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Kawasaki

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Motorcycle Service Manual

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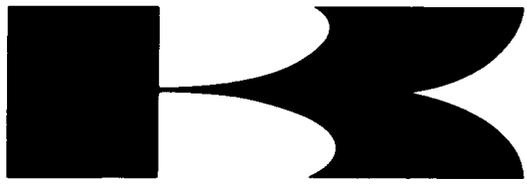
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This quick reference guide will assist you in locating a desired topic or procedure.

- Bend the pages back to match the black tab of the desired chapter number with the black tab on the edge at each table of contents page.
- Refer to the sectional table of contents for the exact pages to locate the specific topic required.



Kawasaki

Versys

Motorcycle Service Manual

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No liability can be accepted for any inaccuracies or omissions in this publication, although every possible care has been taken to make it as complete and accurate as possible.

The right is reserved to make changes at any time without prior notice and without incurring an obligation to make such changes to products manufactured previously. See your Motorcycle dealer for the latest information on product improvements incorporated after this publication.

All information contained in this publication is based on the latest product information available at the time of publication. Illustrations and photographs in this publication are intended for reference use only and may not depict actual model component parts.

LIST OF ABBREVIATIONS

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

COUNTRY AND AREA CODES

AT	Austria	GB	United Kingdom
CA	Canada	MY	Malaysia
CH	Switzerland	WVTA	Whole Vehicle Type Approval
DE	Germany		

Foreword

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

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

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

To get the longest life out of your vehicle.

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

How to Use This Manual

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

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

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

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

⚠ WARNING

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

CAUTION

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

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

NOTE

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

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

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

General Information

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1-2 GENERAL INFORMATION

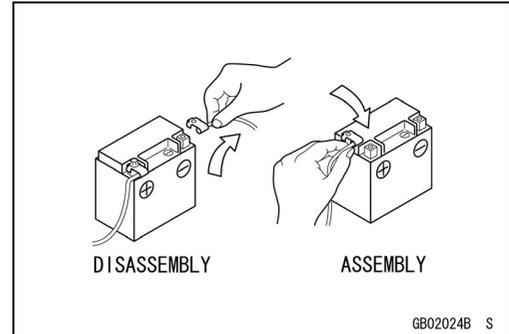
Before Servicing

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

Especially note the following:

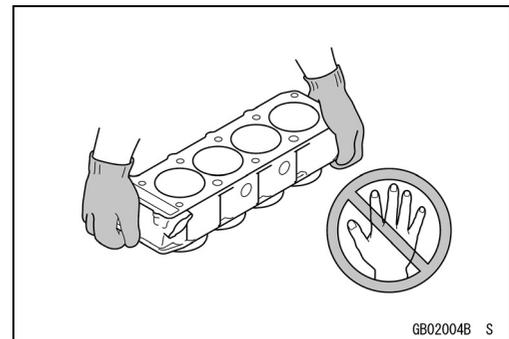
Battery Ground

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



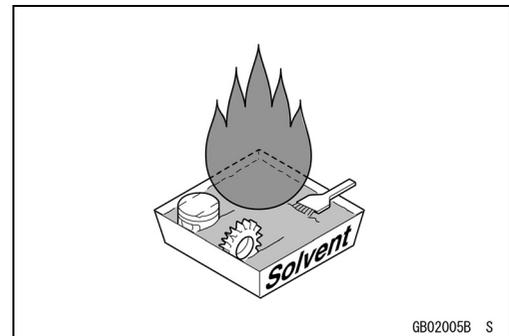
Edges of Parts

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



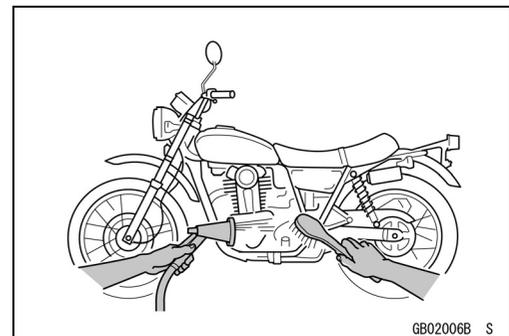
Solvent

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



Cleaning Vehicle before Disassembly

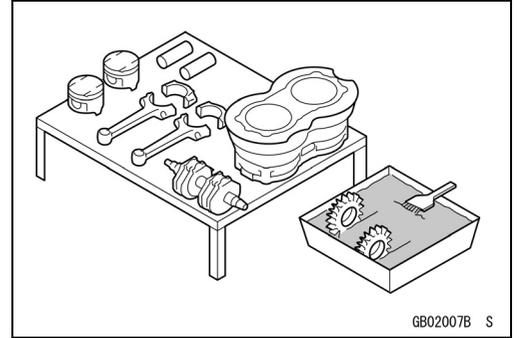
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Before Servicing

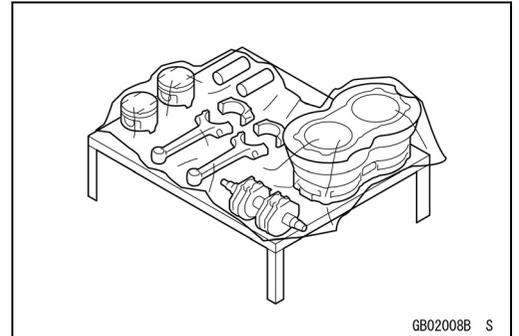
Arrangement and Cleaning of Removed Parts

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



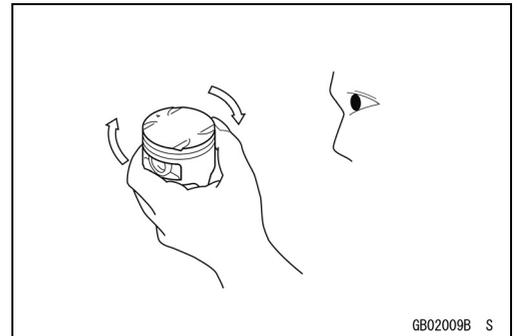
Storage of Removed Parts

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



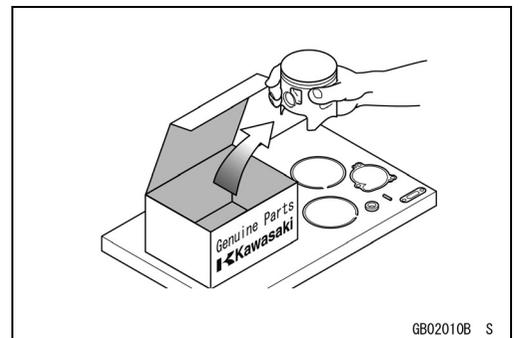
Inspection

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



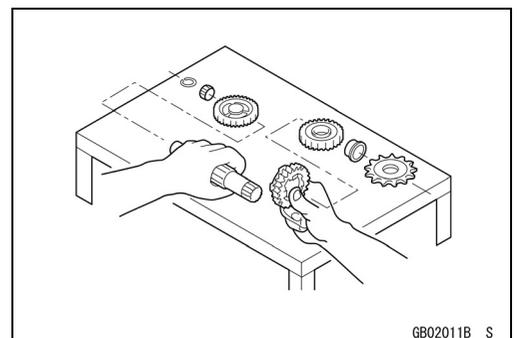
Replacement Parts

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



Assembly Order

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

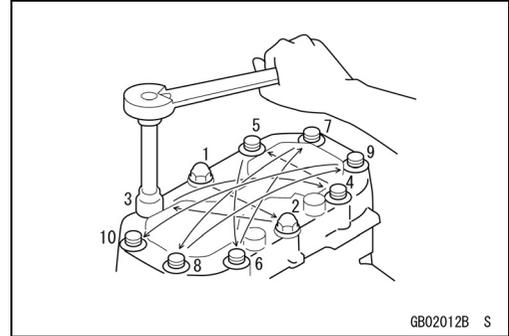


1-4 GENERAL INFORMATION

Before Servicing

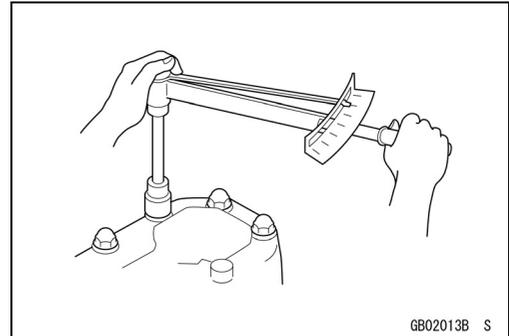
Tightening Sequence

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



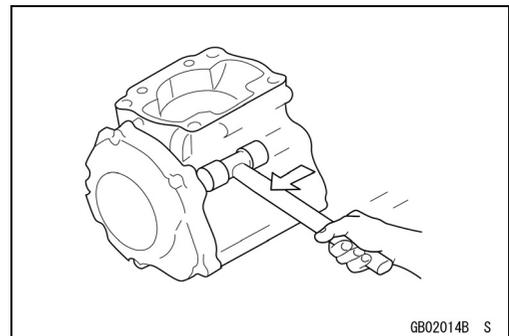
Tightening Torque

Incorrect torque applied to a bolt, nut, or screw may lead to serious damage. Tighten fasteners to the specified torque using a good quality torque wrench. Often, the tightening sequence is followed twice-initial tightening and final tightening with torque wrench.



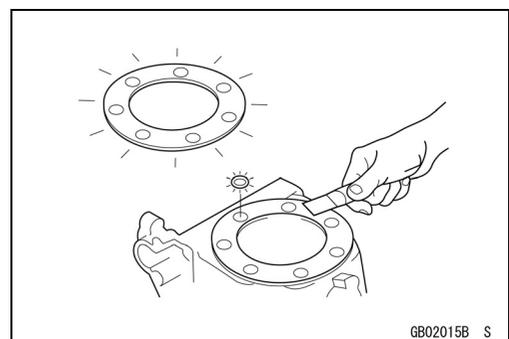
Force

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.



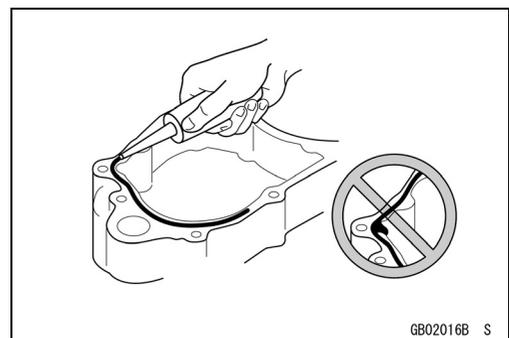
Gasket, O-ring

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, Non-permanent Locking Agent

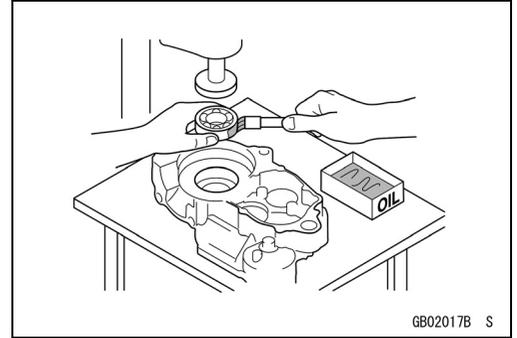
For applications that require Liquid Gasket or a Non-permanent Locking Agent, clean the surfaces so that no oil residue remains before applying liquid gasket or non-permanent locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Before Servicing

Press

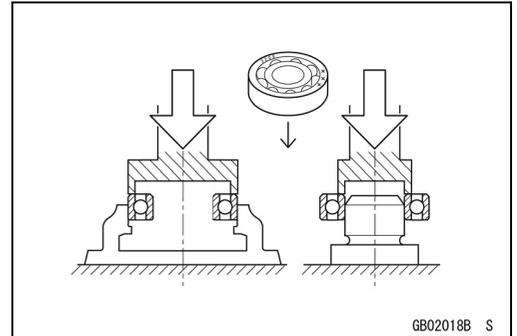
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



Ball Bearing and Needle Bearing

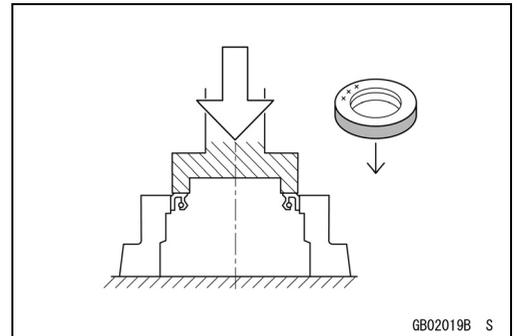
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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

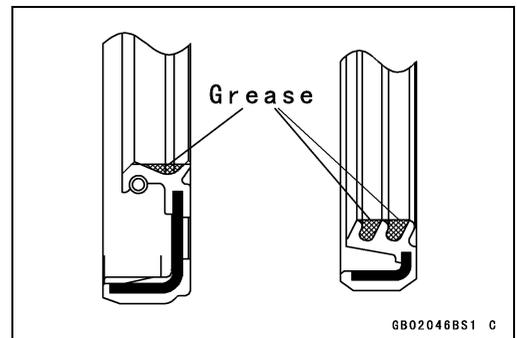


Oil Seal, Grease Seal

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.

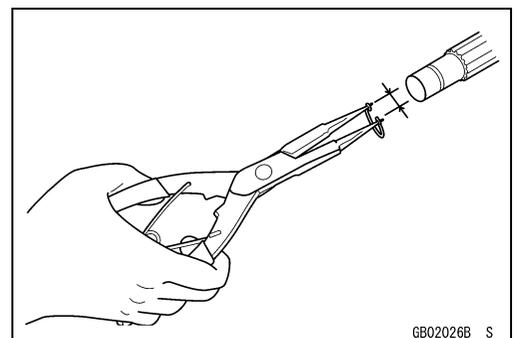


Apply specified grease to the lip of seal before installing the seal.



Circlips, Cotter Pins

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

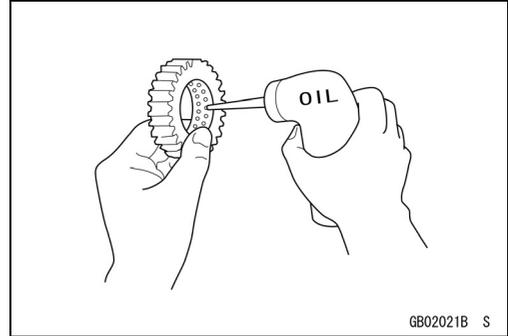


1-6 GENERAL INFORMATION

Before Servicing

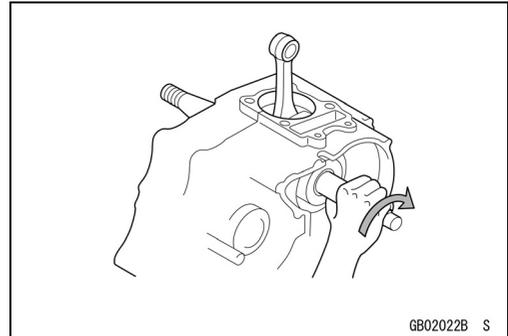
Lubrication

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



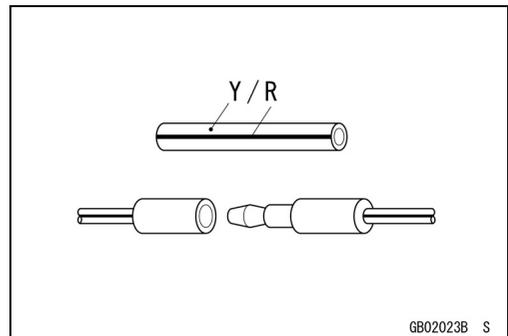
Direction of Engine Rotation

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



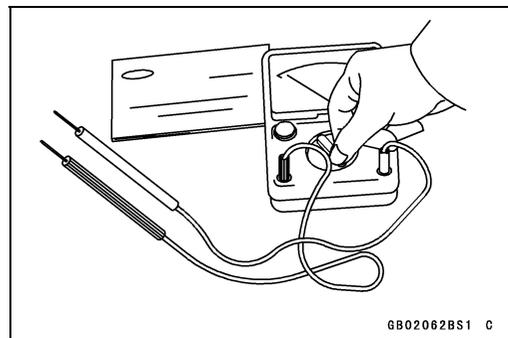
Electrical Wires

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



Instrument

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



Model Identification

KLE650B7F Left Side View



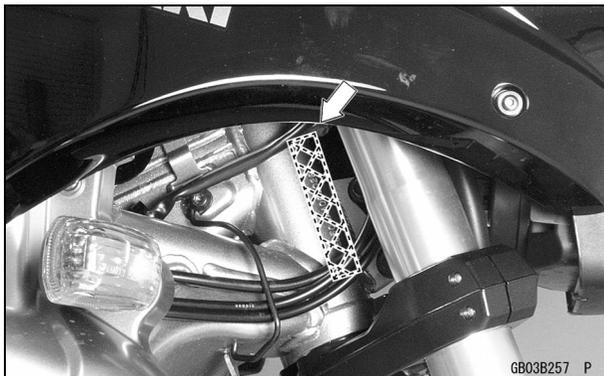
GB03B255 P

KLE650B7F Right Side View



GB03B256 P

Frame Number



GB03B257 P

Engine Number



GB03B258 P

1-8 GENERAL INFORMATION

General Specifications

Items	KLE650A7F, KLE650B7F
Dimensions	
Overall Length	2 125 mm (83.7 in.)
Overall Width	840 mm (33.1 in.)
Overall Height	1 315 mm (51.8 in.)
Wheelbase	1 415 mm (55.7 in.)
Road Clearance	180 mm (7.1 in.)
Seat Height	840 mm (33.1 in.)
Dry Mass:	
KLE650A7F	181 kg (399 lb)
KLE650B7F	184 kg (405 lb)
Curb Mass:	
Front:	
KLE650A7F	103 kg (227 lb)
KLE650B7F	103 kg (227 lb)
Rear:	
KLE650A7F	105 kg (232 lb)
KLE650B7F	104 kg (229 lb)
Fuel Tank Capacity	19 L (5.0 US gal)
Performance	
Minimum Turning Radius	2.7 m (8.8 ft)
Engine	
Type	4-stroke, DOHC, 2-cylinder
Cooling System	Liquid-cooled
Bore and Stroke	83 × 60 mm (3.3 × 2.4 in.)
Displacement	649 cm ³ (39.6 cu in.)
Compression Ratio	10.6 : 1
Maximum Horsepower	47.0 kW (64 PS) @8 000 r/min (rpm), (MY) 44.0kW (60 PS) @7 000 r/min (rpm), (CA) – – –
Maximum Torque	61 N·m (6.2 kgf·m, 114 ft·lb) @6 800 r/min (rpm), (MY)61 N·m (6.2 kgf·m, 114 ft·lb) @6 000 r/min (rpm), (CA) – – –
Carburetion System	FI (Fuel injection), KEIHIN TTK38 × 2
Starting System	Electric starter
Ignition System	Battery and coil (transistorized)
Timing Advance	Electronically advanced (digital igniter in ECU)
Ignition Timing	From 10° BTDC @1 300 r/min (rpm) to From 33° BTDC @5 000 r/min (rpm)
Spark Plug	NGK CR9EIA-9
Cylinder Numbering Method	Left to right, 1-2
Firing Order	1-2

General Specifications

Items	KLE650A7F, KLE650B7F
Valve Timing: Inlet: Open Close Duration Exhaust: Open Close Duration Lubrication System Engine Oil: Type Viscosity Capacity	25° (BTDC) 54° (ABDC) 260° 47° (BBDC) 25° (ATDC) 252° Forced lubrication (sem-dry sump) API SE, SF or SG API SH, SJ or SL with JASO MA SAE 10W-40 2.4 L (2.5 US qt)
Drive Train Primary Reduction System: Type Reduction Ratio Clutch Type Transmission: Type Gear Ratios: 1st 2nd 3rd 4th 5th 6th Final Drive System: Type Reduction Ratio Overall Drive Ratio	Gear 2.095 (88/42) Wet multi disc 6-speed, constant mesh, return shift 2.438 (39/16) 1.714 (36/21) 1.333 (32/24) 1.111 (30/27) 0.966 (28/29) 0.852 (23/27) Chain drive 3.067 (46/15) 5.473 @Top gear
Frame Type Caster (Rake Angle) Trail Front Tire: Type Size Rear Tire: Type Size	Tubular,diamond 25° 108 mm (4.2 in.) Tubeless 120/70 ZR17 MC (58W) Tubeless 160/60 ZR17 MC (69W)

1-10 GENERAL INFORMATION

General Specifications

Items	KLE650A7F, KLE650B7F
Rim Size: Front Rear Front Suspension: Type Wheel Travel Rear Suspension: Type Wheel Travel Brake Type: Front Rear	17 × 3.50 17 × 4.50 Telescopic fork (upside-down) 150 mm (5.9 in.) Swingarm (uni-trak) 145 mm (5.7 in.) Dual discs Single disc
Electrical Equipment Battery Headlight: Type Bulb Tail/Brake Light Alternator: Type Rated Output	12 V 10 Ah Semi-sealed beam 12 V 55 W/55W (Hi/Lo) 12 V 0.5/3.7 W (LED) Three-phase AC 8 A/14 V @4 000 r/min (rpm)

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

Unit Conversion Table

Prefixes for Units:

Prefix	Symbol	Power
mega	M	× 1 000 000
kilo	k	× 1 000
centi	c	× 0.01
milli	m	× 0.001
micro	μ	× 0.000001

Units of Mass:

kg	×	2.205	=	lb
g	×	0.03527	=	oz

Units of Volume:

L	×	0.2642	=	gal (US)
L	×	0.2200	=	gal (imp)
L	×	1.057	=	qt (US)
L	×	0.8799	=	qt (imp)
L	×	2.113	=	pint (US)
L	×	1.816	=	pint (imp)
mL	×	0.03381	=	oz (US)
mL	×	0.02816	=	oz (imp)
mL	×	0.06102	=	cu in

Units of Force:

N	×	0.1020	=	kg
N	×	0.2248	=	lb
kg	×	9.807	=	N
kg	×	2.205	=	lb

Units of Length:

km	×	0.6214	=	mile
m	×	3.281	=	ft
mm	×	0.03937	=	in

Units of Torque:

N·m	×	0.1020	=	kgf·m
N·m	×	0.7376	=	ft·lb
N·m	×	8.851	=	in·lb
kgf·m	×	9.807	=	N·m
kgf·m	×	7.233	=	ft·lb
kgf·m	×	86.80	=	in·lb

Units of Pressure:

kPa	×	0.01020	=	kgf/cm ²
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cmHg
kgf/cm ²	×	98.07	=	kPa
kgf/cm ²	×	14.22	=	psi
cmHg	×	1.333	=	kPa

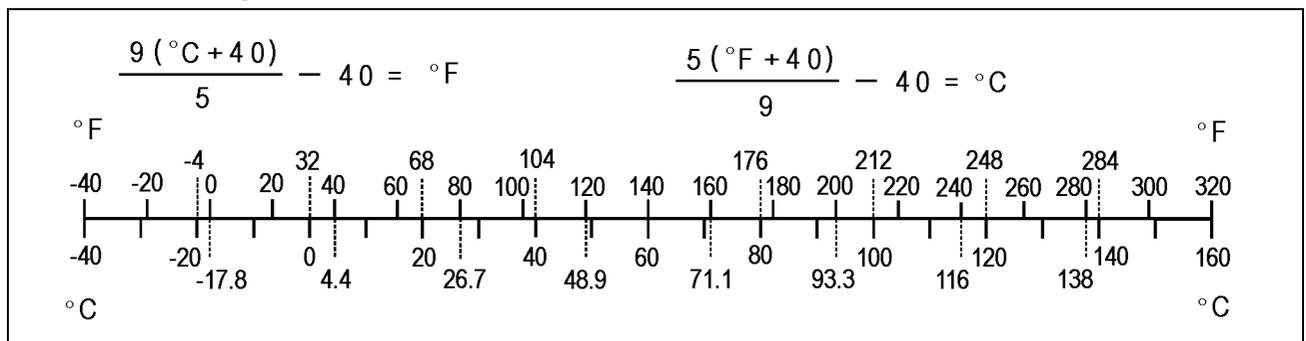
Units of Speed:

km/h	×	0.6214	=	mph
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Units of Power:

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

Units of Temperature:



Periodic Maintenance

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Engine Oil Change.....	2-48
Oil Filter Replacement	2-48
Brake Hose and Pipe Replacement.....	2-49
Brake Fluid Change	2-50
Master Cylinder Rubber Parts Replacement	2-52
Caliper Rubber Parts Replacement	2-53
Spark Plug Replacement	2-55

2-4 PERIODIC MAINTENANCE

Periodic Maintenance Chart

FREQUENCY	Whichever comes first ↓ Every	* ODOMETER READING × 1 000 km (× 1 000 mile)							See Page
		1 (0.6)	6 (4)	12 (7.5)	18 (12)	24 (15)	30 (20)	36 (24)	
INSPECTION									
Brake hose and pipe damage - inspect	year	•	•	•	•	•	•	•	2-31
Brake hose and pipe installation condition - inspect	year	•	•	•	•	•	•	•	2-31
Brake operation (effectiveness, play, no drag) - inspect	year	•	•	•	•	•	•	•	2-32
Brake fluid level - inspect	6 months	•	•	•	•	•	•	•	2-32
Brake pad wear - inspect #			•	•	•	•	•	•	2-33
Brake light switch operation - inspect		•	•	•	•	•	•	•	2-33
Suspensions									
Front forks/rear shock absorber operation (damping and smooth stroke) - inspect				•		•		•	2-34
Front forks/rear shock absorber oil leak - inspect	year			•		•		•	2-34
Steering System									
Steering play - inspect	year	•		•		•		•	2-35
Steering stem bearings - lubricate	2 years					•			2-36
Electrical System									
Lights and switches operation - inspect	year			•		•		•	2-37
Headlight aiming - inspect	year			•		•		•	2-39
Sidestand switch operation - inspect	year			•		•		•	2-40
Engine stop switch operation - inspect	year			•		•		•	2-41
Others									
Chassis parts - lubricate	year			•		•		•	2-42
Bolts and nuts tightness - inspect		•		•		•		•	2-43

#: 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

CHANGE/REPLACE ITEM	FREQUENCY	* ODOMETER READING					See Page
	Whichever comes first ↓ Every	1 (0.6)	12 (7.5)	24 (15)	36 (24)	48 (30)	
Air cleaner element #	2 years						2-44
Fuel hose	4 years					●	2-44
Coolant	3 years				●		2-45
Radiator hose and O-ring	3 years				●		2-47
Engine oil #	year	●	●	●	●	●	2-48
Oil filter	year	●	●	●	●	●	2-48
Brake hose and pipe	4 years					●	2-49
Brake fluid	2 years			●		●	2-50
Rubber parts of master cylinder and caliper	4 years					●	2-52, 2-53
Spark plug			●	●	●	●	2-55

#: 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.

2-6 PERIODIC MAINTENANCE

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.

EO: Apply engine oil.

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

Lh: Left-hand Threads

MO: Apply molybdenum disulfide oil solution.

(mixture of the engine oil and molybdenum disulfide grease in a weight ratio 10 : 1)

R: Replacement Parts

S: Follow the specified tightening sequence.

Si: Apply silicone grease (ex. PBC grease).

SS: Apply silicone sealant.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel System (DFI)				
Fuel Pump Bolts	9.8	1.0	87 in·lb	L, S
Right Switch Housing Screws	3.5	0.36	31 in·lb	
Sidestand Switch Bolt	3.9	0.40	35 in·lb	L
Crankshaft Sensor Bolts	6.0	0.61	53 in·lb	
Oxygen Sensor (Europe Models)	44.1	4.5	33	
Spark Plugs	15	1.5	11	
Speed Sensor Bolt	7.8	0.80	69 in·lb	
Timing Rotor Bolt	40	4.1	30	
Water Temperature Sensor	12	1.2	106 in·lb	
Cooling System				
Baffle Plate Bolts	5.9	0.60	52 in·lb	
Radiator Bolt	15	1.5	11	
Radiator Hose Clamp Screws	2.0	0.20	18 in·lb	
Thermostat Housing Bolts	9.8	1.0	87 in·lb	
Water Pump Cover Bolts	9.8	1.0	87 in·lb	
Water Pump Drain Bolt	9.8	1.0	87 in·lb	
Water Pump Impeller Bolt	9.8	1.0	87 in·lb	
Water Temperature Sensor	12	1.2	106 in·lb	
Engine Top End				
Air Suction Valve Cover Bolts	9.8	1.0	87 in·lb	
Baffle Plate Bolts	5.9	0.60	52 in·lb	
Camshaft Cap Bolts	12	1.2	106 in·lb	S
Camshaft Chain Tensioner Cap Bolt	20	2.0	15	
Camshaft Chain Tensioner Mounting Bolts	9.8	1.0	87 in·lb	
Camshaft Sprocket Bolts	15	1.5	11	L
Cylinder Head Bolts (M10)	56	5.7	41	MO, S
Cylinder Head Bolts (M6)	12	1.2	106 in·lb	S
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	
Rear Camshaft Chain Guide Bolts	20	2.0	15	L
Spark Plugs	15	1.5	11	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Throttle Body Assy Holder Bolts	12	1.2	106 in·lb	
Cylinder Bolt (M8)	27.5	2.8	20	MO,S
Cylinder Nut (M10)	49	5.0	36	MO, S
Cylinder Bolts (M6)	12	1.2	106 in·lb	
Exhaust Pipe Manifold Holder Nuts	17	1.7	12	
Muffler Body Mounting Bolt (Front)	20	2.0	15	
Muffler Body Mounting Bolt (Rear)	20	2.0	15	
Clutch				
Clutch Cable Clamp Bolt	9.8	1.0	87 in·lb	
Clutch Cable Holder Bolts	9.8	1.0	87 in·lb	L
Clutch Cover Mounting Bolts	9.8	1.0	87 in·lb	
Clutch Hub Nut	130	13.3	96	
Clutch Lever Clamp Bolts	7.8	0.80	69 in·lb	S
Clutch Spring Bolts	9.8	1.0	87 in·lb	
Timing Rotor Bolt Cap	4.9	0.50	43 in·lb	
Oil Filler Plug	–	–	–	Hand-tighten
Oil Pump Chain Guide Bolts	12	1.2	106 in·lb	L (1)
Oil Pump Sprocket Bolt	12	1.2	106 in·lb	L, Lh
Timing Inspection Cap	3.9	0.40	35 in·lb	
Engine Lubrication System				
Engine Oil Drain Bolt	30	3.1	22	
Filter Plate Bolts	9.8	1.0	87 in·lb	L
Holder Mounting Bolt	25	2.5	18	L
Lower Fairing Bracket Bolts	12	1.2	106 in·lb	L
Oil Filter	17.5	1.8	13	EO, R
Oil Pan Bolts	12	1.2	106 in·lb	
Oil Passage Plug	20	2.0	15	L
Oil Pipe Plate Bolt	9.8	1.0	87 in·lb	L
Oil Plate Bolts	9.8	1.0	87 in·lb	L
Oil Pressure Relief Valve	15	1.5	11	L
Oil Pressure Switch	15	1.5	11	SS
Oil Pump Chain Guide Bolts	12	1.2	106 in·lb	L (1)
Oil Pump Cover Bolts	9.8	1.0	87 in·lb	L
Oil Pump Sprocket Bolt	12	1.2	106 in·lb	L, Lh
Engine Removal/Installation				
Engine Mounting Bracket Bolts	25	2.5	18	S
Front Engine Mounting Bolts	44	4.5	32	S
Rear Engine Mounting Nuts	44	4.5	32	S
Crankshaft/Transmission				
Breather Plate Bolts	9.8	1.0	87 in·lb	L
Race Holder Screw	4.9	0.50	43 in·lb	L
Connecting Rod Big End Nuts	see Text	←	←	
Crankcase Bolt (M8, L = 110 mm)	27.5	2.8	20	S

2-8 PERIODIC MAINTENANCE

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Crankcase Bolt (M6, L = 32 mm)	19.6	2.0	14	S
Crankcase Bolts (M6, L = 38 mm)	19.6	2.0	14	S
Crankcase Bolts (M6, L = 45 mm)	19.6	2.0	14	S
Crankcase Bolts (M8, L = 50 mm)	27.5	2.8	20	S
Crankcase Bolts (M8, L = 60 mm)	35	3.6	26	MO, S
Crankcase Bolts (M8, L = 73 mm)	35	3.6	26	MO, S
Crankcase Bolts (M9, L = 113 mm)	44	4.5	32	MO, S
Crankcase Bolts (M9, L = 83 mm)	44	4.5	32	MO, S
Upper Crankcase Bolt (M8, L = 120 mm)	27.5	2.8	20	S
Upper Crankcase Bolts (M8, L = 110 mm)	27.5	2.8	20	S
Oil Pipe Bolts	9.8	1.0	87 in·lb	L
Oil Plate Bolts	9.8	1.0	87 in·lb	L
Shift Shaft Return Spring Pin	29	3.0	21	L
Timing Rotor Bolt	40	4.1	30	
Drive Shaft Bearing Holder Screw	4.9	0.50	43 in·lb	L
Gear Positioning Lever Bolt	12	1.2	106 in·lb	L
Neutral Switch	15	1.5	11	
Neutral Switch Holder Screw	4.9	0.50	43 in·lb	L
Oil Jet Nozzle	2.9	0.30	26 in·lb	L
Shift Drum Bearing Holder Screws	4.9	0.50	43 in·lb	L
Shift Drum Cam Bolt	12	1.2	106 in·lb	L
Shift Lever Bolt	12	1.2	106 in·lb	L
Shift Rod Plate Bolt	9.8	1.0	87 in·lb	L
Shift Shaft Cover Bolts	9.8	1.0	87 in·lb	L (3)
Shift Shaft Cover Screw	4.9	0.50	43 in·lb	L
Transmission Case Bolts	20	2.0	15	
Wheels/Tires				
Front Axle	108	11.0	80	
Front Axle Clamp Bolt	20	2.0	15	
Rear Axle Nut	108	11.0	80	
Final Drive				
Engine Sprocket Nut	125	12.7	92	MO
Rear Axle Nut	108	11.0	80	
Rear Sprocket Nuts	59	6.0	44	
Speed Sensor Bolt	7.8	0.80	69 in·lb	L
Speed Sensor Bracket Bolts	9.8	1.0	87 in·lb	
Brakes				
Bleed Valve	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	
Front Brake Disc Mounting Bolts	27	2.8	20	L
Front Brake Light Switch Screw	1.0	0.10	9 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Front Brake Reservoir Cap Screws	1.5	0.15	13 in·lb	
Front Caliper Mounting Bolts	34	3.5	25	
Front Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	
Bleed Valve	7.8	0.80	69 in·lb	
Brake Hose Banjo Bolts	25	2.5	18	
Brake Pedal Bolt	8.8	0.90	78 in·lb	
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	
Brake Pipe Joint Nuts (KLE650B Models)	18	1.8	13	
Suspension				
Front Axle Clamp Bolt	20	2.0	15	
Front Fork Bottom Allen Bolts	20	2.0	15	
Front Fork Clamp Bolts (Lower)	29	3.0	21	AL
Front Fork Clamp Bolts (Upper)	20	2.0	15	
Front Fork Top Plugs	35	3.6	26	
Piston Rod Nuts	20	2.0	15	
Rear Shock Absorber Bolt (Upper)	59	6.0	44	
Rear Shock Absorber Nut (Lower)	59	6.0	44	
Swingarm Pivot Shaft Nut	108	11.0	80	
Steering				
Front Fork Clamp Bolts (Lower)	29	3.0	21	AL
Front Fork Clamp Bolts (Upper)	20	2.0	15	
Upper Handlebar Holder Bolts	25	2.5	18	S
Lower Handlebar Holder Bolts	25	2.5	18	
Left Switch Housing Screws	3.5	0.36	31 in·lb	
Right Switch Housing Screws	3.5	0.36	31 in·lb	
Steering Stem Head Bolt	108	11.0	80	
Steering Stem Nut	20	2.0	15	
Frame				
Footpeg Holder Bolts	34	3.5	25	L
Front Footpeg Stay Bolts	25	2.5	18	
Rear Footpeg Stay Bolts	25	2.5	18	
Sidestand Bolt	44	4.5	32	
Sidestand Switch Bolt	3.9	0.40	35 in·lb	L
Lower Fairing Mounting Bolts	8.8	0.90	78 in·lb	
Windshield Mounting Bolts	0.40	0.041	3.5 in·lb	
Tandem Grip Mounting Bolts	25	2.5	18	
Electrical System				
Tail/Brake Light Mounting Bolts	1.2	0.12	11 in·lb	
License Plate Light Cover Screws	0.90	0.090	8 in·lb	
License Plate Light Mounting Screws	1.2	0.12	11 in·lb	

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Turn Signal Light Lens Screws	1.0	0.10	9 in·lb	
Alternator Cover Bolts	9.8	1.0	87 in·lb	
Alternator Lead Holding Plate Bolt	9.8	1.0	87 in·lb	L
Alternator Rotor Bolt	155	15.8	114	MO
Engine Ground Cable Terminal Bolt	9.8	1.0	87 in·lb	
Front Brake Light Switch Screw	1.2	0.12	11 in·lb	
Left Switch Housing Screws	3.5	0.36	31 in·lb	
Right Switch Housing Screws	3.5	0.36	31 in·lb	
Sidestand Switch Bolt	3.9	0.40	35 in·lb	L
Starter Motor Cable Terminal Nut	6.0	0.61	53 in·lb	
Starter Motor Clutch Bolts	34	3.5	25	L
Starter Motor Mounting Bolts	9.8	1.0	87 in·lb	L
Starter Motor Terminal Locknut	11	1.1	97 in·lb	
Starter Motor Through Bolts	4.9	0.50	43 in·lb	
Stator Coil Bolts	12	1.2	106 in·lb	L
Crankshaft Sensor Bolts	6.0	0.61	53 in·lb	
Neutral Switch	15	1.5	11	
Oil Pressure Switch	15	1.5	11	SS
Oxygen Sensor (Europe Models)	44.1	4.50	32.5	
Spark Plugs	15	1.5	11	
Speed Sensor Bolt	7.8	0.80	69 in·lb	L
Timing Rotor Bolt	40	4.1	30	
Water Temperature Sensor	12	1.2	106 in·lb	
Fuel Level Sensor Bolts	6.9	0.70	61 in·lb	L

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	10.0 ~ 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	23.0 ~ 33.0	165 ~ 240