MODEL APPLICATION

Year	Model	Beginning Frame No.
2005	KLE500-B1	JKALE500ABA085001

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

Part No. 99924-1352-01

Printed in Japan

Kawasaki

KLE500

Motorcycle Service Manual

Quick Reference Guide

LIST OF ABBREVIATIONS

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

Read OWNER’S MANUAL before operating.

Foreword

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

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

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

To get the longest life out of your vehicle:

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

How to Use This Manual

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

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

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

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

⚠ WARNING

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

CAUTION

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

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

NOTE

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

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

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

General Information

Table of Contents

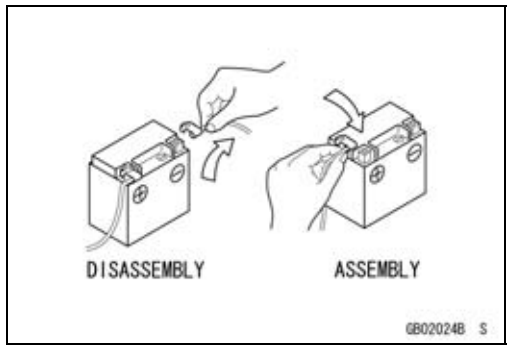
Before Servicing

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

Especially note the following:

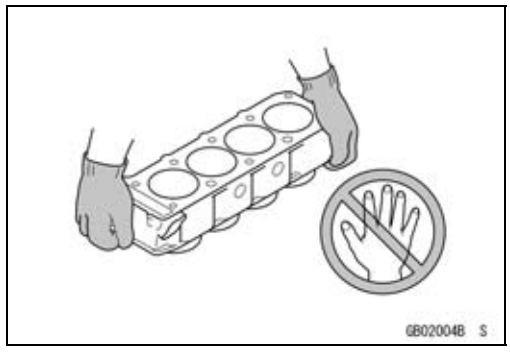
Battery Ground

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



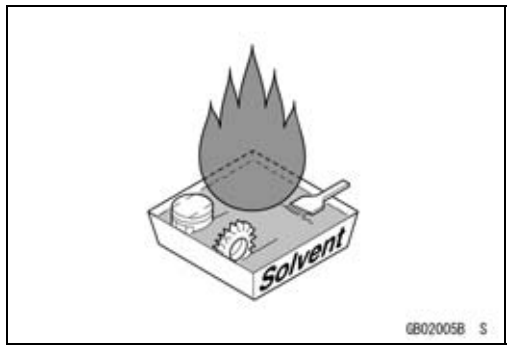
Edges of Parts

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



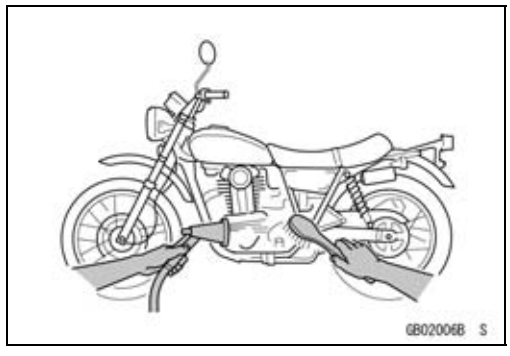
Solvent

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



Cleaning vehicle before disassembly

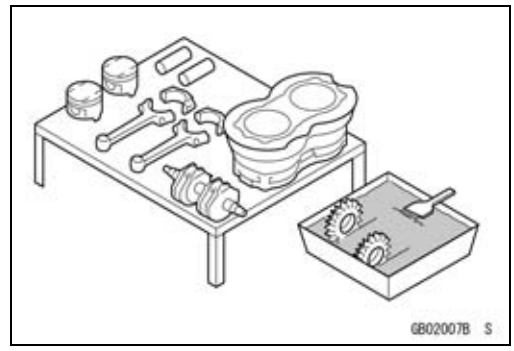
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

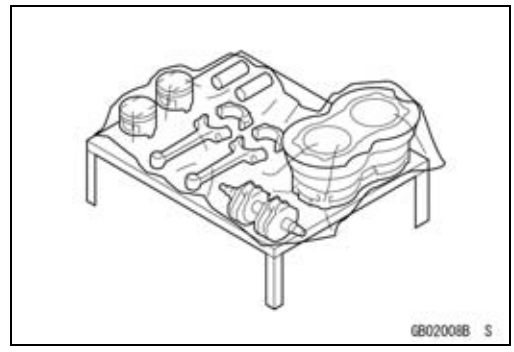
Arrangement and Cleaning of Removed Parts

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



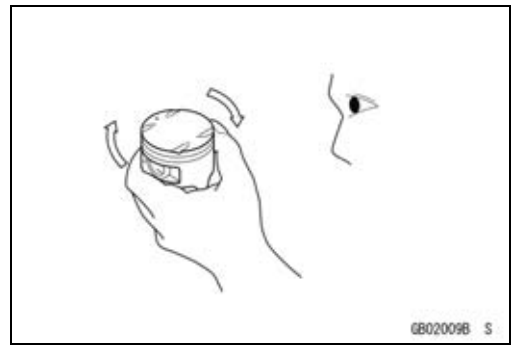
Storage of Removed Parts

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



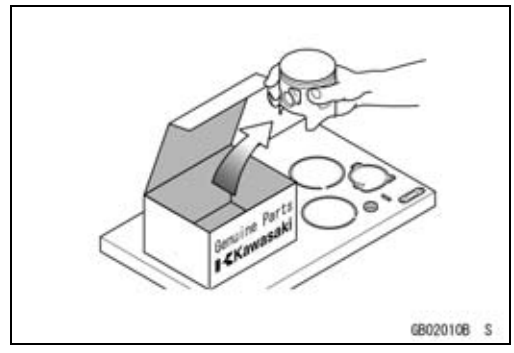
Inspection

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



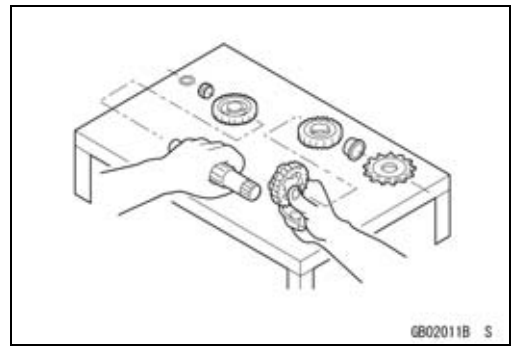
Replacement Parts

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



Assembly Order

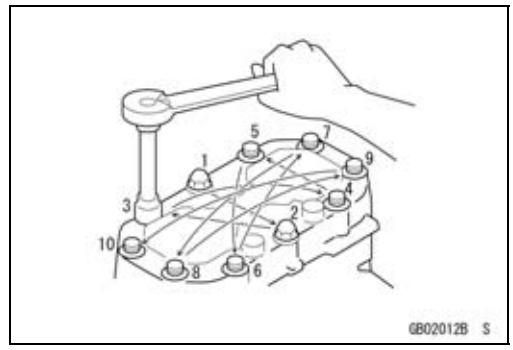
In most cases assembly order is the reverse of disassembly, however, if assembly order is provided in this Service Manual, follow the procedures given.



Before Servicing

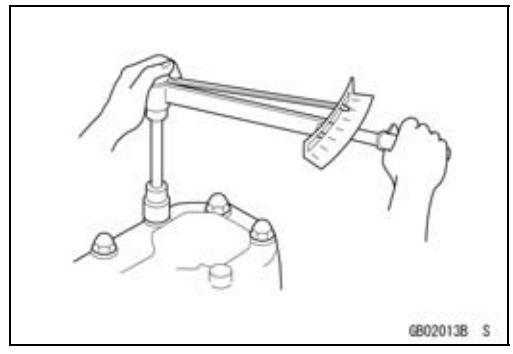
Tightening Sequence

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 them remove them. If the specified tightening sequence is not indicated, tighten the fasteners alternating diagonally.



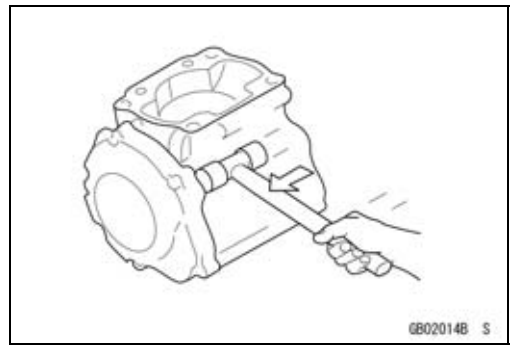
Tightening Torque

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



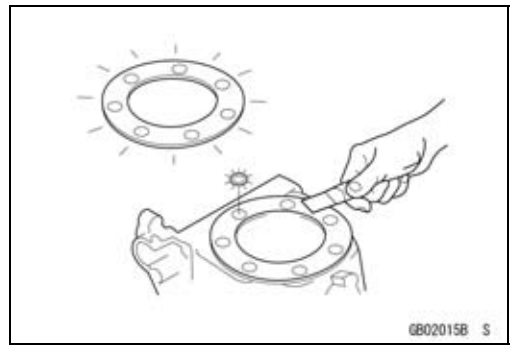
Force

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



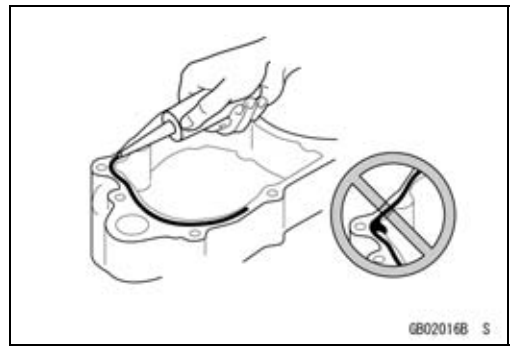
Gasket, O-ring

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



Liquid Gasket, Locking Agent

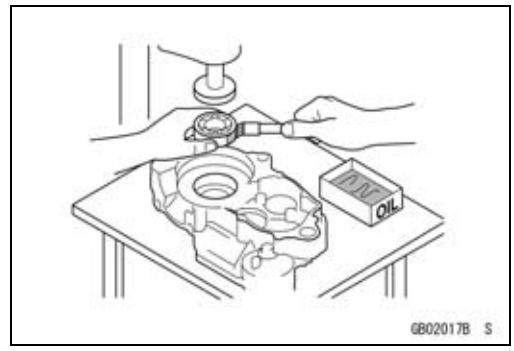
For applications that require Liquid Gasket or a Locking agent, clean the surfaces so that no oil residue remains before applying liquid gasket or locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Before Servicing

Press

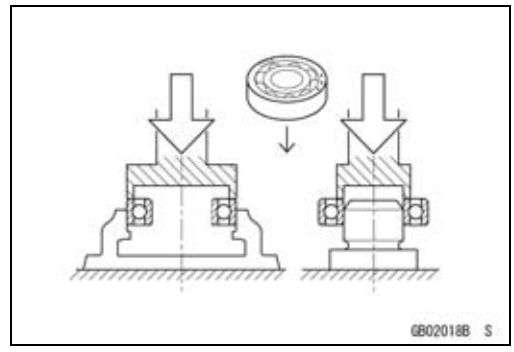
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



Ball Bearing and Needle Bearing

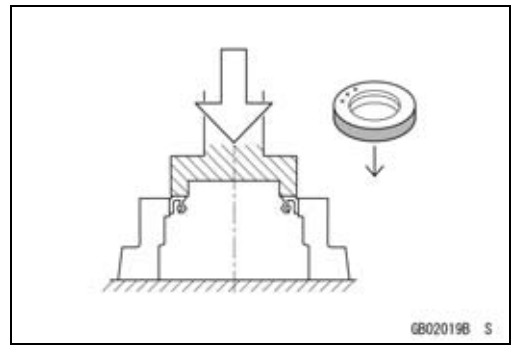
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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

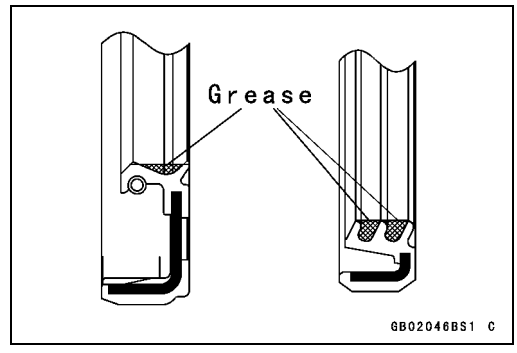


Oil Seal, Grease Seal

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

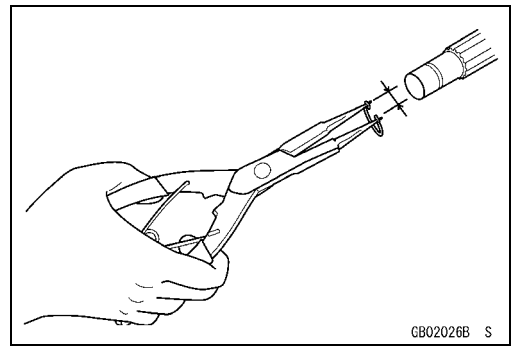


Apply specified grease to lip of seal before installing the seal.



Circlips, Cotter Pins

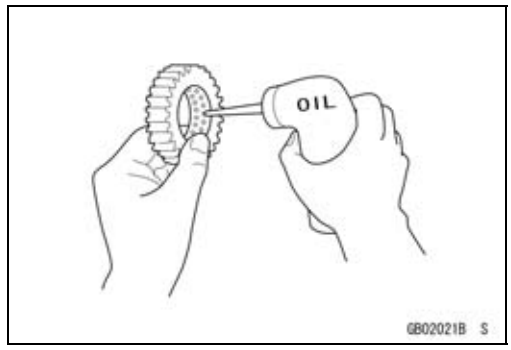
Replace circlips or cotter pins that were removed with new ones. Take care not to open the clip excessively when installing to prevent deformation.



Before Servicing

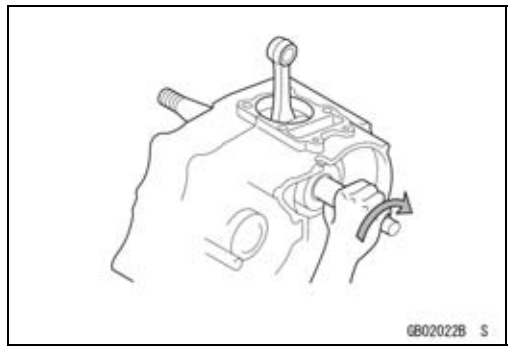
Lubrication

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.



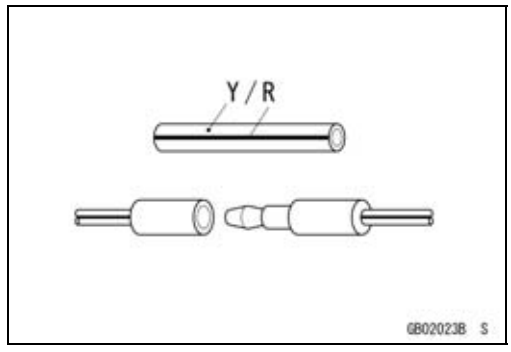
Direction of Engine Rotation

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.



Model Identification

KLE500-B1 Left Side View

KLE500-B1 Right Side View

General Specifications

Items	KLE500-B1
Dimensions	
Overall Length	2 215 mm (87.2 in.)
Overall Width	880 mm (34.6 in.)
Overall Height	1 270 mm (50.0 in.)
Wheelbase	1 500 mm (59.0 in.)
Road Clearance	180 mm (7.09 in.)
Seat Height	850 mm (33.5 in.)
Dry Weight	181 kg (399 lb.)
Curb Weight:	
Front	95 kg (209 lb.)
Rear	105 kg (232 lb.)
Fuel tank Capacity	15 L (4.0 US gal.)
Performance	
Minimum Turning Radius	2.4 m (7.9 ft.)
Engine	
Type	4-stroke, DOHC, 2-cylinder
Cooling System	Liquid-cooled
Bore and Stroke	74.0 × 58.0 mm (2.91 × 2.28 in.)
Displacement	498 mL (30.39 cu in.)
Compression Ratio	9.8:1
Maximum Horsepower	33 kW (44.9 PS) @8 300 r/min (rpm)
Maximum Torque	41 N·m (4.2 kgf·m, 30 ft·lb) @7 500 r/min (rpm)
Carburetion System	Carburetors, Keihin CVK34 × 2
Starting System	Electric starter
Ignition System	Battery and coil (transistorized)
Timing Advance	Electronically Advanced (digital)
Ignition Timing	From 10° BTDC @1 300 r/min (rpm) to 35° BTDC @5 000 r/min (rpm)
Spark Plugs	NGK DR9EA or ND X27ESR-U
Cylinder Numbering Method	Left to right, 1-2
Firing Order	1-2
Valve Timing:	
Inlet	
Open	27° BTDC
Close	47° ABDC
Duration	254°
Exhaust	
Open	52° BBDC
Close	22° ATDC
Duration	254°
Lubrication System	Forced lubrication

General Specifications

Items	KLE500-B1
Engine Oil:	
Grade	API SE, SF, SG or API SH or SJ with JASO MA
Viscosity	SAE10W-40
Capacity	3.4 L (3.6 US qt)
Drive Train	
Primary Reduction System:	
Type	Chain
Reduction Ratio	2.652 (61/23)
Clutch Type	Wet multi disc
Transmission:	
Type	6-speed constant mesh, return shift
Gear Ratios:	
1st	2.571 (36/14)
2nd	1.722 (31/18)
3rd	1.333 (28/21)
4th	1.125 (27/24)
5th	0.961 (25/26)
6th	0.851 (23/27)
Final Drive System:	
Type	Chain drive
Reduction Ratio	2.588 (44/17)
Overall Drive Ratio	5.847 @Top gear
Frame	
Type	Tubular, double cradle
Caster (rake angle)	27°
Trail	105 mm (4.13 in.)
Front Tire:	
Type	Tubeless
Size	90/90-21 M/C 54S
Rear Tire:	
Type	Tubeless
Size	130/80-17 M/C 65S
Front Suspension:	
Type	Telescopic fork
Wheel Travel	220 mm (8.66 in.)
Rear Suspension:	
Type	Swingarm
Wheel Travel	200 mm (7.87 in.)
Brake Type:	
Front	Single disc
Rear	Single disc

General Specifications

Items	KLE500-B1
Electrical Equipment	
Battery	12 V 10 Ah
Headlight:	
Type	Semi-sealed beam
Bulb	12 V 55/55 W (quartz-halogen)
Tail/brake Light	12 V 5/21 W
Alternator:	
Type	Three-phase AC
Rated output	17 A × 14 V @6 000 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	=	cm Hg
kgf/cm²	×	98.07	=	kPa
kgf/cm²	×	14.22	=	psi
cm Hg	×	1.333	=	kPa

Units of Speed:

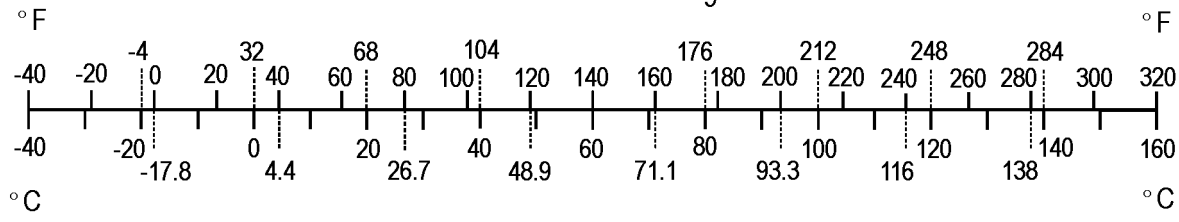
km/h	×	0.6214	=	mph

Units of Power:

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

Units of Temperature:

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



Periodic Maintenance

Table of Contents

Periodic Maintenance Chart

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

FREQUENCY / OPERATION	Whichever comes first ➡ / ⬇ Every	* ODOMETER READING × 1000 km (× 1000 mile) 1 (0.6)	6 (4)	12 (7.5)	18 (12)	24 (15)	30 (20)	36 (24)	See Page
Fuel System									
Throttle cable-inspect	year	●		●		●		●	2-14
Idle speed-inspect		●		●		●		●	2-15
Carburetor synchronization-inspect				●		●		●	2-16
Coolant filter-clean	year								2-17
Air cleaner element-clean #				●		●		●	2-17
Fuel hoses and connections-inspect	year	●		●		●		●	2-17
Cooling System									
Coolant level-inspect		●		●		●		●	2-18
Radiator hose and connection-inspect	year	●		●		●		●	2-19
Engine Top End									
Air suction valve-inspect				●		●		●	2-19
Valve clearance-inspect						●			2-19
Clutch									
Clutch operation (play, disengagement, engagement)-inspect		●		●		●		●	2-21
Wheels and Tires									
Tire air pressure-inspect			●	●	●	●	●	●	2-22
Tire tread wear-inspect				●		●		●	2-22
Wheel/tire damage-inspect				●		●		●	2-23
Wheel bearing damage-inspect	year			●		●		●	2-24
Spoke tightness and rim runout-inspect		●	●	●	●	●	●	●	2-24
Final Drive									
Drive chain slack-inspect #	Every 1 000 km (600 mile)								2-25
Drive chain wear-inspect #	Every 6 000 km (4 000 mile)								2-26
Drive chain lubrication condition-inspect #	Every 600 km (400 mile)								2-27
Drive chain guide wear-inspect	Every 12 000 km (7 500 mile)								–
Brake System									
Brake fluid leak (brake hose and pipe)-inspect	year	●	●	●	●	●	●	●	2-27
Brake hose damage-inspect	year	●	●	●	●	●	●	●	2-28
Brake hose installation condition-inspect	year	●	●	●	●	●	●	●	2-28
Brake operation (effectiveness, play, no drag)-inspect	year	●	●	●	●	●	●	●	2-28
Brake fluid level-inspect	6 months	●	●	●	●	●	●	●	2-28
Brake pad wear-inspect #			●	●	●	●	●	●	2-29
Brake light switch operation-inspect		●	●	●	●	●	●	●	2-30

2-4 PERIODIC MAINTENANCE

Periodic Maintenance Chart

FREQUENCY / OPERATION	Whichever comes first ➡ / ⬇ Every	* ODOMETER READING × 1000 km (× 1000 mile) 1 (0.6)	6 (4)	12 (7.5)	18 (12)	24 (15)	30 (20)	36 (24)	See Page
Suspensions									
Front forks/rear shock absorber operation (damping and smooth stroke)-inspect				●		●		●	2-30
Front forks/rear shock absorber oil leak-inspect	year			●		●		●	2-31
Rocker arm operation-inspect				●		●		●	2-31
Rocker arm bearings and sleeves -lubricate						●			2-31
Tie-rods operation-inspect				●		●		●	2-32
Swingarm pivot-lubricate						●			2-32
Steering System									
Steering play-inspect	year	●		●		●		●	2-32
Steering stem bearings-lubricate	2 years					●			2-33
Electrical System									
Spark plug condition-inspect				●		●		●	2-34
Lights and switches operation-inspect	year			●		●		●	2-34
Headlight aiming-inspect	year			●		●		●	2-36
Side stand switch operation-inspect	year			●		●		●	2-37
Engine stop switch operation-inspect	year			●		●		●	2-38
Others									
Chassis parts-lubricate	year			●		●		●	2-38
Bolts, nuts and fasteners tightness-inspect		●		●		●		●	2-39

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

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

Periodic Maintenance Chart

Periodic Replacement Parts

FREQUENCY / CHANGE/REPLACEMENT	Whichever come first ➡ / Every ⬇	* ODOMETER READING × 1000 km (× 1000 mile) 1 (0.6)	12 (7.5)	18 (12)	24 (15)	36 (24)	48 (30)	See Page
Fuel hose	4 years						●	2-40
Air cleaner element	2 years							2-40
Coolant	3 years					●		2-40
Radiator hose and O-ring	3 years					●		2-43
Engine oil #	year	●	●		●	●	●	2-43
Oil filter	year	●	●		●	●	●	2-44
Brake hose	4 years						●	2-44
Brake fluid	2 years				●		●	2-45
Master Cylinder/Caliper Rubber Parts	4 years						●	2-47

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

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

Torque and Locking Agent

Tighten all bolts and nuts to the proper torque using an accurate torque wrench. An insufficiently tightened bolt or nut may become damaged or fall off, possibly resulting in damage to the motorcycle and injury to the rider. A bolt or nut which is overtightened may become damaged, strip an internal thread, or break and then fall out. The following table lists the tightening torque for the major bolts and nuts, and the parts requiring use of a non-permanent locking agent or liquid gasket.

When checking the tightening torque of the bolts and nuts, first loosen the bolt or nut by half a turn and then tighten it to the specified torque.

Letters used in the "Remarks" column mean:

EO: Apply engine oil to the threads and seating surface.
L: Apply a non-permanent locking agent to the threads.
LG: Apply liquid gasket to the threads.
Lh: Left-hand threads.
M: Apply molybdenum disulfide grease.
MO: Apply molybdenum disulfide oil (mixture of the engine oil and molybdenum disulfide grease in a weight ratio 10 : 1)
R: Replacement parts.
S: Tighten the fasteners following the specified sequence.
SS: Apply silicone sealant to the threads.
St: Stake the fasteners to prevent loosening.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel System				
Fuel Tap Cover Screws	0.8	0.08	7 in·lb	
Fuel Tap Mounting Bolts	5.0	0.51	44 in·lb	
Air Cut Valve Cover Screws	1.0	0.10	9 in·lb	
Cooling System				
Radiator Hose Clamp Screws	2.5	0.25	22 in·lb	
Radiator Fan Switch	18	1.8	13	
Thermostat Housing Bolts	11	1.1	95 in·lb	
Water Temperature Sensor	7.8	0.8	69 in·lb	SS
Water Pump Cover Bolts	11	1.1	95 in·lb	
Water Pump Shaft	25	2.5	18	Lh
Water Pump Impeller	9.8	1.0	87 in·lb	Lh
Water Pipe Bolts	9.8	1.0	87 in·lb	L
Cylinder Head Jacket Plug	9.8	1.0	87 in·lb	L
Radiator Cap Holder Mounting Bolts	11	1.1	95 in·lb	
Coolant Drain Plug	11	1.1	95 in·lb	
Engine Top End				
Air Suction Valve Cover Bolts	11	1.1	95 in·lb	
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	S
Camshaft Cap Bolts	12	1.2	104 in·lb	S
Rocker Shafts	39	4.0	29	EO
Valve Adjuster Locknuts	25	2.5	18	
Camshaft Sprocket Bolts	15	1.5	11	L
Cylinder Head Bolts (10 mm)	51	5.2	38	S
Cylinder Head Bolts (6 mm)	9.8	1.0	87 in·lb	S
Camshaft Chain Tensioner Mounting Bolts	11	1.1	95 in·lb	
Camshaft Chain Tensioner Cap Bolt	13	1.3	9.5	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Main Oil Pipe Upper Banjo Bolts M8	12	1.2	104 in·lb	
Main Oil Pipe Lower Banjo Bolt M10	20	2.0	14.5	
Water Jacket Plug	9.8	1.0	87 in·lb	L
Oil Pipe Bolts (in the cylinder head)	11	1.1	95 in·lb	
Main Oil Pipe Mounting Bolt	11	1.1	95 in·lb	
Clutch				
Oil Filler Plug	1.5	0.15	13 in·lb	
Clutch Hub Nut	132	13.5	98	
Clutch Spring Bolts	9.3	0.95	82 in·lb	
Clutch Cable Holder Bolt	11	1.1	95 in·lb	
Clutch Cover Bolts	11	1.1	95 in·lb	
Engine Lubrication System				
Oil Filler Plug	1.5	0.15	13 in·lb	
Oil Passage Plug	18	1.8	13	
Oil Filter Mounting Stud	25	2.5	18	L (Planted side)
Oil Filter (Cartridge Type)	17	1.7	12.5	
Oil Pipe for Balancer Shaft Banjo Bolt	20	2.0	14.5	
Oil Pipe for Drive Shaft Upper Banjo Bolt M6	7.8	0.8	69 in·lb	
Oil Pipe for Drive Shaft Lower Banjo Bolt M8	12	1.2	104 in·lb	
Oil Pipe for Output Shaft Upper Banjo Bolt M6	7.8	0.8	69 in·lb	
Oil Pipe for Output Shaft Lower Banjo Bolt M8	12	1.2	104 in·lb	
Oil Pipe for Output Shaft Mounting Bolt	11	1.1	95 in·lb	L
Oil Pump Outer Oil Pipe Bolts	11	1.1	95 in·lb	L
Relief Valve	15	1.5	11	L
Oil Pressure Switch Terminal Bolt	1.5	0.15	13 in·lb	
Oil Pressure Switch	15	1.5	11	SS
Main Oil Pipe Mounting Bolt	11	1.1	95 in·lb	
Main Oil Pipe Upper Banjo Bolts	12	1.2	104 in·lb	
Main Oil Pipe Lower Banjo Bolt	20	2.0	14.5	
Rocker Shafts	39	4.0	29	
Engine Oil Drain Plug	29	3.0	22	
Oil Pan Mounting Bolts	11	1.1	95 in·lb	
Oil Pump Mounting Bolts	11	1.1	95 in·lb	
Engine Removal/Installation				
Downtube Bolts	44	4.5	33	
Engine Mounting Bolts and Nuts	44	4.5	33	
Engine Mounting Bracket Bolts	25	2.5	18	
Crankshaft/Transmission				
Breather Body Bolt	5.9	0.6	52 in·lb	
Crankcase Bolts (8 mm)	27	2.8	20	S
Crankcase Bolts (6 mm)	12	1.2	104 in·lb	S

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Upper Primary Chain Guide Mounting Bolt	11	1.1	95 in·lb	L
Lower Primary Chain Guide Mounting Bolt	11	1.1	95 in·lb	L
Connecting Rod Big End Nuts	36	3.7	27	
Return Spring Pin	20	2.0	14.5	L
Gear Positioning Lever Pivot Stud	–	–	–	L (planted side)
Gear Positioning Lever Nut	11	1.1	95 in·lb	
Shift Pedal Link Lever Mounting Bolt	12	1.2	104 in·lb	
Shift Drum Bearing Holder Bolts	11	1.1	95 in·lb	L
Shift Drum Cam Pin Plate Screw	–	–	–	L
Engine Sprocket Nut	127	13	94	EO
External Shift Mechanism Cover Bolts	11	1.1	95 in·lb	
Neutral Switch	15	1.5	11	
Wheels/Tires				
Spoke Nipple	2.0 ~ 3.9	0.2 ~ 0.4	17 ~ 35 in·lb	
Front Axle Nut	88	9.0	65	
Rear Sprocket Nut	33	3.4	24	
Rear Axle Nut	108	11	80	
Final Drive				
Engine Sprocket Nut	127	13	94	EO
Rear Sprocket Nuts	33	3.4	24	
Rear Coupling Studs	–	–	–	L (planted side)
Rear Axle Nut	108	11	80	
Drive Chain Guide Bolts	11	1.1	95 in·lb	
Brakes				
Brake Hose Banjo Bolts	34	3.5	25	
Front Reservoir Cap Screws	1.5	0.15	13 in·lb	
Brake Lever Pivot Bolt	1.0	0.10	9 in·lb	
Brake Lever Pivot Locknut	5.9	0.60	52 in·lb	
Front Master Cylinder Clamp Bolts	11	1.1	95 in·lb	S
Front Brake Light Switch Mounting Screw	1.2	0.12	10 in·lb	
Front Caliper Mounting Bolts	34	3.5	25	
Rear Caliper Mounting Bolts	25	2.5	18	
Caliper Bleed Valves	7.8	0.8	69 in·lb	
Brake Disc Mounting Bolts	23	2.3	16.5	L
Brake Pedal Bolt	25	2.5	18	
Rear Reservoir Mounting Bolt	5.9	0.60	52 in·lb	
Rear Master Cylinder Mounting Bolts	25	2.5	18	
Suspension				
Front Fork Upper Clamp Allen Bolts	25	2.5	18	S
Front Fork Lower Clamp Bolts	23	2.3	16.5	S

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Front Fork Top Bolts	30	3.1	22	
Front Fork Bottom Allen Bolt	30	3.1	22	L
Rear Shock Absorber Upper Mounting Nut	59	6.0	43	
Rear Shock Absorber Lower Mounting Nut	98	10	72	
Swingarm Pivot Nut	118	12	87	
Rocker Arm Pivot Nut	98	10	72	
Tie-Rod Mounting Nuts	98	10	72	
Steering				
Handlebar Clamp Bolts	25	2.5	18	S
Handlebar Weight Allen Bolts	–	–	–	L
Front Fork Upper Clamp Allen Bolts	25	2.5	18	S
Front Fork Lower Clamp Bolts	23	2.3	16.5	S
Steering Stem Head Nut	39	4.0	29	
Steering Stem Locknut	Hand -Tighten (about 4.9)	Hand -Tighten (about 0.5)	Hand -Tighten (about 43 in·lb)	
Frame				
Tail Grip Bolts	25	2.5	18	
Front Footpeg Bracket Bolts	34	3.5	25	
Sidestand Bolt and Nut	44	4.5	33	
Rear Footpeg Bracket Bolts	25	2.5	18	
Carrier Stay Mounting Bolts	25	2.5	18	
Electrical System				
Crankshaft Sensor Mounting Screws	8.3	0.85	74 in·lb	L
Timing Inspection Plug	2.5	0.25	22 in·lb	
Alternator Rotor Bolt Plug	1.5	0.15	13 in·lb	
Alternator Cover Bolts	11	1.1	95 in·lb	
Alternator Lead Clamp Screws	2.9	0.30	26 in·lb	
Spark Plug	14	1.4	10	
Alternator Stator Allen Bolts	12	1.2	104 in·lb	
Alternator Rotor Bolt	69	7.0	51	Lh
Starter Motor Mounting Bolts	11	1.1	95 in·lb	
Starter Chain Guide Bolts	4.9	0.5	43 in·lb	L
Starter Motor Through Bolts	6.9	0.7	65 in·lb	
Starter Motor Terminal Nut	4.9	0.5	43 in·lb	
Starter Motor Lead Clamp Nut	4.9	0.5	43 in·lb	
Starter Clutch Allen Bolts	34	3.5	25	L
Sidestand Switch Mounting Screw	3.9	0.4	35 in·lb	L
Sidestand Bolt and Nut	44	4.5	33	
Radiator Fan Switch	18	1.8	13	
Water Temperature Switch	7.8	0.80	69 in·lb	SS
Oil Pressure Switch Terminal Bolt	1.5	0.15	13 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Oil Pressure Switch	15	1.5	11	SS
Neutral Switch	15	1.5	11	
Tail Light Mounting Nut	5.9	0.6	52 in·lb	

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

Basic Torque for General Fasteners

Threads dia. (mm)	Torque		
	N·m	kgf·m	ft·lb
5	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in·lb
6	5.9 ~ 7.8	0.60 ~ 0.80	52 ~ 69 in·lb
8	14 ~19	1.4 ~1.9	10.0 ~ 13.5
10	25 ~ 34	2.6 ~ 3.5	19.0 ~ 25
12	44 ~ 61	4.5 ~ 6.2	33 ~ 45
14	73 ~ 98	7.4 ~ 10.0	54 ~ 72
16	115 ~ 155	11.5 ~ 16.0	83 ~ 115
18	165 ~ 225	17.0 ~ 23.0	125 ~ 165
20	225 ~ 325	23 ~ 33	165 ~ 240

Specifications

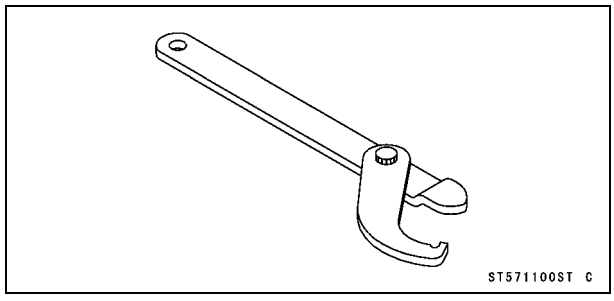
Item	Standard	Service Limit
Fuel System		
Throttle Grip Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	– – –
Idle Speed	1 200 ±50 r/min (rpm)	– – –
Engine Top End		
Valve Clearance		
Inlet	0.13 ~ 0.18 mm (0.0051 ~ 0.0071 in.)	– – –
Exhaust	0.18 ~ 0.23 mm (0.0070 ~ 0.0090 in.)	– – –
Clutch		
Clutch Lever Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	– – –
Wheels/Tires		
Air Pressure		
Front	150 kPa (1.5 kgf/cm², 21 psi)	– – –
Rear	225 kPa (2.25 kgf/cm², 32 psi)	– – –
Tread Depth		
Front		
Dunlop	6.9 mm (0.27 in.)	1 mm (0.04 in.)
Bridgestone	6.0 mm (0.24 in.)	
Rear		
Dunlop	8.8 mm (0.35 in.)	2 mm (0.08 in.) (Up to 130 km/h (80 mph))
Bridgestone	8.5 mm (0.33 in.)	3 mm (0.12 in.) (Over to 130 km/h (80 mph))
Rim Runout		
Axial	0.5 mm (0.02 in.)	1.5 mm (0.06 in.)
Radial	0.8 mm (0.03 in.)	1.5 mm (0.06 in.)
Final Drive		
Drive Chain Slack	2 ~ 12 mm (0.08 ~ 0.47 in.)	– – –
Drive Chain Wear (20-link length)	317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)	323 mm (12.7 in.)
Brakes		
Brake Fluid Grade	DOT4	– – –
Pad Lining Thickness	5.5 mm (0.203 in.)	1 mm (0.04 in.)
Brake Light Timing		
Front	ON after 10 mm (0.39 in.) lever travel	– – –
Rear	ON after 15 mm (0.59 in.) pedal travel	– – –
Electrical System		
Spark Plug Gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in.)	– – –
Replacement Parts		
Coolant Capacity	1.7 L (1.8 US qt)	– – –
Engine Oil		
Grade	API SE, SF, SG or API SH or SJ with JASO MA	– – –
Viscosity	SAE10W-40	– – –

Specifications

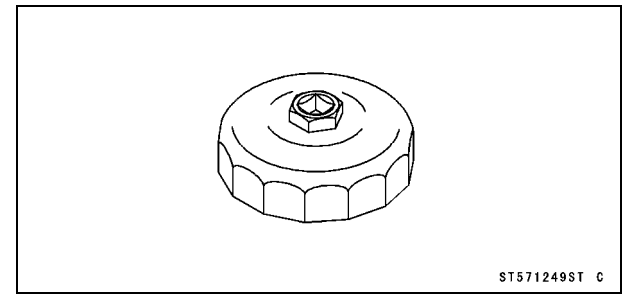
Item	Standard	Service Limit
Capacity		
when filter is not removed	2.8 L (3.0 US qt)	– – –
when filter is removed	3.0 L (3.2 US qt)	– – –
when engine is completely dry	3.4 L (3.6 US qt)	– – –

Special Tools

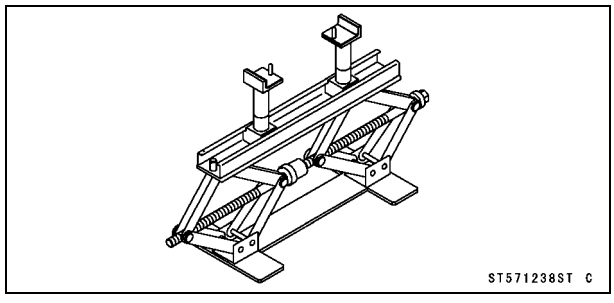
Steering Stem Nut Wrench:
57001-1100



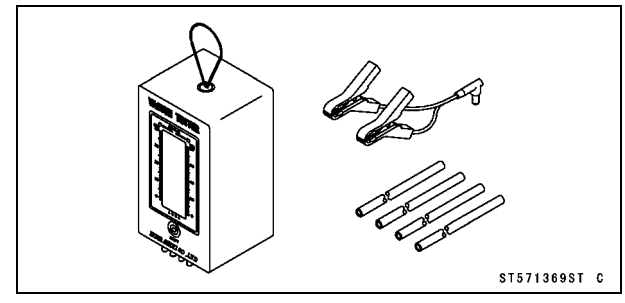
Oil Filter Wrench:
57001-1249



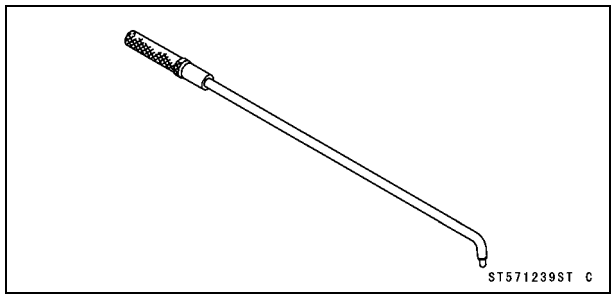
Jack:
57001-1238



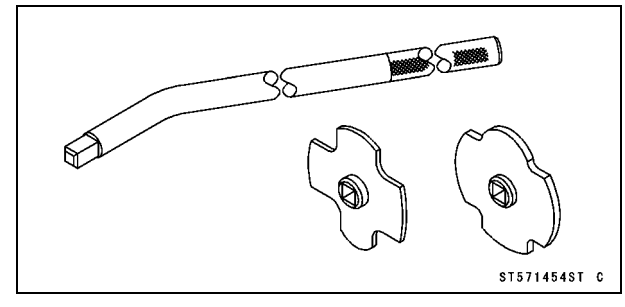
Vacuum Gauge:
57001-1369



Pilot Screw Adjuster, A:
57001-1239



Filler Cap Driver:
57001-1454



Maintenance Procedure

Fuel System

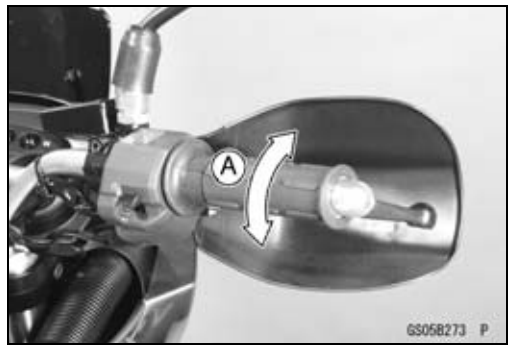
Throttle Cable Inspection

Throttle Grip Free Play Inspection

- Check throttle grip play [A] by lightly turning the throttle grip back and forth.

★If the free play is improper, adjust the throttle cable.

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



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

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

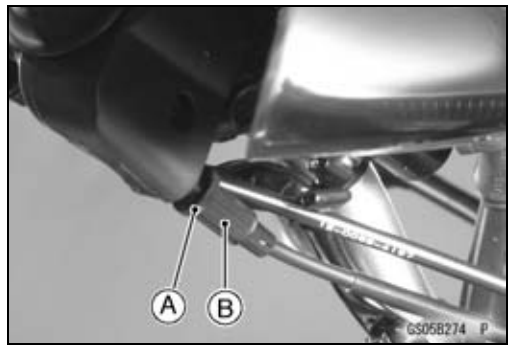
- Run the engine at the idle speed, and turn the handlebar all the way to the right and left to ensure that the idle speed does not change.

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

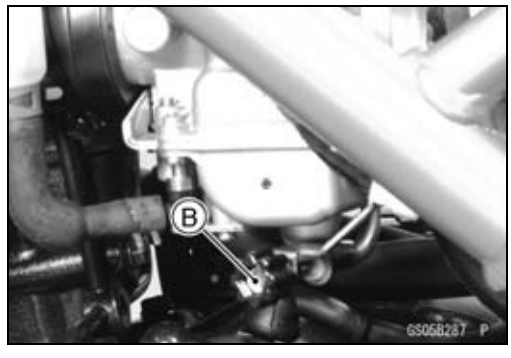
Throttle Grip Free Play Adjustment

★If the free play is incorrect, loosen the locknut [A] and turn the adjuster [B] of the accelerator cable until the 2 ~ 3 mm (0.08 ~ 0.12 in.) of throttle grip play is obtained.

- Tighten the locknut against the adjuster securely.



- Check that the throttle pulley [A] stops against the idle adjusting screw [B] with the throttle grip closed.



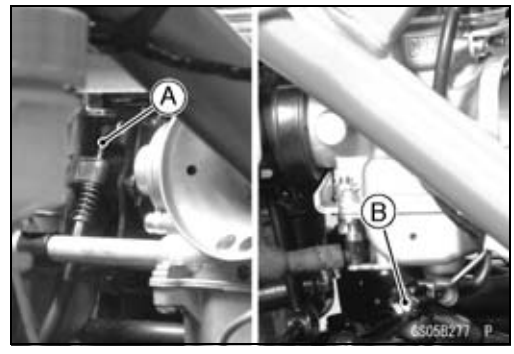
Maintenance Procedure

★If the play can not be adjusted by using the adjuster at the throttle grip, use the adjuster [A] of the decelerator cable under the fuel tank.
- Screw in the adjuster fully at the throttle grip and tighten the locknut.
- Remove the fuel tank (see Fuel Tank Removal in the Fuel System chapter).

○Make the necessary free play adjustment at the lower cable end.

- Check that the throttle pulley stops [A] against the idle adjusting screw [B], with the throttle grip released and stops against the carburetor stopper with the throttle grip opened.
- Turn the handlebar from side to side while idling the engine.

★If idle speed varies, the cable may be poorly routed or damaged.

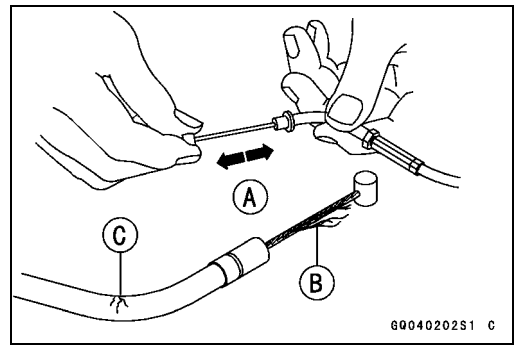


⚠ WARNING

Operation with an improperly adjusted, incorrectly routed, or damaged cable could result in an unsafe riding condition.

Throttle Cable Inspection
- Remove both ends of the throttle cables.
- With the throttle cable disconnected at both ends, the cable should move freely [A] within the cable housing.

○If cable movement is not free after lubricating, if the cable is frayed [B], or if the cable housing is kinked [C], replace the cable.



Idle Speed Inspection

Idle Speed Inspection
- Start the engine and warm it up thoroughly.
- With the engine idling, turn the handlebar to both sides.

★If handlebar movement changes the idle speed, the throttle cable may be improperly adjusted or incorrectly routed, or it may be damaged. Be sure to correct any of these conditions before riding.

⚠ WARNING

Operation with improperly adjusted, incorrectly routed, or damaged cables could result in an unsafe riding condition.

- Check idle speed.

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

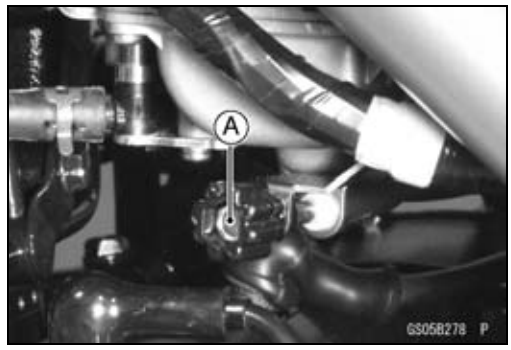
Idle Speed
1 200 ±50 r/min (rpm)

Maintenance Procedure

Idle Speed Adjustment

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

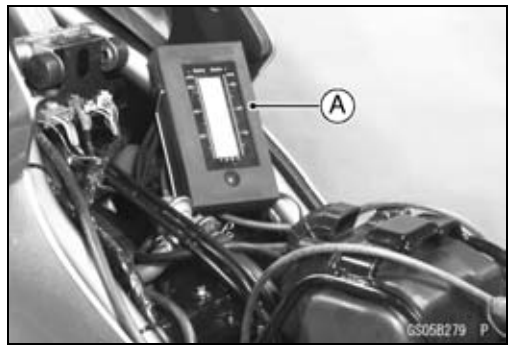


Carburetor Synchronization Inspection

Synchronization Inspection

- Situate the motorcycle so that it is perpendicular to the ground.
- Remove the fuel tank and connect the auxiliary fuel tank to supply the fuel.
- Warm up the engine.
- Check idle speed and adjust if necessary.
- Pull the vacuum hoses off, and attach vacuum gauge [A] to the vacuum hose fittings on the carburetors.

Special Tool - Vacuum Gauge: 57001-1369

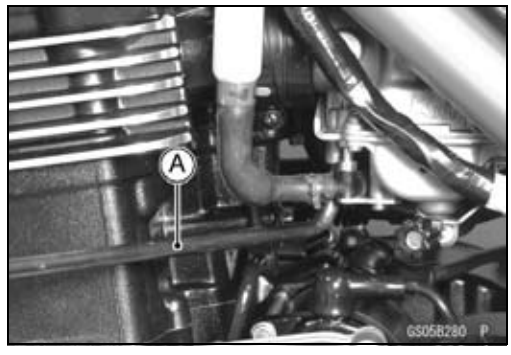


Synchronization Adjustment

○The pilot screw is set at the factory and should not be removed. But if necessary, check the pilot screw opening as follows.

- Turn in the pilot screw and count the number of turns until it seats fully but not tightly, and then remove the screw. This is to set the screw to its original (correct) position when assembling.

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



NOTE

○*Each carburetor has different opening of the pilot screw. When setting the pilot screw, do not refer to the specifications which show mean opening of the pilot screws.*