Kawasaki

MULE 2510
MULE 2520



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Utility Vehicle
Service Manual

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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.

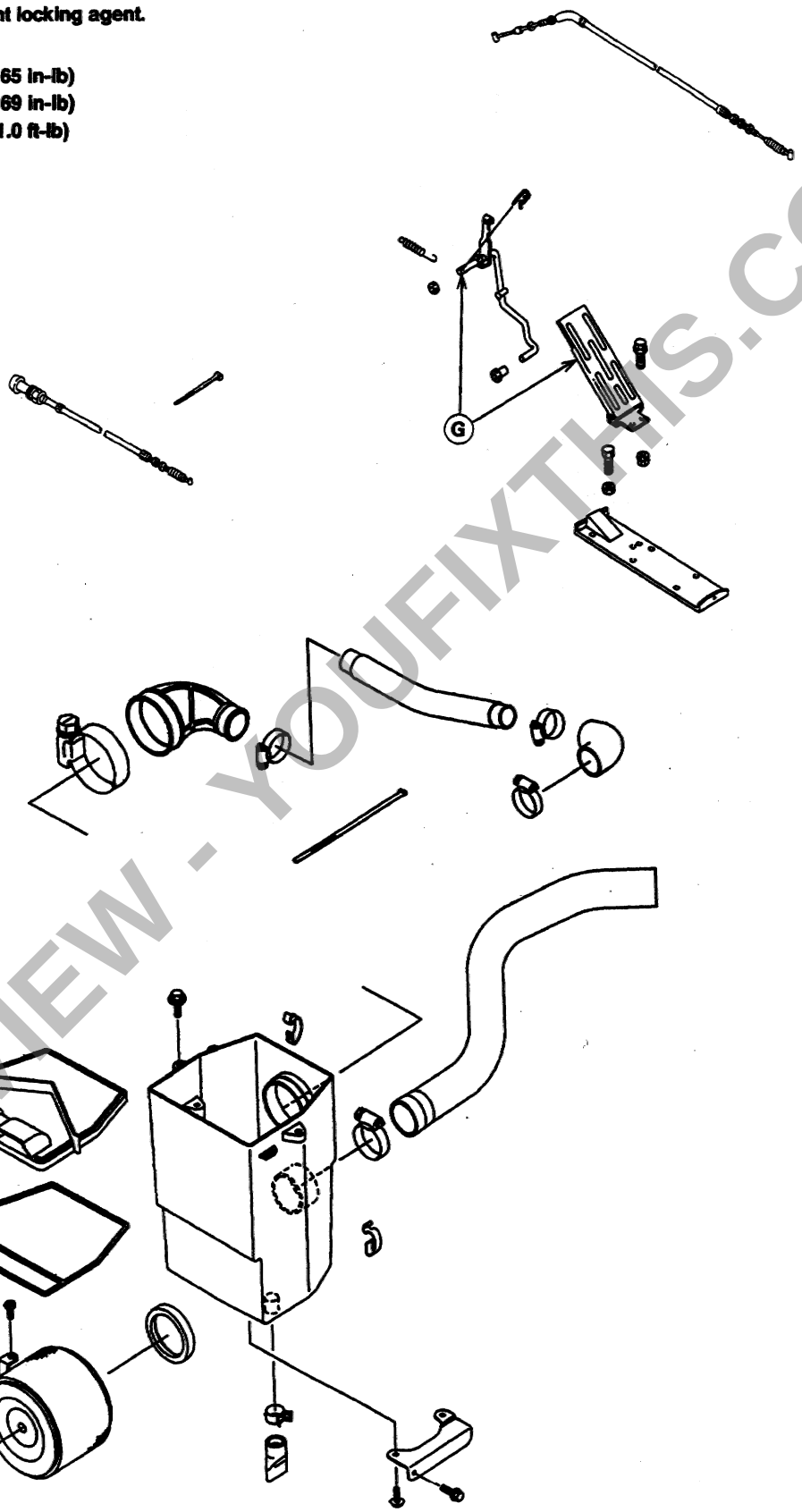
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Exploded View

AD : Apply adhesive agent.
G : Apply grease.
L : Apply non-permanent locking agent.

T1 : 7.4 N-m (0.75 kg-m, 65 in-lb)
T2 : 7.8 N-m (0.80 kg-m, 69 in-lb)
T3 : 15 N-m (1.5 kg-m, 11.0 ft-lb)



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Torque and Locking Agent

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

Letters used in the "Remarks" column mean:
L : Apply a non-permanent locking agent to the threads.
O : Apply an oil to the threads, seated surface, or washer.
S : Tighten the fasteners following the specified sequence.
SS : Apply a silicone sealant to the threads.

Fastener	Torque			Remarks
	N-m	kg-m	ft-lb	
Fuel System:				
Carburetor mounting bolts	15	1.5	11.0	
Carburetor throttle valve mounting screws	–	–	–	L
Carburetor choke valve mounting screws	–	–	–	L
Carburetor float bowl mounting bolt	7.8	0.80	69 in-lb	
Carburetor holder mounting bolts	–	–	–	L
Governor arm clamp nut	7.4	0.75	65 in-lb	
Cooling System:				
Radiator fan switch	25	2.5	18.0	
Coolant temperature switch	–	–	–	SS
Water pump cover bolts	8.8	0.90	78 in-lb	
Engine Top End:				
Cylinder head bolts	22	2.2	16.0	S
Valve adjusting screw locknuts	9.8	1.0	87 in-lb	
Muffler mounting bolts	–	–	–	L
Converter System:				
Converter cover bolts	1.5	0.15	13 in-lb	
Drive pulley bolt	93	9.5	69	
Driven pulley bolt	93	9.5	69	L
Drive pulley cover bolts	13	1.3	113 in-lb	
Ramp weight shaft stop bolts	13	1.3	113 in-lb	
Ramp weight roller shaft stop bolts	13	1.3	113 in-lb	
Driven pulley coupling bolts	13	1.3	113 in-lb	
Engine Lubrication System:				
Engine oil drain plug: 14 mm dia.	22	2.2	16.0	
16 mm dia.	25	2.5	18.0	
Oil pressure switch	–	–	–	SS
Engine Bottom End:				
Crankcase cover bolts	22	2.2	16.0	
Connecting rod big end cap bolts	21	2.1	15.0	
Transmission:				
Transmission case mounting nuts	44	4.5	33	
Transmission oil drain plug	15	1.5	11.0	
Transmission case bolts	8.8	0.90	78 in-lb	
Neutral switch	15	1.5	11.0	
Transmission shift arm positioning bolt	37	3.8	27	
Differential shift shaft stop bolt	7.8	0.80	69 in-lb	

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Troubleshooting Guide

NOTE

○*This is not an exhaustive list, giving every possible cause for each problem listed. It is meant simply as a rough guide to assist the troubleshooting for some of the more common difficulties.*

Engine Doesn't Start, Starting Difficulty:

Starter motor not rotating:
- Neutral switch trouble
- Starter motor trouble
- Battery voltage low
- Relays not contacting or operating
- Wiring open or shorted
- Ignition switch trouble
- Fuse blown

Starter motor rotating but engine doesn't turn over:
- Starter motor trouble
- Pinion or ring gear worn

Engine won't turn over:
- Valve seizure
- Rocker arm seizure
- Cylinder, piston seizure
- Crankshaft seizure
- Connecting rod small end seizure
- Connecting rod big end seizure
- Camshaft seizure

No fuel flow:
- Fuel tank air vent obstructed
- Fuel pump trouble
- Fuel filter clogged
- Fuel line clogged
- Fuel pump relay trouble
- Float valve clogged

Engine flooded:
- Fuel level too high
- Float valve worn or stuck open
- Starting technique faulty (When flooded, crank the engine with the throttle fully opened to allow more air to reach the engine.)

No spark; spark weak:
- Spark plug dirty, broken, or maladjusted
- Spark plug cap or high tension wiring trouble
- Spark plug cap not in good contact
- Spark plug incorrect
- Igniter trouble
- Ignition coil trouble
- Pickup coil trouble
- Ignition switch shorted
- Wiring shorted or open
- Fuse blown

Compression low:
- Spark plug loose
- Cylinder head not sufficiently tightened down
- No valve clearance
- Cylinder, piston worn
- Piston rings bad (worn, weak, broken, or sticking)
- Piston ring/land clearance excessive
- Cylinder head gasket damaged
- Cylinder head warped
- Valve spring broken or weak
- Valve not seating properly (valve bent, worn, or carbon accumulation on the seating surface)

Poor Running at Low Speed:

Spark weak:
- Spark plug dirty, broken, or maladjusted
- Spark plug cap or high tension wiring trouble
- Spark plug cap shorted or not in good contact
- Spark plug incorrect
- Igniter trouble
- Ignition coil trouble
- Pickup coil trouble

Fuel/air mixture incorrect:
- Pilot screw maladjusted
- Pilot jet, or air passage clogged
- Air bleed pipe bleed holes clogged
- Air cleaner clogged, poorly sealed, or missing
- Choke valve stuck closed
- Fuel level too high or too low
- Fuel tank air vent obstructed
- Fuel pump trouble
- Governor link mechanism malfunctioning

Compression low;
- Spark plug loose
- Cylinder head not sufficiently tightened down
- No valve clearance
- Cylinder, piston worn
- Piston ring bad (worn, weak, broken, or sticking)
- Piston ring/land clearance excessive
- Cylinder head warped
- Cylinder head gasket damaged
- Valve spring broken or weak
- Valve not seating properly (valve bent, worn, or carbon accumulation on the seating surface)

Other:
- Igniter trouble
- Engine oil viscosity too high
- Front final gear case oil viscosity too high (KAF620A)
- Drive train trouble
- Brake dragging

Poor Running or No Power at High Speed:

Firing incorrect:
- Spark plug dirty, broken, or maladjusted
- Spark plug cap shorted or not in good contact
- Spark plug incorrect
- Igniter trouble
- Ignition coil trouble
- Pickup coil trouble

Fuel/air mixture incorrect:
- Choke valve stuck close
- Main jet clogged or wrong size
- Fuel level too high or too low
- Air bleed pipe holes clogged
- Air cleaner clogged, poorly sealed, or missing
- Water or foreign matter in fuel
- Fuel tank air vent obstructed
- Fuel line clogged

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General Specifications

Item			KAF620-A1, A2/B1, B2
Dimensions:			
Overall length			2 845 mm
Overall width			1 460 mm
Overall height			(A)1 920 mm, (B)1 900 mm
Wheelbase			1 870 mm
Track:	Front		1 160 mm
	Rear		1 180 mm
Ground clearance			170 mm
Seat height			(A)870 mm, (B)850 mm
Dry weight			(A)537 kg, (B)501 kg
Curb weight:	Front		(A)243 kg, (B)222 kg
	Rear		(A)318 kg, (B)303 kg
Fuel tank capacity			20 L
Cargo bed (L x W x H)			1 175 x 1 310 x 250 mm
Performance:			
Minimum turning radius			3.4 m
Engine:			
Type			4-stroke, OHV, V2-cylinder
Cooling system			Liquid-cooled
Bore and stroke			76.0 x 68.0 mm
Displacement			617 mL
Compression ratio			10.3
Carburetion system			Carburetor, Mikuni BV26-18
Starting system			Electric starter
Ignition system			Battery and transistor
Ignition timing			20° BTDC (constant)
Spark plug			NGK BMR2A
Cylinder numbering method			Front to rear, 1 - 2
Firing order			1 - 2
Valve timing:			
Inlet:	Open:	#1	68° BTDC
		#2	64° BTDC
	Close:	#1	76° ABDC
		#2	80° ABDC
	Duration		324°
Exhaust:	Open		94° BBDC
	Close		48° ATDC
	Duration		322°
Lubrication system			Forced lubrication (wet sump)
Engine oil:			
	Grade		SE or SF class
	Viscosity		SAE10W-40, 10W-50, 20W-40, or 20W-50
	Capacity		1.8 L

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Periodic Maintenance Chart

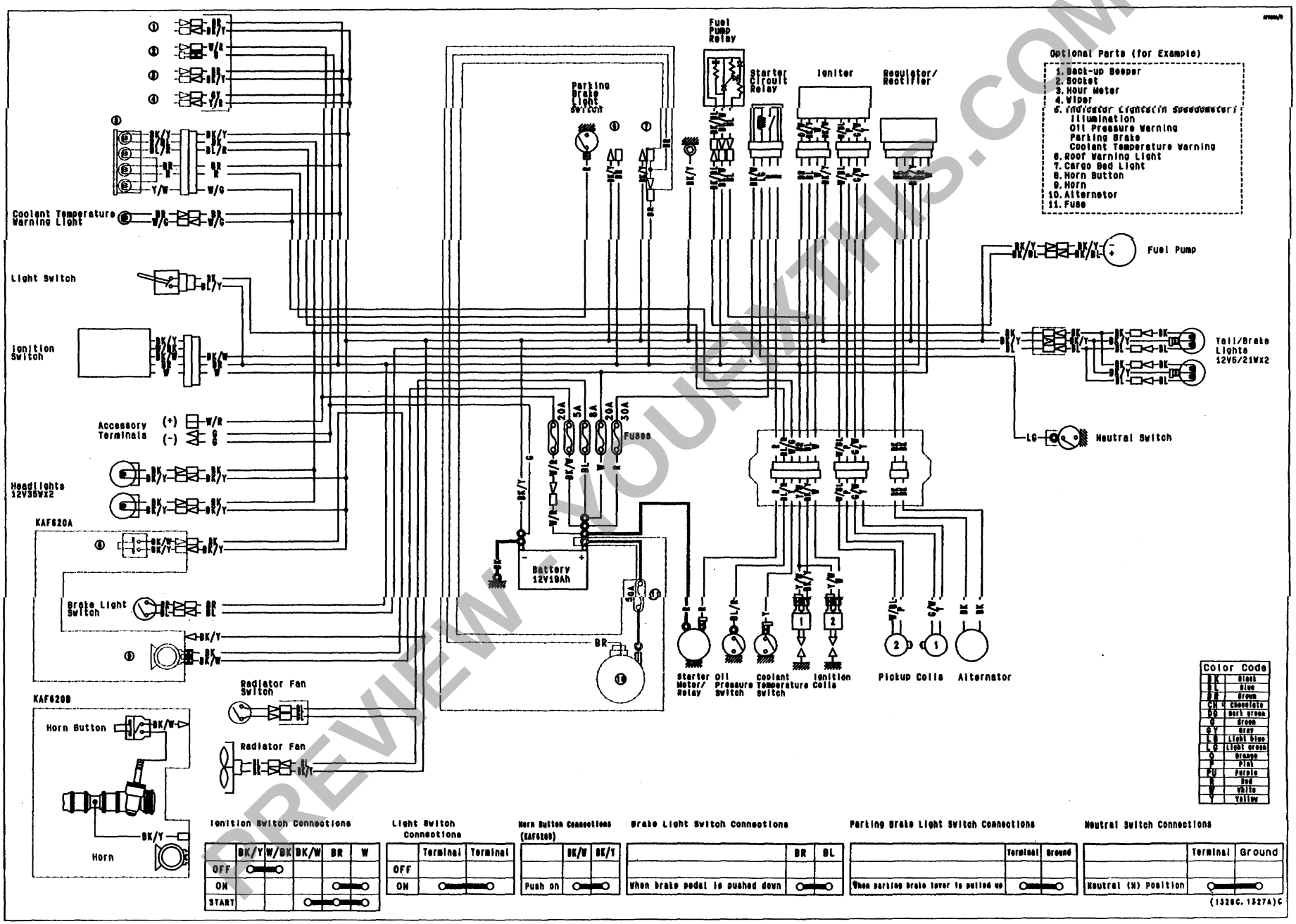
The scheduled maintenance must be done in accordance with this chart to keep the vehicle in good running condition. **The first service is vitally important and must not be neglected.**

FREQUENCY / OPERATION	Whichever comes first → / ↓ Every	First Service	Regular Service	
		After 50 h, or 1 000 km of use	Every 250 h, or 5 000 km of use	Every 500 h, or 10 000 km of use
ENGINE				
Converter belt--check*			●	
Converter driven pulley shoe--check*				●
Spark plug--clean and gap			●	
Air cleaner element--clean*		●	●	
Valve clearance--check		●		●
Engine oil--change*	1 year	●		●
Oil filter--replace*		●		●
Throttle pedal play--check		●		●
Idle speed--adjust		●	●	
Fuel system cleanliness--check*				●
Spark arrester--clean			●	
Radiator--clean*		●	●	
Radiator hoses and connections--check*	1 year	●		●
Coolant--change	2 years			
Fuel hose--replace	4 years			

● = Clean, adjust, lubricate, torque, or replace parts as necessary
* = Service more frequently when operated in mud, dust, or other harsh riding conditions.

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Before Servicing

Before starting to service a vehicle, careful reading of the applicable section is recommended 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 also required for successful work.

Especially note the following:

(1) Dirt

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

(2) Battery Ground

Remove the ground (−) lead from the battery before performing any disassembly operations on the vehicle. This prevents:

(a) the possibility of accidentally turning the engine over while partially disassembled.

(b) sparks at electrical connections which will occur when they are disconnected.

(c) damage to electrical parts.

(3) 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 cross pattern. 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 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.

(4) 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.

(5) 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 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 screw heads.

(6) 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.

(7) High Flash-Point Solvent

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

(8) 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.

(9) 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).

(10) Press

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

(11) 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.

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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 vehicle parts. Special tools, gauges, and testers that are necessary when servicing Kawasaki vehicles 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 preparing this manual, we divided the product into its major systems. These systems became the manual's chapters. All information for a particular system from adjustment through disassembly and inspection is located in a single chapter.

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.

The Periodic Maintenance Chart is located in the General Information chapter. The chart gives a time schedule for required maintenance operations.

If you want spark plug information, for example, go to the Periodic Maintenance Chart first. The chart tells you how frequently to clean and gap the plug. Next, 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 Spark Plug 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

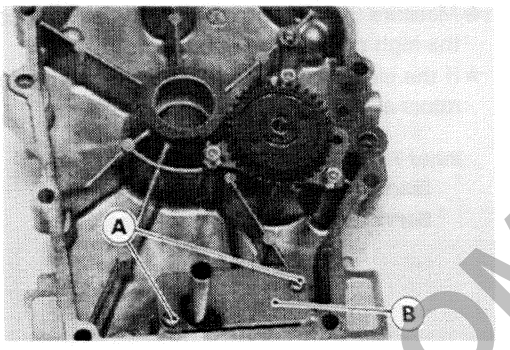
This caution symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

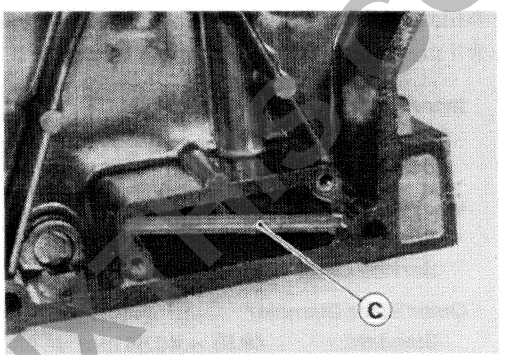
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Oil Screen

Oil Screen Removal





●Remove:
Engine
Crankcase Cover
Oil Screen Cover Screws [A]
Oil Screen Cover [B]
Oil Screen [C]

Oil Screen Installation

●Clean the oil screen thoroughly whenever it is removed.

Oil Screen Cleaning/Inspection

●Clean the oil screen with high flash-point solvent and remove any particles stuck to it.

⚠WARNING

Clean the screen in a well-ventilated area, and take care that there is no spark or flame anywhere near the working area. Because of the danger of highly flammable liquids, do not use gasoline or low flash-point solvents.

NOTE

○ *While cleaning the screen, check for any metal particles that might indicate internal engine damage.*

●Check the screen carefully for any damage: holes and broken wire.

★If the screen is damaged, replace it.

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Brake Line Air Bleeding

- Remove the maintenance cover.
- Check that there is plenty of fluid in the reservoir.

NOTE

○ *The fluid level must be checked several times during the bleeding operation and replenished as necessary. If the fluid in the reservoir runs completely out any time during bleeding, the bleeding operation must be done over again from the beginning since air will have entered the line.*

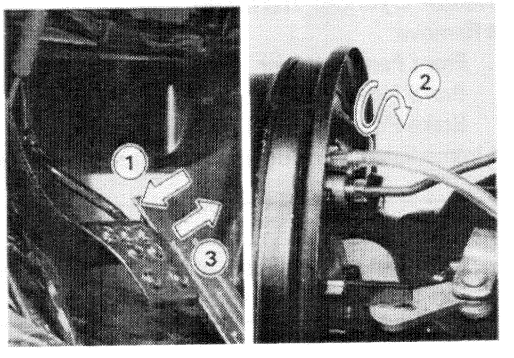
- With the reservoir cap off, slowly pump the brake pedal several times until no air bubbles can be see rising up through the fluid from the holes at the bottom of the reservoir. This bleeds the air from the master cylinder end of the line.
- Remove the wheel for extra clearance.
- Connect a clear plastic hose to the bleed valve at the wheel cylinder, running the other end of the hose into a container.

NOTE

○ *Start with the rear left or right wheel and finish with the front left or right wheel.*

- Pump the brake pedal a few times until it becomes hard to pump. Hold the pedal in the down position. Quickly open (turn counterclockwise) and close the bleed valve. Then release the pedal. Repeat this operation until no more air can be seen coming out into the plastic hose.

1. Hold brake pedal applied.
2. Quickly open and close bleed valve.
3. Release brake pedal.



- Torque:

Torque – Bleed Valves : 5.9 N-m (0.60 kg-m, 52 in-lb)

- Repeat the previous step for each wheel.
- When air bleeding is finished, add fluid up to the upper level in the reservoir.
- Apply the brake forcefully for a few seconds, and check for fluid leakage around the fittings.
- Install the removed parts.

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