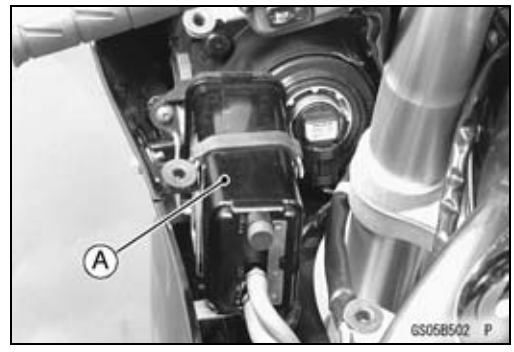
★Replace the fuel hose if any fraying, cracks [B] or bulges [C] are noticed.

- Check that the hose joints are securely connected.
- Check that the hoses are routed according to Cable, Wire, and Hose Routing section in the Appendix chapter.

★Replace the hose if it has been sharply bent or kinked.

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

Evaporative Emission Control System Inspection (California Model)



- Inspect the canister as follows.

○Remove:

Left Inner Cover (see Inner Cover Removal in the Frame chapter)

○Remove the canister [A], and disconnect the hoses from the canister.

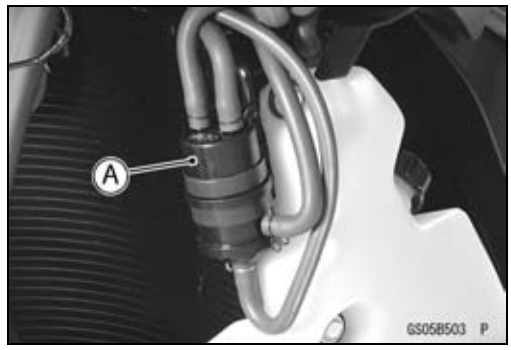
○Visually inspect the canister for cracks or other damage.

★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.*

Maintenance Procedure



- Check the liquid/vapor separator as follows.

○Remove:
Left Middle Fairing (see Middle 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.

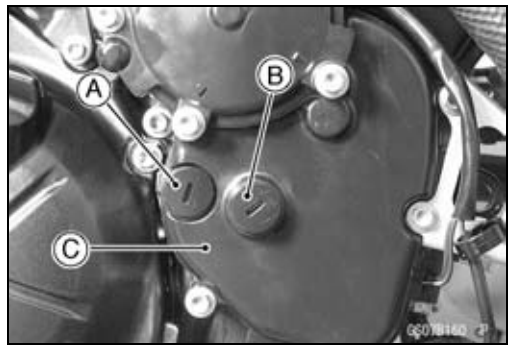
○When installing the hoses, avoid sharp bending, kinking, flattening or twisting, and route the hoses with a minimum of bending so that the emission flow will not be obstructed.

Engine Top End

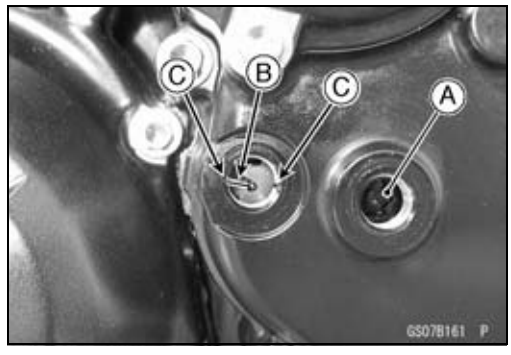
Valve Clearance Inspection

NOTE

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



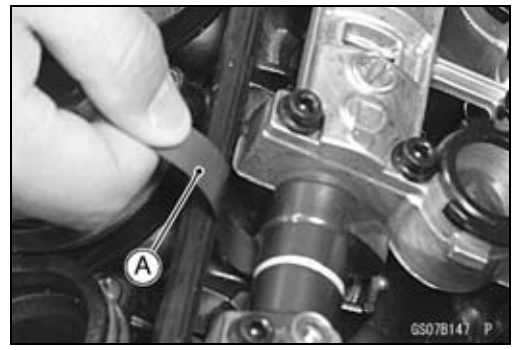
- Remove the cylinder head cover (see Cylinder Head Cover Removal in the Engine Top End chapter).
- Remove the timing inspection cap [A] and starter clutch bolt cap [B] on the starter clutch cover [C].



- Using a wrench, turn the starter clutch bolt [A] counterclockwise until the line [B] (TDC mark for #1,4 pistons) on the starter clutch is aligned with the notches [C] in the edge of the timing inspection hole in the starter clutch cover.

Maintenance Procedure

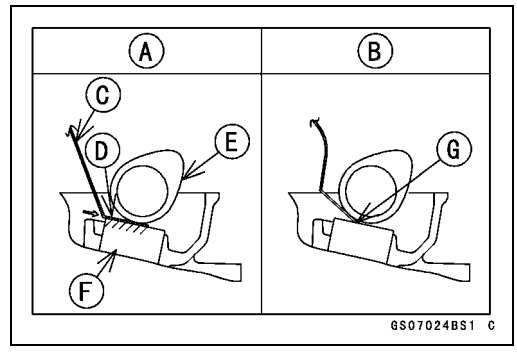
● Using a thickness gauge [A], measure the valve clearance between the cam and the valve lifter.



Valve Clearance
Standard:
Exhaust 0.24 ~ 0.31 mm (0.0094 ~ 0.0122 in.)
Inlet 0.13 ~ 0.19 mm (0.0051 ~ 0.0075 in.)

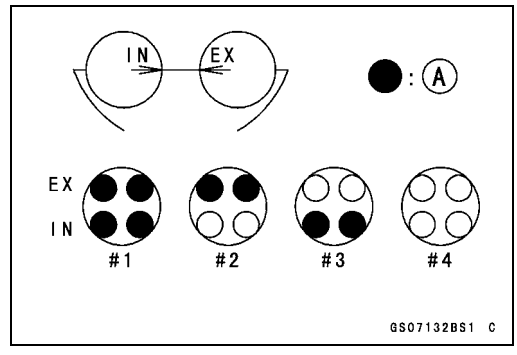
NOTE

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

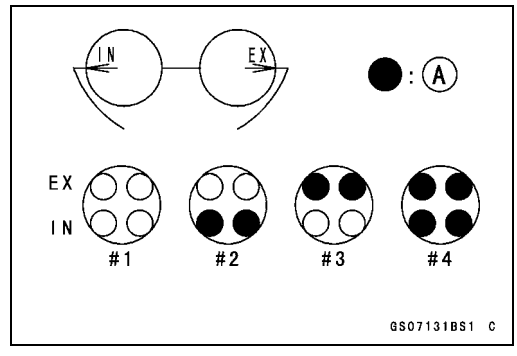


Good [A]
Bad [B]
Thickness Gauge [C]
Horizontally Inserts [D]
Cam [E]
Valve Lifter [F]
Hits the Valve Lifter Ahead [G]

○**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]

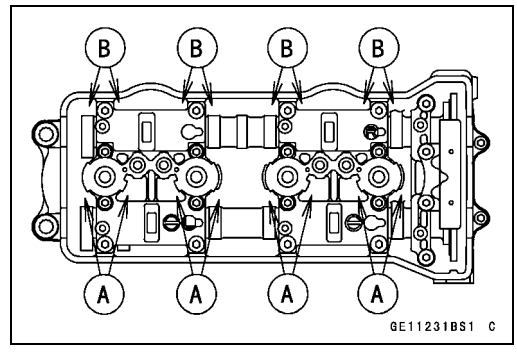


○**When positioning #4 piston TDC at the end of the compression stroke:**
Inlet Valve Clearance of #2 and #4 Cylinders
Exhaust Valve Clearance of #3 and #4 Cylinders
Measuring Valve [A]



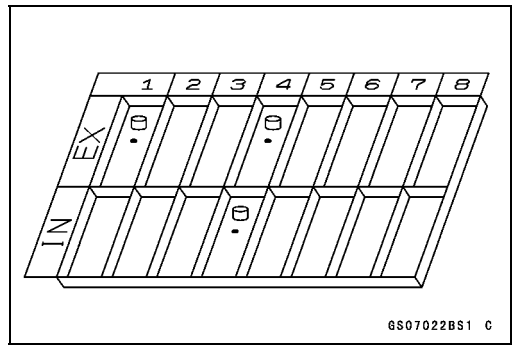
★If the valve clearance is not within the specified range, first record the clearance, and then adjust it.

● Filling engine oil to all pockets front side of the cam lobes of the camshaft.
Inlet Side Oil Pockets [A]
Exhaust Side Oil Pockets [B]



Maintenance Procedure

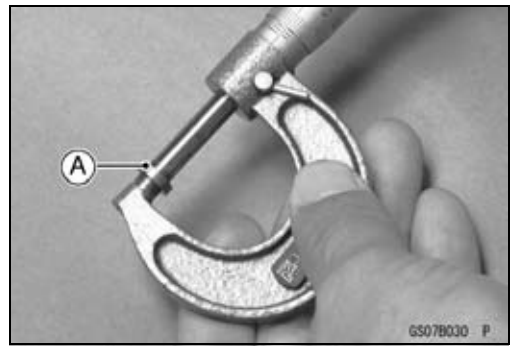
Valve Clearance Adjustment



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

NOTE

○*Mark and record the locations of the valve lifters and shims so that they can be reinstalled in their original positions.*



- Clean the shim to remove any dust or oil.
- Measure the thickness of the removed shim [A].
- Select a new shim thickness calculation as follows.

  a + b – c = d

  [a] Present Shim Thickness

  [b] Measured Valve Clearance

  [c] Specified Valve Clearance (Mean Value = 0.16)

  [d] Replace Shim Thickness

Example:

1.600 + 0.33 – 0.16 = 1.77 mm

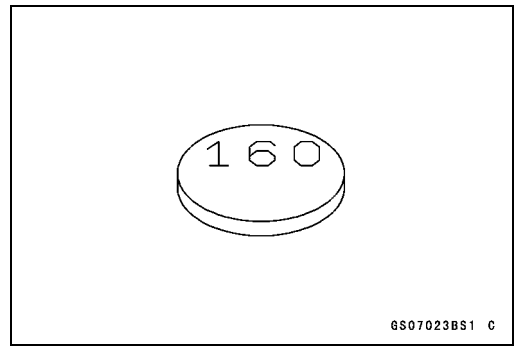
○Exchange the shim for the 1.775 size shim.

CAUTION
Don't use the shims for another models. This could cause wear of the valve stem end, and valve stem damage.

Maintenance Procedure

Adjustment Shims

Thickness	Part Number	Mark
1.300	92180-0108	130
1.325	92180-0109	132
1.350	92180-0110	135
1.375	92180-0111	138
1.400	92180-0112	140
1.425	92180-0113	142
1.450	92180-0114	145
1.475	92180-0115	148
1.500	92180-0116	150
1.525	92180-0117	152
1.550	92180-0118	155
1.575	92180-0119	158
1.600	92180-0120	160
1.625	92180-0121	162
1.650	92180-0122	165
1.675	92180-0123	168
1.700	92180-0124	170
1.725	92180-0125	172
1.750	92180-0126	175
1.775	92180-0127	178
1.800	92180-0128	180
1.825	92180-0129	182
1.850	92180-0130	185
1.875	92180-0131	188
1.900	92180-0132	190
1.925	92180-0133	192
1.950	92180-0134	195
1.975	92180-0135	198
2.000	92180-0136	200
2.025	92180-0137	202
2.050	92180-0138	205
2.075	92180-0139	208
2.100	92180-0140	210
2.125	92180-0141	212
2.150	92180-0142	215
2.175	92180-0143	218
2.200	92180-0144	220
2.225	92180-0145	222
2.250	92180-0146	225
2.275	92180-0147	228
2.300	92180-0148	230



Maintenance Procedure

CAUTION

Be sure to remeasure the clearance after selecting a shim. The clearance can be out of the specified range because of the shim tolerance.

○If there is no valve clearance, use a shim that is a few sizes smaller, and remeasure the valve clearance.

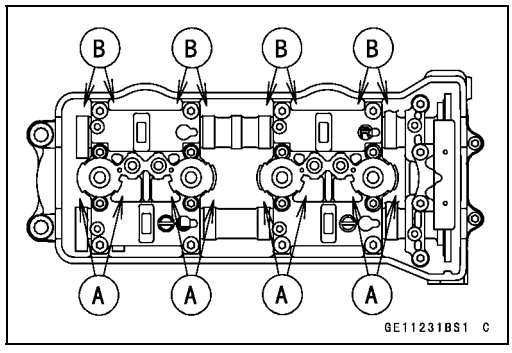
- When installing the shim, face the marked side toward the valve lifter. At this time, apply engine oil to the shim or the valve lifter to keep the shim in place during camshaft installation.

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.

- Apply molybdenum disulfide oil solution to the valve lifter surface and install the lifter.
- Install the camshafts (see Camshaft Installation in the Engine Top End chapter).
- Recheck the valve clearance and readjust if necessary.

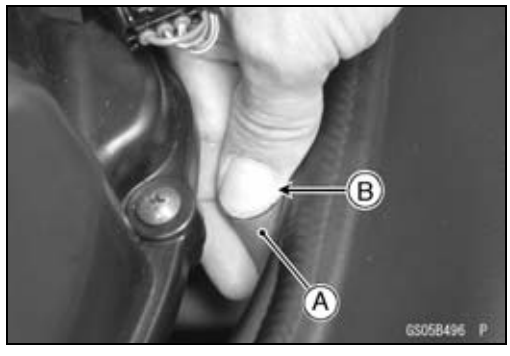
- Filling engine oil to all oil pockets front side of the cam lobes of the camshafts.
  Inlet Side Oil Pockets [A]
  Exhaust Side Oil Pockets [B]
- Install the removed parts.



Air Suction System Damage Inspection

- Set up the fuel tank (see the Air Cleaner Element Replacement).
- Pull the air switching valve hose [A] out of the air cleaner.
- Start the engine and run it at idle speed.
- Plug [B] the air switching valve hose end with your finger and feel vacuum pulsing in the hose.

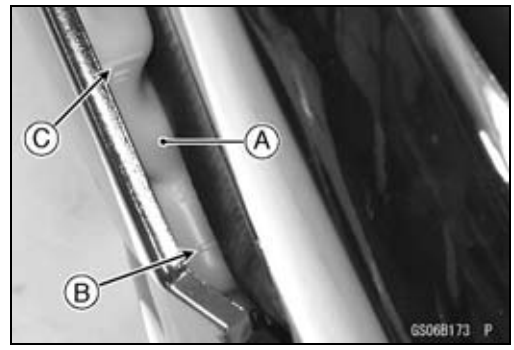
★If there is no vacuum pulsation, check the hose line for leak. If there is no leak, check the air switching valve (see Air Switching Valve Unit Test in the Electrical System chapter) or air suction valve (see Air Suction Valve Inspection in the Engine Top End chapter).



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].

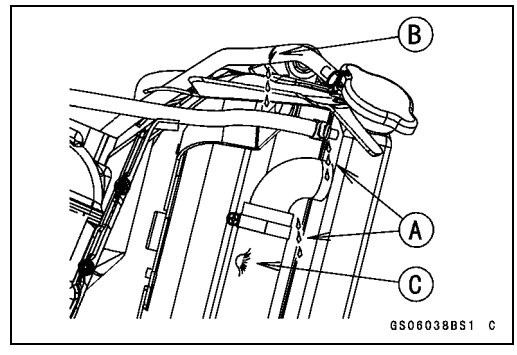
"L": low

"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 reserve 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 - Water Hose Clamp Screws: 2.0 N·m (0.20 kgf·m, 17 in·lb)

Maintenance Procedure

Clutch

Clutch Operation Inspection

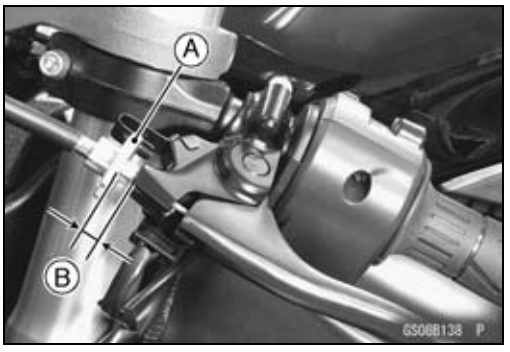
- Pull the clutch lever just enough to take up the free play [A].
- Measure the gap between the lever and the lever holder.

★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.

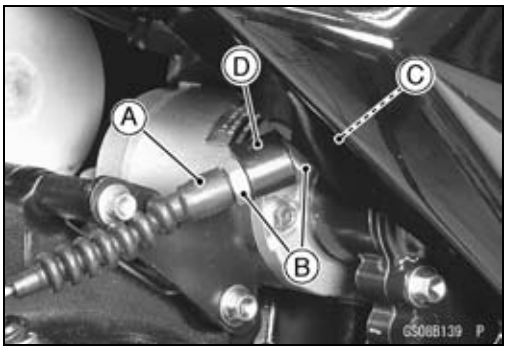
Clutch Lever Free Play
Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)

⚠ WARNING

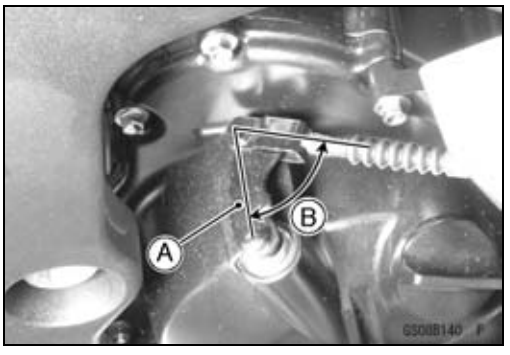
To avoid a serious burn, never touch the engine or exhaust pipe during clutch adjustment.



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



- 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.



- Push the release lever [A] toward the front of the motorcycle 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.

★If the clutch operation is insufficiency, inspect the clutch system.

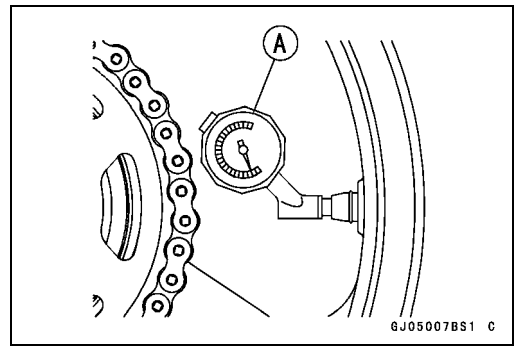
⚠ WARNING

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

Maintenance Procedure

Wheels/Tires

Air Pressure Inspection



- Remove the air valve cap.
- 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).

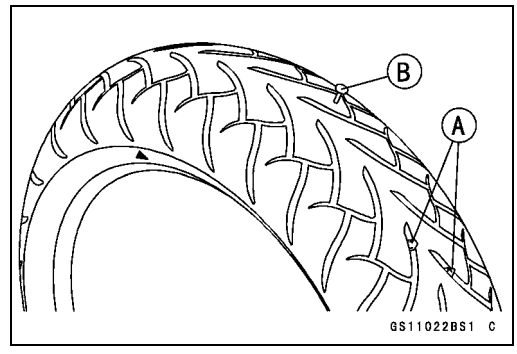
★Adjust the tire air pressure according to the specifications if necessary.

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)

- Install the air valve cap.

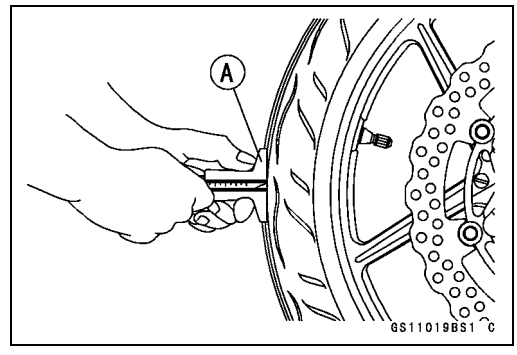
Wheel/Tire Damage Inspection



- Remove any imbedded stones [A], nail [B] or other foreign particles 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).

Tread Depth

Standard:	
Front	**3.6 mm (0.14 in.)**
Rear	**4.8 mm (0.19 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 (80 mph))**
	3 mm (0.12 in.) (Over 130 km/h (80 mph))

Maintenance Procedure

⚠ WARNING

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

NOTE

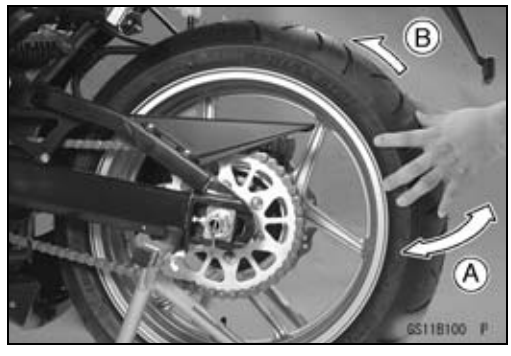
○*Most countries may have their own regulations a minimum tire tread depth: be sure to follow them.*

○*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 moving [A] the wheel to the both side.
- 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 moving [A] the wheel to the both side.
- 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).

Maintenance Procedure

Final Drive

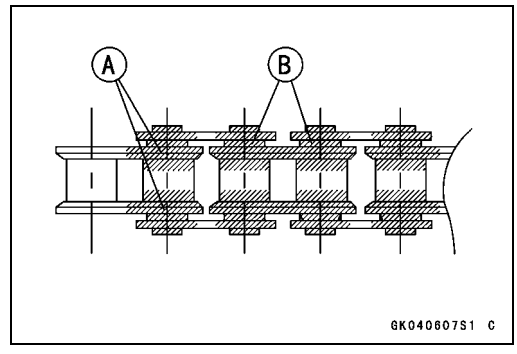
Drive Chain Lubrication Condition Inspection

- 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

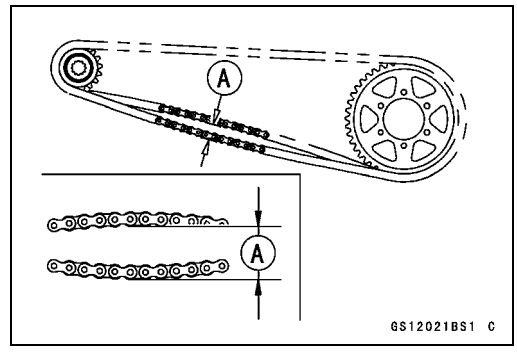
NOTE

○*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).
- Rotate the rear wheel to find the position where the chain is tightest.
- Measure the vertical movement (chain slack) [A] midway between the sprockets.

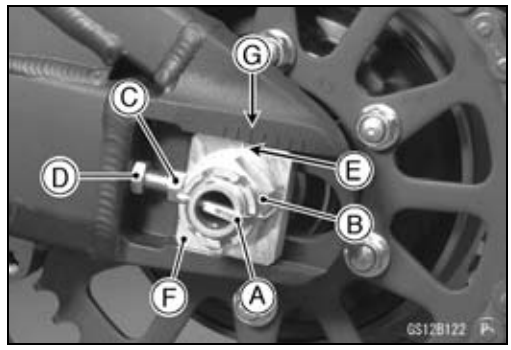
★If the chain slack exceeds the standard, adjust it.

Chain Slack
Standard: 30 ~ 40 mm (1.2 ~ 1.6 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.

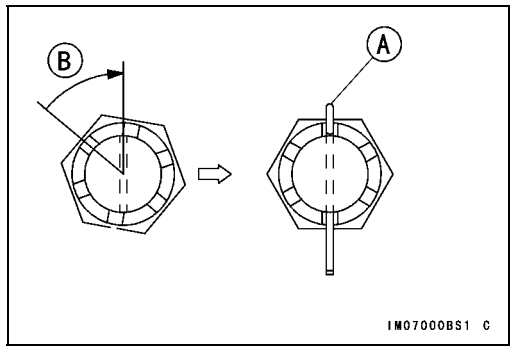
⚠ WARNING

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)

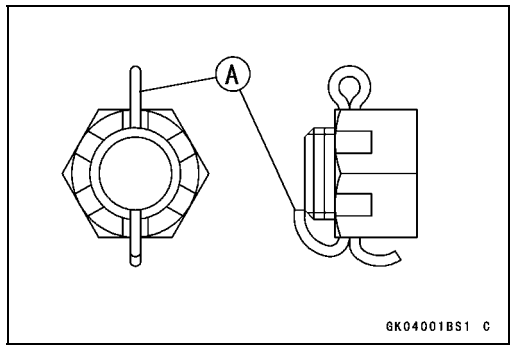
- Turn the wheel, measure the chain slack again at the tightest position, and readjust if necessary.
- Insert a new cotter pin into the axle and bend its end securely.



- Insert a new cotter pin [A].

NOTE

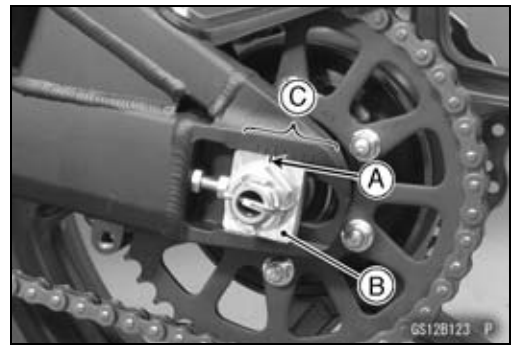
○*When inserting the cotter pin, if the slots in the nut do not align with the cotter pin hole in the axle, tighten the nut clockwise [B] up to next alignment.*
○*It should be within 30 degree.*
○*Loosen once and tighten again when the slot goes past the nearest hole.*



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

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).

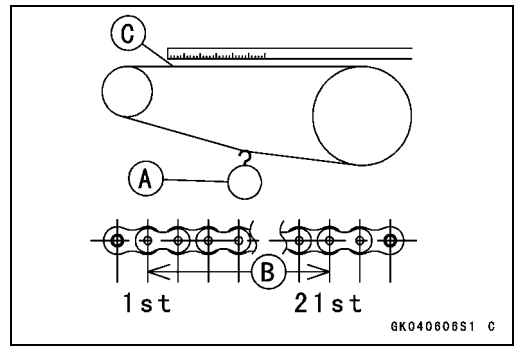
NOTE

○*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

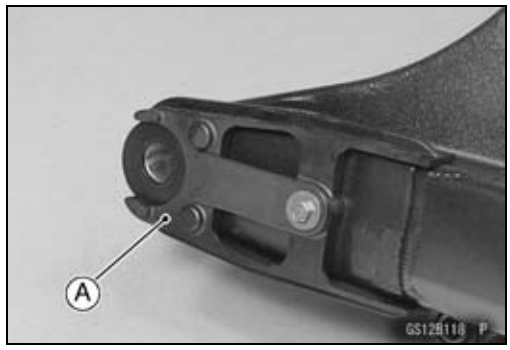
Make: ENUMA

Type: EK520MVXL1

Link: 112 links

Maintenance Procedure

Chain Guide Wear Inspection



- Remove:
  Swingarm (see Swingarm Removal in the Suspension chapter)
- Visually inspect the chain guide [A].

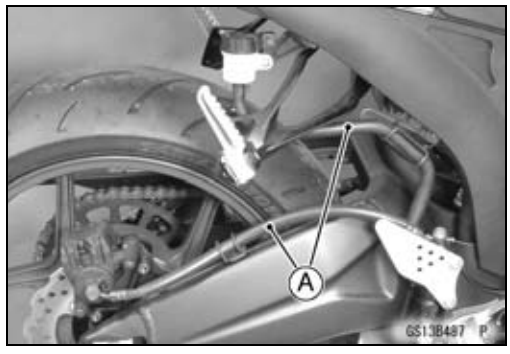
★Replace the chain guide if it shows any signs of abnormal wear or damage.

Brakes

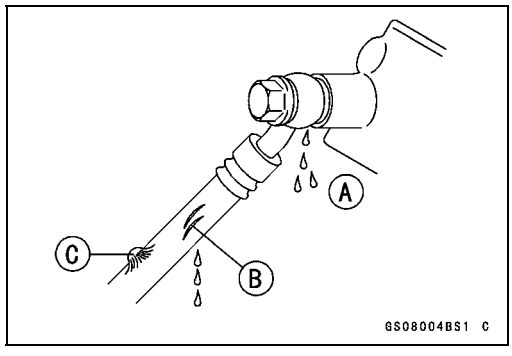
Brake Fluid Leak (Brake Hose and Pipe) Inspection

- 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.

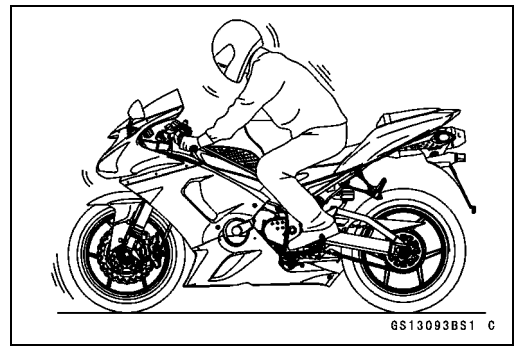
Torque - Brake Hose Banjo Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)

- 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.

Maintenance Procedure

Brake Operation Inspection



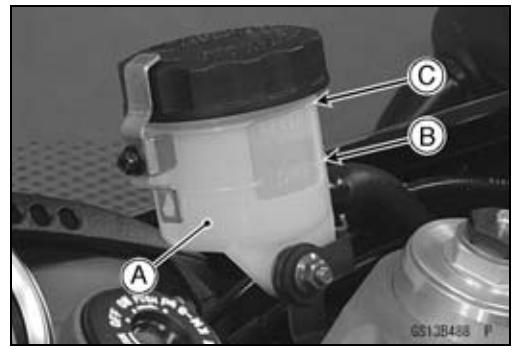
- Inspect the operation of the front and rear brake by running the vehicle on the dry road.

★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.

Brake Fluid Level Inspection

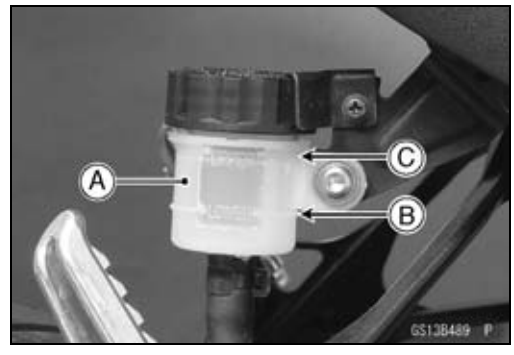


- Check that the brake fluid level in the front brake reservoir [A] is above the lower level line [B].

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].



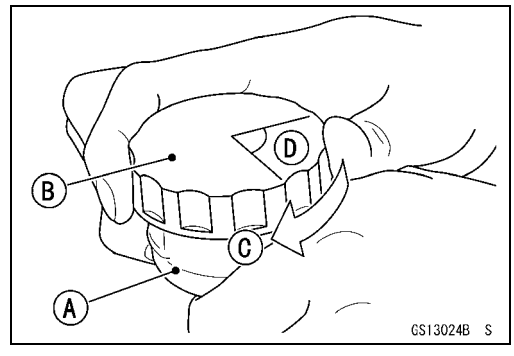
- Check that the brake fluid level in the rear brake reservoir [A] is above the lower level [B].

★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

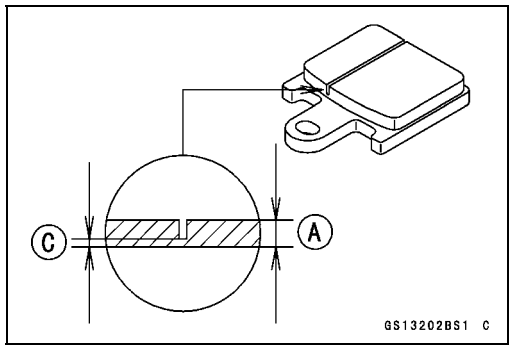


- Follow the procedure below to install the front/rear brake fluid reservoir cap correctly.

○First, tighten the brake fluid reservoir cap [B] clockwise [C] by hand until slight resistance is felt indicating that the cap is seated on the reservoir body, then tighten the cap an additional 1/6 turn [D] while holding the brake fluid reservoir body [A].

Maintenance Procedure

Brake Pad Wear Inspection

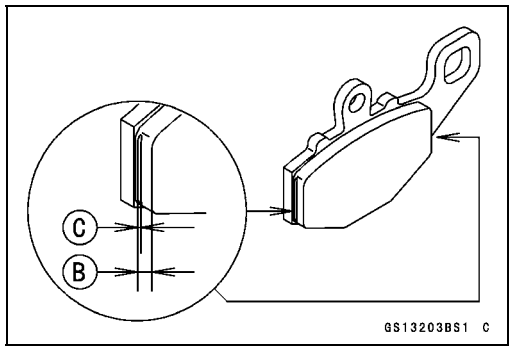


- Check the lining thickness of the pads in each caliper.

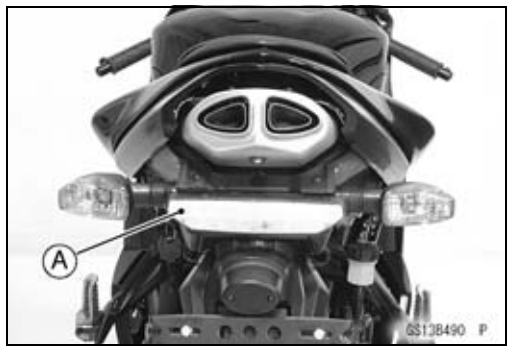
Pad Lining Thickness
Standard:

Front [A]	**4.0 mm (0.16 in.)**
Rear [B]	**5.0 mm (0.20 in.)**
Service Limit [C]:	**1 mm (0.04 in.)**

★If the lining thickness of either pad is less than the service limit, replace both pads in the caliper as a set.



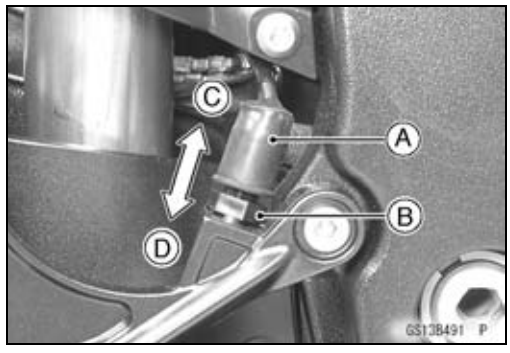
Brake Light Switch Operation Inspection



- 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.).

★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]

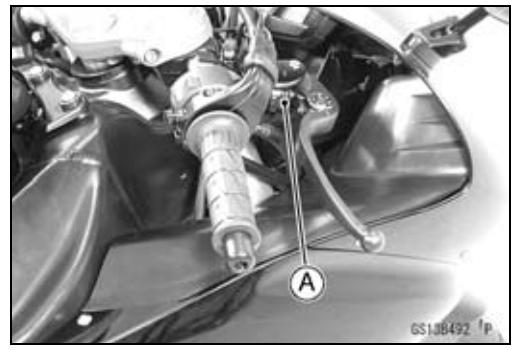


CAUTION

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

Maintenance Procedure

★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)

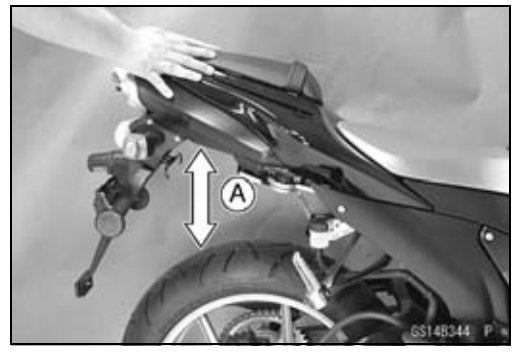


Suspensions

Front Forks/Rear Shock Absorber Operation Inspection

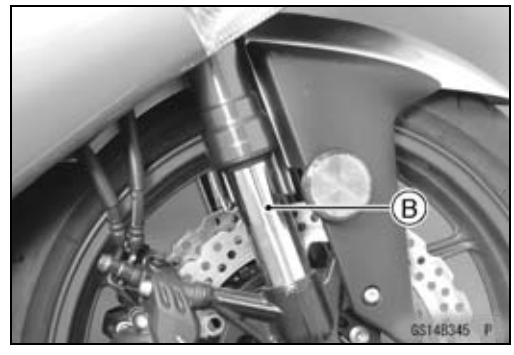
● Pump the forks down and up [A] 4 or 5 times, and inspect the smooth stroke.
★If the forks do not smoothly or noise is found, inspect the fork oil level or fork clamps (see Front Fork Oil Change in the Suspension chapter).

● 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).



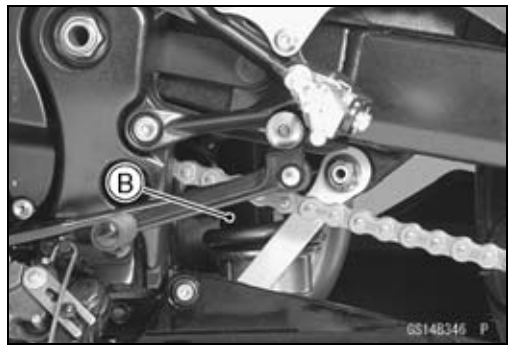
Front Fork Oil Leak Inspection

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



Maintenance Procedure

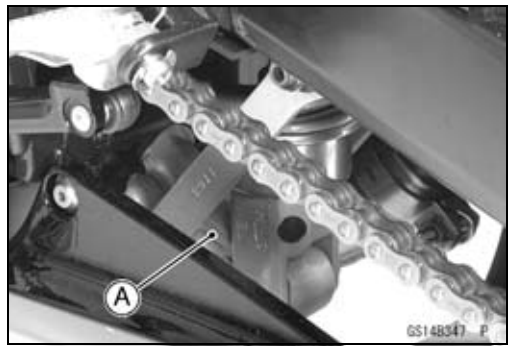
Rear Shock Absorber Oil Leak Inspection



- 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.

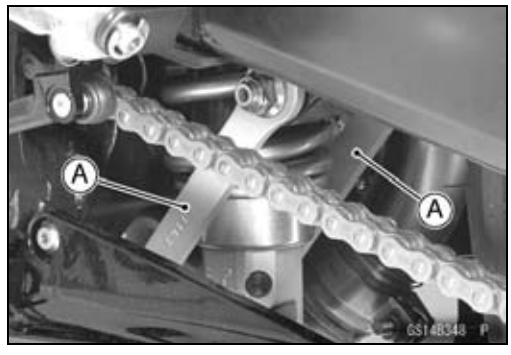
Rocker Arm Operation Inspection



- 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



- 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).

Steering System

Steering Play Inspection

- Remove the lower fairings (see Lower Fairing Removal in the Frame chapter).
- Lift the front wheel off the ground using the jack.

Special Tools - Jack: 57001-1238
Jack Attachment: 57001-1608

- With the front wheel pointing straight ahead, alternately tap each end of the handlebar. The front wheel should swing fully left and right from the force of gravity until the fork hits the stop.

★If the wheel binds or catches before the stop, the steering is too tight.

- Feel for steering looseness by pushing and pulling the forks.

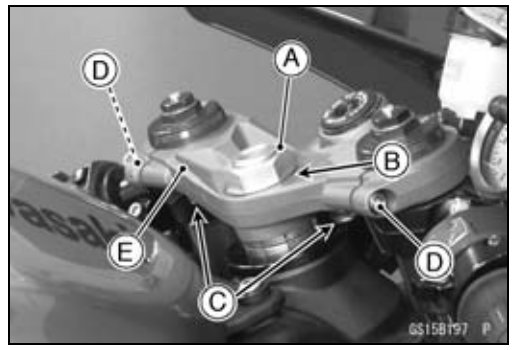
★If you feel looseness, the steering is too loose.

NOTE

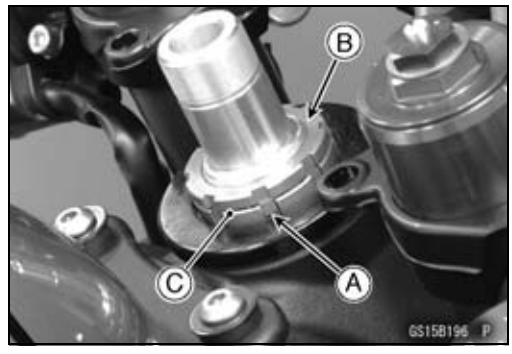
○*The cables and wiring will have some effect on the motion of the fork which must be taken into account.*
○*Be sure the wires and cables are properly routed.*
○*The bearings must be in good condition and properly lubricated in order for any test to be valid.*

Maintenance Procedure

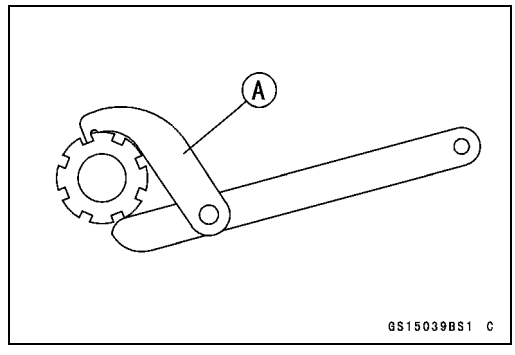
Steering Play Adjustment



- Raise the front wheel off the ground with the jack.
- Remove:
  Upper End of Clutch Cable
  Upper End of Throttle Cables
  Stem Head Nut [A] and Washer [B]
  Handlebar Position Bolts [C]
- Loosen the upper fork clamp bolts [D].
- Remove the stem head [E].



- Bend the claws [A] of the claw washer straighten.
- Remove the steering stem locknut [B] and claw washer [C].



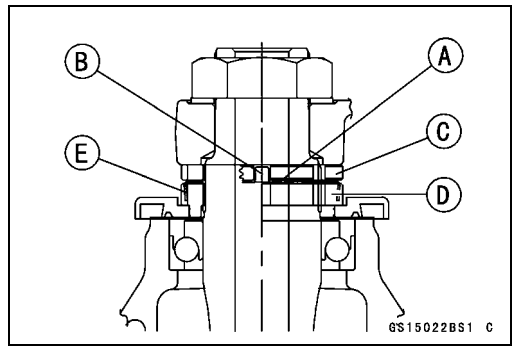
- Adjust the steering.

Special Tool - Steering Stem Nut Wrench [A]: 57001-1100

★If the steering is too tight, loosen the stem nut a fraction of a turn.
★If the steering is too loose, tighten the stem nut a fraction of a turn.

NOTE

○*Turn the stem nut 1/8 turn at time maximum.*



- Install the claw washer [A] so that its bent side [B] faces upward, and engage the bent claws with the grooves of stem locknut [C].
- Hand tighten the stem locknut until it touches the claw washer.
- Tighten the stem locknut clockwise until the claws are aligned with the grooves (ranging from 2nd to 4th) of stem nut [D], and bend the 2 claws downward [E].

- Apply a non-permanent locking agent to the handlebar position bolts.
- Tighten:

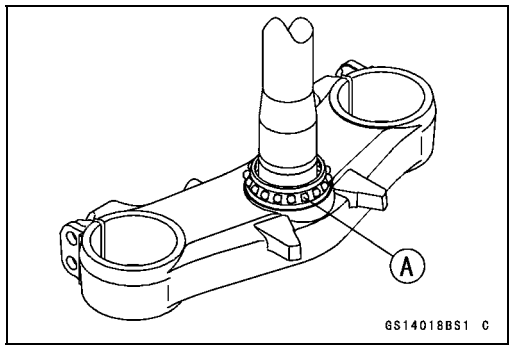
Torque - Steering Stem Head Nut: 78 N·m (8.0 kgf·m, 58 ft·lb)
Upper Front Fork Clamp Bolts: 20 N·m (2.0 kgf·m, 15 ft·lb)
Handlebar Position Bolts: 9.8 N·m (1.0 kgf·m, 87 in·lb)

- Check the steering again.

★If the steering is still too tight or too loose, repeat the adjustment.

Maintenance Procedure

Steering Stem Bearing Lubrication



- Remove the steering stem (see Stem, Stem Bearing Removal in the Steering chapter).
- Using a high-flash point solvent, wash the upper and lower ball bearings in the cages, and wipe the upper and lower outer races, which are press-fitted into the frame head pipe, clean off grease and dirt.
- Visually check the outer races and the ball bearings.

★Replace the bearing assemblies if they show wear or damage.

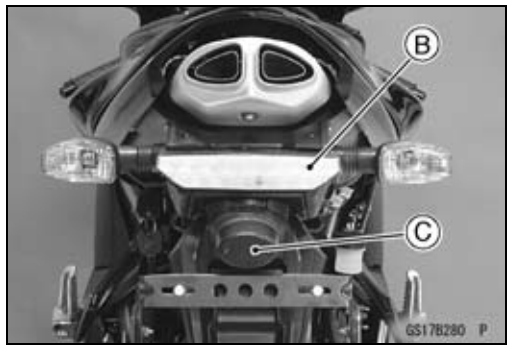
- Pack the upper and lower ball bearings [A] in the cages with grease, and apply a light coat of grease to the upper and lower outer races.
- Install the steering stem (see Stem, Stem Bearing Installation in the Steering chapter).
- Adjust the steering (see Steering Play Adjustment in this chapter).

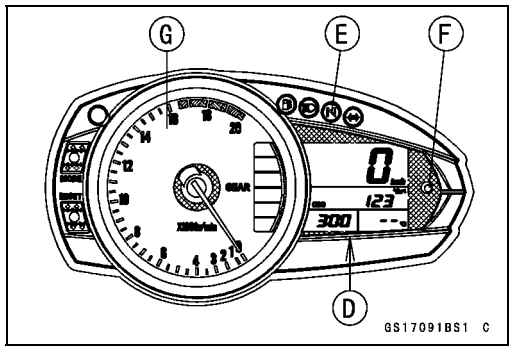
Lights and Switches Operation Inspection

First Step

- Turn on the ignition switch.
- The following lights should go on according to below table.

City Light [A]	goes on
Taillight (LED) [B]	goes on
License Plate Light [C]	goes on
Meter Panel LCD [D]	goes on
Neutral Indicator Light (LED) [E]	goes on
Warning Indicator Light (LED) [F]	goes on (blinks)
Meter Panel Illumination Light (LED) [G]	goes on





★If the light does not go on, inspect or replace the following item.

Battery (see Charging Condition Inspection in the Electrical System chapter)
Applicable Bulbs (see Wiring Diagram in the Electrical System chapter)
Meter Unit (see Electronic Combination Meter Unit Inspection in the Electrical System chapter)
ECU (see ECU Power Supply Inspection in the Fuel System (DFI) chapter)
Main Fuse 30 A and Taillight Fuse 10 A (see Fuse Inspection in the Electrical System chapter)
Ignition Switch (see Wiring Diagram in the Electrical System chapter)
Gear Position Switch (see Gear Position Switch Inspection in the Electrical System chapter)
Harness (see Wiring Inspection in the Electrical System chapter)

- Turn off the ignition switch.
- The all lights should go off (for the immobilizer model, warning indicator light (LED) will blink. see Abstract in the Electrical System chapter).

★If the light does not go off, replace the ignition switch.

Maintenance Procedure

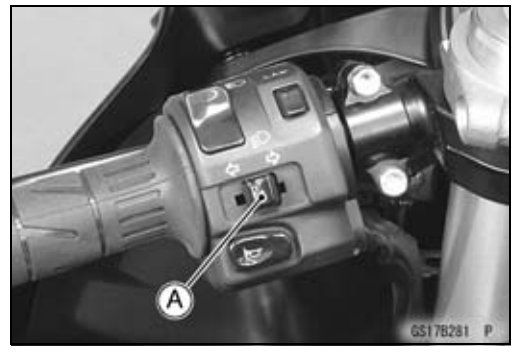
Second Step
- Turn the ignition switch to P (Park) position.
- The city light, tail/brake light (LED) and license plate light should go on.

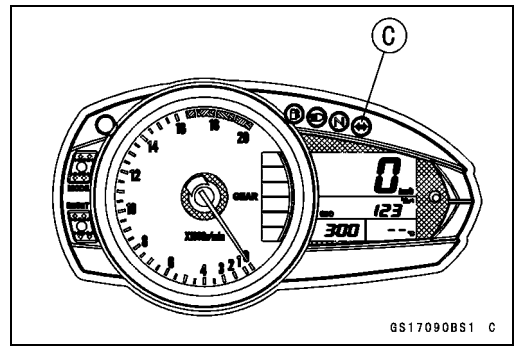
★If the light does not go on, inspect or replace the following item.
Ignition Switch (see Wiring Diagram in the Electrical System chapter)

Third Step
- Turn on the ignition switch.
- Push the turn signal switch [A] (left or right position).
- The left or right turn signal lights [B] (front and rear) according to the switch position should blink.
- The turn signal indicator light (LED) [C] in the meter unit should blink.

★If the each light does not blink, inspect or replace the following item.
Turn Signal Light Bulb (see Turn Signal Light Bulb Replacement in the Electrical System chapter)
Meter Unit for Turn Signal Light Indicator Light (LED) (see Electronic Combination Meter Unit Inspection in the Electrical System chapter)
Turn Signal Relay Fuse 10 A (see Fuse Inspection in the Electrical System chapter)
Turn Signal Switch (see Wiring Diagram in the Electrical System chapter)
Turn Signal Relay (see Turn Signal Relay Inspection in the Electrical System chapter)
Harness (see Wiring Inspection in the Electrical System chapter)
- Put back the turn signal switch.
- The turn signal lights and indicator light (LED) should go off.

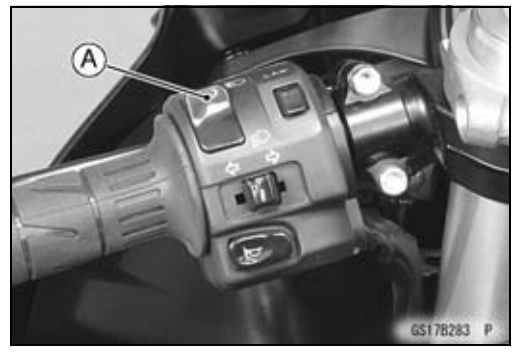
★If the light does not go off, inspect or replace the following item.
Turn Signal Switch (see Wiring Diagram in the Electrical System chapter)





Fourth Step
- Set the dimmer switch [A] to low beam position.
- Start the engine.
- The low beam headlight should go on.

★If the low beam headlight does not go on, inspect or replace the following item.
Headlight Low Beam Bulb (see Headlight Bulb Replacement in the Electrical System chapter)
Headlight Fuse 10 A (see Fuse Inspection in the Electrical System chapter)
Dimmer Switch (see Wiring Diagram in the Electrical System chapter)
Headlight Relay (see Relay Circuit Inspection in the Electrical System chapter)
Harness (see Wiring Inspection in the Electrical System chapter)



Maintenance Procedure

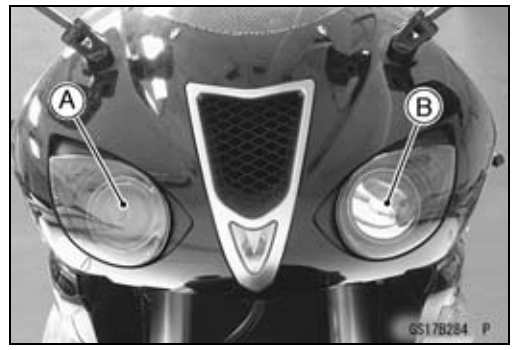
- Set the dimmer switch to high beam position.
- The low beam [A] and high beam [B] headlights should go on.
- The high beam indicator light (LED) [C] should go on.

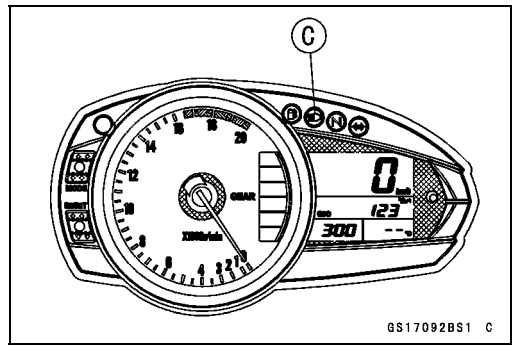
★If the high beam headlight and/or high beam indicator light (LED) does not go on, inspect or replace the following item.
Headlight High Beam Bulb (see Headlight Bulb Replacement in the Electrical System chapter)
Dimmer Switch (see Wiring Diagram in the Electrical System chapter)
Harness (see Wiring Inspection in the Electrical System chapter)
Headlight Fuse 10 A (see Fuse Inspection in the Electrical System chapter)
Headlight Relay (see Relay Circuit Inspection in the Electrical System chapter)

- Turn off the engine stop switch.
- The low beam and high beam headlights should stay going on.

★If the headlights and high beam indicator light (LED) does go off, inspect or replace the following item.
Headlight Relay (see Relay Circuit Inspection in the Electrical System chapter)

- Turn off the ignition switch.
- The headlights and high beam indicator light (LED) should go off.





Headlight Aiming Inspection

- Inspect the headlight beam for aiming.

★If the headlight beam points to one side rather than straight ahead, adjust the horizontal beam.

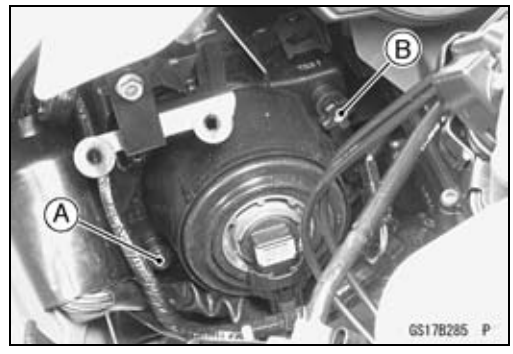
Headlight Beam Horizontal Adjustment

- Turn the horizontal adjuster [A] in both headlights in or out until the beam points straight ahead.

★If the headlight beam points too low or high, adjust the vertical beam.

Headlight Beam Vertical Adjustment

- Turn the vertical adjuster [B] in both headlights in or out with a screwdriver to adjust the headlight vertically.



NOTE

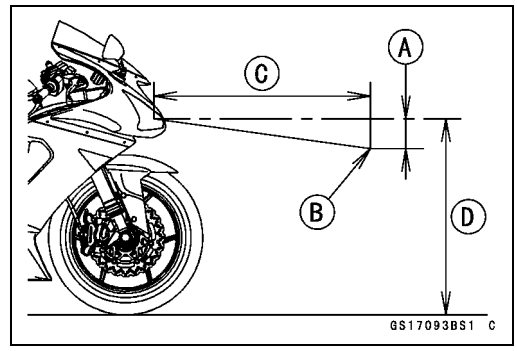
○*ON high beam, the brightest points should be slightly below horizontal with the motorcycle on its wheels and the rider seated. Adjust the headlight to the proper angle according to local regulations.*

Maintenance Procedure

NOTE

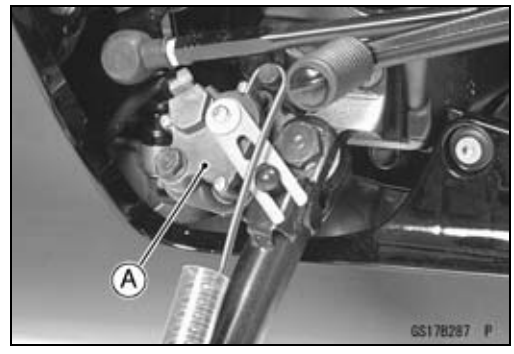
○*For US model, the proper angle is 0.4 degrees below horizontal. This is 50 mm (2 in.) drop at 7.6 m (25 ft) measured from the center of the headlight with the motorcycle on its wheels and the rider seated.*

50 mm (2 in.) [A]
Center of Brightest Spot [B]
7.6 m (25 ft) [C]
Height of Headlight Center [D]



Side Stand Switch Operation Inspection

● Inspect the side stand switch [A] operation accordance to below table.



Side Stand Switch Operation

Side Stand	Gear Position	Clutch Lever	Engine Start	Engine Run
Up	Neutral	Released	Starts	Continue running
Up	Neutral	Pulled in	Starts	Continue running
Up	In Gear	Released	Doesn't start	Continue running
Up	In Gear	Pulled in	Starts	Continue running
Down	Neutral	Released	Starts	Continue running
Down	Neutral	Pulled in	Starts	Continue running
Down	In Gear	Released	Doesn't start	Stops
Down	In Gear	Pulled in	Doesn't start	Stops