

### MODEL APPLICATION

Year	Model	Beginning Frame No.
2005	KAF620-J1	JK1AFCJ1□5B500001
2005	KAF620-K1	JK1AFCK1□5B500001

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



KAWASAKI HEAVY INDUSTRIES, LTD.  
Consumer Products & Machinery Company

Part No.99924-1350-01

Printed in Japan



# **Kawasaki** MULE 3010 TRANS 4 × 4



# **Utility Vehicle Service Manual**

# Quick Reference Guide

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## LIST OF ABBREVIATIONS

A	ampere(s)	lb	pounds(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 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.

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## How to Use This Manual

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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

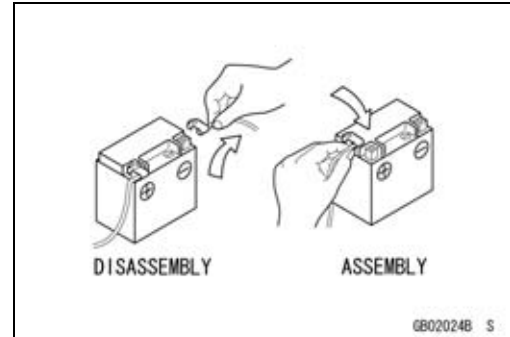
## Before Servicing

Before starting to perform an inspection service or carry out a disassembly and reassembly operation on a vehicle, 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:

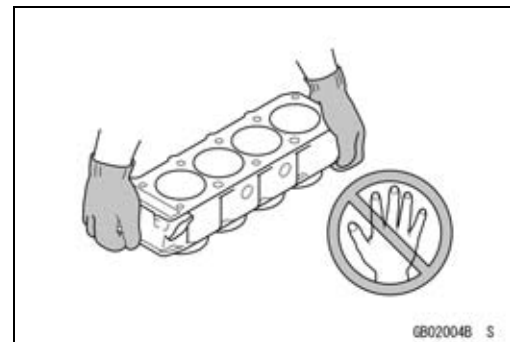
### *Battery Ground*

Before completing any service on the vehicle, disconnect the battery wires from the battery to prevent the engine from accidentally turning over. Disconnect the ground 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.



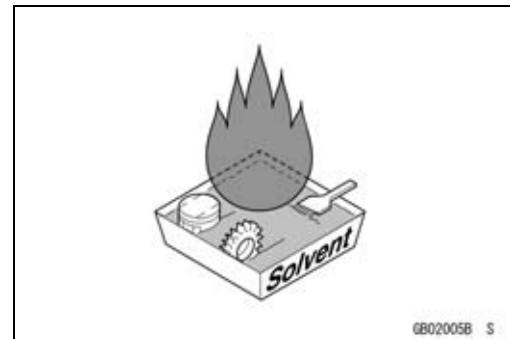
### *Edges of Parts*

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



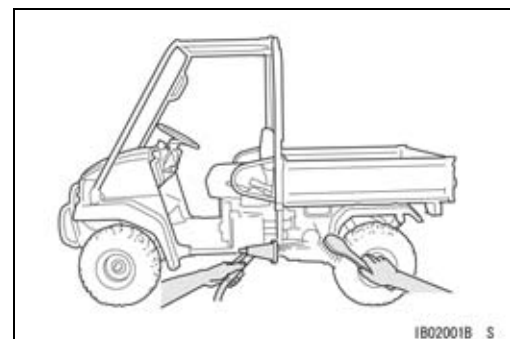
### *Solvent*

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



### *Cleaning vehicle before disassembly*

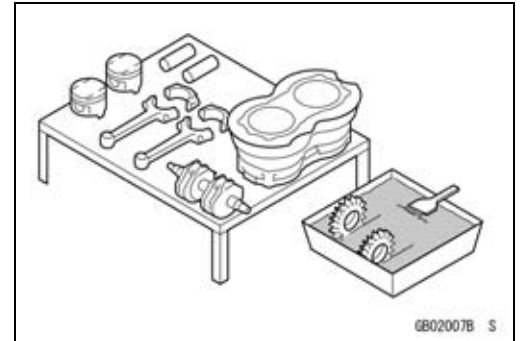
Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



**Before Servicing**

*Arrangement and Cleaning of Removed Parts*

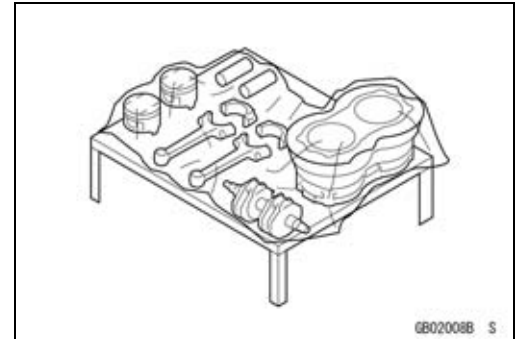
Disassembled parts are easy to confuse. Arrange the parts according to the order the parts were disassembled and clean the parts in order prior to assembly.



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*Storage of Removed Parts*

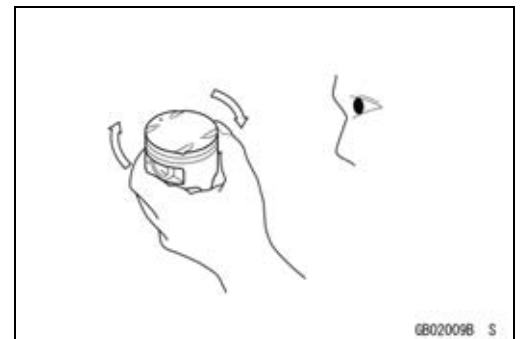
After all the parts including subassembly parts have been cleaned, store the parts in a clean area. Put a clean cloth or plastic sheet over the parts to protect from any foreign materials that may collect before re-assembly.



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*Inspection*

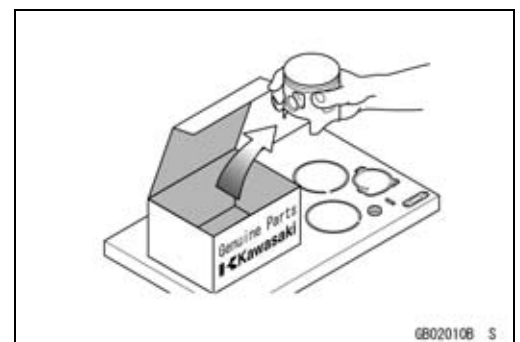
Reuse of worn or damaged parts may lead to serious accident. Visually inspect removed parts for corrosion, discoloration, or other damage. Refer to the appropriate sections of this manual for service limits on individual parts. Replace the parts if any damage has been found or if the part is beyond its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



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*Replacement Parts*

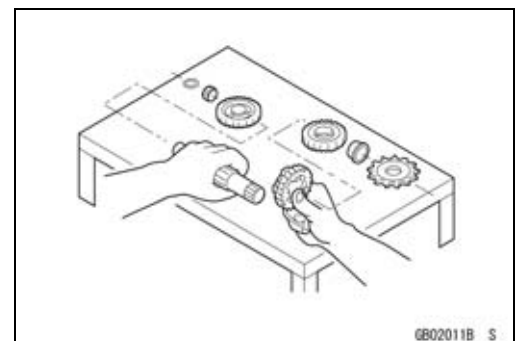
Replacement Parts must be KAWASAKI genuine or recommended by KAWASAKI. Gaskets, O-rings, Oil seals, Grease seals, circlips or cotter pins must be replaced with new ones whenever disassembled.



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*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.



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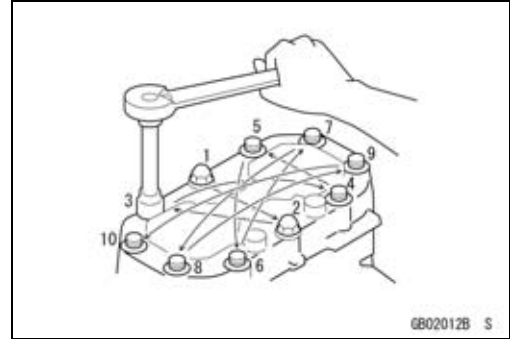


# 1-4 GENERAL INFORMATION

## Before Servicing

### *Tightening Sequence*

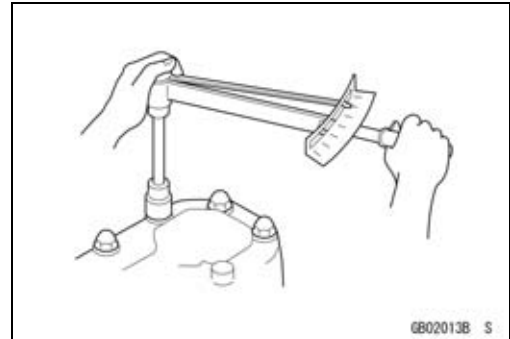
Generally, when installing a part with several bolts, nuts, or screws, start them all in their holes and tighten them to a snug fit. Then tighten them according to the specified sequence to prevent case warpage or deformation which can lead to malfunction. Conversely when loosening the bolts, nuts, or 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*

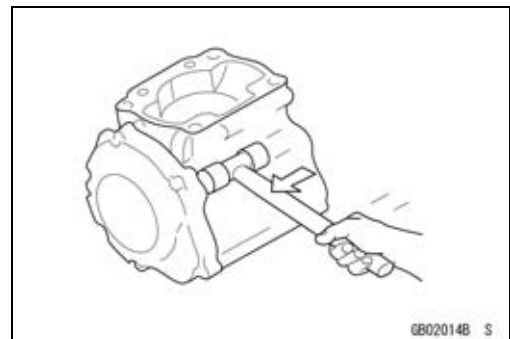
Incorrect torque applied to a bolt, nut, or screw may lead to serious damage. Tighten fasteners to the specified torque using a good quality torque wrench.

Often, the tightening sequence is followed twice initial tightening and final tightening with torque wrench.



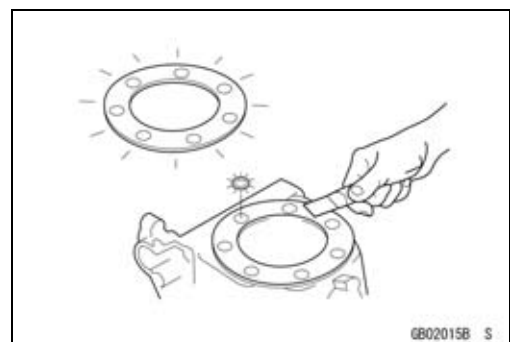
### *Force*

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, Locking Agent*

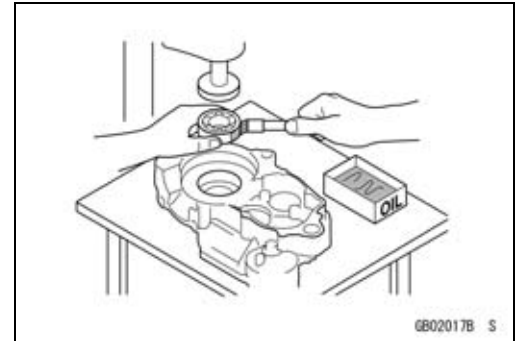
For applications that require Liquid Gasket or a Non-Permanent Locking Agent, clean the surfaces so that no oil residue remains before applying liquid gasket or locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



**Before Servicing**

*Press*

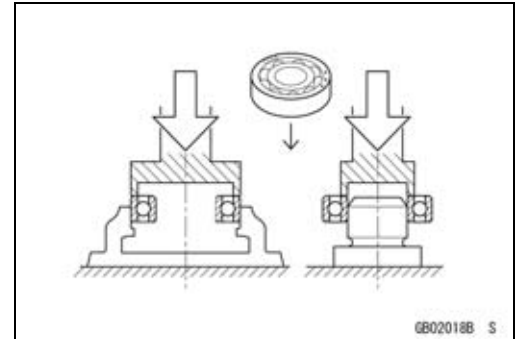
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



*Ball Bearing and Needle Bearing*

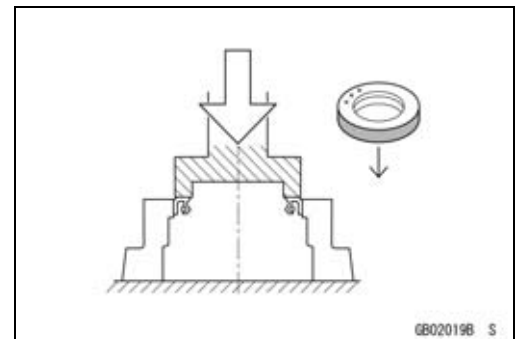
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

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

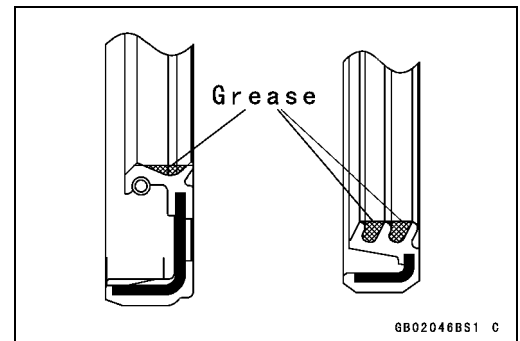


*Oil Seal, Grease Seal*

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.

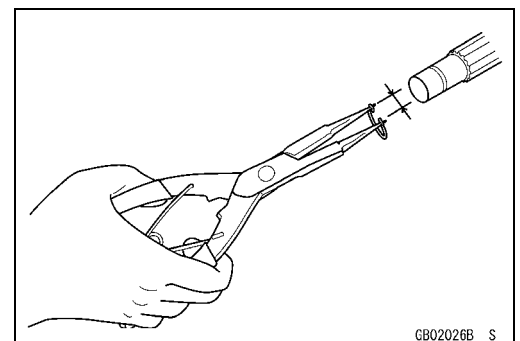


Apply specified grease to the lip of seal before installing the seal.



*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.

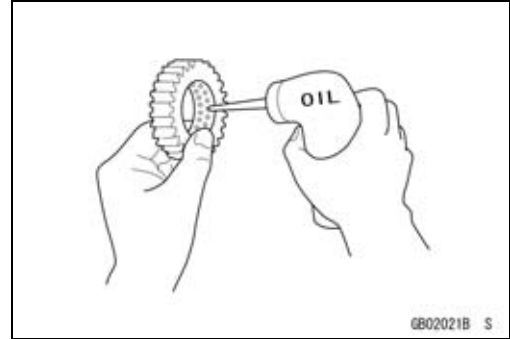


## 1-6 GENERAL INFORMATION

### Before Servicing

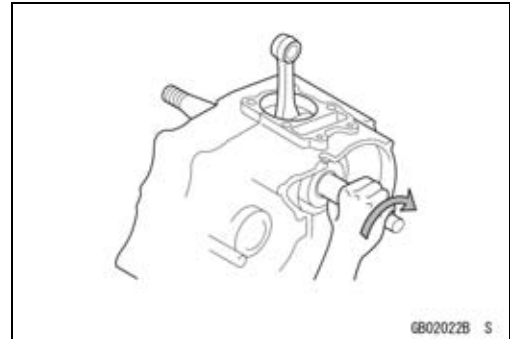
#### *Lubrication*

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.



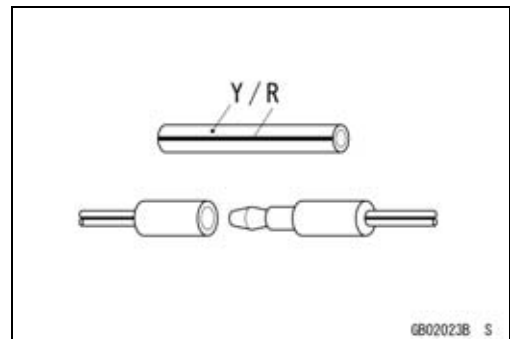
#### *Direction of Engine Rotation*

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.



Model Identification

KAF620-J1 Left Side View



1803B004 P

KAF620-J1 Right Side View



1803B005 P

The KAF620-K1 is a camouflage-surface-treated model and identical to the KAF620-J1, the base model, in every other aspect: controls, features, and specifications.

# 1-8 GENERAL INFORMATION

## General Specifications

Items	KAF620-J1/K1
<b>Dimensions</b> Overall Length Overall Width Overall Height Wheelbase Track: Front Rear Ground Clearance Seat Height: Front Rear Dry Weight Curb Weight: Front Rear Fuel Tank Capacity Cargo Bed (L × W × H): Long Bed Short Bed	3 169 mm (124.76 in.) 1 449 mm (57.05 in.) 1 933 mm (76.10 in.) 2 165 mm (85.24 in.) 1 160 mm (45.67 in.) 1 180 mm (46.46 in.) 177 mm (6.97 in.) 868 mm (34.17 in.) 896 mm (35.28 in.) 668 kg (1 473 lb) 321 kg (708 lb) 374 kg (825 lb) 24.2 L (6.4 US gal) 1 280 × 1 212 × 287 mm (50.39 × 47.72 × 11.30 in.) 770 × 1 212 × 287 mm (30.31 × 47.72 × 11.30 in.)
<b>Performance</b> Maximum Torque Minimum Turning Radius	47 N·m (4.8 kgf·m, 34.7 ft·lb) @2 500 r/min (rpm), (US) – 3.8 m (12.5 ft)
<b>Engine</b> Type Cooling System Bore And Stroke Displacement Compression Ratio Carburetion System Starting System Ignition System Ignition Timing Spark Plug Cylinder Numbering Method Firing Order Valve Timing: Inlet: open close duration Exhaust: open close	4-stroke, OHV, 2 cylinder Liquid-cooled 76 × 68 mm (2.99 × 2.68 in.) 617 mL (37.6 cu in.) 10.3 MIKUNI BW26-18 Electric Starter Battery and transistor 3/900 ~ 13/2 000 ~ 18/2 500 ~ 23/3 500 (BTDC°/rpm) NGK BPR2ES Front to rear, 1-2 Front to rear, 1-2 #1 68° BTDC/#2 64° BTDC #1 76° ABDC/#2 80° ABDC 324° 94° BBDC 48° ATDC

**General Specifications**

Items	KAF620-J1/K1
duration Lubrication System Engine Oil: Grade Viscosity Capacity Coolant Capacity	322° Forced lubrication (wet sump) API SF or SG, API SH or SJ with JASO MA 10W-40 1.8 L (1.9 US qt) 4.6 L (4.9 US qt)
<b>Drive Train</b> Primary Reduction System: Type Reduction Ratio Transmission Gear Ratio: Forward: High Low Reverse: Low Final Drive System: Type Reduction Ratio Overall Drive Ratio: Forward: High Low Reverse: Low Front Final Gear Case Oil: Type Capacity Transmission Oil: Type Capacity	Belt drive torque converter 3.9 ~ 0.85 1.821 (51/28) 3.750 (51/28 × 25/20 × 28/17) 4.220 (41/20 × 25/20 × 28/17) 2-speed, automatic, reverse gear drive (4WD/2WD) 5.4 (81/15) 8.360 17.212 19.372 API GL-5 or GL-6 Hypoid gear oil for LSD SAE 85W-140, SAE 90, or SAE 140 0.4 L (0.4 US qt) API GL-5 Hypoid gear oil, SAE 90 (above 5°C, 41°F) or SAE 80 (below 5°C, 41°F) 2.5 L (2.6 US qt)
<b>Frame</b> Type Caster (Rake Angle) Camber Trail Tire: Front And Rear Steering Type	Steel tube, Ladder 7.5° 0.8° 35 mm (1.4 in.) 23 × 11.00-10, Tubeless Rack and pinion

## 1-10 GENERAL INFORMATION

### General Specifications

Items	KAF620-J1/K1
Suspension: Front: Type Wheel Travel Rear: Type Wheel Travel Brake Type: Front And Rear Parking Brake Type	MacPherson strut 100 mm (3.9 in.)  De Dion axle 70 mm (2.8 in.)  Drum (Hydraulic) Drum (Mechanical internal expansion)
<b>Electrical Equipment</b> Battery Headlight: Type Bulb Tail/Brake Light Alternator: Type Rated Output	12 V 18 Ah  Semi-sealed beam 12 V 30 W × 2 12 V 5/21 W  Three - phase AC 21 A /12 V @3 000 rpm
<b>Load Capacity</b> Maximum Vehicle Load (Including Occupants And Cargo) Maximum Cargo Bed Load: Long Short	603 kg (1330 lb)  363 kg (800 lb) 182 kg (401 lb)

US: United States Model

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 <sup>2</sup>
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cmHg
kgf/cm <sup>2</sup>	×	98.07	=	kPa
kgf/cm <sup>2</sup>	×	14.22	=	psi
cmHg	×	1.333	=	kPa

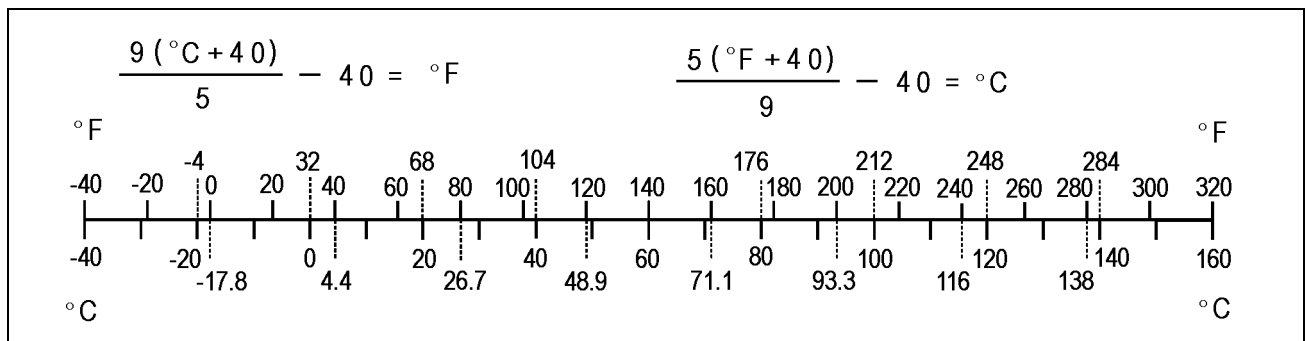
**Units of Speed:**

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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## 2-2 PERIODIC MAINTENANCE

### Periodic Maintenance Chart

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

OPERATION	FREQUENCY	Whichever comes first → ↓ Every	First Service	Regular Service		See Page
			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	
<b>ENGINE</b>						
Converter belt - check*			●			2-18
Converter driven pulley shoe - check*				●		2-19
Converter air cleaner element - clean*			●	●		2-19
Converter dust or water - drain*				●		2-20
Valve clearance - check			●		●	2-20
Engine oil - change*		1 year	●	●		2-22
Oil filter - replace*			●		●	2-23
Throttle pedal play - check			●		●	2-11
Idle speed - adjust			●	●		2-12
External carburetor mechanism (Throttle lever roller and choke lever cam) - clean*			●	●		2-13
Fuel hose and connections - check*			●	●		2-13
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Fuel filter - change*					●	2-13
Fuel system cleanliness - check*					●	2-12
Air cleaner element - clean*			●	●		2-14
Intake chamber water - drain*			●	●		2-13
Spark plug - clean and gap				●		2-35
Spark arrester - clean				●		2-22
Radiator - clean*			●	●		2-15
Radiator hoses and connections - check		1 year	●		●	2-16
Coolant - change		2 years				2-16
Coolant filter - clean		1 year				2-18

●: Clean, adjust, lubricate, torque, or replace parts as necessary.

\*: Service more frequently when operated in mud, dust, or other harsh riding conditions.

**Periodic Maintenance Chart**

OPERATION	FREQUENCY	Whichever comes first → ↓ Every	First Service	Regular Service		See Page
			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	
<b>CHASSIS</b>						
Steering - check			●	●		2-34
Steering and axle shaft joint dust boots - check			●	●		2-35
Brake pedal play - check*			●	●		2-27
Parking brake lever - check			●	●		2-33
Brake hose and pipe - check			●	●		2-29
Brake fluid level - check			●	●		2-26
Brake wear - check*				●		2-30
Tire wear - check*			●	●		2-25
Brake light switch - check			●	●		2-35
Seat belt - check				●		2-34
General lubrication - perform*				●		2-35
Bolts, nuts, and fasteners tightness - check			●	●		2-37
Wheel nuts tightness - check			●	●		2-24
Front final gear case oil and transmission oil - change*		1 year	●		●	2-25
Brake fluid - change		2 years				2-27
Brake master cylinder cup and dust seal - replace		2 years				2-28
Brake wheel cylinder assembly - replace		2 years				2-31
Brake hose - replace		4 years				2-29

●: Clean, adjust, lubricate, torque, or replace parts as necessary.

\*: Service more frequently when operated in mud, dust, or other harsh riding conditions.

## 2-4 PERIODIC MAINTENANCE

### 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.

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

O: Apply an oil to the threads, seated surface, or washer.

R: Replacement Part

S: Tighten the fasteners following the specified sequence.

SS: Apply a silicone sealant to the threads.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
<b>Fuel System</b>				
Air Duct Clamps	1.0	0.10	8.7	
Cover Mounting Bolts	2.9	0.30	26 in·lb	L
Chamber Case Cover Bolts	4.9	0.50	43 in·lb	
Float Bowl Screws	2.0	0.20	18 in·lb	
Air Cleaner Housing Mounting Bolts	20	2.0	14	
Governor Arm Mounting Nut	7.4	0.75	65 in·lb	
Link Lever Mounting Bolts	8.8	0.90	78 in·lb	L
Carburetor Cover Bolts	8.8	0.90	78 in·lb	
<b>Cooling System</b>				
Water Pump Cover Bolts (M6)	8.8	0.90	78 in·lb	S
Water Pump Cover Bolt (M8)	25	2.5	18	S
Radiator Fan Switch	25	2.5	18	
Radiator Screen Bolts	8.8	0.90	78 in·lb	
Radiator Mounting Bolts	8.8	0.90	78 in·lb	
Water Pipe Bolts	8.8	0.90	78 in·lb	
Coolant Temperature Warning Light Switch	23	2.3	17	SS
Coolant Reservoir Mounting Bolt	4.4	0.45	39 in·lb	
Coolant Drain Plugs (Cylinder)	17	1.7	12	
<b>Engine Top End</b>				
Cylinder Head Bolts	22	2.2	16	S
Intake Pipe Bolts	8.8	0.90	78 in·lb	L (2)
Valve Adjusting Screw Locknuts	9.8	1.0	87 in·lb	
Coolant Temperature Warning Light Switch	23	2.3	17	SS
Intake Manifold Bolts	–	–	–	S
Muffler Mounting Bolts	–	–	–	L
<b>Converter System</b>				
Drive Pulley Bolt (New)	76	7.7	56	R
Driven Pulley Bolt	93	9.5	69	L
Converter Cover Bolts	1.5	0.15	13 in·lb	
Ramp Weight Nuts	6.9	0.70	61 in·lb	
Spider	275	28	203	
Drive Pulley Cover Bolts	13	1.3	113 in·lb	
Wear Shoe Mounting Screws	1.1	0.11	10 in·lb	

## PERIODIC MAINTENANCE 2-5

### Torque and Locking Agent

Fastener	Torque			Remarks
	N-m	kgf-m	ft-lb	
Cooling Fan Cover Bolts	8.8	0.90	78 in-lb	
<b>Engine Lubrication System</b>				
Engine Oil Drain Plug (M14)	22	2.2	16	
Engine Oil Drain Plug (M16)	25	2.5	18	
Oil Pressure Switch	9.8	1.0	87 in-lb	SS
Oil Filter	–	–	–	see text
<b>Engine Removal/Installation</b>				
Engine Positioning Plate Bolts	20	2.0	14	
<b>Engine Bottom End</b>				
Crankcase Cover Bolts	25	2.5	18	
Connecting Rod Big End Cap Bolts	21	2.1	15	O
Coolant Drain Plugs (Cylinder)	17	1.7	12	
Oil Filter Stud Bolt	18	1.8	13	
<b>Transmission</b>				
Transmission Oil Drain Plug	15	1.5	11	
Transmission Case Mounting Bolts	44	4.5	33	
Transmission Case Bolts	8.8	0.90	78 in-lb	
Shift Arm Positioning Bolt	37	3.8	27	
Hi/Low Gear Case Bolts	20	2.0	14	
Shift Shaft Stop Bolt	7.8	0.80	69 in-lb	
Differential Gear Housing Bolts	57	5.8	42	
Bearing Holder	120	12	87	MO
Neutral Switch	15	1.5	11	
Governor Pivot Arm Stopper Bolt	15	1.5	11	
Shift Shaft Lever Clamp Bolts	12	1.2	104 in-lb	
<b>Wheels/Tires</b>				
Tie-Rod End Locknuts	49	5.0	36	
Wheel Nuts	137	14	101	
<b>Final Drive</b>				
Front Final Gear Case:				
Oil Filler Cap	29	3.0	22	
Oil Drain Plug	20	2.0	14	
Gear Case Bracket Bolts	44	4.5	33	L
Gear Case Mounting Nuts	44	4.5	33	
Ring Gear Cover Bolts (M10)	47	4.8	35	
Ring Gear Cover Bolts (M8)	25	2.5	18	
Pinion Gear Bearing Housing Nuts	25	2.5	18	
Differential Case Torx Bolts	32	3.3	24	L
Ring Gear Bolts	49	5.0	36	
Pinion Gear Slotted Nut	120	12	87	MO
Bevel Gear Case:				
Bevel Gear Case Bolts	22	2.2	16	
Driven Gear Shaft Nut	110	11	80	L

## 2-6 PERIODIC MAINTENANCE

### Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Bearing Holder	120	12	87	L
Housing Locknut	120	12	87	L
Bevel Gear Case Holder Nuts	25	2.5	18	
Drive Gear Nut	120	12	87	MO
Front Axle Cap Bolts	8.8	0.90	78 in·lb	
Drive Shaft Cap Bolts	20	2.0	14	
<b>Brakes</b>				
Bleed Valves	5.9	0.60	52 in·lb	
Push Rod Locknut	18	1.8	13	
Brake Hose Banjo Bolts	25	2.5	18	
Brake Pipe Nipples	18	1.8	13	
Piston Stop Bolt	8.8	0.90	78 in·lb	
Reservoir Clamp Bolt	5.9	0.60	52 in·lb	
Front Axle Nuts	200	20	140	
Rear Axle Nuts	300	31	220	
Wheel Cylinder Mounting Bolts	11	1.1	95 in·lb	
Wheel Cylinder Mounting Nuts	7.8	0.80	69 in·lb	
Brake Panel Mounting Bolts	44	4.5	33	L
<b>Suspension</b>				
Strut Mounting Nuts	44	4.5	33	
Strut Clamp Nut	98	10	72	
Strut Lock Nut	49	5.0	36	
Rear Shock Absorber Mounting Nuts	59	6.0	43	
Front Suspension Arm Pivot Bolts	98	10	72	
Front Suspension Arm Joint Nut	78	8.0	58	
Damper Bracket Mounting Nuts	44	4.5	33	
Leaf Spring Mounting Nuts (Front)	98	10	72	
Leaf Spring Mounting Nuts (Rear)	59	6.0	43	
Tie-rod End Nuts	34	3.5	25	
<b>Steering</b>				
Steering Wheel Mounting Nut	52	5.3	38	
Intermediate Shaft Clamp Bolts	20	2.0	14	
Steering Gear Assembly Bracket Bolts	52	5.3	38	L
Tie-rod End Nuts	34	3.5	25	
Rack Guide Spring Cap Locknut	39	4.0	29	
Tie-Rod End Locknuts	49	5.0	36	
Strut Clamp Nut	98	10	72	
<b>Frame</b>				
Seat Belt Mounting Bolts	34	3.5	25	
Front Bar Mounting Bolts (Lower)	98	10	72	
Front Bar Mounting Bolts (Upper)	44	4.5	33	
Top Bar Mounting Bolts	44	4.5	33	
Center Bar Mounting Bolts and Nuts	44	4.5	33	

**Torque and Locking Agent**

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Rear Bar Mounting Bolts And Nuts	44	4.5	33	
Rear End Sub-Frame Mounting Bolts	44	4.5	33	
Hood Latch Lever Mounting Bolt	39	4.0	29	
Tail Gate Fixing Lever Screw	4.4	0.45	39 in·lb	L
Screen Fixing Lever Screw	4.4	0.45	39 in·lb	L
<b>Electrical System</b>				
Alternator Rotor Nut	120	12	87	
Spark Plugs	17	1.7	12	
Starter Motor Mounting Bolts	22	2.2	16	
Regulator/Rectifier Mounting Bolts	8.8	0.90	78 in·lb	
Igniter Mounting Bolts	8.8	0.90	78 in·lb	
Alternator Stator Mounting Screws	-	-	-	L
Coolant Temperature Warning Light Switch	23	2.3	17	SS
Oil Pressure Switch	9.8	1.0	87 in·lb	SS
Neutral Switch	15	1.5	11	
Radiator Fan Switch	25	2.5	18	
Battery Holder Nuts	17	1.7	12	

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 of Engine Parts**

Threads dia. mm (in.)	Mark of bolt head	Torque		
		N·m	kgf·m	ft·lb
6 (0.24)	4T	3.9 ~ 4.9	0.40 ~ 0.50	35 ~ 43 in·lb
6 (0.24)	7T	7.8 ~ 9.8	0.80 ~ 1.0	69 ~ 87 in·lb
6 (0.24)	9T	12 ~ 15	1.2 ~ 1.5	104 ~ 130 in·lb
8 (0.31)	4T	10 ~ 14	1.0 ~ 1.4	87 ~ 120 in·lb
8 (0.31)	7T	18 ~ 22	1.8 ~ 2.2	13 ~ 16
10 (0.39)	4T	20 ~ 24	2.0 ~ 2.4	14 ~ 17
10 (0.39)	7T	39 ~ 44	4.0 ~ 4.5	29 ~ 33

**Basic Torque for General Fasteners of Frame Parts**

Threads dia. mm (in.)	Torque		
	N·m	kgf·m	ft·lb
5 (0.20)	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in·lb
6 (0.24)	5.8 ~ 7.9	0.60 ~ 0.80	52 ~ 69 in·lb
8 (0.31)	14 ~ 19	1.4 ~ 1.9	10 ~ 14
10 (0.39)	26 ~ 34	2.6 ~ 3.5	19 ~ 25
12 (0.47)	44 ~ 61	4.5 ~ 6.2	33 ~ 45

## 2-8 PERIODIC MAINTENANCE

### Specifications

Item	Standard	Service Limit
<b>Fuel System</b>		
Throttle Pedal Free Play	5 ~ 10 mm (0.2 ~ 0.4 in.)	---
Idle Speed	850 ~ 950 r/min (rpm)	---
<b>Cooling System</b>		
Coolant:		
Type	Permanent type of antifreeze (Soft water and ethylene glycol plus corrosion and rust inhibitor chemicals for aluminum engine and radiators)	---
Color	Green	---
Mixed Ratio	Soft water 50% × coolant 50%	---
Freezing Point	-35°C (-31°F)	---
Total Amount	4.6 L (4.9 US qt)	---
Fan Belt Deflection	9.5 ~ 11.5 mm/10 kgf (22 lb)	---
<b>Converter System</b>		
Belt Width	30.3 mm (1.19 in.)	28.8 mm (1.13 in.)
Wear Shoe Width	---	16 mm (0.64 in.)
<b>Engine Top End</b>		
Valve Clearance (When Cold)	0.25 mm (0.010 in.)	---
<b>Engine Lubrication System</b>		
Engine Oil:		
Grade	API SF or SG API SH or SJ with JASO MA	---
Viscosity	SAE 10W-40	---
Capacity	1.5 L (1.6 US qt) (when filter is not removed) 1.8 L (1.9 US qt) (when filter is removed)	---
Oil Level	Between F and L marks on dipstick	---
<b>Transmission</b>		
Transmission Oil:		
Type	API "GL-5" Hypoid gear oil	---
Viscosity	SAE90: above 5°C (41°F) or SAE80: below 5°C (41°F)	---
Capacity	2.5 L (2.6 US qt)	---
Oil Level	Between H and L lines on dipstick	---
<b>Wheels/Tires</b>		
Tire Tread Depth	13.2 mm (0.520 in.)	3 mm (0.12 in.)
<b>Final Drive</b>		
Front Final Gear Case Oil:		
Type	API "GL-5 or GL-6" hypoid gear oil for LSD (Limited Slip Differential gears)	---
Viscosity	SAE85W-140, SAE90 or SAE140	---
Capacity	0.4 L (0.4 US qt)	---
Oil Level	Filler opening level	---



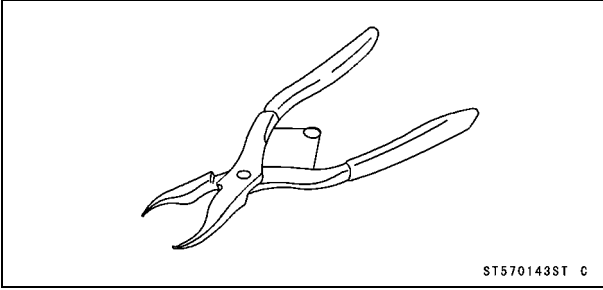
**Specifications**

Item	Standard	Service Limit
<b>Brakes</b>		
Brake Fluid:		
Type	DOT3	- - -
Fluid Level	Between upper and lower level lines	- - -
Brake Pedal Play	2 ~ 10 mm (0.08 ~ 0.39 in.)	- - -
Brake Drum Inside Diameter	180.000 ~ 180.160 mm (7.0866 ~ 7.0929 in.)	180.75 mm (7.116 in.)
Brake Shoe Lining Thickness	4.5 mm (0.18 in.)	1.0 mm (0.04 in.)
Parking Brake Lever Travel	8 ~ 12 notches (clicks) at 200 N (20 kgf, 44 lb)	- - -
<b>Steering</b>		
Steering Wheel Free Play	0 ~ 20 mm (0 ~ 0.79 in.)	- - -
<b>Electrical System</b>		
Brake Light Switch Timing	ON after 10 mm (0.39 in.) of pedal travel	- - -
Spark Plug Gap	0.7 ~ 0.8 mm (0.028 ~ 0.031 in.)	

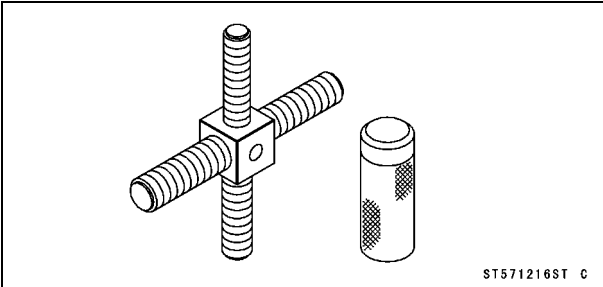
## 2-10 PERIODIC MAINTENANCE

### Special Tools

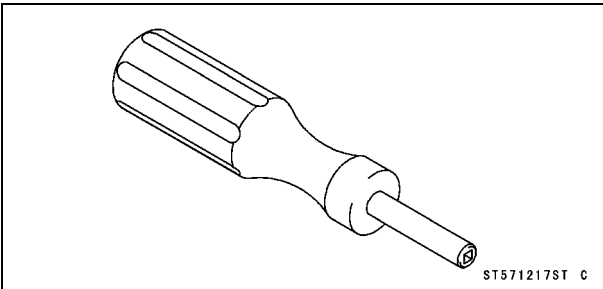
**Inside Circlip Pliers:**  
57001-143



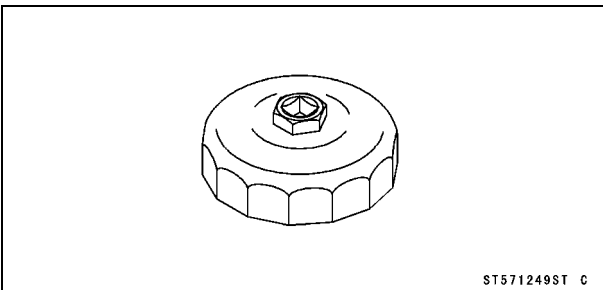
**Rotor Puller, M16/M18/M20/M22 × 1.5:**  
57001-1216



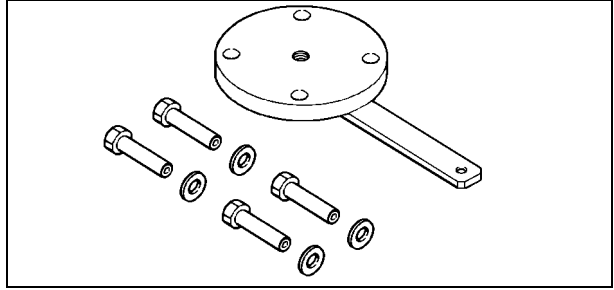
**Valve Adjusting Screw Holder:**  
57001-1217



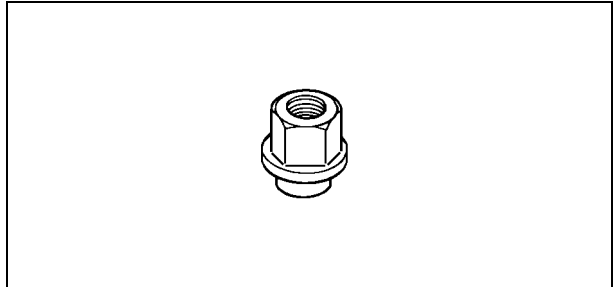
**Oil Filter Wrench:**  
57001-1249



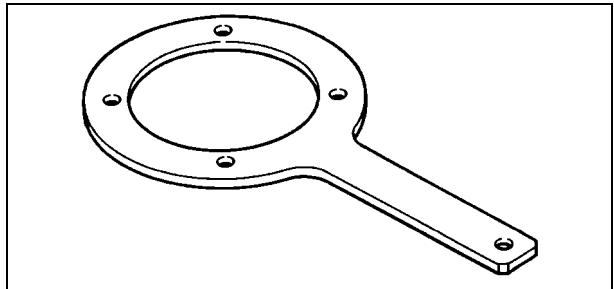
**Brake Drum Remover:**  
57001-1260



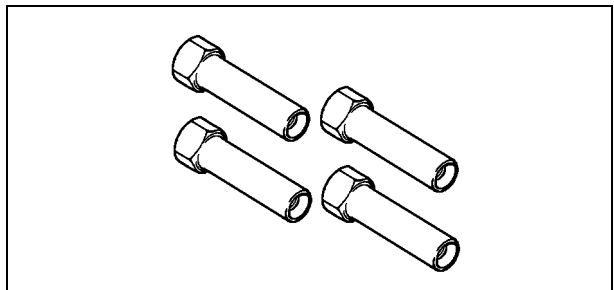
**Brake Drum Pusher, M18 × 1.5:**  
57001-1261



**Brake Drum Holder:**  
57001-1325



**Brake Drum Remover Nuts:**  
57001-1326

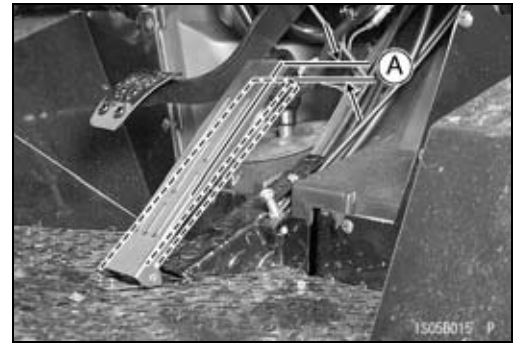


**Periodic Maintenance Procedures**

**Fuel System**

*Throttle Pedal Free Play Inspection*

- Check that the throttle pedal moves smoothly from full open to close.
- ★ If the throttle pedal does not return properly, lubricate the throttle cable.
- Check the throttle pedal free play [A].
- ★ If the free play is incorrect, adjust the throttle cable.

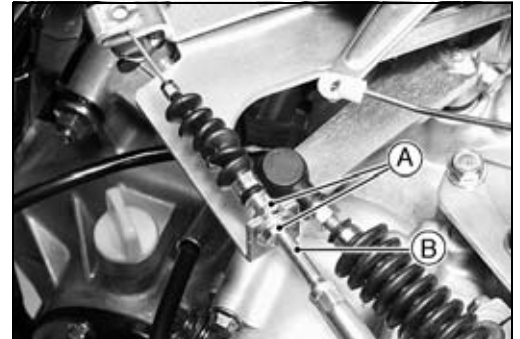


**Throttle Pedal Free Play**

**Standard: 5 ~ 10 mm (0.2 ~ 0.4 in.)**

*Throttle Pedal Free Play Adjustment*

- Remove:
  - Cargo Bed (tilt up)
- Loosen the adjuster mounting nuts [A] at the cable lower end.
- Slide the adjuster [B] until the proper amount of throttle pedal free play is obtained.
- Tighten the mounting nuts securely.
- Start the engine.
- With the transmission in neutral, operate the throttle pedal a few times to make sure that the idle speed does not change.
- ★ If the idle speed does change, the throttle cable may be improperly adjusted, incorrectly routed, or it may be damaged.
- Correct any of these conditions before operation.

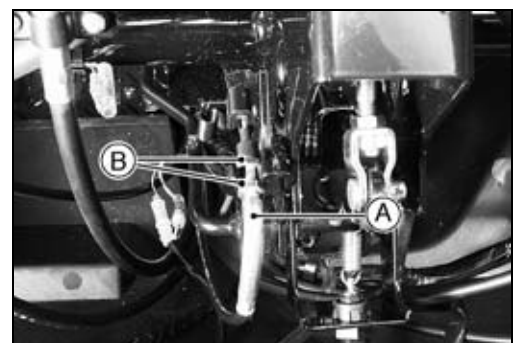


**⚠ WARNING**

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

**NOTE**

○ If the throttle pedal free play cannot be adjusted by using the adjuster at the cable lower end, use the cable adjuster [A] at the cable upper end. Do not forget to securely tighten the adjuster mounting nuts [B].



## 2-12 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Full Throttle Pedal Position Adjustment

- Loosen the locknut [A].
- Screw in the throttle pedal stop bolt [B].
- Depress the throttle pedal until the throttle lever on the carburetor is in the fully opened position, and keep its position.
- Turn the throttle pedal stop bolt until the bolt head lightly touches the bottom of the throttle pedal.
- Tighten the locknut securely.



#### Idle Speed Inspection

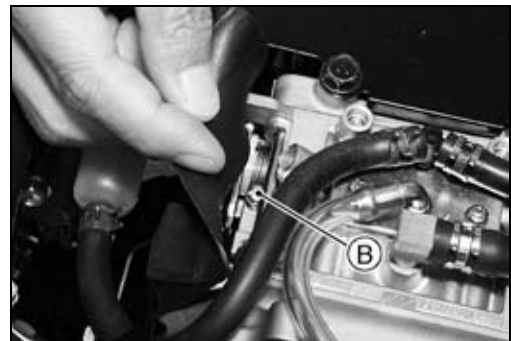
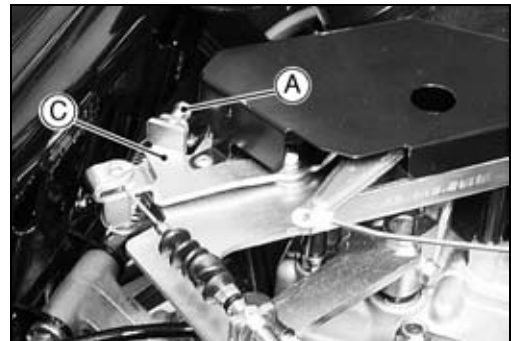
- Start the engine and warm it up thoroughly.
- Tilt up the cargo bed.
- Check the idle speed with a tachometer.
- ★ If the idle speed is out of the specified range, adjust it.

#### Idle Speed

Standard: 850 ~ 950 r/min (rpm)

#### Idle Speed Adjustment

- Start the engine and warm it up thoroughly.
- Tilt up the cargo bed.
- Loosen the accel lever stopper screw [A] on the control panel.
- Turn the idle adjusting screw [B] at the carburetor until the idle speed is correct.
- Depress and release the throttle pedal a few times to make sure that the idle speed is within the specified range. Readjust if necessary.
- After the adjustment, screw in the accel lever stopper screw [A] until the screw lightly touches the accel lever [C].

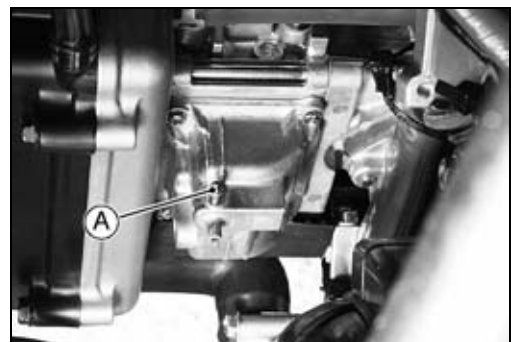


#### Fuel System Cleanliness Inspection

#### **⚠ WARNING**

Gasoline is extremely flammable and can be explosive under certain conditions. Turn the ignition switch OFF. Do not smoke. Make sure the area is well-ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

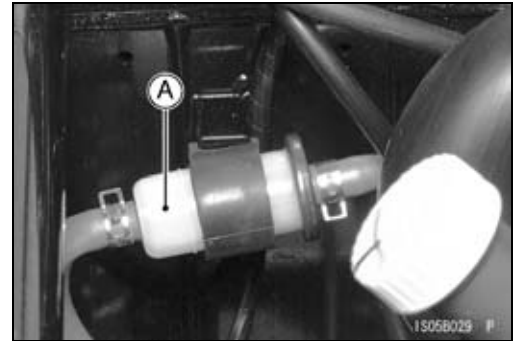
- Remove:
  - Cargo Bed (tilt up)
- Place a suitable container under the carburetor.
- Turn out the drain screw [A] a few turns to drain some fuel from the carburetor, and check for water or dirt in the fuel.
- ★ If any water or dirt comes out, clean the carburetor and fuel tank (see Fuel Tank) and check the fuel filter.
- Tighten the drain screw securely.



**Periodic Maintenance Procedures**

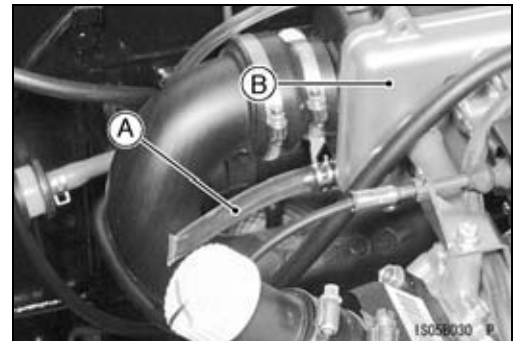
*Fuel Filter Inspection*

- Visually inspect the fuel filter [A].
- ★ If the filter is clear with no signs of dirt or other contamination, it is OK and need not be replaced.
- ★ If the filter is dark or looks dirty, replace it. Also, check the rest of the fuel system for contamination.



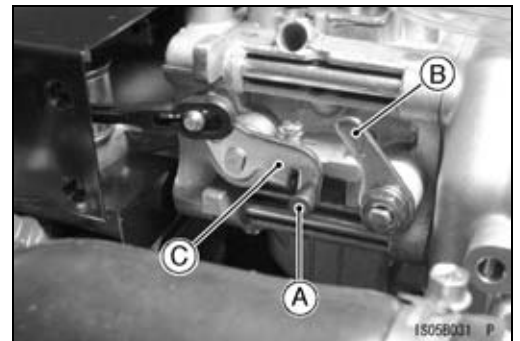
*Intake Chamber Water Draining*

- Lift the cargo bed to support it with the rod.
- Remove the clamp then the drain hose [A] on the intake chamber [B] to expel dust and/or water accumulated inside.



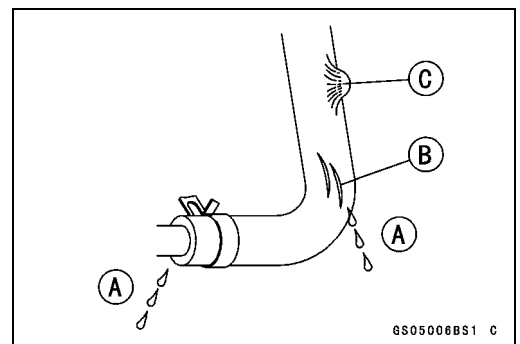
*External Carburetor Mechanism Cleaning*

- Lift the cargo bed to support it with the rod.
- Remove the carburetor cover.
- Clean and lubricate the throttle lever roller [A] and choke lever cam [B], with a penetrating rust inhibitor, such as WD40 or BEL-RAY 6 in 1.
- [C] Throttle Valve Lever



*Fuel Hoses And Connections Inspection*

- Lift up the cargo bed and seat.
- Check the fuel hoses and fittings for deterioration, cracks and signs of leakage.
- ★ Replace the fuel hose if any fraying, leak [A], cracks [B] or bulges [C] are noticed.
- Check that the hoses are securely connected and clamps are installed correctly.
- When installing, route the hoses according to Cable, Wire, and Hose Routing section in the Appendix chapter.
- When installing the fuel hoses, avoid sharp bending, kinking, flattening or twisting, and route the fuel hoses with a minimum of bending so that the fuel flow will not be obstructed.
- ★ Replace the hose if it has been sharply bent or kinked.

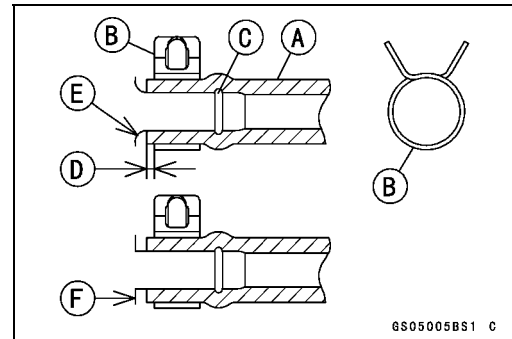
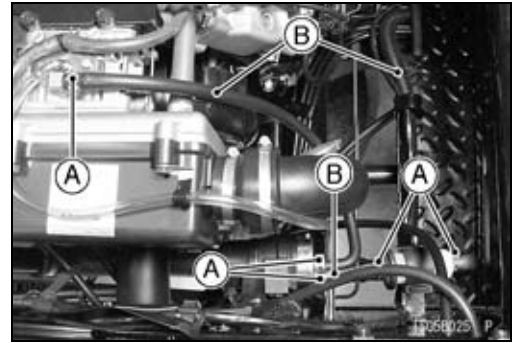


## 2-14 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Fuel Hoses Replacement

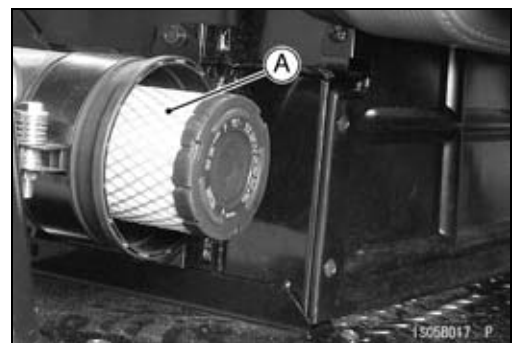
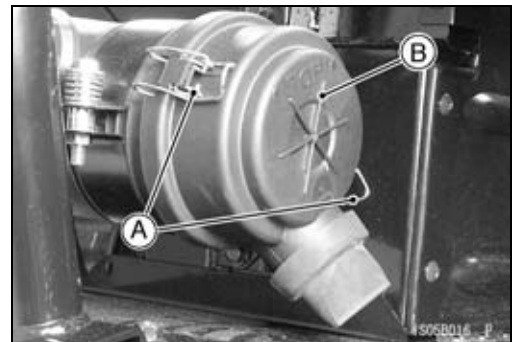
- Tilt up the cargo bed.
- Slide out the plate clamps [A].
- Remove the hoses [B] (see Exploded View in Fuel System chapter).
- When installing, route the hoses according to Cable, Wire, and Hose Routing section in the Appendix chapter.
- When installing the fuel hoses, avoid sharp bending, kinking, flattening or twisting, and route the fuel hoses with a minimum of bending so that the fuel flow will not be obstructed.
- Fit the fuel hose [A] onto the fitting fully and install the plate clamp [B] beyond the raised rib [C].  
1 ~ 2 mm (0.0039 ~ 0.0078 in.) [D]
- The hose end must reach the filler [E] or be as near as possible to the step [F].



- Bleed the air from the fuel filter (see Next Section).

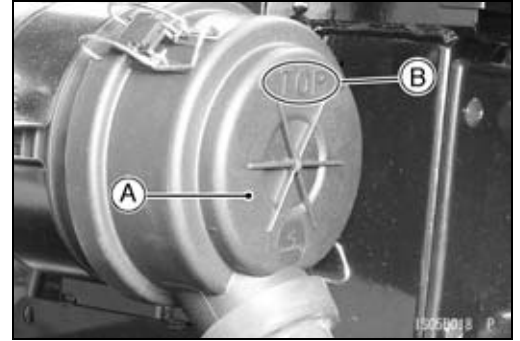
#### Air Cleaner Element Cleaning

- Unlock the clamps [A].
- Remove:  
Air Cleaner Cover [B]
- Remove:  
Element [A]
- Clean the element by tapping gently with the handle end of a screwdriver.
- ★ If the element is very dirty or damaged, replace the element.
- Carefully clean out the air cleaner cover.

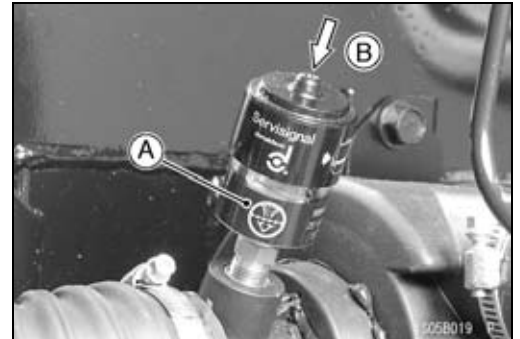


**Periodic Maintenance Procedures**

- Install the cover [A] and lock the clamps.
- Face the TOP mark [B] upward.



- Reset the Air Filter Restriction Gauge [A] (push [B] its reset button).



*Air Cleaner Housing Dust and/or Water Inspection*

- Push open the drain tube [A] on the bottom of the air cleaner housing.

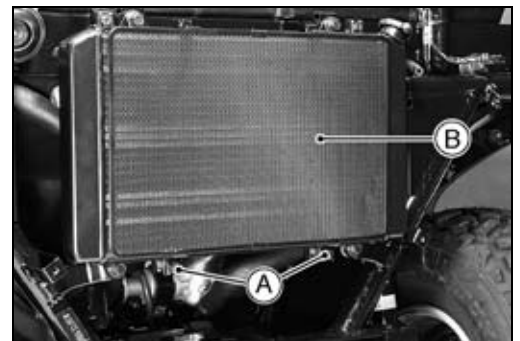


**Cooling System**

*Radiator Cleaning*

<b>CAUTION</b>
<p><b>Clean the radiator screen and the radiator in accordance with the Periodic Maintenance Chart. In dusty areas, they should be cleaned more frequently than the recommended interval. After riding through muddy terrains, the radiator screen and the radiator should be cleaned immediately.</b></p>

- Remove:
  - Front Fender Front Cover
  - Radiator Screen Mounting Bolts [A]
  - Radiator Screen [B]
- Clean the radiator screen in a bath of tap water, and then dry it with compressed air or by shaking it.

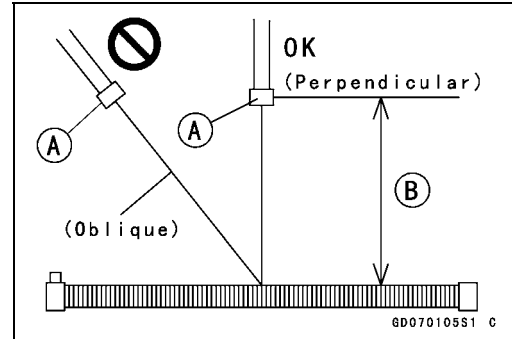


## 2-16 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### CAUTION

When cleaning the radiator with steam cleaner, be careful of the following to prevent radiator damage. Keep the steam gun [A] away more than 0.5 m (1.6 ft) [B] from the radiator core. Hold the steam gun perpendicular to the core surface. Run the steam gun following the core fin direction.



#### Radiator Hose and Connection Inspection

- The high pressure inside the radiator hose can cause coolant to leak or the hose to burst if the line is not properly maintained. Visually inspect the hoses [A] for signs of deterioration. Squeeze the hoses. A hose should not be hard and brittle, nor should it be soft or swollen.
- ★ Replace the hose if any fraying, cracks or bulges are noticed.
- Check that the hoses are securely connected and clamps are tightened correctly.

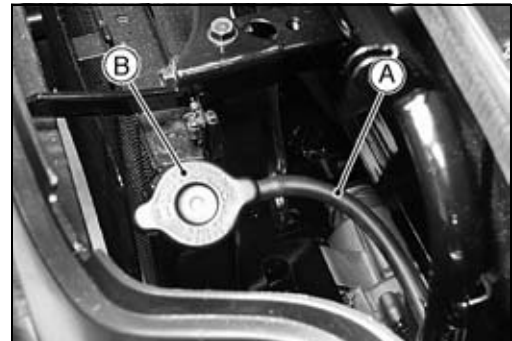


#### Coolant Draining

#### ⚠ WARNING

To avoid burns, do not remove the radiator cap or try to change the coolant when the engine is still hot. Wait until it cools down. Coolant on tires will make them slippery and can cause an accident and injury. Immediately wash away any coolant that spills on the frame, engine, or wheels. Since coolant is harmful to the human body, do not use for drinking.

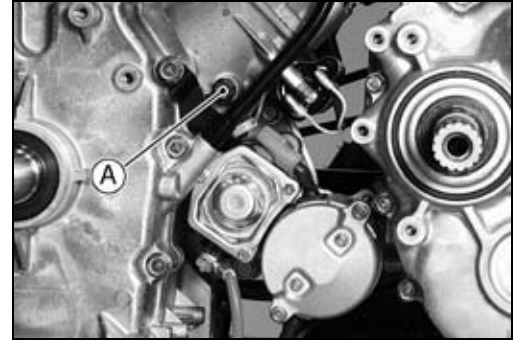
- Pull off the reservoir tank hose [A] and pour the coolant into a container.
- Remove:  
Radiator Cap [B]
- Remove the radiator cap in two steps. First turn the cap counterclockwise to the first stop. Then push and turn it further in the same direction and remove the cap.
- Remove:  
Coolant Drain Plug [A] at Front Cylinder
- Place a container under the drain plug.



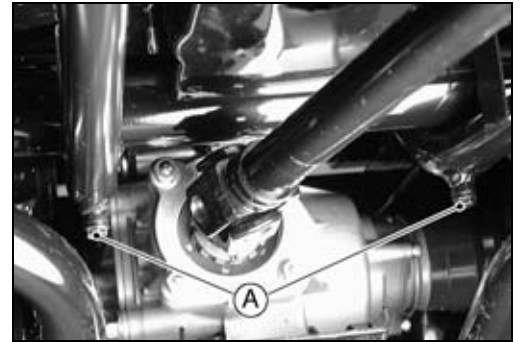


**Periodic Maintenance Procedures**

- Remove:
  - Torque Converter
  - Coolant Drain Plug [A] at Rear Cylinder
- Place a container under the drain plug.



- Remove:
  - Front Final Gear Case Skid Plate
  - Coolant Drain Plugs [A] at Water Pipes
- Place a container under the drain plugs.



**Coolant Filling**

- Tighten the drain plugs.
  - Torque - Coolant Drain Plugs (Cylinder): 17 N·m (1.7 kgf·m, 12 ft·lb)**
- Remove:
  - Radiator Cap
  - Air Bleeder Bolts [A]
- Pour the coolant slowly so that the air in the engine and radiator can escape.



**NOTE**

○ Pour in the coolant slowly so that the air in the engine and radiator can escape.

**CAUTION**

**Soft or distilled water must be used with antifreeze (see Specifications in this chapter) in the cooling system. If hard water is used in the system, it causes scale accumulation in the water passages, considerably reducing the efficiency of the cooling system.**

**Water and Coolant Mixture Ratio (Recommended)**

Soft Water	:	50%
Coolant	:	50%
Freezing Point	:	-35°C (-31°F)
Total Amount	:	4.6 L (4.9 US qt)

**NOTE**

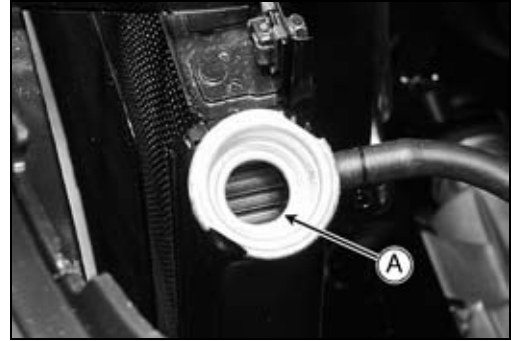
○ Choose a suitable mixture ratio by referring to the coolant manufacture's directions.

- When the coolant begins to flow out the air bleeder bolt holes, tighten the air bleeder bolts.

## 2-18 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- Fill the cooling system up to the filler neck [A] in the radiator cap fitting with coolant.
- Install the radiator cap.
- Fill the reservoir tank up to the F (Full) mark with coolant.



- Bleed the air from the cooling system as follows.
  - Start the engine and run it until no more air bubbles can be seen in the coolant in the reservoir tank (less than five minutes).
  - Tap the radiator hoses to force any air bubbles caught inside.
  - Stop the engine and fill the reservoir tank up to the F (Full) mark with coolant.

#### CAUTION

**Do not add more coolant above the F (Full) mark.**

- Install the reservoir tank cap.

#### Coolant Filter Inspection

- Visually inspect the coolant filter [A].
- ★ If the filter is cleaner with no signs of dirt or other contamination, it is OK and need not be replaced.
- ★ If the filter is dark or looks dirty, replace it. Also, check the rest of the cooling system for contamination.



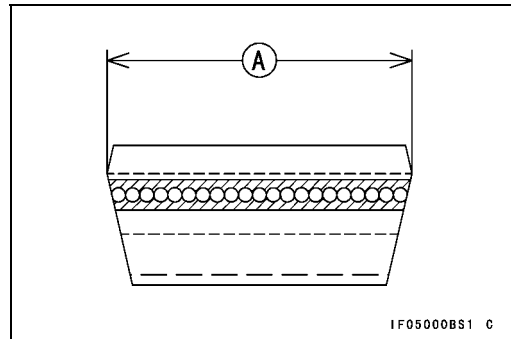
### Converter System

#### Drive Belt Inspection

- Measure the width [A] of the belt.
- ★ If any measurements exceed the service limit, replace the belt.

#### Belt Width

<b>Standard:</b>	<b>30.3 mm (1.19 in.)</b>
<b>Service Limit:</b>	<b>28.8 mm (1.13 in.)</b>



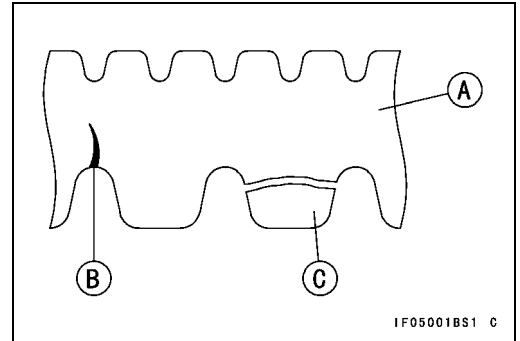
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**Periodic Maintenance Procedures**

- Check the belt for wear, cracks, breaks or peeling.
- ★ If necessary, replace the belt with a new one.
  - Belt [A]
  - Crack [B]
  - Broken [C]

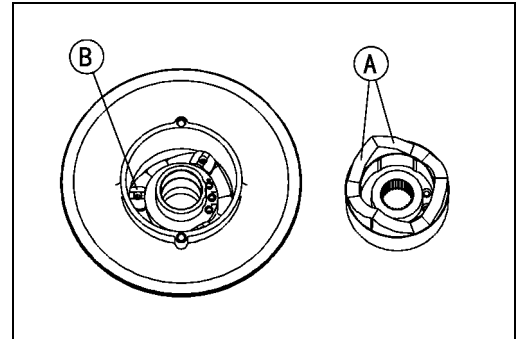
**NOTE**

○ Whenever the belt is replaced, inspect the drive and the driven pulleys.



**Converter Driven Pulley Shoe Inspection**

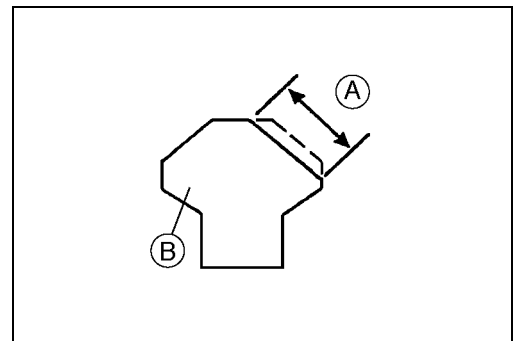
- Remove the driven pulley (see Drive and Driven Pulley Removal in the Converter System chapter).
- Disassembly the driven pulley.
- ★ If the ramps [A] or the wear shoes [B] are damaged or worn, replace the ramp or the shoes.



- ★ If the wear shoe contact area width [A] is greater than the service limit, replace the shoe [B].

**Wear Shoe Width**

**Service Limit: 16.3 mm (0.64 in.)**



**Air Cleaner Element Cleaning/Inspection**

**NOTE**

- In dusty areas, the element should be cleaned more frequently than the recommended interval.
- After riding through rain or on muddy roads, the element should be cleaned immediately.

**⚠ WARNING**

**Clean the element in a well-ventilated area, and take ample care that there are no sparks or flame anywhere near the working area. Because of the danger of highly flammable liquids, do not use gasoline or a low flash-point solvent to clean element.**

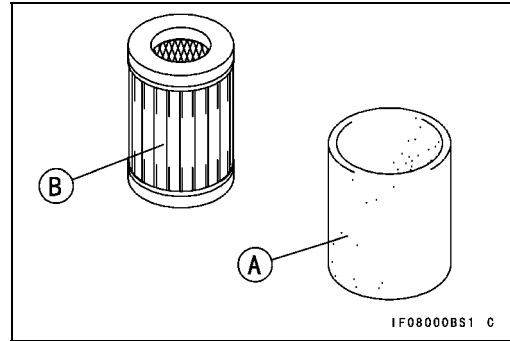
## 2-20 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- Remove the air cleaner element, and separate the foam element [A] from the paper element [B].
- Clean the foam element in a bath of a high flash-point solvent, and then dry it with compressed air or by shaking it.

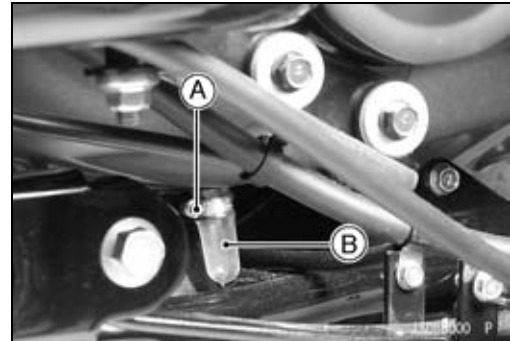
#### CAUTION

**Do not use compressed air to clean the paper element.**  
**Do not oil the paper element.**



#### Converter Dust or Water Draining

- Unscrew the clamp screw [A] and remove the drain hose [B] on the bottom of the converter housing to expel dust and/or water accumulated inside.



### Engine Top End

#### Valve Clearance Inspection

#### NOTE

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

- Remove:
  - Alternator Cover [A]
  
- Remove:
  - Cylinder Head Covers [A]
  - Spark Plugs

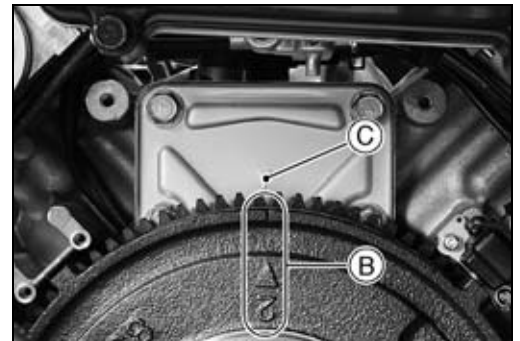
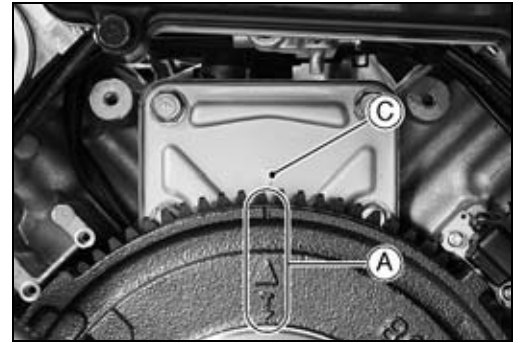


**Periodic Maintenance Procedures**

- Turn the alternator rotor clockwise so that the mark "1" [A] or "2" [B] on the rotor aligns with the mark [C] on the crankcase breather cover. Check both rocker arms are free. If not, turn the rotor more one turn and free both rocker arms.

**NOTE**

○The mark "1" is for the No. 1 cylinder, and "2" is for the No. 2 cylinder.



- Using a thickness gauge [A], measure the valve clearance between the rocker arm and the valve stem.
- ★ If the valve clearance is incorrect, adjust it.

**Valve Clearance (when cold)**

**Standard: 0.25 mm (0.010 in.)**

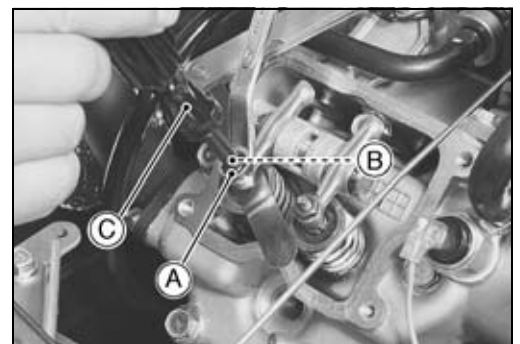


**Valve Clearance Adjustment**

- Loosen the valve adjusting screw locknut [A].
- Turn the valve adjusting screw [B] until the correct clearance is obtained.
- Holding the adjusting screw with the holder [C], tighten the locknut.

**Special Tool - Valve Adjusting Screw Holder: 57001-1217**

**Torque - Valve Adjusting Screw Locknut: 9.8 N·m (1.0 kgf·m, 87 in·lb)**



## 2-22 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Spark Arrester Cleaning

#### **⚠ WARNING**

To avoid burns, wear gloves while cleaning the spark arrester. Since the engine must be run during this procedure, the muffler will become hot.

- Remove the drain plug [A] from the muffler [B].
- Apply the parking brake.
- In an open area away from combustible materials, start the engine with the gear shift lever in the N (neutral) position.
- Raise and lower engine speed while tapping on the muffler with a rubber mallet until the carbon particles are purged from the muffler.

#### **⚠ WARNING**

Do not run the engine in a closed area. Exhaust gases contain carbon monoxide; a colorless, odorless, poisonous gas. Breathing exhaust gas can lead to carbon monoxide poisoning, asphyxiation, and death.

- Stop the engine.
- Install the drain plug.



#### Engine Lubrication

##### Oil and/or Filter Change

- Warm up the engine so that the oil will pick up any sediment and drain easily.
- Place an oil pan beneath the engine.
- Remove the engine oil drain plug [A], and let the oil drain completely.
- ★ If the oil filter is to be changed, replace it with a new one.
- Check the gasket at the drain plug for damage.
- ★ Replace the gasket with a new one if it is damaged.
- After the oil has completely drained out, install the drain plug with the gasket.

**Torque - Engine Oil Drain Plug: 22 N·m (2.2 kgf·m, 16 ft·lb)**

- Fill the engine with a good quality motor oil as specified in the table.
- Check the oil level.

##### Engine Oil

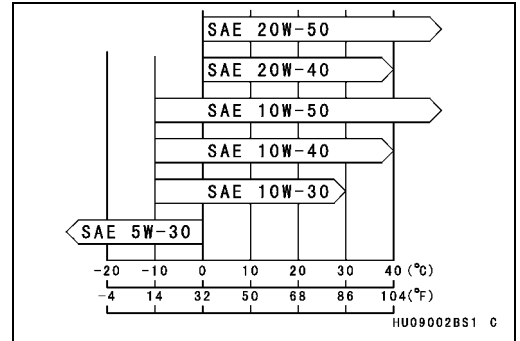
- Grade:** API SF or SG  
API SH or SJ with JASO MA
- Viscosity:** SAE 10W-40
- Capacity:** 1.5 L (1.6 US qt) (when filter is not removed)  
1.8 L (1.9 US qt) (when filter is removed)
- Oil level:** Between F and L lines on dipstick



**Periodic Maintenance Procedures**

**NOTE**

○ Depending on the atmospheric temperature of your riding area, the engine oil viscosity should be changed according to the chart:



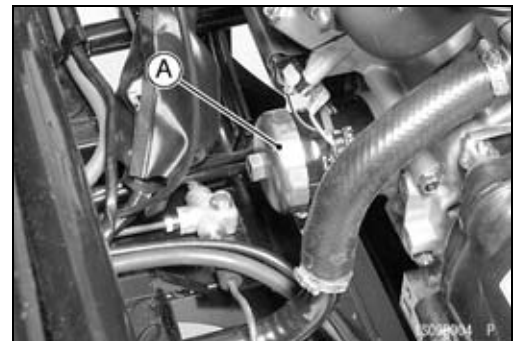
**Oil Filter Removal**

- Tilt up the cargo bed.
  - Remove the oil filter [A].
- When unscrewing the oil filter, cover the filter bottom with a clean cloth so as not to spill the engine oil out of the filter. Any split oil should be wiped up completely.



○ Use the oil filter wrench [A] if the oil filter is tight.

**Special Tool - Oil Filter Wrench: 57001-1249**



**Oil Filter Installation**

- Apply engine oil:  
Oil Filter Gasket
  - Install the new filter.
- Screw the filter in until the gasket touches the engine, then turn it 3/4 turn.
- Add the engine oil (see Oil Level Inspection).
  - Thoroughly warm up the engine, and check the oil leakage and the oil level.
- ★ If necessary, add more engine oil.

## 2-24 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Transmission

##### *Transmission Oil Change*

- Warm up the oil by running the vehicle so that the oil will pick up any sediment and drain easily. Then stop the vehicle.
- Place an oil pan beneath the transmission case.
- Remove the transmission oil drain plug [A], and let the oil drain completely.
- Check the gasket at the drain plug for damage.
- ★ Replace the gasket with a new one if it is damaged.
- After the oil has completely drained out, install the drain plug with the gasket.

**Torque - Transmission Oil Drain Plug: 15 N·m (1.5 kgf·m, 11 ft·lb)**

- Fill the transmission case with a good quality oil as specified in the table.
- Check the oil level.

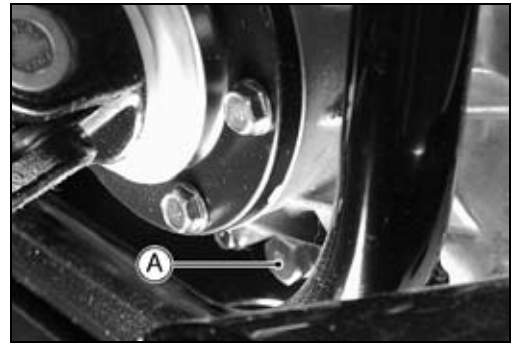
##### **Transmission Oil**

**Type:** API "GL-5" Hypoid gear oil

**Viscosity:** SAE 90: above 5°C (41°F)  
SAE 80: below 5°C (41°F)

**Capacity:** 2.5 L (2.6 US qt)

**Oil Level:** Between H and L lines on dipstick



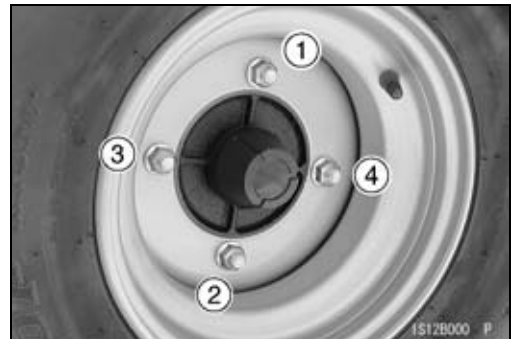
#### Wheels/Tires

##### *Wheels Nuts Tightness Inspection*

- Check the tightness of all the wheel nuts.
- ★ If there are loose nut, first loosen by 1/2 turn, then re-torque them to the specified torque.

**Torque - Wheel Nuts: 137 N·m (14 kgf·m, 101 ft·lb)**

- Tighten the wheel nuts [1] ~ [4] in a criss-cross pattern.

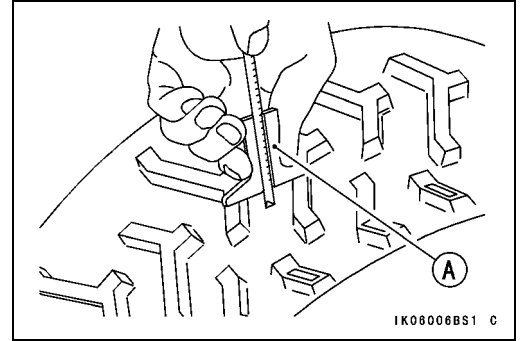




**Periodic Maintenance Procedures**

*Tire Inspection*

- Examine the tire for damage and wear.
- ★ If the tire is cut or cracked, replace it.
- Lumps or high spots on the tread or sidewalls indicate internal damage, requiring tire replacement.
- Remove any foreign objects from the tread. After removal, check for leaks with a soap and water solution.
- Measure the tread depth at the center of the tread with a depth gauge [A]. Since the tire may wear unevenly, take measurements at several places.
- ★ If any of the measurements is less than the service limit, replace the tire.



**Tire Tread Depth**

- Standard:** 13.2 mm (0.520 in.)
- Service Limit** 3 mm (0.12 in.)

**Standard Tire**

- Front and rear:** 23 × 11.00-10 DUNLOP KT869  
Tubeless

**Final Drive**

*Front Final Gear Case Oil Change*

- Warm up the oil by running the vehicle so that the oil will pick up any sediment and drain easily. Then stop the vehicle.
- Park the vehicle so that it is level, both side-to-side and front-to-rear.
- Remove:  
Front Final Gear Case Skid Plate
- Place an oil pan beneath the front final gear case and remove the drain plug [A].



**⚠ WARNING**

**When draining or filling the final gear case, be careful that no oil gets on the tire or rim. Clean off any oil that inadvertently gets on them with a high-flash point solvent.**

- After the oil has completely drained out, install the drain plug with a new aluminum gasket, and tighten it.  
**Torque - Oil Drain Plug: 20 N·m (2.0 kgf·m, 14 ft·lb)**
- Fill the gear case up to the bottom of filler opening with the oil specified below.

**Front Final Gear Case Oil**

- Type:** API "GL-5 or GL-6" hypoid gear oil for LSD (Limited Slip Differential gears)
- Viscosity:** SAE 85W-140, SAE 90, or SAE 140
- Capacity:** 0.4 L (0.4 US qt)
- Oil Level** Filler opening level

**NOTE**

- "GL-5 and GL-6" indicate a quality and additive rating.
- Be sure the O-ring is in place, and tighten the filler cap.  
**Torque - Oil Filler Cap: 29 N·m (3.0 kgf·m, 22 ft·lb)**

## 2-26 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Brakes

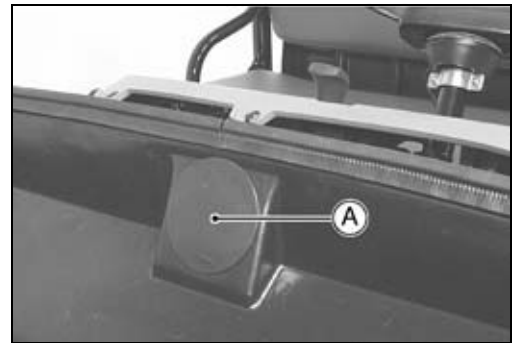
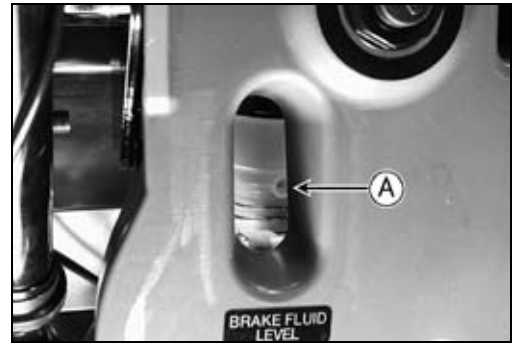
##### *Brake Fluid Level Inspection*

- With the vehicle on level ground, check that, through the inspection hole [A], the fluid level in the reservoir is between the upper (MAX) and lower (MIN) level lines.
- ★ If the fluid level is lower than the lower level line, check for fluid leaks in the brake lines, and fill the reservoir to the upper level line.

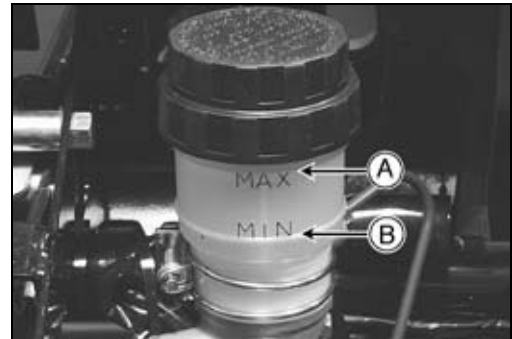
#### **⚠ WARNING**

**Change the fluid in the brake system completely if the fluid level is low but the type and brand of the fluid already in the reservoir are unknown.**

- Raise the front cargo hood (see Frame chapter).
- Remove:
  - Rubber Cap [A]



- Fill the reservoir to the upper level line [A].
  - Upper Level Line (MAX)
  - Lower Level Line (MIN) [B]



- Apply the brake forcefully for a few seconds and check for fluid leakage around the fittings.

#### **⚠ WARNING**

**If the brake pedal has a soft or "spongy feeling" when it is applied, there might be air in the brake lines or the brake may be defective. Since it is dangerous to operate the vehicle under such conditions, have the brake system serviced immediately.**

## Periodic Maintenance Procedures

### Brake Fluid Changing

- 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 fluid changing and replenished as necessary. If the fluid in the reservoir runs completely out any time during fluid changing, air bleeding must be done since air will have entered 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.

- Open the bleed valve, apply pressure to the brake pedal, close the valve while the brake is applied, and then quickly release the pedal. Repeat this operation until fresh brake fluid comes out from the plastic hose or the color of the fluid changes.

1. Open bleed valve.
2. Apply brake pedal and hold it.
3. Close bleed valve.
4. Release brake pedal.

- Tighten:

**Torque - Bleed Valves: 5.9 N·m (0.60 kgf·m, 52 in·lb)**

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

#### **⚠ WARNING**

**If the brake pedal has a soft or "sponge feeling" when it is applied, there might be air in the brake line or the brake may be defective. Since it is dangerous to operate the vehicle under such conditions, bleed the air from the brake line immediately.**

- Install the removed parts.

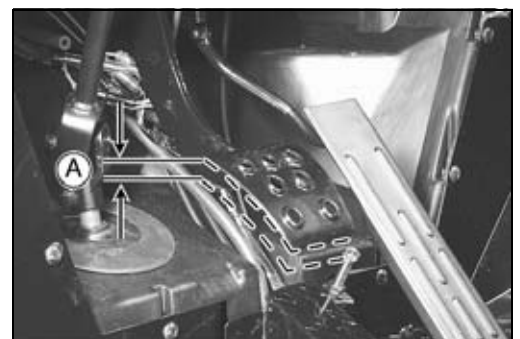
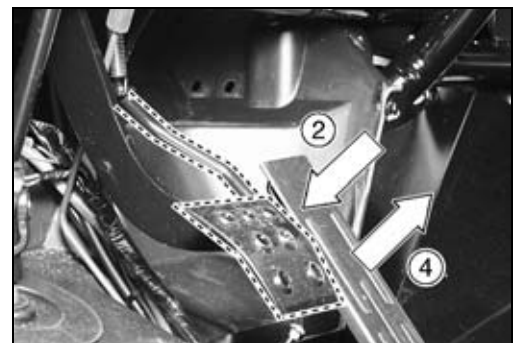
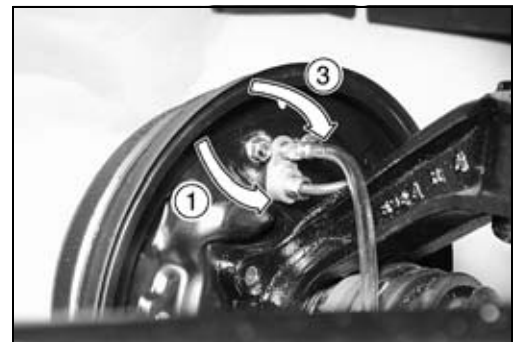
### Brake Pedal Free Play Adjustment

- Check brake pedal free play [A].

#### Brake Pedal Free Play

**Standard: 2 ~ 10 mm (0.08 ~ 0.39 in.)**

- ★ If free play is not correct, adjust it.



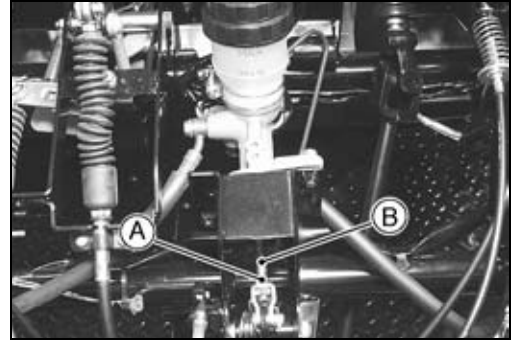
## 2-28 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- Loosen the locknut [A] and turn the push rod [B] to obtain the correct amount of free play.
- Tighten:  
**Torque - Push Rod Locknut: 18 N·m (1.8 kgf·m, 13 ft·lb)**
- Check for brake drag and braking effectiveness.

#### **⚠ WARNING**

**Incorrect adjustment with insufficient free play can cause brake heating and drag. Skidding and loss of control may result.**



#### *Brake Master Cylinder Cup and Dust Seal Replacement*

- Remove the master cylinder (see Master Cylinder Removal in the Brakes chapter).
- Push the pistons in all the way with a screwdriver and remove the piston stop bolt.
- Remove the retainer with the circlip pliers and remove the pistons.

**Special Tool - Inside Circlip Pliers: 57001-143**

- Remove the pistons by lightly applying compressed air to where the brake pipe fits into the cylinder.

Dust Cover [A]

Retainer [B]

Pistons [C]

Springs [D]

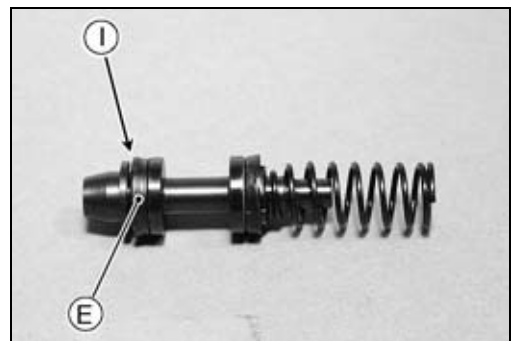
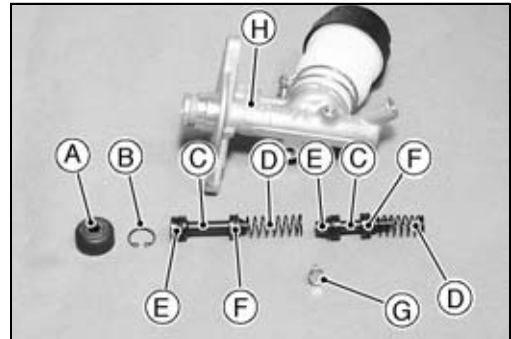
Secondary Cup [E]

Primary Cup [F]

Piston Stop Bolt [G]

Master Cylinder [H]

Be careful of the secondary cup direction [I]



- Before assembly, clean all parts including the master cylinder with brake fluid or alcohol, and apply brake fluid to the removed parts and the inner wall of the cylinder.

#### **CAUTION**

**Use only brake fluid, isopropyl alcohol, or ethyl alcohol, for cleaning brake parts. Do not use any other fluid for cleaning these parts. Gasoline, motor oil, or any other petroleum distillate will cause deterioration of the rubber parts. Oil spilled on any part will be difficult to wash off completely, and will eventually deteriorate the rubber used in the brake.**

- Push the pistons in all the way with a screwdriver and install the piston stop bolt.
- Tighten:

**Torque - Piston Stop Bolt: 8.8 N·m (0.90 kgf·m, 78 in·lb)**

**Reservoir Clamp Bolt: 5.9 N·m (0.60 kgf·m, 52 in·lb)**

**Periodic Maintenance Procedures**

*Brake Hose and Pipe Inspection*

- The high pressure inside the brake line can cause fluid to leak or the hose to burst if the line is not properly maintained. Bend and twist the rubber hose while examining it.
- ★ Replace it if any cracks or bulges are noticed.
- The metal pipe will rust if the plating is damaged.
- ★ Replace the pipe if it is rusted, cracked (especially check the fittings), or if the plating is badly scratched.

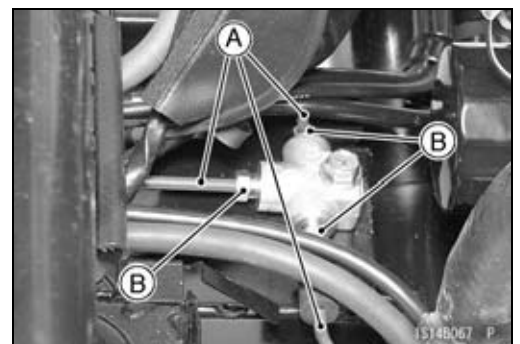
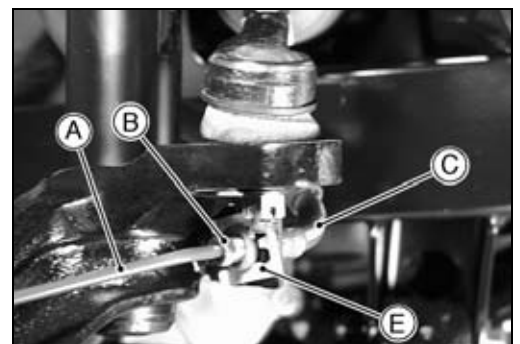
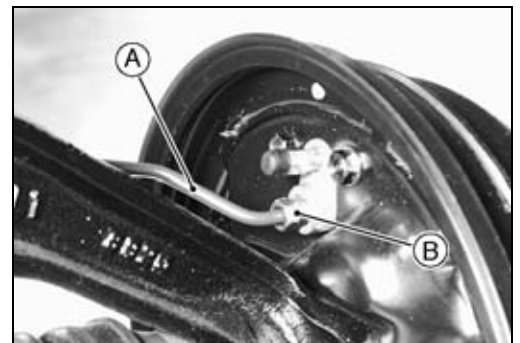
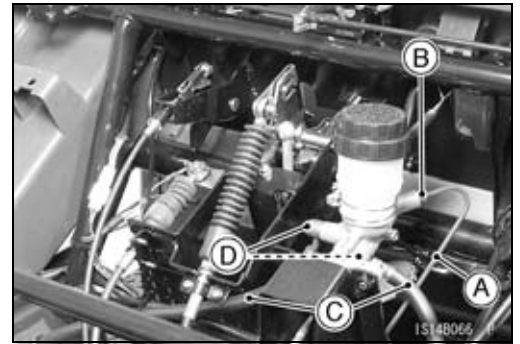
*Brake Hose and Pipe Replacement*

- To remove the metal pipes [A], unscrew the nipples [B].
- To remove the hoses [C], remove the banjo bolts [D] and/or pull out the retainers [E] (see below).
- Immediately wipe up any brake fluid that spills.

**CAUTION**

**Brake fluid quickly ruins painted surfaces; any spilled fluid should be completely wiped up immediately.**

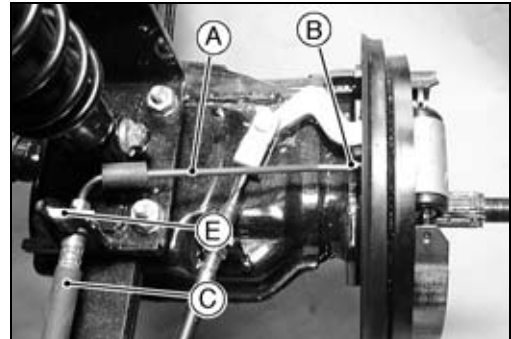
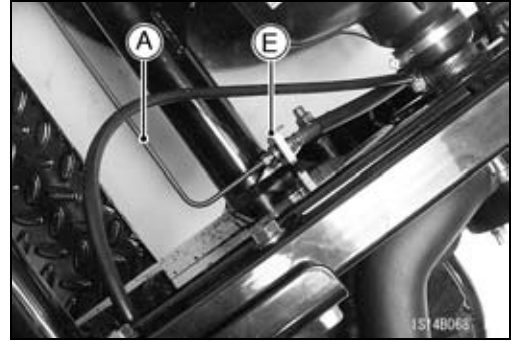
- Use a new aluminum washer for each side of the hose fittings at the master cylinder.
- Apply brake fluid:  
 Brake Pipe Nipple Threads
- Tighten:
    - Torque - Brake Hose Banjo Bolts: 25 N·m (2.5 kgf·m, 18 ft·lb)**
    - Brake Pipe Nipples: 18 N·m (1.8 kgf·m, 13 ft·lb)**
  - Check that the brake line has proper fluid pressure and no fluid leakage.



## 2-30 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- [A] Metal Pipes
- [B] Nipples
- [C] Hoses
- [E] Retainers



#### Brake Wear Inspection

- Remove the brake drum (see Brake Drum Removal in the Brakes chapter).
- Measure the inside diameter of the drum at several points.
- ★ If any measurement is greater than the service limit, replace the drum.
- ★ If the drum is worn unevenly or scored, lightly turn the drum on a brake drum lathe or replace it. Do not turn the drum beyond the service limit.

#### Brake Drum Inside Diameter

**Standard:** 180.000 ~ 180.160 mm (7.0866 ~ 7.0929 in.)

**Service Limit:** 180.75 mm (7.116 in.)

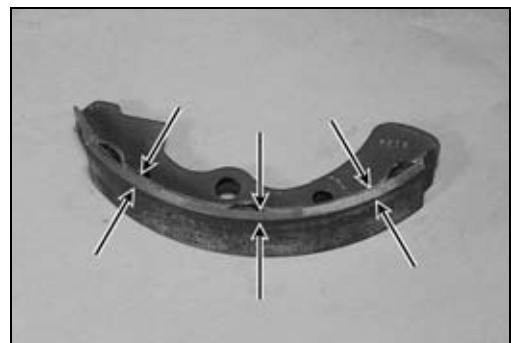
- Measure the lining thickness at several points.

#### Brake Shoe Lining Thickness

**Standard:** 4.5 mm (0.18 in.)

**Service Limit:** 1.0 mm (0.04 in.)

- ★ If any measurement is less than the service limit, replace both shoes as a set.
- ★ If the lining thickness is greater than the service limit, do the following before installing the shoes.
- File or sand down any high spots on the surface on the lining.
- Use a wire brush to remove any foreign particles from the lining.
- Wash off any oil or grease with an oilless solvent.



#### CAUTION

**Do not use a solvent which will leave an oily residue or the shoes will have to be replaced.**



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