Kawasaki

KBL23A/26A
KBL33A/34A/43A/48A
KBH26A/33A/34A/43A/48A

Trimmer/Brushcutter
Service Manual

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) Celcius	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.

EMISSION CONTROL INFORMATION

To protect the environment in which we all live, Kawasaki has incorporated exhaust emission control systems (EM) in compliance with applicable regulations of the United States Environmental Protection Agency and California Air Resources Board.

1. **Exhaust Emission Control System**

   The exhaust emission control system applied to this engine consists of a carburetor and an ignition system having optimum ignition timing characteristics.

   The carburetor has been calibrated to provide lean air/fuel mixture characteristics and optimum fuel economy with a suitable air cleaner and exhaust system.

TAMPERING WITH EMISSION CONTROL SYSTEM PROHIBITED

Federal law and California State law prohibits the following acts or the causing thereof: (1) the removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new engine for the purpose of emission control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the engine after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below:
Do not tamper with the original emission related part:

- Carburetor and internal parts
- Spark plugs
- Magnet or electronic ignition system
- Fuel filter
- Air cleaner elements

Foreword

This manual is designed primarily for use by trained mechanics in a properly equipped shop. However, it contains enough detail and information to make it useful to the owner who desires to perform his own basic maintenance anbd 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 has doubts as to his ability to do the work, all adjustments, maintenance, and repair should be carried out only by qualified mechanics.

This manual covers models: KBL23A, KBH26A, KBL26A, KBH33A, KBL33A, KBH34A, KBL34A, KBH43A, KBL43A, KBH48A and KBL48A. As for safety information, specifications, exploded view, assembly and preparation, operating instructions, and periodic maintenance; this manual does not mention them as you can depend upon their respective owner's manuals and parts catalogues to tell you the details.

In order to perform the work efficiently and to avoid costly mistakes, read the text, thoroughly familiarize yourself with the procedures before stating 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.

To get the longest life out of your equipement.

- Follow the Periodic Maintenance Chart in their respective owner's manuals.
- Be alert for problems and non-scheduled maintenance.
- Use proper tools and genuine Kawasaki engine parts. Genuide 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

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 WARNING, CAUTION, or 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.

General Information

Table of Contents

1-2 GENERAL INFORMATION

Before Servicing

Before starting to service the engine, careful read the applicable section to eliminate unnecessary work. Photographs, diagrams, notes, cautions, warnings, and detailed descriptions have been included wherever necessary. Nevertheless, even a detailed account has limitations, a certain amount of basic knowledge is required for successful work.

Especially note the following:

(1) Dirt

Before removal and disassembly, clean the engine. Any dirt entering the engine, carburetor, or other parts will work as an abrasive and shorten the life of the engine. For the same reason, before installing a new part, clean off any dust or metal filings.

(2) 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 evenly, in a staggered sequence. This is to avoid distortion of the part and/or causing gas or oil leakage. Conversely, when loosening the bolts, nuts, or screws, first loosen all of them by about a quarter of a turn and then remove them. Where there is a tightening sequence indication in this Service Manual, the bolts, nuts, or screws must be tightened in the order and method indicated.

(3) Torque

When torque values are given in this Service Manual, use them. Either too little or too much torque may lead to serious damage. Use a good quality, reliable torque wrench.

(4) Force

Common sense should dictate how much force is necessary in assembly and disassembly. If a part seems especially difficult to remove or install, stop and examine what may be causing the problem. Whenever tapping is necessary, tap lightly using a rubber, wooden or plastic-faced mallet. Use an impact driver for screws (particularly for the removal of screws held by a locking agent) in order to avoid damaging the heads.

(5) Edges

Watch for sharp edges, especially during major engine disassembly and assembly. Protect your hands with gloves or a piece of thick cloth when lifting the engine or turning it over.

(6) High-Flash Point Solvent

A high-flash point solvent is recommended to reduce fire danger. A commercial solvent commonly available in North America is Standard solvent (generic name). Always follow manufacturer and container directions regarding the use of any solvent.

(7) Gasket, O-Ring

Do not reuse a gasket or O-ring once it has been in service. The mating surfaces around the gasket should be free of foreign matter and perfectly smooth to avoid oil or compression leaks.

(8) Liquid Gasket, Non-Permanent Locking Agent

Follow manufacturer's directions for cleaning and preparing surfaces where these compounds will be used. Apply sparingly. Excessive amounts may block engine oil passages and cause serious damage. An example of a non-permanent locking agent commonly available in North America is Loctite Lock'n Seal (Blue).

(9) Press

A part installed using a press or driver, such as a journal, should first be coated with oil on its outer or inner circumference so that it will go into place smoothly.

(10) Ball Bearing

When installing a ball bearing, the bearing race which is affected by friction should be pushed by a suitable driver. This prevents severe stress on the balls and races, and prevents races and balls from being dented. Press a ball bearing until it stops at the stop in the hole or on the shaft.

(11) Oil Seal and Grease Seal

Replace any oil or grease seals that were removed with new ones, as removal generally damages seals.

When pressing in a seal which has manufacturer's marks, press it in with the marks facing out. Seals should be pressed into place using a suitable driver, which contacts evenly with the side of seal, until the face of the seal is even with the end of the hole.

(12) Seal Guide

A seal guide is require for certain oil or grease seals during installation to avoid damage to the seal lips. Before a shaft passes through a seal, apply a little oil, preferable high temperature grease on the lips to reduce rubber to metal friction.

(13) Circlip, Retaining Ring

Replace any circlips and retaining rings that were removed with new ones, as removal weakens and deforms them. When installing circlips and retaining rings, take care to compress or expand them only enough to install them and no more.

(14) Cotter Pin

Replace any cotter pins that were removed with new ones, as removal deforms and breaks them.

Before Servicing

(15) Lubrication

Engine wear is generally at its maximum while the engine is warming up and before all the rubbing surfaces have an adequate lubricative film. During assembly, oil or grease (whichever is more suitable) should be applied to any rubbing surface which has lost its lubricative film. Old grease and dirty oil should be cleaned off. Deteriorated grease has lost its lubricative quality and may contain abrasive foreign particles.

Don't use just any oil or grease. Some oils and greases in particular should be used only in certain applications and may be harmful if used in an application for which they are not intended. This manual makes reference to molybdenum disulfide grease (MoS_2) in the assembly of certain engine and chassis parts. Always check manufacturer recommendations before using such special lubricants.

(16) Replacement Parts

When there is a replacement instruction, replace these parts with new ones every time they are removed. These replacement parts will be damaged or lose their original function once removed.

(17) Inspection

When parts have been disassembled, visually inspect these parts for the following conditions or other damage. If there is any doubt as to the condition of them, replace them with new ones.

Abrasion	Crack	Hardening	Warp
Bent	Dent	Scratch	Wear
Color change	Deterioration	Seizure	

(18) Specifications

Specification terms are defined as follows:

"Standards" show dimensions or performances which brand-new parts or systems have.

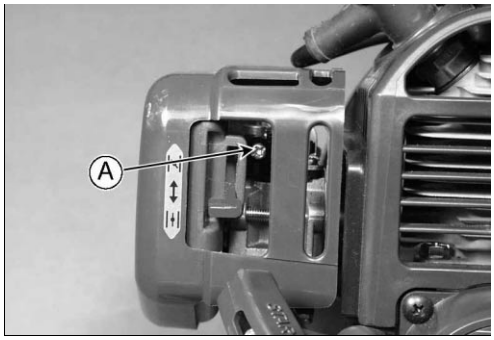
"Service Limits" indicate the usable limits. If the measurement shows excessive wear or deteriorated performance, replace the damaged parts.

Idling Speed

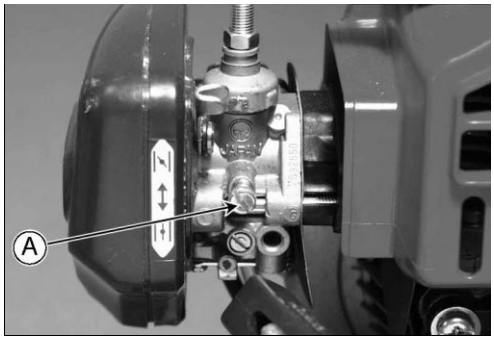
Idling Speed Adjustment

- Start the engine and leave it running at idling speed to warm it up thoroughly.
- If the engine stops while idling, turn the throttle stop screw (A) clockwise until the cutting head or the cutting blade begins to rotate. Then back off one half turn. The cutting head or the cutting blade must not rotate.
- If the cutting head or the cutting blade rotates when the engine is idling, turn the throttle stop screw (A) counterclockwise until the cutting head or the cutting blade stops rotating and then turn the throttle stop screw (A) another one half turn.

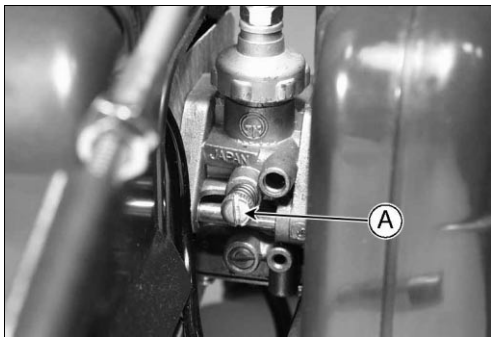
KBL23A/KB□26A/KB□34A



KB□33A



KBH43A/KBH48A



General Specifications

Model		KBL23A	KBH26A	KBL26A
Handle type		Loop handle	Double handles	Loop handle
Engie	Type	Forced air cooled 2-stroke, horizontal shaft gasoline engine		
	Displacement ml (cu. in.)	22.5 1.37	25.4 1.55	25.4 1.55
	Carburetor	Diaphragm type		
	Ignition	Solid state ignition		
	Spark plug	NGK BPMR6A		
	Starter	Recoil starter		
	Clutch mm (in.)	Automatic centrifugal type ϕ54 (2.1)		
Fuel	Mixing ratio	Regular unleaded gasoline 50:1 2-stroke engine oil		
	Tank capacity litre	0.5	0.6	0.6
Drive shaft asembly & gear housing	Cutter Dia. of string mm (in.)	Nylon string ϕ2.4 (0.095)		
	Bearing of shaft	5 plane		
	Rotation	Counterclockwise		
	Lubrication	High quality lithium grease		
	Drive shaft dia. mm (in.)	ϕ6 (0.24)		
	Drive shaft metarial	High tensile steel		
	Reduction ratio	14 : 19		
	Guard	Plastic guard on the pipe assembly		

**"Weight": The unit without cutting attachment and shoulder harness, empty fuel tank.

1-6 GENERAL INFORMATION

General Specifications

Model		KBH33A	KBL33A	KBH34A	KBL34A
Handle type		Double handles	Loop handle	Double handles	Loop handle
Engine	Type	Forced air cooled 2-stroke, horizontal shaft gasoline engine			
	Displacement ml (cu. in.)	33.3 (2.03)	33.3 (2.03)	33.3 (2.03)	33.3 (2.03)
	Carburetor	Diaphragm type			
	Ignition	Solid state ignition			
	Spark plug	NGK BMR6A			
	Starter	Recoil starter			
	Clutch drum dia. mm (in.)	Automatic centrifugal type ϕ78 (3.1)			
Fuel	Mixing ratio	Regular unleaded gaoline 50:1 2-stroke engine oil			
	Tank capacity litre	0.8	0.8	0.8	0.8
Drive shaft ass'y & gear housing	Cutter Dia. of cord mm (in.)	Nylon cord ϕ2.4 (0.095)			
	Bearing of shaft	5 plane			
	Rotation	Counterclockwise			
	Lubrication	High quality lithium grease			
	Drive shaft dia. mm (in.)	ϕ8 (0.31)			
	Drive shaft material	High tensile steel			
	Reduction ratio	17 : 21			
	Guard	Plastic guard on the pipe ass'y			

**"Weight": The unit without cutting attachment and shoulder harness, empty fuel tank.

General Specifications

Model		KBH43A	KBL43A	KBH48A	KBL48A
Handle type		Double handles	Loop handle	Double handles	Loop handle
Engine	Type	Forced air cooled 2-stroke, horizontal shaft gasoline engine			
	Displacement ml (cu. in.)	43.2 (2.64)	43.2 (2.64)	48.6 (2.97)	48.6 (2.97)
	Carburetor	Diaphragm type			
	Ignition	Solid state ignition			
	Spark plug	NGK BMR6A			
	Starter	Recoil starter			
	Clutch drum dia. mm (in.)	Automatic centrifugal type ϕ78 (3.1)			
Fuel	Mixing ratio	Regular unleaded gaoline 50:1 2-stroke engine oil			
	Tank capacity litre	1.0	1.0	1.0	1.0
Drive shaft ass'y & gear housing	Cutter Dia. of cord mm (in.)	Nylon cord ϕ2.4 (0.095)			
	Bearing of shaft	5 plane			
	Rotation	Counterclockwise			
	Lubrication	High quality lithium grease			
	Drive shaft dia. mm (in.)	ϕ8 (0.31)			
	Drive shaft material	High tensile steel			
	Reduction ratio	17 : 21			
	Guard	Plastic guard on the pipe ass'y			

**"Weight": The unit without cutting attachment and shoulder harness, empty fuel tank.

1-8 GENERAL INFORMATION

Periodic Maintenance Chart

⚠WARNING

Accidental engine starting can cause injury.
Always remove the spark plug cap before servicing the engine to prevent accidental starting.

	Maintenance	Interval				
		Daily	First 20 hours	Every 20 hours	Every 50 hours	Every 100 hours
	Check and replenish fuel	●				
	Check for fuel leakage	●				
	Check bolts, nuts and screws for looseness and loss	●				
	Check throttle lever operation	●				
	Check engine switch operation	●				
	Check guard assembly condition	●				
	Check hook of shoulder harness condition	●				
	Clean fuel filter			●		
*	Clean air filter element			●		
	Tighten bolts, nuts and screws		●		●	
	Clean spark plug and adjust electrode gap				●	
*	Remove dust and dirt from cylinder fins				●	
	Remove carbon deposits on piston head and inside cylinder				●	
	Remove carbon deposits in the exhaust pipe of muffler				●	
	Check gear case assembly lubrication				●	
	Check drive shaft lubricaion				●	
	Check the sliding portion of crankshaft, connecting rod etc.					●
	Fuel tube	It is recommended to replace every 3 years.				

NOTE

○ *The service intervals indicated are to be used as a guide. "*"Service to be performed more frequently as necessary by operating condition.*

Tightening Torque

The following tables list the tightening torque for the major fasteners and the parts requiring use of a non-permanent locking agent or requid gasket.

Letters used in the following “Tightening Torque” table mean.

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

LG: Apply a liquid gasket to the sealing surfaces.

MTGS:Mounting screw(s)

Tightening Torque — KBL23A/KB□26A

Fasteners	Size	Torque			Remarks
		N·m	kg·m	ft·lb	
Air Cleaner Cap MTGS	M5	2.0 - 2.5	0.20 - 0.25	18 - 22 in·lb	
Ignition Coil MTGS	M4	2.0 - 2.5	0.20 - 0.25	18 - 22 in·lb	LA
Recoil Starter MTGS	M4	1.7 - 2.0	0.17 - 0.20	15 - 18 in·lb	LA
Crankcase Connecting Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA/LG
Engine Shroud MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Carburetor/Air Cleaner Case MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Insulator MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Fuel Tank MTGS (Crankcase side)	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Fuel Tank MTGS (Recoil Starter side)	M5	2.0 - 2.5	0.20 - 0.25	18 - 22 in·lb	
Muffler MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Muffler Cover MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Cylinder MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Clutch Shoe MTGS	M6	8.0 - 10	0.80 - 1.00	71 - 89 in·lb	LA
Flywheel Nut	M6	8.0 - 10	0.80 - 1.00	71 - 89 in·lb	
Starter Pulley Nut	M8	14 - 16	1.40 - 1.60	10 - 12	
Starter Pulley	M8	10 - 12	1.00 - 1.20	7.2 - 8.7	
Spark Plug	M14	12 - 17	1.20 - 1.70	8.9 - 13	
Gear Case Clamp Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Gear Case Alignment Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Grease Hole Bolt	M6	4.0 - 5.0	0.40 - 0.50	35 - 44 in·lb	
Clutch Housing Clamp Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Clutch Housing MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Cutter Blade Mounting Nut	M8	13 - 15	1.30 - 1.50	8.9 - 11	

Tightening Torque — KB□33A

Fasteners	Size	Torque			Remarks
		N·m	kg·m	ft·lb	
Air Cleaner Assy. MTGS	M4	1.7 - 2.0	0.35 - 0.40	15 - 18 in·lb	
Ignition Coil MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Recoil Starter MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Crankcase Connecting Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Head Shroud MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Carburetor MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Insulator MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Fuel Tank MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Muffler MTGS	M5	3.9 - 4.4	0.40- 0.45	35 - 39 in·lb	LA
Muffler Cover MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Cylinder MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Clutch Shoe MTGS	M8	14 - 16	1.40 - 1.60	10 - 12	LA
Flywheel Nut	M8	14 - 16	1.40 - 1.60	10 - 12	
Starter Pulley Nut	M8	14 - 16	1.40 - 1.60	10 - 12	
Starter Pulley	M8	10 - 12	1.00 - 1.20	89 - 106 in·lb	
Spark Plug	M14	12 - 17	1.20 - 1.70	8.9 - 13 in·lb	
Gear Case Clamp Screw	M6	8.0 - 10	0.80 - 1.00	71 - 89 in·lb	
Gear Case Alignment Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Grease Hole Bolt	M6	4.0 - 5.0	0.40 - 0.50	15 - 18 in·lb	
Clutch Housing Alignment Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Clutch Housing MTGS	M6	8.0 - 10	0.80 - 1.00	71 - 89 in·lb	
Cutting Tool Guard MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	

Tightening Torque

Tightening Torque — KB□34A

Fasteners	Size	Torque			Remarks
		N·m	kg·m	ft·lb	
Air Cleaner Cap MTGS	M5	2.0 - 2.5	0.20 - 0.25	18 - 22 in·lb	
Ignition Coil MTGS	M4	2.0 - 2.5	0.20 - 0.25	18 - 22 in·lb	
Recoil Starter MTGS	M4	1.7 - 2.0	0.17 - 0.20	15 - 18 in·lb	
Crankcase Connecting Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA/LG
Engine Shroud MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Carburetor/Air Cleaner Case MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Insulator MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Fuel Tank MTGS (Crankcase side)	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Fuel Tank MTGS (Recoil Starter side)	M5	2.0 - 2.5	0.20 - 0.25	18 - 22 in·lb	
Muffler MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Muffler Cover MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Cylinder MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Clutch Shoe MTGS	M8	14 - 16	1.4 - 1.6	10 - 12	LA
Flywheel Nut	M8	14 - 16	1.4- 1.6	10 - 12	
Starter Pulley Nut	M8	14 - 16	1.40 - 1.60	10 - 12	
Starter Pulley	M8	10 - 12	1.00 - 1.20	7.2 - 8.7	
Spark Plug	M14	12 - 17	1.20 - 1.70	8.9 - 13	
Gear Case Clamp Screw	M6	8 - 10	0.8- 1.0	6.0 - 7.4	
Gear Case Alignment Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Grease Hole Bolt	M6	4.0 - 5.0	0.40 - 0.50	35 - 44 in·lb	
Clutch Housing Clamp Screw	M6	8 - 10	0.8- 1.0	6.0 - 7.4	
Clutch Housing MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Cutter Blade Mounting Nut	M10	15 - 19	1.5 - 1.9	11 - 14	

Tightening Torque — KB□43A/KB□48A

Fasteners	Size	Torque			Remarks
		N·m	kg·m	ft·lb	
Air Cleaner Cap MTGS	M4	1.7 - 2.0	0.17 - 0.20	15 - 18 in·lb	
Air Cleaner Case MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Ignition Coil MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Recoil Starter MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Crankcase Connecting Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA/LG
Engine Shroud MTGS	M4	1.7 - 2.0	0.17 - 0.20	15 - 18 in·lb	LA
Fuel Tank MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	LA
Insulator MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Muffler MTGS	M6	7.0 - 8.0	0.70 - 0.80	62 - 71 in·lb	
Muffler Cover MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Cylinder MTGS	M6	7.0 - 9.0	0.70 - 0.90	62 - 80 in·lb	
Clutch Shoe MTGS	M8	14 - 16	1.40 - 1.60	10 - 12	LA
Flywheel Nut	M10	25 - 30	2.50 - 3.00	18 - 22	
Starter Pulley Nut	M8	14 - 16	1.40 - 1.60	10 - 12	
Starter Pulley	M8	10 - 12	1.00 - 1.20	89 - 106 in·lb	
Spark Plug	M14	12 - 17	1.20 - 1.70	8.9 - 13	
Gear Case Clamp Screw	M6	8.0 - 10.0	0.80 - 1.00	71 - 89 in·lb	
Gear Case Alignment Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Grease Hole Bolt	M6	4.0 - 5.0	0.40 - 0.50	35 - 44 in·lb	
Clutch Housing Alignment Screw	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	
Clutch Housing Clamp Screw	M6	8.0 - 10	0.80 - 1.00	71 - 89 in·lb	
Clutch Housing MTGS	M6	8.0 - 10	0.80 - 1.00	71 - 89 in·lb	
Cutting Tool Guard MTGS	M5	3.5 - 4.0	0.35 - 0.40	31 - 35 in·lb	

Clearance Table

Clearance Table

Unit: mm (in)

	Service Limit						Remarks
	KBL23A	KB□26A	KB□33A	KB□34A	KB□43A	KB□48A	
Cylinder bore	32.1 (1.263)	34.1 (1.342)	32.8 (1.291)	37.1 (1.461)	41.6 (1.638)	44.1 (1.736)	Replace if over
Piston-to-cylinder clearance	0.15	0.15	0.15	0.15	0.15	0.15	Replace if over
Piston ring-to-groove clearance	0.17	0.17	0.17	0.17	0.17	0.17	Replace if over
Piston ring end-gap	0.7	0.7	0.7	0.7	0.7	0.7	Replace if over
Piston-to-piston pin clearance	0.1	0.1	0.1	0.1	0.1	0.1	Replace if over
Connecting rod big-end axail play	0.5	0.5	0.5	0.5	0.5	0.5	Replace if over
Connecting rod big-end radial play	0.15	0.15	0.15	0.15	0.15	0.15	Replace if over
Piston pin-to-needle bearing radial play	0.15	0.15	0.15	0.15	0.15	0.15	Replace if over
Ball bearing axial play	0.5	0.5	0.5	0.5	0.5	0.5	Replace if over
Crankshaft axial play*	0.05 ∼ 0.295	0.05 ∼ 0.295	0.05 ∼ 0.295	0.05 ∼ 0.295	0.05 ∼ 0.295	0.05 ∼ 0.295	Adjust if over

* does not include that of ball bearings.

1-12 GENERAL INFORMATION

Setting Table

Setting Table

	Standard Setting					
	KBL23A	KB□26A	KB□33A	KB□34A	KB□43A	KB□48A
The engine speed at which the clutch engages	about 4000 rpm at 4.0 N·m (0.4 kg·m), of drag torque		about 3800 rpm at 4.0 N·m (0.4 kg·m) of drag torque		about 3500 rpm at 4.0 N·m (0.4 kg·m) of drag torque	
Max. engine speed (rpm)	Different depending on matching machine					
Idling speed (rpm)	3000 ± 200 rpm					
Ignition coil air-gap	0.3 to 0.5 mm (0.011 to 0.019 in.)		0.4 to 0.5mm (0.015 to 0.019 in.)	0.3 to 0.5 mm (0.011 to 0.019 in.)		
ignition timing	25° B.T.D.C. @7000 rpm					
Gear ratio	14:19		17:21			
Jet needle clip location	–		2/3	-	2/3	
Main adjust screw turning out	–		1 1/2 ± 1/2	-	1 1/2 ± 1/2	
Gear case grease capacity (full case)	about 8 to 10 grams		about 13 to 17 grams			

Power Train

Table of Contents

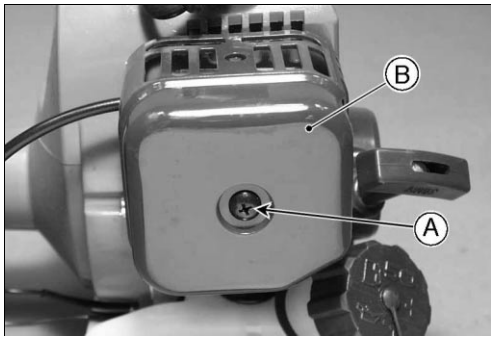
2-2 POWER TRAIN

Complete Engine

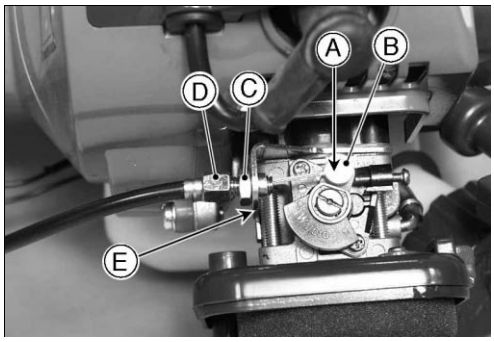
Complete Engine Removal — KBL23A/KB□26A/KB□34A

The power train has been designed to have friction enough between the clutch housing and the guard tube so that it can keep the guard tube from turning and coming off. Thus it is almost impossible to remove not only the ball bearings but the clutch drum.

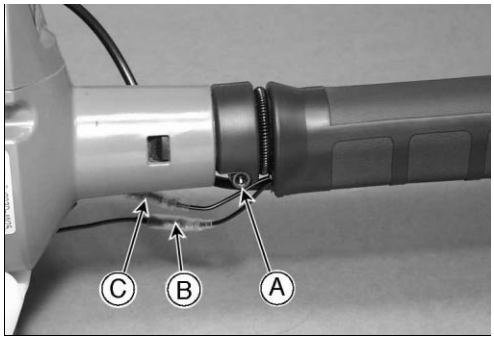
- Unscrew the mounting screw (A) to remove the carburetor cover (B).



- Remove the cable-end nipple (A) out of the throttle valve terminal (B).
- Release the cable adjuster locknut (C) to remove the cable adjuster (D) out of the bracket (E).



- Release the guard tube clamp screw (A) and the lead wire connectors (B, C).



- Pull the complete engine out of the guard tube (A) and withdraw the drive shaft (B).