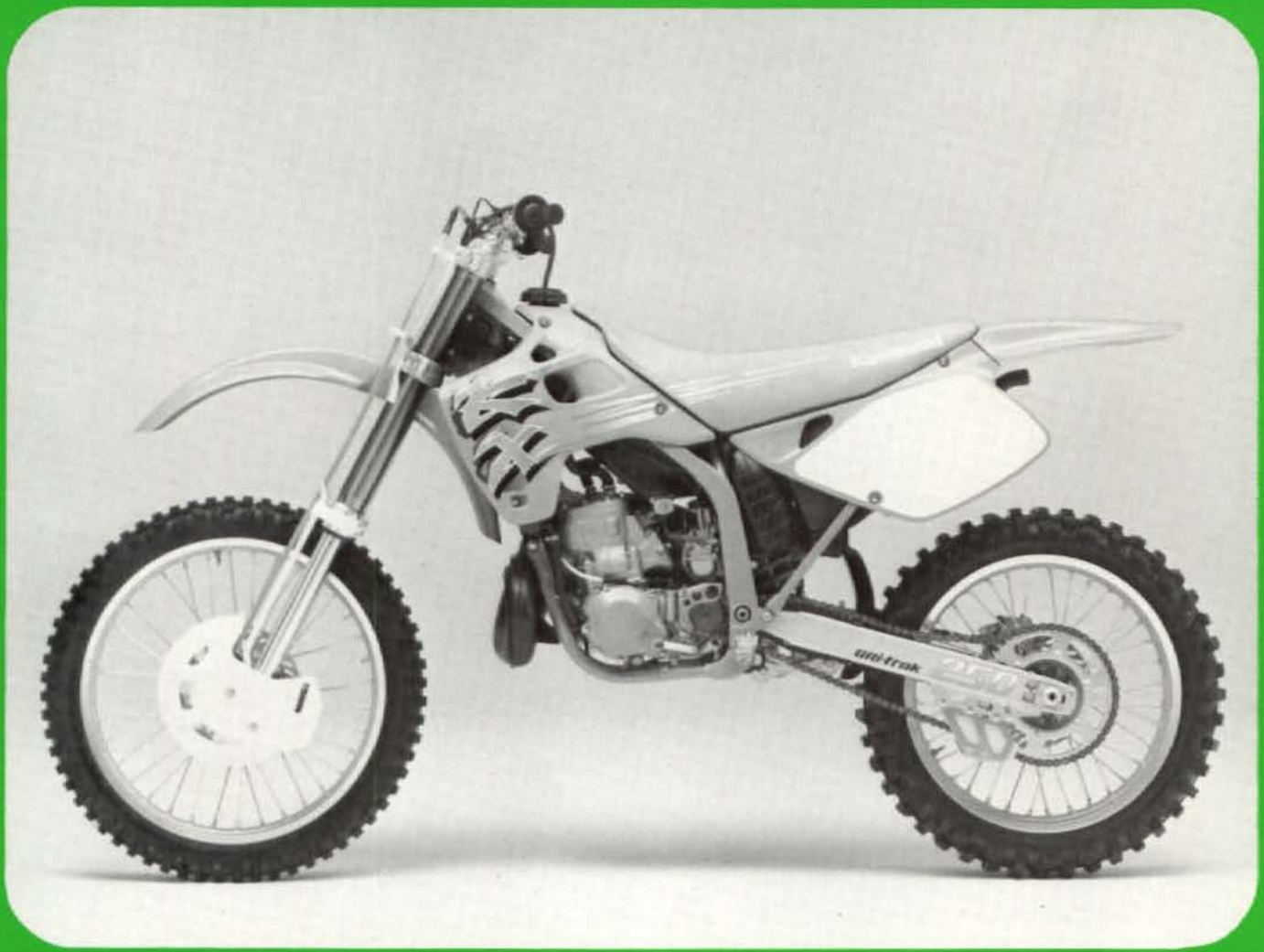
Kawasaki

KX125
KX250



Motorcycle Service Manual

Quick Reference Guide

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

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

Kawasaki

KX125
KX250

Motorcycle
Service Manual

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.

We recommend that all repairs and scheduled maintenance be performed in accordance with this service manual.

To get the longest life out of your Motorcycle:

- Follow the Periodic Maintenance Chart in the Service Manual.
- Be alert for problems and non-scheduled maintenance.
- Use proper tools and genuine Kawasaki Motorcycle parts. Special tools, gauges, and testers that are necessary when servicing Kawasaki Motorcycles are introduced by the Special Tool 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.

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

NOTE

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

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

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.

1

General Information

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Before Servicing

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

(2) Tightening Sequence

Generally, when installing a part with several bolts, nuts, or screws, start them all in their holes and tighten them to a snug fit. Then tighten them evenly in a 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.

(3) Torque

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

(4) Force

Common sense should dictate how much force is necessary in assembly and disassembly. If a part seems especially difficult to remove or install, stop and examine what may be causing the problem. Whenever tapping is necessary, tap lightly using a 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.

(5) Edges

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

(6) High-Flash Point Solvent

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

(7) Gasket, O-Ring

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

(8) Liquid Gasket, Non-Permanent Locking Agent

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

(9) Press

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

(10) Ball Bearing and Needle Bearing

Do not remove any ball or needle bearings that are pressed in unless it is necessary. If they are removed, replace them with new ones.

When installing a bearing, press it in with the marked side facing out using a suitable driver until it is bottomed. Bearings should be pressed into place by pushing evenly the bearing race which is affected by friction.

(11) Oil Seal and Grease Seal

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

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

(12) Seal Guide

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

(13) Circlip, Retaining Ring

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

(14) Cotter Pin

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

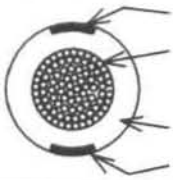
(15) Lubrication

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

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

(16) Electrical Wires

All the electrical wires are either single-color or two-color and, with only a few exceptions, must be connected to wires of the same color. On any of the two-color wires there is a greater amount of one color and a lesser amount of a second color, so a two-color wire is identified by first the primary color and then the secondary color. For example, a yellow wire with thin red stripes is referred to as a "yellow/red" wire; it would be a "red/yellow" wire if the colors were reversed to make red the main color.

Wire (cross-section)	Name of Wire Color
	Yellow/Red

(17) Replacement Parts

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

(18) Inspection

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

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

(19) Specifications

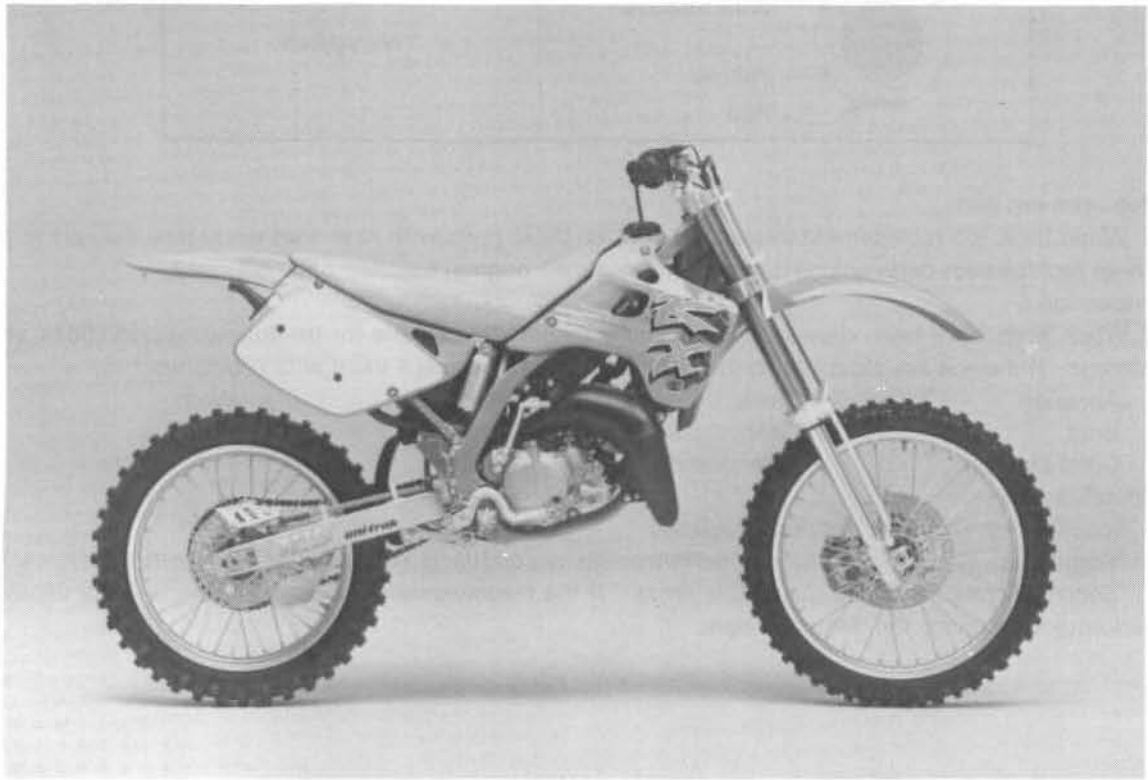
Specification terms are defined as follows:

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

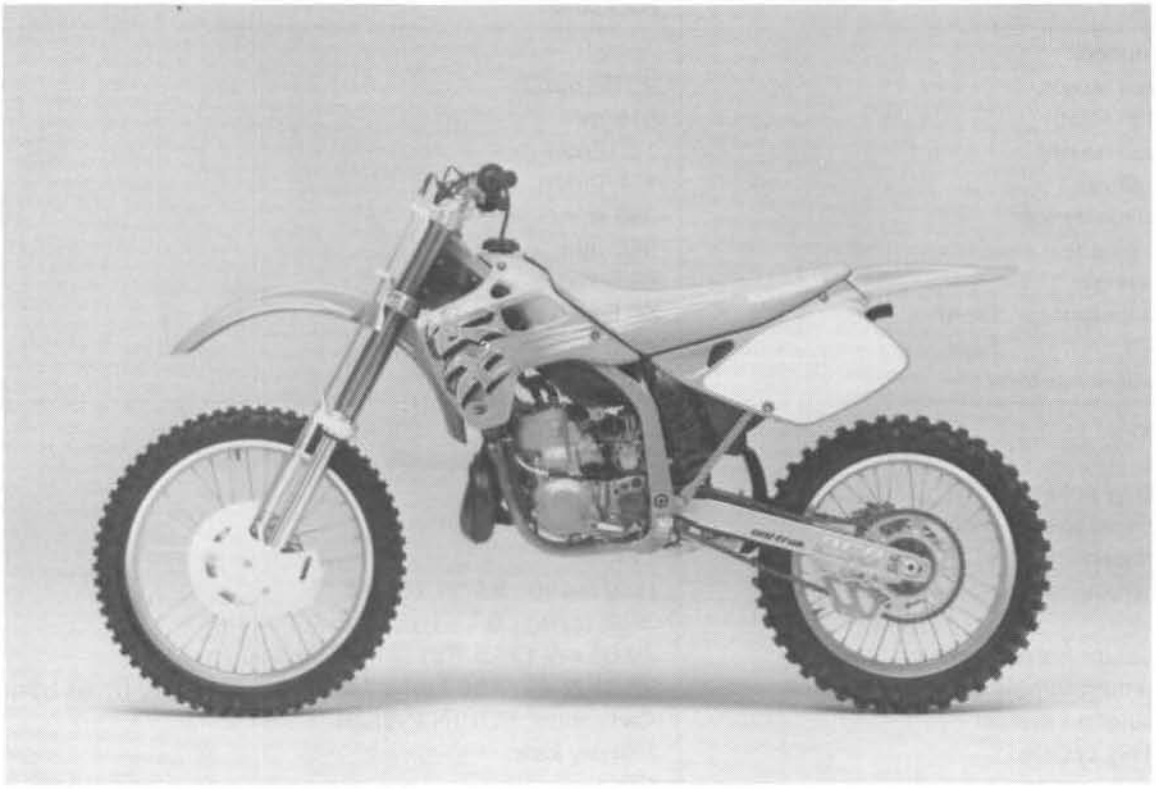
"Service Limits": Indicate the usable limits. If the measurement shows excessive wear or deteriorated performance, replace the damaged parts.

KX125-J1 Left Side View

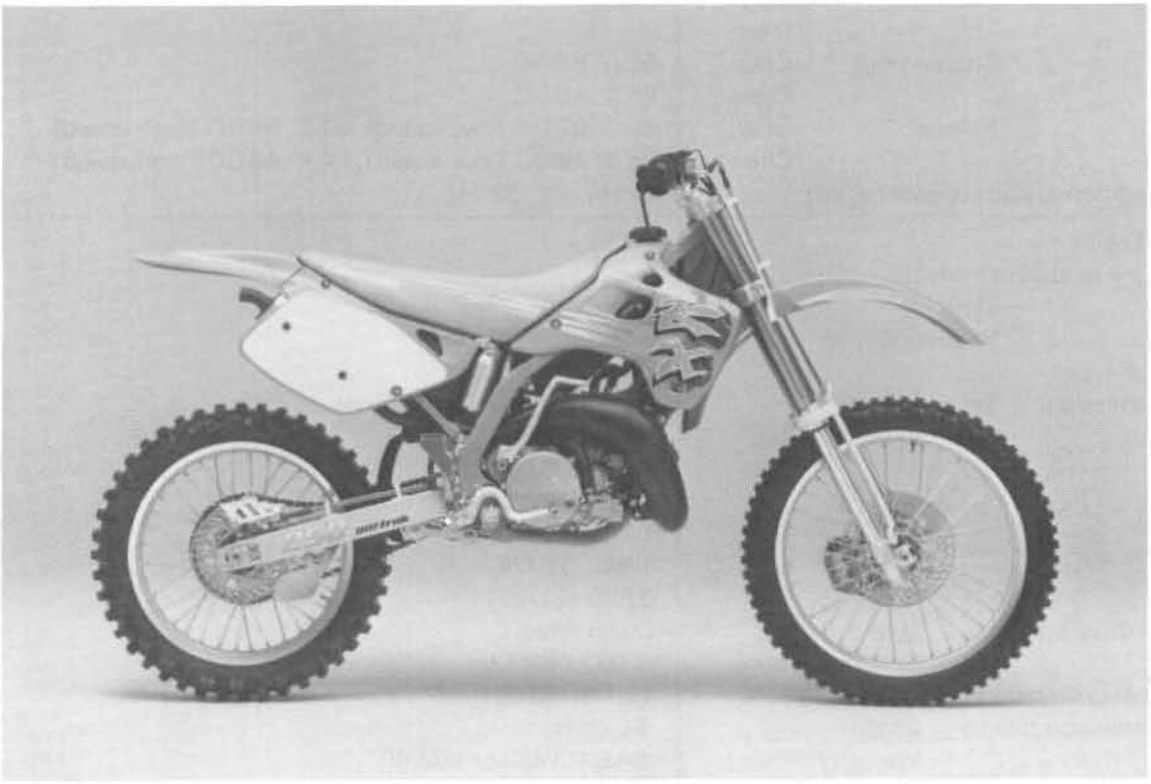
KX125-J1 Right Side View



KX250-J1 Left Side View



KX250-J1 Right Side View



General Specifications

Items			KX125-J1
Dimensions:			
Overall length			2 160 mm
Overall width			815 mm
Overall height			1 215mm
Wheelbase			1 470 mm
Road clearance			395 mm
Seat height			950 mm
Dry weight			86.5 kg
Curb weight:	Front		45.5 kg
	Rear		48.5 kg
Fuel tank capacity			8.5 L
Engine:			
Type			2-stroke, single cylinder, crankcase reed valve
Cooling system			Liquid-cooled
Bore and stroke			54.0 × 54.5 mm
Displacement			124 mL
Compression ratio			Low speed : 9.1 : 1 (E) 8.8 : 1 High speed : 8.1 : 1 (E) 7.8: 1
Maximum horsepower			29.05 kW (39.5 PS) @11250 r/min (rpm)
Maximum torque			25.01 N-m (2.55 kg-m, 18.4 ft-lb) @11,000 r/min (rpm)
Carburetion system			Carburetor, KEIHIN PWK36
Starting system			Primary kick
Ignition system			CDI
Ignition timing			14.5° BTDC @11000 r/min (rpm)
Spark plug			NGK R6254K-105 (A) (C) (E) NGK R6252K-105
Port timing:	Inlet	Open	Full open
		Close	–
	Scavenging	Open	65.0° BBDC
		Close	65.0° ABDC
	Exhaust	Open	86.0° BBDC (low speed), 94.5° BBDC (high speed)
		Close	86.0° ABDC (low speed), 94.5° ABDC (high speed)
Lubrication system (Gasoline: oil)			Petrol mix (32:1)
Drive Train:			
Primary reduction system:			
	Type		Gear
	Reduction ratio		3.500 (56/16)
Clutch type			Wet, multi disc
Transmission:	Type		6-speed, constant mesh, return shift
	Gear ratios:	1st	2.142 (30/14)
		2nd	1.714 (24/14)
		3rd	1.400 (28/20)
		4th	1.181 (26/22)
		5th	1.041 (25/24)
		6th	0.920 (23/25)
Final drive system:	Type		Chain drive
	Reduction ratio		4.083 (49/12)
Overall drive ratio			13.148 @Top gear
Transmission oil:	Grade		SE class
	Viscosity		SAE 10W30 or 10W40
	Capacity		0.7 L

(Continued on next page.)

Items			KX125-J1
Frame:			
Type			Tubular, semi-double cradle
Steering angle			45° to either side
Caster (rake angle)			25.5°
Trail			105 mm
Front tire:	Make/Type		DUNLOP K490 (E) DUNLOP D752, Tube type
	Size		80/100-21 51M
Rear tire:	Make/Type		DUNLOP K695 (E) DUNLOP D752, Tube type
	Size		100/90-19 57M
Front suspension:		Type	Telescopic fork (up side down)
		Wheel travel	310 mm
Rear suspension:		Type	Swing arm (Uni-trak)
		Wheel travel	330 mm
Brake type:		Front and Rear	Single disc
Effective disc diameter:			
		Front	220 mm
		Rear	190 mm

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

(A) : Australian model
(C) : Canadian model
(E) : European model

Items			KX250-J1
Dimensions:			
Overall length			2 185 mm
Overall width			815 mm
Overall height			1 215mm
Wheelbase			1 490 mm
Road clearance			385 mm
Seat height			955 mm
Dry weight			96.5 kg
Curb weight:	Front		50 kg
	Rear		52 kg
Fuel tank capacity			8.5 L
Engine:			
Type			2-stroke, single cylinder, piston reed valve
Cooling system			Liquid-cooled
Bore and stroke			66.4 × 72.0 mm
Displacement			249 mL
Compression ratio			10.9 : 1 (low speed), 9.3 : 1 (high speed)
Maximum horsepower			39.4 kW (53.6 PS) @8 500 r/min (rpm)
Maximum torque			49.0 N-m (5.0 kg-m, 36 ft-lb) @7 500 r/min (rpm)
Carburetion system			Carburetor, KEIHIN PWK38
Starting system			Primary kick
Ignition system			CDI
Ignition timing			14° BTDC @6 000 r/min (rpm)
Spark plug			NGK R6254E-9 (A) (C) (E) NGK R6252E-9
Port timing:	Inlet	Open	Full open
		Close	–
	Scavenging	Open	61.0° BBDC
		Close	61.0° ABDC
	Exhaust	Open	80.5° BBDC (low speed), 92.5° BBDC (high speed)
		Close	80.5° ABDC (low speed),92.5° ABDC (high speed)
Lubrication system (Gasoline: oil)			Petrol mix (32:1)
Drive Train:			
Primary reduction system:			
	Type		Gear
	Reduction ratio		2.750 (55/20)
Clutch type			Wet, multi disc
Transmission:	Type		5-speed, constant mesh, return shift
	Gear ratios:	1st	2.133 (32/15)
		2nd	1.687 (27/16)
		3rd	1.388 (25/18)
		4th	1.136 (25/22)
		5th	1.000 (24/24)
Final drive system:	Type		Chain drive
	Reduction ratio		3.500 (49/14)
Overall drive ratio			9.625 @Top gear
Transmission oil:	Grade		SE class
	Viscosity		SAE 10W30 or 10W40
	Capacity		0.85 L

(Continued on next page.)

Items			KX250-J1
Frame:			
Type			Tubular, semi-double cradle
Steering angle			45° to either side
Caster (rake angle)			26°
Trail			108 mm
Front tire:	Make/Type		DUNLOP K490 (E) D752, Tube type
	Size		80/100-21 51M
Rear tire:	Make/Type		DUNLOP K695 (E) D752, Tube type
	Size		110/90-19 62M
Front suspension:		Type	Telescopic fork (up side down)
		Wheel travel	310 mm
Rear suspension:		Type	Swing arm (Uni-trak)
		Wheel travel	330 mm
Brake type:		Front and Rear	Single disc
Effective disc diameter:			
		Front	220 mm
		Rear	190 mm

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

(A) : Australian Model
(C) : Canadian Model
(E) : European Model

Periodic Maintenance Chart

The maintenance must be done in accordance with this chart to keep the motorcycle in good running condition.

	FREQUENCY / OPERATION	Each race	Every 3 races	Every 5 races	Every 10 races	As required
ENGINE	Clutch – adjust	●				
	Clutch and friction plates-check f		●	R		
	Throttle cable – adjust	●				
	Spark plug – clean, gap f	●	R			
	Air cleaner element – clean	●				
	Air cleaner element – replace	If damaged				
	Carburetor – inspect/adjust	●				
	Transmission oil – change		●			
	Piston and piston ring – clean/check f		●	R		
	Cylinder head, cylinder and exhaust valves – inspect		●			
	Muffler – clean/ check f	●				
	Silencer packing – change		●			
	Small end bearing – check f		●			
	Kick pedal and shift pedal – clean	●				
	Exhaust pipe O-ring – replace		●			
	Engine sprocket – check f	●				
	Coolant – check f	●				
	Radiator hoses, connections – check	●				
CHASSIS	Brake adjustment – check f	●				
	Brake wear – check f			●		
	Brake fluid level – check f		●			
	Brake fluid-change	Every 2 years				
	Brake master cylinder cup and dust seal – replace	Every 2 years				
	Brake caliper piston seal and dust seal – replace	Every 2 years				
	Brake hose – replace	Every 4 years				
	Spoke tightness and rim runout – check f	●				
	Drive chain – adjust	●				
	Drive chain – lubricate	●				
	Drive chain wear – check f			●		
	Chain slipper and guide – replace	If damaged				
	Front fork – inspect/clean	●				
	Front fork oil – change	1st time after 2 races, then every 5 races				
	Nuts, bolts, fasteners – check f	●				
	Fuel system – clean	●				
	Fuel hose-replace	Every 4 years				
	Steering play – check f	●				
	Steering stem bearing – grease			●		
	Rear sprocket – check f			●		
	General lubrication – lubricate	●				
	Wheel bearing – check f			●		
	Swing arm and Uni-Trak linkage pivots – grease			●		
	Swing arm and Uni-Trak linkage pivots – check f			●		
	Rear shock oil – replace	1st time after 2 races, then every 5 races				

f : Replace, add, adjust, clean or torque if necessary.
R : Replace

Torque and Locking Agent

Tighten all bolts and nuts to the proper torque using an accurate torque wrench. If insufficiently tightened, a bolt or nut may become damaged, strip an internal thread, or break and then fall out. The following table lists the tightening torque for the major bolts and nuts, and the parts requiring use of a non-permanent locking agent or liquid gasket.

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

Letter used in the "Remarks" column mean:

L : Apply a non-permanent locking agent to the threads.
LG : Apply liquid gasket to the threads.
S : Tighten the fasteners following the specified sequence.

Fastener	Torque			Remarks
	N-m	kg-m	ft-lb	
Fuel System:				
Rear Frame Mounting Bolts	26	2.7	19.5	
Carburetor Holder Mounting Bolts	8.8	0.9	78 in-lb	
Cooling System:				
Water Pump Impeller Bolt	6.9	0.7	61 in-lb	
Coolant Drain Plug (Water Pump Cover)	8.8	0.9	78 in-lb	
(Cylinder)	22	2.2	16.0	
Engine Top End:				
Cylinder Head Nuts	25	2.5	18.0	
Spark Plug	27	2.8	20.0	
Coolant Drain Plug (Cylinder)	22	2.2	16.0	
Cylinder Nuts (KX125)	25	2.5	18.0	
(KX250)	34	3.5	25	
Engine Bracket Mounting Nuts (Engine Side)	34	3.5	25	
(Frame Side)	26	2.7	19.5	
Shaft Lever Nut (KX125)	8.3	0.85	74 in-lb	
(KX250)	7.8	0.8	69 in-lb	
Operating Rod Left Side Plug				
(KX125)	22	2.2	16.0	
(KX250)	15	1.5	11	
Main Lever Mounting Allen Bolt (KX125)	3.9	0.4	35 in-lb	
Main Shaft Nut (KX125)	8.8	0.9	78 in-lb	Left-hand threads
Engine Right Side:				
External Shift Mechanism				
Return Spring Pin	22	2.2	16.0	L
Clutch Spring Bolts (KX125)	9.3	0.95	82 in-lb	
(KX250)	8.8	0.9	78 in-lb	
Clutch Hub Nut	98	10	72	
Exhaust Valve Advancer				
Lever Mounting Allen Bolts	3.9	0.4	35 in-lb	
Shaft Lever Nut (KX125)	8.3	0.85	74 in-lb	
(KX250)	7.8	0.8	69 in-lb	
Water pump impeller Bolt	6.9	0.7	61 in-lb	
Kick Ratchet Guide Bolt	8.8	0.9	78 in-lb	
Kick Pedal Bolt (KX125)	9.8	1.0	87 in-lb	
Kick Pedal Nut (KX250)	49	5.0	36	
Primary Gear Nut (KX125)	59	6.0	43	

Fastener	Torque			Remarks
	N-m	kg-m	ft-lb	
Engine Removal/Installation:				
Engine Mounting Nuts	34	3.5	25	
Engine Bracket Nuts:				
Engine Side	34	3.5	25	
Frame Side	26	2.7	19.5	
Swing Arm Pivot Shaft Nut	98	10.0	72	
Engine Bottom End/Transmission:				
Crankcase Bolts	8.8	0.9	78 in-lb	
Transmission Oil Drain Plug	20	2.0	14.5	
Output Shaft Bearing Retaining Bolts	5.4	0.55	48 in-lb	
Drive Shaft Bearing Retaining Bolts	8.8	0.9	78 in-lb	
Shift Drum Bearing Retaining Bolts	8.8	0.9	78 in-lb	
Shift Drum Operating Plate Bolt	22	2.2	16.0	
Flywheel Bolt (KX125)	22	2.2	16.0	
Flywheel Nut (KX250)	78	8.0	58	
Wheels/Tires:				
Front Axle	54	5.5	40	
Front Axle Clamp Nuts	9.3	0.95	82 in-lb	
Rear Axle Nut	98	10.0	72	
Rear Caliper Mounting Bolts	25	2.5	18.0	
Spoke Nipple	Not less than 1.5	Not less than 0.15	Not less than 13 in-lb	
Final Drive:				
Rear Axle Nut	98	10	72	
Rear Sprocket Nuts	29	3.0	22	
Brakes:				
Caliper Mounting Bolts (Front, Rear)	25	2.5	18.0	
Brake Hose Banjo Bolts	25	2.5	18.0	
Front Master Cylinder Clamp Bolts	8.8	0.9	78 in-lb	S
Brake Disc Mounting Screws (Front, Rear)	9.8	1.0	87 in-lb	
Caliper Bleed Valves (Front, Rear)	7.8	0.8	69 in-lb	
Brake Pedal Mounting Bolt	8.8	0.9	78 in-lb	
Brake Pad Bolts	18	1.8	13.0	
Suspension:				
Front Fork Clamp Bolts				
(Upper)	22	2.25	16.3	
(Lower)	20	2.0	14.5	
Front Fork Cylinder Valve Assembly	54	5.5	40	L
Front Fork Top Plug	29	3.0	22	
Push Rod Nut	28	2.85	20.6	
Swing Arm Pivot Shaft Nut	98	10.0	72	
Rear Shock Absorber Mounting Bolts	39	4.0	29	
Tie-Rod Mounting Nut (Front, Rear)	81	8.3	60	
Rocker Arm Bracket Mounting Bolts	81	8.3	60	
Rocker Arm Pivot Nut	81	8.3	60	
Rear Shock Absorber Bracket Mounting Bolts	81	8.3	60	

Fastener	Torque			Remarks
	N-m	kg-m	ft-lb	
Steering:				
Steering Stem Head Nut	78	8.0	58	
Steering Stem Locknut	3.9	0.4	35 in-lb	
Handlebar Clamp Bolts	25	2.5	18.0	
Front Fork Clamp Bolts				
(Upper)	22	2.25	16.3	
(Lower)	20	2.0	14.5	
Electrical System:				
Flywheel Bolt (KX125)	22	2.2	16.0	
Flywheel Nut (KX250)	78	8.0	58	
Spark Plug	27	2.8	20.0	

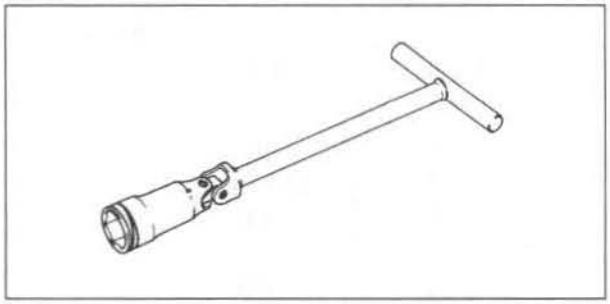
The table below, relating tightening torque to thread diameter, lists the basic torque for the bolts and nuts. Use this table for only the bolts and nuts which do not require a specific torque value. All of the values are for use with dry solvent-cleaned threads.

General Fasteners

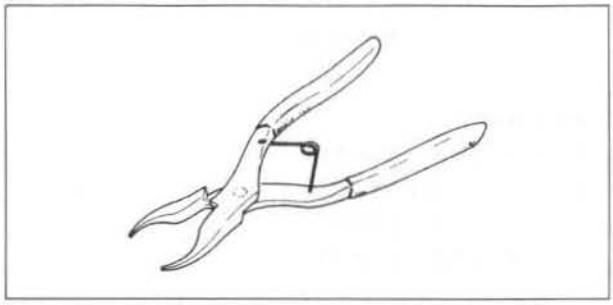
Threads dia. (mm)	Torque		
	N-m	kg-m	ft-lb
5	3.4-4.9	0.35-0.50	30-43 in-lb
6	5.9-7.8	0.60-0.80	52-69 in-lb
8	14-19	1.4-1.9	10.0-13.5
10	25-34	2.6-3.5	19.0-25
12	44-61	4.5-6.2	33-45
14	73-98	7.4-10.0	54-72
16	115-155	11.5-16.0	83-115
18	165-225	17-23	125-165
20	225-325	23-33	165-240

Special Tools, Sealant

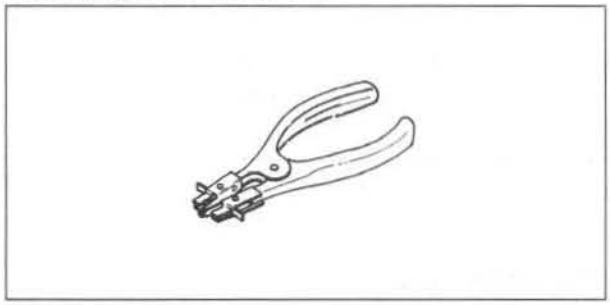
Spark Plug Wrench, Hex 21: 57001-110



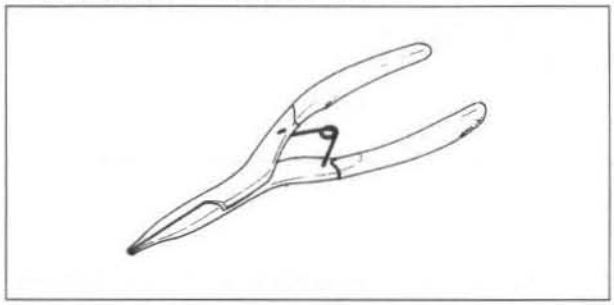
Inside Circlip Pliers: 57001-143



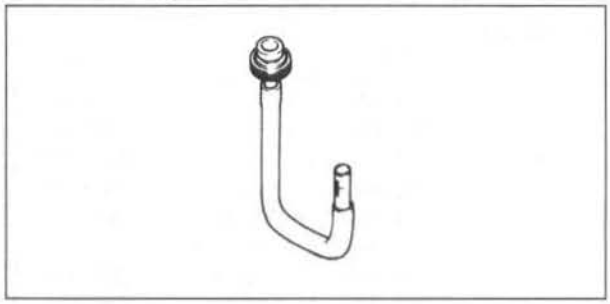
Piston Ring Pliers: 57001-115



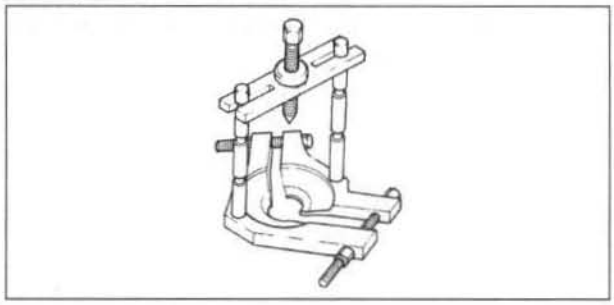
Outside Circlip Pliers: 57001-144



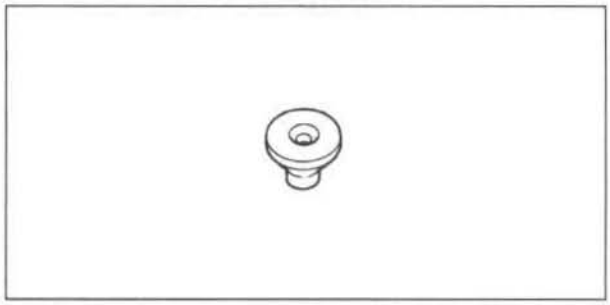
Fuel Level Gauge: 57001-122



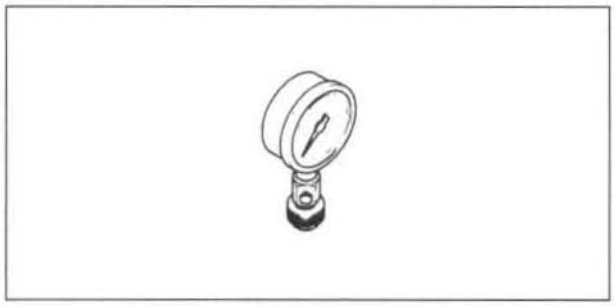
Bearing Puller: 57001-158



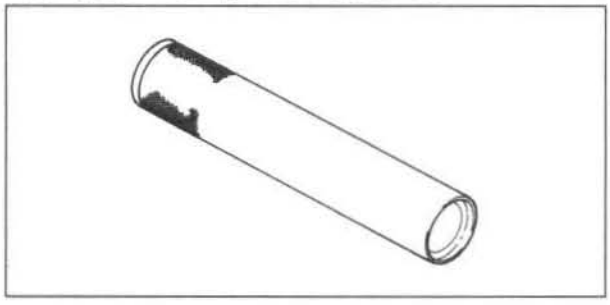
Bearing Puller Adapter: 57001-136



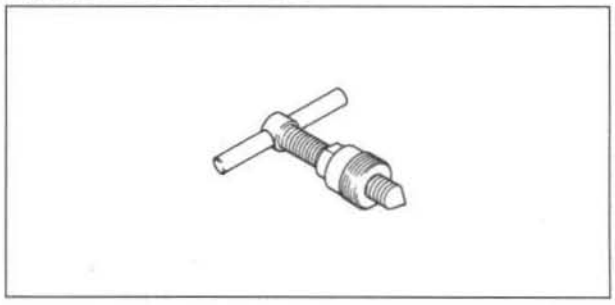
Compression Gauge: 57001-221



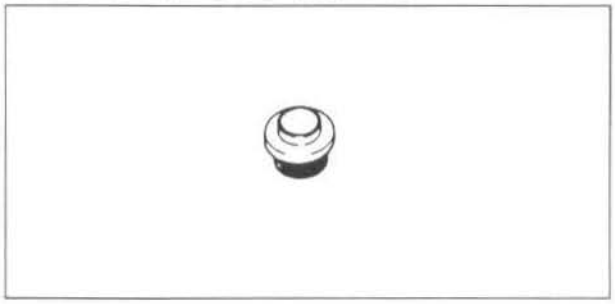
Steering Stem Bearing Driver: 57001-137



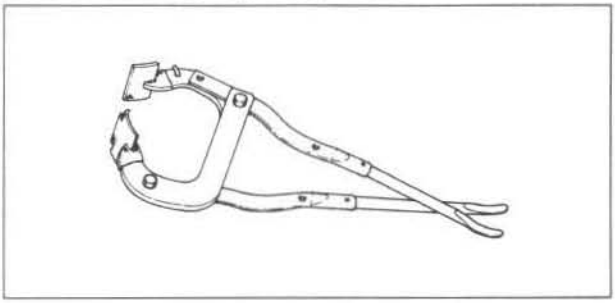
Flywheel Puller: 57001-252



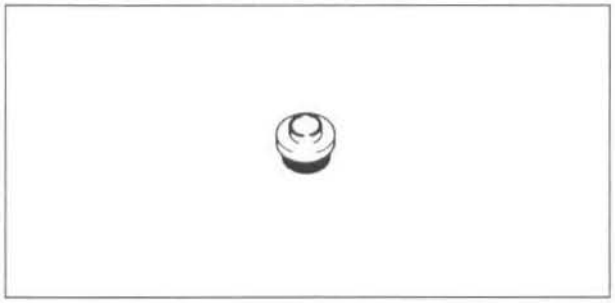
Kick Shaft Oil Seal Guide: 57001-263



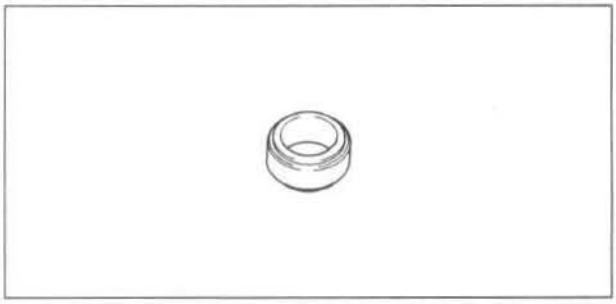
Bead Breaker Assembly: 57001-1072



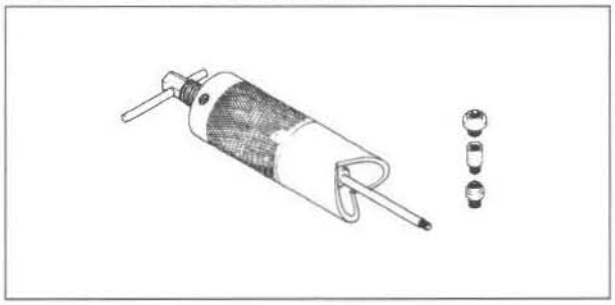
Shift Shaft Oil Seal Guide: 57001-264



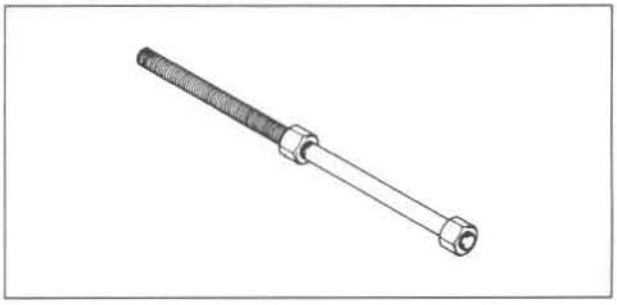
Steering Stem Bearing Driver Adapter: 57001-1074



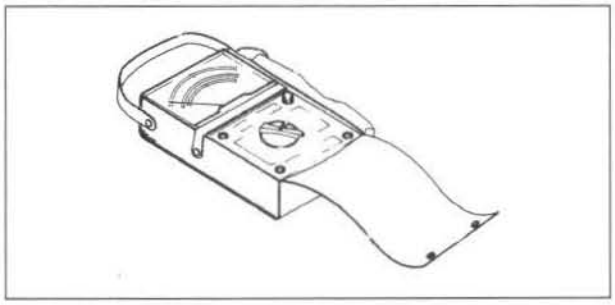
Piston Pin Puller Assembly: 57001-910



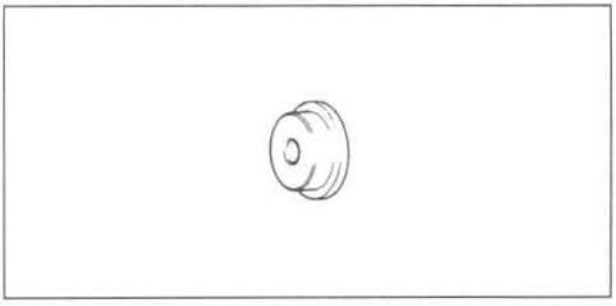
Head Pipe Outer Race Press Shaft: 57001-1075



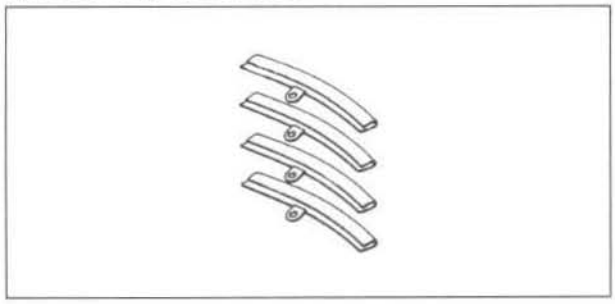
Hand Tester (V. O. M) : 57001-983



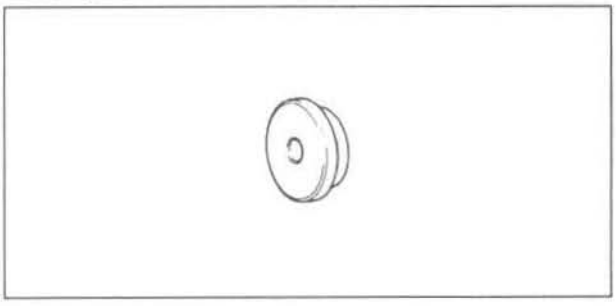
Head Pipe Outer Race Driver: 57001-1076



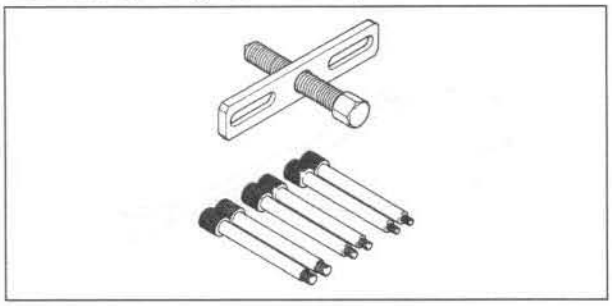
Rim Protector: 57001-1063



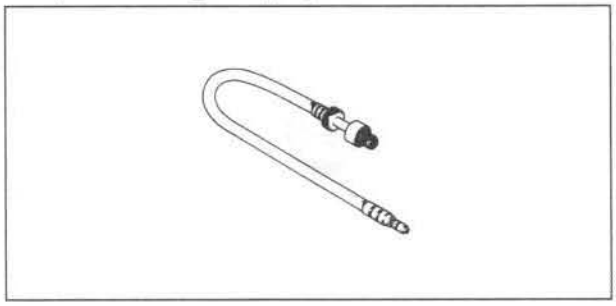
Head Pipe Outer Race Driver: 57001-1077



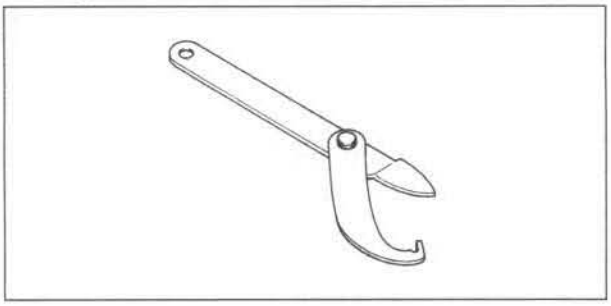
Crankcase Splitting Tool Assembly: 57001-1098



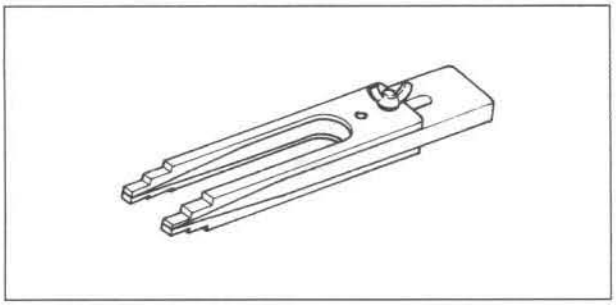
Compression Gauge Adapter, M14 x 1.25: 57001-1159



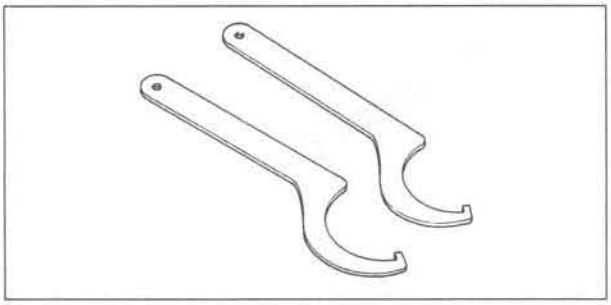
Steering Stem Nut Wrench: 57001-1100



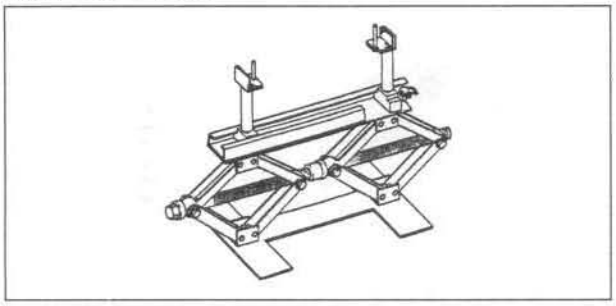
Crankshaft Jig: 57001-1174



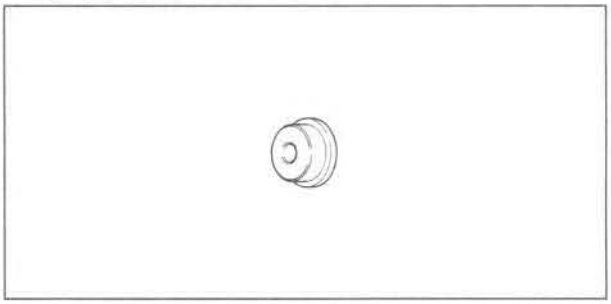
Hook Wrench: 57001-1101



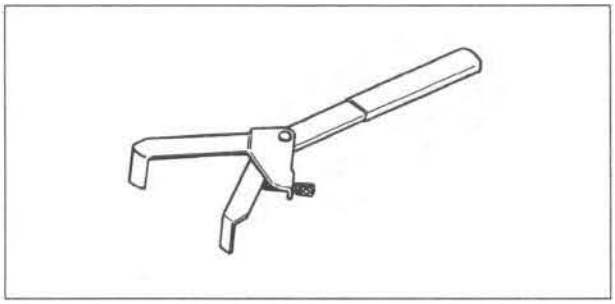
Jack: 57001-1238



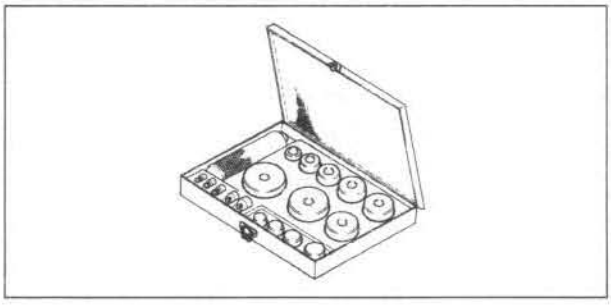
Head Pipe Outer Race Driver: 57001-1106



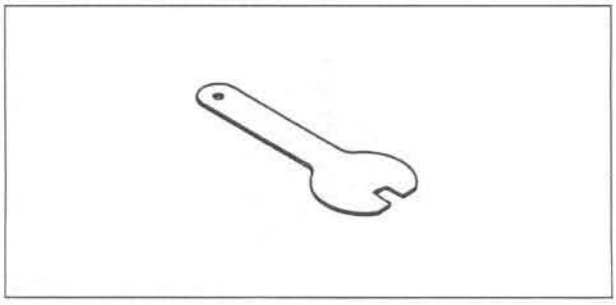
Clutch Holder: 57001-1243



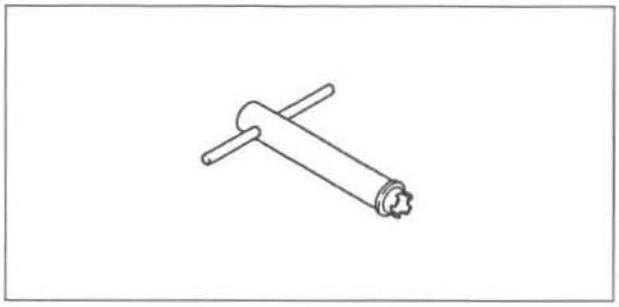
Bearing Driver Set: 57001-1129



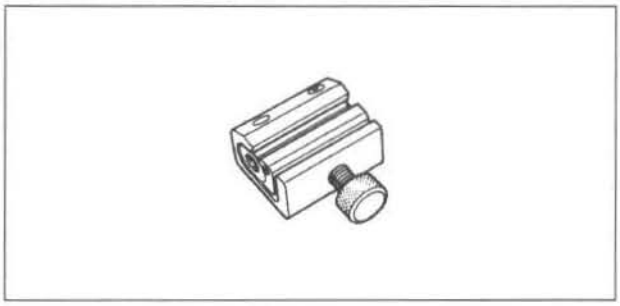
Fork Spring Holder: 57001-1286



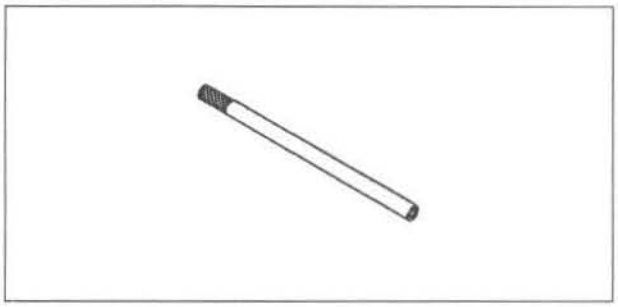
Fork Cylinder Holder: 57001-1287



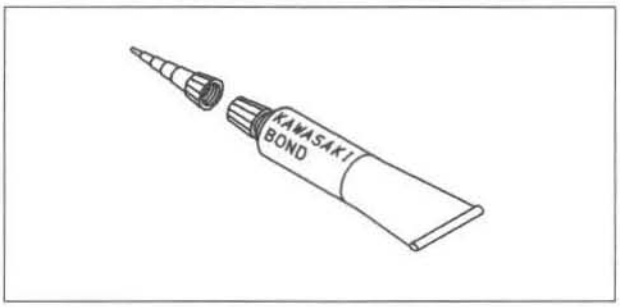
Pressure Cable Luber: k5601-9021



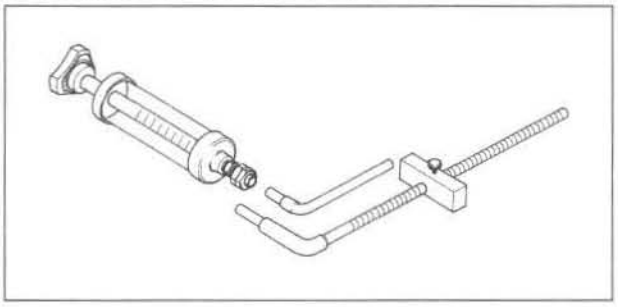
Fork Piston Rod Puller, M12 x 1.25: 57001-1289



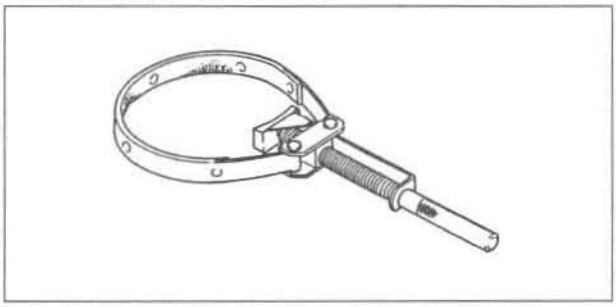
Kawasaki Bond (Liquid Gasket – Silver): 92104-002



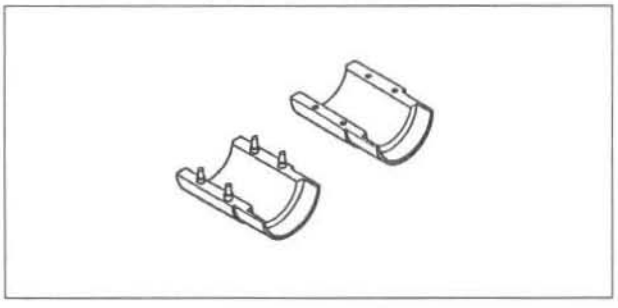
Fork Oil Level Gauge: 57001-1290



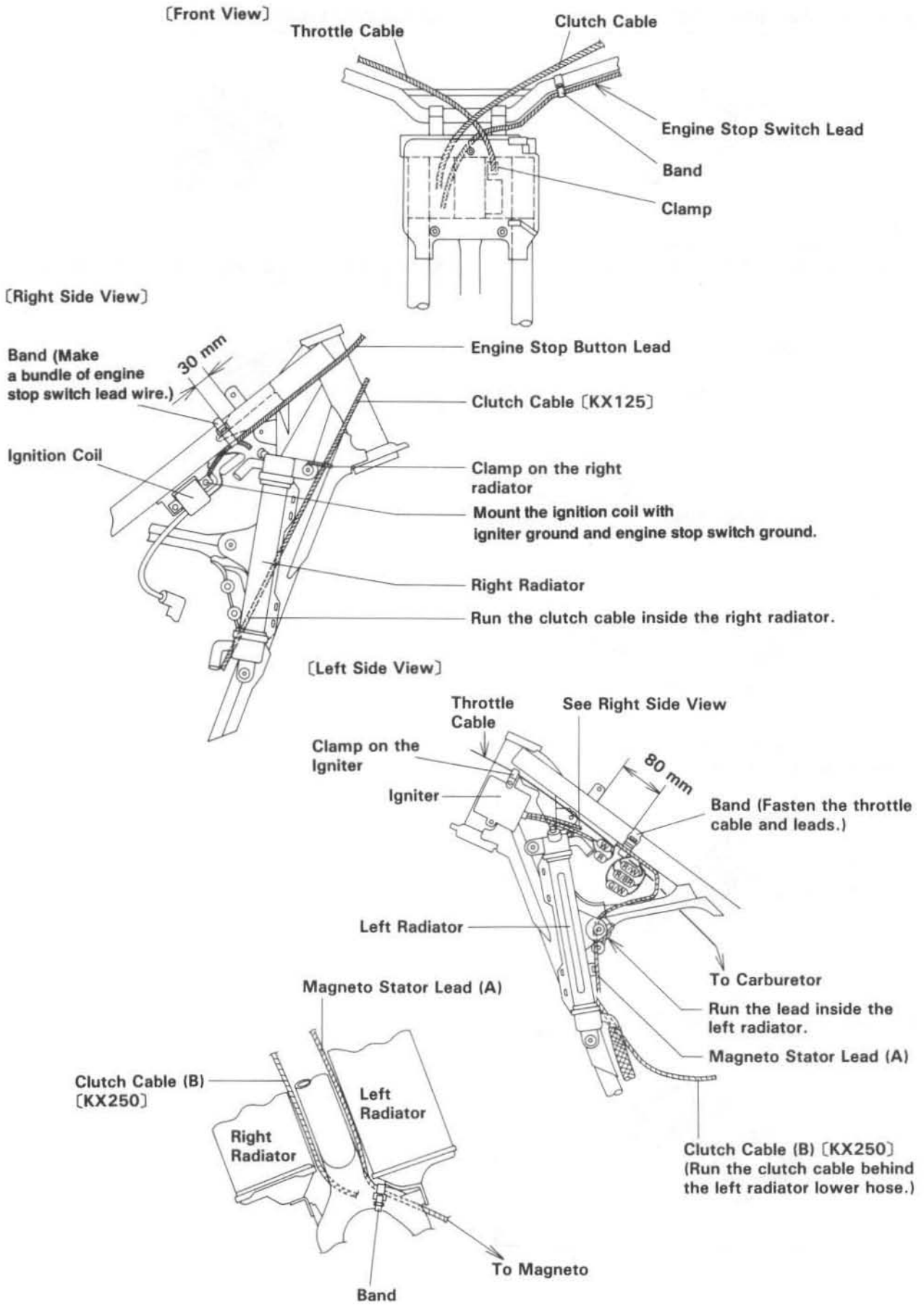
Flywheel Holder: 57001-1313

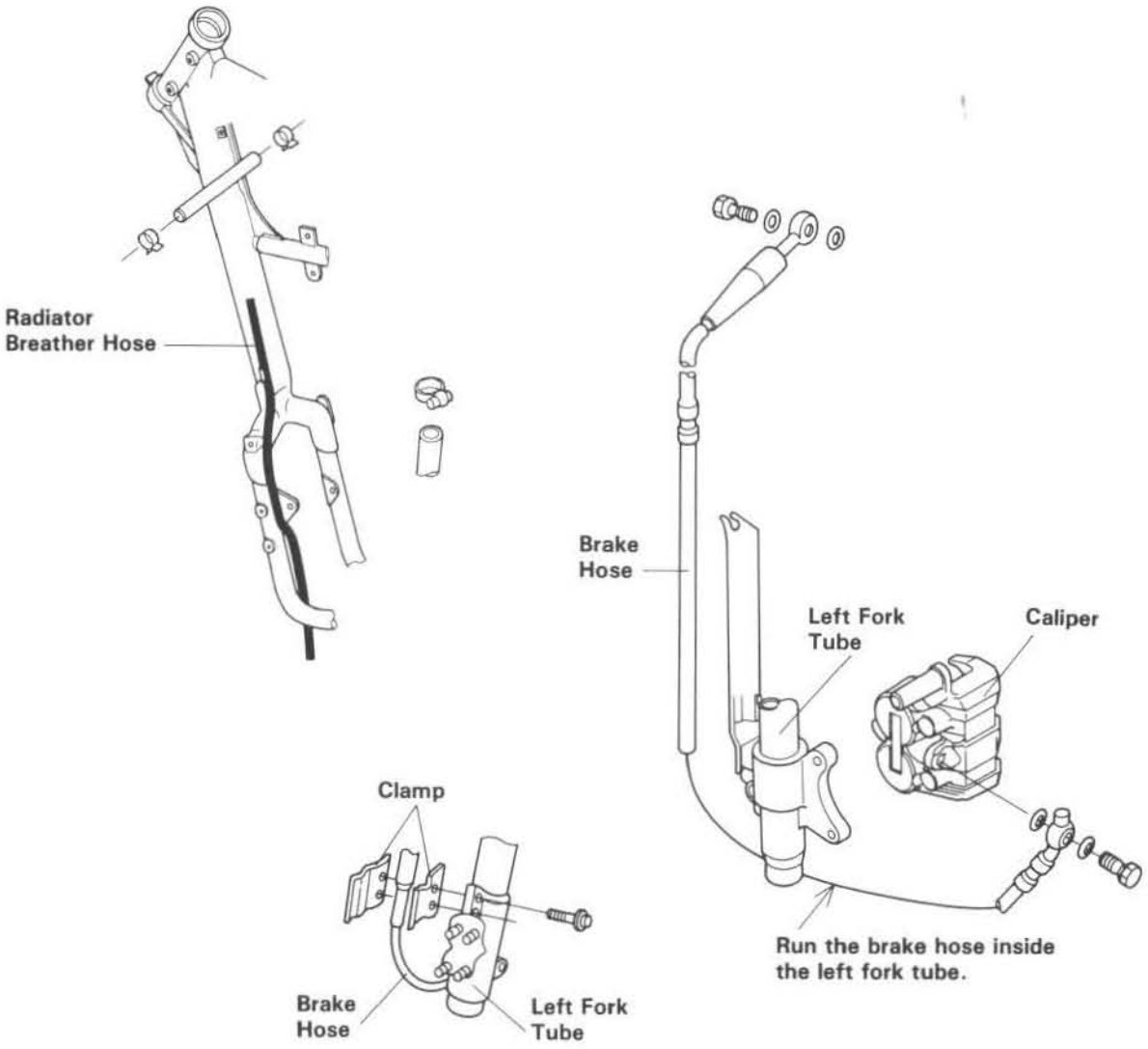


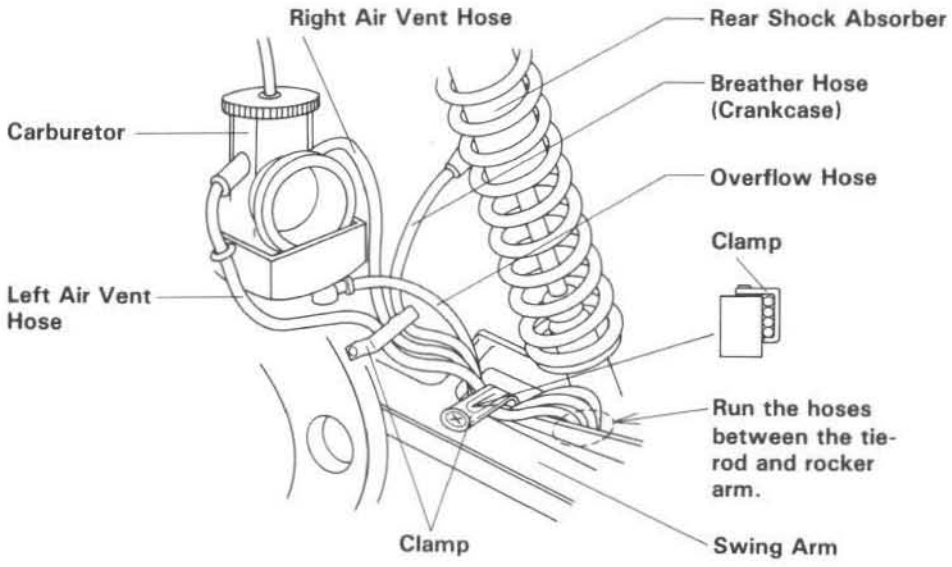
Fork Oil Seal Driver, Φ43: 57001-1340



Cable, Harness, Hose Routing







2

Fuel System

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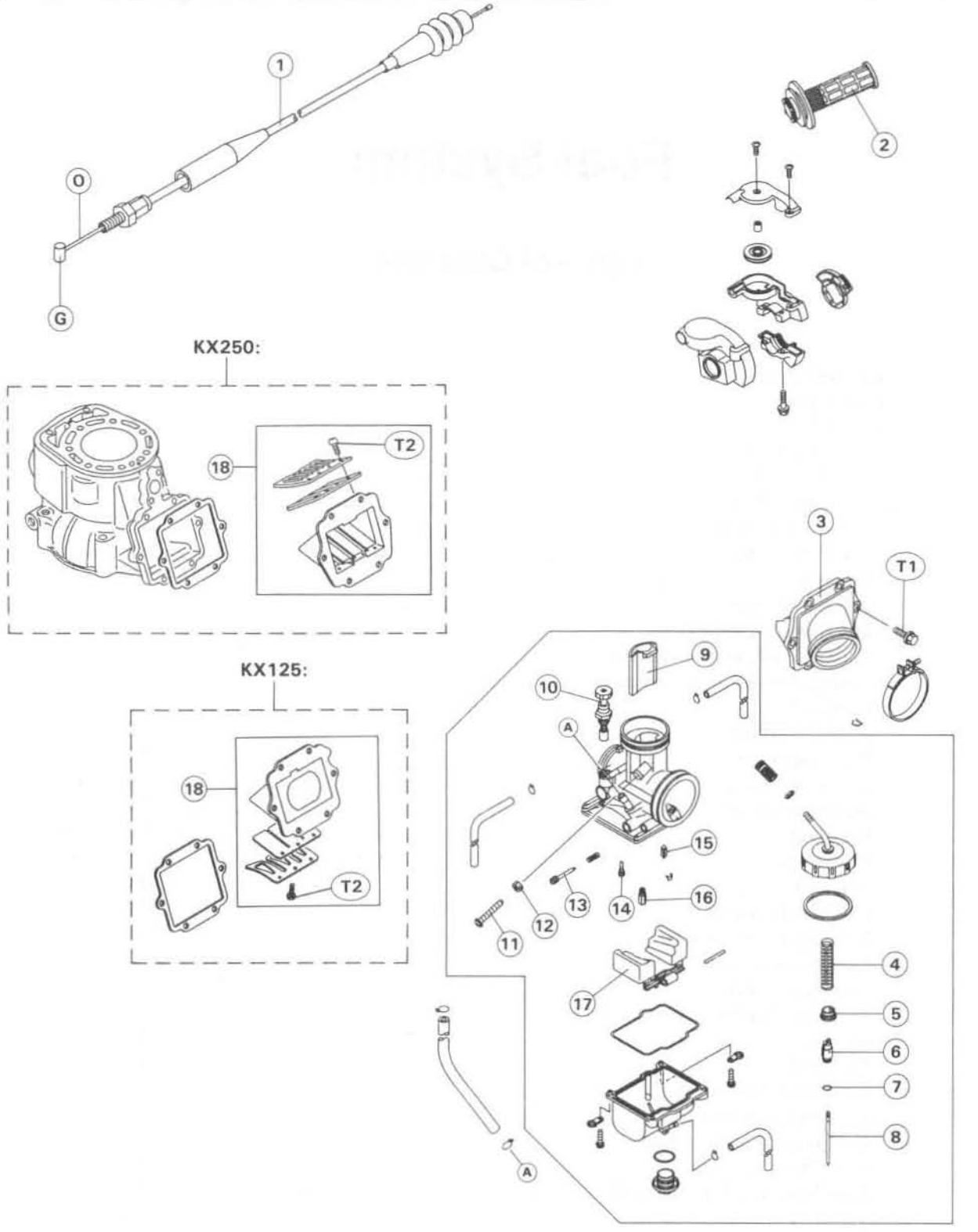
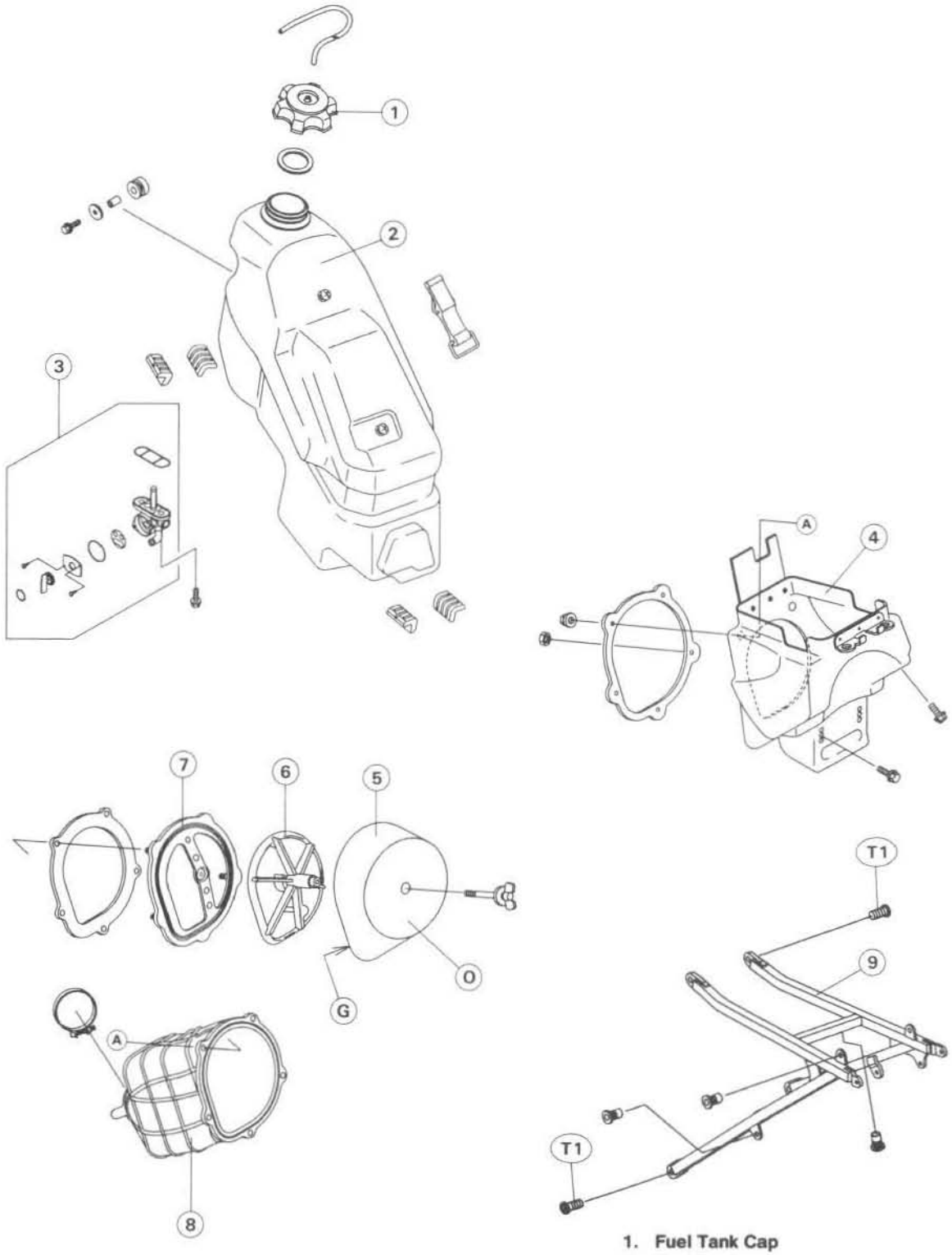
Exploded View



1. Throttle Cable
2. Throttle Grip
3. Carburetor Holder
4. Spring
5. Retainer
6. Connector
7. Jet Needle Clip
8. Jet Needle
9. Throttle Valve
10. Choke Knob
11. Idle Adjusting Screw
12. Locknut
13. Air Screw
14. Slow Jet
15. Float Valve Needle
16. Main Jet
17. Float
18. Reed Valve

O : Apply oil
G : Apply grease
T1 : 8.8 N-m (0.9 kg-m, 78 in-lb)
T2 : 1.0 N-m (0.10 kg-m, 9 in-lb)



1. Fuel Tank Cap
2. Fuel Tank
3. Fuel Tap
4. Air Cleaner Housing
5. Element
6. Frame
7. Holder
8. Air Cleaner Duct
9. Rear Frame

G : Apply grease
O : High-quality foam-air filter oil
T1 : 26 N-m (2.7 kg-m, 19.5 ft-lb)

Specifications

KX125 :

Item	Standard	Service Limit
Throttle grip free play	2 ~ 3 mm	---
Carburetor:		
Make/type	KEIHIN PWK36	---
Main jet	#158	---
Throttle valve cutaway	# 5	---
Jet needle	NORG	---
Jet needle clip position	3rd groove from the top	---
Slow jet	# 48	---
Air screw	1⅛ (turns out)	---
Service fuel level	2 mm above ~ 0 mm below the float bowl mating surface	
Main air jet	# 200	---
Float height	16 ±2 mm	---
Air Cleaner:		
Element oil	High-quality foam-air filter oil	---
Reed Valve:		
Reed warp	---	0.2 mm

KX250 :

Item	Standard	Service Limit
Throttle grip free play	2 ~ 3 mm	---
Carburetor:		
Make/type	KEIHIN PWK38	---
Main jet	# 162	---
Throttle valve cutaway	# 7	---
Jet needle	NOLB	---
Jet needle clip position	3rd groove from the top	---
Slow jet	# 58	---
Air screw	1⅛ (turns out)	---
Service fuel level	2 mm above ~ 0 mm below the float bowl mating furface	
Main air jet	# 200	---
Float height	16 ±2 mm	---
Air Cleaner:		
Element oil	High-quality foam-air filter oil	---
Reed Valve:		
Reed warp	---	0.2 mm

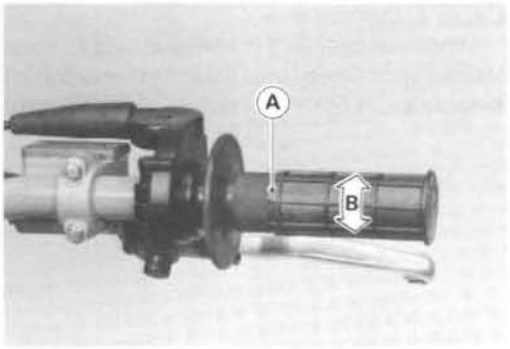
Special Tools – Fuel Level Gauge, M18 x 1.0: 57001-122
Pressure Cable Luber: k5601-9021

Throttle Grip and Cable

If the throttle grip has excessive free play due to cable stretch or misadjustment, there will be a delay in throttle response. Also, the throttle valve may not open fully at full throttle. On the other hand, if the throttle grip has no play, the throttle will be hard to control, and the idle speed will be erratic. Check the throttle grip play periodically in accordance with the Periodic Maintenance Chart, and adjust the play if necessary.

The throttle cable routing is shown in Cable, Harness, Hose Routing in the General Information chapter.

Free Play Inspection

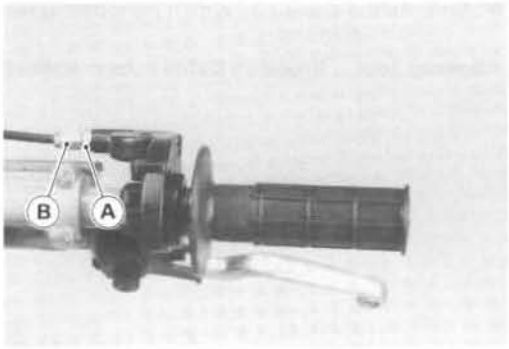


- Check throttle grip free play [B] by lightly turning the throttle grip [A] back and forth.

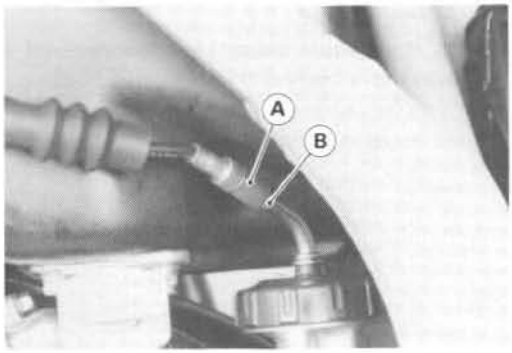
★If the free play is improper, adjust the throttle cable.

Throttle Grip Free Play
Standard: 2 ~ 3 mm

Free Play Adjustment



- Loosen the locknut [A].
- Turn the adjuster [B] until the proper amount of throttle grip free play is obtained.
- Tighten the locknut.



★If the throttle grip free play cannot be adjusted with the adjuster at the upper end of the throttle cable use the cable adjuster [A] at the carburetor.

○Pull the boot off of the carburetor top. Make the necessary free play adjustment at the lower cable adjuster, tighten the locknut [B], and install the boot.

- Turn the handlebar from side to side while idling the engine. If idle speed varies, the throttle cable may be poorly routed or it may be damaged.

⚠WARNING

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

Installation Notes

- Install the throttle cable in accordance with the Cable, Harness, Hose Routing section in the General Information chapter.
- After the installation, adjust each cable properly.

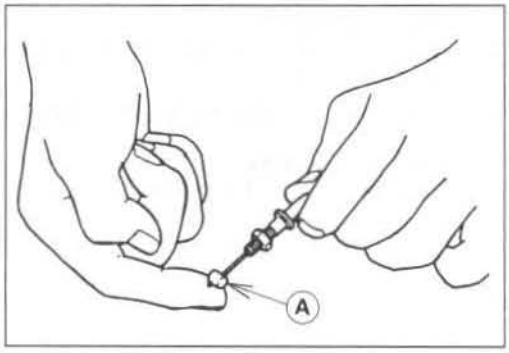
⚠WARNING

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

Cable Lubrication

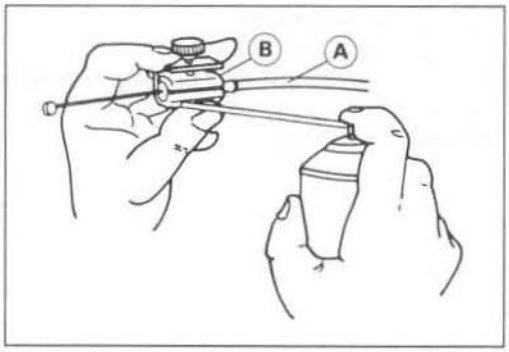
Whenever the cable is removed, and in accordance with the Periodic Maintenance Chart (see General Information chapter), do the following.

- Apply a thin coating of grease [A] to the cable upper end.



- Lubricate the cable [A] with a penetrating rust inhibitor.

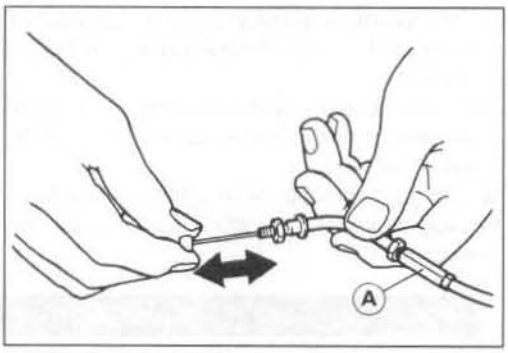
Special Tool – Pressure Cable Luber: K56019-021 [B]



Cable Inspection

- With the throttle cable [A] disconnected at both ends, the cable should move freely within the cable housing.

★If cable movement is not free after lubricating, if the cable is frayed, or if the housing is kinked, replace the cable.



Carburetor

Since the carburetor regulates and mixes the fuel and air going to the engine, there are two general types of carburetor trouble: too rich a mixture (too much fuel), and too lean a mixture (too little fuel). Such trouble can be caused by dirt, wear, maladjustment, or improper fuel level in the float chamber. A dirty or damaged air cleaner can also alter the fuel to air ratio.

Idle Speed Inspection

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

★If handlebar movement changes the idle speed, the throttle cable may be improperly adjusted or incorrectly routed, or it may be damaged. Be sure to correct any of these conditions before riding (see Cable, Harness, Hose Routing in the General Information chapter).

⚠WARNING

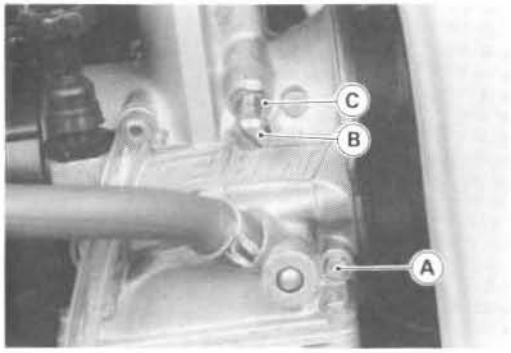
Operation with an improperly adjusted, incorrectly routed, or damaged cable could result in an unsafe riding condition.

- Check idle speed.

★Adjust it as needed.

Idle Speed Adjustment

- First turn in the air screw [A] until it seats lightly, and back it out 1½ turns.
- Start the engine and warm it up thoroughly.
- Loosen the locknut [C] and turn the idle adjusting screw [B] to obtain desired idle speed. If no idle is preferred, turn out the screw until the engine stops.
- After adjustment, tighten the locknut.
- Open and close the throttle a few times to make sure that the idle speed is as desired. Readjust if necessary.



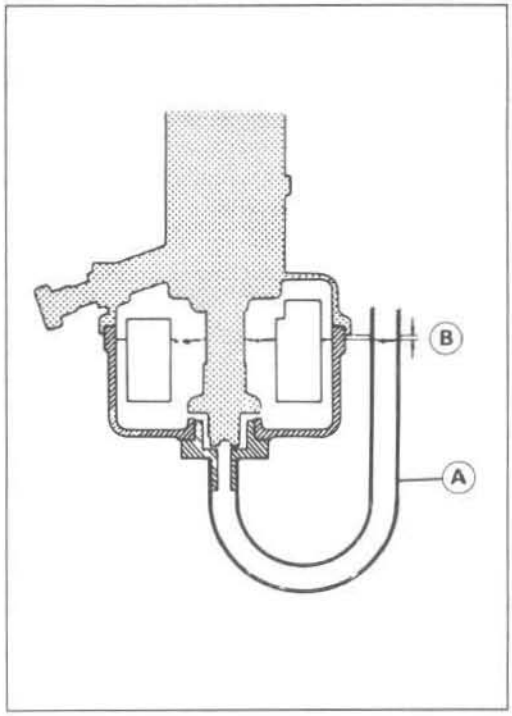
Service Fuel Level Inspection

⚠WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and 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.

- Turn the fuel tap to the OFF position.
- Remove the fuel tank.
- Remove the carburetor, and hold it in true vertical position on a stand. The fuel hose and carburetor cable do not have to be removed to inspect the fuel level.
- Put the fuel tank on a bench, and connect the fuel tap to the carburetor using a suitable hose.
- Remove the drain plug from the bottom of the float bowl, and screw a fuel level gauge [A] into the plug hole.

Special Tool – Fuel Level Gauge: 57001-122 [A]



- Hold the gauge vertically against the side of the carburetor body so that the "zero" line is several millimeters higher than the bottom edge of the carburetor body.
- Turn the fuel tap to the ON position to feed fuel to the carburetor.
- Wait until the fuel level in the gauge settles.
- Keeping the gauge vertical, slowly lower the gauge until the "zero" line is even with the bottom edge of the carburetor body.

NOTE

○ *Do not lower the "zero" line below the bottom edge of the carburetor body. If the gauge is lowered and then raised again, the fuel level measure shows somewhat higher than the actual fuel level. If the gauge is lowered too far, dump the fuel out of it into a suitable container and start the procedure over again.*

- Read the fuel level [B] in the gauge and compare it to the specification.

Service Fuel Level

Standard: 2 mm above ~ 0 mm below the float bowl mating surface

★ If the fuel level is incorrect, adjust it.

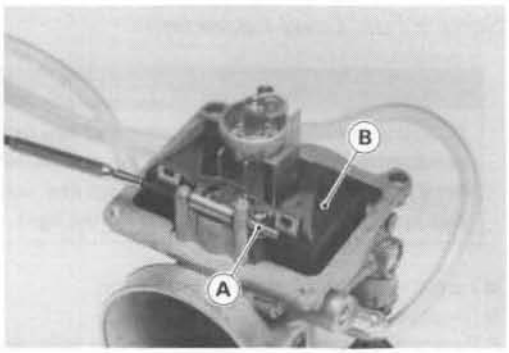
- Turn the fuel tap to the OFF position and remove the fuel level gauge.
- Install the drain plug on the bottom of the float bowl.

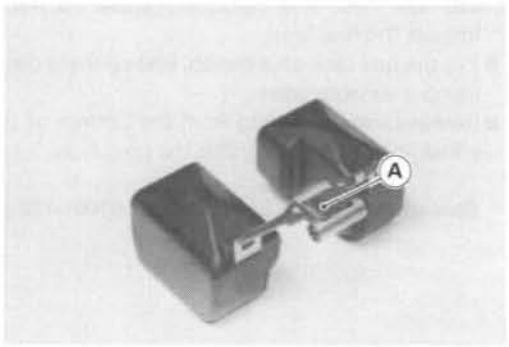
Service Fuel Level Adjustment

⚠WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and 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 the carburetor, and drain the fuel into a suitable container.
- Remove the float bowl.
- Drive out the pivot pin [A] and remove the float [B].
- Bend the tang [A] on the float arm very slightly to change the float height. Increasing the float height lowers the fuel level and decreasing the float height raises the fuel level.

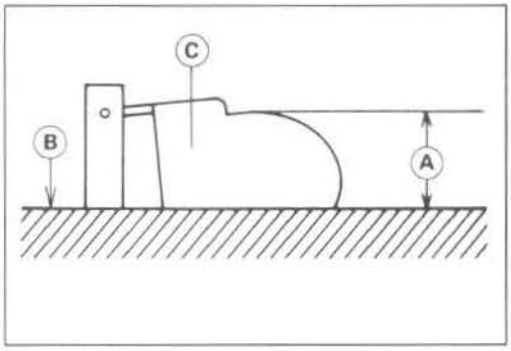




● Measure the float height tilting the carburetor so that the tang on the float just touches the needle rod in the float valve.

Float Height
Standard: 16 ±2 mm

1. Float Bowl Mating Surface
2. Needle Rod
3. Float
4. Float Height
5. Float Valve



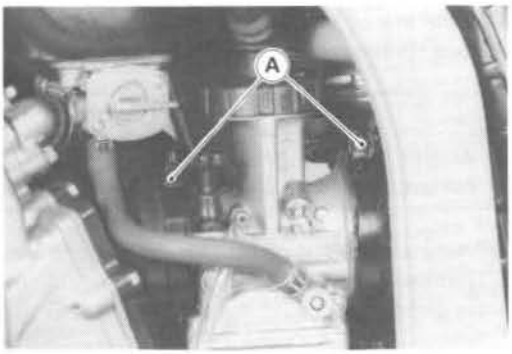
● Assemble the carburetor, and recheck the fuel level.
★ If the fuel level cannot be adjusted by this method, the float or the float valve is damaged.

Removal

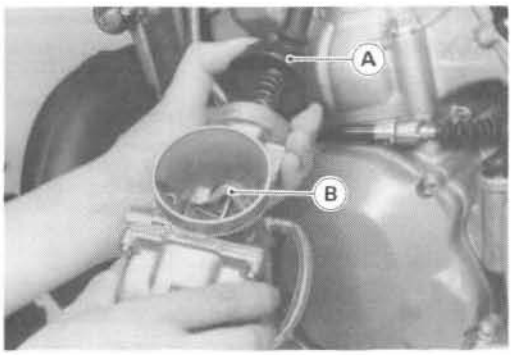
⚠WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and 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.

● Turn the fuel tap to the OFF position and pull the fuel hose off the tap.
● Loosen the clamps [A], and remove the carburetor from the end of the air cleaner duct, and then pull it out of the carburetor holder.



● Drain the fuel from the float bowl by remove the drain plug. After draining, install the drain plug securely.
● Unscrew the carburetor cap [A], and pull out the throttle valve assembly [B].



CAUTION

If the throttle valve is not removed from the cable, wrap it in a clean cloth to avoid damage.

● After removing the carburetor, push a clean, lint-free towel into the carburetor holder and the air cleaner duct to keep dirt or other foreign material from entering.

⚠WARNING

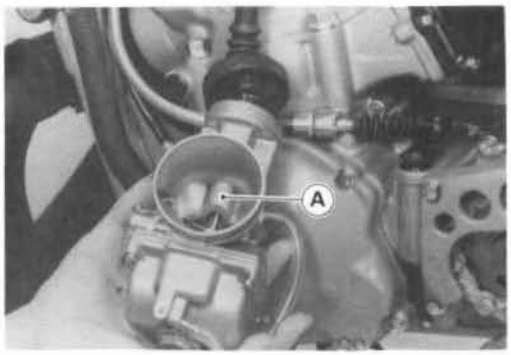
If dirt or dust is allowed to pass through into the carburetor, the throttle may become stuck, possibly causing an accident.

CAUTION

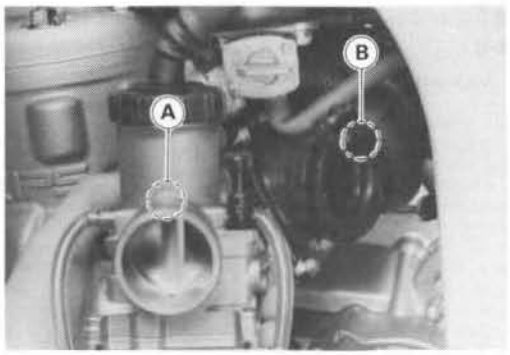
If dirt gets through into the engine, excessive engine wear and possibly engine damage will occur.

Installation Notes

● Being careful not to bend or otherwise damage the jet needle. Check to see that the throttle valve [A] goes all the way down into the carburetor body, and slides smoothly.



● When installing the carburetor into the carburetor holder, align the center [A] of the carburetor with the groove [B] on the holder.



● Route the air vent and overflow hoses properly (see Cable, Harness, Hose Routing in the General Information chapter).

CAUTION

Always keep the hoses free of obstruction, and make sure they do not get pinched by the chain or shock absorber.

● After installing the carburetor, do the following.

○ Turn the fuel tap to the ON position, and check for fuel leakage from the carburetor.

⚠WARNING

Fuel spilled from the carburetor is hazardous.

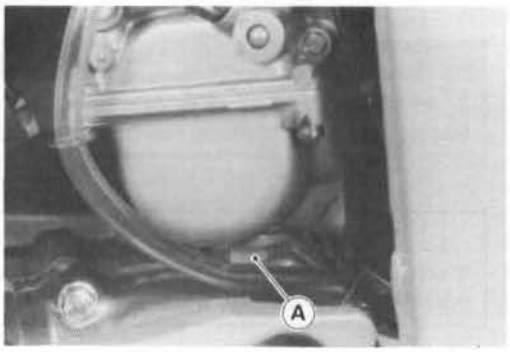
○ Adjust the following items if necessary:
Throttle Cable
Idle Speed

Fuel Inspection

⚠WARNING

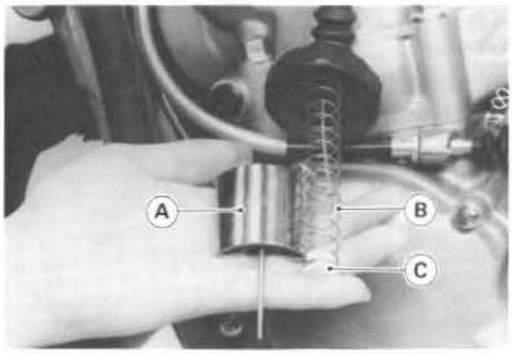
Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

● Turn the fuel tap to the OFF position.
● Remove the carburetor.
● Remove the drain plug [A] from the bottom of the float bowl and check for water or dirt in the fuel.
★ If any water or dirt comes out, clean the carburetor, fuel tap and fuel tank (see Fuel Tank).
● Install the drain plug on the float bowl, and tighten it securely.
● Install the carburetor.

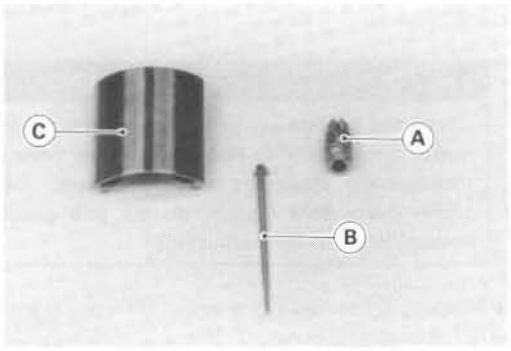


Disassembly

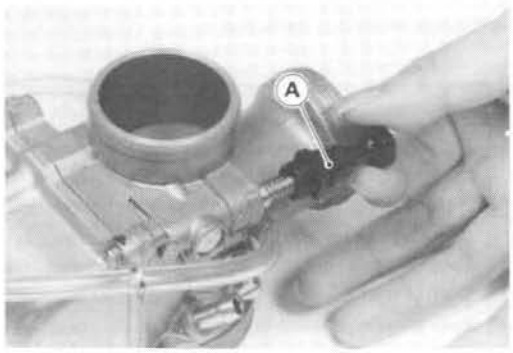
- Remove the carburetor.
- Remove the throttle valve assembly [A], spring [B], retainer [C] and carburetor cap from the carburetor cable lower end.



- Disassemble the throttle valve assembly; connector [A], jet needle with circlip [B] and throttle valve [C].

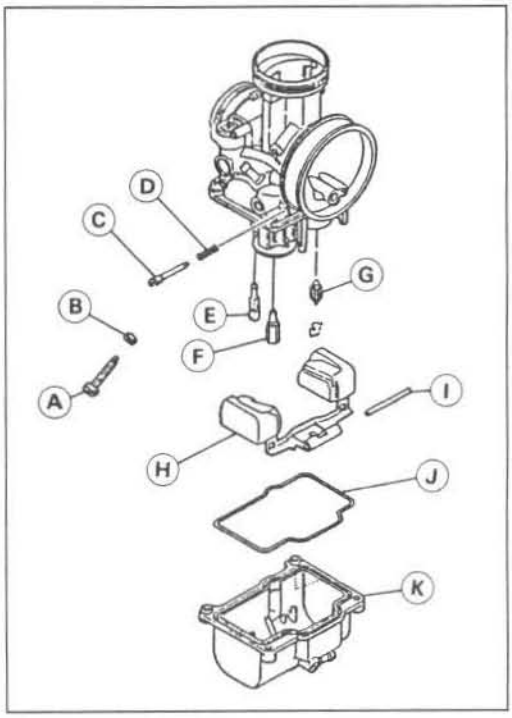


- Remove the choke knob/starter plunger assembly [A] from the carburetor.



- Remove the following parts from the carburetor body.

A. Idle Adjusting Screw
B. Locknut
C. Air Screw
D. Spring
E. Slow Jet
F. Main Jet
G. Float Valve Needle
H. Float
I. Pin
J. O-ring
K. Float Bowl



Assembly Notes

- Clean the disassembly parts before assembling.
- Replace the float bowl O-ring with a new one if it is deteriorated or damaged.
- Turn in the air screw [A] fully but not tightly, and then back it out 1½ turns.

Cleaning

⚠WARNING

Clean the carburetor in a well-ventilated area, and take care that there is no spark or flame anywhere near the working area; this includes any appliance with a pilot light. Because of the danger of highly flammable liquids, do not use gasoline or low flash-point solvent to clean the carburetor.

- Make sure the fuel tap is in the OFF position.
- Remove the carburetor.
- Drain the fuel in the carburetor.
- Disassemble the carburetor.

CAUTION

Do not use compressed air on an assembled carburetor, the float may be deformed by the pressure.
Remove as many rubber or plastic parts from the carburetor as possible before cleaning the carburetor with a cleaning solution. This will prevent damage or deterioration of the parts.
Do not use a strong carburetor cleaning solution which could attack the plastic parts; instead, use a mild high flash-point cleaning solution safe for plastic parts.
Do not use wire or any other hard instrument to clean carburetor parts, especially jets, as they may be damaged.

- Immerse all the metal parts in a carburetor cleaning solution.
- Rinse the parts in water.
- After the parts are cleaned, dry them with compressed air.
- Blow through the air and fuel passages with compressed air.
- Assemble the carburetor, and install it on the motorcycle.

Inspection

⚠WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and 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 the carburetor.
- Before disassembling the carburetor, check the fuel level (see Fuel Level Inspection).

★If the fuel level is incorrect, inspect the rest of the carburetor before correcting it.

- Pull the carburetor cable to check that the throttle valve moves smoothly and returns by spring pressure.

★If the throttle valve does not move smoothly. Replace the carburetor.

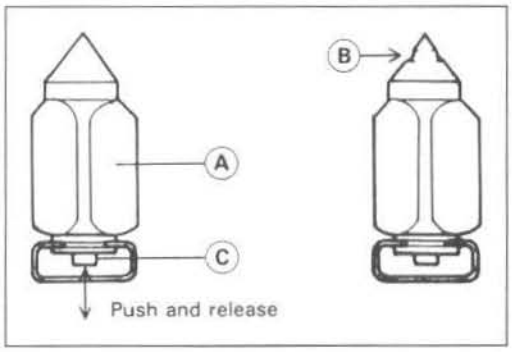
- Clean the carburetor.

- Remove the float valve needle.
- Check the float valve needle [A] for wear.

★If the needle is worn as shown right [B], replace the valve needle.

- Push the rod [C] in the valve needle, then release it.

★If the rod does not come out fully by spring tension, replace the valve needle.



- Remove the slow jet.
- Check the slow jet for any damage.

★If the slow jet is damaged, replace it with a new one.

- Remove the throttle valve and jet needle.
- Inspect the outside of the throttle valve for scratches and abnormal wear.

★If it is badly scratched or worn, replace the throttle valve.

- Inspect the inside of the carburetor body for these same faults.

★If it is badly scratched or worn, replace the entire carburetor.

- Check the jet needle for wear.

★A worn jet needle should be replaced.

- Disassemble the carburetor, and clean the fuel and air passages with a high flash-point solvent and compressed air.

Air Cleaner

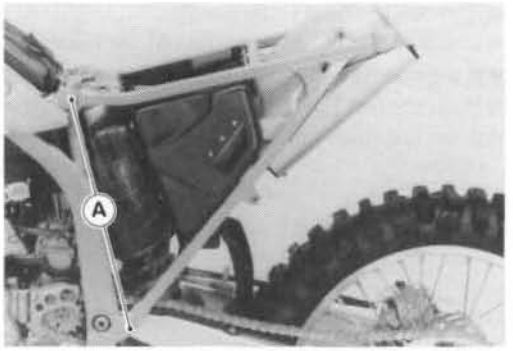
Housing Removal

- Loosen the air cleaner duct clamp.
- Remove:
  - Side Covers
  - Seat
  - Silencer
  - Rear Fender
  - Rear Flap
  - Rear Frame
- Remove the air cleaner housing.

Housing Installation Notes

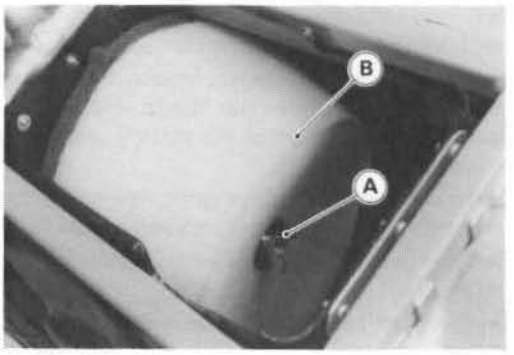
- Torque the rear frame mounting bolts [A].

Torque – Rear Frame Mounting Bolts: 26 N-m (2.7 kg-m, 19.5 ft-lb)



Element Removal

- Remove the seat.
- Remove the wing bolt [A] and pull out the element [B].
- Stuff a clean, lint-free towel into the carburetor so no dirt is allowed to enter the carburetor.
- Wipe out the inside of the air cleaner housing with a clean damp towel.

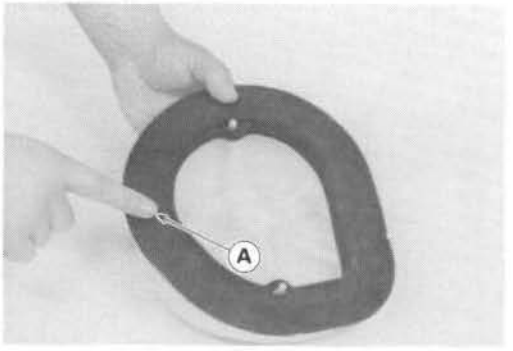


CAUTION

Check inside the inlet tract and carburetor for dirt. If dirt is present, clean the intake tract and carburetor thoroughly. You may also need to replace the element and seal the housing and inlet tract.

Installation Note

- When installing the element, coat the lip of the element with a thick layer of all purpose grease [A] to assure a complete seal against the air cleaner element base. Also, coat the base where the lip of the element fits.
- Apply grease to all connections and screw holes in the air cleaner housing and intake tract.



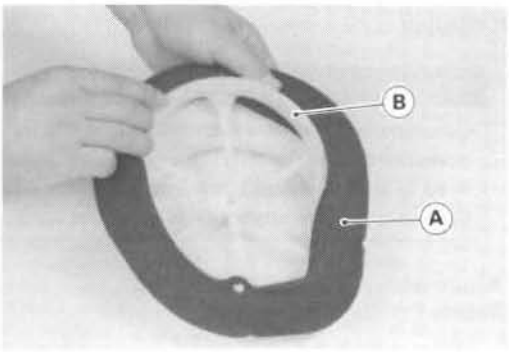
Element Cleaning and Inspection

NOTE

- *In dusty areas, the element should be cleaned more frequently than recommended interval.*
- *After riding through rain or on muddy roads, the element should be cleaned immediately.*
- *Since repeated cleaning opens the pores of the element, replace it with a new one in accordance with the Periodic Maintenance Chart. Also, if there is a break in the element material or any other damage to the element, replace the element with a new one.*

⚠WARNING

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



- Remove the air cleaner element, and separate the element [A] from the frame [B].

- Clean the element in a bath of a high flash-point solvent using a soft bristle brush. Squeeze it dry in a clean towel. Do not wring the element or blow it dry; the element can be damaged.
- Check all the parts of the element for visible damage.

★If any part of the element is damaged, replace it.

- After cleaning, saturate the element with a high-quality foam-air-filter oil, squeeze out the excess, then wrap it in a clean rag and squeeze it as dry as possible. Be careful not to tear the sponge filter.
- Assemble the element.
- Remove the towel from the carburetor.
- Install the element.

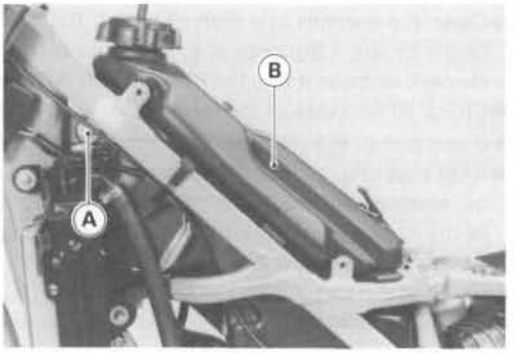
Fuel Tank

Removal

⚠WARNING

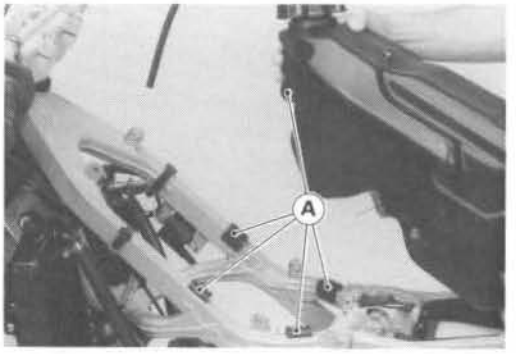
Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

- Remove:
  Side Covers
  Seat
  Radiator Covers
- Turn the fuel tap to the OFF position.
- Pull the fuel hose off the fuel tap.
- Remove the fuel tank mounting bolts [A].
- Remove the fuel tank [B].
- Drain the fuel tank.



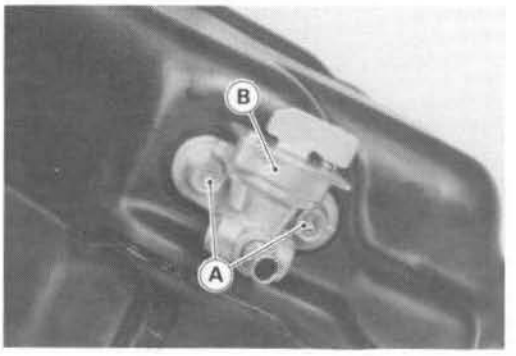
Installation Notes

- Check the rubber dampers [A] on the frame and fuel tank.
- ★If the dampers are damaged or deteriorated, replace them.
- Be sure the fuel hose is clamped to the fuel tap to prevent leaks.



Fuel Tap Removal

- Remove the fuel tank and drain it.
- Remove the mounting bolts [A] and take out the fuel tap [B].



Fuel Tap Installation Notes

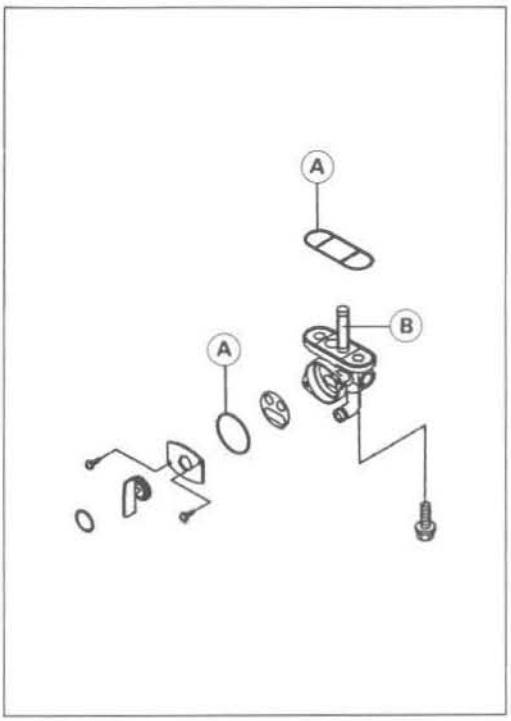
- Be sure the O-ring is in good condition to prevent leaks.
- Be sure to clamp the fuel hose to the tap to prevent leaks.

Fuel Tap Inspection

- Remove the fuel tap.
- Check the fuel tap filter screen [B] for any breaks or deterioration.

★If the fuel tap screen have any breaks or deterioration, it may allow dirt to reach the carburetor, causing poor running. Replace the fuel tap.

★If the fuel tap leaks, or allows fuel to flow when it is at OFF position, replace the damaged O-ring [A].



Fuel Tank and Tap Cleaning

⚠WARNING

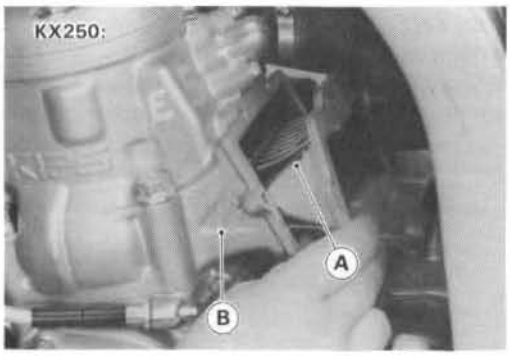
Clean the tank in a well-ventilated area, and take care that there is no sparks or flame anywhere near the working area. Because of the danger of highly flammable liquids, do not use gasoline or low flash-point solvent to clean the tank.

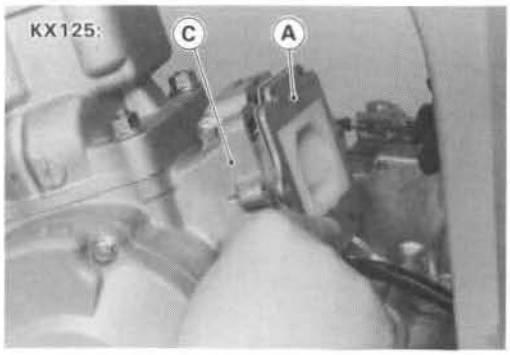
- Remove the fuel tank and drain it.
- Pour some high flash-point solvent into the fuel tank and shake the tank to remove dirt and fuel deposits.
- Pour the solvent out of the tank.
- Remove the fuel tap from the tank by taking out the bolts.
- Clean the fuel tap filter screen in a high flash-point solvent.
- Pour high flash-point solvent through the tap in all lever positions.
- Dry the tank and tap with compressed air.
- Install the tap in the tank.
- Install the fuel tank.

Reed Valve

Removal

- Remove the carburetor from the carburetor holder and air cleaner duct.
- Remove the mounting bolts, and take off the carburetor holder.
- Take the reed valve [A] out of the cylinder [B].
- For KX125 model; remove the reed valve [A] from the crankcase [C].

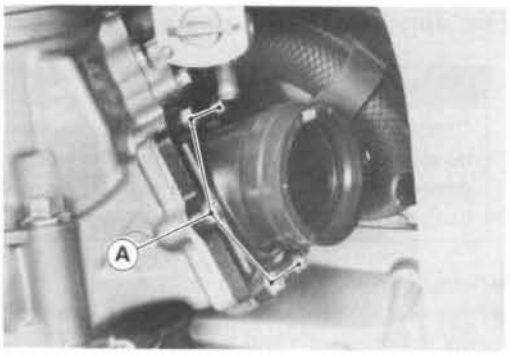




Installation Note

- Torque the carburetor holder mounting bolts [A].

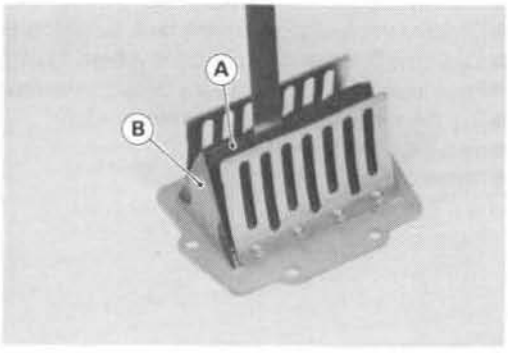
Torque – Carburetor Holder Mounting Bolts: 8.8 N-m (0.9 kg-m, 78 in-lb)



Inspection

- Inspect the reeds for cracks, folds, or other visible damage.
- ★If there is any doubt as to the condition of a reed, replace the reed valve part with a new one.
- ★If a reed becomes wavy, replace the valve part with a new one even if its warp is less than the service limit.
- Measure the clearance between the reed [A] and holder [B], and check the reed warp as shown.
- ★If any one of the clearance measurements exceeds the service limit, replace the valve part with a new one.

Reed Wrap
Service Limit: 0.2 mm



Cooling System

3

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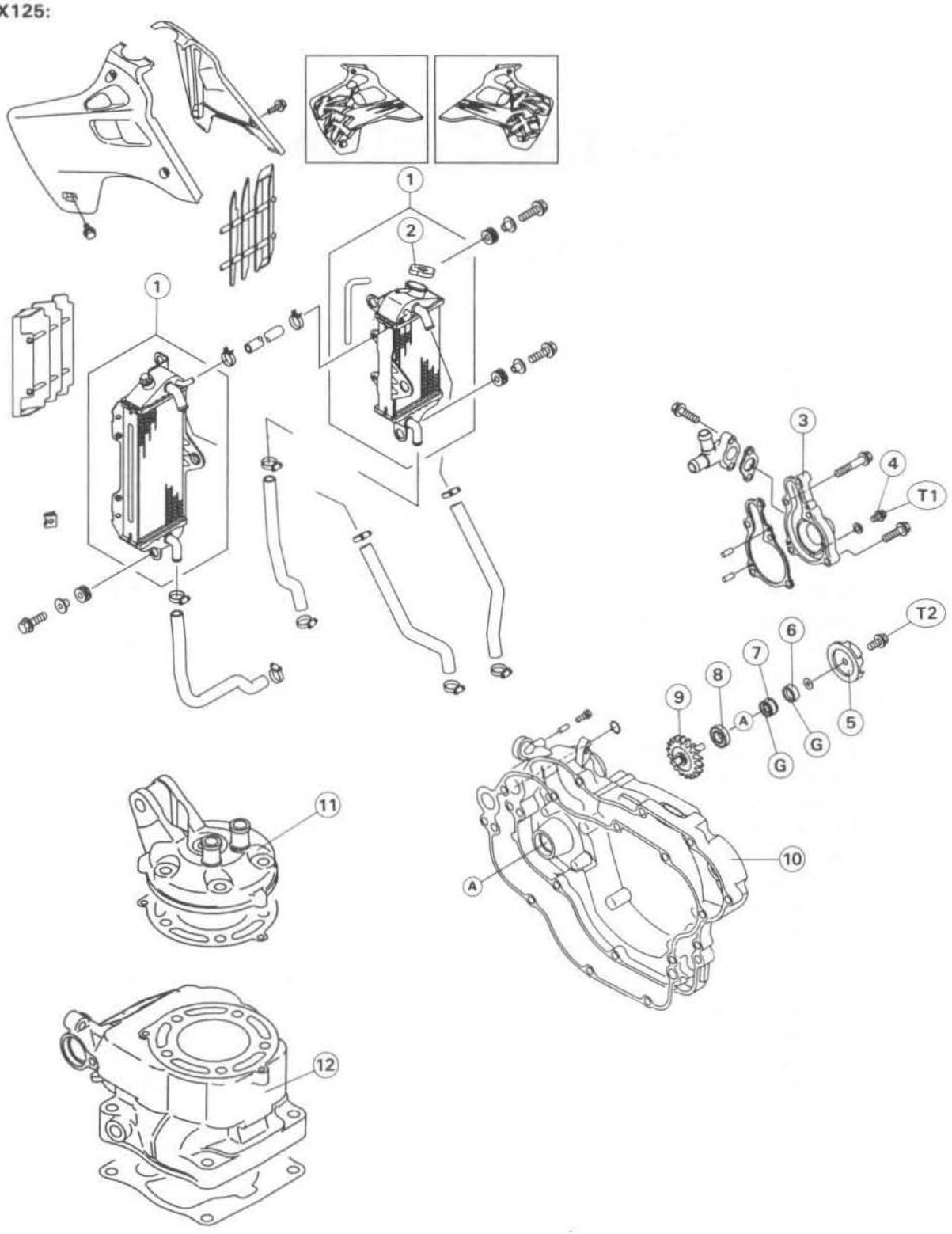
Exploded View

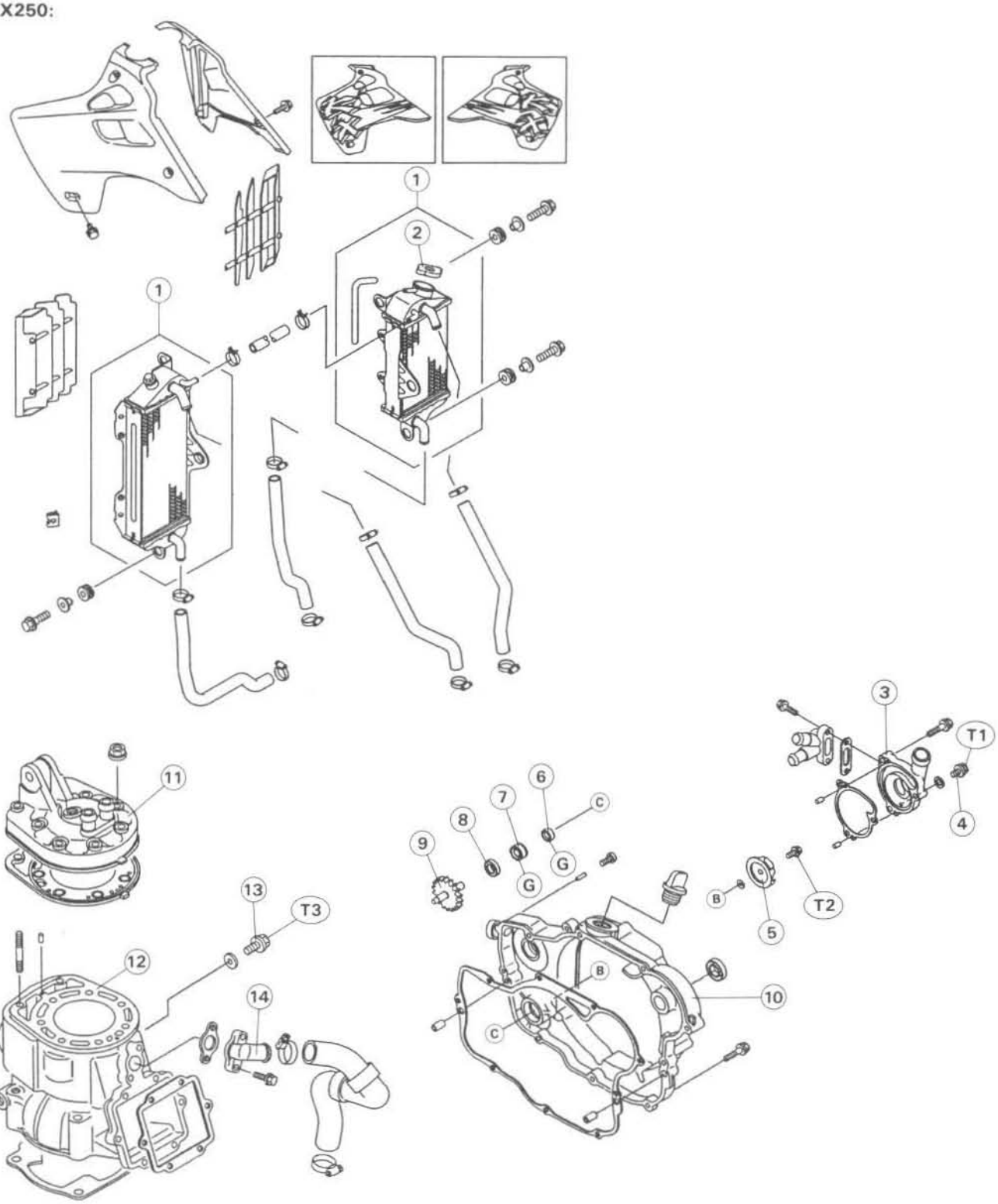
KX125:



1. Radiator
2. Radiator Cap
3. Water Pump Cover
4. Drain Plug
5. Impeller
6. Oil Seal (Short)
7. Oil Seal (Long)
8. Bearing
9. Water Pump Gear
10. Right Engine Cover
11. Cylinder Head
12. Cylinder

G : Apply grease
T1 : 8.8 N-m (0.9 kg-m, 78 in-lb)
T2 : 6.9 N-m (0.7 kg-m, 61 in-lb)

KX250:



1. Radiator
2. Radiator Cap
3. Water Pump Cover
4. Drain Plug
5. Impeller
6. Oil Seal (Short)
7. Oil Seal (Long)
8. Bearing
9. Water Pump
10. Right Engine Cover
11. Cylinder Head
12. Cylinder
13. Cylinder Drain Plug
14. Elbow Fitting

G : Apply grease
T1 : 8.8 N-m (0.9 kg-m, 78 in-lb)
T2 : 6.9 N-m (0.7 kg-m, 61 in-lb)
T3 : 22 N-m (2.2 kg-m, 16.0 ft-lb)

Specifications

Item		Standard
Coolant:		
	Type	Permanent type of antifreeze for aluminum engines and radiators
	Color	Green
	Mixed ratio	Soft water 50%, coolant 50%
	Total amount : KX125	0.93L
	KX250	1.1 L
Radiator:		
	Cap relief pressure	95 ~ 125 kPa (0.95 ~ 1.25 kg/cm², 14 ~ 18 psi)

Special Tool – Bearing Driver Set: 57001-1129

Coolant

Check the coolant level each day before riding the motorcycle, and replenish coolant if the level is low. Change the coolant in accordance with the Periodic Maintenance Chart (see the General Information chapter).

⚠WARNING

To avoid burns, do not remove the radiator cap or try to inspect the coolant level or change the coolant when the engine is still hot. Wait until it cools down.

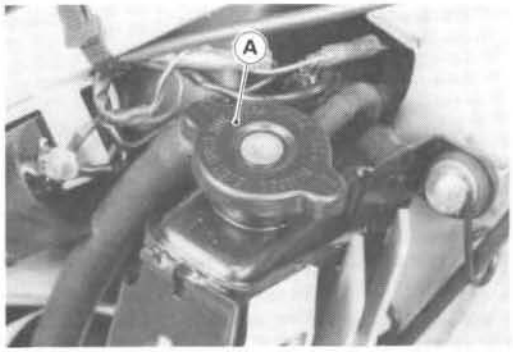
Coolant Inspection

Coolant Level:

NOTE

○*Check the level when the engine is cold (room or ambient temperature).*

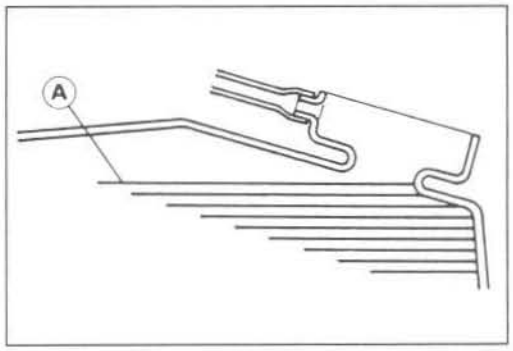
● Situate the motorcycle so that it is perpendicular to the ground.
● Remove the radiator cap [A].



NOTE

○*Remove the radiator cap in two steps. First turn the cap counterclockwise to the first stop and wait there for a few seconds. Then push down and turn it further in the same direction and remove the cap.*

● Check the coolant level. The coolant level [A] should be at the bottom of the filler neck.
★ If the coolant level is low, add coolant through the filler opening to the bottom of the filler neck. Install the cap.



Recommended coolant:
Permanent type of antifreeze (soft water and ethylene glycol plus corrosion and rust inhibitor chemicals for aluminum engines and radiators)
Water and coolant mixture ratio:
1:1 (Water 50%, Coolant 50%)
Total amount:
KX125 : 0.93 L
KX250 : 1.1 L

Coolant Deterioration:

● Visually inspect the old coolant.
★ If whitish cotton-like wafts are observed, aluminum parts in the cooling system are corroded. If the coolant is brown, iron or steel parts are rusting. In either case, flush the cooling system.
★ If the coolant gives off an abnormal smell, check for a cooling system leak. It may be caused by exhaust gas leaking into the cooling system.

Coolant Change

The coolant should be changed periodically to ensure long engine life.

Coolant Draining:

⚠WARNING

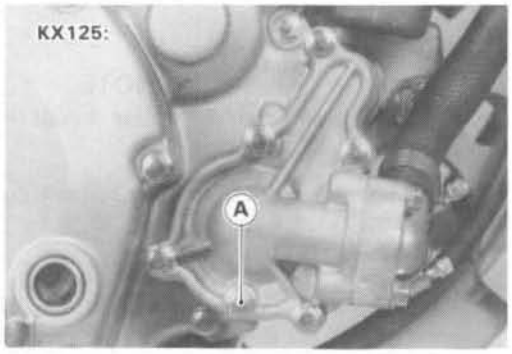
Coolant on tires will make them slippery and can cause an accident and injury. Immediately wipe up or wash away any coolant that spills on the frame, engine or other painted parts. Since coolant is harmful to the human body, do not use for drinking.

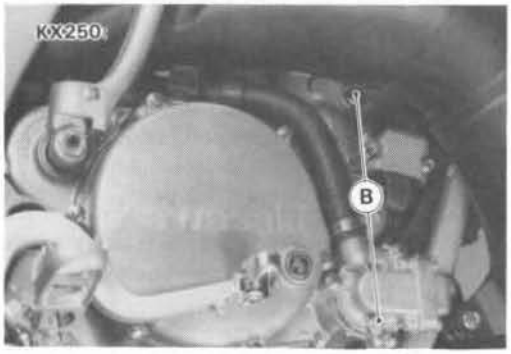
- Remove the right radiator cover.
- Remove the radiator cap.

NOTE

○ *Remove the radiator cap in two steps. First turn the cap counterclockwise to the first stop and wait there for a few seconds. Then push down and turn it further in the same direction and remove the cap.*

- Place a container under the coolant drain plug (KX125) [A] or plugs (KX250) [B], and drain the coolant from the radiator and engine by removing the drain plug on the water pump cover and the cylinder (KX250). Immediately wipe or wash out any coolant that spills on the frame, engine, or wheel.
- Inspect the old coolant for visual evidence of corrosion and abnormal smell (see Coolant Deterioration).





Coolant Filling:

CAUTION

Use coolant containing corrosion inhibitors made specifically for aluminum engines and radiators in accordance with the instruction of the manufacture's. Soft or distilled water must be used with the antifreeze (see below for antifreeze) in the cooling system. If hard water is used in the system, it causes scale accumulation in the water passages, and considerably reduces the efficiency of the cooling system.

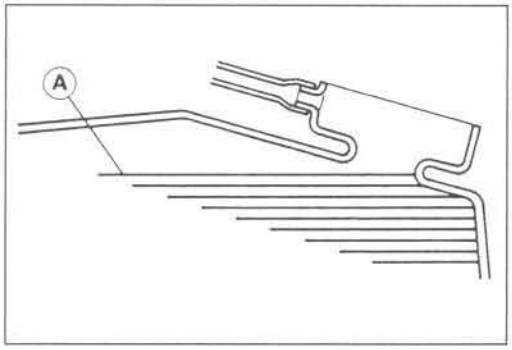
Coolant

Type	:	**Permanent type antifreeze for aluminum engines and radiators**
Color	:	**Green**
Mixed ratio	:	**Soft water 50%, Coolant 50%**
Freezing point	:	**−35°C (−31°F)**
Total amount	:	**KX125 : 0.93 L KX250 : 1.1 L**

● Install the drain plug.
○ Replace the gasket with a new one.

Torque – Coolant Drain Plug on Water Pump Cover: 8.8 N-m (0.9 kg-m, 78 in-lb)
Coolant Drain Plug on Cylinder (KX250): 22 N-m (2.2 kg-m, 16.0 ft-lb)

● Fill the radiator up to the bottom of the radiator filler neck with coolant [A], and install the cap, turning it clockwise about ¼ turn.



NOTE

○ *Pour in the coolant slowly so that it can expel the air from the engine and radiator. The radiator cap must be installed in two steps. First turn the cap clockwise to the first stop. Then push down on it and turn it the rest of the way.*

● Check the cooling system for leaks.
● Install the right radiator cap.

Air Bleeding

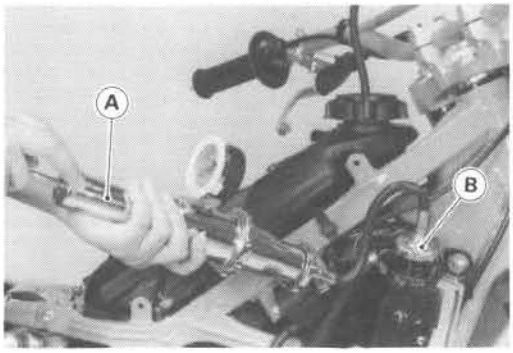
Before putting the motorcycle into operation, any air trapped in the cooling system must be removed as follows.

● Start the engine, warm up the engine thoroughly, and then stop the engine. Wait until the engine cools down.
● Remove the right radiator cover and radiator cap.
● Check the coolant level.
★ If the coolant level is low, add coolant up to the bottom of the filler neck.
● Install the radiator cap.
● Check the cooling system for leaks.
● Install the right radiator cover.

Cooling System Pressure Testing

CAUTION

During pressure testing, do not exceed the pressure for which the system is designed to work. The maximum pressure is 125 kPa (1.25 kg/cm², 18 psi).



● Remove the right radiator cover.
● Remove the radiator cap, and install a cooling system pressure tester [A] and adapter [B] on the radiator filler neck.

NOTE

○ *Wet the adapter cap sealing surfaces with water or coolant to prevent pressure leaks.*

● Build up pressure in the system carefully until the pressure reaches 125 kPa (1.25 kg/cm², 18 psi).
● Watch the gauge for at least 6 seconds. If the pressure holds steady, the cooling system is all right.
● Remove the pressure tester, replenish the coolant, and install the radiator cap.
★ If the pressure drops and no external source is found, check for internal leaks. Check the cylinder head gasket for leaks.

Cooling System Flushing

Over a period of time, the cooling system accumulates rust, scale, and lime in the water jacket and radiator. When this accumulation is suspected or observed, flush the cooling system. If this accumulation is not removed, it will clog up the water passages and considerably reduce the efficiency of the cooling system.

- Drain the cooling system.
- Fill the cooling system with fresh water mixed with a flushing compound.

CAUTION
Avoid the use of a flushing compound which is harmful to the aluminum engine and radiator. Carefully follow the instructions supplied by the manufacture of the cleaning product.

- Warm up the engine, and run it at normal operating temperature for about ten minutes.
- Stop the engine, and drain the cooling system after the coolant cools down.
- Fill the system with fresh water.
- Warm up the engine and drain the system after the coolant cools down.
- Repeat the previous two steps once more.
- Fill the system with a permanent type coolant, and bleed the air from the system (see Air Bleeding).

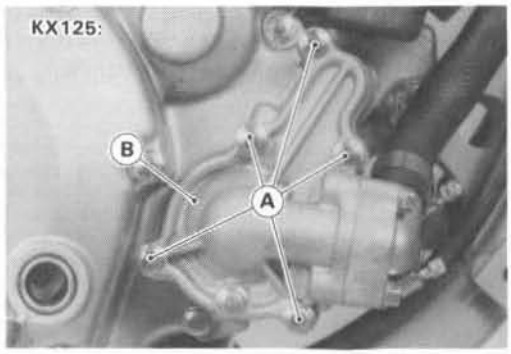
Disassembly and Assembly Precautions

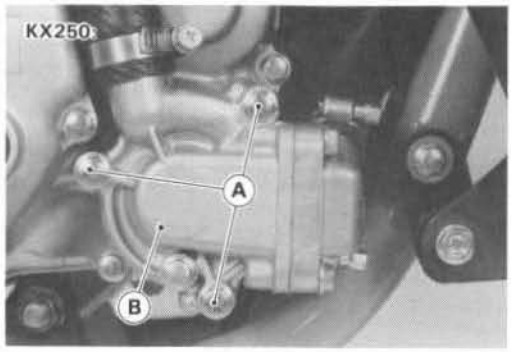
- Prior to disassembly of cooling system parts (radiator, pump, etc), wait until the coolant cools down, and then drain the coolant.
- After assembling and filling the system with coolant, bleed any air from the system.

Water Pump

Cover Removal

- Drain the coolant (see Coolant Draining).
- Loosen the cooling hose clamps, and disconnect the cooling hoses on the water pump cover.
- Remove the cover bolts [A], and remove the water pump cover [B].



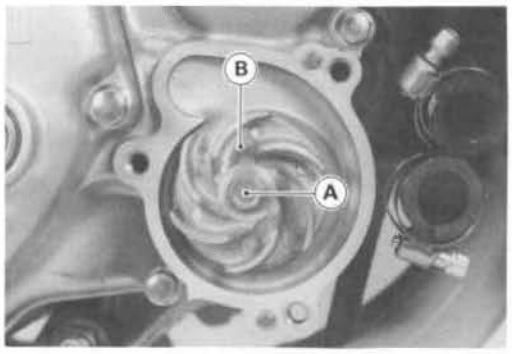


Cover Installation Notes

- Replace the pump cover gasket with a new one.
- Fill the cooling system (see Coolant Filling).
- Bleed the air from the cooling system.

Impeller Removal

- Drain the coolant (see Coolant Draining).
- Remove the cover bolts and take out the water pump cover from the right engine cover with the water hoses attached.
- Remove the impeller bolt [A], and take out the impeller [B] and washer.



Impeller Installation Note

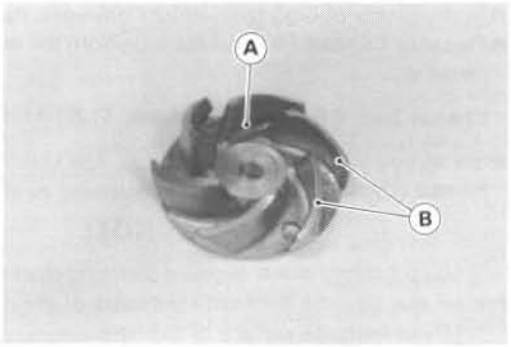
- Torque the impeller bolt.

Torque – Impeller Bolt: 6.9 N-m (0.7 kg-m, 61 in-lb)

Impeller Inspection

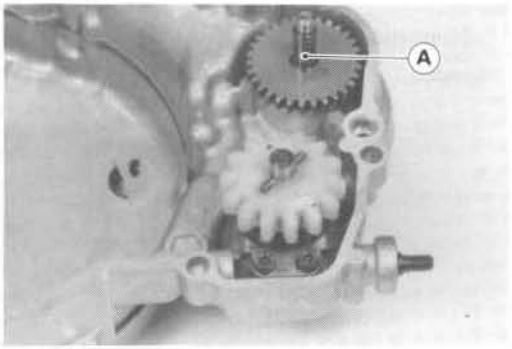
- Visually check the impeller [A].

★If the surface is corroded, or if the blades [B] are damaged, replace the impeller.



Shaft Removal

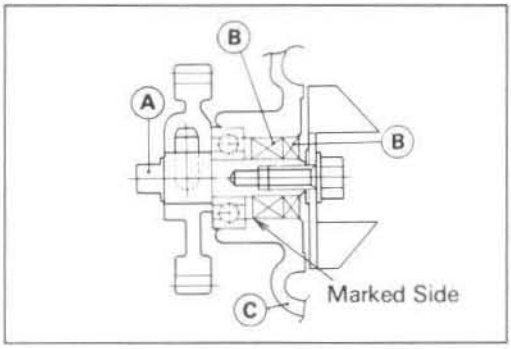
- Remove:
  Impeller
  Right Engine Cover
- Pull out the water pump shaft [A] toward inside of the right engine cover.



Shaft Installation Note

- To prevent the oil seal lips from peeling, apply a molybdenum disulfide grease to the water pump shaft [A] and insert it into the oil seals [B] from the inside of the right engine cover [C].

CAUTION
Be sure to apply a molybdenum disulfide grease to the water pump shaft when installing. If it is installed dry, the seals may wear excessively.



Oil Seal Removal

- Remove:
  Impeller
  Right Engine Cover
  Water Pump Shaft
- Insert a bar into the water pump shaft hole from the outside of the right engine cover, and remove the ball bearing by tapping evenly around the bearing inner race.
- Insert a bar into the water pump shaft hole from the inside of the right engine cover, and remove the oil seal by tapping evenly around the seal lips.

Oil Seal Installation

CAUTION
If the oil seal or ball bearing is removed, replace both of them with new ones at the same time.

- Be sure to replace the oil seals.

- Apply plenty of high temperature grease to the oil seal lips [A].
- Press the oil seals [B] into the hole from the outside of the right engine cover.

Special Tool – Bearing Driver Set: 57001-1129 [C]

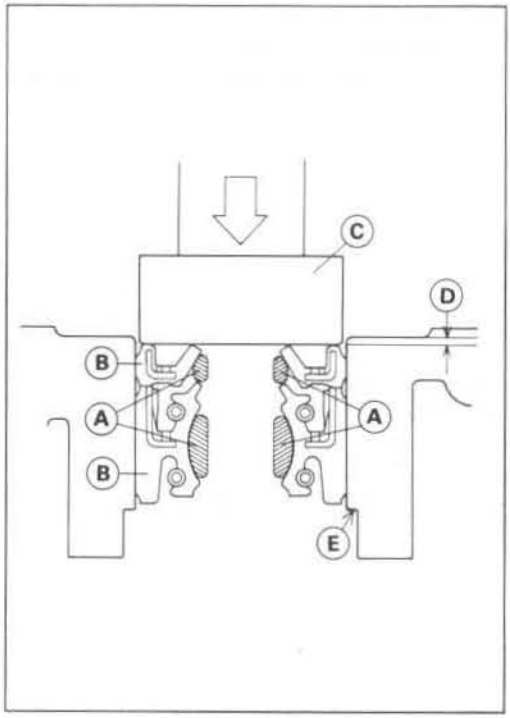
- Set the oil seal (thick) so that dual lips side face outward and set the oil seal (thin) so that a lip faces outward as shown.

NOTE

○ *Use a bearing driver larger in diameter than the oil seal, and press the oil seal into the hole until the edge of the oil seal is located 0.5 mm [D] in from the surface of the hole.*

- Press the ball bearing into the hole until the bearing is bottomed against the step [E].

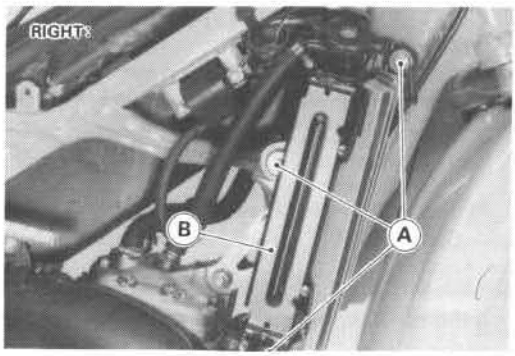
Special Tool – Bearing Driver Set: 57001-1129



Radiator

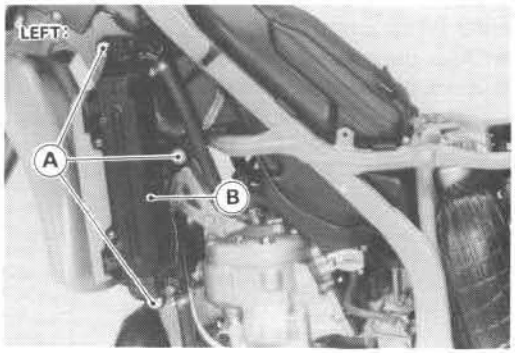
Removal

- Remove the radiator cover(s).
- Drain the coolant (see Coolant Draining).
- Loosen the hose clamps, and pull off the cooling and breather hoses.
- Remove the mounting bolts [A], and take out the radiator [B].



Installation Note

- Route the cooling and breather hoses correctly.

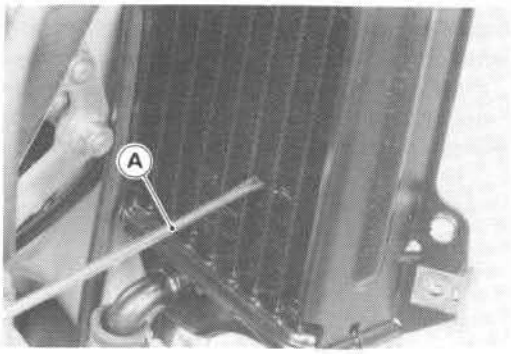


Inspection

- Check the radiator core.

★If there are obstructions to air flow, remove them.

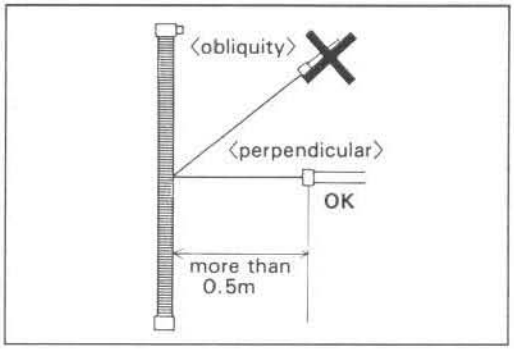
★If the corrugated fins are deformed, carefully straighten them with the thin blade of a screwdriver [A].



CAUTION
Do not tear the radiator tubes while straightening the fins.

★If the air passages of the radiator core are blocked more than 20% by unremovable obstructions or irreparably deformed fins, replace the radiator with a new one.

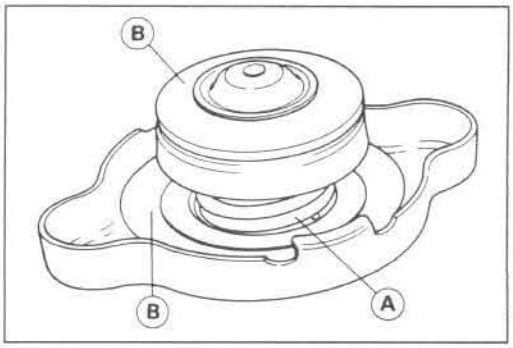
CAUTION
When cleaning the radiator with compressed air, be careful of the following to avoid damage to the fins. **Keep the air nozzle over 0.5 m (20 in.) away from the radiator.** **Blow air perpendicularly to the radiator core.** **Never blow air at an angle against the fins but straight through them in the direction of natural air flow.** **Never shake the air nozzle at a right angle against the fins, be sure to move it at a level with the fins.**



Cap Inspection

- Check the condition of the valve spring [A], and the top and bottom valve seals [B] of the radiator cap.

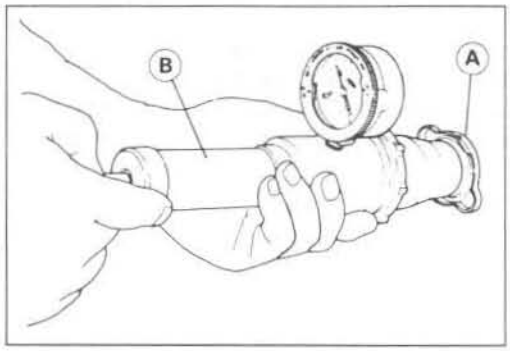
★If any one of them shows visible damage, replace the cap.



- Wet the top and bottom valve seals with water or coolant to prevent pressure leaks.
- Install the cap [A] on a cooling system pressure tester [B].
- Watching the pressure gauge, pump the tester to build up the test pressure. The cap must open at the specified relief pressure (the gauge hand flicks down).

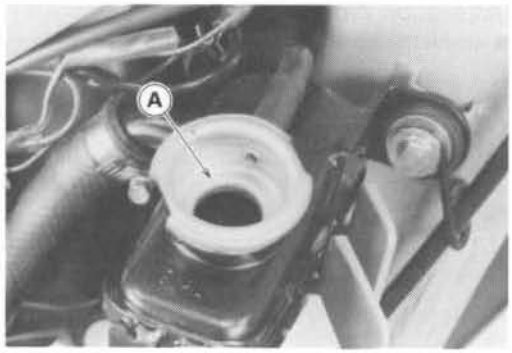
Radiator Cap Relief Pressure:
Standard: **95 – 125 kPa (0.95 ~ 1.25 kg/cm², 14 ~ 18 psi)**

○ Also, the cap must hold the relief pressure for at least 6 seconds.
★ If the cap cannot hold the pressure, or if the relief pressure is too high or too low, replace the cap with a new one.



Filler Neck Inspection

- Check the radiator filler neck for signs of damage.
- Check the condition of the top and bottom sealing seats [A] in the filler neck. They must be smooth and clean for the radiator cap to function properly.

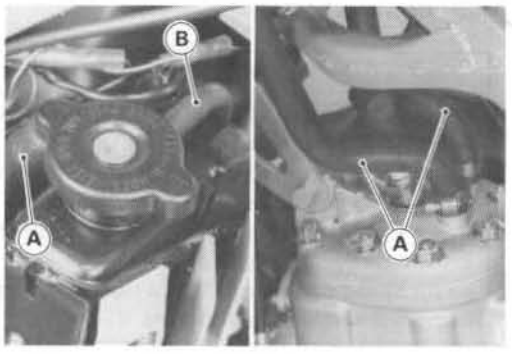


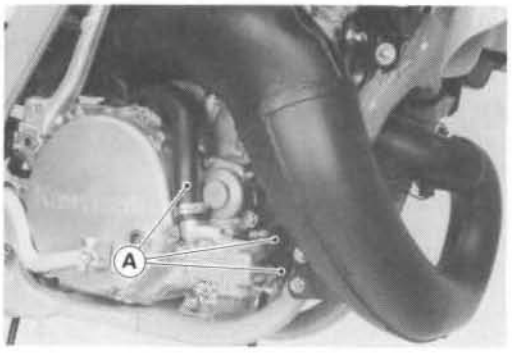
Cooling Hoses, Breather Hose Inspection

- In accordance with the Periodic Maintenance Chart, visually inspect the hoses for signs of deterioration. Squeeze the hose. A hose should not be hard and brittle, nor should it be soft or swollen.
- Replace any damaged hose.

Cooling Hoses, Breather Hose Installation Notes

- Install the cooling hoses [A] or breather hose [B] being careful to follow the preformed bends (see Exploded View and Cable, Harness, Hose Routing in the General Information chapter). Avoid sharp bending, kinking, flattening, or twisting.
- Tighten the hose clamps securely.





Engine Top End

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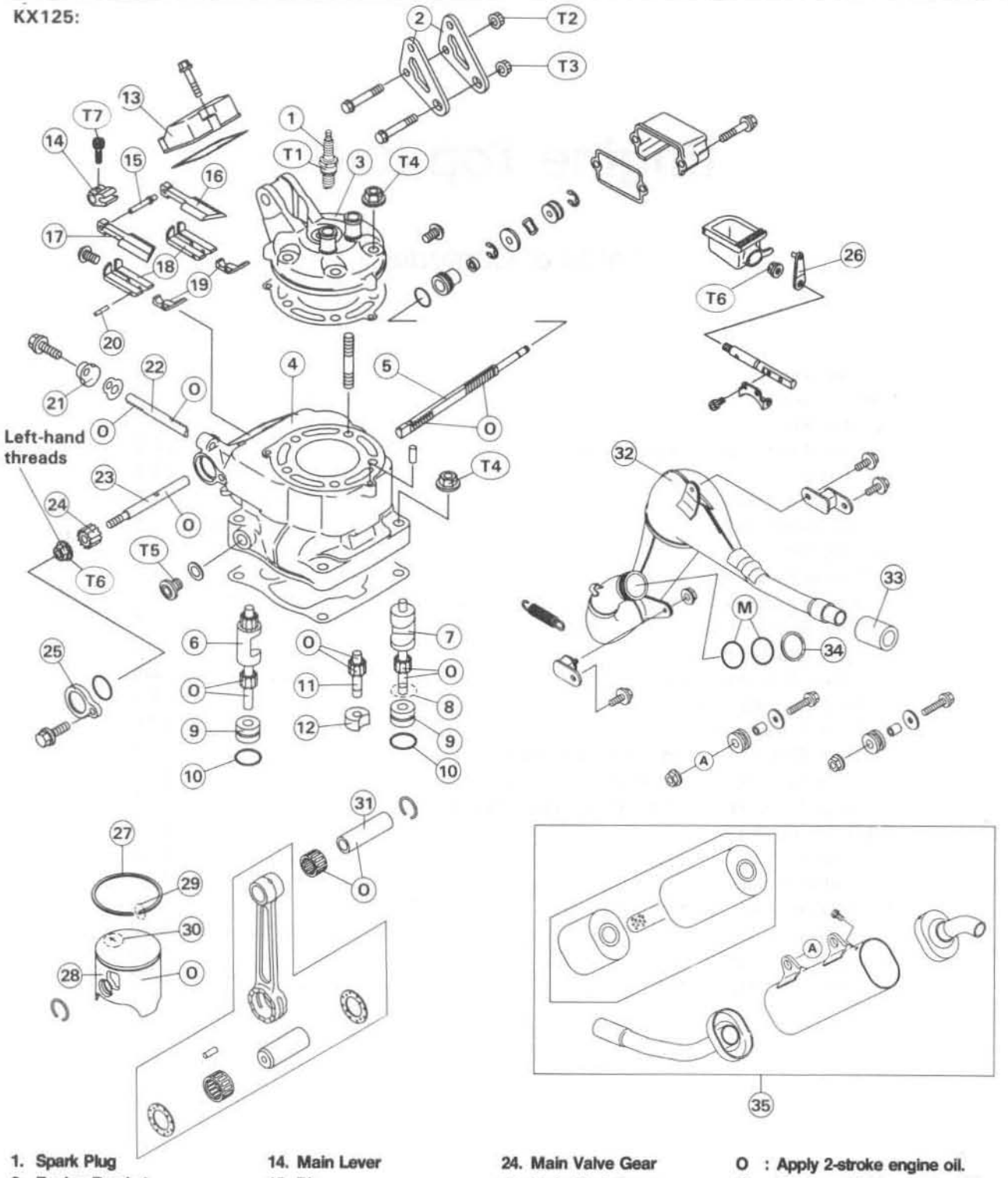
Exploded View

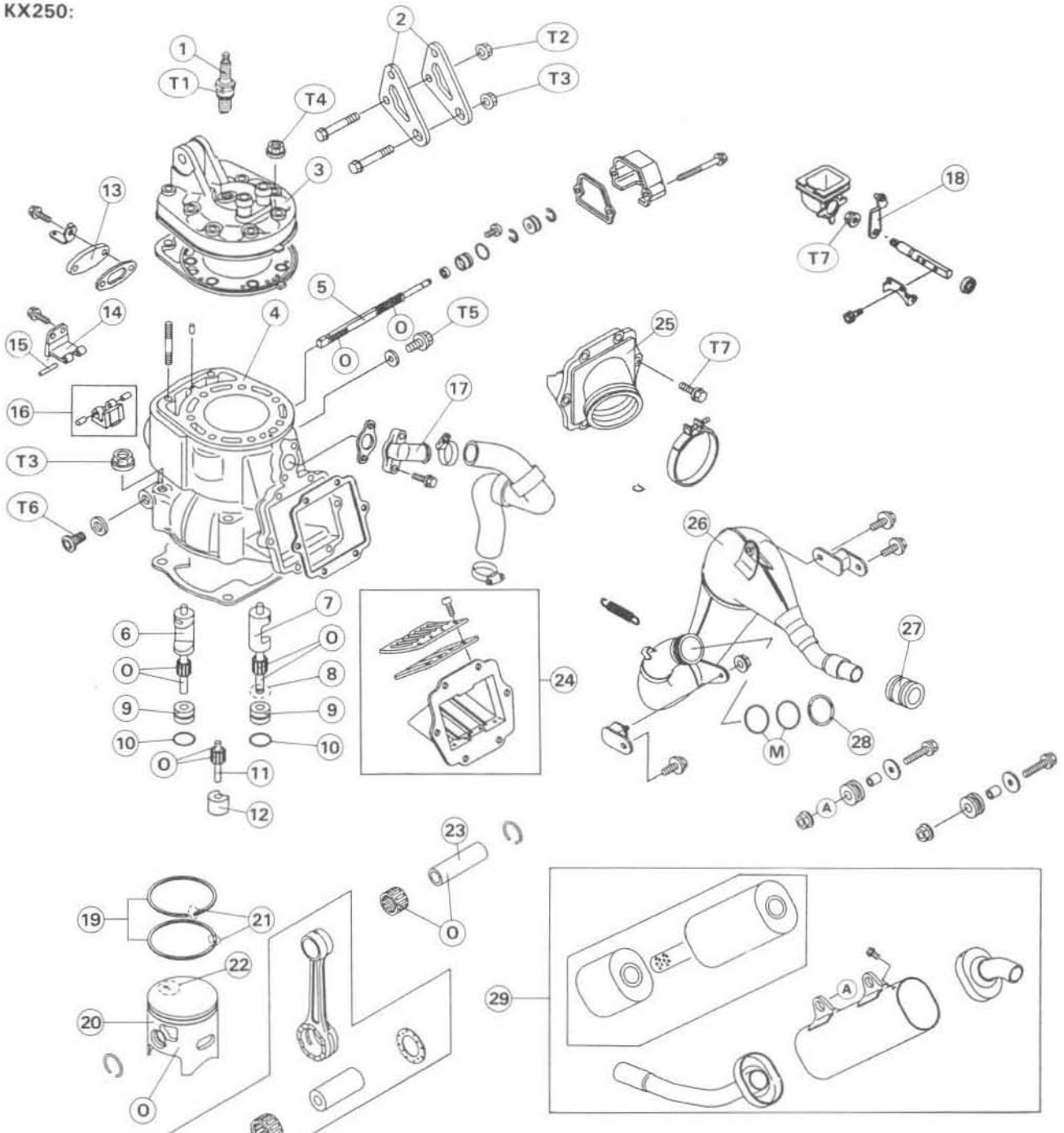
KX125:



1. Spark Plug
2. Engine Bracket
3. Cylinder Head
4. Cylinder
5. Operating Rod
6. Exhaust Valve (Left)
7. Exhaust Valve (Right)
8. Groove
9. Guide
10. O-Ring
11. Idle Gear
12. Guide
13. Main Valve Cover
14. Main Lever
15. Pin
16. Main Exhaust Valve (Right)
17. Main Exhaust Valve (Left)
18. Valve Holder
19. Main Exhaust Valve (Small)
20. Pin
21. Main Valve Rod Cover
22. Main Valve Rod
23. Main Shaft
24. Main Valve Gear
25. Main Shaft Cover
26. Shaft Lever
27. Piston Ring
28. Piston
29. "R" Mark
30. Arrow must point toward the front.
31. Piston Pin
32. Expansion Chamber
33. Rubber Seal
34. Gasket
35. Silencer

O : Apply 2-stroke engine oil.
M : Apply molybdenum disulfide grease .
T1 : 27 N-m (2.8 kg-m, 20 ft-lb)
T2 : 26 N-m (2.7 kg-m,19.5 ft-lb)
T3 : 34 N-m (3.5 kg-m, 25 ft-lb)
T4 : 25 N-m (2.5 kg-m, 18.0 ft-lb)
T5 : 15 N-m (1.5 kg-m, 11.0 ft-lb)
T6 : 8.8 N-m (0.9 kg-m, 78 in-lb)
T7 : 3.9 N-m (0.4 kg-m, 35 in-lb)

KX250:



1. Spark Plug
2. Engine Bracket
3. Cylinder Head
4. Cylinder
5. Operating Rod
6. Exhaust Valve (Left)
7. Exhaust Valve (Right)
8. Groove
9. Guide
10. O-Ring
11. Idle Gear
12. Guide
13. Main Exhaust Valve Cover
14. Valve Holder
15. Pin
16. Main Exhaust Valve
17. Elbow Fitting
18. Shaft Lever
19. Piston Ring
20. Piston
21. "R" Mark
22. Arrow must point toward the front.
23. Piston Pin
24. Reed Valve
25. Carburetor Holder
26. Expansion Chamber
27. Rubber Seal
28. Gasket
29. Silencer

M : Apply molybdenum disulfide grease.
O : Apply 2-stroke engine oil.
T1 : 27 N-m (2.8 kg-m, 20 ft-lb)
T2 : 26 N-m (2.7 kg-m, 19.5 ft-lb)
T3 : 34 N-m (3.5 kg-m, 25 ft-lb)
T4 : 25 N-m (2.5 kg-m, 18 ft-lb)
T5 : 22 N-m (2.2 kg-m, 16.0 ft-lb)
T6 : 15 N-m (1.5 kg-m, 11.0 ft-lb)
T7 : 8.8 N-m (0.9 kg-m, 78 in-lb)

4-4 ENGINE TOP END

Specifications

KX125 :

Item	Standard	Service Limit
Cylinder Head:		
Cylinder compression	(usable range) 770 ~ 1 200 kPa (7.7 ~ 12.0 kg/cm², 109 ~ 171 psi)	---
Cylinder head warp	---	0.03 mm
Cylinder, Piston:		
Cylinder inside diameter	54.000 ~ 54.015 mm	54.11 mm
Piston diameter	53.926 ~ 53.941 mm	53.78 mm
Piston/cylinder clearance	0.069 ~ 0.079 mm	---
Piston ring/groove clearance	0.04 ~ 0.08 mm	0.18 mm
Piston ring groove width	1.03 ~ 1.05 mm	1.10 mm
Piston ring thickness	0.97 ~ 0.99 mm	0.90 mm
Piston ring end gap	0.35 ~ 0.55 mm	0.90 mm
Piston pin diameter	15.995 ~ 16.000 mm	15.96mm
Piston pin hole diameter	16.000 ~ 16.020 mm	16.07 mm
Small end inside diameter	21.003 ~ 21.014 mm	21.05 mm

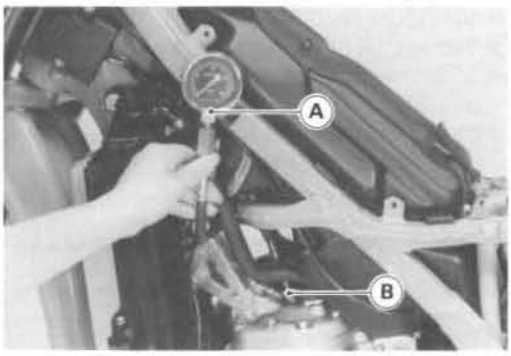
KX250 :

Item	Standard	Service Limit
Cylinder Head:		
Cylinder compression	(usable range) 840 ~ 1 300 kPa (8.4 ~ 13.0 kg/cm², 119 ~ 185 psi)	---
Cylinder head warp	---	0.03 mm
Cylinder, Piston:		
Cylinder inside diameter	66.400 ~ 66.415 mm	66.48 mm
Piston diameter	66.323 ~ 66.338 mm	66.17 mm
Piston/cylinder clearance	0.072 ~ 0.082 mm	---
Piston ring/groove clearance	0.04 ~ 0.08 mm	0.18 mm
Piston ring groove width	1.23 ~ 1.25 mm	1.30 mm
Piston ring thickness	1.17 ~ 1.19 mm	1.10 mm
Piston ring end gap	0.25 ~ 0.45 mm	0.75 mm
Piston pin diameter	17.995 ~ 18.000 mm	17.96mm
Piston pin hole diameter	18.000 ~ 18.020 mm	18.07 mm
Small end inside diameter	22.003 ~ 22.012 mm	22.05 mm

Special Tools – Piston Ring Pliers: 57001-115
Compression Gauge: 57001-221
Piston Pin Puller Assembly: 57001-910
Compression Gauge Adapter, M14 x 1.25: 57001-1159

Cylinder Head

Cylinder Compression Measurement



- Start the engine.
- Thoroughly warm up the engine so that the engine oil between the piston and cylinder wall will help seal compression as it does during normal running.
- Stop the engine.
- Remove the spark plug, and screw a compression gauge firmly into the spark plug hole.

Special Tool – Compression Gauge: 57001-221 [A]
Compression Gauge Adapter: 57001-1159 [B]

- With the throttle fully open, turn the engine over sharply with the kickstarter several times until the compression gauge stops rising; the compression is the highest reading obtainable.

Cylinder Compression
Usable Range:
KX125: 770 – 1 200kPa (7.7 – 12.0 kg/cm², 109 – 171 psi)
KX250: 840 – 1 300 kPa (8.4 – 13.0 kg/cm², 119 – 185 psi)

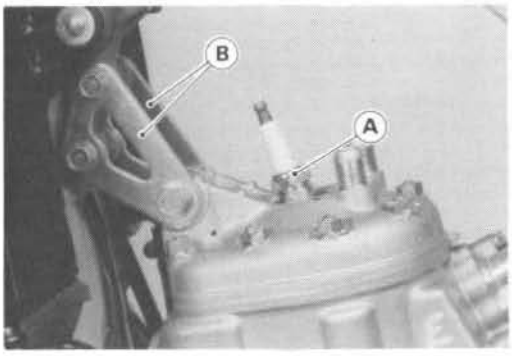
★If cylinder compression is higher than the usable range, check the following:

1. Carbon build-up on the piston head and cylinder head –clean off any carbon on the piston head and cylinder head.
2. Cylinder head gasket, cylinder base gasket – use only the proper gaskets for the cylinder head and base. The use of gasket of the incorrect thickness will change the compression.

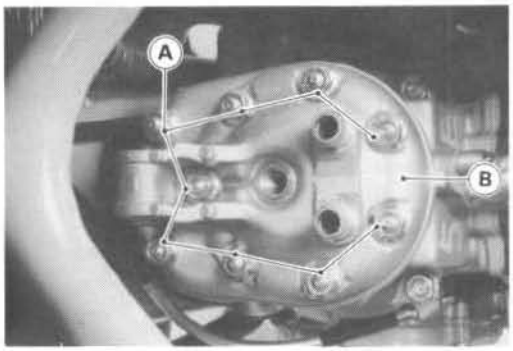
★If cylinder compression is lower than the usable range, check the following:

1. Piston/cylinder clearance, piston seizure.
2. Gas leakage around the cylinder head – replace the damaged gasket and check the cylinder head for warping.
3. Piston ring, piston ring groove.

Removal



- Drain the coolant (see Coolant Change in the Cooling System chapter).
- Remove:
  Side Covers
  Seat
  Radiator Covers
  Fuel Tank
  Muffler
  Water Hoses
  Spark Plug [A]
  Engine Mounting Brackets [B]



- Remove the cylinder head nuts [A], and take off the cylinder head [B] and gasket.

Installation Notes

- Replace the head gasket with a new one.
- Scrape out any carbon and clean the head with a high flash-point solvent.
- Check for a crust of minerals and rust in the head water jacket, and remove them if necessary.
- Torque the cylinder head nuts.

Torque – Cylinder Head Nuts: 25 N-m (2.5 kg-m, 18 ft-lb)

- Torque the engine mounting bracket nuts.

Torque – Engine Mounting Bracket Nuts:
Frame side : 26 N-m (2.7 kg-m, 19.5 ft-lb)
Engine side : 34 N-m (3.5 kg-m, 25 ft-lb)

- Torque the spark plug.

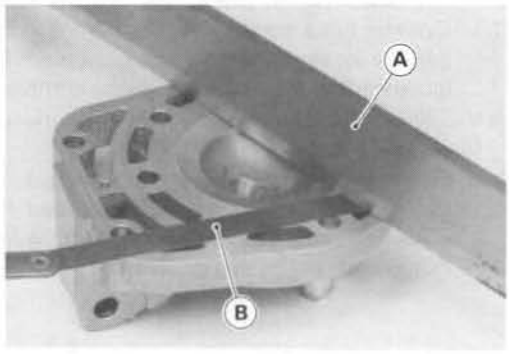
Torque – Spark Plug: 27 N-m (2.8 kg-m, 20 ft-lb)

Warp Inspection

- Lay a straightedge [A] across the lower surface of the head at several different points, and measure warp by inserting a thickness gauge [B] between the straightedge and the head.

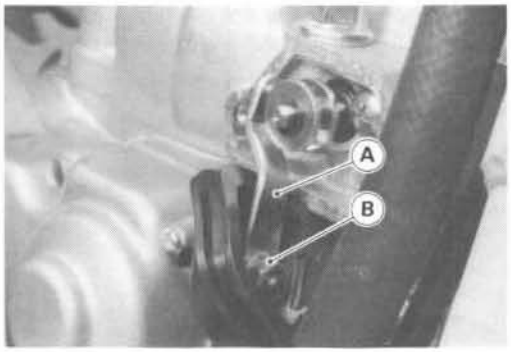
★If warp exceeds the service limit, repair the mating surface. Replace the cylinder head if the mating surface is badly damaged.

Cylinder Head Warp
Service Limit: 0.03 mm

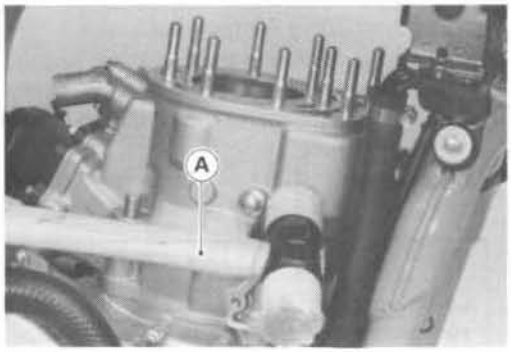


Cylinder, Piston

Cylinder Removal



- Drain the coolant.
- Remove the cylinder head (see Cylinder Head Removal).
- For KX125 model; take off the clutch cable lower end at the clutch release lever.
- Loosen the clamps, and pull the carburetor out of the holder and the air cleaner duct.
- Remove the carburetor holder mounting bolts, and take out the holder and reed valve.
- Remove the right cover at the cylinder.
- Remove the shaft lever nut [B], and take off the shaft lever [A].

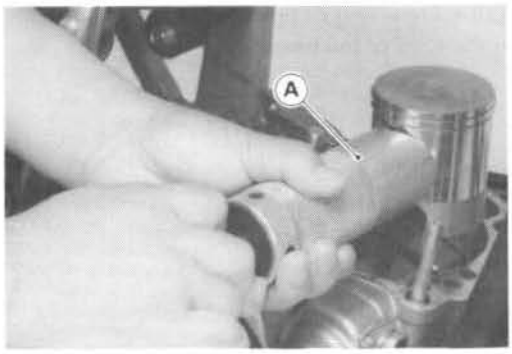


- Remove the cylinder nuts.
- Lift off the cylinder, and remove the cylinder base gasket. If necessary, tap lightly around the base of the cylinder with a plastic mallet [A], taking care not to damage the cylinder.
- Remove the exhaust valves from the cylinder (see Exhaust Valve Removal).

Cylinder Installation Notes

- Scrape any carbon out of the exhaust port.
- Check for a crust of minerals and rust in the cylinder water jacket, and remove them if necessary.
- Replace the cylinder base gasket with a new one.
- Apply engine oil to the piston surface, piston rings and cylinder bore.
- Check to see that the pin in each piston ring groove is between the ends of the piston ring, and fit the base of the cylinder over each ring, pressing in on opposite sides of the ring as necessary. Be certain that the rings do not slip out of position.
- Torque the following:

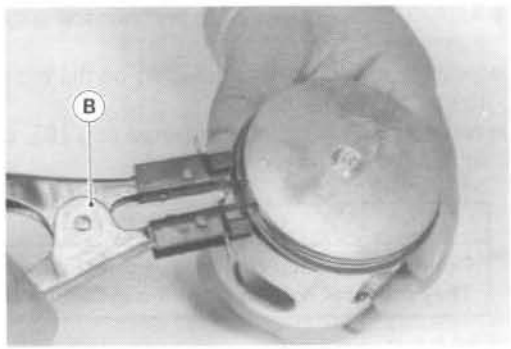
Torque – Cylinder Nut:
KX125: 25 N-m (2.5 kg-m, 18 ft-lb)
KX250: 34 N-m (3.5 kg-m, 25 ft-lb)
Shaft Lever Nut: 8.8 N-m (0.9 kg-m, 78 in-lb)



Piston Removal

- Remove the cylinder.
- Stuff a clean cloth into the crankcase opening around the connecting rod so that no parts will fall into the crankcase.
- Remove one of the piston pin snap rings with needle nose pliers.
- Remove the piston by pushing the piston pin out the side from which the snap ring was removed.

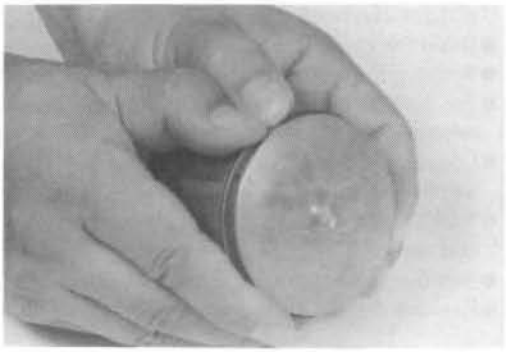
Special Tool – Piston Pin Puller Assembly: 57001-910 [A]



- Remove the piston ring (s).

Special Tool – Piston Ring Pliers: 57001-115 [B]

○If the special tool is not available, carefully spread the ring opening with your thumbs and then push up on the opposite side of the ring to remove it.



Piston Installation Notes

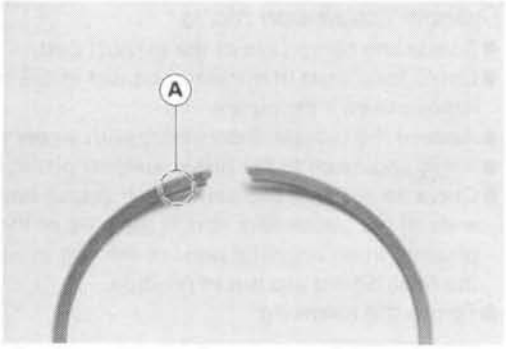
- Stuff a clean cloth into the crankcase opening around the connecting rod so that no parts will fall into the crankcase.
- Scrape off any carbon of the piston, then lightly polish the piston with fine emery cloth.
- Clean carbon and dirt out of the piston ring groove using a suitable tool.

CAUTION
Carbon particles can be very abrasive to piston rings. Don't allow such particles to fall onto the cylinder walls.

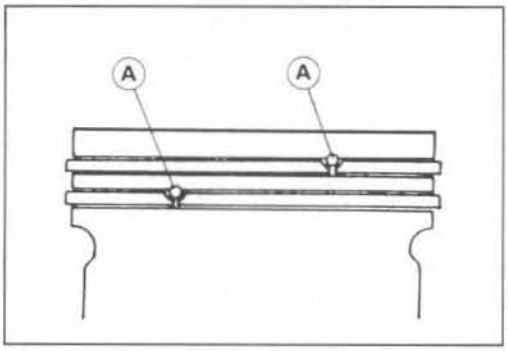
- When installing the piston ring on the piston, note the following:

○If installing the piston ring by hand, first fit one end of the piston ring against the pin in the ring groove, spread the ring opening with the other hand and then slip the ring into the groove.

○The piston ring have a "R" mark [A] on it upper surface.

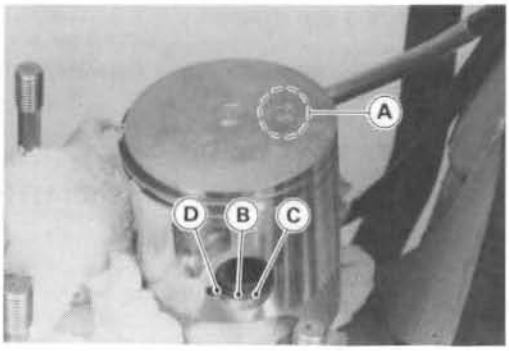


○Install the ring so that the pin [A] in the piston ring groove is between the ends of the piston ring.



- Apply 2-stroke engine oil to the connecting rod needle bearing and the piston pin.
- Install the piston. The arrow [A] on the top of the piston must point toward the front.
- When installing a piston pin snap ring [B], compress it only enough to install it and no more.

CAUTION
Do not reuse snap rings, as removal weakens and deforms them. They could fall out and score the cylinder wall.

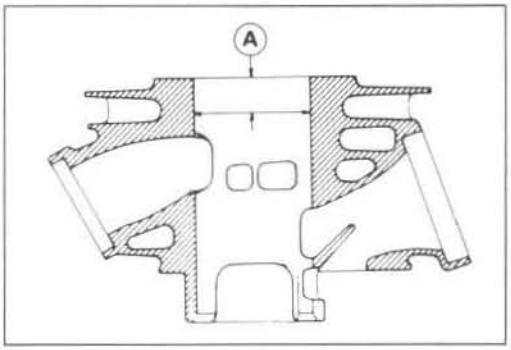


● Fit a new piston pin snap ring into the side of the piston so that the ring opening [C] does not coincide with the notch [D] in the edge of the piston pin hole.

Cylinder Wear Inspection

NOTE

○ *Measure the cylinder inside diameter when the cylinder is cold (room or ambient temperature).*



● Inspect the inside of the cylinder for scratches and abnormal wear.
★ If the cylinder is damaged or badly worn, replace it with a new one.
● Since there is a difference in cylinder wear in different directions, take a side-to-side and a front-to-back measurement shown in the figure.
★ If any of the cylinder inside diameter measurements exceeds the service limit, the cylinder must be replaced with a new one since the ELECTRO FUSION cylinder cannot be bored or honed.

Cylinder Inside Diameter
KX125:

Standard:	**54.000 – 54.015 mm, and less than 0.01 mm difference between any two measurements.**
Service Limit:	**54.08 mm, or more than 0.05 mm difference between any two measurements.**

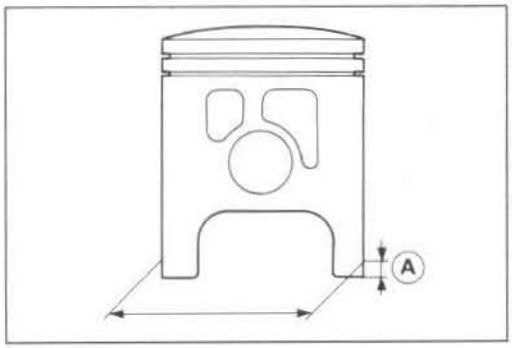
KX250:

Standard:	**66.400 – 66.415mm, and less than 0.01 mm different between any two measurements.**
Service Limit:	**66.48 mm, or more than 0.05mm difference between any two measurements.**

(A): KX125 – 15 mm
KX250 – 30 mm

Piston Diameter Measurement

● Measure the outside diameter of the piston 18.0 mm (KX125) or 20.5 mm (KX250) [A] up from the bottom of the piston at a right angle to the direction of the piston pin.
★ If the measurement is under the service limit, replace the piston.



Piston Diameter
KX125:

Standard:	**53.926 – 53.941 mm**
Service Limit:	**53.78 mm**

KX250:

Standard:	**66.323 – 66.338 mm**
Service Limit:	**66.17 mm**

(A): KX125 – 5 mm
KX250 – 15 mm

Piston/Cylinder Clearance

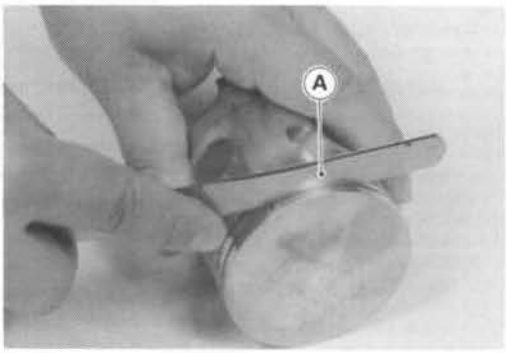
The piston-to-cylinder clearance is measured whenever a piston or cylinder is replaced with a new one. The standard piston-to-cylinder clearance must be adhered to whenever the cylinder is replaced.

If only a piston is replaced, the clearance may exceed the standard slightly. But it must not be less than the minimum, in order to avoid piston seizure.

The most accurate way to find the piston clearance is by making separate piston and cylinder diameter measurements and then computing the difference between the two values. Measure the piston diameter as just described, and measure the cylinder diameter at the very bottom of the cylinder.

Piston/Cylinder Clearance
Standard:
KX125: 0.069 – 0.079 mm
KX250: 0.072 – 0.082 mm

Piston Ring, Piston Ring Groove Inspection



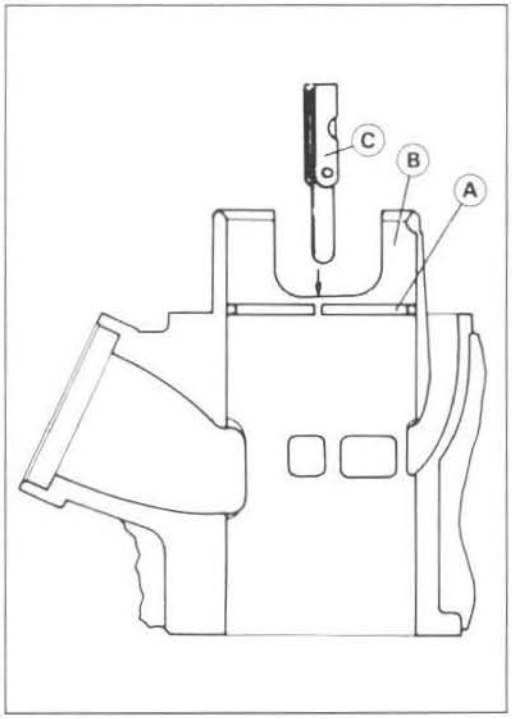
- Visually inspect the piston rings and the piston ring grooves.
- ★If the rings are worn unevenly or damaged, they must be replaced.
- ★If the piston ring grooves are worn unevenly or damaged, the piston must be replaced and fitted with new rings.
- Check for uneven groove wear by inspecting the ring seating.
- ★The rings should fit perfectly parallel to the groove surfaces. If not, the piston must be replaced.
- With the piston ring in its groove, make several measurements with a thickness gauge [A] to determine piston ring/groove clearance.
- ★If the clearance exceeds the service limit, measure the thickness of the piston ring.
- ★If the ring has worn down to less than the service limit, replace the ring; if the groove width exceeds the service limit, replace the piston.

Piston Ring/Groove Clearance
Standard: **0.04 ~ 0.08 mm**
Service Limit: **0.18 mm**

Piston Ring Thickness
KX125:
Standard: **0.97 ~ 0.99 mm**
Service Limit: **0.9 mm**
KX250:
Standard: **1.17 ~ 1.19 mm**
Service Limit: **1.10 mm**

Piston Ring Groove Width
KX125:
Standard: **1.03 ~ 1.05 mm**
Service Limit: **1.10 mm**
KX250:
Standard: **1.23 ~ 1.25 mm**
Service Limit: **1.30 mm**

Piston Ring End Gap Inspection



- Place the piston ring [A] inside the cylinder [B], using the piston to locate the ring squarely in place.
- Set it close to the bottom of the cylinder, where cylinder wear is low.
- Measure the gap between the ends of the ring with a thickness gauge [C].

★If the gap is wider than the service limit, the ring is overworn and must be replaced.

Piston Ring End Gap

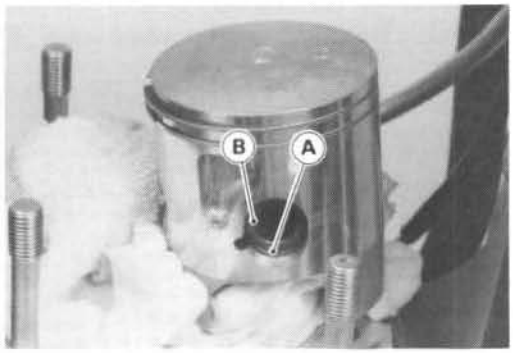
KX125:

Standard:	**0.25 ~ 0.45 mm**
Service Limit:	**0.90 mm**

KX250:

Standard:	**0.25 ~ 0.45 mm**
Service Limit:	**0.75 mm**

Piston, Piston Pin, Connecting Rod Wear Inspection



- Visually inspect the snap ring [A] still fitted in place.

★If the ring shows weakness or deformation, replace the ring. Also if the pin hole groove shows excessive wear, replace the piston.

- Measure the diameter of the piston pin [B] with a micrometer.

★If the piston pin diameter is less than the service limit at any point, replace the piston pin.

- Using a cylinder gauge, measure the diameter of both of piston pin holes in the piston and the inside diameter of the connecting rod small end.

★If either piston pin hole diameter exceeds the service limit, replace the piston.

★If the connecting rod small end inside diameter exceeds the service limit, replace the crankshaft assembly.

Piston Pin Diameter

KX125:

Standard:	**15.995 ~ 16.000 mm**
Service Limit:	**15.96 mm**

KX250:

Standard:	**17.995 ~ 18.000 mm**
Service Limit:	**17.96 mm**

Piston Pin Hole Diameter

KX125:

Standard:	**16.000 ~ 16.020 mm**
Service Limit:	**16.07 mm**

KX250:

Standard:	**18.000 ~ 18.020 mm**
Service Limit:	**18.07 mm**

Small End Inside Diameter

KX125:

Standard:	**21.003 ~ 21.014 mm**
Service Limit:	**21.05 mm**

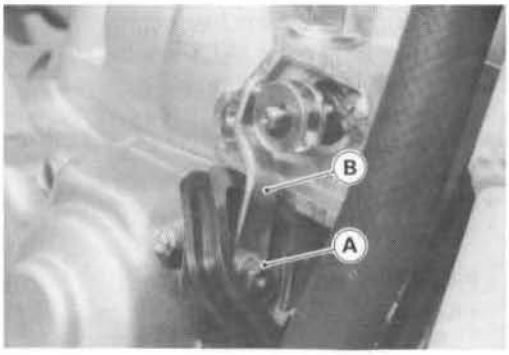
KX250

Standard:	**22.003 ~ 22.012 mm**
Service Limit:	**22.05 mm**

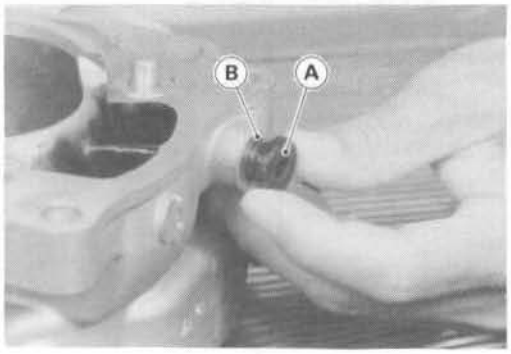
Exhaust Valve (KIPS)

Removal

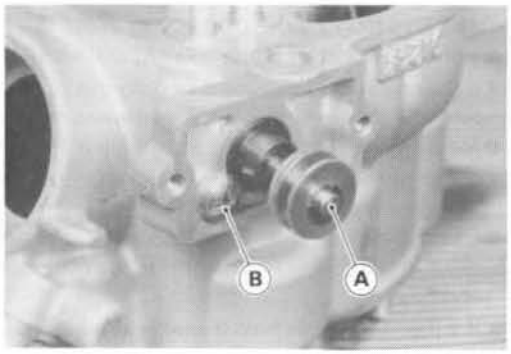
- Remove:
  Carburetor
  Cylinder Head
- Remove the right cover at the cylinder.
- Remove the shaft lever nut [A], and take off the shaft lever [B].
- Remove the cylinder (see Cylinder Removal).



- Turn the cylinder up side down.
- Remove the plug [A] and the gasket [B] at the left side of the cylinder.



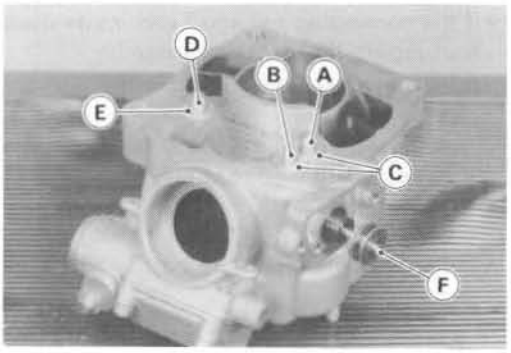
- Pull out the operating rod [A] as far as it goes.
- Remove the operating rod retaining screw [B].



- Remove the exhaust valve in accordance with the following procedure.

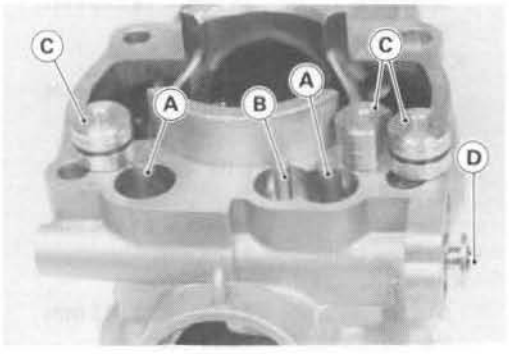
KX125:

- ○ Lift up and remove the right exhaust valve [A] with idle gear [B] and remove the valve guides [C].
- ○ Lift up the left exhaust valve [D], and pull out the operating rod [F].
- ○ Take out the left exhaust valve with valve guide [E].



KX250:

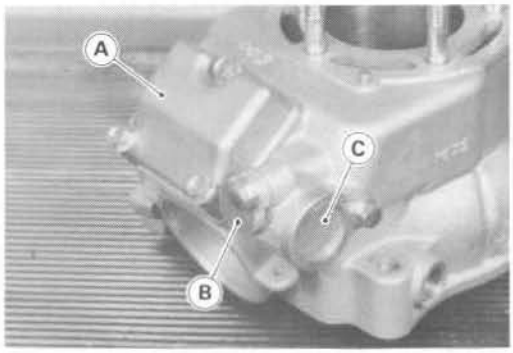
- ○ Remove the idle gear [B].
- ○ Lift up the exhaust valves [A], and remove the valve guides [C].
- ○ Lift up the exhaust valves, and pull out the operating rod [D]. Then take out the exhaust valves.



● Remove the main exhaust valve in accordance with the following procedure.

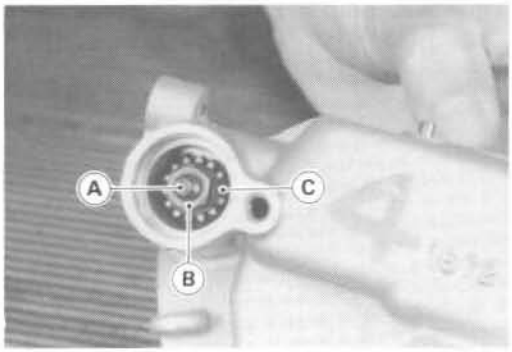
KX125:

● Remove the main valve cover [A], main valve rod cover [B] and main shaft cover [C] from the cylinder.

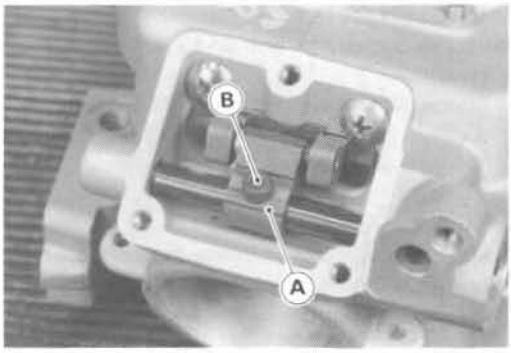


● Remove the main shaft nut [B] from the main shaft [A], and pull out the main valve gear [C].

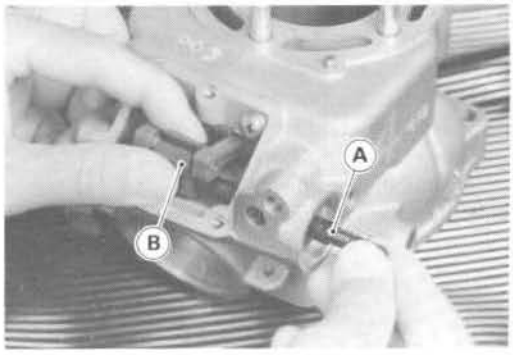
CAUTION
Main shaft nut has left-hand threads.



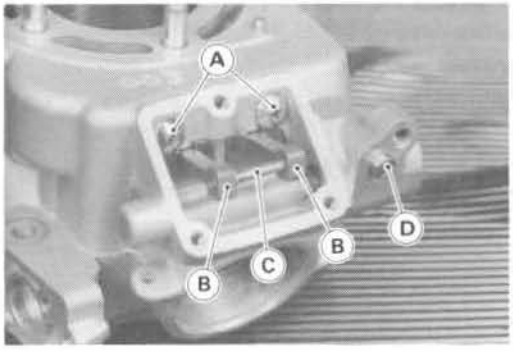
● Unbolt the Allen bolt [B] from the main lever [A].



● Position the main exhaust valve full open, and pull out the main shaft [A].
● Set the main exhaust valve full closed position, and remove the main lever [B].

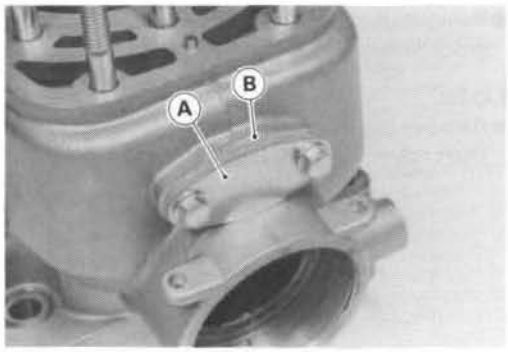


● Unscrew the two main exhaust valve retaining screws [A].
● Take out the pin [C] from the main exhaust valves [B].
● Pull out the main exhaust valves and main valve rod [D] from the cylinder.

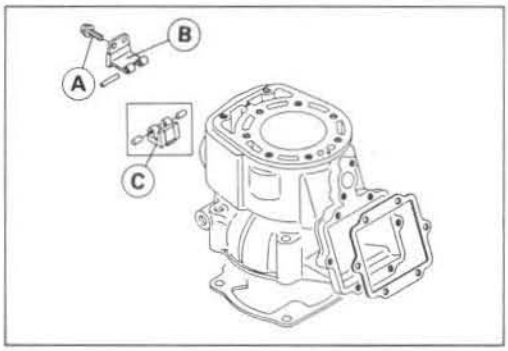


KX250:

● Remove the main exhaust valve cover bolts, and remove the cover [A] and gasket [B].



● Remove the mounting bolts [A], and remove the holder [B] and main exhaust valve [C].



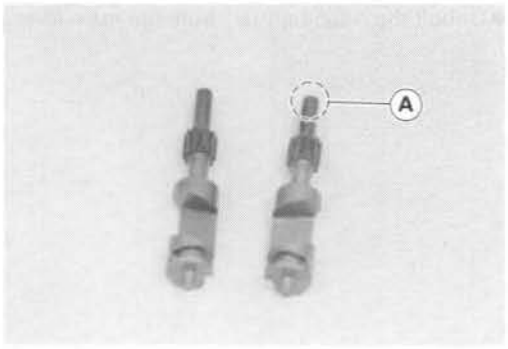
Installation Notes

● Scrape out any carbon and clean the valves with a high flash-point solvent.

● Check the following for signs of damage:
Exhaust Valves and Valve Operating Rod
Oil Seal on Rod Seal Plug
O-rings
Gaskets

★ If necessary, replace them with new ones.

● For KX250 model, be careful not to mix up the right and left exhaust valves. The right valve has an identifying groove [A].



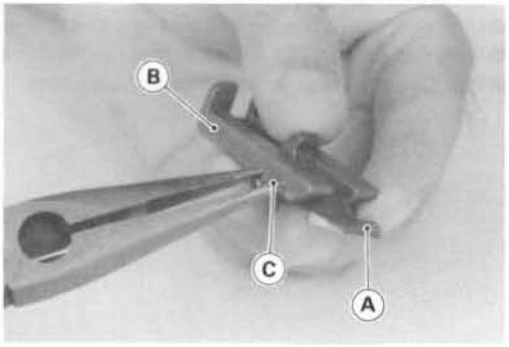
● Apply a 2-stroke engine oil to the following:
Exhaust Valve Upper and Lower Journals
Exhaust Valve Pinions
Valve Guides (inside)
Valve Operating Rod Journals
Valve Operating Rod Rack
Main Exhaust Valve Parts

● Apply a high temperature grease to the oil seal lip on the operating rod.

Adjust the exhaust valve position in accordance with the following procedure.

KX125:

● Install each small main exhaust valve [A] on the valve holder [B] with pin [C].

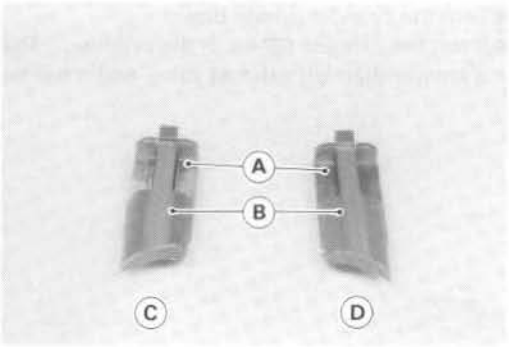


● Put the main exhaust valves [B] on the groove of the valve holder [A].

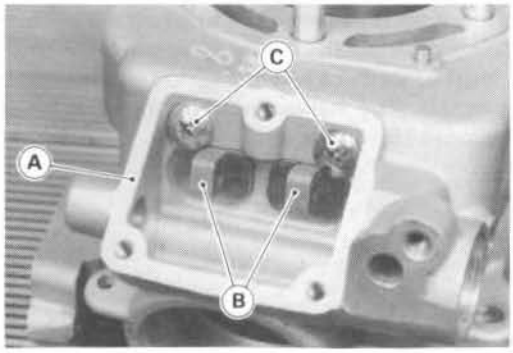
NOTE

○ *Be careful not to mix up the right and left main exhaust valves.*

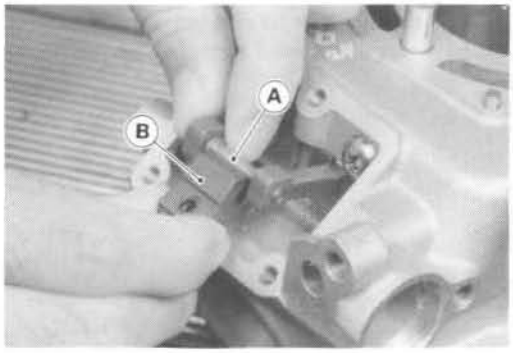
C. Left Main Exhaust Valve
D. Right Main Exhaust Valve



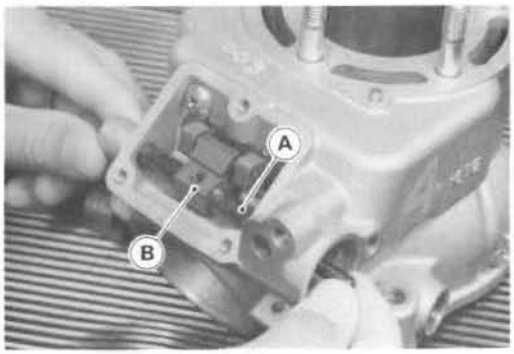
● Insert the left and right main exhaust valve sets [B] into their holes in the cylinder [A].
● Install the retaining screws [C] securely.
● Check that the left and right main exhaust valves slide smoothly.



● Put the pin [A] in the left and right main exhaust valve holes.
● Fit the main lever [B] to the pin.



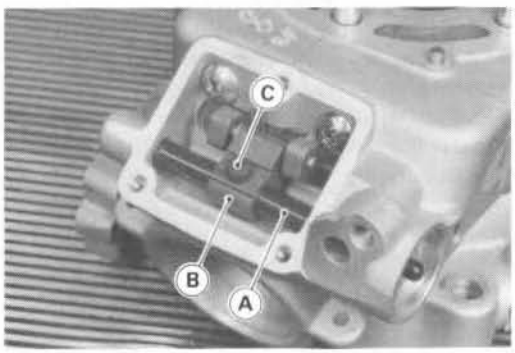
● Insert the main shaft [A] in the hole of the left upper end at the cylinder and through the hole in the main lever [B]. Then put the main shaft into the cylinder hole.



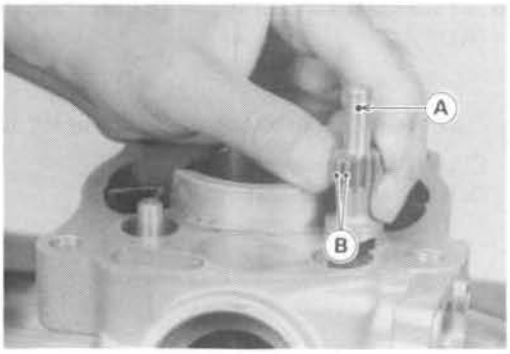
● Fix the main lever [B] to the main shaft [A] with the Allen bolt [C].

Torque – Allen Bolt : 3.9 N-m (0.4 kg-m, 35 in-lb)

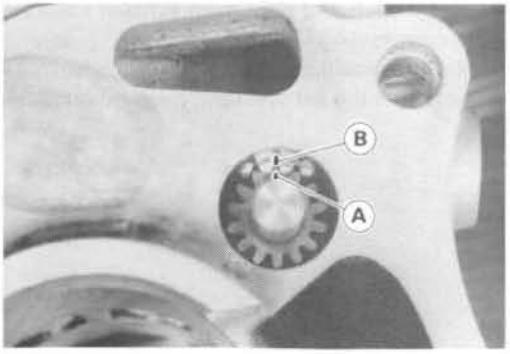
● Check that the main exhaust valves slide smoothly.



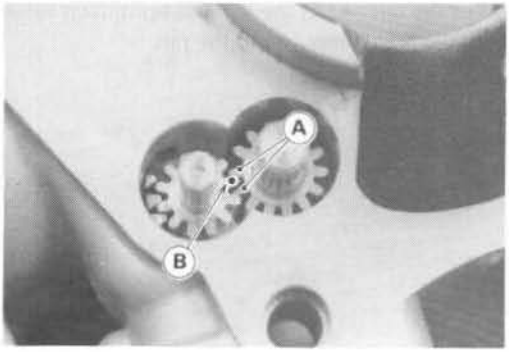
●Turn the cylinder upside down.
●Insert the exhaust valves in the cylinder. The right exhaust valve [A] is smaller than left exhaust valve, and it has two marked teeth [B].



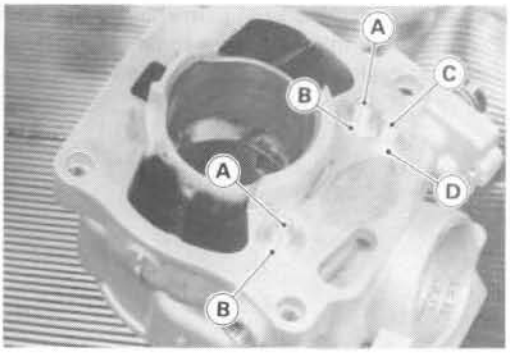
●Insert the operating rod and adjust the exhaust valve position.
○Engage the left exhaust valve pinion with the rod rack so that the marked tooth [A] on the pinion is positioned toward the front of the engine. The marked tooth on the valve pinion should align with the groove [B] on the rod.



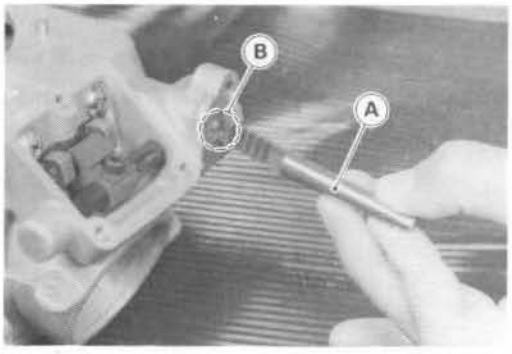
○Install the idle gear so that the punch mark [B] on the idle gear pinion is between the marked teeth [A] on the right exhaust valve pinion.



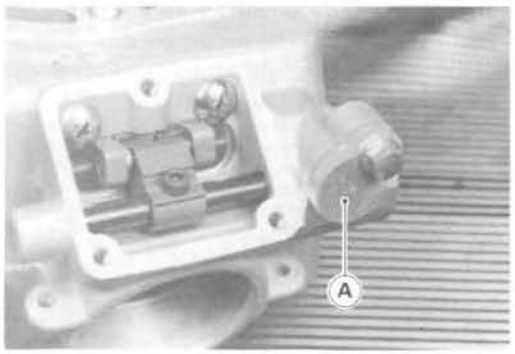
●Mount the valve guides [B, D] on the exhaust valves [A] and idle gear [C].



●Turn the cylinder upside down.
●Push the operating rod seal plug into the cylinder until the O-ring portion.
●Pull out the operating rod as far as it goes.
●Install the main valve rod [A] in the cylinder so that grooved side [B] faces outward.



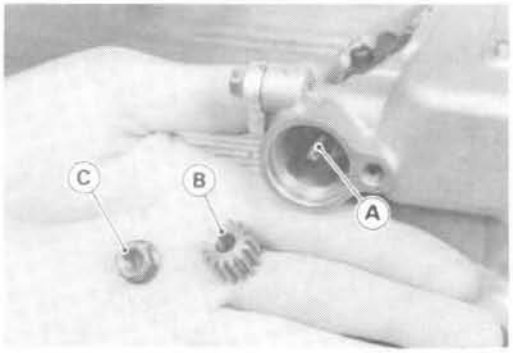
● Install the main valve rod cover [A] except gasket to prevent the main valve rod from moving.
● Position the main exhaust valves full open.
● Remove the main valve rod cover.
● With the main exhaust valves full open, check that the end of the main valve rod and cylinder are aligned [A].

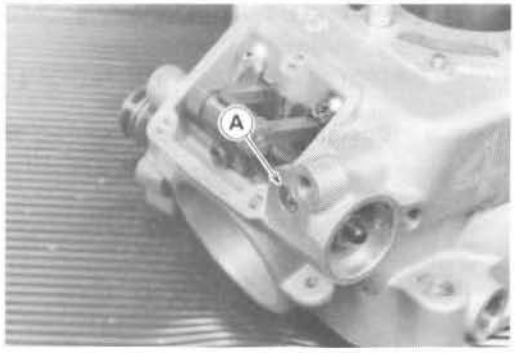


● Install the main valve gear [B] and nut [C] on the main shaft [A], and tighten the nut.

CAUTION
Main shaft nut has left-hand threads.

Torque – Main Shaft Nut: 8.8 N-m (0.9 kg-m, 78 in-lb)



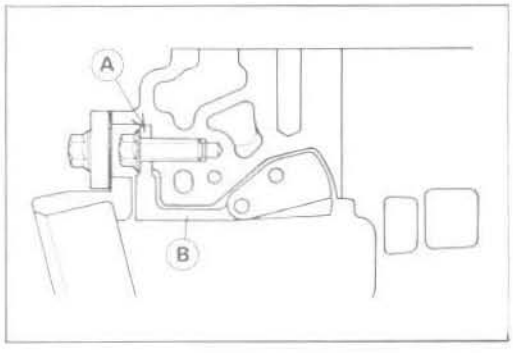


● Check the gasket on the left plug for signs of damage.
★ If necessary, replace it with a new one.
● Install the left plug on the cylinder.

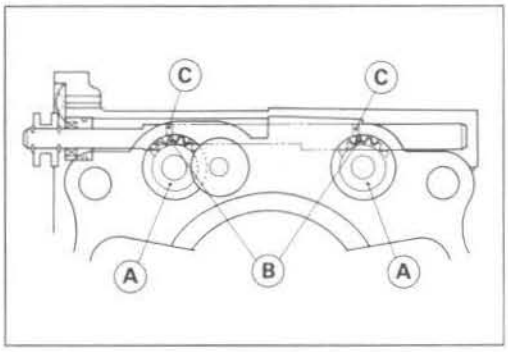
Torque – Operating Rod Left Side Plug: 22 N-m (2.2 kg-m, 16.0 ft-lb)

● Push the rod seal plug into the cylinder, and install the retaining screw securely.
● Install the main valve cover, main valve rod cover and main shaft cover on the cylinder.

KX250:
● Tighten the main exhaust valve bracket mounting bolts securely. Check that there is no gap [A] between the bracket [B] and cylinder.

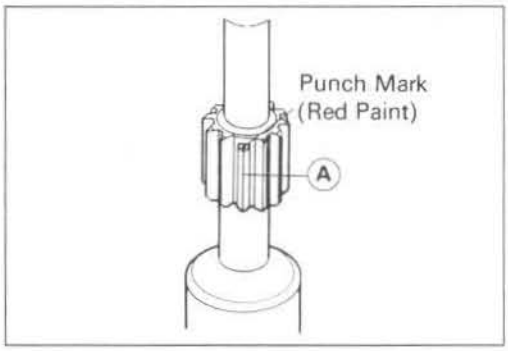


● Engage the valve pinions with the rod rack [A] so that the punch marks (Red Paint) [B] on the pinions are positioned toward the front of the engine. The punch marks on the valve pinions should align with the grooves [C] on the rod.



NOTE

○ *The marked tooth [A] is identified by its shape also.*



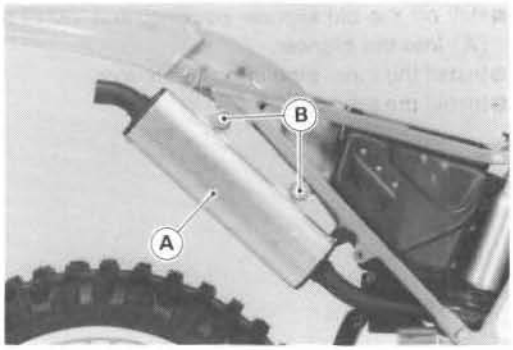
● Check the gasket on the left plug for signs of damage.
★ If necessary, replace it with a new one.
● Install the plug on the left side of the cylinder.

Torque – Operating Rod Left Side Plug: 15 N-m (1.5 kg-m, 11 ft-lb)

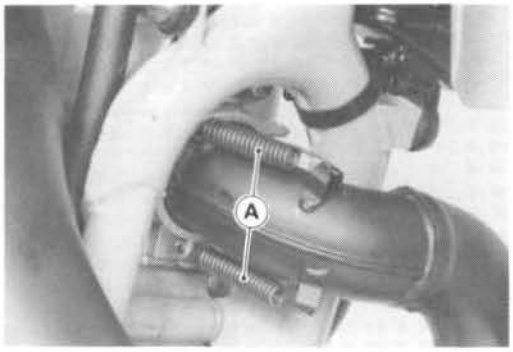
Muffler (Expansion Chamber, Silencer)

Removal

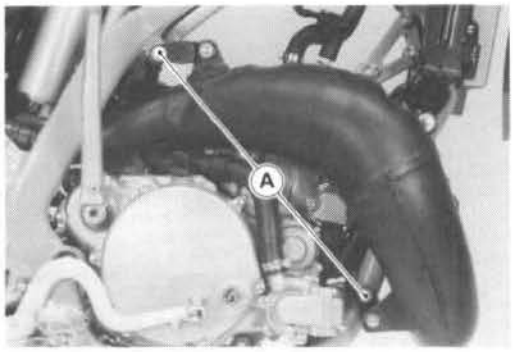
- Remove the right side cover.
- Remove the mounting bolts [B] and pull the silencer [A] off toward the rear.



- Remove the exhaust pipe holding springs [A].



- Remove the muffler damper mounting bolts [A], and pull off the expansion chamber toward the front.
- Remove the exhaust gasket.



Installation Notes

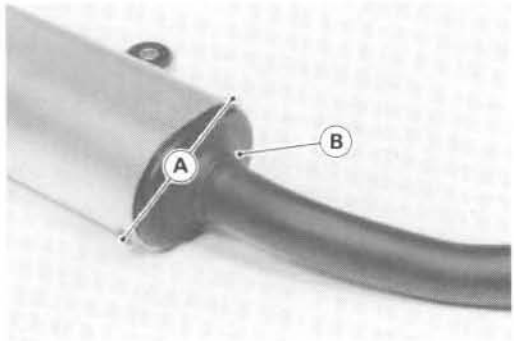
- Scrape any carbon out of the expansion chamber.
- Check the exhaust O-rings for signs of damage.

★If necessary, replace them with new ones.

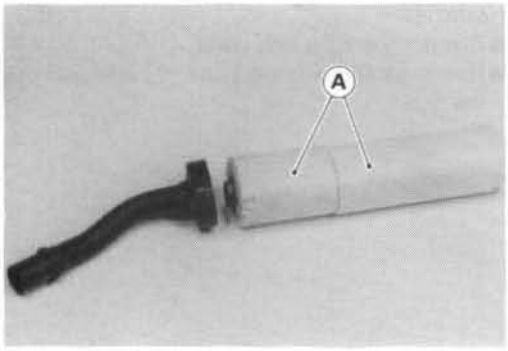
Silencer Packing Change

Replace the silencer packing if the exhaust noise becomes too loud or the engine performance drops.

- Remove the silencer.
- Remove the inner pipe mounting bolts [A], and pull the inner pipe [B] out toward the rear.



- Pull off the old silencer packing, and install the new silencer packing [A] into the silencer.
- Install the inner pipe into the silencer.
- Install the silencer.



Engine Right Side

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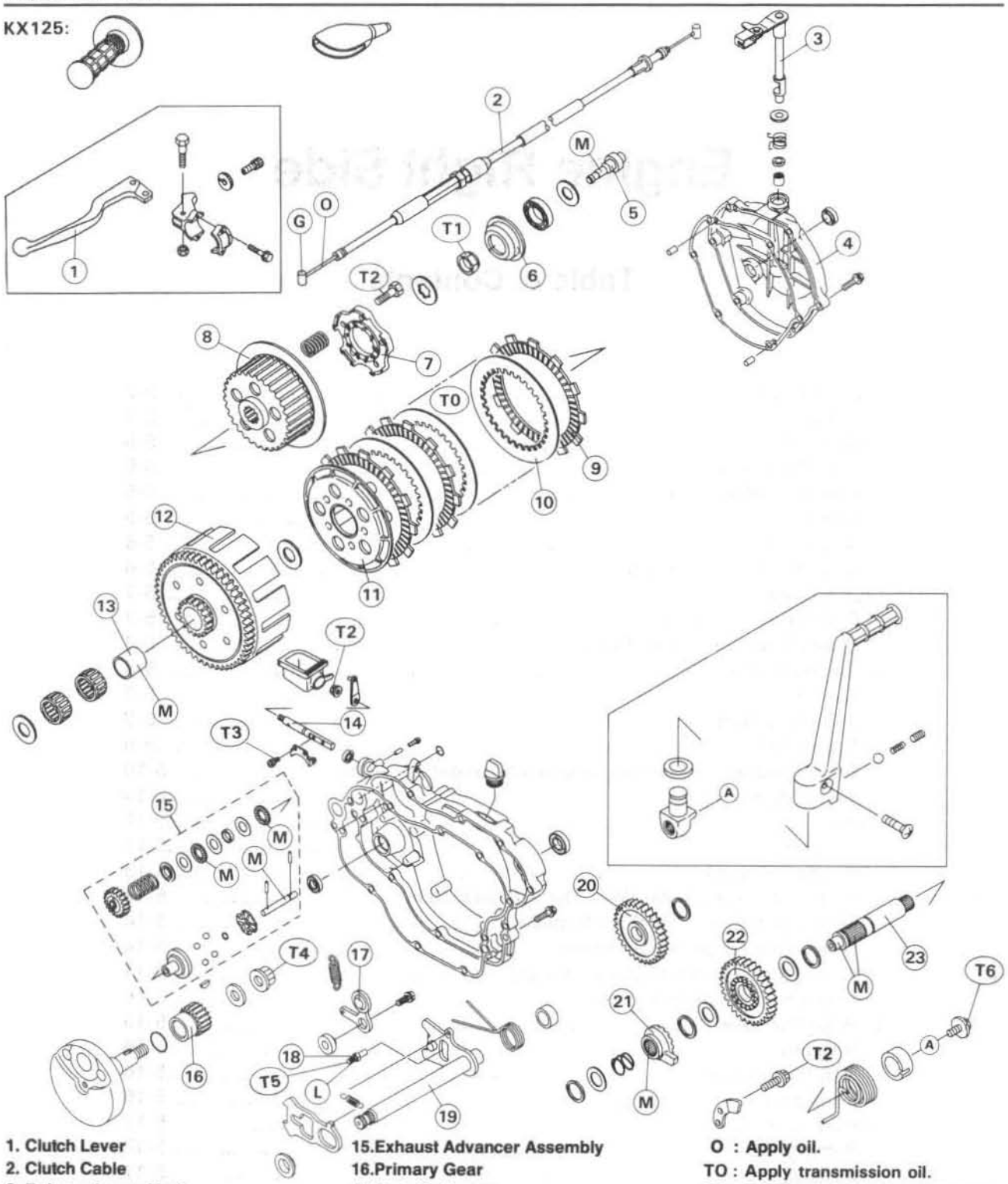
Exploded View

KX125:

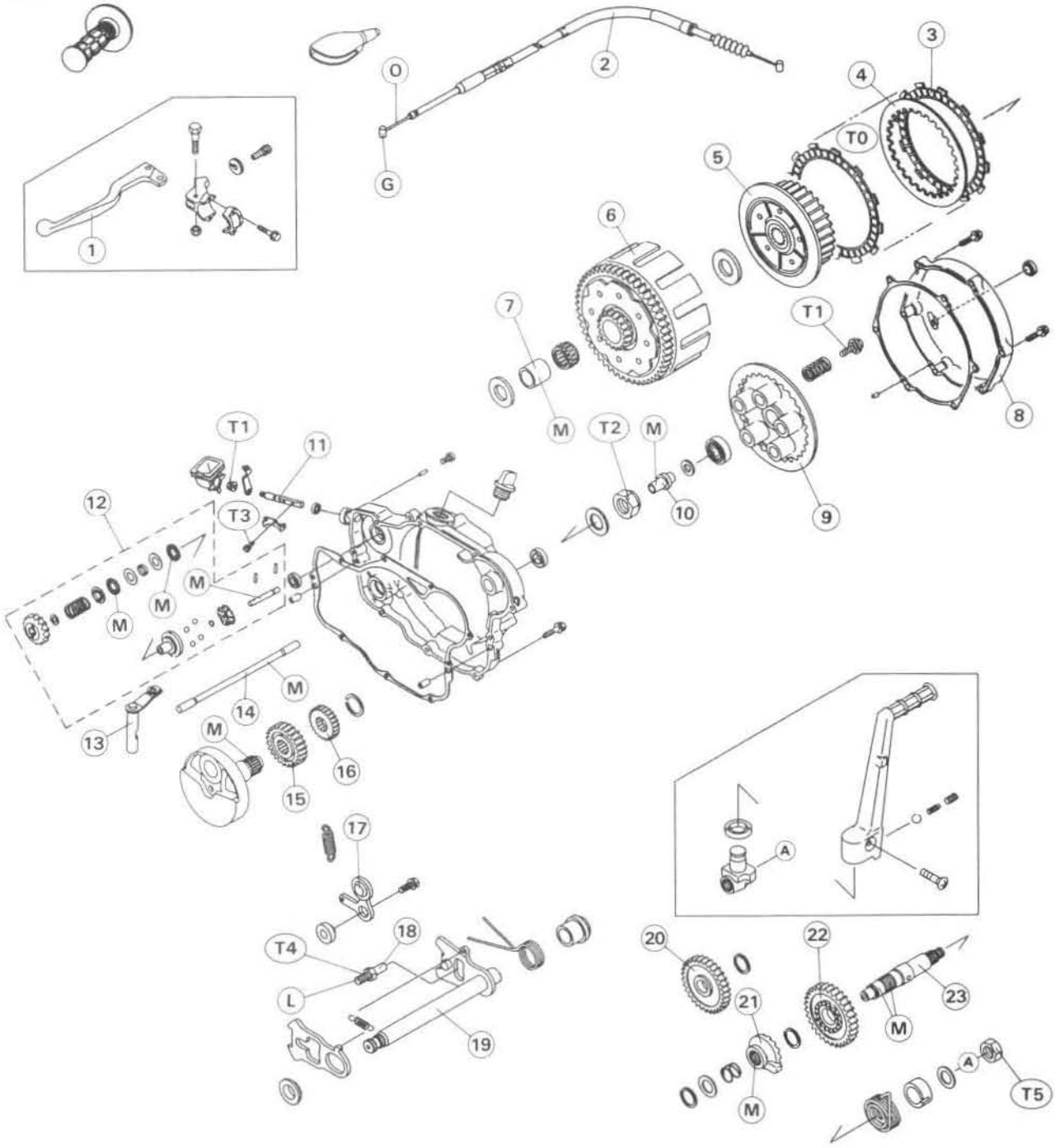


1. Clutch Lever
2. Clutch Cable
3. Release Lever Shaft
4. Clutch Cover
5. Clutch Pusher
6. Holder
7. Clutch Spring Holder
8. Clutch Hub
9. Friction Plate
10. Steel Plate
11. Clutch Wheel
12. Clutch Housing
13. Sleeve
14. Lever Shaft
15. Exhaust Advancer Assembly
16. Primary Gear
17. Gear Set Lever
18. Return Spring Pin
19. Shift Shaft
20. Kickstarter Idle Gear
21. Ratchet Gear
22. Kick Gear
23. Kick Shaft

L : Apply a non-permanent locking agent to the threads.
M : Apply molybdenum disulfide grease.
G : Apply high temperature grease.

O : Apply oil.
TO : Apply transmission oil.
T1 : 98 N-m (10.0 kg-m, 72 ft-lb)
T2 : 8.8 N-m (0.9 kg-m, 72 in-lb)
T3 : 3.9 N-m (0.4 kg-m, 35 in-lb)
T4 : 59 N-m (6.0 kg-m, 43 ft-lb)
T5 : 22 N-m (2.2 kg-m, 16 ft-lb)
T6 : 9.8 N-m (1.0 kg-m, 87 in-lb)

KX250:



1. Clutch Lever
2. Clutch Cable
3. Friction Plate
4. Steel Plate
5. Clutch Hub
6. Clutch Housing
7. Sleeve
8. Clutch Cover
9. Operating Plate
10. Clutch Pusher
11. Lever Shaft
12. Exhaust Advancer Assembly
13. Release Lever Shaft
14. Push Rod
15. Primary Gear
16. Water Pump Drive Gear
17. Gear Set Lever
18. Return Spring Pin
19. Shift Shaft
20. Kickstarter Idle Gear
21. Ratchet Gear
22. Kick Gear
23. Kick Shaft

G : Apply high temperature grease.
O : Apply oil.
TO : Apply transmission oil.
T1 : 8.8 N-m (0.9 kg-m, 78 in-lb)
T2 : 98 N-m (10 kg-m, 72 ft-lb)
T3 : 3.9 N-m (0.4 kg-m, 35 in-lb)
T4 : 22 N-m (2.2 kg-m, 16.0 ft-lb)
T5 : 49 N-m (5.0 kg-m, 36 ft-lb)
L : Apply a non-permanent locking agent to the threads.
M : Apply molybdenum disulfide grease.

Specifications

Item		Standard	Service Limit
Clutch:			
Lever free play		2 ~ 3 mm	---
Friction plate thickness		2.92 ~ 3.08 mm	2.8 mm
Steel plate thickness:			
KX125 :	Thick (1)	1.46 ~ 1.74 mm	1.36 mm
	Thin (6)	1.36 ~ 1.64 mm	1.26 mm
KX250 :		1.46 ~ 1.74 mm	1.36 mm
Friction plate warp		Not more than 0.15 mm	0.3 mm
Steel plate warp		Not more than 0.2 mm	0.3 mm
Clutch spring free length:			
	KX125	37.5 mm	36.0 mm
	KX250	35.0 mm	33.6 mm
Friction plate/clutch housing clearance:	KX125	0.10 ~ 0.60 mm	0.9 mm
	KX250	0.15 ~ 0.45 mm	0.8 mm

Special Tools – **Kick Shaft Oil Seal Guide: 57001-263**
Shift Shaft Oil Seal Guide: 57001-264
Flywheel Holder: 57001-1313
Clutch Holder: 57001-1243
Outside Circlip Pliers: 57001-144
Pressure Cable Luber: K56019-021

Clutch Cable

Due to friction plate wear and clutch cable stretch over a long period of use, the clutch must be adjusted in accordance with the Periodic Maintenance Chart.

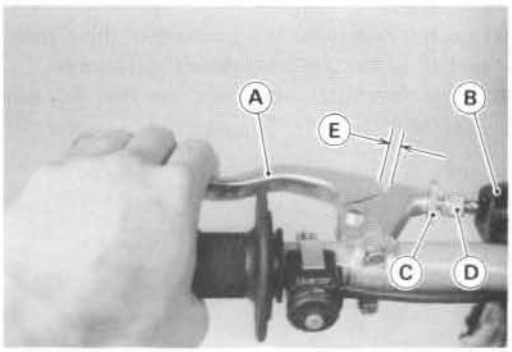
⚠WARNING

To avoid a serious burn, never touch the hot engine or exhaust chamber during clutch adjustment.

Free Play Check

- Slide the clutch lever dust cover [B] out of place.
- Check that the clutch cable upper end is fully seated in the adjuster [D].
- Check that the clutch lever [A] has 2 ~ 3 mm of play [E].

★If it does not, adjust the lever play



Free Play Adjustment

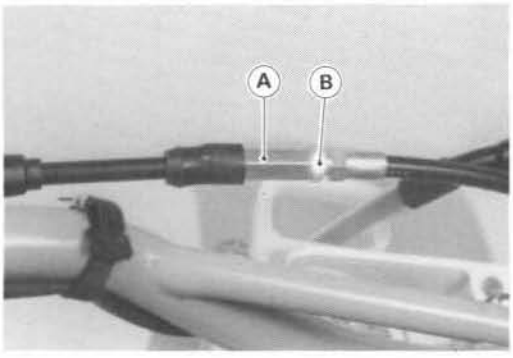
- Slide the clutch lever dust cover out of place.
- Loosen the knurled locknut [C].
- Turn the adjuster so that the clutch lever will have 2 ~ 3 mm of play.

NOTE

○*Be sure that the outer cable end at the clutch lever is fully seated in the adjuster at the clutch lever, or it could slip into the place later, creating enough cable play to prevent clutch disengagement.*

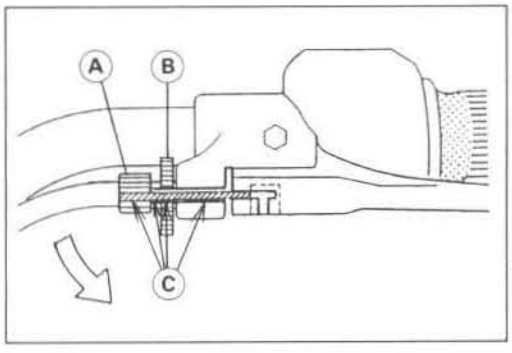
- Tighten the locknut.

- If it cannot be done, loosen the locknut [B] at the upper of the clutch cable, and turn the adjusting nut [A] so that clutch lever has 2 – 3 mm of play.
- After the adjustment is made, tighten the locknut, and start the engine and check that the clutch does not slip and that it releases properly.



Removal

- Slide the dust cover out of place.
- Loosen the locknut at the upper of the cable, and turn the adjusting nut to give the cable plenty of play.
- Loosen the knurled locknut [B] at the clutch lever, and screw in the adjuster [A].
- Line up the slots [C] in the clutch lever, knurled locknut, and adjuster, and then free the cable from the clutch lever.



● Free the clutch inner cable tip from the clutch release lever.

CAUTION
Do not remove the clutch release shaft unless it is absolutely necessary. If removed, the release shaft oil seal must be replaced with a new one.

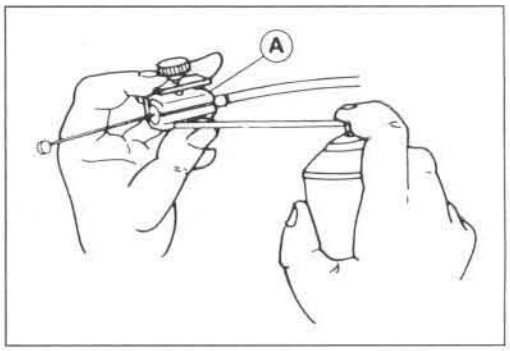
● Pull the clutch cable out of the frame.

Installation

● Run the clutch cable according to the Cable, Harness, Hose Routing section of the General Information chapter.
● Adjust the clutch cable (see Free Play Adjustment).

Lubrication and Inspection

● Lubricate the clutch cable using the pressure cable luber (special tool: K56019-021) [A] in accordance with the Periodic Maintenance Chart.
● With the cable disconnected at both ends, the cable should move freely within the cable housing (see General Lubrication in the Appendix chapter).

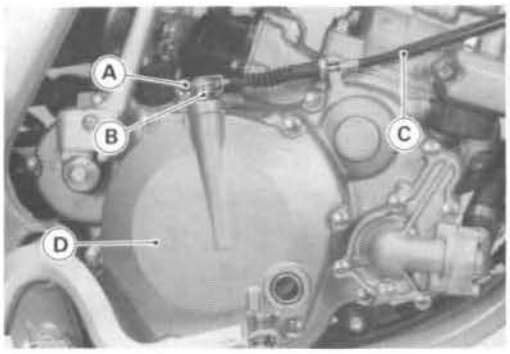


Clutch Cover

Clutch Cover Removal

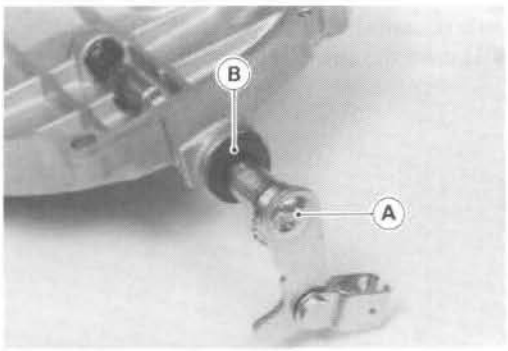
KX125:

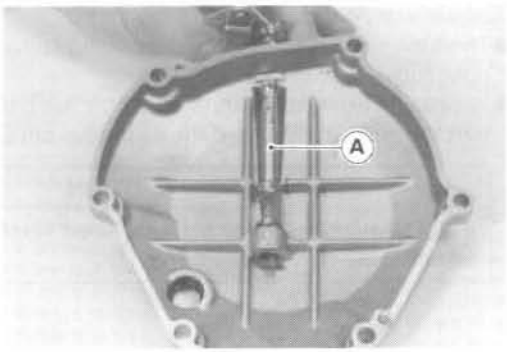
- Drain the transmission oil (see Transmission Oil Change in the Engine Bottom End/Transmission chapter).
- Loosen the locknut at the upper of the clutch cable, turn the adjusting nut to give the cable plenty of play, and swing the clutch cable out away from the clutch lever.
- Remove the lower end of the clutch cable [C] from the clutch release lever [A].
- Turn the clutch release lever toward the rear, and free the release shaft [B] from the clutch spring plate pusher.
- Unbolt the clutch cover bolts, and take off the clutch cover [D].



CAUTION

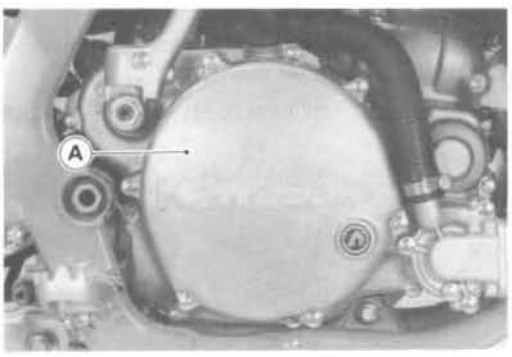
Do not remove the clutch release shaft [A] unless it is absolutely necessary. If removed, you must replace the oil seal [B] with a new one and apply high temperature grease liberally to the oil seal lip.





KX250:

- Drain the transmission oil (see Transmission Oil Change in the Engine Bottom End/Transmission chapter).
- Unbolt the clutch cover bolts, and take off the clutch cover [A].



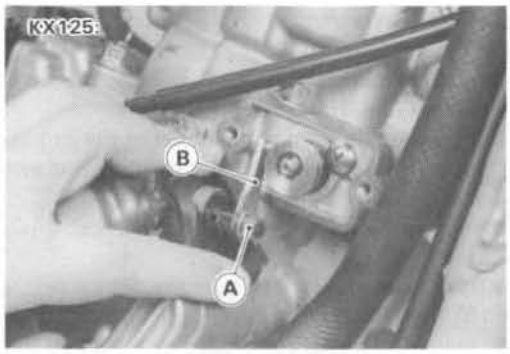
Clutch Cover Installation Notes

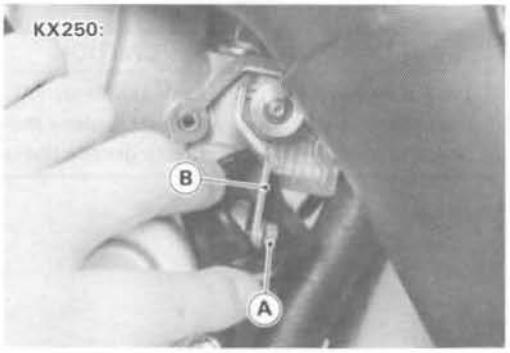
- There are two knock pins of the mating surfaces of the right engine cover and clutch cover.
- For KX125 model, turn the clutch release lever toward the rear.
- Replace the clutch cover gasket with a new one.
- For KX125 model, adjust the clutch cable (see Clutch Cable Free Play Adjustment).

Right Engine Cover

Removal

- Remove:
  Transmission Oil (drain)
  Coolant (drain)
  Cooling Hose Lower End
  Kick Pedal
  Clutch Cable Lower End (KX125 only)
  Brake Pedal
  Water Pump Cover
  Impeller
- Remove the KIPS cover from the right side of the cylinder.
- Remove the nut [A], and take off the shaft lever [B].
- For KX125 model, turn the clutch release lever toward the rear and free the release shaft from the clutch spring plate pusher.
- Remove the cover bolt, and take off the right engine cover and gasket.

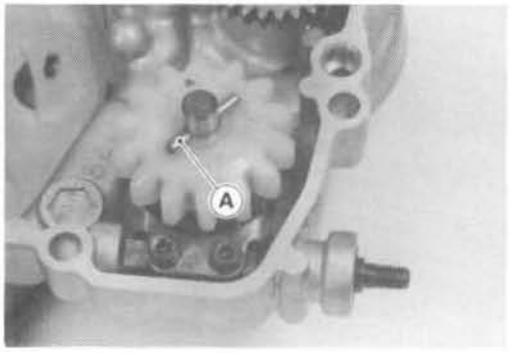




Installation Notes

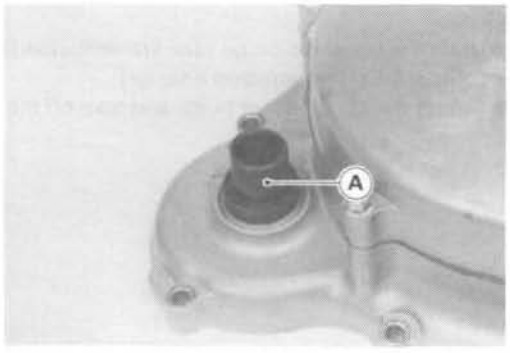
- There are two knock pins on the mating surfaces of the crankcase and right engine cover.
- In case the exhaust advancer assembly has been removed, install it and turn the gear so as to level the gear drive pin [A].

CAUTION
If the gear drive pin is not positioned level, it may fall out when installing the right engine cover.



- For KX125 model, turn the clutch release lever toward the rear.
- Install the right engine cover using the kick shaft oil seal guide [A] to protect the cover oil seal.

Special Tool – Oil Seal Guide, Φ16: 57001-263 [A]

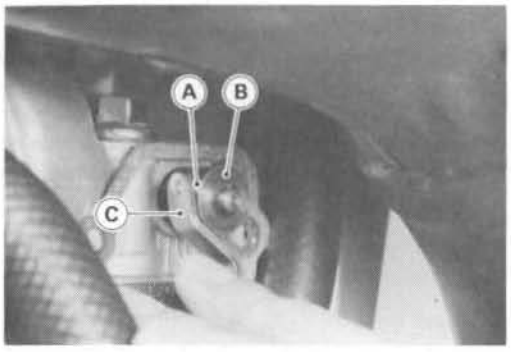


- Fit the shaft lever boss [A] in the groove of the valve operating rod collar [B], and install the shaft lever [C] on the lever shaft.
- Torque the shaft lever nut.

NOTE

○ *Tighten the shaft lever nut while holding the valve operating rod all the way in.*

Torque – Shaft Lever Nut: 8.8 N-m (0.9 kg-m, 78 in-lb)



● Torque the water pump impeller bolt.

Torque – Water Pump Impeller Bolt: 6.9 N-m (0.7 kg-m, 61 in-lb)

● Apply grease to the inside of the brake pedal boss.
● Torque the brake pedal mounting bolt.

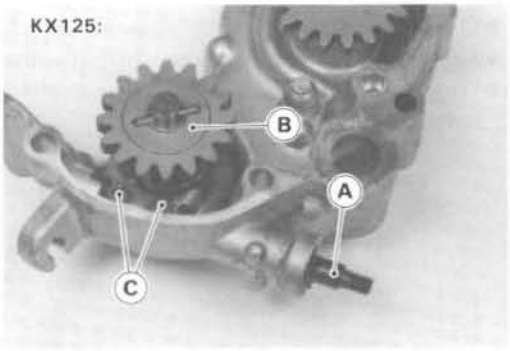
Torque – Brake Pedal Mounting Bolt: 8.8 N-m (0.9 kg-m, 78 in-lb)

● Fill the cooling system with coolant (see Coolant Filling in the Cooling System chapter).
● Fill the transmission with oil (see Transmission Oil Change in the Engine Bottom End/Transmission chapter).
● For KX125 model; adjust the clutch cable.
● Check the rear brake.

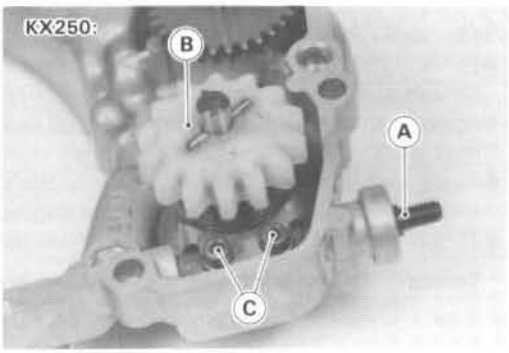
Disassembly

● Remove the right engine cover.
● Turn the lever shaft [A] to the right, and remove the exhaust advancer assembly [B].
● Remove the Allen bolts [C], and take off the advancer lever.

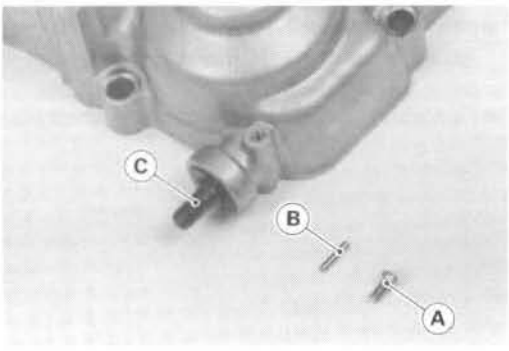
KX125:



KX250:



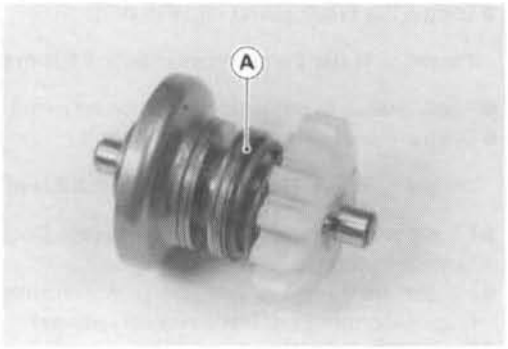
● Remove the plug screw [A] and take out the positioning pin [B].
● Pull the lever shaft [C] out of the right engine cover.
● Pull off the water pump shaft (see Water Pump Shaft Removal in the Cooling System chapter).



CAUTION
For KX125 model; do not remove the clutch release shaft unless it is absolutely necessary. If removed, you must replace the oil seal with a new one.

Exhaust Advancer Disassembly/Assembly Notes

●The exhaust advancer assembly [A] consists of the following parts.

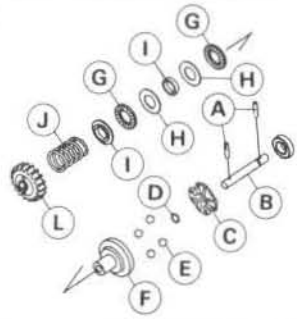


A. Pins
B. Rod
C. Guide
D. O-ring
E. Steel Balls
F. Holder
G. Needle Bearing
H. Spacer
I. Collar
J. Spring
K. Washer
L. Gear

KX250:

●Check the exhaust advancer assembly parts for damage.
★Any damaged parts should be replaced with new ones.
●When assembling, apply molybdenum disulfide grease between the rod and holder.

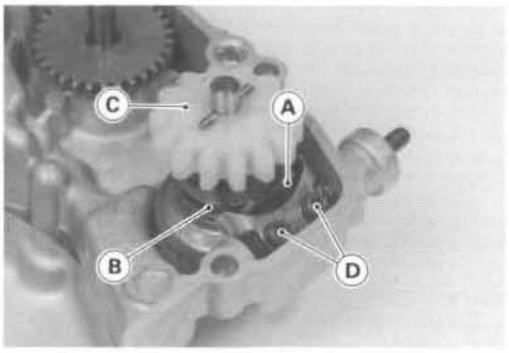
KX125:



Assembly Notes

●For KX125 model, in case the clutch release shaft has been removed, be sure to replace the oil seal with a new one.
●Apply high temperature grease to the oil seal lips before inserting the lever shaft.
●Apply molybdenum disulfide grease to the surface of the lever shaft, and insert the lever shaft into the right engine cover hole.
●Torque the advancer lever mounting Allen bolts [D].

Torque – Advancer Lever Mounting Allen Bolts: 3.9 N-m (0.4 kg-m, 35 in-lb)



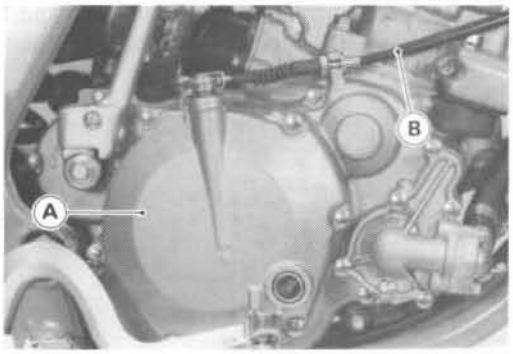
●Fit the advancer lever pin [A] into the groove [B] on the exhaust advancer assembly [C], and install the assembly in the engine cover while turning the lever shaft to the left.
●Tighten the exhaust valve advancer shaft plug screw securely.

Clutch

Removal

KX125:

- For KX125 model, remove the clutch cable [B].
- Remove the clutch cover [A].

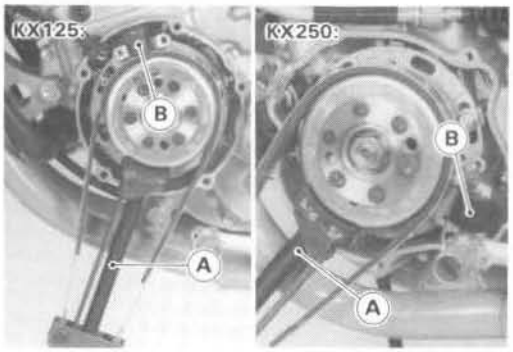


- Remove the magneto cover.
- Unscrew the pickup coil mounting screws and remove the pickup coil [B] from the stator.
- Install the flywheel holder [A] on the magneto flywheel.

NOTE

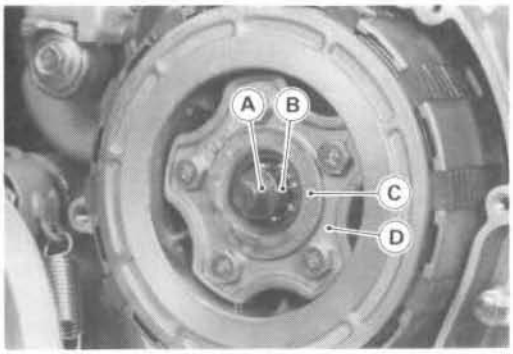
○ *Use the flywheel holder to prevent the clutch from rotating.*

Special Tool – Flywheel Holder: 57001-1313 [A]

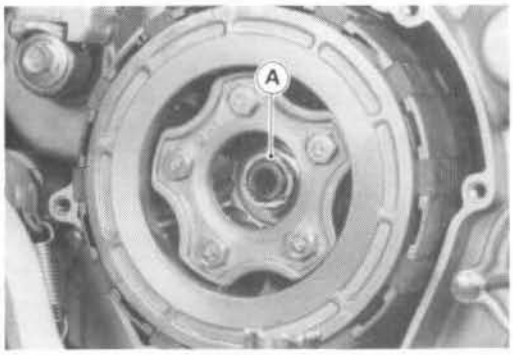


KX125:

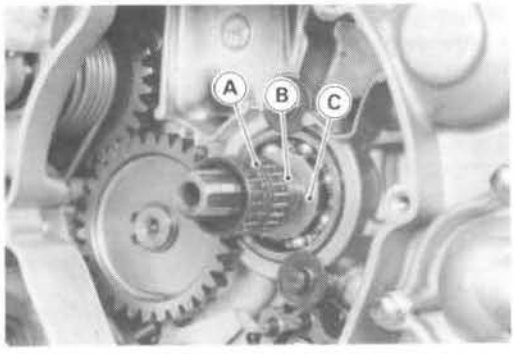
- Remove the flat washer [B] (if provided), clutch pusher [A] and spring plate pusher [C] in the spring plate [D].



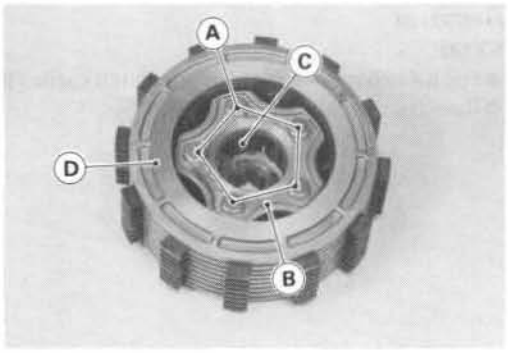
- Remove the clutch hub nut [A].



- Remove the clutch assembly, needle bearing [A], sleeve [B] and thrust washer [C].
- Separate the clutch gear assembly and clutch housing from the clutch assembly.

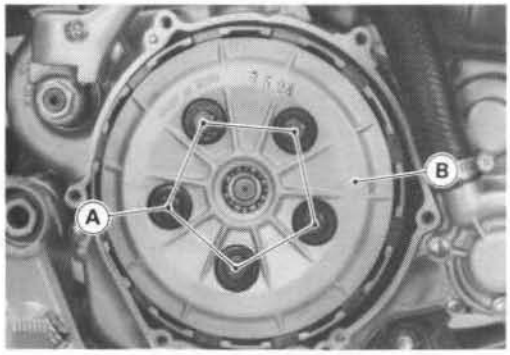


● Unscrew the clutch spring bolts [A], and remove the spring plate [B], spring [C], clutch hub [D], friction plates and steel plates from the clutch gear.

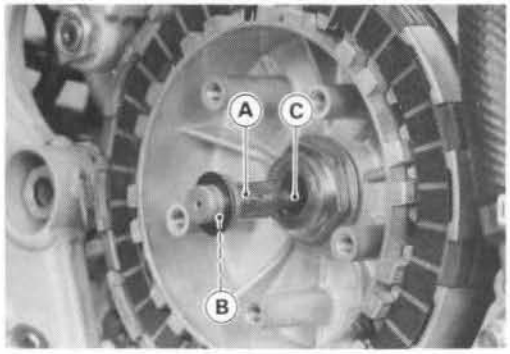


KX250:

● Remove the clutch spring bolts [A], spring, and clutch pressure plate [B].



● Remove the push rod holder [A], flat washer [B], friction plates, steel plates, and push rod [C].

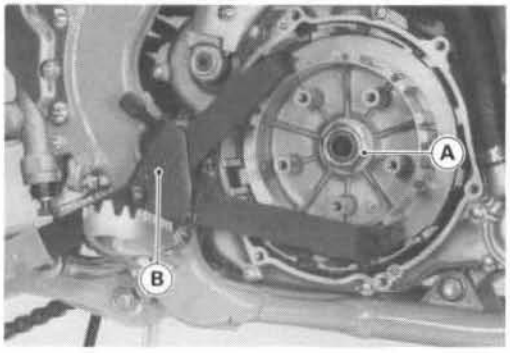


● Remove the clutch hub nut [A] and washer.

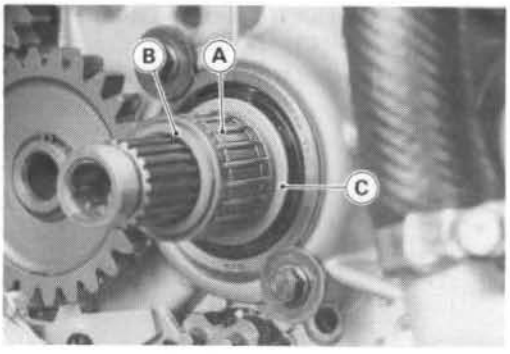
NOTE

○ *Use the clutch holder to prevent the clutch hub from rotating.*

Special Tool – Clutch Holder: 57001-1243 [B]



● Remove the clutch assembly, needle bearing [A], sleeve [B], and thrust washer [C].



Installation Notes

- Apply molybdenum disulfide grease to the outside of the sleeve.
- Apply transmission oil to the inside of the clutch housing gear and kickstarter driven gear.
- Install the friction plates and steel plates, starting with a friction plate and alternating them. Finish with a friction plate.

CAUTION
If dry steel plates and friction plates are installed, apply transmission oil to the surfaces of each plate to avoid clutch plate seizure.

- Torque the clutch hub nut.

Torque – Clutch Hub Nut: 98 N-m (10 kg-m, 72 ft-lb)

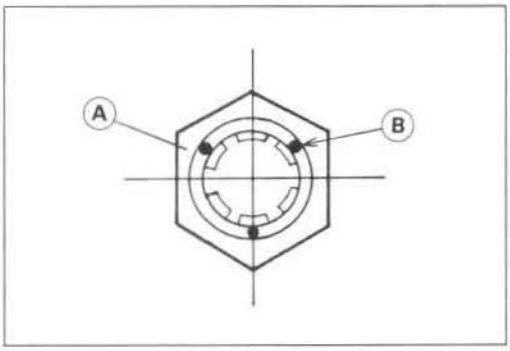
NOTE

○*Use the flywheel holder (KX125) or clutch holder (KX250) to prevent the clutch hub from rotating.*

Special Tool – Flywheel Holder: 57001-1313
Clutch Holder: 57001-1243

- Then stake the clutch hub nut [A] in three points [B] to the spline grooves to secure it in place.

CAUTION
When staking the nut, be careful not to hit the shaft itself. Such a shock could damage the shaft and/or bearings.



- Apply molybdenum disulfide grease to the rubbing portion of the clutch spring plate pusher.
- Torque the clutch spring bolts.

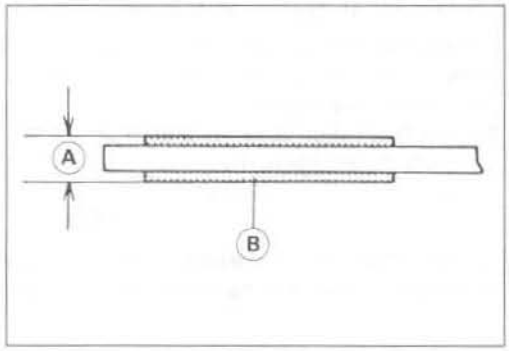
Torque – Clutch Spring Bolts: 8.8 N-m (0.9 kg-m, 78 in-lb)

NOTE

○*Use the flywheel holder to prevent the clutch from rotating.*

Special Tool – Flywheel Holder: 57001-1313

Friction and Steel Plates Wear, Damage Inspection



- Visually inspect the friction and steel plates to see if they show any signs of seizure, or uneven wear.

★If any plates show signs of damage, replace the friction plates and steel plates as a set.

- Measure the thickness [A] of the friction plates [B] and steel plates with vernier calipers.

★If they have worn past the service limit, replace them with new ones.

Friction Plate Thickness

Standard:	**2.92 ~ 3.08 mm**
Service Limit:	**2.8 mm**

Steel Plate Thickness

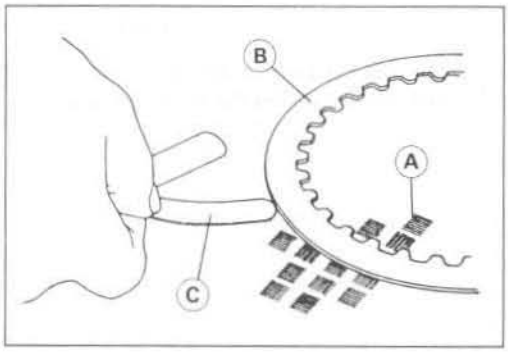
KX125 :

Standard:	**Thick (1) 1.46 ~ 1.74 mm**
	Thin (6) 1.36 ~ 1.64 mm
Service Limit:	**Thick (1) 1.36 mm**
	Thin (6) 1.26 mm

KX250 :

Standard:	**1.46 ~ 1.74 mm**
Service Limit:	**1.36 mm**

Friction and Steel Plate Warp Inspection



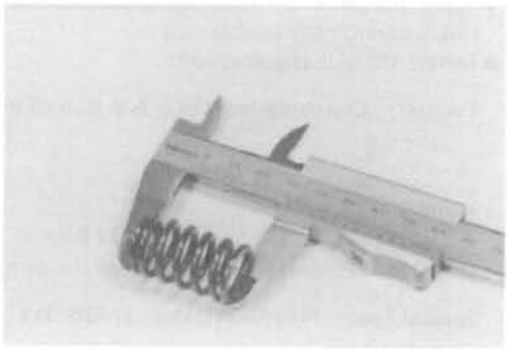
- Place each friction plate or steel plate on a surface plate, and measure the gap between the surface plate [A] and each friction plate or steel plate [B] with a thickness gauge [C]. The gap is the amount of friction or steel plate warp.

★If any plate is warped over the service limit, replace it with a new one.

Friction and Steel Plates Warp

	Friction Plate	Steel Plate
Standard:	**Not more than 0.15 mm**	**Not more than 0.2 mm**
Service Limit:	**0.3 mm**	**0.3 mm**

Spring Free Length Measurement



- Since the spring becomes shorter as it weakens, check its free length to determine its condition.

★If any of the springs is shorter than the service limit, it must be replaced.

Clutch Spring Free Length

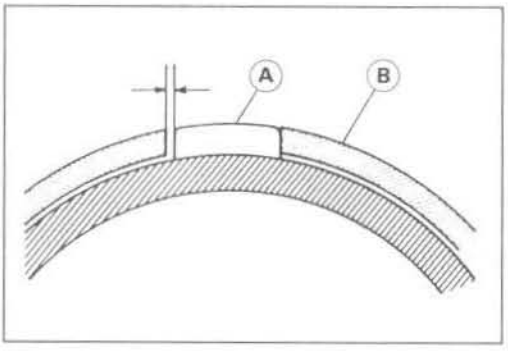
KX125:

Standard:	**37.5 mm**
Service Limit:	**36.0 mm**

KX250:

Standard:	**35 mm**
Service Limit:	**33.6 mm**

Friction Plate/Clutch Housing Clearance



- Measure the clearance between the tangs [A] on the friction plate and the fingers [B] of the clutch housing.

★If this clearance is excessive, the clutch will be noisy.

★If the clearance exceeds the service limit, replace the friction plates.

Friction Plate/Clutch Housing Clearance

KX125 :

Standard:	**0.10 ~ 0.60 mm**
Service Limit:	**0.9 mm**

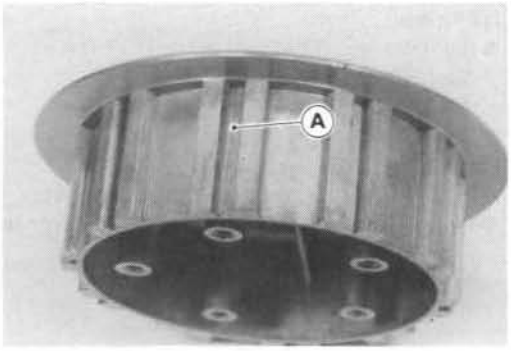
KX250 :

Standard:	**0.15 ~ 0.45 mm**
Service Limit:	**0.8 mm**

Clutch Hub Spline Inspection

- Visually inspect where the teeth on the steel plates wear against the splines [A] of the clutch hub.

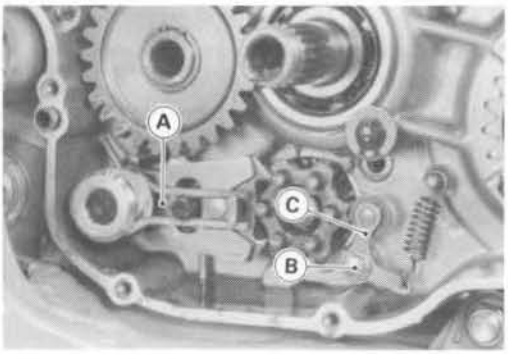
★ If there are notches worn into the splines, replace the clutch hub. Also, replace the clutch plates if their teeth are damaged.



External Shift Mechanism

Removal

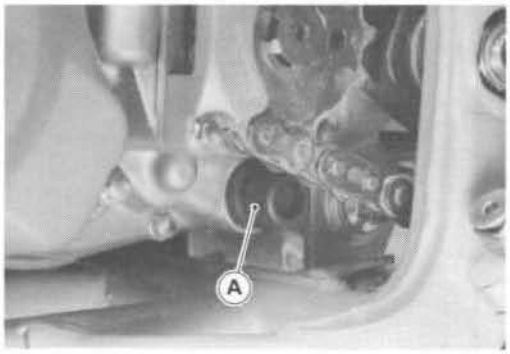
- Remove:
  Shift Pedal
  Magneto Cover
  Right Engine Cover
  Clutch Housing
- Pull out the external shift mechanism [A].
- Remove the bolt [B], and take off the gear set lever [C].



Installation Notes

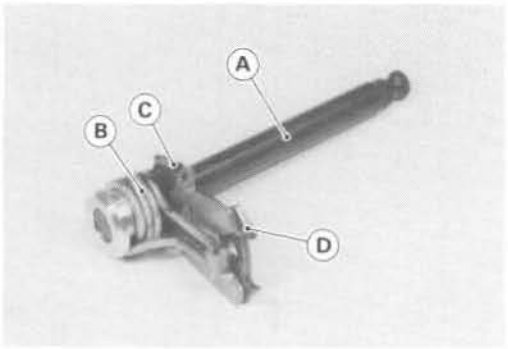
- Insert the shift shaft into the crankcase using the shift shaft oil seal guide [A] on the oil seal in the left crankcase half to protect the seal.
- ○ Before installing the shift shaft, apply high temperature grease to the oil seal lips.

Special Tool – Shift Shaft Oil Seal Guide: 57001-264 [A].



Inspection

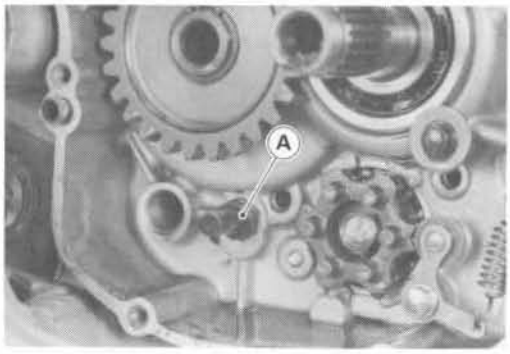
- Check the shift shaft [A] for bending or damage to the splines.
- ★ If the shaft is bent, straighten or replace it. If the splines are damaged, replace the external shift mechanism.
- Check the return spring [B] and arm spring [C] for cracks or distortion.
- ★ If the springs are damaged in any way, replace them.
- Check the shift mechanism arm [D] for distortion.
- ★ If the shift mechanism arm is damaged in any way, replace the shift mechanism.



- Check that the return spring pin [A] is not loose.
- ★ If it is loose, unscrew it, apply a non-permanent locking agent to the threads, and torque it.

Torque – Return Spring Pin: 22 N-m (2.2 kg-m, 16.0 ft-lb)

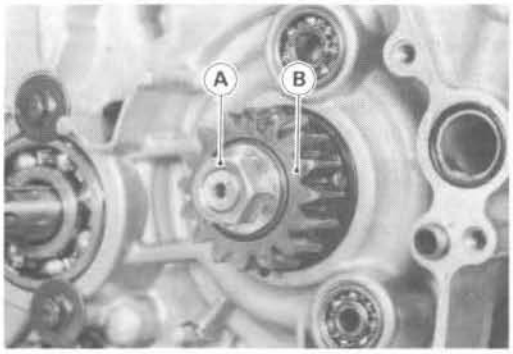
- Check the gear set lever and its spring for cracks or distortion.
- ★ If the lever or spring is damaged in any way, replace them.



Primary Gear

Removal

- Remove the right engine cover (see Right Engine Cover Removal).
- Remove the clutch (see Clutch Removal).
- For KX125 model; remove the primary gear nut [A], spring washer, woodruff key, primary gear [B], and O-ring.

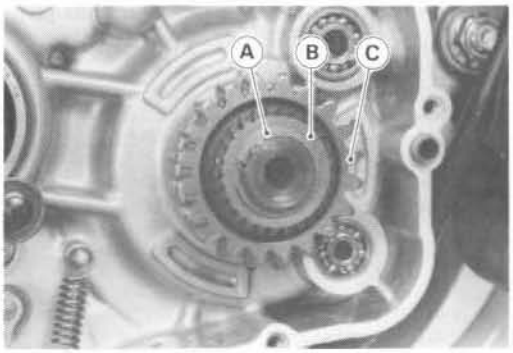


NOTE

○ *Use the flywheel holder to prevent the crankshaft from the rotating.*

Special Tool – Flywheel Holder: 57001-1313

- For KX250 model; remove the circlip [A], and take off the water pump drive gear [B] and primary gear [C].

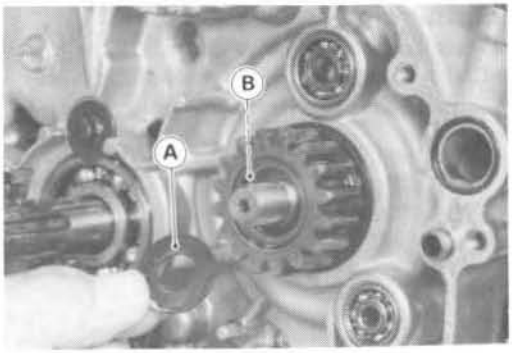


Special Tool – Outside Circlip Pliers: 57001-144

Installation Notes

KX125:

- Fit the woodruff key [B] on the crankshaft groove.
- Install the spring washer so that concave side faces [A] inward.
- Torque the primary gear nut.



Torque – Primary Gear Nut: 59 N-m (6.0 kg-m, 43 ft-lb)

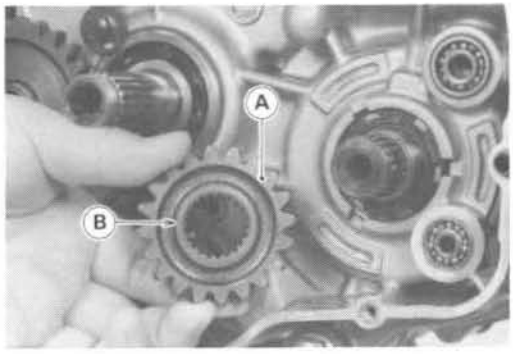
NOTE

○ *Use the flywheel holder to prevent the crankshaft from the rotating.*

Special Tool – Flywheel Holder: 57001-1313

KX250:

- Install the primary gear [A] so that chamfered side [B] faces outward.
- Replace the old circlip with a new one.

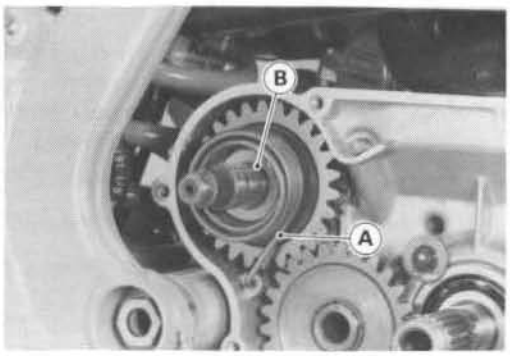


Special Tool – Outside Circlip Pliers: 57001-144

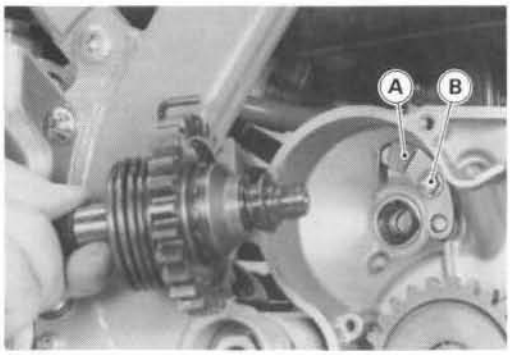
Kickstarter

Removal

- Remove:
  Right Engine Cover
  Clutch Housing
- Pull the end of the kick spring [A] out of the hole in the crankcase.
- Remove the kickstarter assembly [B].



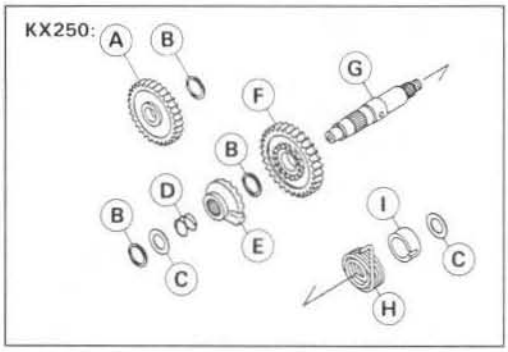
- Remove the ratchet guide [A], and bolts [B].

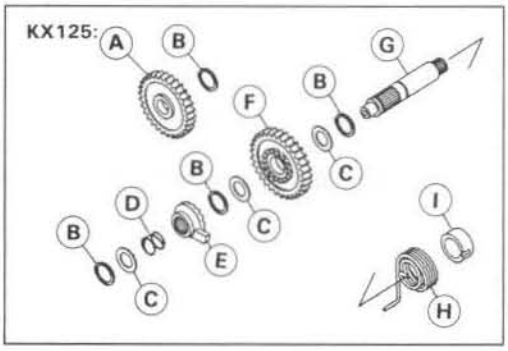


Disassembly/Assembly Notes

- The kickstarter assembly consists of the following parts.
- Check the kickstarter assembly parts for damage. Any damaged parts should be replaced with new ones.

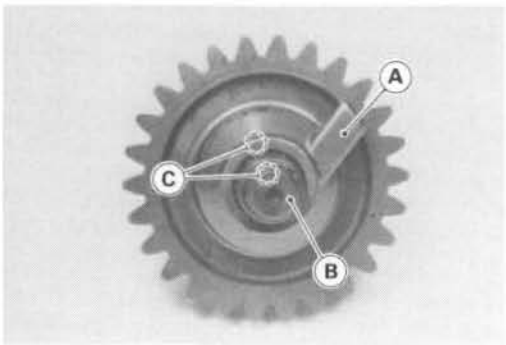
A. Idle Gear
B. Circlip
C. Washer
D. Spring
E. Ratchet Gear
F. Kick Gear
G. Kick Shaft
H. Kick Spring
I. Spring Guide





CAUTION

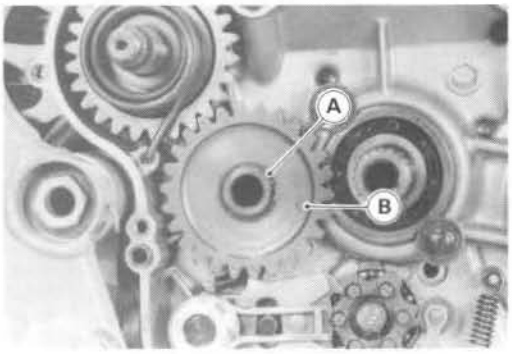
When assembling the ratchet gear [A] onto the kick shaft [B], align the punch mark [C] on the ratchet gear with the punch mark [C] on the kick shaft.



- Apply molybdenum disulfide grease to the inside of the kick gear and ratchet gear.
- Replace the circlips that were removed with new ones.

Special Tool – Outside Circlip Pliers: 57001-144

Idle Gear Removal Notes



- Remove the right engine cover and clutch housing before idle gear removal (see Right Engine Cover Removal and Clutch Removal).
- Remove the circlip [A] and pull off the idle gear [B].

Special Tool – Outside Circlip Pliers: 57001-144

Idle Gear Installation Notes

- Apply molybdenum disulfide grease to the inside of the idle gear.
- Replace the circlip that was removed with a new one.

Special Tool – Outside Circlip Pliers: 57001-144

Engine Removal/Installation

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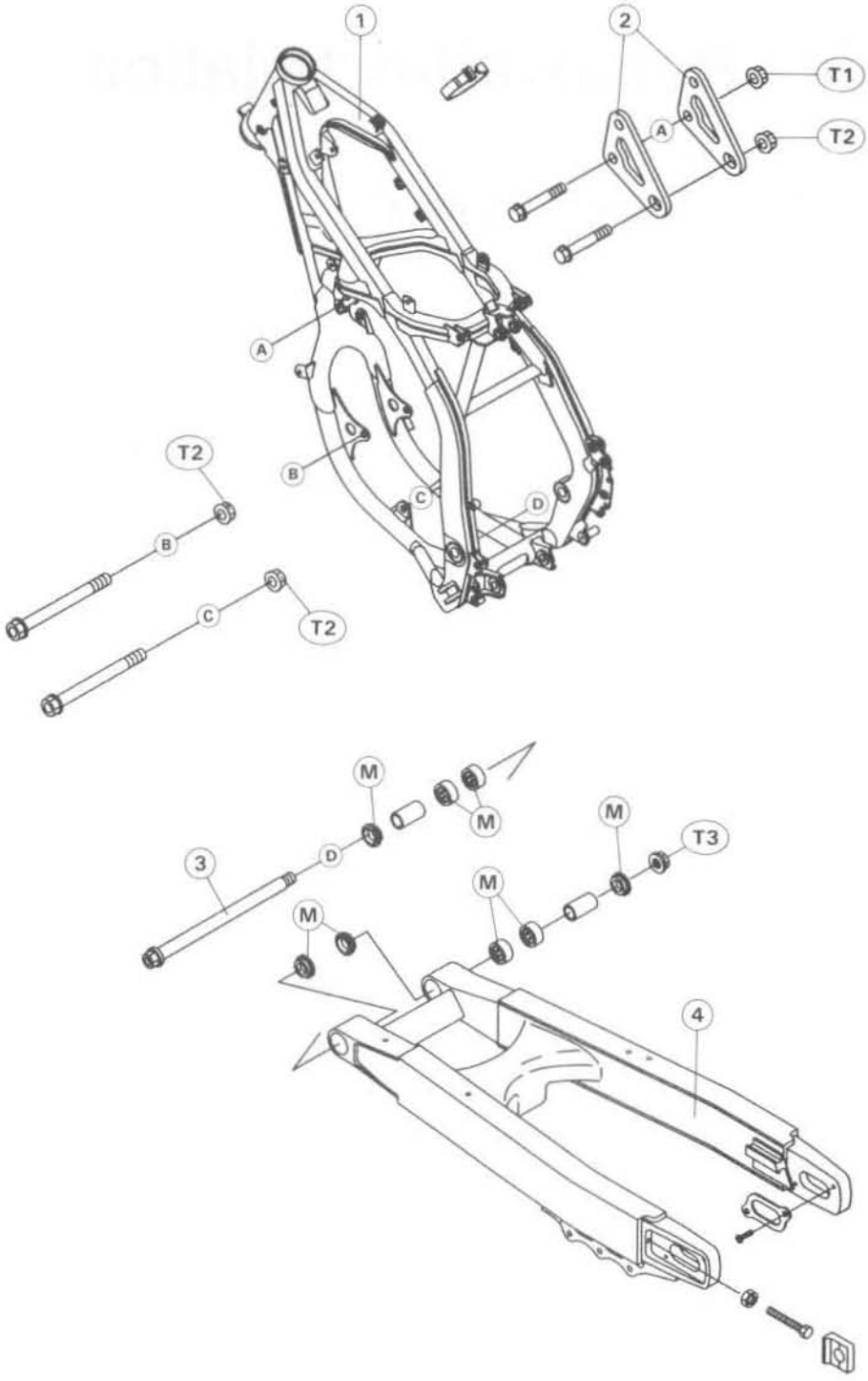
Exploded View



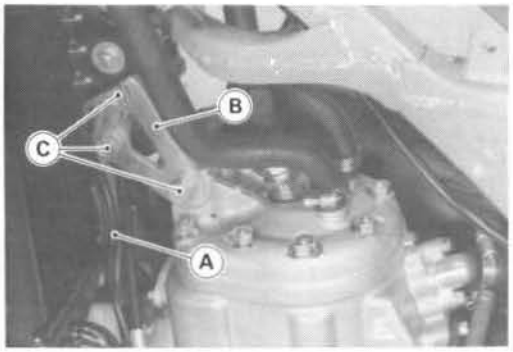
1. Frame
2. Engine Bracket
3. Pivot Shaft
4. Swing Arm

M : Apply molybdenum disulfide grease.
T1 : 26 N-m (2.7 kg-m, 19.5 ft-lb)
T2 : 34 N-m (3.5 kg-m, 25 ft-lb)
T3 : 98 N-m (10.0 kg-m, 72 ft-lb)

Engine Removal/Installation

Removal

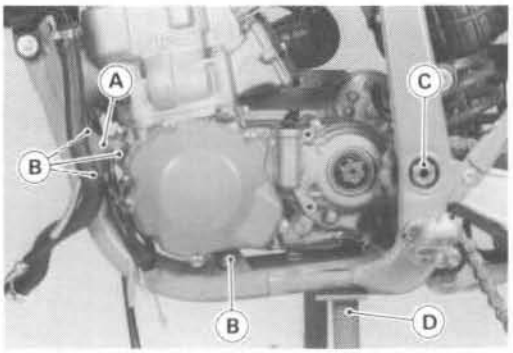
- Drain the transmission oil (see Transmission Oil Change in the Engine Bottom End/Transmission chapter).
- Drain the coolant (see Coolant Change in the Cooling System chapter).
- Remove:
  Side Covers
  Radiator Covers
  Cooling Hoses
  Seat
  Fuel Tank
  Expansion Chamber
  Spark Plug
  Carburetor (with Cables and Hoses)
  Clutch Cable Lower End
  Drive Chain
  Engine Sprocket
  Shift Pedal
  Brake Pedal
- Disconnect the magneto output lead [A], and free the leads from the frame.
- Remove the engine brackets [B] and mounting bolts [C].



- Place a jack [D] under the frame to lift the motorcycle off the ground, and put blocks under the front and rear tires to steady the motorcycle.

⚠WARNING

The swing arm pivot shaft also serves as the engine mounting bolt. Take precautions to insure the frame is well supported, and that the motorcycle will not fall over when the pivot shaft is removed.



Special Tool – Jack: 57001-1238

- Remove the engine brackets [A] and mounting bolts [B].
- Pull out the swing arm pivot shaft [C].
- Lift the engine out to the right.

Installation Notes

- Torque the following nuts.

Torque – Engine Mounting Nuts: 34 N-m (3.5 kg-m, 25 ft-lb)
Engine Bracket Nuts:
(Engine Side): 34 N-m (3.5 kg-m, 25 ft-lb)
(Frame Side): 26 N-m (2.7 kg-m, 19.5 ft-lb)
Pivot Shaft Nut: 98 N-m (10.0 kg-m, 72 ft-lb)

- To route the leads, cables and hoses, refer to the General Information chapter.
- To install parts removed, refer to the appropriate chapters.
- Fill the cooling system with coolant (see Coolant Change in the Cooling System chapter).
- Fill the engine with transmission oil (see Transmission Oil Change in the Engine Bottom End/Transmission chapter).
- Adjust:
  Throttle Cable
  Clutch Cable
  Drive Chain
  Rear Brake

Engine Bottom End/Transmission

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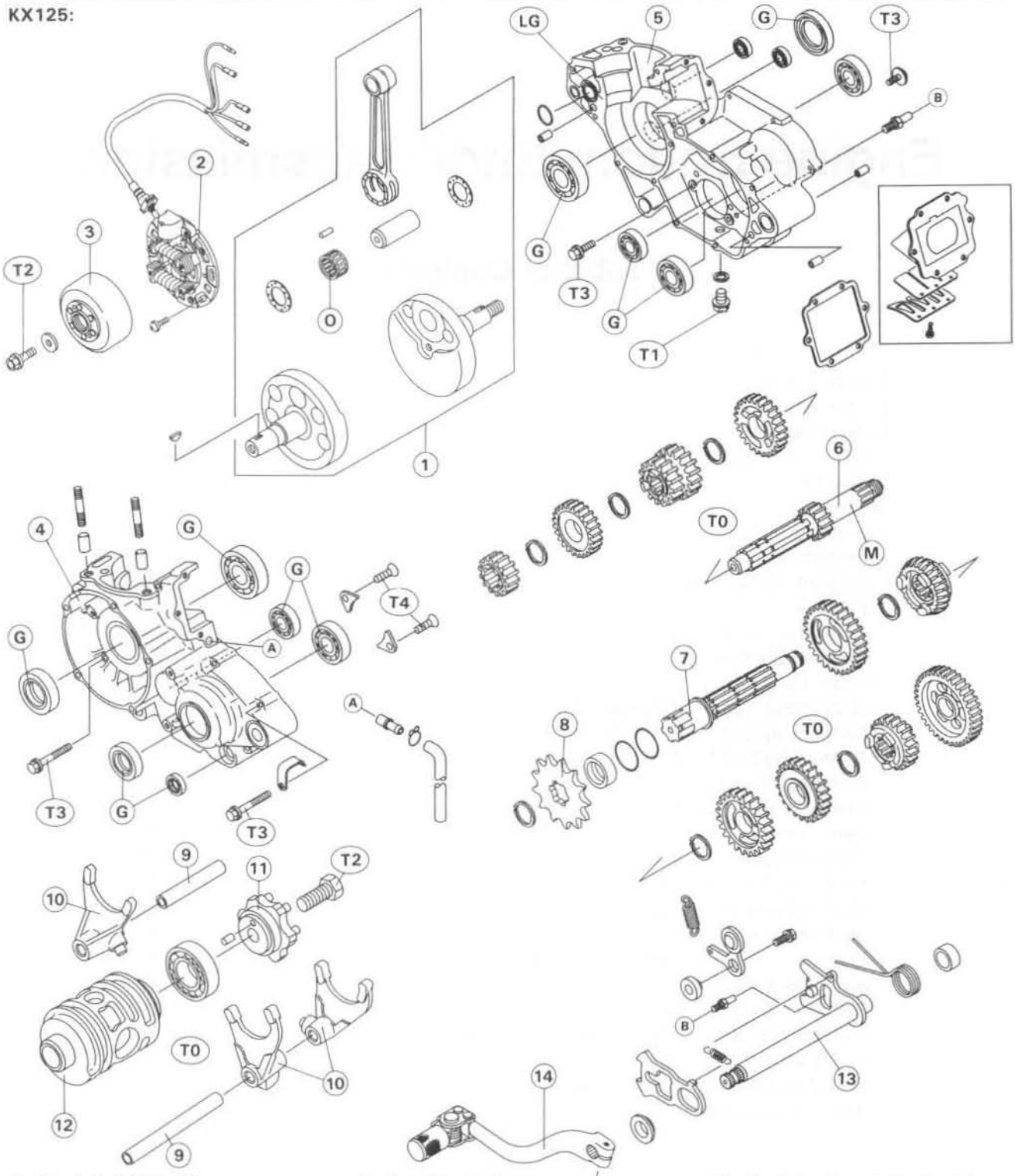
Exploded View

KX125:

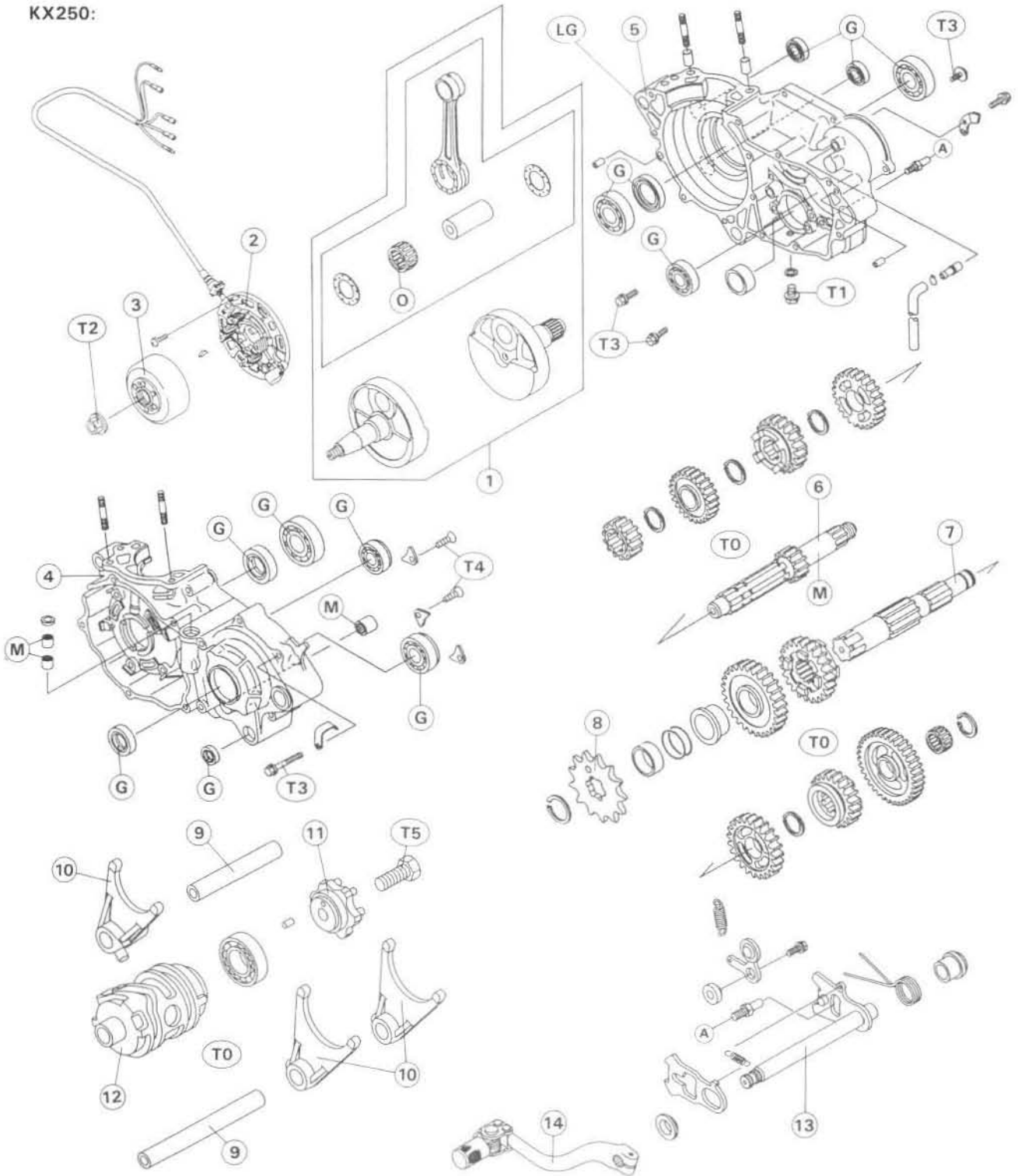


1. Crankshaft Assembly
2. Stator
3. Magneto Flywheel
4. Left Crankcase
5. Right Crankcase
6. Drive Shaft
7. Output Shaft
8. Engine Sprocket
9. Shift Rod
10. Shift Fork
11. Operating Plate
12. Shift Drum
13. Shift Shaft
14. Shift Pedal

M : Apply molybdenum disulfide grease.
O : Apply 2-stroke engine oil.
TO : Apply transmission oil to the transmission gears and shift forks, etc.
G : Apply high temperature grease.

LG : Apply liquid gasket to the left and right case mating surface.
T1 : 20 N-m (2.0 kg-m, 14.5 ft-lb)
T2 : 22 N-m (2.2 kg-m, 16.0 ft-lb)
T3 : 8.8 N-m (0.9 kg-m, 78 in-lb)
T4 : 5.4 N-m (0.55 kg-m, 48 in-lb)

KX250:



1. Crankshaft Assembly
2. Stator
3. Magneto Flywheel
4. Left Crankcase
5. Right Crankcase
6. Drive Shaft
7. Output Shaft
8. Engine Sprocket
9. Shift Rod
10. Shift Fork
11. Operating Plate
12. Shift Drum
13. Shift Shaft
14. Shift Pedal

M : Apply molybdenum disulfide grease.
O : Apply 2-stroke engine oil.
TO : Apply transmission oil to the transmission gears and shift forks, etc.
G : Apply high temperature grease.

LG : Apply liquid gasket to the left and right case mating surface.
T1 : 20 N-m (2.0 kg-m, 14.5 ft-lb)
T2 : 78 N-m (8.0 kg-m, 58 ft-lb)
T3 : 8.8 N-m (0.9 kg-m, 78 in-lb)
T4 : 5.4 N-m (0.55 kg-m, 48 in-lb)
T5 : 22 N-m (2.2 kg-m, 16.0 ft-lb)

Specifications

Item		Standard	Service Limit
Transmission Oil:			
Transmission Oil:			
Grade		SE class	---
Viscosity		SAE10W30 or 10W40	---
Amount	KX125	0.7 L	---
	KX250	0.85 L	---
Crankshaft, Connecting Rod:			
Connecting rod bend		Not more than 0.03 mm/100 mm	0.2 mm/100 mm
Connecting rod twist		Not more than 0.03 mm/100 mm	0.2mm/100mm
Connecting rod big end radial clearance:			
	KX125	0.026 – 0.043 mm	0.09 mm
	KX250	0.037 – 0.049 mm	0.10 mm
Connecting rod big end side clearance:			
	KX125	0.40 – 0.50 mm	0.70 mm
	KX250	0.45 – 0.55 mm	0.70 mm
Crankshaft runout		Not more than 0.03 mm	0.05 mm
Transmission:			
Gear backlash:		0.06 ~ 0.23 mm	0.30 mm
Shift fork ear thickness:	KX125	3.90 – 4.00 mm	3.80 mm
	KX250	4.40 – 4.50 mm	4.30 mm
Gear shift fork groove width:	KX125	4.05 – 4.15 mm	4.25 mm
	KX250	4.55 – 4.65 mm	4.75 mm
Shift fork guide pin diameter		5.90 ~ 6.00 mm	5.80 mm
Shift drum groove width		6.05 ~ 6.20 mm	6.25 mm

Special Tools – **Outside Circlip Pliers: 57001-144**
Bearing Puller: 57001-158
Oil Seal Guide, Φ13: 57001-264
Bearing Puller Adapter: 57001-136
Crankcase Splitting Tool Assembly: 57001-1098
Bearing Driver Set: 57001-1129
Crankshaft Jig: 57001-1174

Sealant – **Kawasaki Bond (Liquid Gasket – Silver): 92104-002**

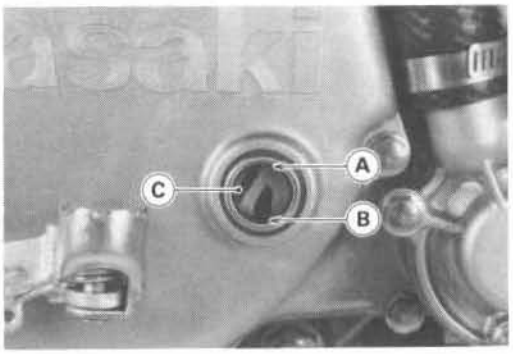
Transmission Oil

In order for the transmission and clutch to function properly, always maintain the transmission oil at the proper level and change the oil periodically.

⚠WARNING

Motorcycle operation with insufficient, deteriorated, or contaminated transmission oil will cause accelerated wear and may result in transmission seizure, accident, and injury.

Level Inspection

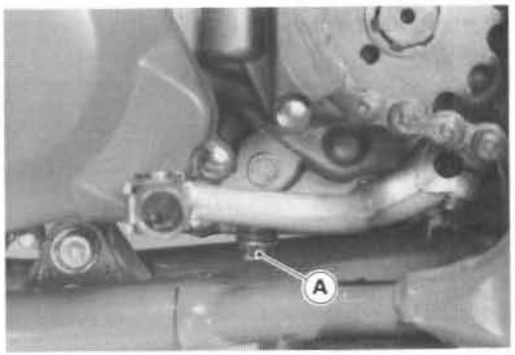


- Situate the motorcycle so that it is perpendicular to the ground.
- If the motorcycle has just been used, wait several minutes until the oil settles.
- Check that the oil level comes up between the upper level [A] and lower level [B] through the oil level gauge [C] on the clutch cover.
- ★If the oil level is too high, remove the excess oil using a syringe or some other suitable device.
- ★If the oil level is too low, add the correct amount of oil through the oil filler opening. Use the same type and make of oil that is already in the engine.

NOTE

○*If the transmission oil type and make are unknown, use any brand of the specified oil to top up the level in preference to running the engine with the oil level low. Then at your earliest convenience, change the oil completely.*

Change



- Warm up the engine thoroughly so that the oil will pick up any sediment and drain easily. Then stop the engine.
- Place an oil pan beneath the engine.
- Remove the transmission oil drain plug [A] on the bottom of the engine, and let the oil drain completely.

NOTE

○*Hold the motorcycle upright so that the oil may 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, and torque it.

Torque – Transmission Oil Drain Plug: 20 N-m (2.0 kg-m, 14.5 ft-lb)

- Fill the engine with a good quality motor oil specified below.
- Check the oil level.

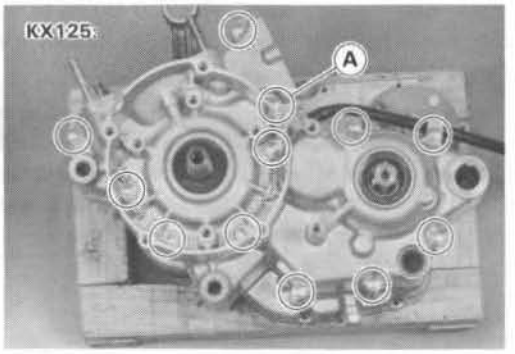
Transmission Oil

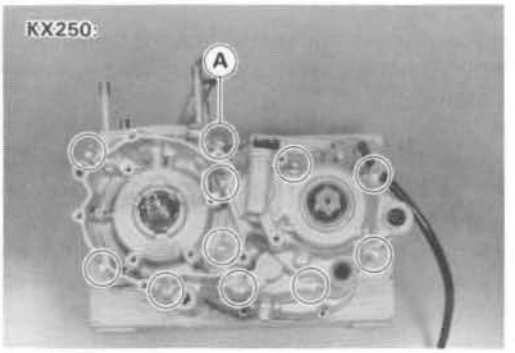
Grade:	**SE class**
Viscosity:	**SAE 10W30 or 10W40**
Amount:	**KX125 0.7 L**
	KX250 0.85 L

Crankcase

Splitting

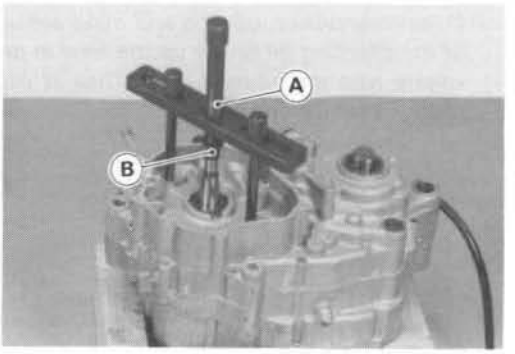
- Remove the engine (see the Engine Removal/Installation chapter).
- Set the engine on a clean surface while parts are being removed.
- Remove:
  - Magneto Cover
  - Output Shaft Sleeve and O-ring
  - Cylinder Head
  - Cylinder
  - Piston
  - Right Engine Cover
  - Clutch
  - Primary Gear
  - Kickstarter Assembly
  - Kickstarter Idle Gear
  - Gear Set Lever
  - Magneto Flywheel and Stator
  - Reed Valve (KX125)
- Remove the crankcase bolts [A].



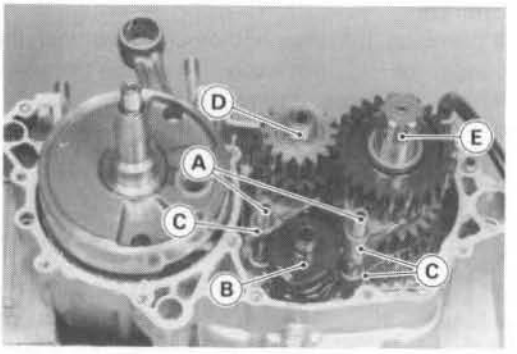


- Install the crankcase splitting tool [A] and bearing puller adapter [B] into the left side of the crankcase. Be certain to screw the tool in all the way.

Special Tool – Crankcase Splitting Tool Assembly: 57001-1098 [A]
Bearing Puller Adapter: 57001-136 [B]



- Tighten the bolt on the crankcase splitting tool to split the crankcase halves.
- Once the crankcase is split, remove the crankcase splitting tool, and lift off the left crankcase half.
- Pull out the shift rods [A].
- Disengage the shift fork guide pins from the shift drum grooves.
- Take out the shift drum [B].
- Remove the shift forks [C] from the transmission gears.
- Take out the drive shaft [D] and output shaft [E] together with their gears meshed.
- Remove the crankshaft from the right crankcase half using a press.

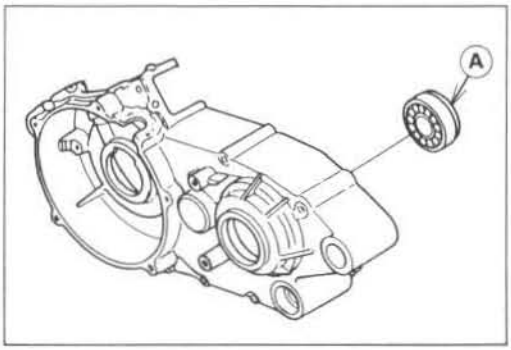


Assembly

- Before fitting the left case on the right case, note the following:
  - Chip off the old gasket from the mating surfaces of the crankcase halves, and clean off the crankcase with a high flash-point solvent. After cleaning, apply transmission oil to the transmission gears, shift drum, shift forks and so on.
  - Be sure to replace any oil seal removed with a new one. Press in the new oil seal using a press and suitable tools so that the seal surface is flush with the surface of the crankcase.
  - Apply high temperature grease to the oil seal lips.
  - Press in the ball bearings using the bearing driver set until the bearing is bottomed.

Special Tool – Bearing Driver Set: 57001-1129

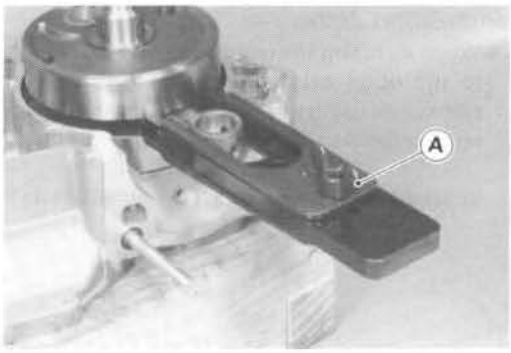
○Install the bearing for the output shaft into the left crankcase half so that the stepped side faces [A] inside.



CAUTION

Do not remove the bearings unless it is necessary. Removal may damage them.
Install the bearings for the crankshaft in the right and left crankcase so that their sealed sides face toward the oil seal side.

○Tighten the output and drive shaft bearing retaining bolts securely.
○If the crankshaft bearings stay on the crankshaft when splitting the crankcase, remove the bearings from the crankshaft and reinstall them in the crankcase, and then assemble the crankcase (see Crankshaft Removal and Installation Notes).
●Turn the crankshaft to BDC, and install the crankshaft jig [A] between the flywheels opposite the connecting rod big end to protect flywheel alignment as shown.
○If the crankshaft has been removed from the crankcase, install the jig between the crankshaft flywheels before pressing the crankshaft into the right crankcase half.

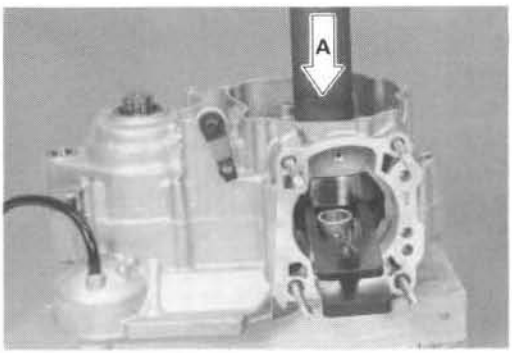


Special Tool – Crankshaft Jig: 57001-1174 [A]

●Check to see that the crankcase knock pins are in place on the right crankcase half. If any of them has been removed, replace it with a new one.
●Apply liquid gasket to the mating surface of the left crankcase half.

Sealant – Kawasaki Bond (Liquid Gasket – Silver): 92104-002

●Using a suitable tool on the left crankcase to press [A] around the hole for the crankshaft, fit the crankcase halves together with a press on the tool.



NOTE

○*Constantly check the alignment of the two crankcase halves, and the position of the transmission shafts, and shift drum. The front and rear of the crankcase must be pushed together evenly.*

●Remove the crankshaft jig (special tool) from the flywheels.
●Tighten the crankcase bolts starting with the ones around the crankshaft, and then the farther ones.

Torque – Crankcase Bolts: 8.8 N-m (0.9 kg-m, 78 in-lb)

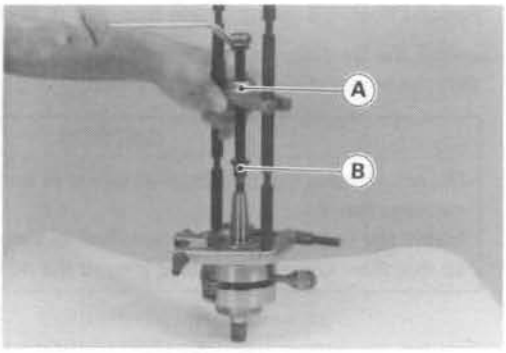
●Check to see that the crankshaft, drive shaft, and output shaft all turn freely (in the neutral position).
★If the crankshaft will not turn, probably the crankshaft is not centered; tap the appropriate end of the crankshaft with a mallet to reposition it.
●Spinning the output shaft, shift the transmission through all the gears to make certain there is no binding and that all the gears shift properly.
●Install the parts removed in the reverse order of removal, and refer to the appropriate chapters.
○Replace the O-ring on the output shaft with a new one.

Crankshaft, Connecting Rod

Removal

- Split the crankcase (see Crankcase Splitting).
- Remove the transmission shafts (see Transmission Shaft Removal).
- Using a press, remove the crankshaft from the right crankcase.
- If the bearings stay on the crankshaft when splitting the crankcase or removing the crankshaft from the right crankcase, remove the bearings from the crankshaft with a bearing puller [A] and adapter [B].

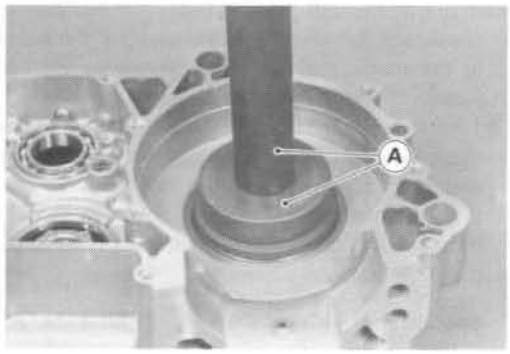
Special Tool – Bearing Puller: 57001-158 [A]
Bearing Puller Adapter: 57001-136 [B]

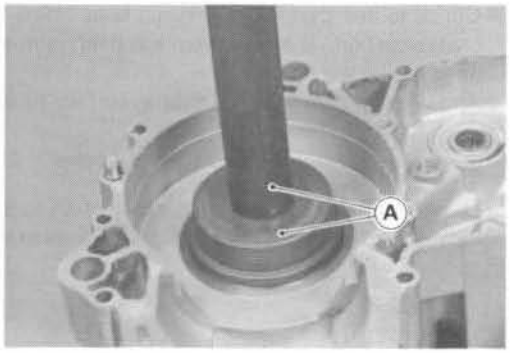


Installation Notes

- When installing the crankshaft bearings, apply high temperature grease to the outer sides of the bearings, and then press them into the crankcase using the bearing driver [A] until the bearing bottoms against the step.

Special Tool – Bearing Driver Set: 57001-1129 [A]

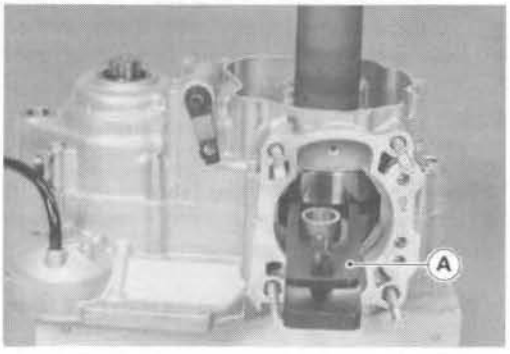




- Insert the crankshaft jig [A] between the crankshaft flywheels opposite the connecting rod big end to protect flywheel alignment as shown, and press the crankshaft into the right crankcase.
  - When pressing, position the jig in the crankcase opening so the jig does not hit the crankcase.

Special Tool – Crankshaft Jig: 57001-1174 [A]

- Apply 2-stroke oil to the connecting rod big end bearing.



Disassembly Note

Since assembly of the crankshaft demands exacting tolerances, the disassembly and reassembly of the crankshaft can only be done by a shop having the necessary tools and equipment.

- If it should be necessary to disassemble the crankshaft, use a press to remove the crankpin.

Assembly Notes

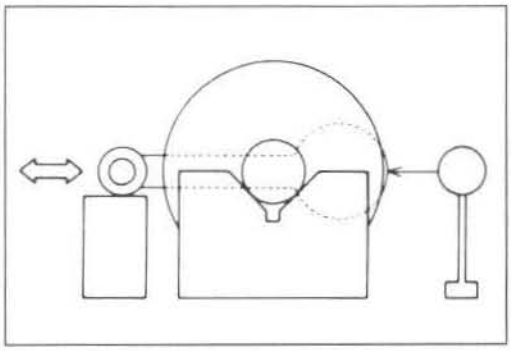
Since the assembly of the crankshaft demands exacting tolerances, the disassembly and reassembly of the crankshaft can only be done by a shop having the necessary tools and equipment.

- Reassemble the crankshaft according to the standard tolerances in Specifications.
  - Connecting rod bend, twist
  - Connecting rod big end radial clearance.
  - Cold-fitting tolerance between crankpin and flywheels.
  - Side clearance between the connecting rod big end and one of flywheels.
  - Crankshaft runout.

Connecting Rod Big End Radial Clearance

- Set the crankshaft in a flywheel alignment jig or on V blocks, and place a dial gauge against the connecting rod big end.
- Push the connecting rod first towards the gauge and then in the opposite direction. The difference between the two gauge readings is the radial clearance.

★If the radial clearance exceeds the service limit, the crankshaft should be either replaced or disassembled and the crankpin, needle bearing, and connecting rod big end examined for wear.



Connecting Rod Big End Radial Clearance

Standard:	**KX125: 0.026 ~ 0.043 mm**
	KX250: 0.037 ~ 0.049 mm
Service Limit:	**KX125: 0.09 mm**
	KX250: 0.10 mm

Connecting Rod Big End Seizure

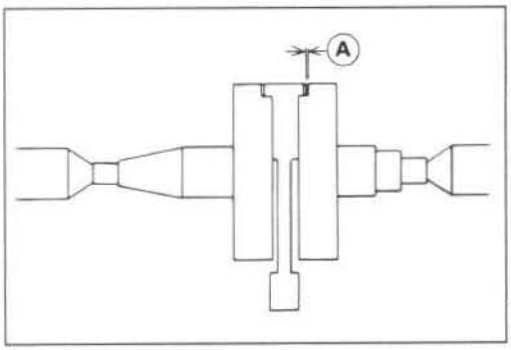
★In case of serious seizure with damaged flywheels, the crankshaft must be replaced.

★In case of less serious damage, disassemble the crankshaft and replace the crankpin, needle bearing, side washers, and connecting rod.

Connecting Rod Big End Side Clearance

- Measure the side clearance [A] of the connecting rod with a thickness gauge.

★If the clearance exceeds the service limit, replace the crankshaft.



Connecting Rod Big End Side Clearance

Standard:	**KX125 – 0.40 ~ 0.50 mm**
	KX250 – 0.45 ~ 0.55 mm
Service Limit:	**0.70 mm**

Crankshaft Runout

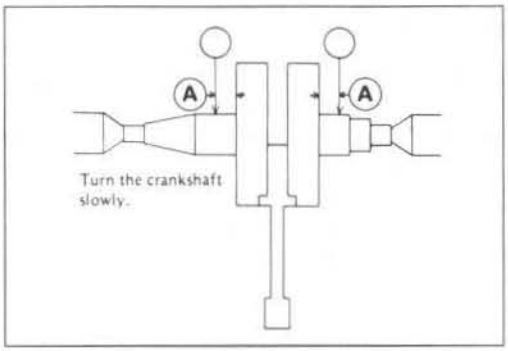
- Set the crankshaft in a flywheel alignment jig or on V blocks, and place a dial gauge against the points indicated.
- Turn the crankshaft slowly. The maximum difference in gauge readings is the crankshaft runout.

★If the runout at either point exceeds the service limit, align the flywheels so that the runout falls within the service limit.

Crankshaft Runout

Standard:	**Not more than 0.03 mm**
Service Limit:	**0.05 mm**

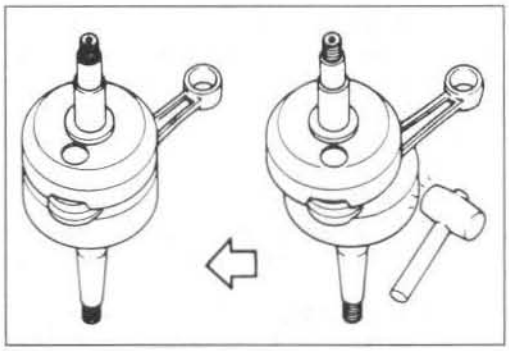
(A) : KX125 – 8.0 mm
KX250 – 8.5 mm



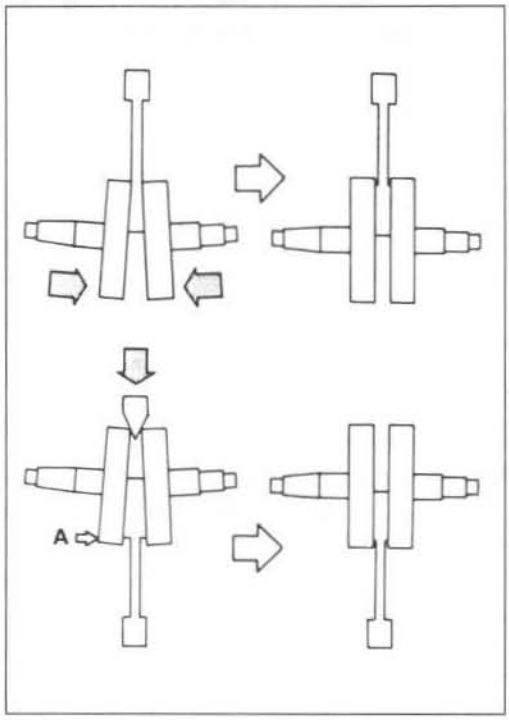
Crankshaft Alignment

- In the case of horizontal misalignment, which is the most common, strike the projecting rim of the flywheel with a plastic, soft lead, or brass hammer as indicated in the figure.
- Recheck the runout with a dial gauge, repeating the process until the runout falls within the service limit.

○Vertical misalignment is corrected either by driving a wedge in between the flywheels or by squeezing the flywheel rims in a vise, depending on the nature of the misalignment. In cases of both horizontal and vertical misalignment, correct the horizontal misalignment first.



CAUTION
Don't hammer the flywheel at point "A".

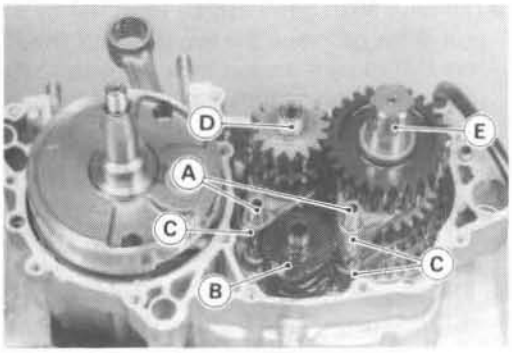


★If flywheel misalignment cannot be corrected by the above method, replace the crankpin or the crankshaft itself.

Transmission

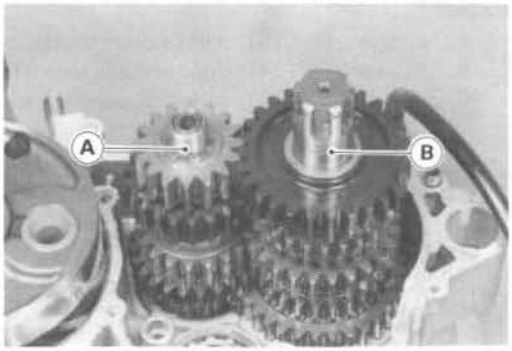
Shaft Removal

- Split the crankcase (see Crankcase Splitting).
- Pull out the shift rods [A], and disengage the shift fork guide pins from the shift drum grooves.
- Remove the shift drum [B].
- Remove the shift forks [C] from the transmission gears.
- Take out the drive shaft [D] and output shaft [E] together, with their gears meshed.



Shaft Installation Notes

- Hold the drive shaft [A] and output shaft [B] together, with their gears meshed, and fit them into the right crankcase half.
- To install the shift forks and shift drum, see the Shift Drum and Fork Installation Notes.



Shaft Disassembly Note

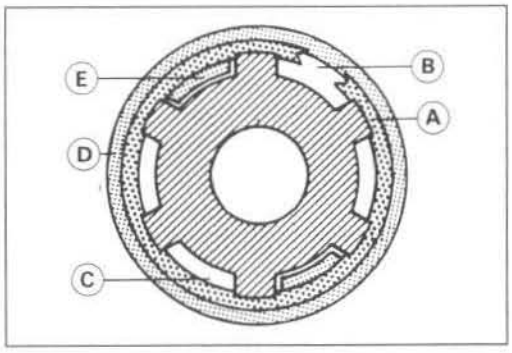
- Using circlip pliers to remove the circlips, disassemble the transmission shaft.

Special Tool – Outside Circlip Pliers: 57001-144

Shaft Assembly Notes

- Apply transmission oil liberally to the transmission shaft, gears and bearings.
- Replace any circlips that were removed with new ones.
- Always install circlips [A] so that the opening [B] is aligned with a spline groove [C], and install toothed washers [D] so that the teeth [E] are not aligned with the circlip opening [B]. To install a circlip without damage, first fit the circlip onto the shaft expanding it just enough to install it, and then use a suitable gear to push the circlip into place.

Special Tool – Outside Circlip Pliers: 57001-144

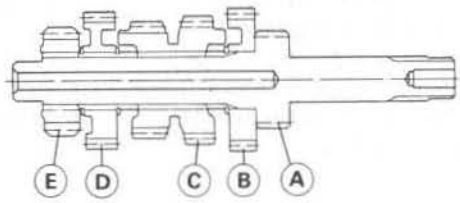


●The drive shaft gears can be identified by size; the smallest diameter gear is 1st gear, and the largest is 5th (KX250) or 6th (KX125). Be sure that all parts are put back in the correct sequence, and facing the proper direction, and that all circlips and the washers are properly in place.

KX125:

A. 1st gear (14T; part of drive shaft)
B. 6th gear (25T; plain side faces right)
C. 3rd/4th gear (20T/22T; larger gear faces right)
D. 5th gear (24T; has an identifying groove)
E. 2nd gear (14T; chamfered side faces right)

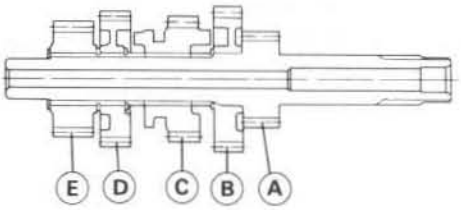
KX125:



KX250:

A. 1st gear (15T; part of drive shaft)
B. 5th gear (24T; dog recesses face left)
C. 3rd gear (18T; fork groove goes to the left side of the gear teeth)
D. 4th gear (22T; dog recesses face right)
E. 2nd gear (16T; chamfered side faces right)

KX250:

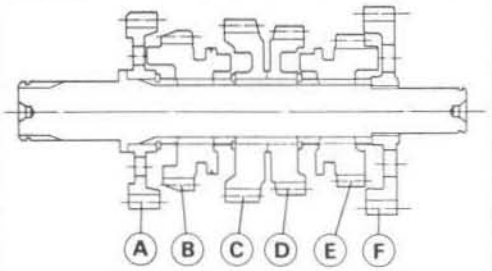


●The output shaft gears can be identified by size; the largest diameter gear is 1st gear, and the smallest is 5th (KX250) or 6th (KX125). Be sure that all parts are put back in the correct sequence and facing the proper direction, and that all circlips and washers are properly in place.

KX125:

A. 2nd gear (24T; dog recesses face right)
B. 5th gear (25T; fork groove goes to the right side of the gear teeth)
C. 3rd gear (28T; dog recesses face left)
D. 4th gear (26T; dog recesses face right)
E. 6th gear (23T; fork groove goes to the left side of the gear teeth)
F. 1st gear (30T; plain side faces right)

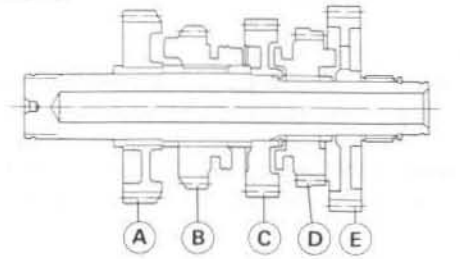
KX125:



KX250:

A. 2nd gear (27T; plain side faces left)
B. 4th gear (25T; fork groove goes to the right side of the gear teeth)
C. 3rd gear (25T; dog recesses face left)
D. 5th gear (24T; dog recesses face right)
E. 1st gear (32T; dog recesses face left)

KX250:



●Check that each gear spins or slides freely on the transmission shaft without binding after assembly.

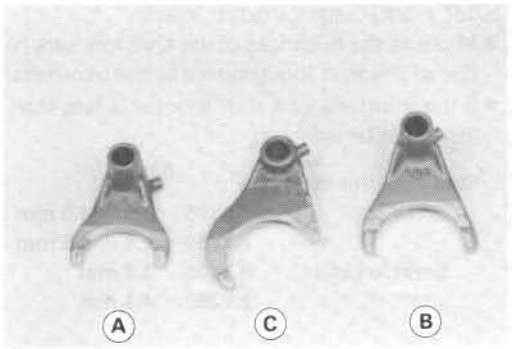
Shift Drum and Fork Installation Notes

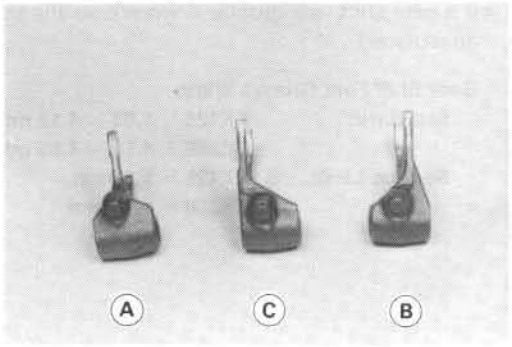
● Apply a little transmission oil to the shift fork ears, and fit the shift forks into the gear grooves.

Shift Fork Identification

KX125:

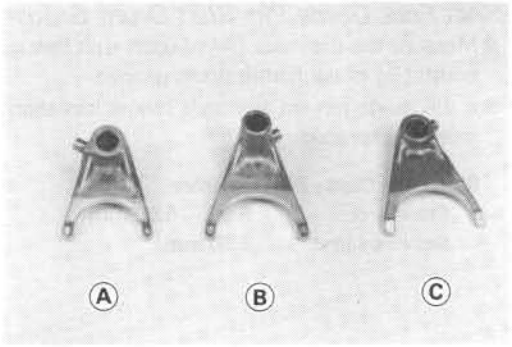
Drive shaft 3rd gear and 4th gear shift fork [A]	ears are shorter than those of the other two shift forks
Output shaft 5th gear shift fork [B]	guide pin goes to left side of the ears
Output shaft 6th gear shift fork [C]	guide pin goes to right side of the ears





KX250:

Drive shaft 3rd gear shift fork [A]	ears are shorter than those of the other two shift forks
Output shaft 4th gear shift fork [B]	guide pin goes to left side of the ears
Output shaft 5th gear shift fork [C]	guide pin goes to center



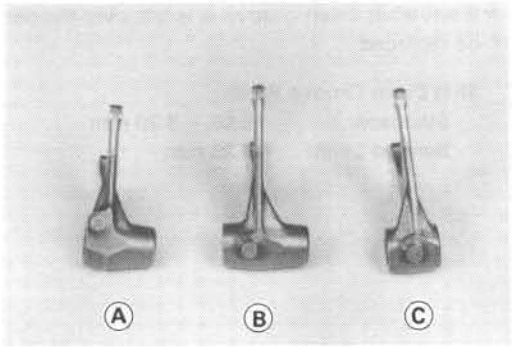
● Torque the shift drum bearing retaining bolts.

Torque – Shift Drum Bearing Retaining Bolts: 8.8 N-m (0.9 kg-m, 78 in-lb)

● Fit the shift fork guide pins into the corresponding shift drum grooves.
● Torque the shift drum operating plate bolt.

Torque – Shift Drum Operating Plate Bolt: 22 N-m (2.2 kg-m, 16 ft-lb)

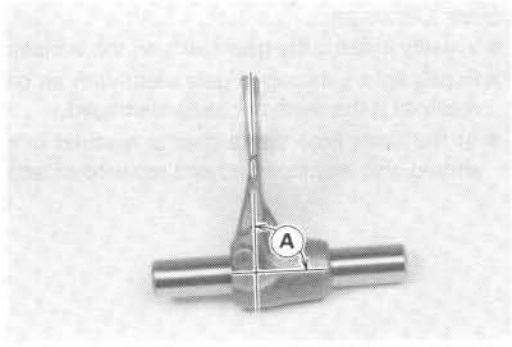
● Apply a little transmission oil to the shift rod, and slide it into the shift forks.



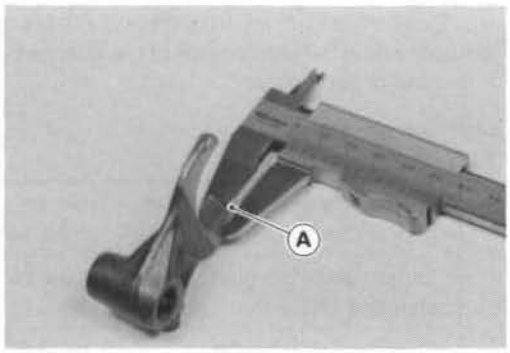
Shift Fork Bending

● Visually inspect the shift forks, and replace any fork that is bent. A bent fork could cause difficulty in shifting, or allow the transmission to jump out of gear when under power.

A. 90°



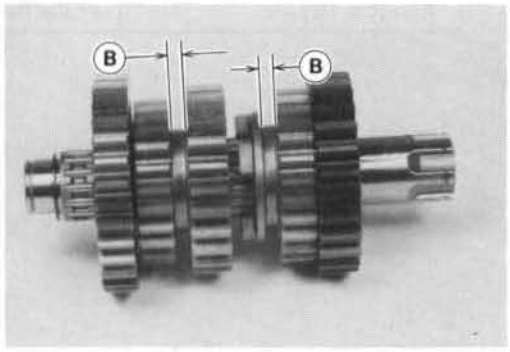
Shift Fork/Gear Groove Wear



- Measure the thickness of the shift fork ears [A], and measure the width [B] of the shift fork grooves in the transmission gears.
- ★If the thickness of a shift fork ear is less than the service limit, the shift fork must be replaced.

Shift Fork Ear thickness

Standard:	**KX125 – 3.9 ~ 4.0 mm**
	KX250 – 4.4 ~ 4.5 mm
Service Limit:	**KX125 – 3.8 mm**
	KX250 – 4.3 mm

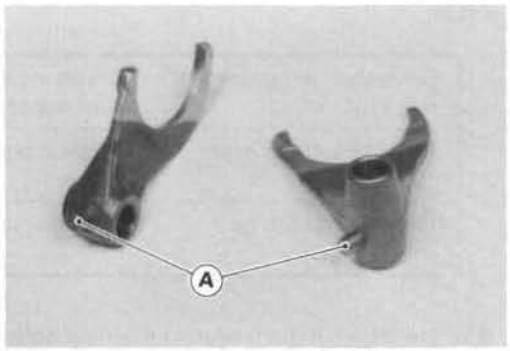


- ★If a gear shift fork groove is worn over the service limit, the gear must be replaced.

Gear Shift Fork Groove Width

Standard:	**KX125 – 4.05 ~ 4.15 mm**
	KX250 – 4.55 ~ 4.65 mm
Service Limit:	**KX125 – 4.25mm**
	KX250 – 4.75 mm

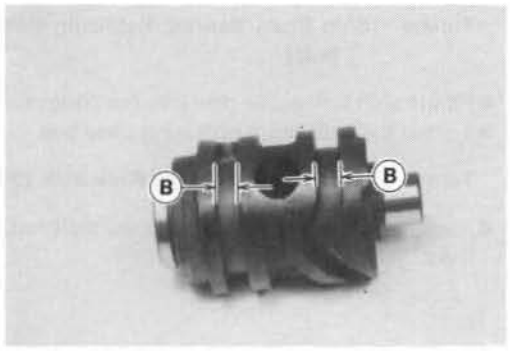
Shift Fork Guide Pin/Shift Drum Groove Wear



- Measure the diameter [A] of each shift fork guide pin, and measure the width [B] of each shift drum groove.
- ★If the guide pin on any shift fork is less than the service limit, the fork must be replaced.

Shift Fork Guide Pin Diameter

Standard:	**5.90 ~ 6.00 mm**
Service Limit:	**5.80 mm**



- ★If any shift drum groove is worn over the service limit, the drum must be replaced.

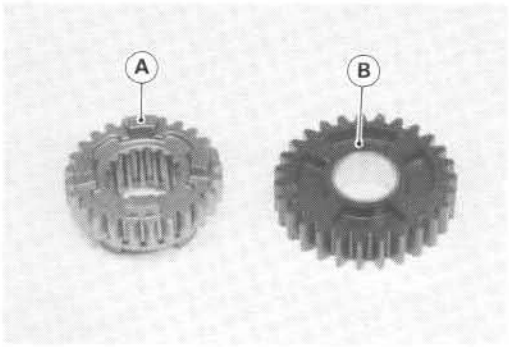
Shift Drum Groove Width

Standard:	**6.05 ~ 6.20 mm**
Service Limit:	**6.25 mm**

Gear Damage

- Visually inspect the gear teeth on the transmission gears.
- ★Repair lightly damaged gear teeth with an oilstone. The gear must be replaced if the teeth are badly damaged.
- ★At the same time that a gear is repaired or replaced, the driving gear should also be inspected and repaired or replaced if necessary.

Gear Dog/Gear Dog Hole Damage



● Visually inspect the gear dogs [A] and gear dog holes [B].

★ Replace any damaged gears or gears with excessively worn dogs or dog holes.

Ball Bearing Wear

● Check the ball bearings in the crankcase.

○ Since the ball bearings are made to extremely close tolerances, the wear must be judged by feel rather than measurement. Clean each bearing in a high flash-point solvent, dry it (do not spin the bearing while it is dry), and oil it with transmission oil.

○ Spin the bearing by hand to check its condition.

★ If the bearing is noisy, does not spin smoothly, or has any rough spots, replace it.

Wheels/Tires

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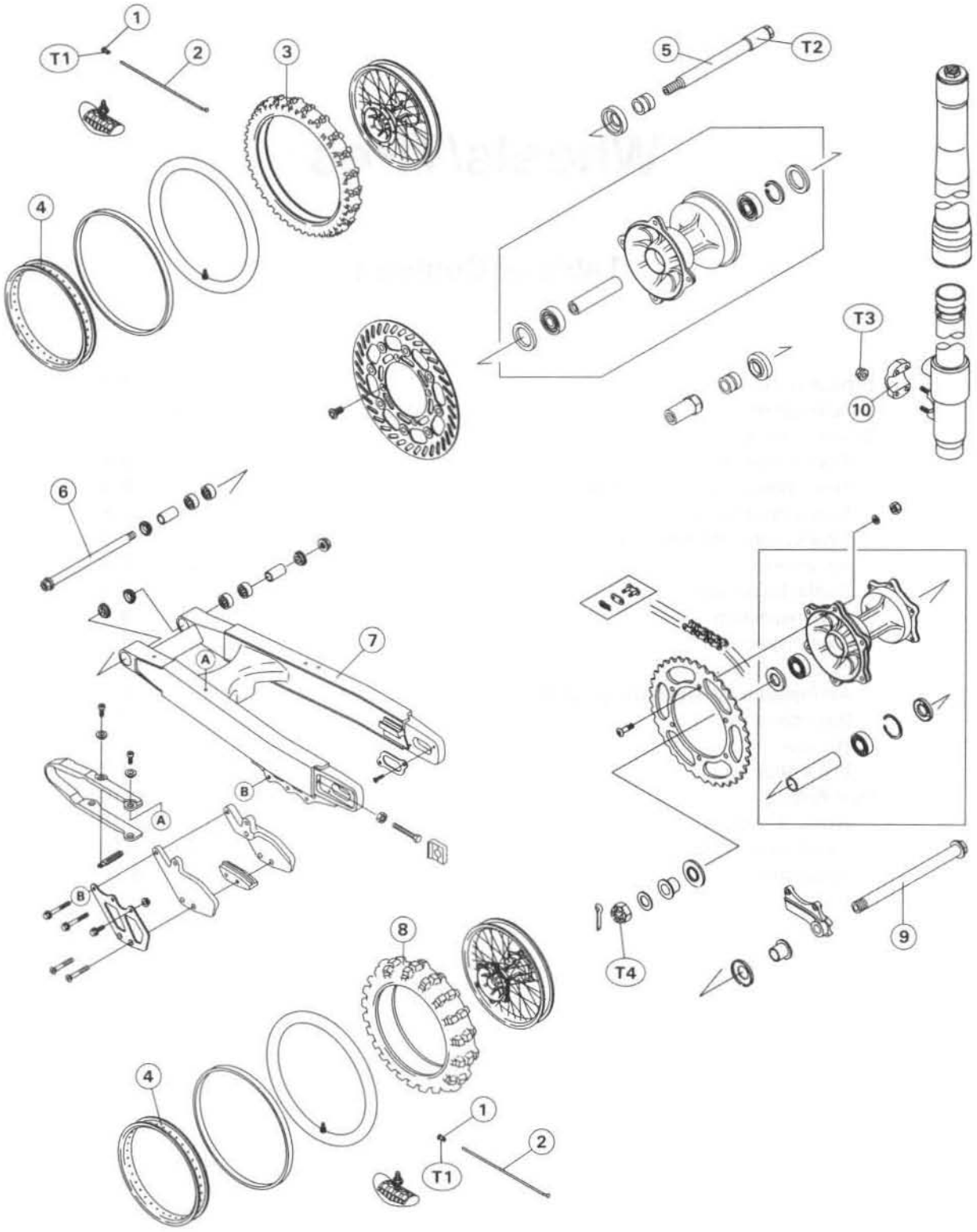
Exploded View



1. Nipple
2. Spoke
3. Front Tire
4. Rim
5. Front Axle
6. Pivot Shaft
7. Swing Arm
8. Rear Tire
9. Rear Axle
10. Front Axle Clamp

T1 : 1.5 N-m (0.15 kg-m, 13 ft-lb)
T2 : 54 N-m (5.5 kg-m, 40 ft-lb)
T3 : 9.3 N-m (0.95 kg-m, 82 in-lb)
T4 : 98 N-m (10 kg-m, 72 ft-lb)

Specifications

Item		Standard	Service Limit
Wheels (Rims):			
Rim runout:	Axial	Under 0.5 mm	2 mm
	Radial	Under 0.8 mm	2 mm
Axle runout/100 mm		Under 0.10 mm	0.2 mm
Tires:			
Standard tire:			
KX125:			
Front:	Size	80/100-21 51 M	---
	Make	DUNLOP	
	Type	K490, Tube (E) D752, Tube	
Rear:	Size	100/90-19 57 M	---
	Make	DUNLOP	
	Type	K695, Tube (E) D752, Tube	
KX250:			
Front:	Size	80/100-21 51 M	---
	Make	DUNLOP	
	Type	K490, Tube (E) D752, Tube	
Rear:	Size	110/90-19 62 M	---
	Make	DUNLOP	
	Type	K695, Tube (E) D752, Tube	

(E): European Model

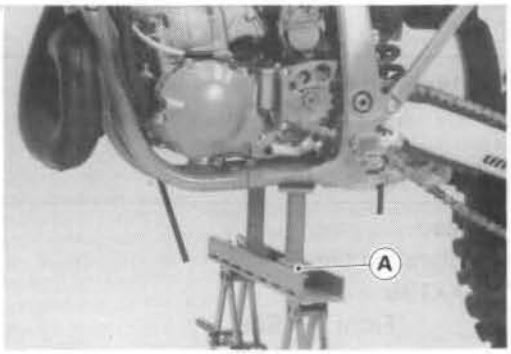
Special Tools – Inside Circlip Pliers: 57001-143
Rim Protector: 57001-1063
Bead Breaker Assembly: 57001-1072
Bearing Driver Set: 57001-1129
Jack: 57001-1238

Wheels (Rims)

Front Wheel Removal

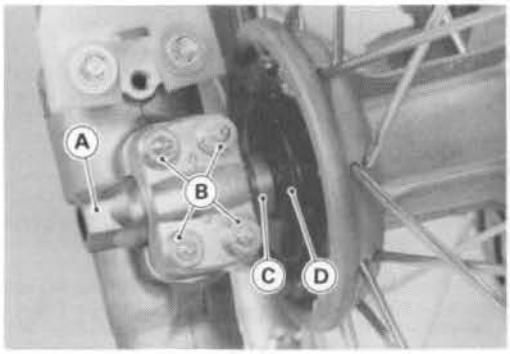
● Using the jack [A] under the frame, and stabilize the motorcycle.

Special Tool – Jack: 57001-1238 [A]



● Place a stand under the engine to raise the front wheel off the ground.
● Remove the front disc cover.

● Loosen the right axle clamp nuts [B], remove the axle [A], and pull out the wheel.
● Take off the collar [C] and cap [D] from each side of the front hub.



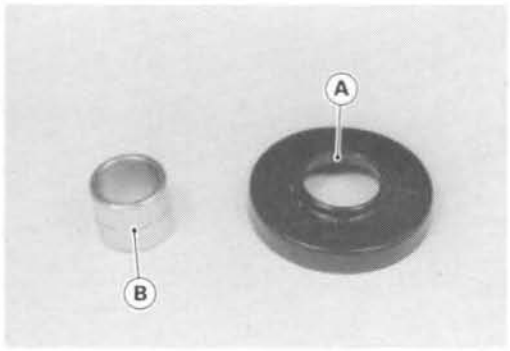
CAUTION

Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so the disc does not touch the ground.

● Insert a wood wedge between the disc brake pads. This prevents them from being moved out of their proper position, should the brake lever be squeezed accidentally.

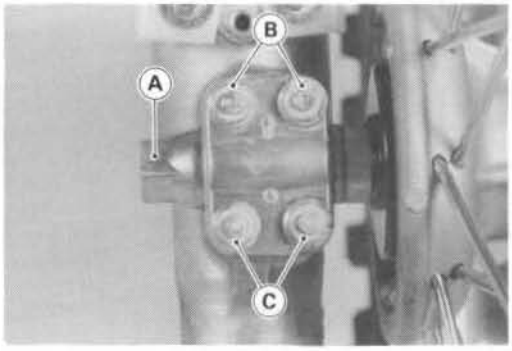
Front Wheel Installation Notes

● Fit the projection [A] on the cap to the groove [B] on the collar.
● Install the collars on the left and right side of the hub.



● Torque the axle [A].

Torque – Front Axle: 54 N-m (5.5 kg-m, 40 ft-lb)



● Tighten the upper clamp nuts [B] first, and then tighten the lower clamp nuts [C].

Torque – Clamp Nut : 9.3 N-m (0.95 kg-m, 82 in-lb)

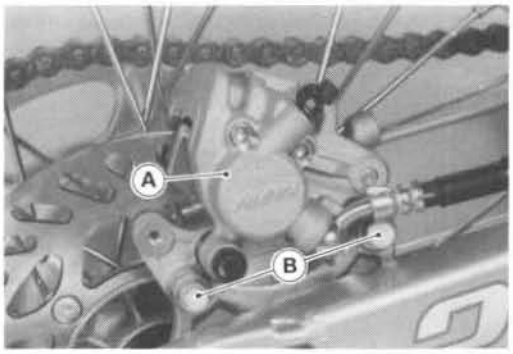
⚠WARNING

Do not attempt to drive the motorcycle until a full brake lever is obtained by pumping the brake lever until the pads are against the disc. The brake will not function on the first application of the lever if this is not done.

Rear Wheel Removal

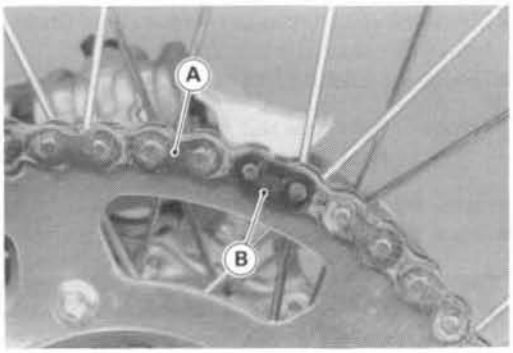
- Use the jack under the frame so that the rear wheel is raised off the ground.

Special Tool – Jack: 57001-1238

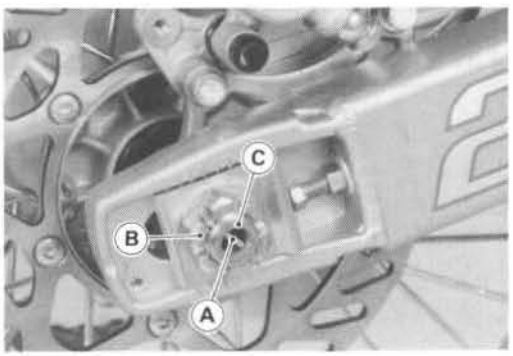


- Remove the caliper cover, unscrew the caliper mounting bolts [B], and remove the caliper [A] from the disc.
- Insert a wood wedge between the brake pads this prevents them from being moved out of their proper position, should the brake pedal be squeezed accidentally.

- Remove the clip [B] from the master link using pliers, and free the drive chain [A] from the rear sprocket.



- Remove the cotter pin [A].
- Remove the axle nut [B].
- Pull out the axle [C], and remove the chain adjuster, brake holder, and rear wheel.
- Take off the collar and cap from the each side of the rear hub.

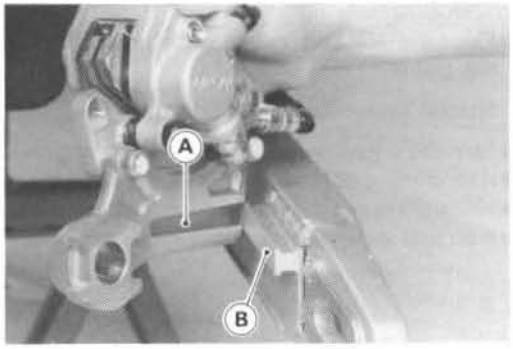


CAUTION

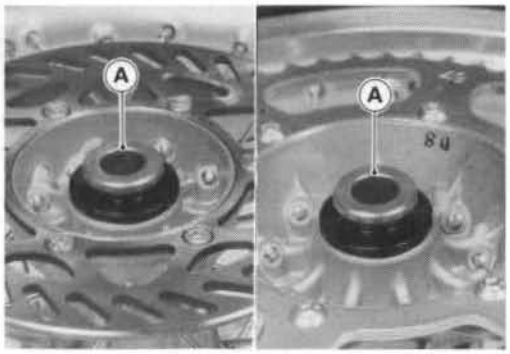
Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so the disc does not touch the ground.

Rear Wheel Installation Notes

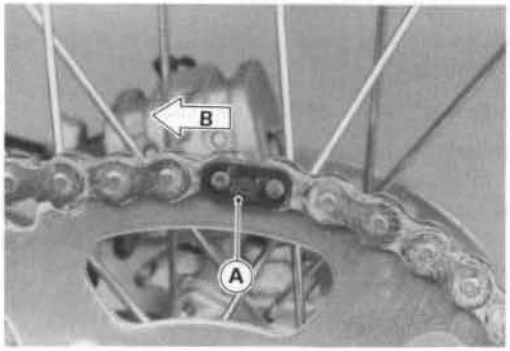
- Fit the brake holder stop [A] against the swing arm stop [B].



- Fit the projection on the cap to the groove on the collar.
- Install the collars [A] on the left and right side of the hub.



- Install the drive chain. Install the master link clip [A] so that the closed end of the "U" points in the direction of chain rotation [B].



- Check the drive chain slack (see Drive Chain Slack Inspection in the Final Drive chapter).
- Torque the axle nut and caliper mounting bolts.

Torque – Rear Axle Nut: 98 N-m (10 kg-m, 72 ft-lb)
Rear Caliper Mounting Bolts: 25 N-m (2.5 kg-m, 18 ft-lb)

- Install the new cotter pin.
- Check the rear brake for good braking power and no brake drag.

⚠WARNING

Do not attempt to drive the motorcycle until a full brake pedal is obtained by pumping the brake pedal until the pads are against the disc. The brake will not function on the first application of the pedal if this is not done.

Inspection

- Place the jack under the frame so that the front/rear wheel is raised off the ground.

Special Tool – Jack: 57001-1238

- Spin the wheel lightly, and check for roughness or binding.
★If roughness or binding is found, replace the hub bearings.
- Visually inspect the front and rear axles for damage.
★If an axle is damaged or bent, replace it.

Spoke Inspection

● Check that all the spokes are tightened evenly.

★ If spoke tightness is uneven or loose, torque the spoke nipples evenly.

Torque – Spoke Nipples: 1.5 N-m (0.15 kg-m, 13 in-lb)

● Check the rim runout.

⚠WARNING

If any spoke breaks, it should be replaced immediately. A missing spoke places an additional load on the other spokes, which will eventually cause other spokes to break.

Rim Inspection

● Place the jack under the frame so that the front/rear wheel is off the ground.

Special Tool – Jack: 57001-1238

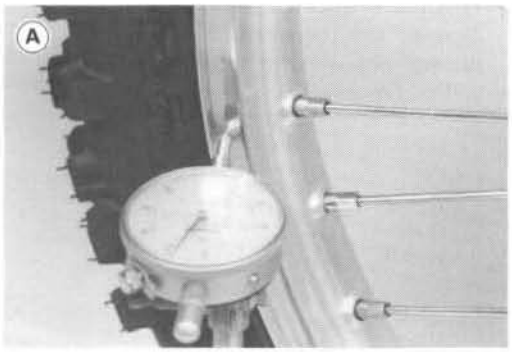
● Inspect the rim for small cracks, dents, bending, or warping.

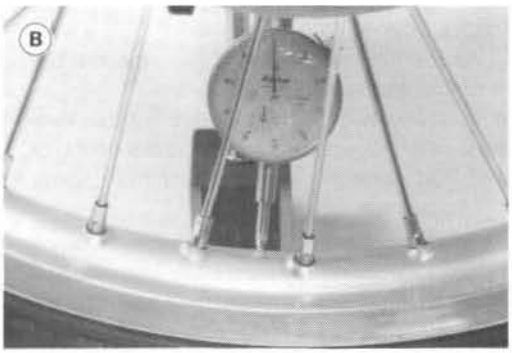
★ If there is any damage to the rim, it must be replaced.

● Set a dial gauge against the side of the rim, and rotate the rim to measure the axial runout [A]. The difference between the highest and lowest dial readings is the amount of runout.

● Set a dial gauge against the outer circumference of the rim, and rotate the rim to measure radial runout [B]. The difference between the highest and lowest dial readings is the amount of runout.

★ If rim runout exceeds the service limit, check the wheel bearings first. Replace them if they are damaged. If the problem is not due to the bearings, correct the rim warp (runout). A certain amount of rim warp can be corrected by recentering the rim. Loosen some spokes and tighten others within the standard torque to change the position of different parts of the rim. If the rim is badly bent, however, it must be replaced.





Rim Runout (with tire installed)

	Standard	Service Limit
Axial	under 0.5 mm	2 mm
Radial	under 0.8 mm	2 mm

Axle Inspection

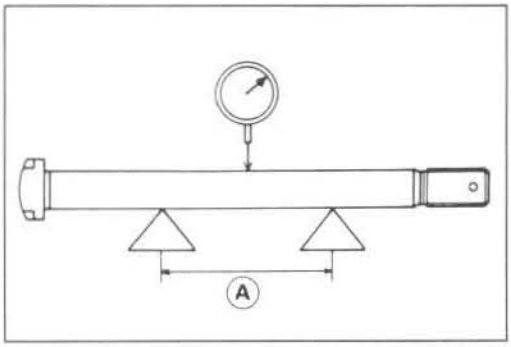
● Place the axle in V blocks that are 100 mm [A] apart, and set a dial gauge on the axle at a point halfway between the blocks. Turn the axle to measure the runout. The difference between the highest and lowest dial readings is the amount of runout.

★ If runout exceeds the service limit, replace the axle.

Axle Runout/100 mm

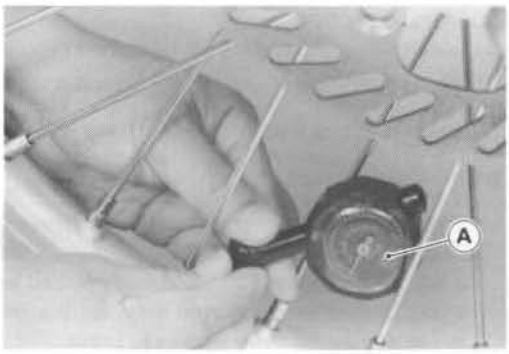
Standard: **Under 0.10 mm**

Service Limit: **0.2 mm**



Tires

Air Pressure Inspection/Adjustment



- Using a tire air pressure gauge [A], measure the tire pressure when the tires are cold.

★Adjust the tire air pressure to suit track conditions and rider preference, but do not stray too far from the recommended pressure.

Track Condition	Tire Pressure
○When the track is wet, muddy, sandy or slippery, reduce the tire pressure to increase the tire tread surface on the ground. ○When the track is pebbly or hard, increase the tire pressure to prevent damage or punctures, though the tires will skid more easily.	80 kPa (0.8 kg/cm², 11 psi) ↕ 100 kPa (1.0 kg/cm², 14 psi)

Inspection

As the tire tread wears down, the tire becomes more susceptible to puncture and failure.

- Remove any imbedded stones or other foreign particles from the tread.
- Visually inspect the tire for cracks and cuts, replacing the tire in case of bad damage. Swelling or high spots indicate internal damage, requiring tire replacement.

⚠WARNING

To ensure safe handling and stability, use only the recommended standard tires for replacement, inflated to the standard pressure.

NOTE

○*Check and balance the wheel when a tire is replaced with a new one.*

Standard Tire

KX125:

Front:

Size:	**80/100-21 51M**
Make:	**DUNLOP**
Type:	**K490, Tube (E) D752, Tube**

Rear:

Size:	**100/90-19 57M**
Make:	**DUNLOP**
Type:	**K695, Tube (E) D752, Tube**

KX250:

Front:

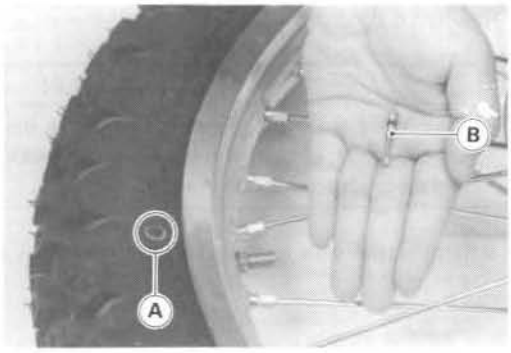
Size:	**80/100-21 51M**
Make:	**DUNLOP**
Type:	**K490, Tube (E) D752, Tube**

Rear:

Size:	**110/90-19 62M**
Make:	**DUNLOP**
Type:	**K695, Tube (E) D752, Tube**

(E) : European Model

Removal



CAUTION

Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so the disc does not touch the ground.

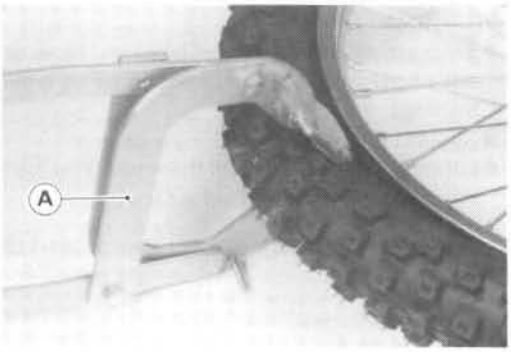
- Remove the wheel from the motorcycle (see Wheels).
- To maintain wheel balance, mark [A] the valve stem position on the tire with chalk so that the tire can be reinstalled in the same position.
- Take out the valve core [B] to let out the air.
- When handling the rim, be careful not to damage the rim flanges.
- Loosen the bead protector nut.
- Lubricate the tire beads and rim flanges on both sides with a soap and water solution or rubber lubricant. This helps the tire beads slip off the rim flanges.

CAUTION

Never lubricate with mineral oil (engine oil) or gasoline because they will cause deterioration of the tire.

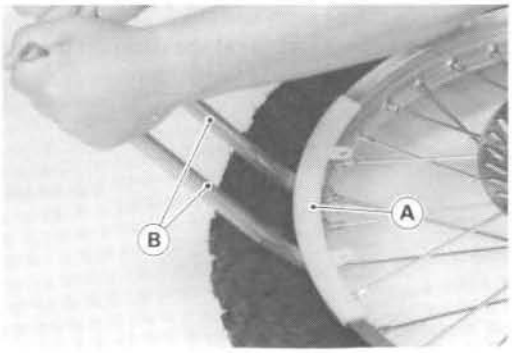
- Break the beads away from both sides of the rim with the bead breaker [A].

Special Tool – Bead Breaker Assembly: 57001-1072 [A]



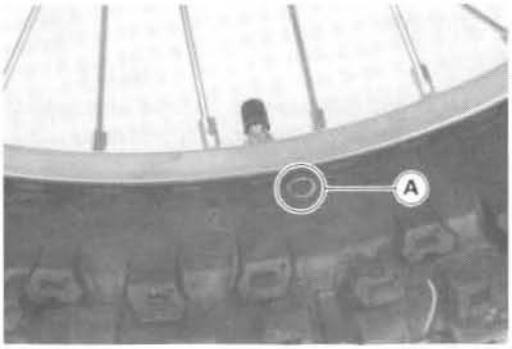
- Protecting the rim with rim protectors [A], pry the tire off.

Special Tool – Rim Protector: 57001-1063 [A]
Tire Iron Portion of the Bead Breaker Assembly: 57001-1072 [B]



Installation Notes

- Position the tire on the rim so that the valve is at the tire balance mark [A] (the chalk mark made during removal or the yellow paint mark on a new tire).
- Tighten the bead protector nut securely.
- Check and adjust the air pressure after installing.

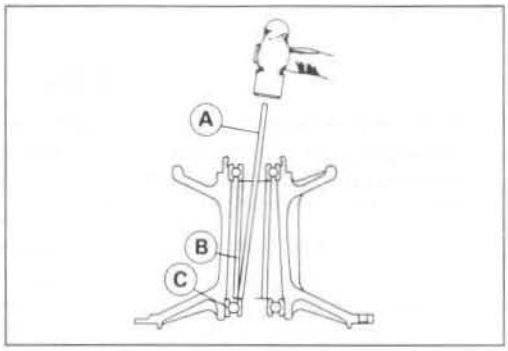


Hub Bearings

Removal Notes

CAUTION

Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so that the disc does not touch the ground.



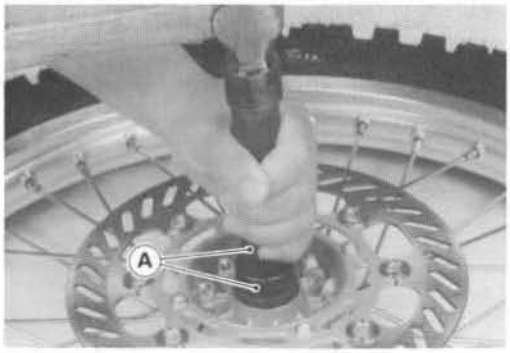
● Remove the hub bearing by tapping evenly around the bearing inner race as shown.

A. Bar
B. Distance Collar
C. Hub Bearing

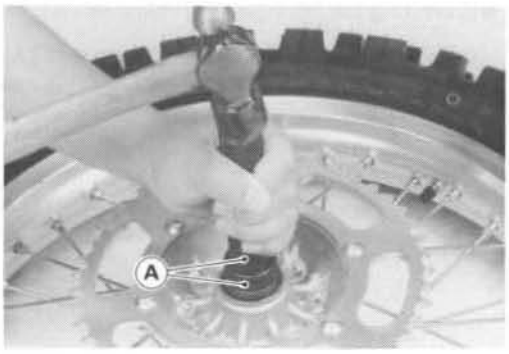
Installation Notes

● Before installing the wheel bearings, blow any dirt or foreign particles out of the hub with compressed air to prevent contamination of the bearings.
● Replace the bearings with new ones.
● Lubricate them and install them using the bearing driver set [A] so that the marked or shielded sides face out.

Special Tool – Bearing Driver Set: 57001-1129 [A]



● Replace the oil seals with new ones.
● Press it in until it stops at the circlip in the hole using the same special tools used for bearing installation



Inspection

NOTE

○ *It is not necessary to remove any bearings for inspection. If any bearings are removed, they will need to be replaced with new ones.*

● Spin it by hand to check its condition.
★ If it is noisy, does not spin smoothly, or has any rough spots, it must be replaced.
● Examine the bearing seal for tears or leakage.
★ If the seal is torn or is leaking, replace the bearing.

Final Drive

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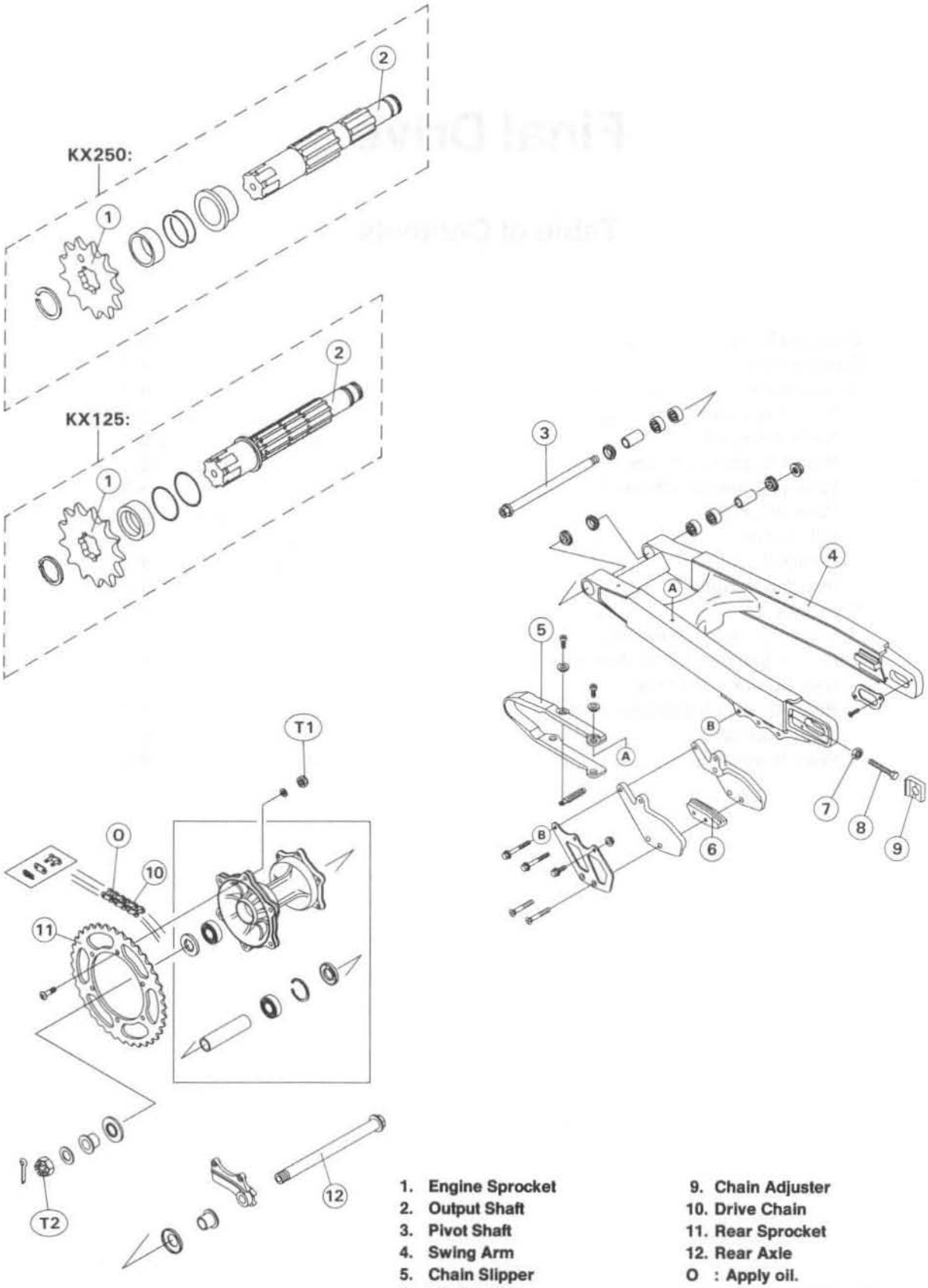
Exploded View



1. Engine Sprocket
2. Output Shaft
3. Pivot Shaft
4. Swing Arm
5. Chain Slipper
6. Chain Guide
7. Locknut
8. Adjusting Bolt
9. Chain Adjuster
10. Drive Chain
11. Rear Sprocket
12. Rear Axle

O : Apply oil.
T1 : 29 N-m (3 kg-m, 22 ft-lb)
T2 : 98 N-m (10 kg-m, 72 ft-lb)

Specifications

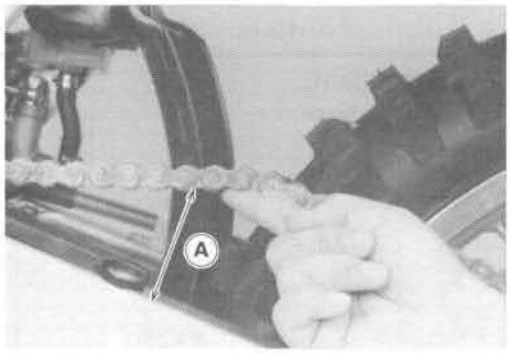
Item		Standard	Service Limit
Drive Chain:			
Chain slack		50 ~ 60 mm	Less than 50 mm, or more than 65 mm
Chain 20-link length		317.5 mm ~ 318.2 mm	323 mm
Standard Chain:			
Make:		DAIDO	---
Type:	KX125	D.I.D 520DS-6 (E) D.I.D 520DS-5	---
	KX250	D.I.D 520 DS	---
Length:	KX125	112 Link	---
	KX250	114 Links	---
Sprockets:			
Engine sprocket diameter:	KX125	50.98 ~ 51.18 mm/12T	50.7 mm
	KX250	60.99 ~ 61.19 mm/14T	60.7 mm
Rear sprocket diameter		237.54 ~ 238.04 mm/49T	237.0 mm
Rear sprocket warp		Under 0.4 mm	0.5 mm

(E) : European Model

Special Tools – Outside Circlip Pliers: 57001-144
Bearing Driver Set: 57001-1129
Jack: 57001-1238

Drive Chain

Slack Inspection



- Support the motorcycle on its side stand.
- Check the wheel alignment (see Wheel Alignment Inspection), and adjust it if necessary (see Wheel Alignment Adjustment).

NOTE

○*Clean the drive chain if it is dirty, and lubricate it if it appears dry.*

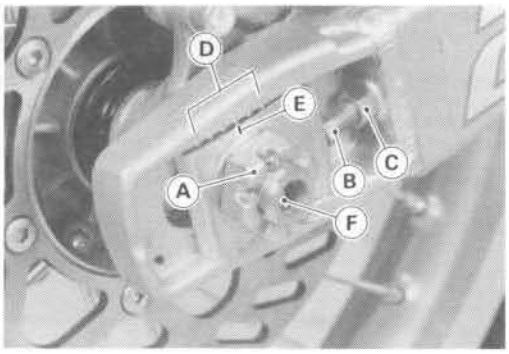
- Rotate the rear wheel to find the position where the chain is tightest.
- Measure the space (chain slack) [A] between the chain and the swing arm at the rear of the chain slipper as shown.

★If the drive chain slack exceeds the standard, adjust it.

Chain Slack

Standard:	**50 ~ 60 mm**
Usable Range:	**50 ~ 65 mm**

Slack Adjustment



- Loosen the left and right chain adjuster locknuts [C].
- Remove the cotter pin [F] and loosen the axle nut [A].

★If the chain is too tight, back out the left and right chain adjusting bolts [B] evenly, and kick the wheel forward until the chain is too loose.

★If the chain is too loose, turn both chain adjusting bolts [B] evenly until the drive chain has the correct amount of slack. To keep the chain and wheel properly aligned, the notch [E] on the left chain adjuster should align with the same swing arm mark [D] as the right chain adjuster notch.

- Check the wheel alignment.
- Tighten both chain adjuster locknuts securely.
- Tighten the axle nut.

Torque – Rear Axle Nut: 98 N-m (10.0 kg-m, 72 ft-lb)

- Rotate the wheel, measure the chain slack again at the tightest position, and readjust if necessary.
- Install a new cotter pin through the axle nut and axle, and spread its ends.

⚠WARNING

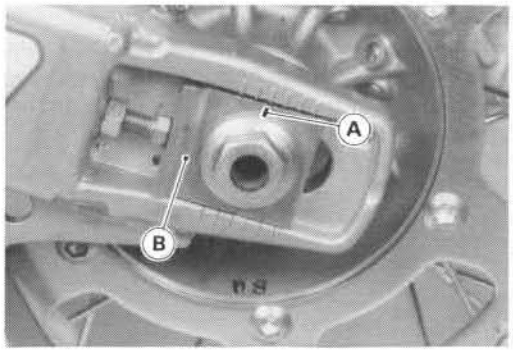
If the axle nut is not securely tightened, or the cotter pin is not installed, an unsafe riding condition may result.

- Check the rear brake (see the Brakes chapter).

NOTE

○*In wet and muddy conditions, mud sticks to the chain and sprockets resulting in an overly tight chain, and the chain may break. To prevent this, adjust the chain to 55 ~ 65 mm of slack whenever necessary.*

Wheel Alignment Inspection



● Check that the notch [A] on the left chain adjuster [B] aligns with the same swing arm mark as the right chain adjuster.

NOTE

○ *Wheel alignment can also be checked using the straightedge or string method.*

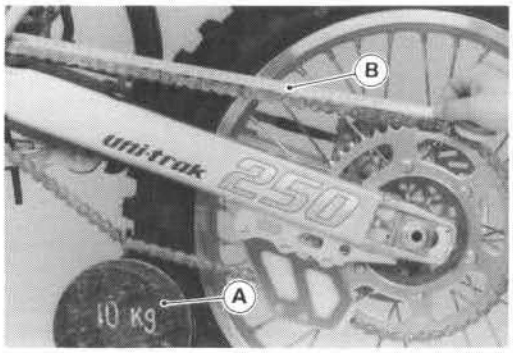
⚠WARNING

Misalignment of the wheel will result in abnormal wear, and may result in an unsafe riding condition.

Wheel Alignment Adjustment

This procedure is the same as Drive Chain Slack Adjustment.

Wear Inspection



● Rotate the rear wheel to inspect the drive chain for damaged rollers, and loose pins and links.

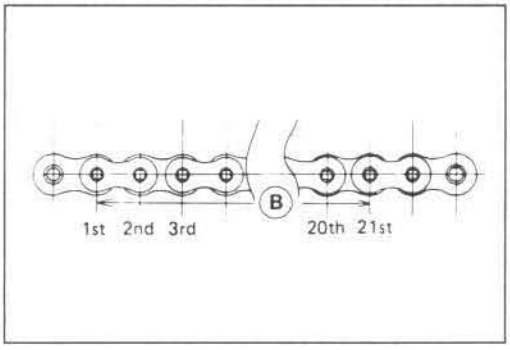
★ If there is any irregularity, replace the drive chain.

★ Lubricate the drive chain if it appears dry.

● Stretch the chain taut by hanging a 98 N (10kg, 20lb) weight [A] on the chain.

● Measure [B] the length of 20 links on the straight part of the chain from the pin center of the 1st pin to the pin center of the 21st pin. Since the chain may wear unevenly, take measurements at several places.

★ If any measurements exceed the service limit, replace the chain. Also, replace the front and rear sprockets when the drive chain is replaced.



Chain 20-Link Length

Standard:	**317.5 mm ~ 318.2 mm**
Service Limit:	**323 mm**

⚠WARNING

If the drive chain wear exceeds the service limit, replace the chain or an unsafe riding condition may result. A chain that breaks or jumps off the sprockets could snag on the engine sprocket or lock the rear wheel, severely damaging the motorcycle and causing it to go out of control.

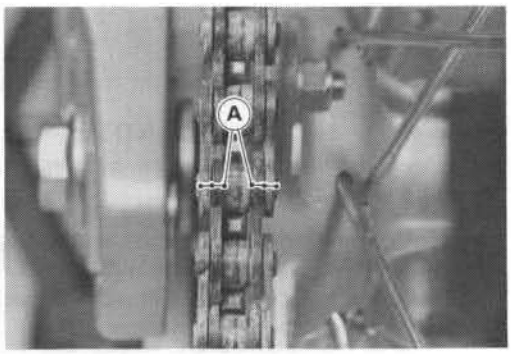
Standard Chain

Make:	**DAIDO**	
Type:	**KX125 –**	**D.I.D 520DS-6**
		(E) D.I.D 520 DS-5
	KX250 –	**D.I.D 520DS**
Link:	**KX125 –**	**112 Links**
	KX250 –	**114 Links**

(E) : European Model

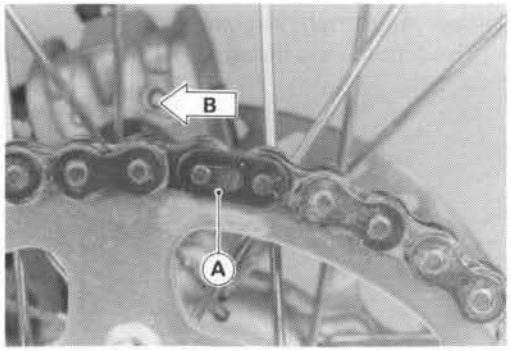
Lubrication

- If the chain appears especially dirty, it should be cleaned before lubrication with high flash-point solvent.
- Apply oil [A] to the sides of the rollers so that oil will penetrate to the rollers and bushings.
- Wipe off any excess oil.



Removal

- Remove the engine sprocket cover.
- Remove the clip [A] from the master link using pliers, and free the drive chain from the rear sprocket.
- Remove the drive chain from the chassis.

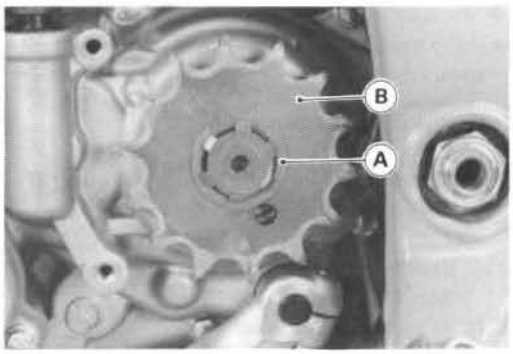


Installation Notes

- Fit the drive chain back onto the sprockets with the ends at the rear sprocket.
- Install the master link from the frame side.
- Install the clip [A] so that the closed end of the "U" points in the direction of chain rotation [B].
- Adjust the drive chain slack (see Drive Chain Slack Adjustment).
- Check the rear brake (see the Brakes chapter).

Sprockets

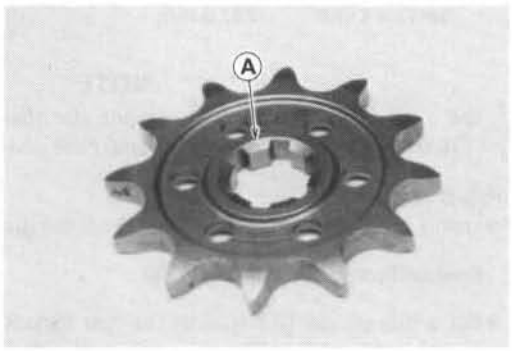
Engine Sprocket Removal



- Remove:
  Engine Sprocket Cover
  Drive Chain (free of engine sprocket)
- Remove the circlip [A], and pull off the engine sprocket [B].

Special Tool – Outside Circlip Pliers: 57001-144

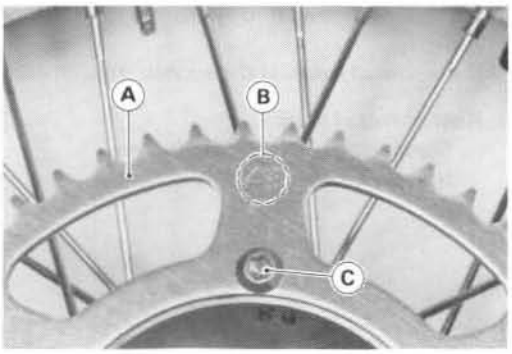
Engine Sprocket Installation Note



- Replace the circlip with a new one.
- For KX125 model; install the sprocket so that the chamfered side [A] faces in.

Special Tool – Outside Circlip Pliers: 57001-144

Rear Sprocket Removal



- Remove the rear wheel (see Rear Wheel Removal in the Wheels/Tires chapter).

CAUTION
Do not lay the wheel on the ground with the disc facing down. This can damage or warp the disc. Place blocks under the wheel so that the disc does not touch the ground.

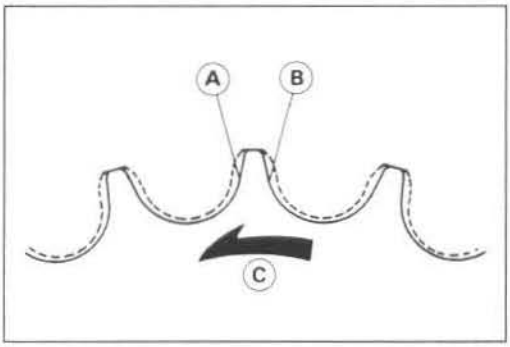
- Unscrew the rear sprocket bolts [C], and remove the rear sprocket [A].

Rear Sprocket Installation Notes

- Install the rear sprocket [A] so that the marked side [B] faces out.
- Tighten the rear sprocket bolts.

Torque – Rear Sprocket Bolts: 29 N-m (3.0 kg-m, 22 ft-lb)

Wear Inspection



- Visually inspect the front and rear sprocket teeth for wear and damage.

★If they are worn as illustrated or damaged, replace the sprocket.

A. Worn Tooth (Engine Sprocket)
B. Worn Tooth (Rear Sprocket)
C. Direction of Rotation

● Measure the diameter of the sprocket at the base of the teeth.
★ If the sprocket is worn down to less than the service limit, replace the sprocket.

Engine Sprocket Diameter
KX125 :
Standard: **50.98 ~ 51.18 mm/12T**
Service Limit: **50.7 mm**
KX250 :
Standard: **60.99 ~ 61.19 mm/14T**
Service Limit: **60.7 mm**
Rear Sprocket Diameter
Standard: **237.54 ~ 238.04 mm/49T**
Service Limit: **237.0 mm**

NOTE

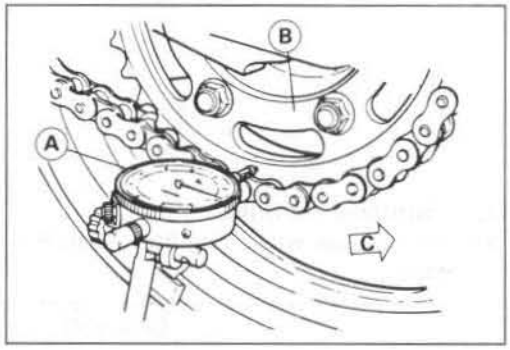
○ *If a sprocket requires replacement, the chain is probably worn also. When replacing a sprocket, inspect the chain.*

Warp Inspection

● Using the jack, raise the rear wheel off the ground.

Special Tool – Jack: 57001-1238

● Set a dial gauge [A] against the rear sprocket [B] near the teeth as shown and rotate [C] the rear wheel. The difference between the highest and lowest dial gauge readings is the amount of runout (warp).
★ If the runout exceeds the service limit, replace the rear sprocket.



Rear Sprocket Warp
Standard: **Under 0.4 mm**
Service Limit: **0.5 mm**

Brakes

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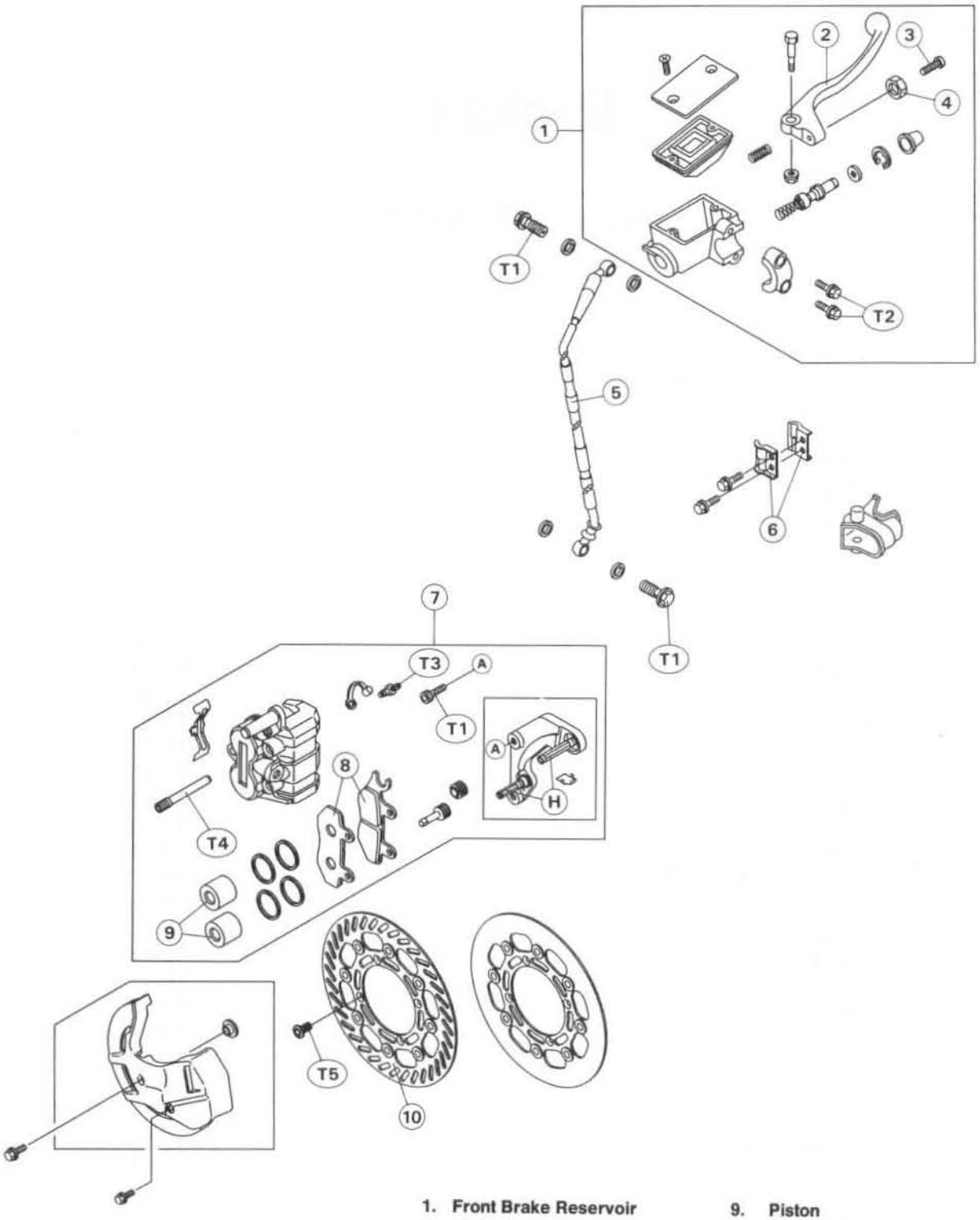
Exploded View

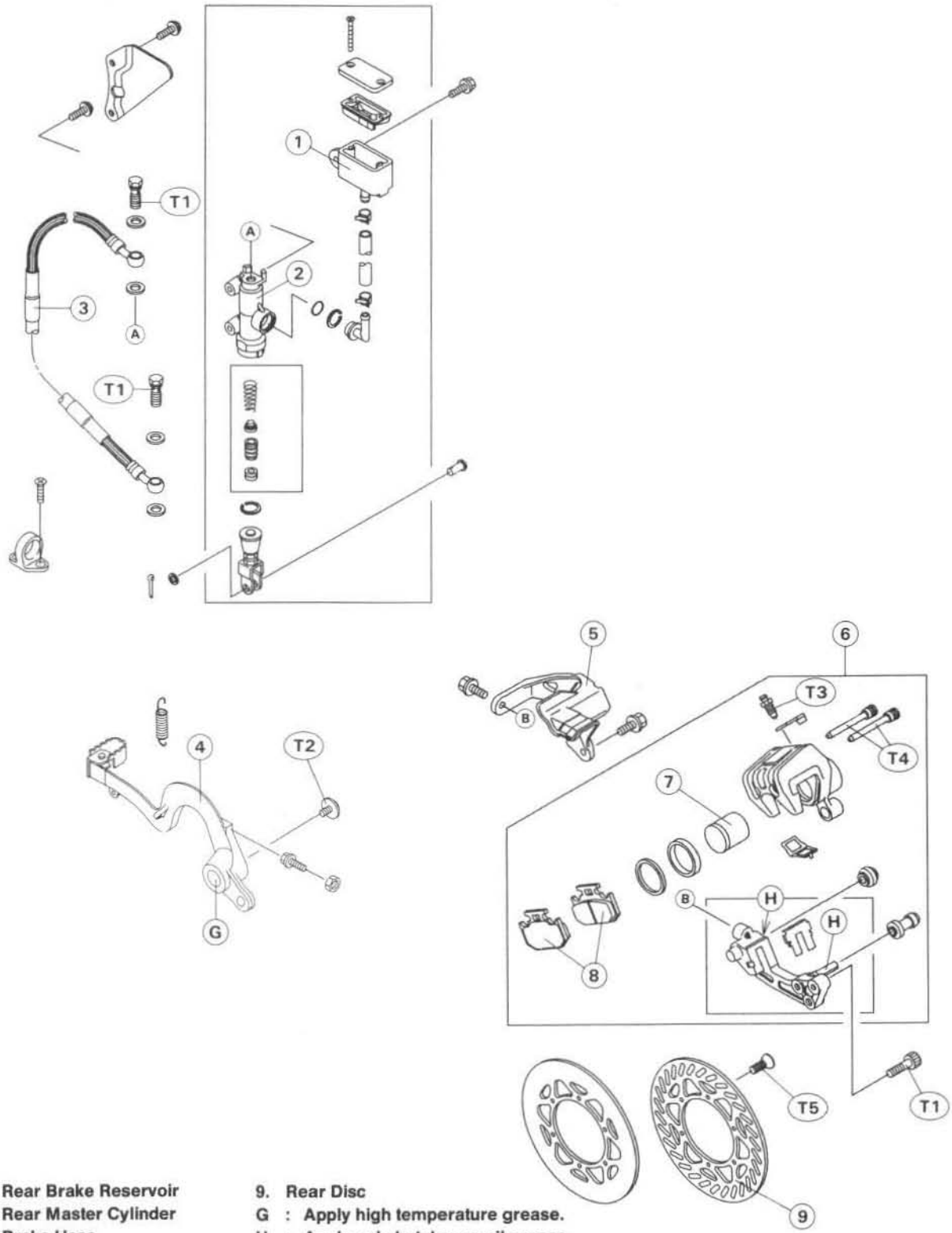
Front Disc Brake



1. Front Brake Reservoir
2. Brake Lever
3. Brake Lever Adjuster
4. Locknut
5. Brake Hose
6. Clamp
7. Front Caliper
8. Brake Pad
9. Piston
10. Front Disc

H : Apply poly butyl cuprysil grease.
T1 : 25 N-m (2.5 kg-m, 18.0 ft-lb)
T2 : 8.8 N-m (0.9 kg-m, 78 in-lb)
T3 : 7.8 N-m (0.8 kg-m, 69 in-lb)
T4 : 18 N-m (1.8 kg-m, 13.0 ft-lb)
T5 : 9.8 N-m (1.0 kg-m, 87 in-lb)

Rear Disc Brake



1. Rear Brake Reservoir
2. Rear Master Cylinder
3. Brake Hose
4. Brake Pedal
5. Rear Caliper Cover
6. Rear Caliper
7. Piston
8. Brake Pad
9. Rear Disc

G : Apply high temperature grease.
H : Apply poly butyl cuprysil grease.
T1 : 25 N-m (2.5 kg-m, 18.0 ft-lb)
T2 : 8.8 N-m (0.9 kg-m, 78 in-lb)
T3 : 7.8 N-m (0.8 kg-m, 69 in-lb)
T4 : 18 N-m (1.8 kg-m, 13.0 ft-lb)
T5 : 9.8 N-m (1.0 kg-m, 87 in-lb)

Specifications

Item		Standard	Service Limit
Brake Adjustment:			
Lever play		Adjustable (to suit rider)	---
Brake pedal position		Adjustable (-10 ~ 10 mm)	---
Brake pedal play		Adjustable (10 ~ 20 mm)	---
Brake Fluid:			
Recommended disc brake fluid:			
	Type	D.O.T.3 or D.O T. 4	---
	Brand	[D.O.T.3]	
		Atlas Extra Heavy Duty	---
		Shell Super Heavy Duty	---
		Texaco Super Heavy Duty	---
		Wagner Lockheed Heavy Duty	---
		Castrol Girling-Universal	---
		Castrol GT (LMA)	---
		Castrol Disc Brake Fluid	---
		[D.O.T.4]	
		Castrol Girling-Universal	---
		Castrol GT (LMA)	---
		Castrol Disc Brake Fluid	---
		Check Shock Premium Heavy Duty	---
Brake Pads:			
Lining thickness:	Front	4.2 mm	1 mm
	Rear	4.7 mm	1 mm
Brake Disc:			
Thickness:	Front	2.85 ~ 3.15 mm	2.5 mm
	Rear	4.35 ~ 4.65 mm	3.8 mm
Runout		Not more than 0.12 mm	0.3 mm

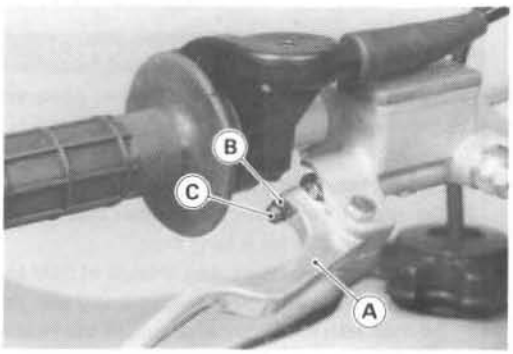
Special Tools – Inside Circlip Pliers: 57001-143
Jack: 57001-1238

Brake Lever, Brake Pedal

Lever Play Adjustment

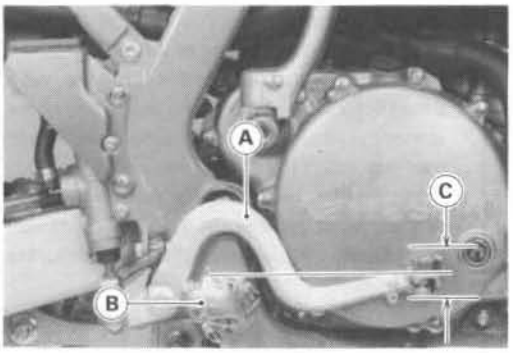
Adjust the front brake lever [A] to suit you.

- Loosen the adjuster locknut [B] and turn the adjuster [C] to either side.
- After adjustment, tighten the locknut.

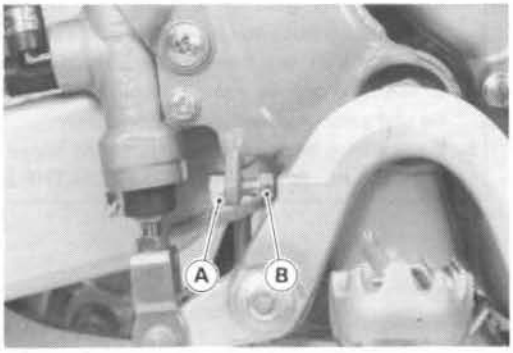


Pedal Position/Adjustment

When the brake pedal [A] is in rest position, it should be -10 ~ 10 mm [C] from the top of the footpeg [B]. If it is not, adjust the pedal position.



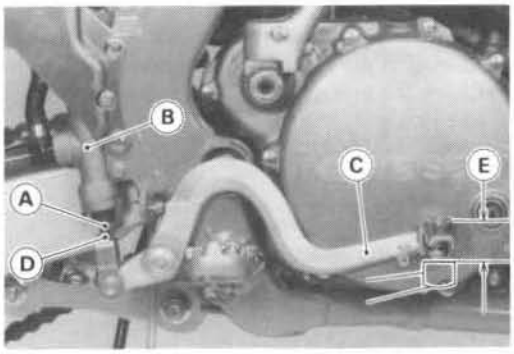
- Loosen the locknut [A], turn the adjusting bolt [B], and then tighten the locknut securely.
- Check the brake pedal play.
- Check the brake for good braking power, and no brake drag.



Pedal Play Adjustment

The brake pedal [C] has 10 ~ 20 mm [E] of play when the pedal is pushed down lightly by hand.

- Loosen the adjuster locknut [D] and turn the adjuster [A] on the rear master cylinder [B].
- After adjustment, tighten the locknut securely.
- Check the brake for good brake power, and no brake drag.



Brake Fluid

⚠WARNING

When working with the disc brake, observe the precautions listed below.

1. **Never reuse old brake fluid.**
2. **Do not use fluid from a container that has been left unsealed or that has been open for a long time.**
3. **Do not mix two types and brands of fluid for use in the brake. This lowers the brake fluid boiling point and could cause the brake to be ineffective. It may also cause the rubber brake parts to deteriorate.**
4. **Don't leave the reservoir cap off for any length of time to avoid moisture contamination of the fluid.**
5. **Don't change the fluid in the rain or when a strong wind is blowing.**
6. **Except for the disc pads and disc, use only disc brake fluid, isopropyl alcohol, or ethyl alcohol for cleaning brake parts. Do not use any other fluid for cleaning these parts. Gasoline, engine 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 disc brake.**
7. **When handling the disc pads or disc, be careful that no disc brake fluid or any oil gets on them. Clean off any fluid or oil that inadvertently gets on the pads or disc with a high flash-point solvent. Do not use one which will leave an oily residue. Replace the pads with new ones if they cannot be cleaned satisfactorily.**
8. **Brake fluid quickly ruins painted surfaces; any spilled fluid should be completely wiped up immediately.**
9. **If any of the brake line fittings or the bleed valve is opened at any time, the AIR MUST BE BLED FROM THE BRAKE.**

Level Inspection

In accordance with the Periodic Maintenance Chart, inspect the brake fluid level in the front and rear brake fluid reservoirs.

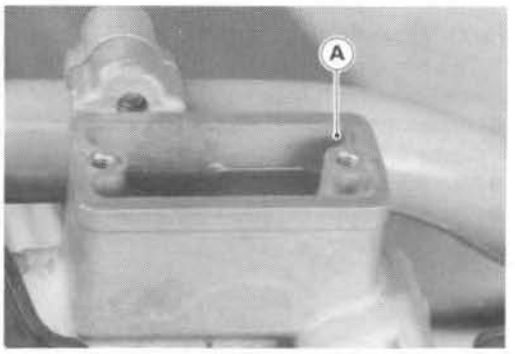
● Check the brake fluid level in the front brake reservoir [A] is more than half full.

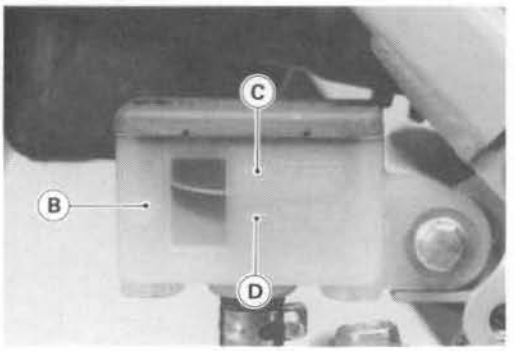
NOTE

○ *Hold the reservoir horizontal when checking brake fluid level.*

● Remove the reservoir guard and check the brake fluid level in the rear brake reservoir [B] is between the upper [C] and the lower [D] level lines.

★ If the fluid level is lower than the lower level line, fill the reservoir to the upper level line of the reservoir.





⚠WARNING

Change the brake fluid in the brake line completely if the brake fluid must be refilled but the type and brand of the brake fluid that already is in the reservoir are unidentified. After changing the fluid, use only the same type and brand of fluid thereafter. Mixing different types and brand of brake fluid lowers the brake fluid boiling point and could cause the brake to be ineffective. It may also cause the rubber brake parts to deteriorate.

NOTE

○*Brake fluid of D.O.T.4. is installed in the brake system when shipped.*

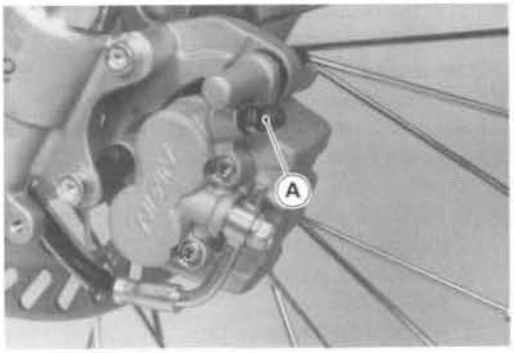
Recommended Disc Brake Fluid
Type: D.O.T.3 or D.O.T.4
Brand: [D.O.T.3]
Atlas Extra Heavy Duty
Shell Super Heavy Duty
Texaco Super Heavy Duty
Wagner Lockheed Heavy Duty
Castrol Girling-Universal
Castrol GT (LMA)
Castrol Disc Brake Fluid
[D.O.T.4]
Castrol Girling – Universal
Castrol GT (LMA)
Castrol Disc Brake Fluid
Check Shock Premium Heavy Duty

Change

In accordance with the Periodic Maintenance Chart, change the brake fluid. The brake fluid should also be changed if it becomes contaminated with dirt or water. Furthermore, the brake fluid should be changed whenever the brake line parts are removed to bleed the air quickly and completely.

NOTE

○*The procedure to change the front brake fluid is as follows. Changing the rear brake fluid is the same as for the front brake.*

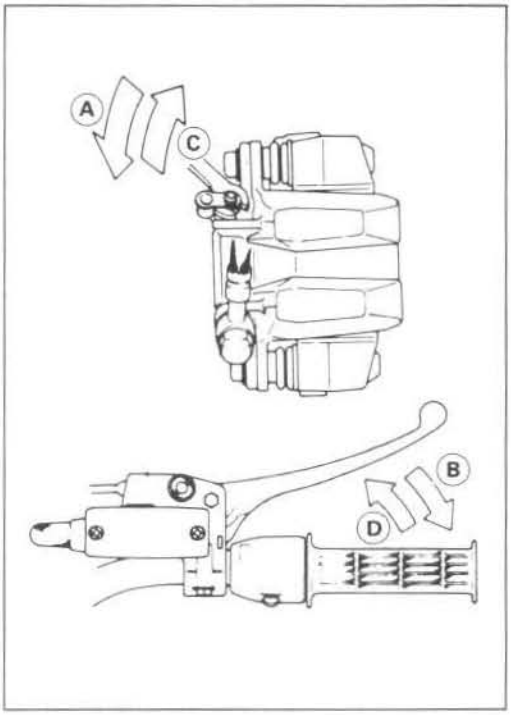


- Level the brake fluid reservoir.
- Remove the reservoir cap.
- Remove the rubber cap on the bleed valve [A].
- Attach a clear plastic hose to the bleed valve on the caliper, and run the other end of the hose into a container.

- Change the brake fluid as follows:

○Repeat this operation until fresh brake fluid comes out from the plastic hose or the color of the fluid changes.

1. Open the bleed valve [A].
2. Apply the brake and hold it [B].
3. Close the bleed valve [C].
4. Release the brake [D].



NOTE

○*The fluid level must be checked often during the changing operation and replenished with fresh brake fluid. If the fluid in the reservoir runs out any time during the changing operation, the brakes will need to be bled since air will have entered the brake line.*

- Remove the clear plastic hose.
- Tighten the bleed valves, and install the rubber caps.

Torque – Caliper Bleed Valve: 7.8 N-m (0.8 kg-m, 69 in-lb)

- After changing the fluid, check the brake for good braking power, no brake drag, and no fluid leakage.

★If necessary, bleed the air from the lines.

Bleeding the Brake Line

The brake fluid has a very low compression coefficient so that almost all the movement of the brake lever or pedal is transmitted directly to the caliper for braking action. Air, however, is easily compressed. When air enters the brake lines, brake lever or pedal movement will be partially used in compressing the air. This will make the lever or pedal feel spongy, and there will be a loss in braking power.

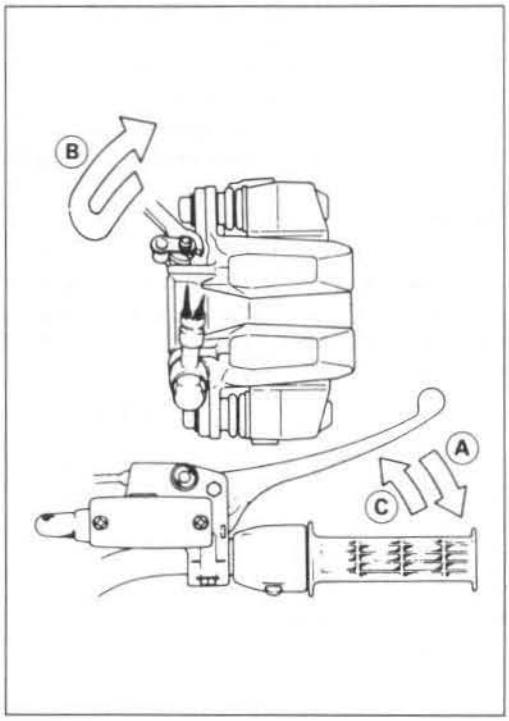
⚠WARNING

Be sure to bleed the air from the brake whenever brake lever or pedal action feels soft or spongy, after the brake fluid is changed, or whenever a brake line fitting has been loosened for any reason.

NOTE

○*The procedure to bleed the front brake line is as follows. Bleeding the rear brake line is the same as for the front brake.*

- Remove the reservoir cap, and check that there is plenty of fluid in the reservoir.
- With the reservoir cap off, slowly pump the brake lever several times until no air bubbles can be seen rising up through the fluid from the holes at the bottom of the reservoir.
- ○ Bleed the air completely from the master cylinder by this operation.
- Install the reservoir cap.
- Attach a clear plastic hose to the bleed valve on the caliper, and run the other end of the hose into a container.
- Bleed the brake line and the caliper as follows:
- ○ Repeat this operation until no more air can be seen coming out into the plastic hose.



1. Pump the brake lever until it becomes hard, and apply the brake and hold it [A].
2. Quickly open and close the bleed valve while holding the brake applied [B].
3. Release the brake [C].

NOTE

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

○*Tap the brake hose lightly from the caliper to the reservoir for easier bleeding.*

- Remove the clear plastic hose.
- Tighten the bleed valves, and install the rubber caps.

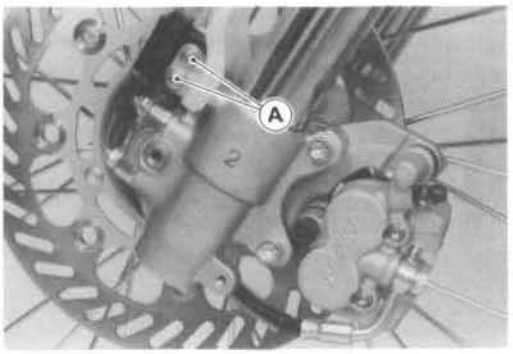
Torque – Caliper Bleed Valve: 7.8 N-m (0.8 kg-m, 69 in-lb)

- Check the fluid level.
- After bleeding is done, check the brake for good braking power, no brake drag, and no fluid leakage.

Caliper

Removal

- Remove the disc/caliper cover.
- Remove the front brake hose clamp mounting bolts [A].

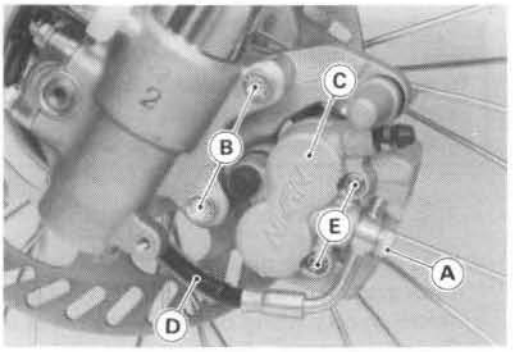


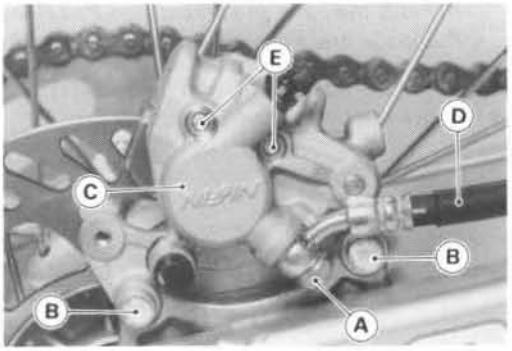
- Loosen the banjo bolt [A] at the brake hose lower end, and tighten it loosely.
- Loosen the brake pad bolts [E] before caliper removal if the caliper is to be disassembled.

NOTE

○ *If the caliper is to be disassembled after removal and compressed air is not available, disassemble the caliper before brake hose removal (see Disassembly).*

- Unscrew the mounting bolts [B], and detach the caliper [C] from the disc.
- Unscrew the banjo bolt and remove the brake hose [D] from the caliper (see Brake Hose Removal/Installation).





CAUTION

Immediately wipe up any brake fluid that spills.

Installation Note

- Tighten the brake pad bolts if it was removed.

Torque – Brake Pad Bolts: 18 N-m (1.8 kg-m, 13 ft-lb)

- Install the caliper, and the brake hose lower end.
- ○ Replace the washers that are on each side of the hose fitting with new ones.

Torque – Caliper Mounting Bolts: 25 N-m (2.5 kg-m, 18.0 ft-lb)
Brake Hose Banjo Bolt: 25 N-m (2.5 kg-m, 18.0 ft-lb)

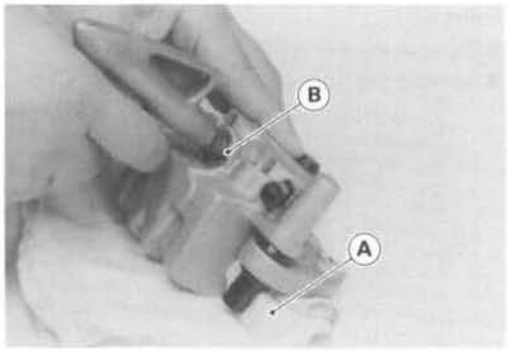
- Bleed the brake line (see Bleeding the Brake Line).
- Check the brake for good braking power, no brake drag, and no fluid leakage.

⚠WARNING

Do not attempt to drive the motorcycle until a full brake lever or pedal is obtained by pumping the brake lever or pedal until the pads are against the disc. The brakes will not function on the first application of the lever or pedal if this is not done.

Disassembly

- Remove the front/rear caliper.
- Remove the pads and spring (see Pad Removal).
- Remove the caliper holder, shaft rubber friction boot and cover.
- Using compressed air, remove the piston(s).
  - Cover the caliper opening with a clean, heavy cloth [A].
  - Remove the piston(s) by lightly applying compressed air [B] to where the brake line fits into the caliper.



⚠WARNING

To avoid serious injury, never place your fingers or palm inside the caliper opening. If you apply compressed air into the caliper, the piston(s) may crush your hand or fingers.

NOTE

- *If the caliper is to be disassembled after removal and compressed air is not available, remove the piston(s) using the following three steps before disconnecting the brake hose from the caliper.*
  - *Prepare a container for brake fluid, and perform the work above it.*
  - *Remove the pads and spring (see Pad Removal).*
  - *Pump the brake lever or pedal to remove the caliper piston(s).*
- Remove the dust seal(s) and fluid seal(s).
- Remove the bleed valve and rubber cap.

Assembly Notes

- Clean the caliper parts except for the pads.

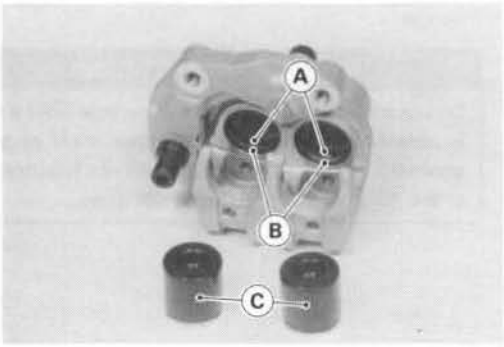
CAUTION

For cleaning the parts, use only disc brake fluid, isopropyl alcohol, or ethyl alcohol.

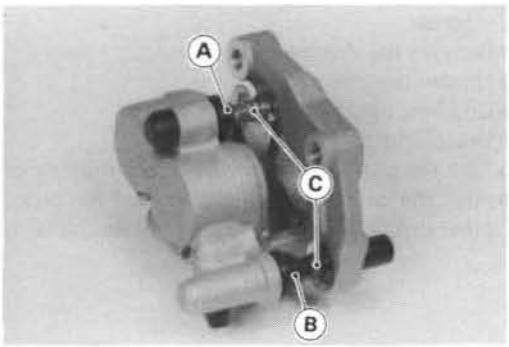
- Tighten the bleed valve.

Torque – Caliper Bleed Valve: 7.8 N-m (0.8 kg-m, 69 in-lb)

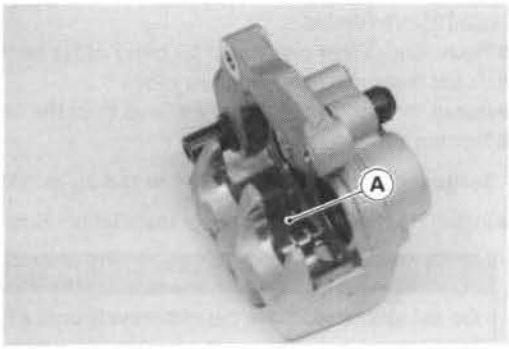
- Replace the fluid seals which are removed with new ones.
  - Apply brake fluid to the fluid seals [A], and install them into the cylinders by hand.
- Replace the dust seals with new ones if they are damaged.
  - Apply brake fluid to the dust seals [B], and install them into the cylinders by hand.
- Apply brake fluid to the outside of the pistons [C], and push them into each cylinder by hand.



- Replace the shaft rubber friction boot [A] and dust cover [B] if they are damaged.
- Apply a thin coat of PBC (Poly Butyl Cuprysil) grease to the caliper holder shafts [C] and holder holes (PBC is a special high temperature, water-resistant grease).



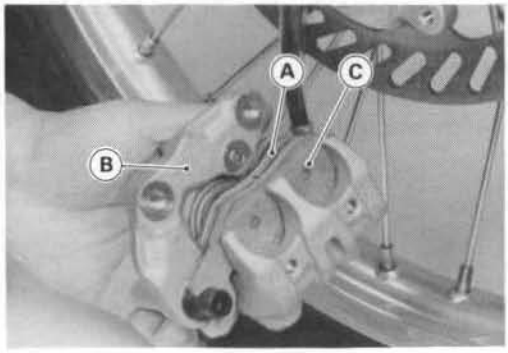
- Install the anti-rattle spring [A] in the caliper as shown.
- Install the pads (see Pads Installation Notes).
- Wipe up any spilled brake fluid on the caliper with watered cloth.



Brake Pads

Removal

- Remove the disc/caliper cover.
- Loosen the pad bolts.
- Unscrew the caliper mounting bolts.
- Detach the caliper from the disc.
- Take the piston side pad [A] out of the caliper holder.
- Push the caliper holder [B] toward the piston, and then remove the other pad [C] from the caliper holder shafts.



Installation Notes

- Push the caliper pistons in by hand as far as they will go.
- Install the anti-rattle spring in place.
- Install the piston side pad first, and then the other pad.
- Tighten the brake pad bolts.

Torque – Brake Pad Bolt: 18 N-m (1.8 kg-m, 13 ft-lb)

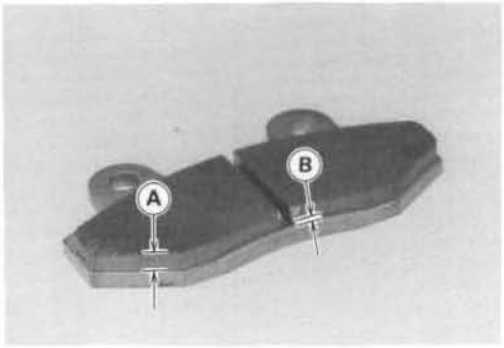
- Install the caliper (see Caliper Installation Notes).

⚠WARNING

Do not attempt to drive the motorcycle until a full brake lever or pedal is obtained by pumping the brake lever or pedal until the pads are against the disc. The brake will not function on the first application of the lever or pedal if this is not done.

Inspection

- Check the lining thickness and condition of the pads in each caliper.
- ★If either pad is damaged, replace both pads in the caliper as a set.
- ★If the lining thickness [A] of either pad is less than the service limit [B], replace both pads in the caliper as a set.



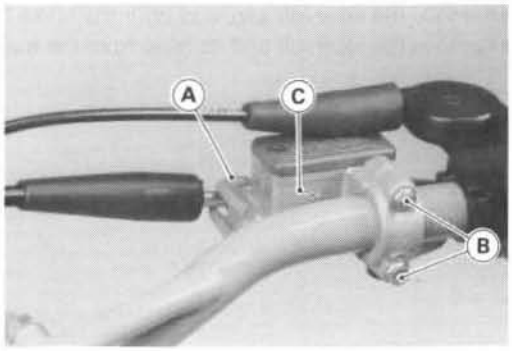
Lining Thickness

	Front	Rear
Standard:	**4.2 mm**	**4.7 mm**
Service Limit:	**1 mm**	**1 mm**

Master Cylinder

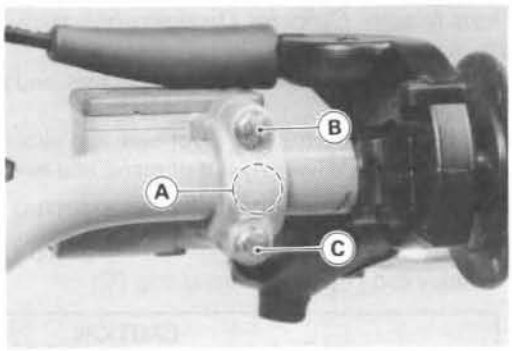
CAUTION

Brake fluid quickly ruins painted or plastic surfaces; any spilled fluid should be completely wiped up immediately with a damp cloth.



Front Master Cylinder Removal

- Pull back the dust cover, and remove the banjo bolt [A] to disconnect the upper brake hose from the master cylinder (see Brake Hose Removal/Installation Notes).
- When removing the brake hose, temporarily secure the end of the brake hose to some high place to keep fluid loss to a minimum.
- Unscrew the clamp bolts [B], and take off the master cylinder [C] as an assembly with the reservoir and brake lever.



Front Master Cylinder Installation Notes

- The master cylinder clamp must be installed with the arrow mark [A] upward.
- ○ Tighten the upper clamp bolt [B] first, and then the lower clamp bolt [C]. There will be a gap at the lower part of the clamp after tightening.

Torque – Master Cylinder Clamp Bolts: 8.8 N-m(0.9 kg-m, 78 in-lb)

- Replace the washers that are on each side of the hose fitting with new ones.
- Torque the brake hose banjo bolt.

Torque – Brake Hose Banjo Bolt: 25 N-m (2.5 kg-m, 18.0 ft-lb)

- Bleed the brake line (see Bleeding the Brake Line).
- Check the brake for good braking power, no brake drag, and no fluid leakage.

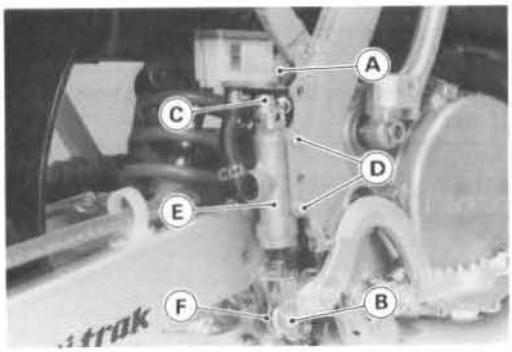
Rear Master Cylinder Removal

- Remove the reservoir guard and the reservoir mounting bolt [A].
- Remove the cotter pin [F].
- Pull off the joint pin [B].

NOTE

○ *Pull off the joint pin while pressing down the brake pedal.*

- Unscrew the brake hose banjo bolt [C] (see Brake Hose Removal/Installation Notes).
- When removing the brake hose, temporarily secure the end of the brake hose to some high place to keep fluid loss to a minimum.
- Unscrew the master cylinder mounting screws [D], and remove the master cylinder [E] with the reservoir.



- Remove the reservoir cap, and pour the brake fluid into a container.
- Remove the reservoir and its hose from the master cylinder.

Rear Master Cylinder Installation Notes

- Replace the cotter pin with a new one.
- Replace the washers are on each side of the hose fitting with new ones.
- Torque the following:

Torque – Brake Hose Banjo Bolt: 25 N-m (2.5 kg-m, 18.0 ft-lb)

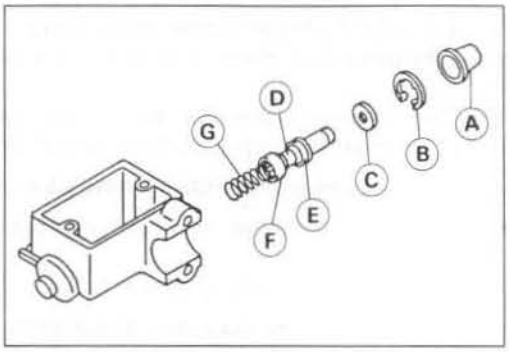
- Bleed the brake line (see Bleeding the Brake Line).
- Check the brake for good braking power, no brake drag, and no fluid leakage.
- Check the brake pedal position.

Front Master Cylinder Disassembly

- Remove the front master cylinder.
- Remove the reservoir cap and diaphragm, and pour the brake fluid into a container.
- Unscrew the locknut and pivot bolt, and remove the brake lever.
- Push the dust cover [A] out of place, and remove the circlip [B].

Special Tool – Inside Circlip Pliers: 57001-143

- Remove the washer [C], pull out the piston [D], secondary cup [E], primary cup [F], and return spring [G].



CAUTION
Do not remove the secondary cup from the piston since removal will damage it.

Rear Master Cylinder Disassembly

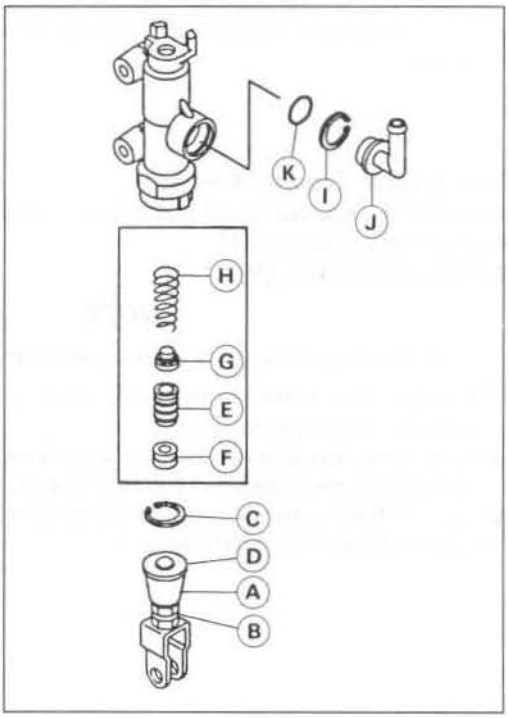
- Remove the rear master cylinder.
- Slide the dust cover [A] on the push rod [B] out of place, and remove the circlip [C].

Special Tool – Inside Circlip Pliers: 57001-143

- Pull out the push rod with the piston stop [D].
- Take off the piston [E], secondary cup [F], primary cup [G], and return spring [H].

CAUTION
Do not remove the secondary cup from the piston since removal will damage it.

- Remove the circlip [I], and take off the connector [J] and O-ring [K].



Assembly Notes

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

⚠CAUTION

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

- Take care not to scratch the piston or the inner wall of the cylinder.
- Tighten the brake lever pivot bolt and the locknut securely.

Inspection (Visual Inspection)

- Disassemble the front and rear master cylinders.
- Check that there are no scratches, rust or pitting on the inner wall of each master cylinder [A] and on the outside of each piston [B].

★If a master cylinder or piston shows any damage, replace them.

- Inspect the primary [C] and secondary [D] cups.

★If a cup is worn, damaged, softened (rotted), or swollen, the piston assembly should be replace to renew the cups.

★If fluid leakage is noted at the brake lever, the piston assembly should be replaced to renew the cup.

- Check the dust cover [E] for damage.

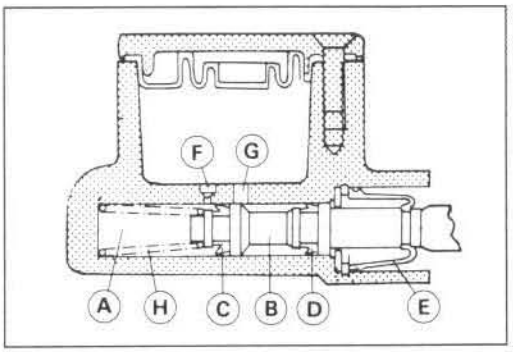
★If they are damaged, replace them.

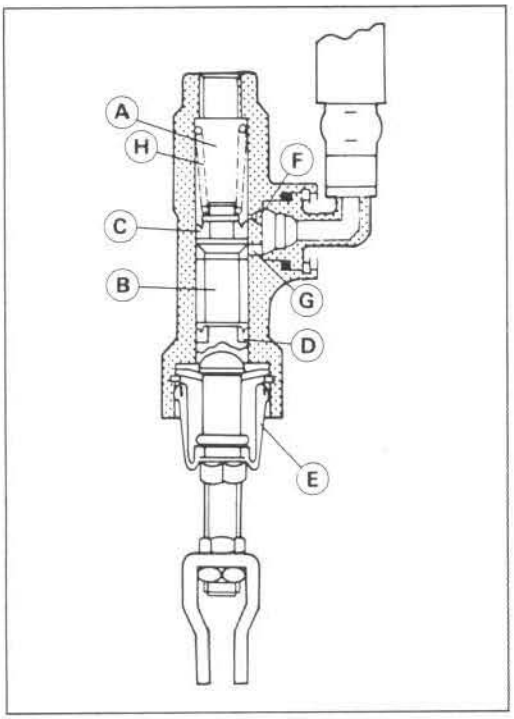
- Check that the relief [F] and supply [G] ports are not plugged.

★If the small relief port becomes plugged, the brake pads will drag on the disc. Blow the ports clean with compressed air.

- Check the piston return springs [H] for any damage.

★If a spring is damaged, replace it.

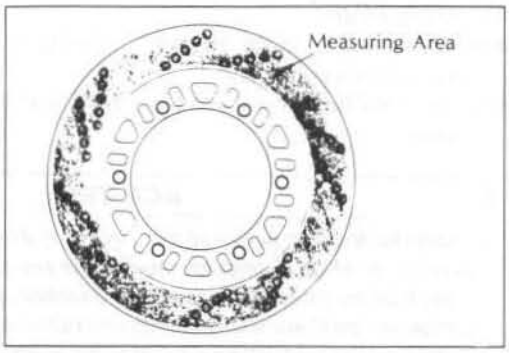




Brake Disc

Inspection

- Visually inspect the disc.
- ★If it is scratched or damaged, replace the disc.
- Measure the thickness of each disc at the point where it has worn the most.
- ★Replace the disc if it has worn past the service limit.

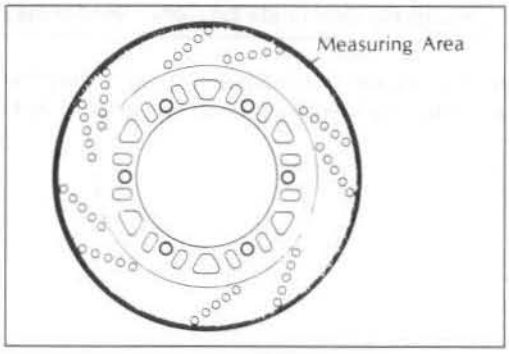


Thickness

	Front	Rear
Standard:	**2.85 ~ 3.15 mm**	**4.35 ~ 4.65 mm**
Service Limit:	**2.5 mm**	**3.8 mm**

- Place a jack under the motorcycle so that the front/rear wheel is raised off the ground.

Special Tool – Jack: 57001-1238



- Set up a dial gauge against the disc as illustrated.
- ○For the front disc, turn the handlebar fully to one side.
- Measure the disc runout while rotating the wheel slowly.
- ★If the runout exceeds the service limit, replace the disc.

Runout

Standard:	**Not more than 0.12 mm**
Service Limit:	**0.3 mm**

Brake Hose

Removal/Installation Notes

CAUTION
Brake fluid quickly ruins painted or plastic surfaces; any spilled fluid should be completely wiped up immediately with a damp cloth.

- When removing the brake hose, take care not to spill the brake fluid on the painted or plastic parts.
- When removing the brake hose, temporarily secure the end of the brake hose to some high place to keep fluid loss to a minimum.
- There are washers on each side of the brake hose fitting. Replace them with new ones when installing.
- When installing the hoses, avoid sharp bending, kinking, flattening or twisting, and route the hoses according to the Cable, Harness, Hose Routing section in the General Information chapter.
- Torque the banjo bolts at the hose fittings.

Torque – Brake Hose Banjo Bolts: 25 N-m (2.5 kg-m, 18.0 ft-lb)

- Bleed the brake line after installing the brake hose (see Bleeding the Brake Line).

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.

Suspension

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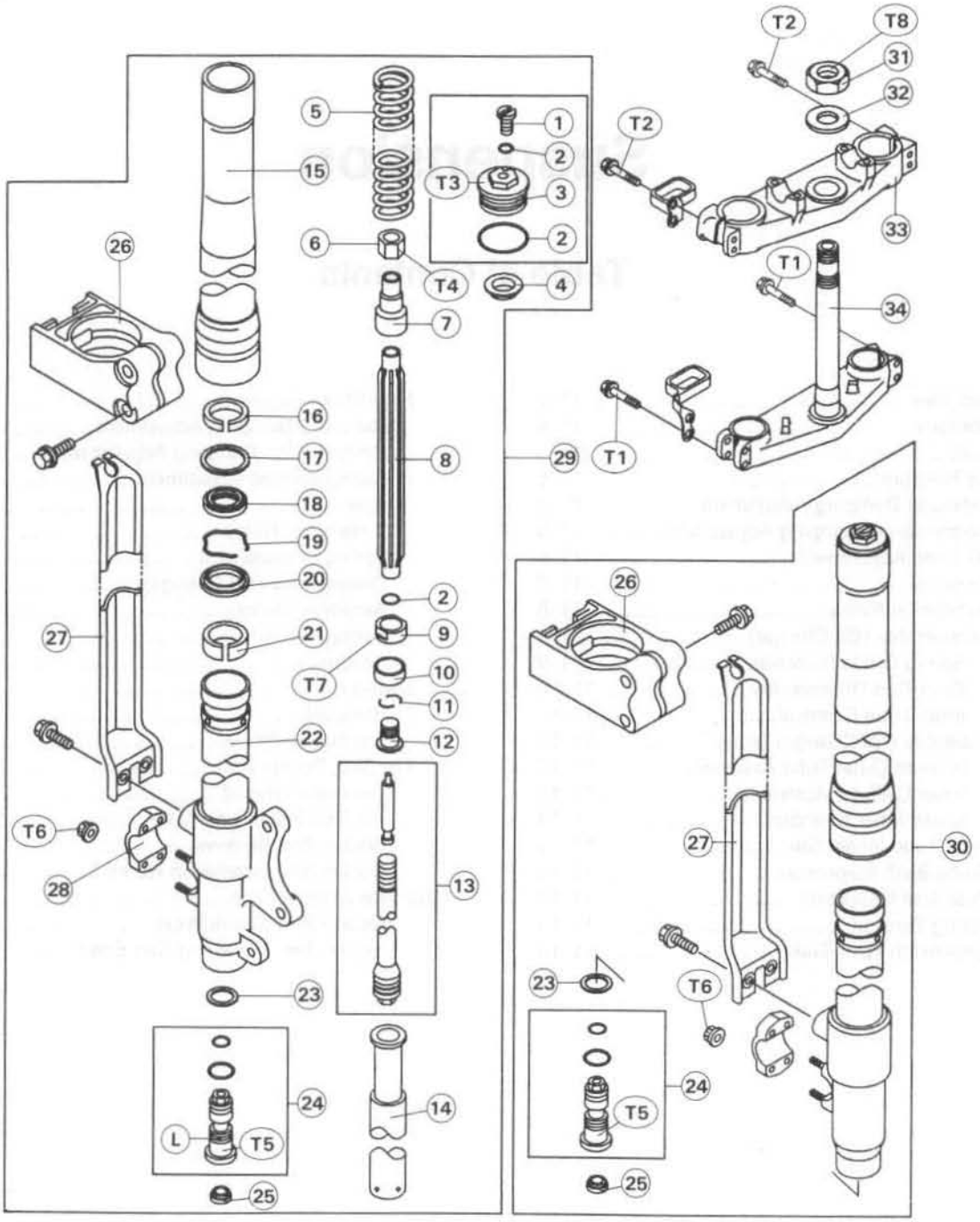
Exploded View

Front Fork

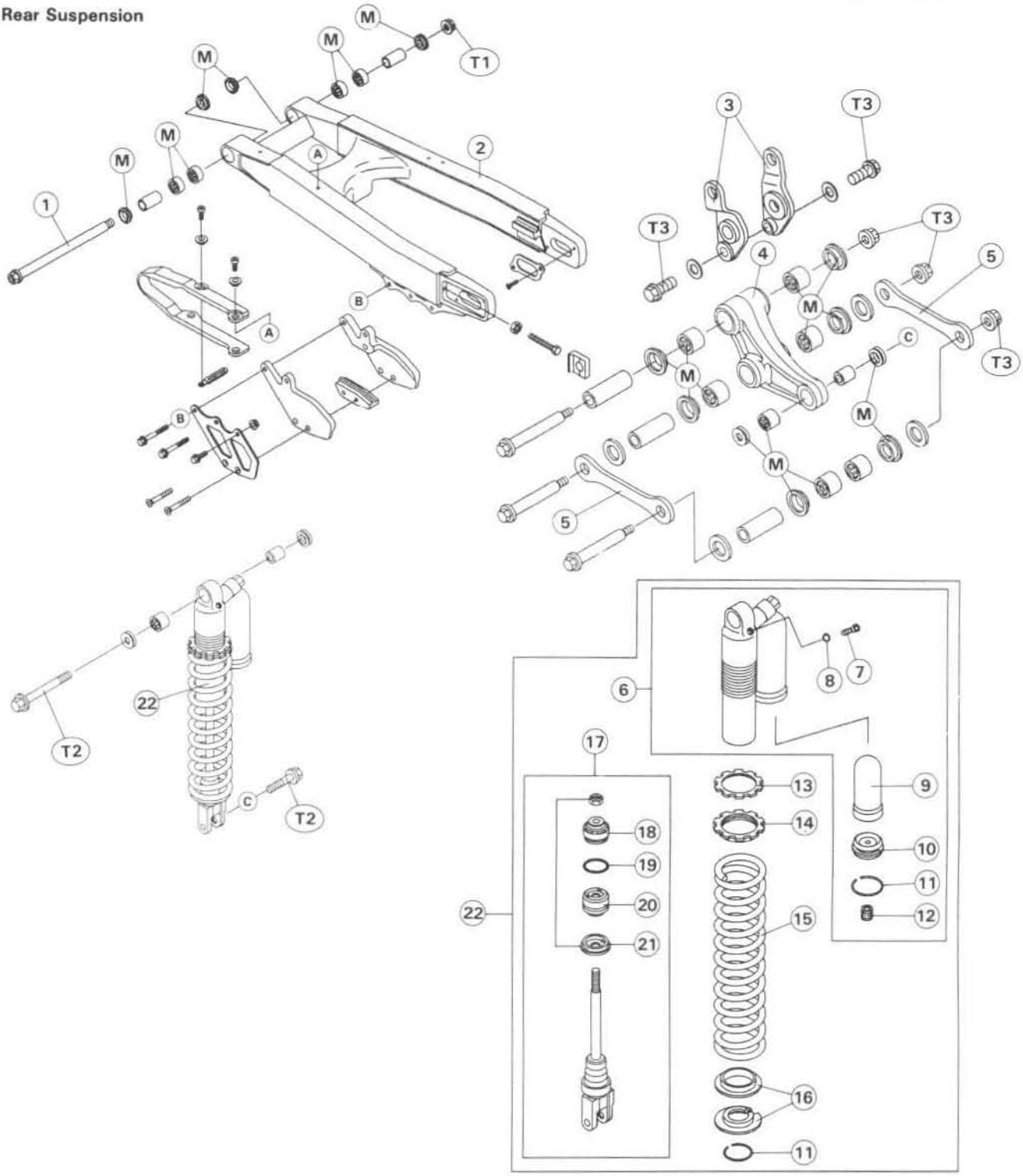


1. Screw
2. O-Ring
3. Top Plug
4. Spring Seat
5. Spring
6. Nut
7. Collar
8. Spring Guide
9. Guide Stay Nut
10. Oil Lock Piston
11. Split Ring Keeper
12. Piston Holder
13. Push Rod
14. Fork Cylinder
15. Outer Tube
16. Guide Bush
17. Washer
18. Oil Seal
19. Retaining Ring
20. Dust Seal
21. Guide Bush
22. Inner Tube
23. Gasket
24. Fork Cylinder Valve Assembly
25. Cap
26. Fork Guide
27. Fork Protector
28. Front Axle Clamp
29. Left Fork Tube
30. Right Fork Tube
31. Steering Stem Nut
32. Washer
33. Steering Stem Head Bracket
34. Steering Stem

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

T1 : 22 N-m (2.25 kg-m, 16.3 ft-lb)
T2 : 20 N-m (2.0 kg-m, 14.5 ft-lb)
T3 : 29 N-m (3.0 kg-m, 22 ft-lb)
T4 : 15 N-m (1.5 kg-m, 11 ft-lb)
T5 : 54 N-m (5.5 kg-m, 40 ft-lb)
T6 : 9.3 N-m (0.95 kg-m, 82 in-lb)
T7 : 27 N-m (2.8 kg-m, 20 ft-lb)
T8 : 78 N-m (8.0 kg-m, 58 ft-lb)

Rear Suspension



1. Pivot Shaft
2. Swing Arm
3. Rear Shock Absorber Bracket
4. Rocker Arm
5. Tie-Rod
6. Rear Shock Absorber Cylinder
7. Air Bleeder Bolt
8. O-Ring
9. Bladder
10. Cap
11. Circlip
12. Valve Cap
13. Locknut
14. Adjusting Nut
15. Spring
16. Spring Guide
17. Rod Assembly
18. Piston
19. O-Ring
20. Oil Seal
21. Stopper
22. Rear Shock Absorber

M : Apply plenty of molybdenum disulfide grease to the inside
T1 : 98 N-m (10 kg-m, 72 ft-lb)
T2 : 39 N-m (4.0 kg-m, 29 ft-lb)
T3 : 81 N-m (8.3 kg-m, 60 ft-lb)

Specifications

Item	Standard	Service Limit
Front Fork:		
Air pressure	Atmospheric pressure	---
Rebound damping adjustment	Refer to 11-5	(Adjustable Range) 16 clicks
Compression damping adjustment	Refer to 11-5	(Adjustable Range) 16 clicks
Oil viscosity	KAYABA 01 or SAE 5W	---
Oil capacity	525 ± 4 mL	---
Oil level (fully compressed, spring removed)	115 ± 2 mm (from top of outer tube)	(Adjustable Range) 100 ~ 150 mm
Fork spring free length	514 mm	504 mm
Rear Suspension (Uni-Trak):		
Rear Shock Absorber:		
Rebound damping adjustment	Refer to 11-17	(Adjustable Range) 16 clicks
Spring preload adjustment (Adjusting nut position from the center of the upper mounting hole)		(Adjustable Range)
KX125:	131.5 mm	118 ~ 141 mm
KX250:	136.5 mm (E) 134.5 mm	118 ~ 143 mm
Rear shock spring free length	275 mm	270 mm
Gas Reservoir:		
Compression damping adjustment	Refer to 11-17	(Adjustable Range) 16 clicks
Gas pressure	1000 kPa (10 kg/cm², 142 psi)	---
Tie-Rod, Rocker Arm:		
Sleeve outside diameter:		
Long	21.987 ~ 22.000 mm	21.85 mm
Short	15.989 ~ 16.000 mm	15.85 mm
Rocker Arm Mounting Bolt Runout	under 0.1 mm	0.2 mm

(E) : European Model

Special Tools – Hook Wrench: 57001-1101
Jack: 57001-1238
Fork Spring Holder: 57001-1286
Fork Cylinder Holder: 57001-1287
Fork Oil Seal Driver: 57001-1340
Fork Piston Rod Puller, M12 x 1.25: 57001-1289
Fork Oil Level Gauge: 57001-1290

Front Fork

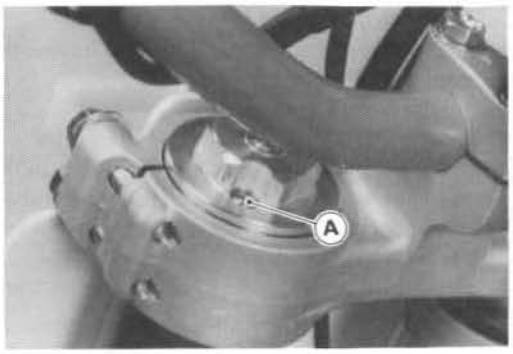
Air Pressure

The standard air pressure in the fork legs is atmospheric pressure. The air pressure in the fork legs increases as the fork heats up, so the fork action will get stiffer as the vehicle operation progresses.

- Place the jack under the frame so that the front wheel is off the ground.

Special Tool – Jack: 57001-1238

- Remove the screws [A] at the top of the front fork top bolts to let the air pressure equalize. Then install them.



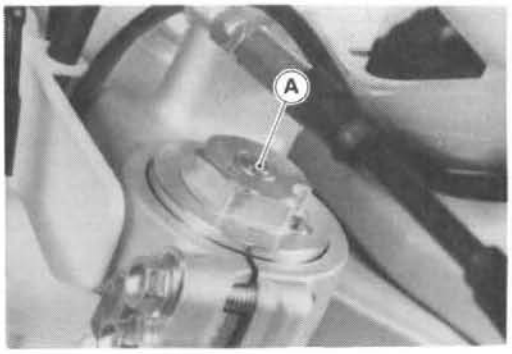
Rebound Damping Adjustment

- Place the jack under the frame so that the front wheel is off the ground.

Special Tool – Jack: 57001-1238

- To adjust rebound damping, turn the adjuster [A] on the front fork top plugs with the blade of a screwdriver until you feel a click. Adjust the rebound damping to suit your preference under special conditions.

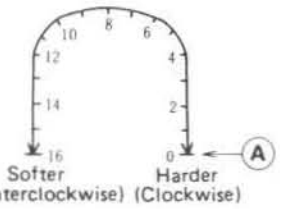
CAUTION
The left and right fork legs must have the same shock damping.



Rebound Damping Adjuster Setting

Standard: **KX125: 11 clicks**
KX250: 9 clicks

Seated position with adjuster turned fully clockwise [A].



Number of turns counterclockwise usable range-16 clicks

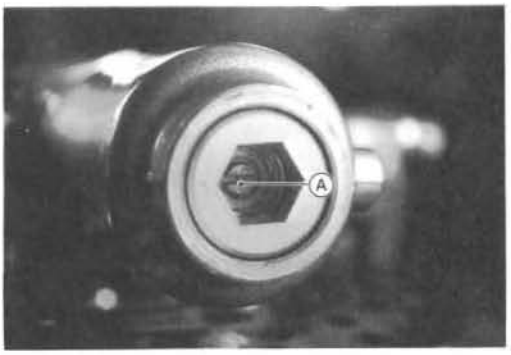
Compression Damping Adjustment

- Place the jack under the frame so that the front wheel is off the ground.

Special Tool – Jack: 57001-1238

- Clean the bottom of the fork tubes.
- Remove the caps on the bottom of the fork tubes.
- To adjust compression damping, turn the adjuster [A] on the front fork cylinder valve with the blade of a screwdriver until you feel a click. Adjust the compression damping to suit your preference under special conditions.

CAUTION
The left and right fork legs must have the same shock damping.



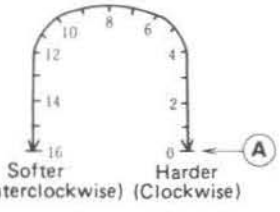
Compression Damping Adjuster Setting

Standard: **KX125 : 12 clicks, (E) 14 clicks**
KX250: 9 clicks, (E) 11 clicks

(E): European Model

Seated position with adjuster turned fully clockwise [A].

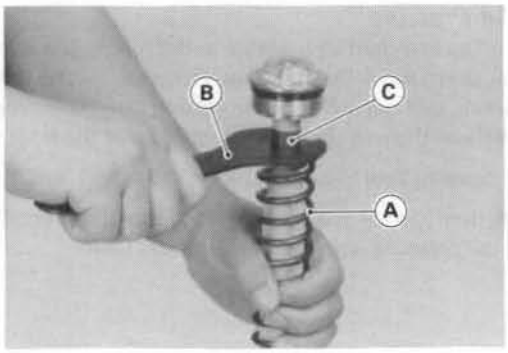
- Put the caps into the bottom of the fork tubes.



Number of turns counterclockwise usable range-16 clicks

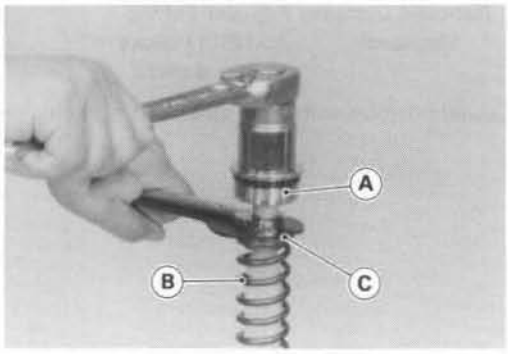
Oil Level Adjustment

- Place the handlebar on one side, and loosen the fork top plug.
- Remove the front fork.
- Hold the outer tube in a vise.
- Unscrew the top plug out of the outer tube.
- Slowly compress the front fork fully while pulling down the outer tube (touch the stepped portion of the inner tube to the outer tube dust cover lower end), and place a stand or other suitable support under the inner tube lower end.
- Pull down the fork spring [A] and insert the fork spring holder [B] under the push rod nut [C].

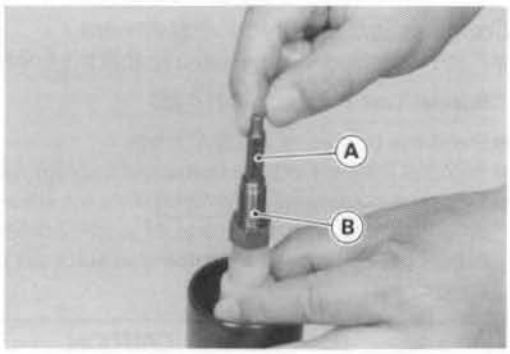


Special Tool – Fork Spring Holder: 57001-1286 [B]

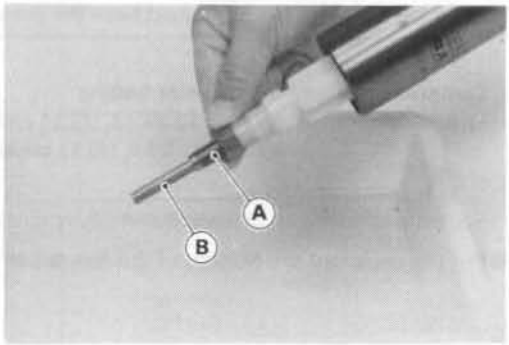
- Use wrenches on the rod nut and the top plug [A] to loosen the push rod nut.
- Remove the top plug from the push rod.
- Remove the fork spring holder.
- Lift the fork spring [B] and its top spring seat [C] out of the inner tube.



- Take the rebound damping adjuster rod (short) [A] out of the push rod [B].



- Hold the fork tube upside down over a clean container and pump it to drain the oil. Remove the rebound damping adjuster rod (long) [B] from the push rod [A].



NOTE

○ *To discharge the fork oil, pump the push rod up and down ten times.*

● Hold the fork tube upright, press the outer tube and the push rod all the way down.
● Insert both the long and short rebound damping adjuster rods into the push rod.

NOTE

○ *The spring should not be installed.*

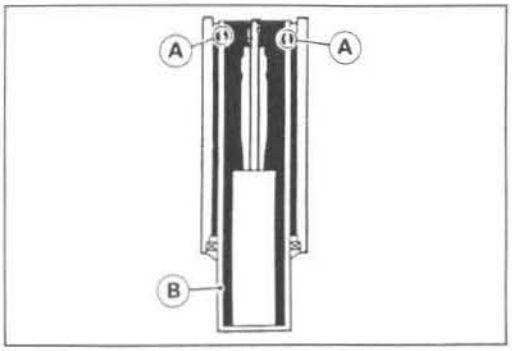
● Fill the front fork to the top with the specified oil.

Recommended Oil
KAYABA 01 or SEA 5W

Front Fork Oil Capacity
525 ± 4 mL

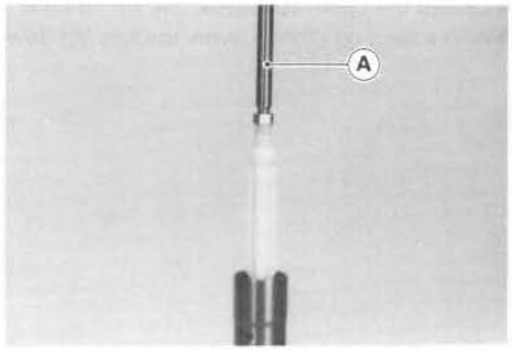
NOTE

○ *While doing this, take care to keep the oil level topped off so that it stays above the two large holes [A] near the top of the inner tube [B].*

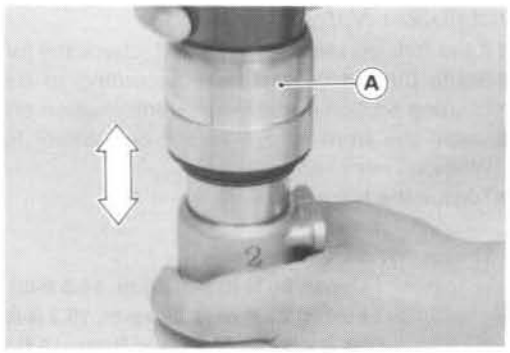


● Purge the air from the fork cylinder by gently moving the piston rod puller [A] up and down five times.

Special Tool – Fork Piston Rod Puller, M12 x 1.25: 57001-1289 [A]



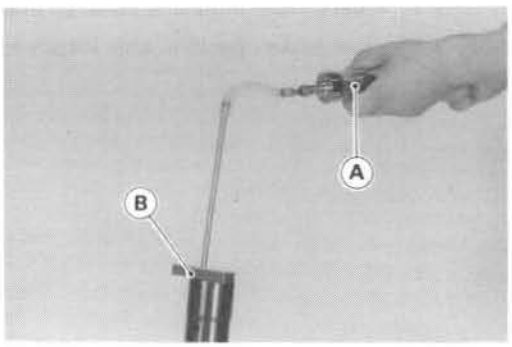
● Purge the air from between the inner and outer tubes by pumping the outer tube [A] up and down.



● After purging the air from the assembly, let it sit for about five minutes so that any suspended air bubbles can surface.
● Check the oil level.
○ With the fork fully compressed, put the oil level gauge [A] and the stopper [B], and inspect the distance from the top of the outer tube to the oil.

Special Tool – Fork Oil Level Gauge: 57001-1290 [A]

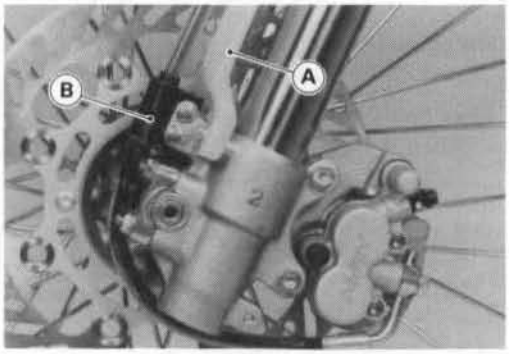
Oil Level (fully compressed, without spring)
Standard: 115 ± 2mm
Adjustable Range: 100 ~ 150 mm



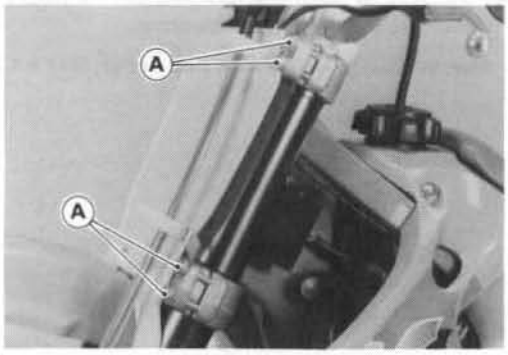
★If no oil is drawn out, there is insufficient oil in the fork tube. Pour in enough oil, then draw out the excess oil.
● Install the parts removed (see Front Fork Assembly in this chapter).

Removal

● Remove the front disc cover.
● Remove the fork protectors [A].
● Remove the front brake hose clamps [B].
● Remove the caliper from the fork leg to be removed, and rest the caliper on some kind of stand so that it doesn't dangle.
● Remove the front wheel (see Front Wheel Removal in the Wheels/Tires chapter).



● Loosen the upper and lower fork clamp bolts [A].
● With a twisting motion, work the fork leg down and out.



Installation Notes

● If the fork leg was disassembled, check the fork oil level.
● Route the cables and hose according to the Cable, Harness, Hose Routing section in the General Information chapter.
● Install the front wheel (see Front Wheel Installation Notes in the Wheels/Tires chapter).
● Torque the following:

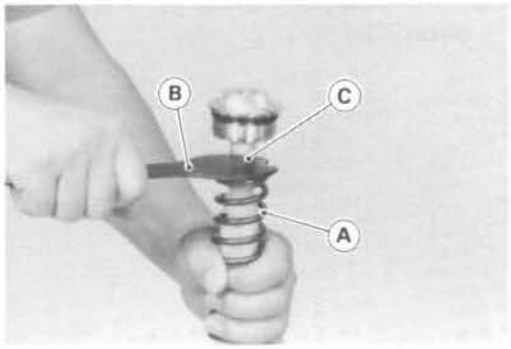
Torque – Fork Clamp Bolts:
Upper: 20 N-m (2.0 kg-m, 14.5 ft-lb)
Lower: 22 N-m (2.25 kg-m, 16.3 ft-lb)
Fork Protector Mounting Bolts: 10 N-m (1.0 kg-m, 87 in-lb)
Front Caliper Mounting Bolts: 25 N-m (2.5 kg-m, 18 ft-lb)

● Check the front brake operation after installation.

Disassembly (Oil Change)

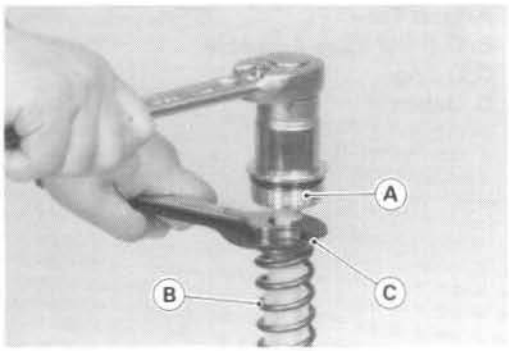
Spring Guide Removal

- Place the handlebar on one side, and loosen each fork top plug.
- Remove the front fork.
- Hold the outer tube in a vise.
- Unscrew the top plug out of the outer tube.
- Slowly compress the front fork fully while pushing up the inner tube lower end (touch the stepped portion of the inner tube to the outer tube dust cover lower end), and place a stand or other suitable support under the inner tube lower end .
- Pull down the fork spring [A] and insert the fork spring holder [B] under the push rod nut [C].

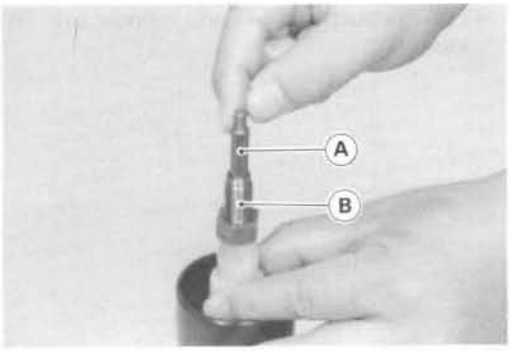


Special Tool – Fork Spring Holder: 57001-1286 [B]

- Use wrenches on the rod nut and top plug [A] loosen the push rod nut.
- Remove the top plug from the push rod.
- Lift the fork spring [B] and its top spring seat [C] out of the inner tube.



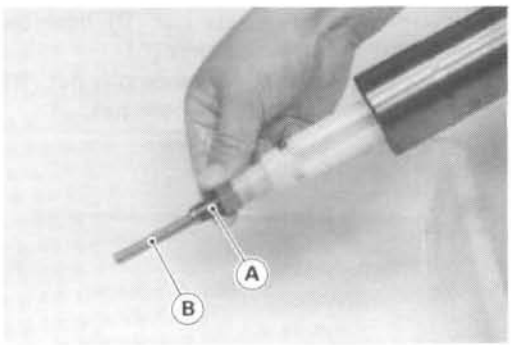
- Take the rebound damping adjuster rod (short) [A] out of the push rod [B].



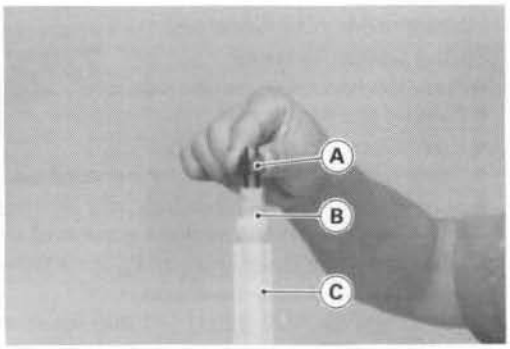
- Hold the fork tube upside down over a clean container and pump it to drain the oil. Remove the rebound damping adjuster rod (long) [B] from the push rod [A].

NOTE

○ *To discharge the fork oil, pump the push rod up and down ten times.*



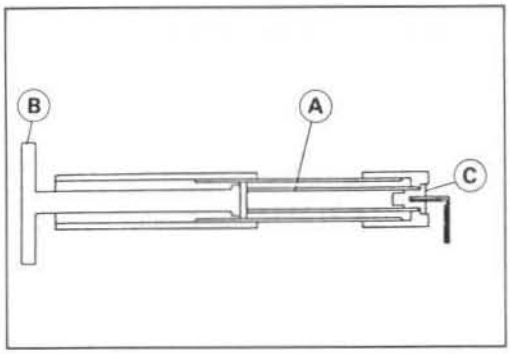
● Remove the push rod nut [A], and take out the collar [B] and spring guide [C].



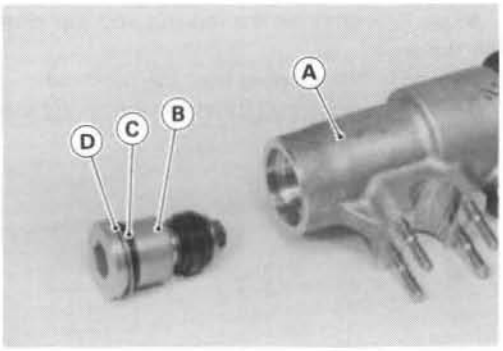
Push Rod Disassembly

● Clean the bottom of the inner tube.
● Remove the cap on the bottom of the inner tube.
● Hold the front fork horizontally in a vise.
● Stop the cylinder unit [A] from turning by using the fork cylinder holder [B]. Unscrew the cylinder valve assembly [C], and take the cylinder valve assembly and gasket out of the bottom of the inner tube.

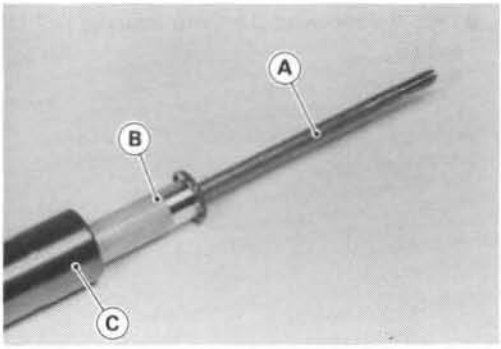
Special Tool – Fork Cylinder Holder: 57001-1287 [B]



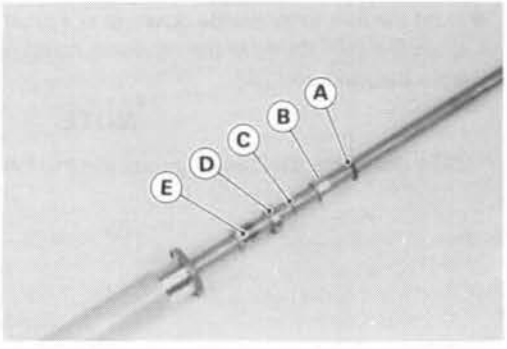
A. Inner Tube
B. Cylinder Valve Assembly
C. O-ring
D. Gasket



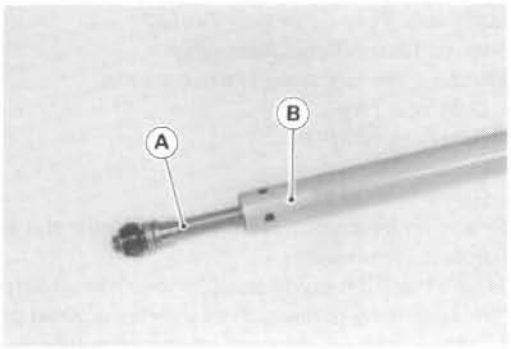
● Pull the push rod [A] and cylinder unit [B] out the top of the outer tube [C].



● Unscrew the guide stay nut [B] from the piston holder [E], and remove the split ring keepers [C].
● Remove the O-ring [A], guide stay nut [B], oil lock piston [D] and piston holder [E] from the push rod.

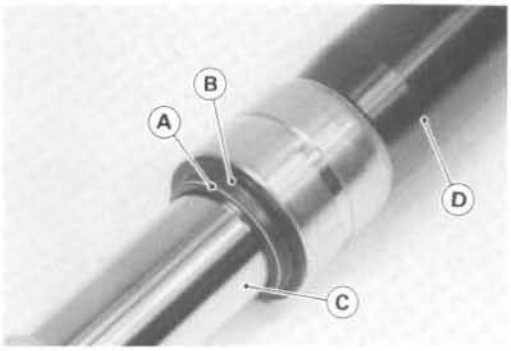


● Pull the push rod assembly [A] out the bottom of the inner cylinder [B].

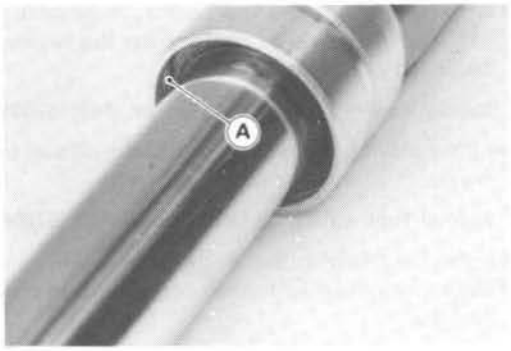


Inner Tube Removal

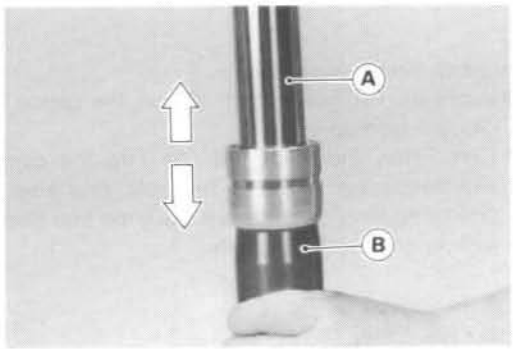
● Separate the inner tube [C] from the outer tube [D] as follows:
○ Slide up the spring band [A].
○ Slide up the dust seal [B].



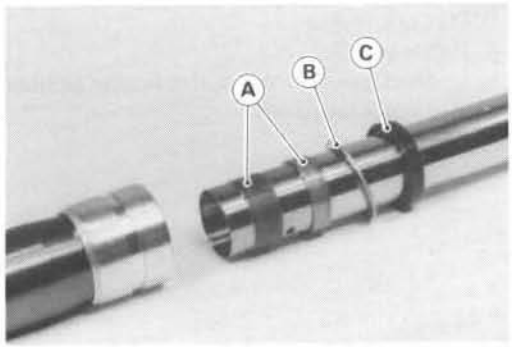
○ Remove the retaining ring [A] from the outer tube.



○ Grasp the outer tube [B] and stroke the inner tube [A] up and down several times. The shock to fork seal separates the inner tube from the outer tube.



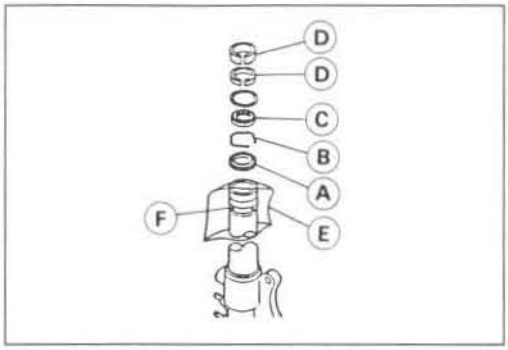
● Remove the guide bushes [A], washer [B], oil seal [C], retaining ring, and dust seal from the inner tube.



Assembly (Oil Change) Notes

Inner to Outer Tube Assembly

- Replace the following with new ones:
  Dust Seal [A]
  Retaining Ring [B]
  Oil Seal [C]
  Guide Bushes [D]
- Place an oil coated plastic bag [E] over the end of the inner tube to protect the oil seals.
- ○ The inner tube guide bush groove has a sharp edge [F] that can out the sealing lip of the seals as they are pushed down over the inner tube.
- Install in order these parts on the inner tube.



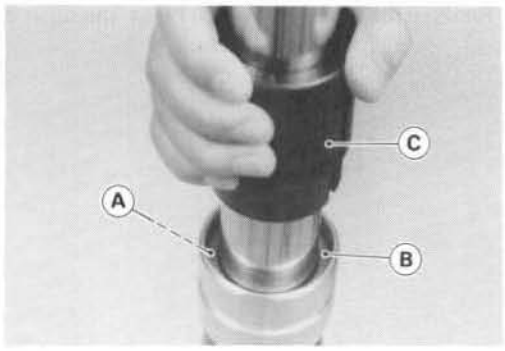
- When assembling the new outer tube guide bush [A], hold the washer [B] against the new one, and tap the washer with the fork oil seal driver [C] until it stops.

  Special Tool – Fork Oil Seal Driver, Φ43: 57001-1340 [C]

- After installing the washer, install the oil seal by using the fork oil seal driver.

  Special Tool – Fork Oil Seal Driver, Φ43: 57001-1340

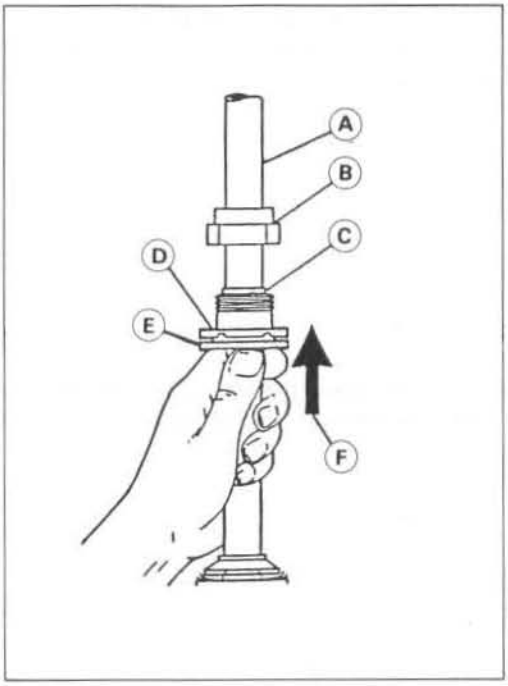
- Install the retaining ring to the outer tube.
- Push the dust seal into the outer tube, and put the spring band on the dust seal.



Inner Cylinder Assembly

- Install the oil lock piston [D] on the piston holder [E] so that the grooves face down.
- ○ First, insert the push rod [A] into the cartridge, then, install the anti-bottoming piston. The split ring keepers [C] that hold the anti-bottoming piston to the push rod can cause severe damage to the fork if not installed securely.

A. Push Rod
B. Guide Stay Nut
C. Split Ring Keepers
D. Oil Lock Piston
E. Piston Holder
F. Upward pressure on piston holder positions keepers while guide stay nut is tightened.

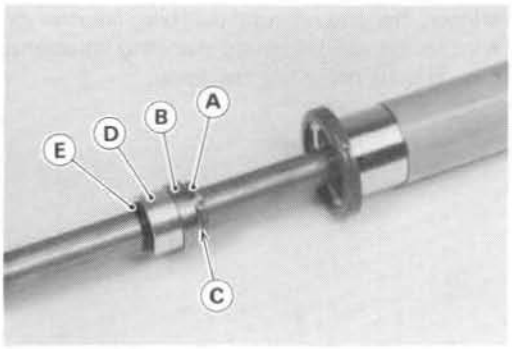


● Tighten the guide stay nut [D].

Torque – Guide Stay Nut: 27 N-m (2.8 kg-m, 20 ft-lb)

● Check the O-ring [E] on the guide stay nut, and replace it with a new one if damaged.

A. Piston Holder
B. Oil Lock Piston
C. Grooved Side
D. Guide Stay Nut
E. O-ring

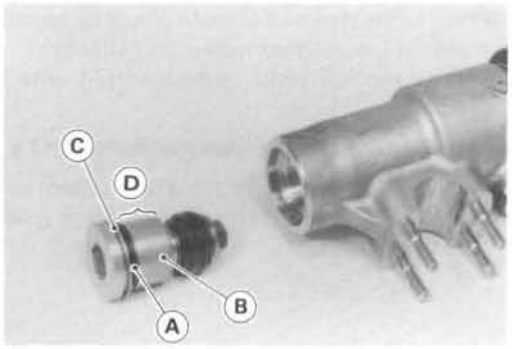


Install Inner Cylinder

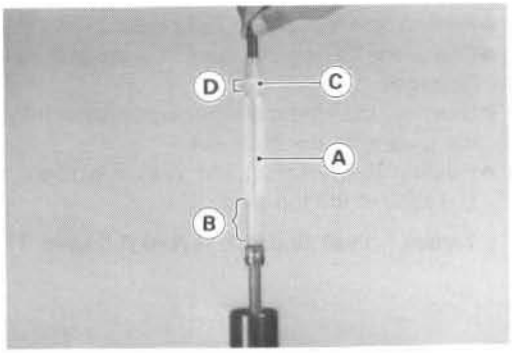
● Check the O-ring [A] on the cylinder valve assembly [B], and replace it with a new one.
● Replace the gasket [C] with a new one.
● Apply a non-permanent locking agent to the threads [D] of the cylinder valve assembly and screw the valve assembly into the bottom of the inner tube.
● Hold the inner cylinder with the fork cylinder holder, and tighten the cylinder valve assembly.

Special Tool – Fork Cylinder Holder: 57001-1287

Torque – Cylinder Valve Assembly: 54 N-m (5.5 kg-m, 40 ft-lb)

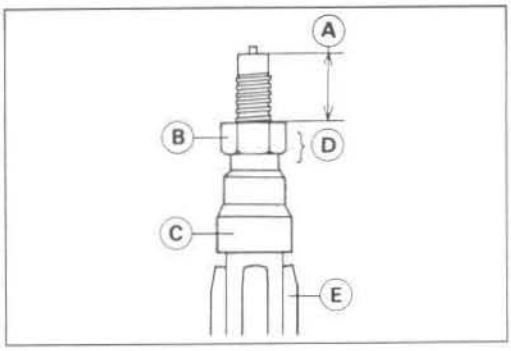


● Install the spring guide [A] so that the longer end [B] is down. Then install the collar [C] with the large end [D] down.

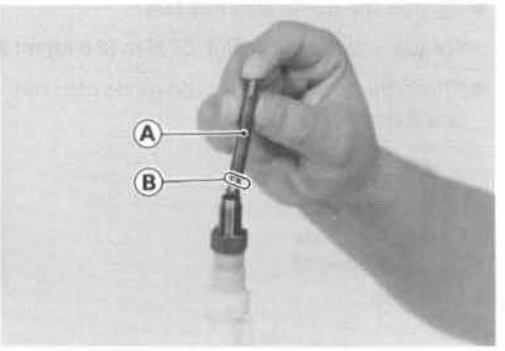


● Screw on the push rod nut [B] so that the chamfered side [D] is down.
○ Position the push rod nut at 18.5 mm [A] or more from the top of the push rod.

A. 18.5 mm
B. Push Rod Nut
C. Collar
D. Chamfered Side
E. Spring Guide



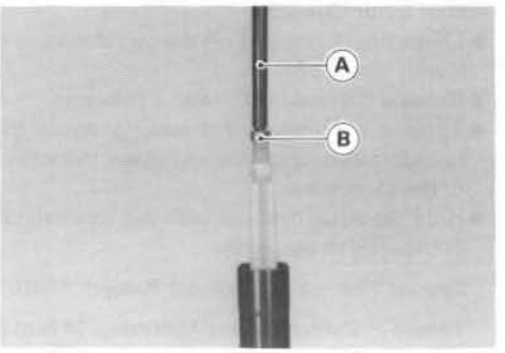
● Insert the long rebound damping adjuster rod into the push rod.
● Insert the short rebound damping adjuster rod [A] into the push rod so that the holes [B] are down.



● Pour in the type and amount of fork oil specified and adjust the oil level (see Oil Level Adjustment in this chapter).
● Screw the fork piston rod puller [A] onto the end of the push rod [B].

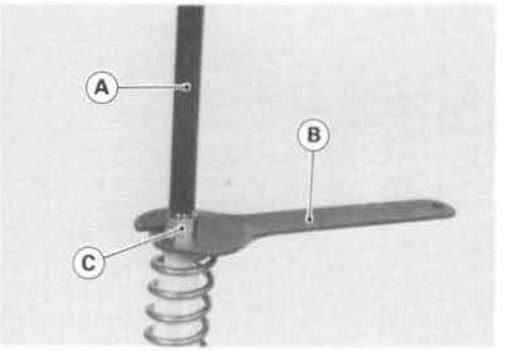
Special Tool – Fork Piston Rod Puller, M12 x 1.25: 57001-1289 [A]

● Pull the push rod up with the special tool for the next procedures.
○ Pull up the push rod slowly so as not to spill the fork oil out of the fork tube.



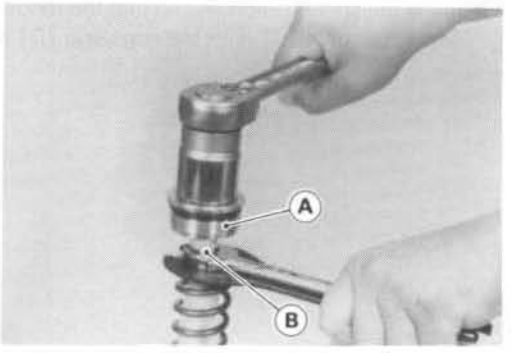
● Install the fork spring into the inner tube and then set the spring seat in place.
● Pull the fork spring down while pulling up on the fork piston rod puller [A] and insert the fork spring holder [B] under the push rod nut [C].

Special Tool – Fork Spring Holder: 57001-1286 [B]



● Remove the fork piston rod puller.
● Check the O-ring on the top plug and replace it with a new one if damaged.
● Unscrew the rebound damping adjuster fully, then screw the front fork top plug onto the push rod.
● Holding the top plug [A] with a wrench, tighten the push rod nut [B] against the top plug.

Torque – Push Rod Nut: 15 N-m (1.5 kg-m, 11 ft-lb)



● Pull out the fork spring holder, raise the outer tube and screw the top plug into it.
● After installing the front fork, torque the top plug.

Torque – Fork Top Plug: 29 N-m (3.0 kg-m, 22 ft-lb)

Inner Tube Inspection

- Visually inspect the inner tube, repair any damage.
- Nick or rust damage can sometimes be repaired by using a wet-stone to remove sharp edges or raised areas which cause seal damage.

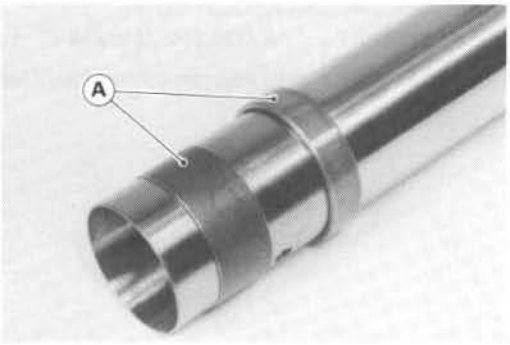
★If the damage is not repairable, replace the inner tube. Since damage to the inner tube damages the oil seal, replace the oil seal whenever the inner tube is repaired or replaced.

- Temporarily assemble the inner and outer tubes, and pump them back and forth manually to check for smooth operation.

CAUTION
If the inner tube is badly bent or creased, replace it. Excessive bending, followed by subsequent straightening, can weaken the inner tube.

Guide Bush Inspection

- Visually inspect the guide bushes [A], and replace them if necessary.

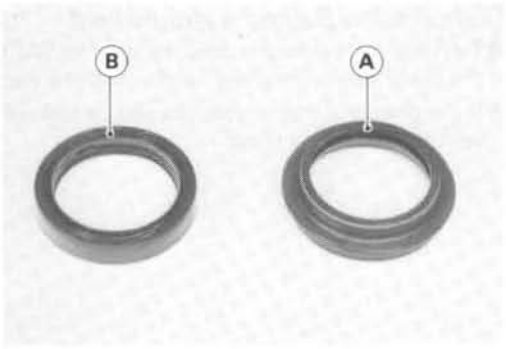


Dust Seal Inspection

- Inspect the dust seal [A] for any signs of deterioration or damage.

★Replace it if necessary.

- Replace the oil seal [B] with a new one whenever it has been removed.



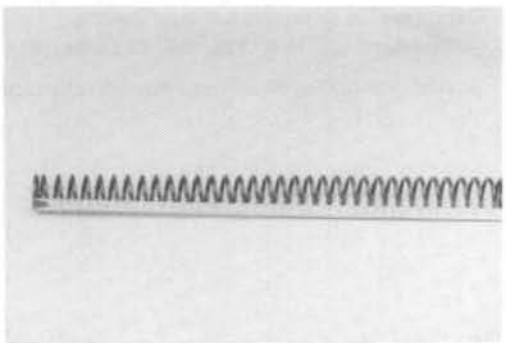
Spring Tension

- Since a spring becomes shorter as it weakens, check its free length to determine its condition.

★If the spring of either fork leg is shorter than the service limit, it must be replaced. If the length of a replacement spring and that of the remaining spring vary greatly, the remaining spring should also be replaced in order to keep the fork legs balanced for motorcycle stability.

Fork Spring Free Length

Standard:	**514 mm**
Service Limit:	**504 mm**



Rear Suspension (Uni-Trak)

Rear Shock Absorber:

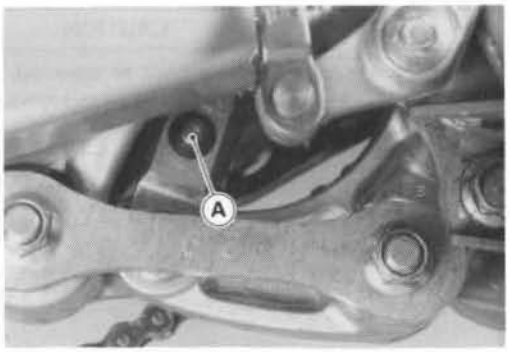
The rear suspension system of this motorcycle is Uni-trak. It consists of a rear shock absorber, swing arm, tie-rod and rocker arm.

To suit to various riding conditions, the spring preload of the shock absorber can be adjusted or the spring can be replaced with an optional one. Also the damping force can be adjusted easily so changing oil viscosity is unnecessary.

Rebound Damping Adjustment

●Turn the rebound damping adjuster [A] on the rear shock absorber lower end with the blade of a screwdriver until you feel a click.

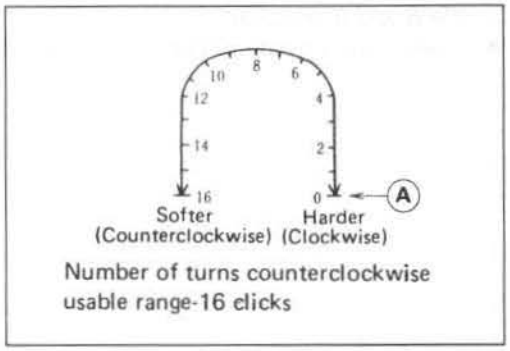
★If the damper setting feels too soft or too stiff, adjust it in accordance with the following table:



Rebound Damping Adjuster Setting

Standard: KX125,250: 12 clicks

Seated position with adjuster turned fully clockwise [A].

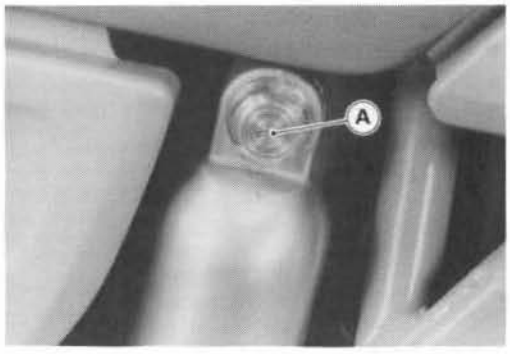


Number of turns counterclockwise usable range-16 clicks

Compression Damping Adjustment

●Turn the compression damping adjuster [A] on the gas reservoir with the blade of a screwdriver until you feel a click.

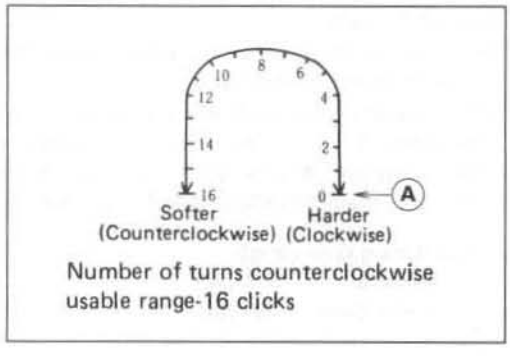
★If the damper setting feels too soft or too stiff, adjust it in accordance with the following table.



Compression Damping Adjuster Setting

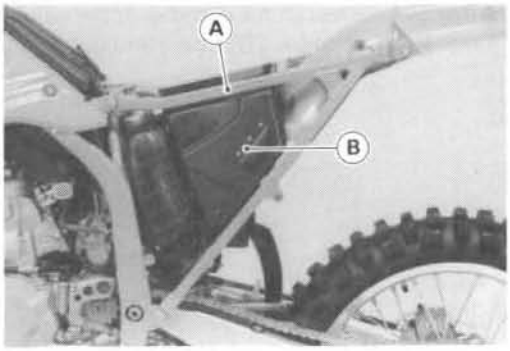
Standard: KX125, 250: 13 clicks, (E) 15 clicks

Seated position with adjuster turned fully clockwise [A].



Number of turns counterclockwise usable range-16 clicks

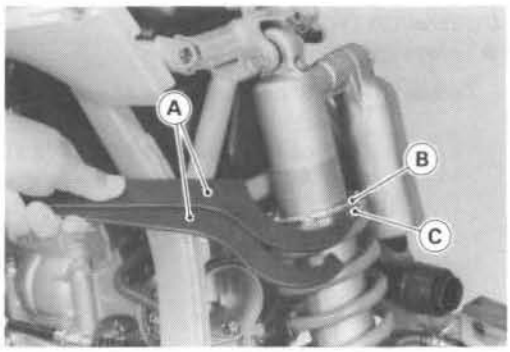
Spring Preload Adjustment



- Remove:
  Side Covers
  Seat
  Silencer
  Rear Frame [A] with Air Cleaner Housing [B]

- Using the jack under the frame, raise the rear wheel off the ground.

Special Tool – Jack: 57001-1238

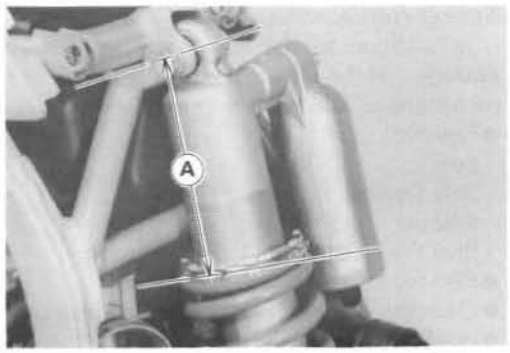


- Using the hook wrenches [A], loosen the locknut [B] and turn the adjusting nut [C] as required. Turning the adjusting nut down makes the spring preload stronger.

Special Tool – Hook Wrench: 57001-1101

Spring Preload Adjustment
(Adjusting nut position [A] from the center of the mounting hole)

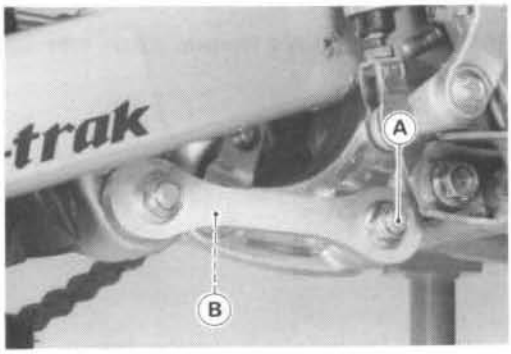
Standard:	**KX125: 134.5 mm**
	KX250: 135 mm
Adjustable Range:	**KX125: 118 ~ 141 mm**
	KX250: 118 ~ 143 mm



- Tighten the locknut securely.
- After adjusting, move the spring up and down to make sure that the spring is seated.
- Install the parts removed.
- Torque the rear frame mounting bolts.

Torque – Rear Frame Mounting Bolts: 26 N-m (2.7 kg-m, 19.5 ft-lb)

Removal



- Remove:
  Side Covers
  Seat
  Silencer
  Rear Frame with Air Cleaner Housing
- Using the jack under the frame, raise the rear wheel off the ground.

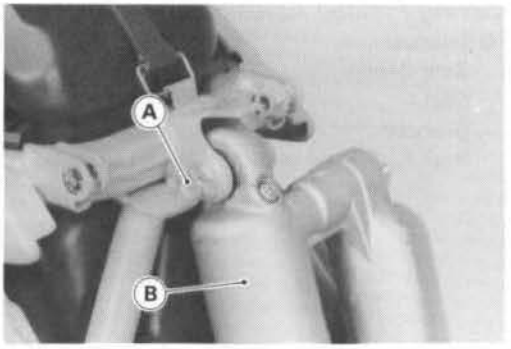
Special Tool – Jack: 57001-1238

- Remove the tie-rod front mounting bolt [A].

CAUTION
When pulling out the mounting bolts, lift the rear wheel slightly. Forcing or tapping on a bolt could damage the bolt, sleeve, and bearing.

- Remove the rear shock absorber lower mounting bolt [B].

● Remove the rear shock absorber upper mounting bolt [A], and pull the rear shock absorber [B] down and out.



Installation Notes

● Torque the following:

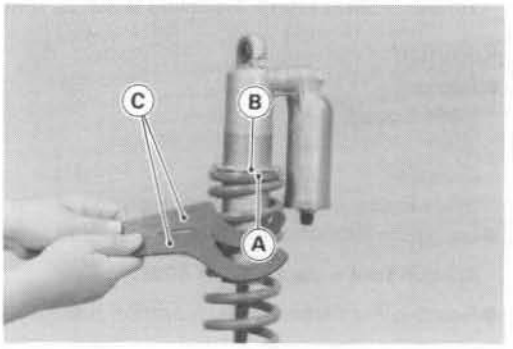
Torque – Rear Shock Absorber Mounting Bolts: 39 N-m (4.0 kg-m, 29 ft-lb)
Tie-Rod Mounting Nut: 81 N-m (8.3 kg-m, 60 ft-lb)
Rear Frame Mounting Bolts: 26 N-m (2.7 kg-m, 19.5 ft-lb)

Spring Replacement

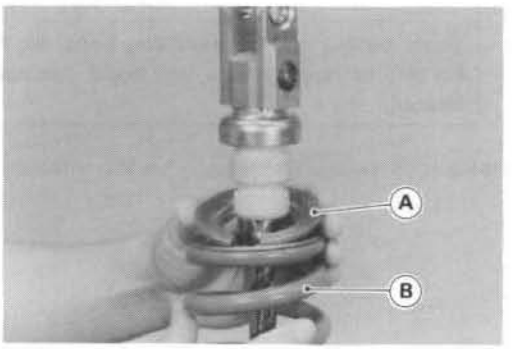
In addition to the standard spring, heavy and light springs are available. If the standard spring is improper for your purpose, select a proper one according to the rider's weight or course conditions.

● Remove:
Seat
Side Covers
Silencer
Rear Frame with Air Cleaner Housing
● Remove the rear shock absorber.
● Clean the threaded portion on the upper of the rear shock absorber.
● Hold the lower of the rear shock absorber with a vise.
● Using the hook wrenches [C], loosen the locknut [B] and turn the adjusting nut [A] all the way up.

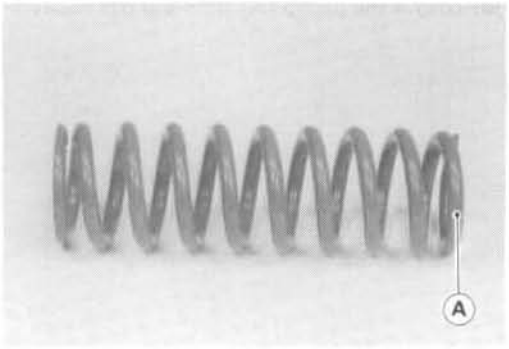
Special Tool – Hook Wrench: 57001-1101



Remove the rear shock absorber from the vise.
● Slide down the rubber bumper.
● Remove the spring guide [A] from the shock absorber and lift off the spring [B].



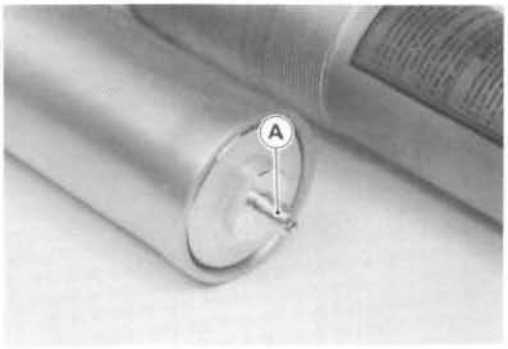
- Exchange the spring for an optional part.
- Install the spring so that smaller diameter end [A] faces upward.
- Install the spring guide.
- Adjust the spring preload (see Spring Preload Adjustment).
- Install the rear shock absorber.
- Install the parts removed.



Disassembly (Oil Change)

The oil should be changed in the rear shock absorber at least once per racing season. The frequency for best performance must be based upon riding conditions and rider ability.

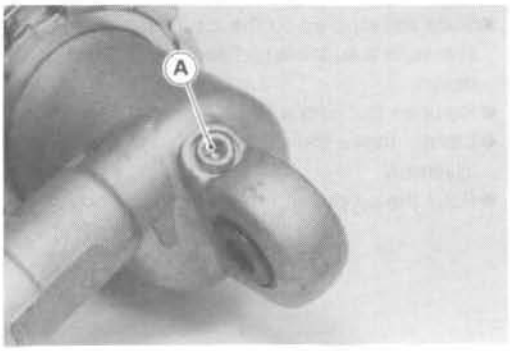
- Remove the rear shock absorber from the frame (see Rear Shock Absorber Removal).
- Remove the shock absorber spring (see Rear Shock Absorber Spring Replacement).
- Point the valve [A] away from you. Slowly release nitrogen gas pressure by pushing down the valve core with a screwdriver.



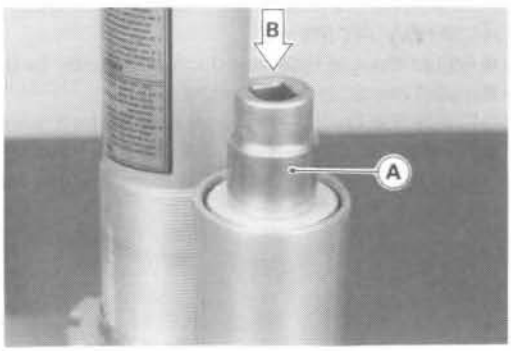
⚠WARNING

Be sure to point the reservoir valve away from you when releasing nitrogen gas pressure. An oil mist is often released with the nitrogen. Always release nitrogen gas pressure before explosive separation of parts.

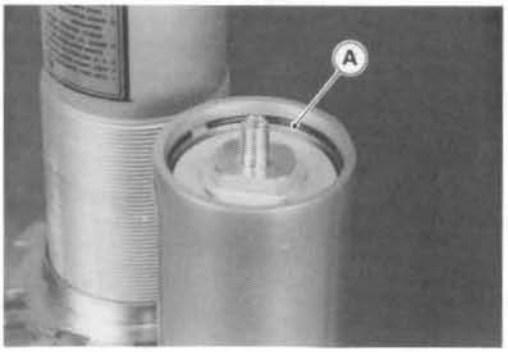
- Adjust the gas reservoir damping adjuster to the softest position.
- Remove the air bleeder bolt [A] and pump the rear shock to drain the oil out of the rear shock body.
- Install the air bleeder bolt.



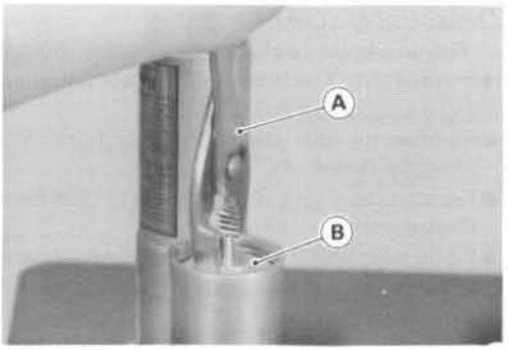
- Using a suitable tool [A] and press [B], push the reservoir cap in 10 mm.



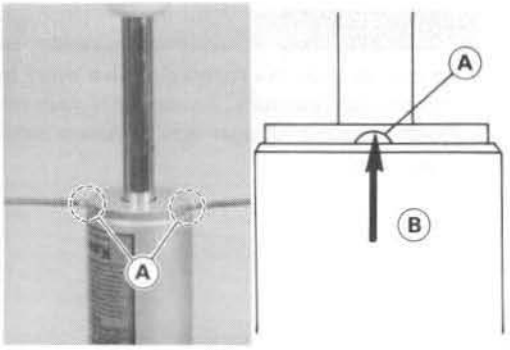
● Remove the circlip [A] from the gas reservoir.



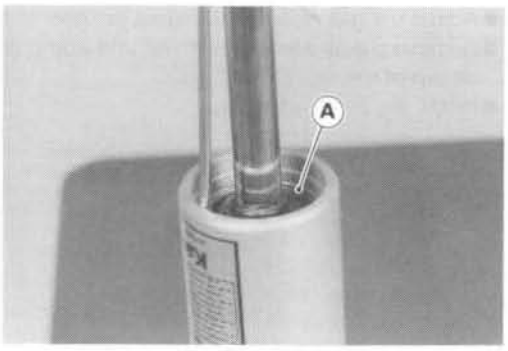
● Pull the gas reservoir cap [B] out of the gas reservoir using pliers [A].



● Pry or tap [B] at the gaps [A] in the stop with suitable tools to free the stop from the rear shock body.

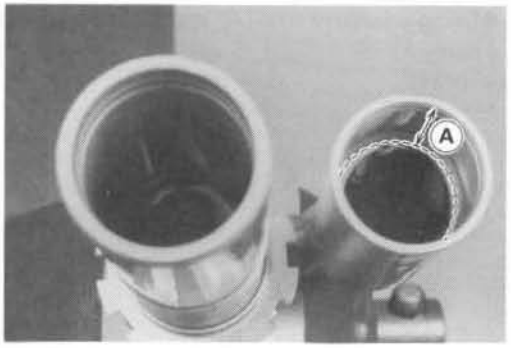


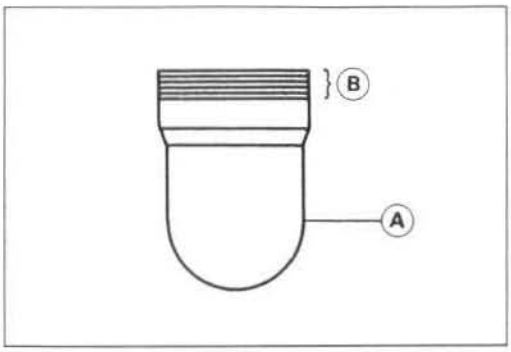
● Slide the stop up to the top of the push rod then lightly tap around the seal with a suitable rod and mallet, and push the seal assembly 10 mm down.
● Remove the circlip [A].
● Lightly move the push rod back and forth, and pull out the push rod assembly.
● Pour the oil out of the rear shock body.



Assembly Notes

● Adjust the gas reservoir damper adjuster to the softest position.
● Install the air bleeder bolt.
○ Check the O-ring on the air bleeder bolt, and replace it if necessary.
● Pour KYB K2-C (SAE 5W or Bel-Ray SE2 #40) oil into the gas reservoir to 60 – 70 mm [A] from the gas reservoir upper end.





- Check that the bladder [A] on the gas reservoir cap is not partially collapsed.
- ★If it is, push down the valve core with a screwdriver.
- Check the bladder for signs of damage or cracks.
- ★If necessary, replace it with a new one.

CAUTION

Do not use a damaged or partially collapsed bladder, because it may burst, greatly reducing rear shock performance.

- Apply grease to the lip [B] of the bladder.
- Push the bladder into the gas reservoir slowly until it just clears the circlip groove. Wipe out any spilled oil.

CAUTION

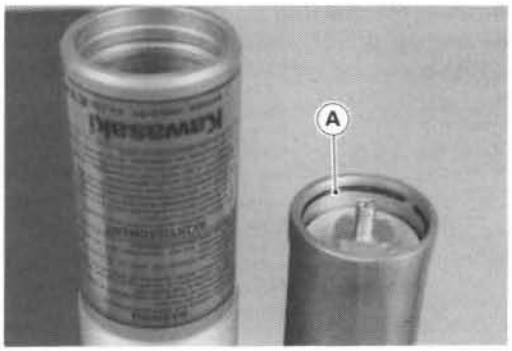
Ensure that no air remains in the system.

- Check the circlip for weakening, deformity and flaws.
- ★If necessary, replace it with a new one.

⚠WARNING

If weakened, deformed or flawed circlip is used, the gas reservoir cap may not hold when injecting the nitrogen gas. This would allow oil and internal parts to explode out of the reservoir.

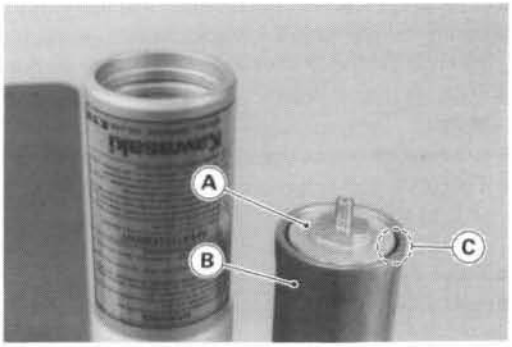
- Mount the circlip [A] in the groove in the gas reservoir.



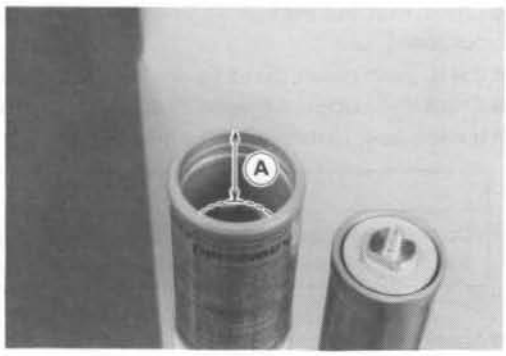
- Pull up the gas reservoir cap [A] against the circlip. The end of the gas reservoir cap must align [C] with the end of the gas reservoir [B].

⚠WARNING

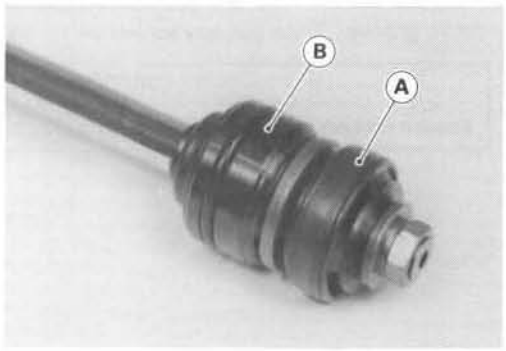
If the end of the gas reservoir cap and the end of the gas reservoir are not aligned, the circlip is not correctly fitting in the groove in the gas reservoir or is deformed. In this case, the oil and internal parts could explode out of the reservoir when injecting the nitrogen gas or while riding the motorcycle.



● Pour KYB K2-C (SAE 5W or Bel-Ray SE2 #40) oil into the rear shock body to 45 mm [A] from the lower end of the rear shock body.



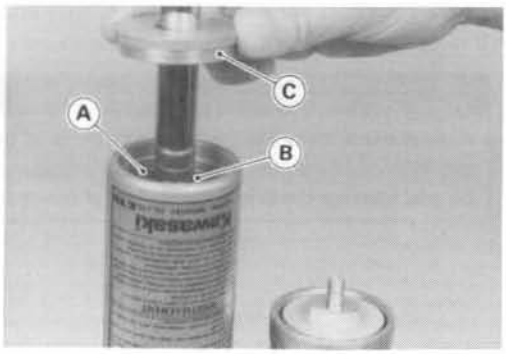
● Insert the piston [A] end of the push rod assembly into the rear shock body slowly, and pump the push rod until all the air is forced out of the rear shock body.
● Push the seal assembly [B] into the rear shock body until it just clears the circlip groove.



● Check the circlip.
★ If it is deformed or damaged, replace it with a new one.
● Fit the circlip [A] into the groove in the rear shock body.

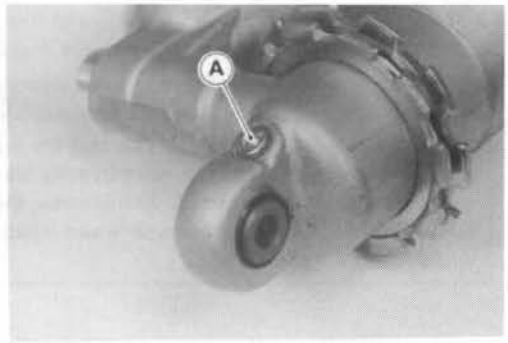
⚠WARNING

If the circlip is not a certain fit in the groove in the rear shock body, the push rod assembly may come out of the shock absorber when injecting the nitrogen gas or riding the motorcycle.



● Pull up the push rod assembly [B] against the circlip.
● Force the stop [C] into the rear shock body by lightly tapping around the edge of the stop with a mallet.

● Hold the lower end of the push rod assembly with a vise.
● Pump the rear shock up and down several times, and then leave it in the fully extended position for about three minutes.
● Remove the air bleeder bolt [A] from the upper part of the rear shock body.
★ If oil comes out of the air bleeder bolt hole, let it overflow until it stops.
★ If oil does not come out of the air bleeder bolt hole, add the specified oil into the air bleeder bolt hole until it overflow (that is, until all the remaining air is forced out).
● Install the air bleeder bolt securely.
● Fully extend the push rod assembly.



- Inject nitrogen gas to a pressure of 50 kPa (0.5 kg/cm², 7 psi) through the valve on the gas reservoir.
- Check the rear shock body and gas reservoir for oil and gas leaks.

★If there are no leaks, inject the nitrogen gas up to the 1 000 kPa (10 kg/cm², 142 psi) pressure.

⚠WARNING

Pressurize the gas reservoir with nitrogen gas only. Do not use air or other gases, since they may cause premature wear, rust, fire hazard or substandard performance.
High pressure gas is dangerous. Have a qualified mechanic perform this procedure.

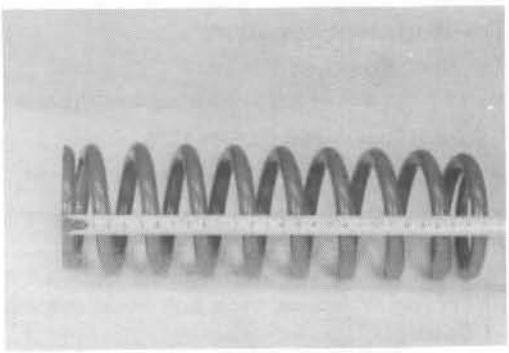
- Install the spring and spring guide.
- Adjust spring preload.
- Reinstall the rear shock absorber.
- Install the parts removed.

Spring Tension

Since a spring becomes shorter as it weakens, check its free length to determine its condition.

★If the spring is shorter than the service limit, it must be replaced.

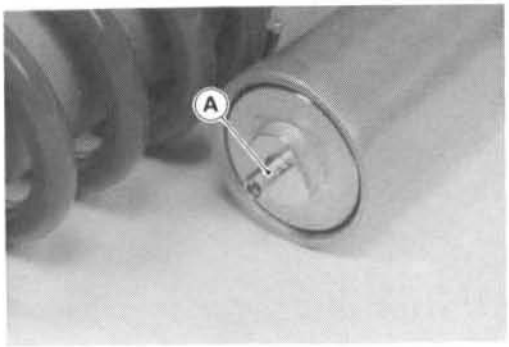
Rear Shock Absorber Spring Free Length
Standard: 275 mm
Service Limit: 270 mm



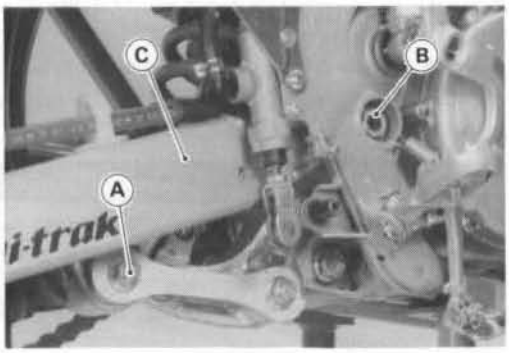
Scrapping

⚠WARNING

Since the rear shock absorber contains nitrogen gas, do not incinerate the rear shock absorber.
Before a rear shock absorber is scrapped, release the nitrogen gas completely. Do not point the valve [A] toward your face or body.



Swing Arm:



Removal

- Remove the rear wheel (see Rear Wheel Removal in the Wheels/Tires chapter).
- Remove the brake pedal.
- Remove the tie-rod rear mounting bolt [A].

CAUTION
When pulling out the mounting bolts, lift the rear end of the swing arm slightly. Forcing or tapping on a bolt could damage the bolt, sleeve, and bearing.

- Pull out the swing arm pivot shaft [B], and remove the swing arm [C].
- Separate the chain guide and chain slipper from the swing arm.

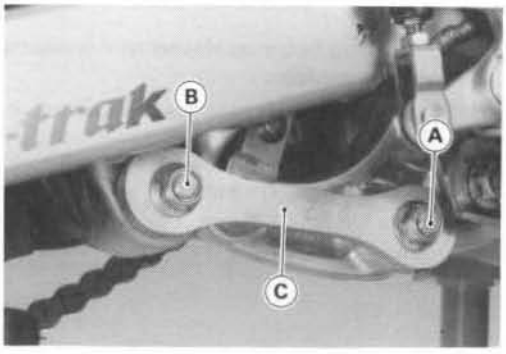
Installation Notes

- Apply plenty of molybdenum disulfide grease to the inside of the needle bearings and sleeves.
- Torque the following:

Torque – Swing Arm Pivot Shaft Nut: 98 N-m (10.0 kg-m, 72 ft-lb)
Tie-Rod Mounting Nut: 81 N-m (8.3 kg-m, 60 ft-lb)

- Refer to the Wheels/Tires, Final Drive, and Brakes chapters for wheel installation

Tie-Rod, Rocker Arm:



Tie-Rod Removal

- Using the jack under the frame, raise the rear wheel off the ground.

Special Tool – Jack: 57001-1238

- Remove the tie-rod front mounting bolt [A].

CAUTION
When pulling out the mounting bolts, lift the rear wheel slightly. Forcing or tapping on a bolt could damage the bolt, sleeve, and bearing.

- Remove the tie-rod rear mounting bolt [B], and then take out the tie-rods [C].

Tie-Rod Installation Note

- Apply plenty of molybdenum disulfide grease to the inside of the needle bearings and oil seals.
- Torque the tie-rod front and rear mounting nuts.

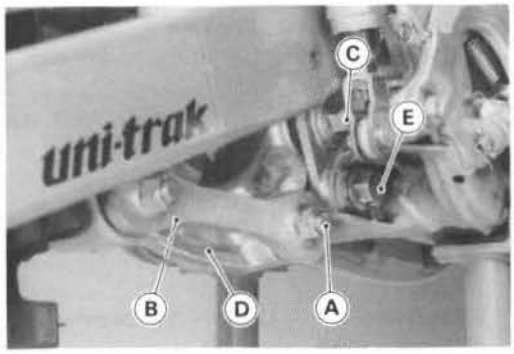
Torque – Tie-Rod Mounting Nuts: 81 N-m (8.3 kg-m, 60 ft-lb)

Rocker Arm Removal

- Using the jack under the frame, raise the rear wheel off the ground.

Special Tool – Jack: 57001-1238

- Loosen the swing arm pivot shaft nut.
- Remove the rear shock absorber bracket mounting bolts [E].
- Remove the tie-rod front mounting bolt [A].



CAUTION

When pulling out the mounting bolts, lift the rear wheel slightly. Forcing or tapping on a bolt could damage the bolt, sleeve, and bearing.

- Remove the rear shock absorber lower mounting bolt [B].
- Remove the rocker arm pivot shaft [C].
- Remove the rocker arm [D].

Rocker Arm Installation Notes

- Apply plenty of molybdenum disulfide grease to the inside of the rocker arm hole, outside of the sleeve, and needle bearing.
- Torque the following:

Torque – Rocker Arm Pivot Nut: 81 N-m (8.3 kg-m, 60 ft-lb)
Rear Shock Absorber Mounting Bolt: 39 N-m (4.0 kg-m, 29 ft-lb)
Tie-Rod Mounting Nut: 81 N m (8.3 kg-m, 60 ft-lb).
Rear Shock Absorber Bracket Mounting Bolts: 81 N-m (8.3 kg-m, 60 ft-lb)
Swing Arm Pivot Shaft Nut: 98 N-m (10.0 kg-m, 72 ft-lb)

Uni-Trak Maintenance

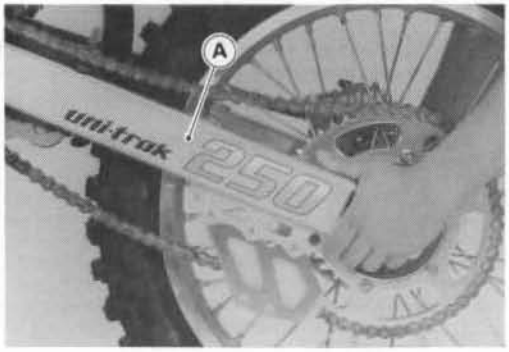
Check the uni-trak component parts for wear periodically, or whenever excessive play is suspected.

● Using the jack under the frame, raise the rear wheel off the ground.

Special Tool – Jack: 57001-1238

● Push and pull on the swing arm [A], up and down, to check for wear.

★ A small amount of play on the swing arm is normal and no corrective action is needed. However, if excessive play is felt, remove the uni-trak parts from the frame and check for wear.

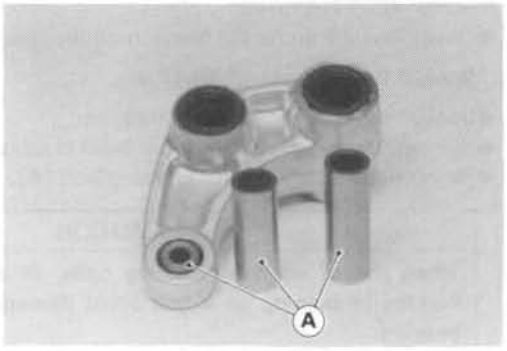


Rocker Arm Sleeve Wear

● Pull out the sleeves [A] of the rocker arm, and measure the outside diameter of the sleeve.

★ If the sleeve is worn past the service limit, replace the sleeve.

Sleeve Outside Diameter
[Long]
Standard: 21.987 ~ 22.000 mm
Service Limit: 21.85 mm
[Short]
Standard: 15.989 ~ 16.000 mm
Service Limit: 15.85 mm



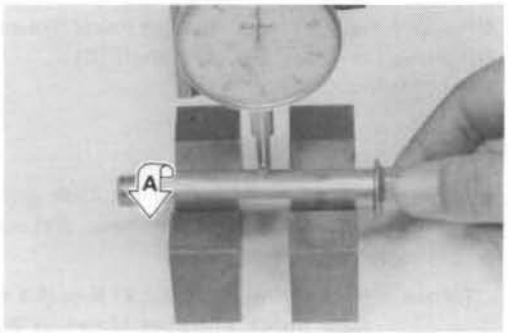
Rocker Arm Mounting Bolt Bend

A bent bolt causes vibration, poor handling, and instability.

● To measure bolt runout, remove the bolt, place it in V blocks, and set a dial gauge to the bolt at a point halfway between the blocks. Turn [A] the bolt to measure the runout. The amount of dial variation is the amount of runout.

★ If runout exceeds the service limit, replace the bolt.

Bolt Runout
Standard: Under 0.1 mm
Service Limit: 0.2 mm



Steering

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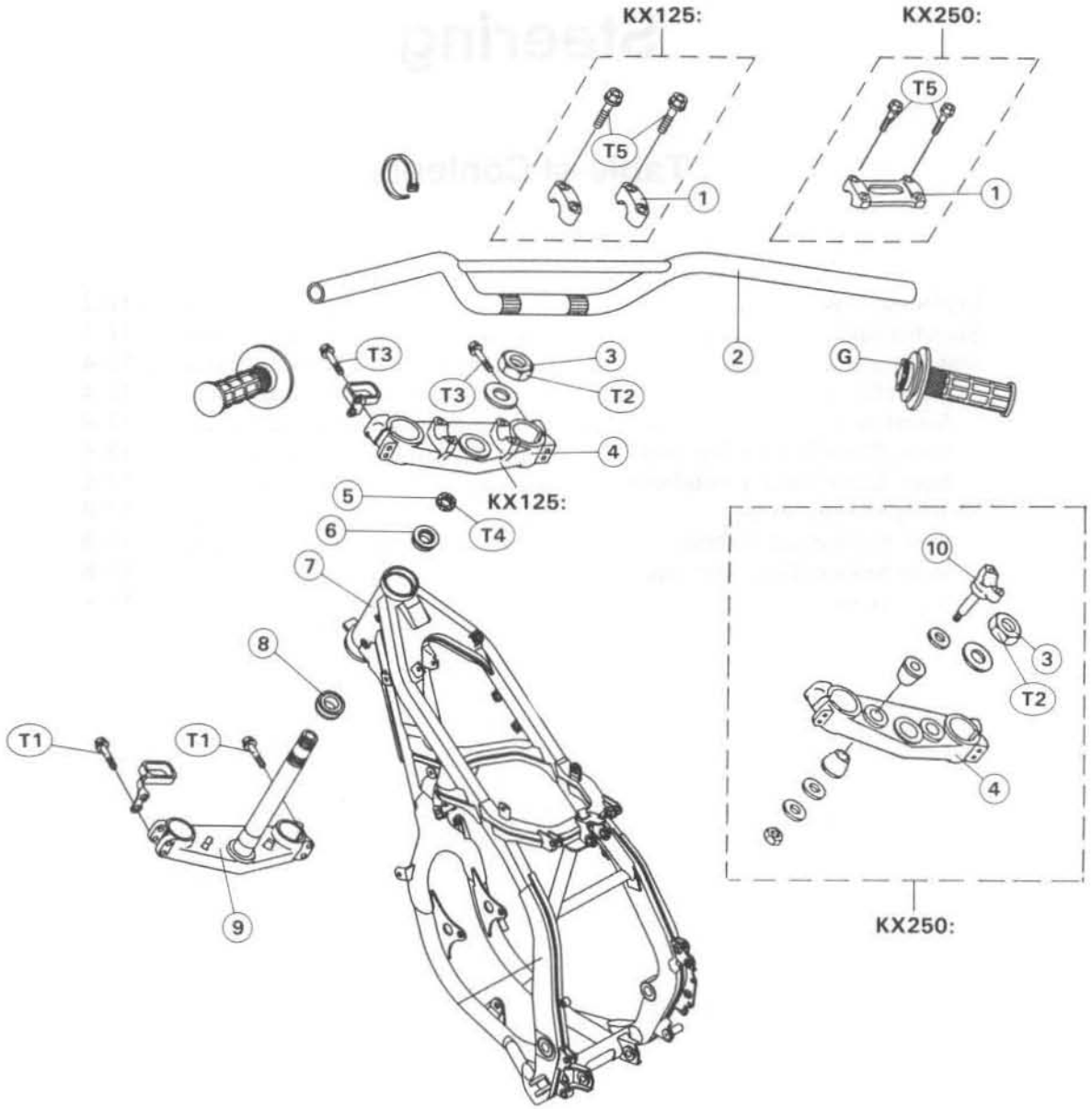
Exploded View



1. Handlebar Clamp
2. Handlebar
3. Steering Stem Head Nut
4. Steering Stem Head Bracket
5. Locknut
6. Tapered Roller Bearing
7. Head Pipe
8. Tapered Roller Bearing
9. Steering Stem

G : Apply grease liberally
T1 : 20 N-m (2.0kg-m, 14.5 ft-lb)
T2 : 78 N-m (8.0kg-m, 58 ft-lb)
T3 : 22 N-m (2.25kg-m, 16.3 ft-lb)
T4 : Tighten all snugly, then loosen.
Retighten to 3.9 N-m (0.4 kg-m, 35 in-lb)
T5 : 25 N-m (2.5 kg-m, 18.0 ft-lb)

Specifications

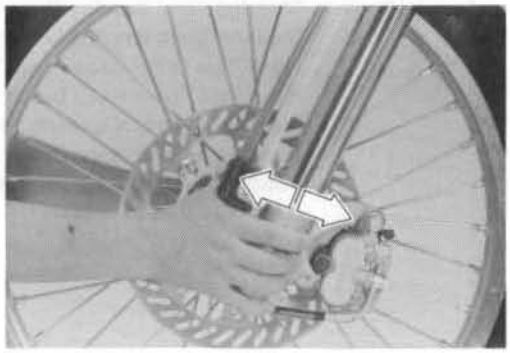
Special Tools – Steering Stem Bearing Driver: 57001-137
Steering Stem Bearing Driver Adapter: 57001-1074
Head Pipe Outer Race Press Shaft: 57001-1075
Head Pipe Outer Race Driver: 57001-1076
Steering Stem Nut Wrench: 57001-1100
Head Pipe Outer Race Driver: 57001-1077
Head Pipe Outer Race Remover: 57001-1107
Jack: 57001-1238

Steering

Inspection

- Remove the front disc cover.
- Using the jack raise the front wheel off the ground.

Special Tool – Jack: 57001-1238



- With the front wheel pointing straight ahead, alternately nudge each end of the handlebar. The front wheel should swing fully left and right from the force of gravity until the fork hits the stop.

★If the steering binds or catches before the stop, check the routing of the cables, hoses, and harnesses.

★If the steering feels tight, adjust or lubricate the steering.

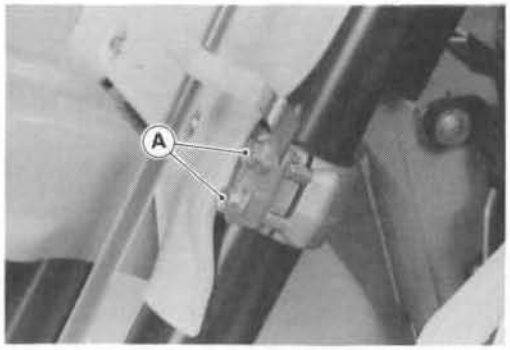
- Feel for steering looseness by pushing and pulling the forks.

★If you feel looseness, adjust the steering.

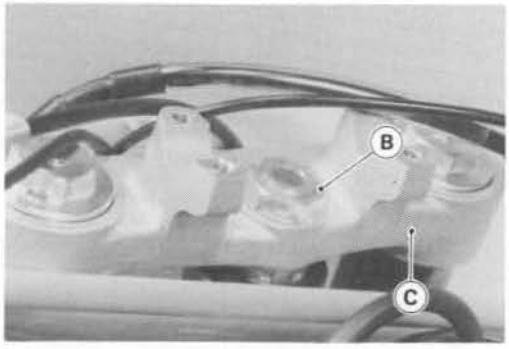
Adjustment

- Remove the front disc cover.
- For KX250 model, remove the number plate.
- Using the jack raise the front wheel off the ground.

Special Tool – Jack: 57001-1238



- Remove the handlebar.
- For KX125 model, loosen the front fork lower clamp bolts [A] and steering stem head nut [B].
- For KX250 model, loosen the front fork upper clamp bolts, and remove the steering stem head nut [B] and steering stem head [C].



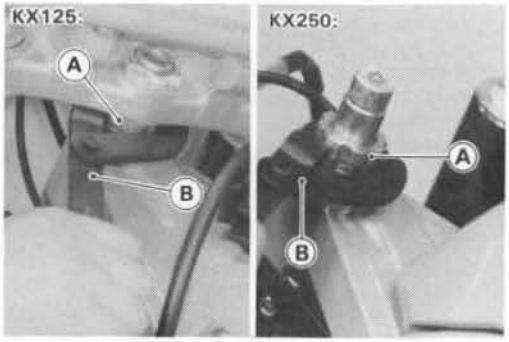
- Turn the steering stem locknut [A] with the steering stem nut wrench [B] to obtain the proper adjustment.

★If the steering is too tight, loosen the stem locknut a fraction of a turn; if the steering is too loose, tighten the locknut a fraction of a turn.

Special Tool – Steering Stem Nut Wrench: 57001-1100 [B]

NOTE

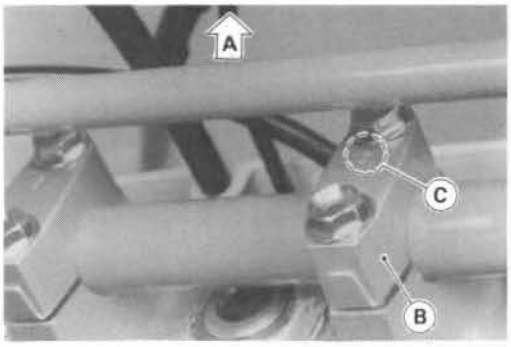
○ *Turn the locknut 1/8 turn at a time maximum.*



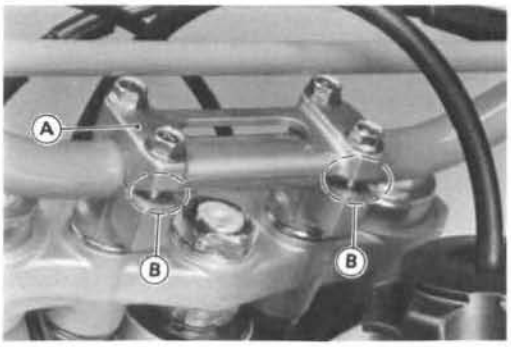
● For KX250 model, install the steering stem head.
● Torque the following:

Torque – Steering Stem Head Nut: 78 N-m (8.0 kg-m, 58 ft-lb)
Front Fork Clamp Bolts:
Upper: 20 N-m (2.0 kg-m, 14.5 ft-lb)
Lower: 22 N-m (2.25 kg-m, 16.3 ft-lb)

● For KX125 model, mount the handlebar clamps [B] so that the arrow [C] on the clamp points to the front [A].



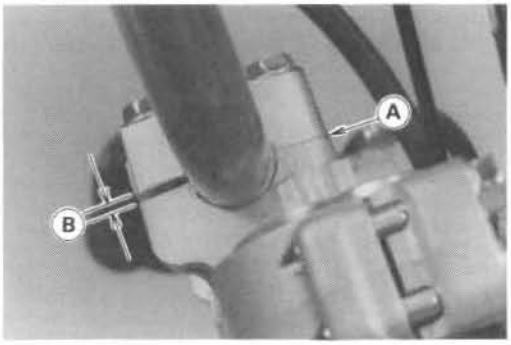
● For KX250 model, mount the handlebar clamp [A] so that the cut side [B] on the clamp points toward the rear.



● Torque the handlebar clamp bolts.

Torque – Handlebar Clamp Bolts: 25 N-m (2.5 kg-m, 18 ft-lb)

○ Tighten the clamp bolts, front first and then the rear. If the handlebar clamp is correctly installed, there will be no gap [A] at the front and a gap [B] at the rear after tightening.

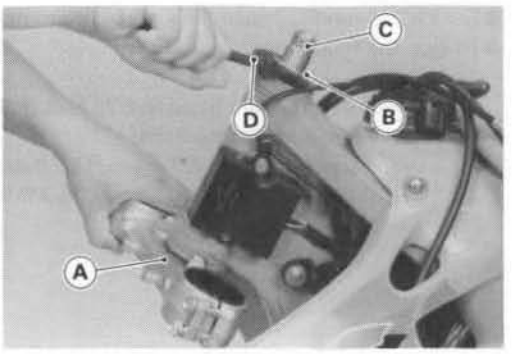


Stem, Stem Bearing Removal

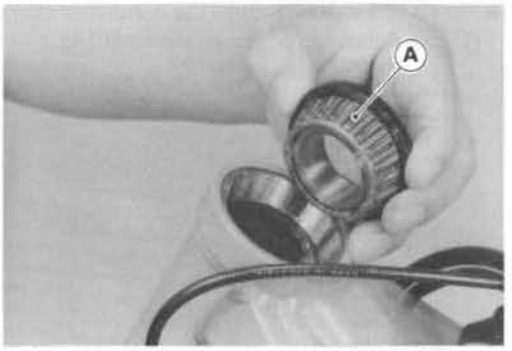
● Remove:
Front Wheel
Seat
Side Covers
Radiator Covers
Fuel Tank
Brake Hose Clamp
Caliper Mounting Bolts
Master Cylinder Clamp
Front Fender
Handlebar
Front Fork

● Remove the steering stem head nut and washer.
● Remove the steering stem head.
● Pushing up on the stem base [A], and remove the steering stem locknut [B], with the steering stem nut wrench [D], then remove the steering stem [C] and stem base.

Special Tool – Steering Stem Nut Wrench: 57001-1100 [D]



● Take off the upper stem bearing inner race (tapered roller bearing) [A].

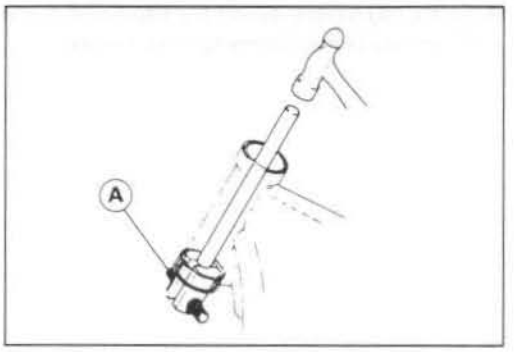


● Drive out the bearing outer races from the head pipe.
○ Remove the outer races pressed into the head pipe, using the head pipe outer race remover [A], and hammer the head pipe outer race remover to drive it out.

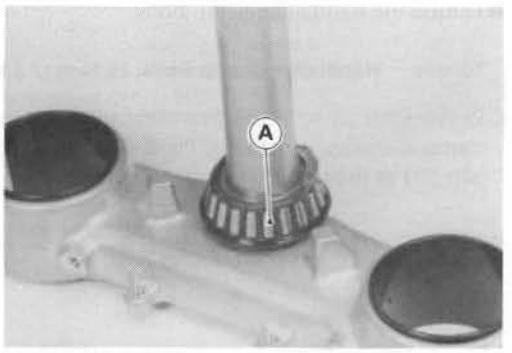
Special Tool – Head Pipe Outer Race Remover: 57001-1107 [A]

NOTE

○ *If either steering stem bearing is damaged, it is recommended that both the upper and lower bearing (including outer races) should be replaced with new ones.*



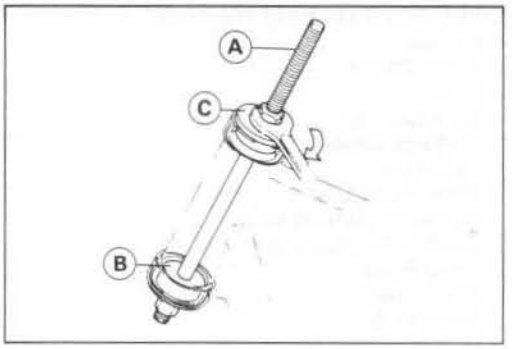
● Remove the lower stem bearing inner race (tapered roller bearing) [A] with its grease seal from the stem using suitable tools.



Stem, Stem Bearing Installation

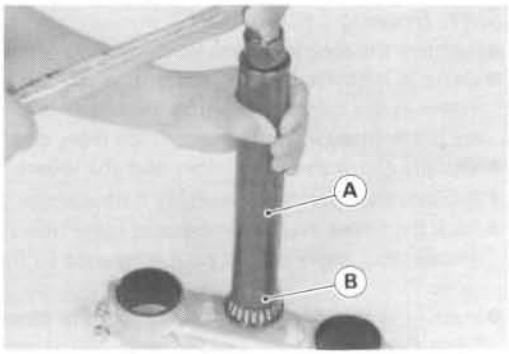
● Replace the bearing outer race with new ones.
○ Apply grease to the outer races, and drive them into the head pipe at the same time using the head pipe outer race press shaft [A] and the drivers [B] [C].

Special Tool – Head Pipe Outer Race Press Shaft: 57001-1075 [A]
Head Pipe Outer Race Driver: 57001-1076 [B]
Head Pipe Outer Race Driver: 57001-1077 [C]

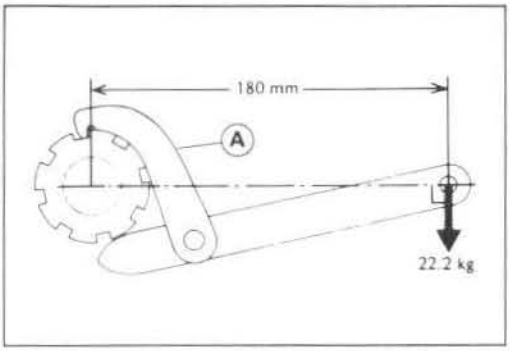


● Replace the lower inner races with new ones.
○ Apply grease to the lower inner race, and drive it onto the stem using the steering stem bearing driver [A] and adapter [B].

Special Tool – Steering Stem Bearing Driver: 57001-137 [A]
Steering Stem Bearing Driver Adapter: 57001-1074 [B]



● Apply grease to the upper inner race, and install it in the head pipe.
● Install the stem through the head pipe and upper bearing, install the stem cap and hand-tighten the locknut while pushing up on the stem base.
● Install the stem head and washer, and tighten the stem head nut lightly.
● Settle the bearings in place as follows:
○ Tighten the stem locknut to 39 N-m (4.0 kg-m, 29 ft-lb) of torque. (To tighten the steering stem locknut to the specified torque, hook the wrench [A] on the stem locknut, and pull the wrench at the hole by 22.2 kg force in the direction shown.)



Special Tool – Steering Stem Nut Wrench: 57001-1100 [A]

○ Check that there is no play and the steering stem turns smoothly without rattles. If not, the steering stem bearings may be damaged.
○ Again back out the stem locknut a fraction of a turn until it turns lightly.
○ Turn the stem locknut lightly clockwise until it just becomes hard to turn. Do not overtighten, or the steering will be too tight.

Torque – Steering Stem Locknut: 3.9 N-m (0.4 kg-m, 35 in-lb)

● Install the front fork (see the Suspension chapter).

NOTE

○ *Tighten the fork upper clamp bolts first, next the stem head bolt, last the fork lower clamp bolt.*

Torque – Steering Stem Head Nut: 78 N-m (8.0 kg-m, 58 ft-lb)
Front Fork Clamp Bolt:
Upper: 22 N-m (2.25 kg-m, 16.3 ft-lb)
Lower: 20 N-m (2.0kg-m, 14.5 ft-lb)

● Install the parts removed (see the appropriate chapter).

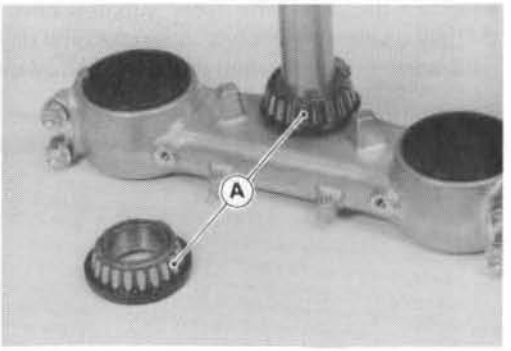
⚠WARNING

Do not impede the handlebar turning by routing the cables, harnesses and hoses improperly (see the General Information chapter).

● Check and adjust:
Steering
Front Brake
Clutch Cable
Throttle Cable

Steering Maintenance

Stem Bearing Lubrication



- Remove the steering stem (see Steering Stem Removal).
- Using a high flash-point solvent, wash the upper and lower tapered rollers in the cages, and wipe the upper and lower outer races, which are press-fitted into the frame head pipe, clean off grease and dirt.
- Visually check the outer races and the rollers.

★Replace the bearing assemblies if they show wear or damage.

- Pack the upper and lower tapered roller bearings [A] in the cages with grease, and apply a light coat of grease to the upper and lower outer races.
- Install the steering stem, and adjust the steering (see Steering Stem, Stem Bearing Installation, Steering Adjustment).

Stem Bearing Wear, Damage

- Using a high flash-point solvent, wash the upper and lower tapered rollers in the cages, and wipe the upper and lower outer races, which are press-fitted into the frame head pipe, clean off grease and dirt.
- Visually check the outer race and the rollers.

★Replace the bearing assembly if it show damage.

Stem Warp

- Whenever the steering stem is removed, or if the steering cannot be adjusted for smooth action, check the steering stem for straightness.

★If the steering stem shaft is bent, replace the steering stem.

Electrical System

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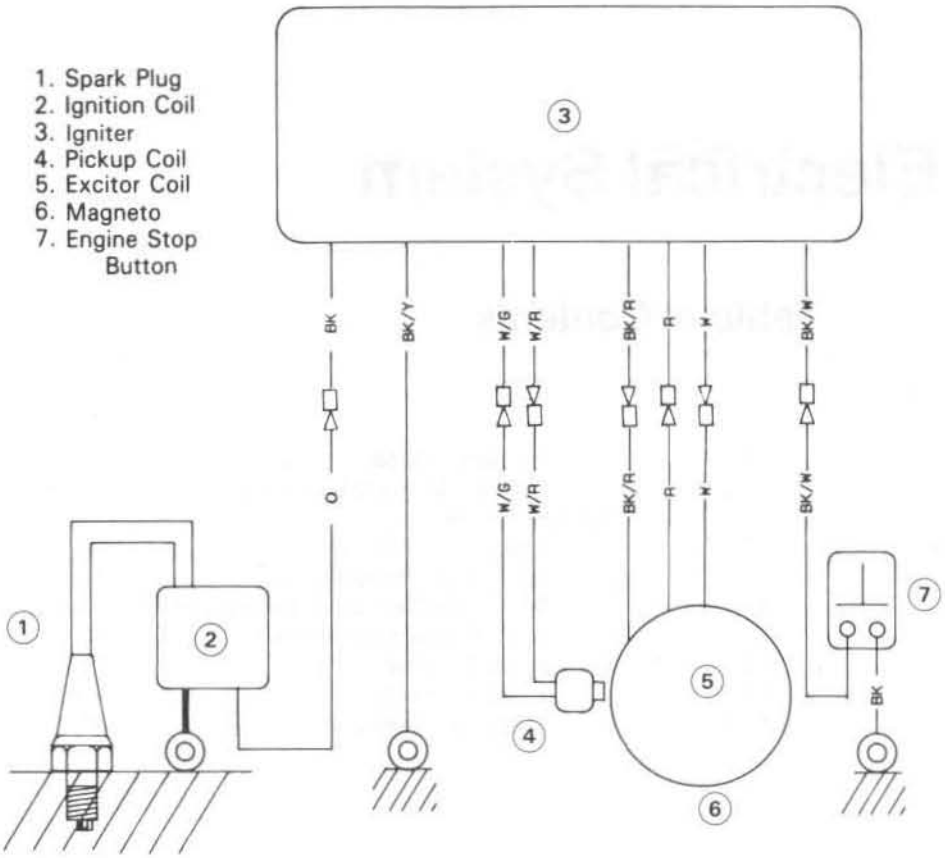
Wiring Diagram

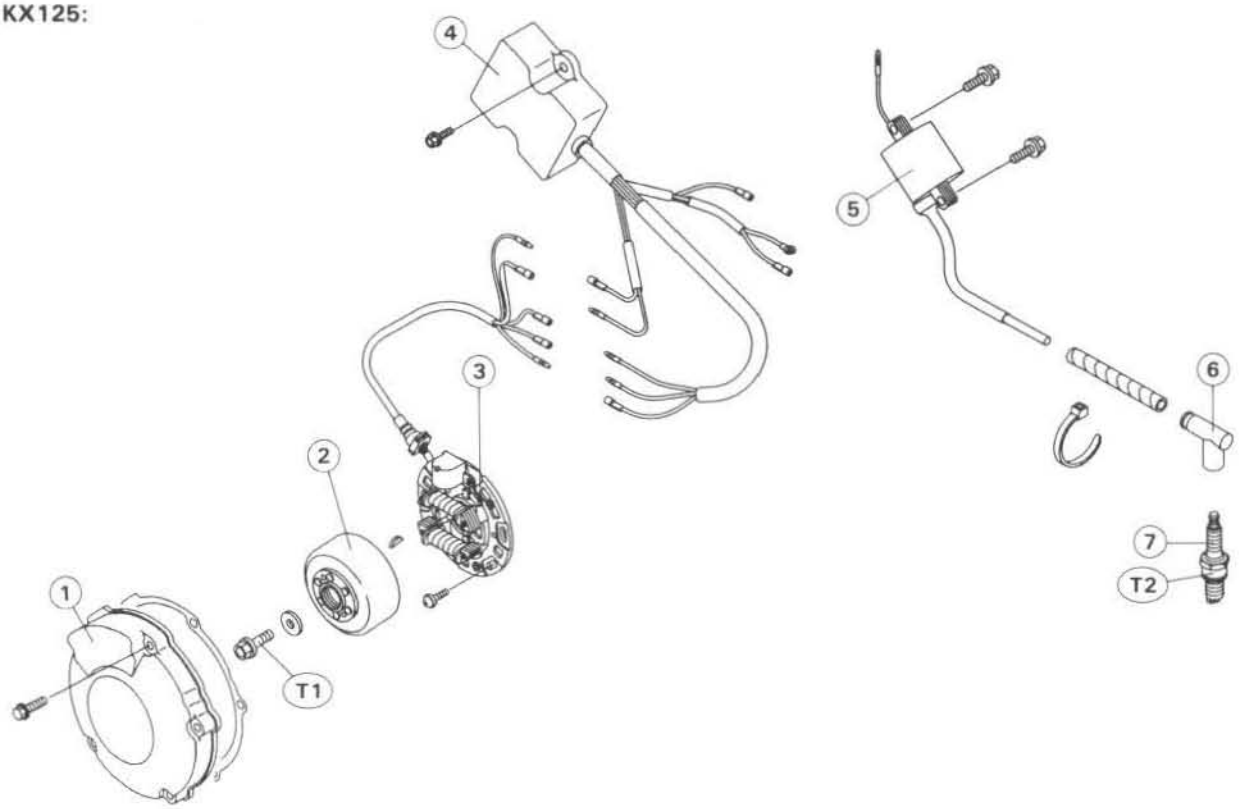
1. Spark Plug
2. Ignition Coil
3. Igniter
4. Pickup Coil
5. Excitor Coil
6. Magneto
7. Engine Stop Button

Color Code	
BK	Black
G	Green
O	Orange
R	Red
W	White
Y	Yellow

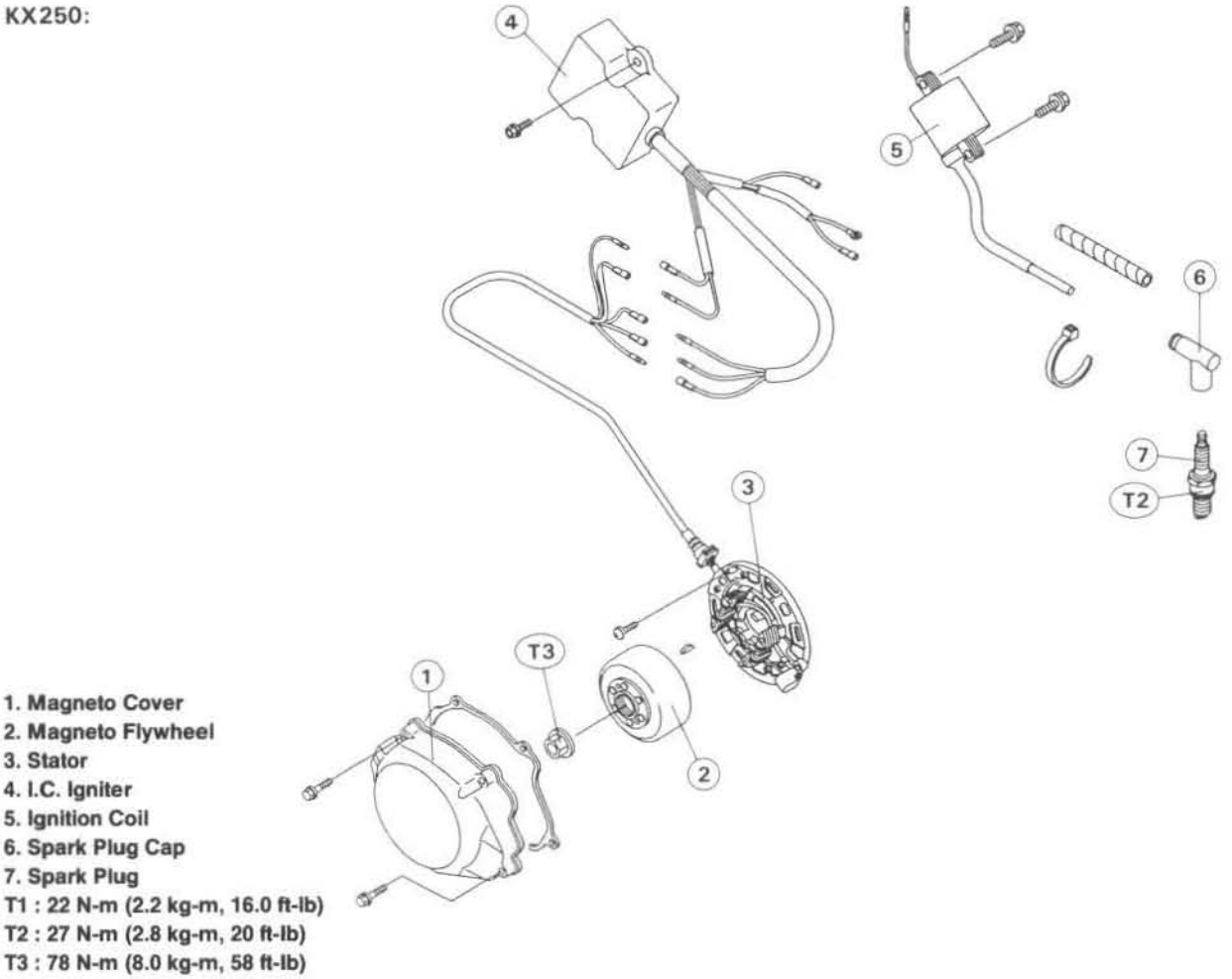


Exploded View

KX125:



KX250:



1. Magneto Cover
2. Magneto Flywheel
3. Stator
4. I.C. Igniter
5. Ignition Coil
6. Spark Plug Cap
7. Spark Plug

T1 : 22 N-m (2.2 kg-m, 16.0 ft-lb)
T2 : 27 N-m (2.8 kg-m, 20 ft-lb)
T3 : 78 N-m (8.0 kg-m, 58 ft-lb)

Specifications

Item		Standard
Ignition System:		
Ignition timing:	KX125	15.8° BTDC @11 000 r/min (rpm)
	KX250	14° BTDC @6 000 r/min (rpm)
Ignition coil:		
3 needle arcing distance		7 mm or more
Primary winding resistance		0.25 ~ 0.37 Ω (at 20°C)
Secondary winding resistance		3.3 ~ 4.9 kΩ (at 20°C)
Igniter internal resistance		Refer to 13 – 13
Spark plug:		
KX125:	Type	NGK R6254K-105 (A)(C)(E) NGK R6252K-105
	Gap	0.7 ~ 0.8 mm
KX250:	Type	NGK R6254E-9 (A)(C)(E) NGK R6252E-9
	Gap	0.5 ~ 0.6 mm

(A) : Australian model
(C) : Canadian model
(E) : European model

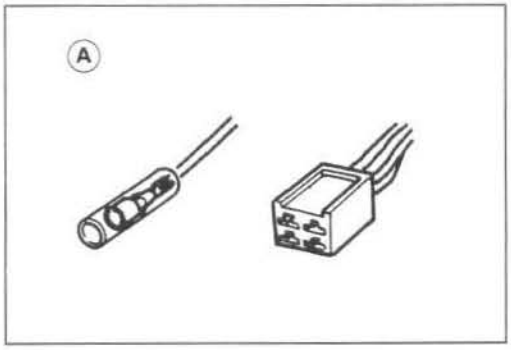
Special Tools – Flywheel Puller: 57001-252
Hand Tester: 57001-983
Spark Plug Wrench, Hex 21: 57001-110
Coil Tester: 57001-1242
Flywheel Holder: 57001-1313

Precautions and Safety Instructions

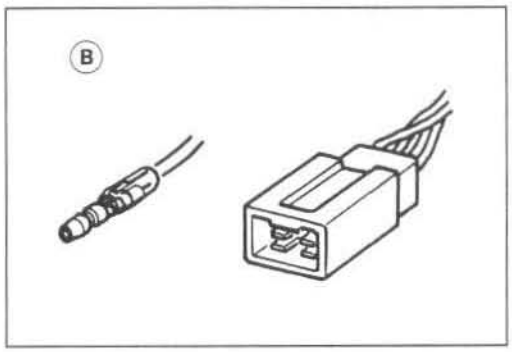
There are numbers of important precautions that are musts when servicing electrical systems. Learn and observe all the rules below.

- The electrical parts should never be struck sharply, as with a hammer, or allowed to fall on a hard surface. Such a shock to the parts can damage them.
- Troubles may involve one or in some cases all items. Never replace a defective part without determining what CAUSED the failure. If the failure was caused by some other item or items, they too must be repaired or replaced, or the new replacement will soon fail again.
- Make sure all connectors in the circuit are clean and tight, and examine wires for signs of burning, fraying, etc. Poor wires and bad connections will affect electrical system operation.
- Measure coil and winding resistance when the part is cold (at room temperature).
- Electrical Connectors

[A] Female Connectors



[B] Male Connectors



⚠WARNING

The ignition system produces extremely high voltage. Do not touch the spark plug, high tension coil, or spark plug lead while the engine is running, or you could receive a severe electrical shock.

Electrical Wiring

Inspection

●Visually inspect the wiring for signs of burning, fraying, etc.

★If any wiring is poor, replace the damaged wiring.

●Pull each connector apart and inspect it for corrosion, dirt, and damage.

★If the connector is corroded or dirty, clean it carefully. If it is damaged, replace it.

●Check the wiring for continuity.

○Use the wiring diagram to find the ends of the lead which is suspected of being a problem.

○Connect an ohmmeter between the ends of the leads.

○Set the meter to the × 1Ω range, and lead the meter.

★If the meter does not read 0 Ω, the lead is defective. Replace the lead or the wiring harness if necessary.

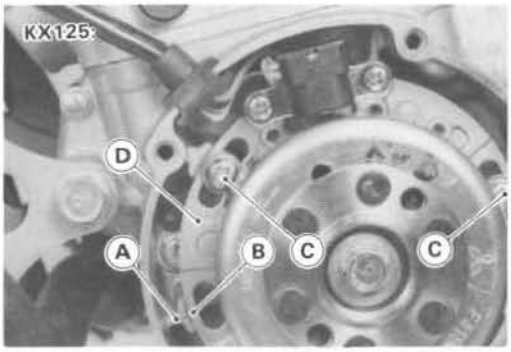
Ignition Timing

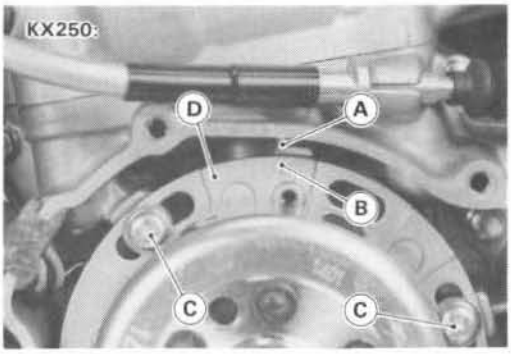
Ignition Timing Adjustment

- Remove the magneto cover.
- Check to see if the center mark of the three marks [B] on the magneto stator is aligned with the mark [A] on the crankcase.

★If the marks are not aligned, loosen the magneto stator screws [C] and turn the magneto stator [D].

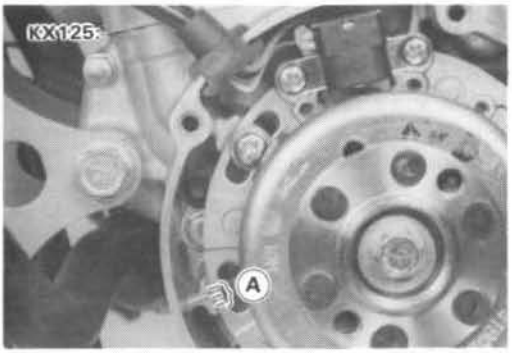
- Tighten the screws securely.
- Install the magneto cover.

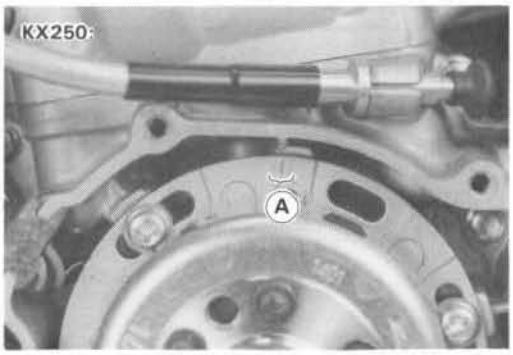




The ignition timing can be adjusted for different power bands the suit the rider's preference and ability.

- Remove the magneto cover.
- Loosen the stator screws.
- Adjust the timing by shifting the stator position within the three lines [A].

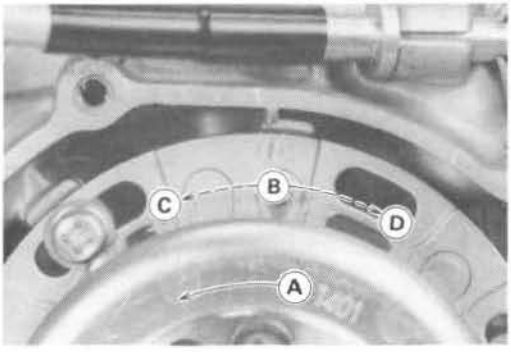




NOTE

○*For best engine performance, it is very important to adjust the ignition timing within the adjustable range just explained.*

A. Crankshaft Rotation
B. Stator Movement
C. Advance
D. Retard

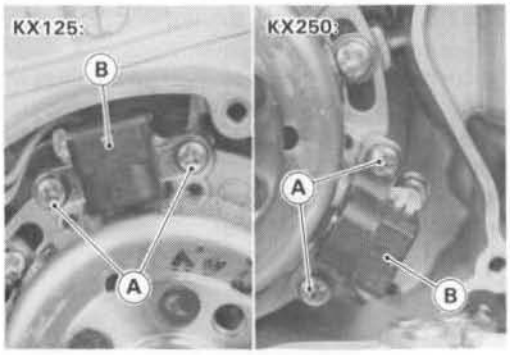


- Tighten the stator screws securely.
- Install the magneto cover.
- Test ride the motorcycle and readjust the ignition timing if necessary.

Flywheel Magneto

Removal

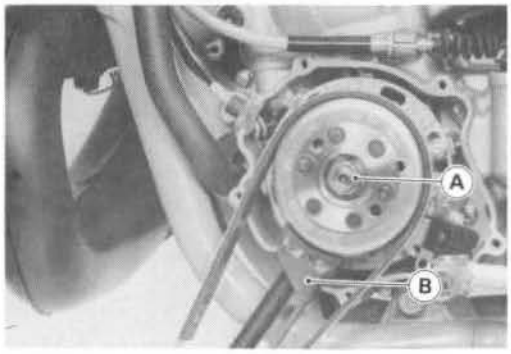
- Remove the magneto cover.
- Unscrew the mounting screws [A], and remove the pickup coil [B].



- Holding the flywheel steady with the flywheel holder [B] remove the flywheel bolt (KX125) or nut (KX250) [A].

Special Tool – Flywheel Holder: 57001-1313 [B]

- Remove the flywheel holder.

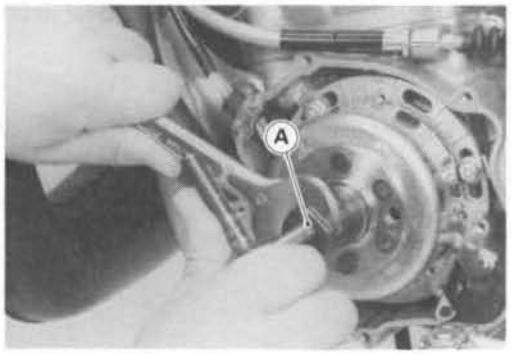


- Screw the flywheel puller [A] into the flywheel by turning it counterclockwise (left-hand thread).
- Remove the flywheel from the crankshaft by turning in the puller center bolt and tapping the head of the bolt lightly with a hammer, while holding the puller body steady. There is a woodruff key in the crankshaft tapered portion.

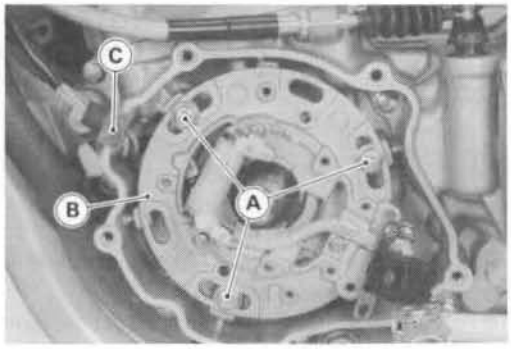
Special Tool – Flywheel Puller: 57001-252 [A]

⚠CAUTION

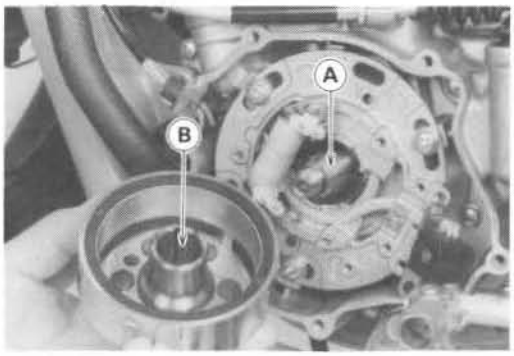
Never strike the grab bar or the flywheel itself. Striking the bar can bend it. If the flywheel is struck, the magnets may lose their magnetism.



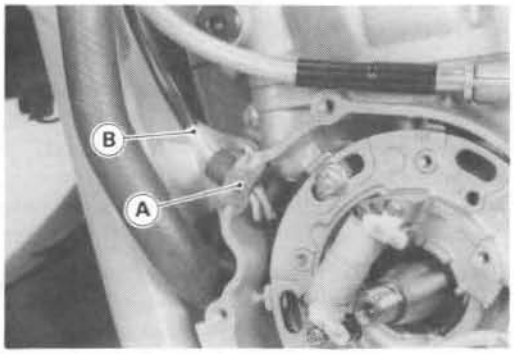
- Unscrew the mounting screws [A], and remove the stator plate [B] and the wiring grommet [C].
- Disconnect the stator lead connectors from the igniter connectors.



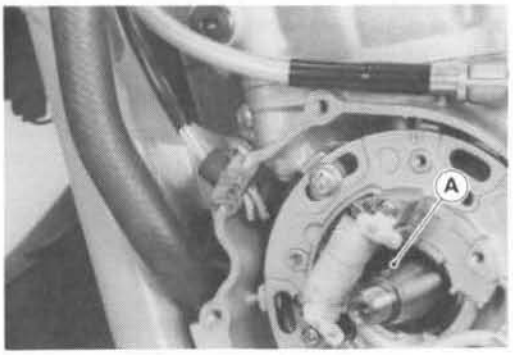
Installation Notes



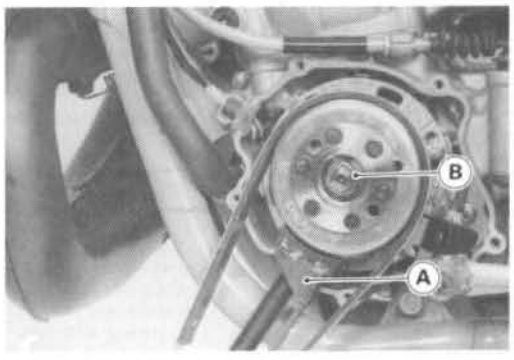
- Using a high flash-point solvent, clean off any oil or dirt that may be on the crankshaft taper [A] or in the hole [B] in the flywheel. Dry them with a clean cloth.



- Set the stator wiring grommet [A] securely in the notch in the left crankshaft half, and route the wires [B] according to the Cable, Harness, Hose Routing section in the General Information chapter.



- Fit the woodruff key [A] securely in the slot in the crankshaft before installing the flywheel.



- Holding the flywheel steady, with the flywheel holder [A], and tighten the flywheel bolt (KX125) or nut (KX250) [B].

  Special Tool – Flywheel Holder: 57001-1313

  Torque – Flywheel Bolt (KX125): 22 N-m (2.2 kg-m, 16 ft-lb)
  Flywheel Nut (KX250): 78 N-m (8.0 kg-m, 58 ft-lb)

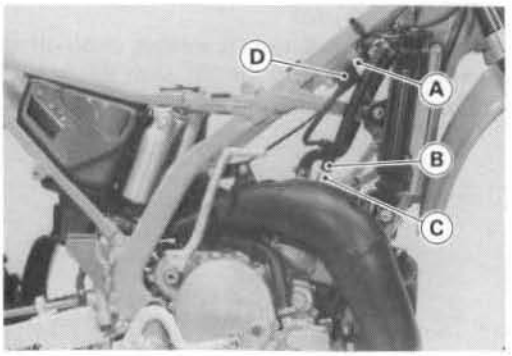
- Replace the gasket with a new one.

Flywheel Magneto Inspection

There are three types of magneto problems: short, open (wire burned out), or loss in flywheel magnetism. A short or open in one of the coil wires will result in either a low output, or no output at all. A loss in flywheel magnetism, which may be caused by dropping or hitting the flywheel, or just by aging, will result in low output. Inspect the coils and the flywheel (see Ignition System).

Ignition System

Ignition Coil Removal



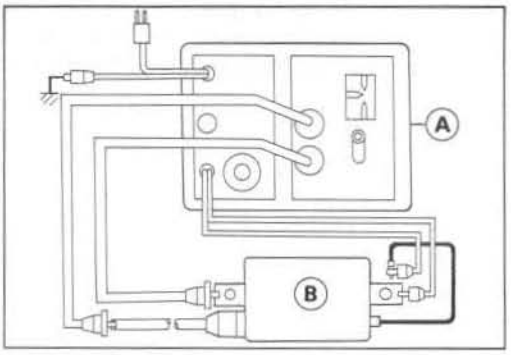
- Remove:
  Side Covers
  Seat
  Radiator Covers
  Fuel Tank
- Disconnect the ignition coil primary lead, engine stop button earth and igniter earth leads [A].
- Pull the plug cap [B] off the spark plug [C].
- Unscrew the mounting bolt, and remove the ignition coil [D].

Ignition Coil Inspection

Measuring arcing distance:

The most accurate test for determining the condition of the ignition coil is made by measuring arcing distance using a suitable commercially available coil tester for the 3-needle method.

- Remove the ignition coil.
- Connect the ignition coil (with the spark plug cap left installed on the spark plug lead) [A] to the tester [B], and measure the arcing distance.



⚠WARNING

To avoid extremely high voltage shocks, do not touch the coil or lead.

★If the distance reading is less than the specified value, the ignition coil or spark plug cap is defective.

Ignition Coil Arcing Distance
Standard: 7 mm or more

- To determine which part is defective, measure the arcing distance again with the spark plug cap removed from the ignition coil lead.

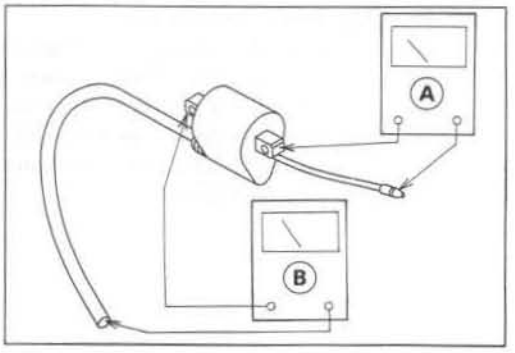
★If the arcing distance is subnormal as before, the trouble is with the ignition coil itself. If the arcing distance is now normal, the trouble is with the spark plug cap.

Measuring coil resistance:

If the arcing tester is not available, the coil can be checked for a broken or badly shorted winding with an ohmmeter. However, an ohmmeter cannot detect layer shorts and shorts resulting from insulation breakdown under high voltage.

- Remove the ignition coil.
- Measure the primary winding resistance [A].

○ Connect an ohmmeter between the coil terminals.



○Set the meter to the x 1 Ω range, and read the meter.
●Measure the secondary winding resistance [B].
○Remove the plug cap by turning it counterclockwise.
○Connect an ohmmeter between the spark plug lead and the ground lead terminal.
○Set the meter to the x 1 kΩ range, and read the meter.
★If the meter does not read as specified, replace the coil.
★If the meter reads as specified, the ignition coil windings are probably good. However, if the ignition system still does not perform as it should after all other components have been checked, test replace the coil with one known to be good.

Ignition Coil Winding Resistance

Primary windings:	**0.25 ~ 0.37 Ω (at 20°C)**
Secondary windings:	**3.3 ~ 4.9 kΩ (at 20°C)**

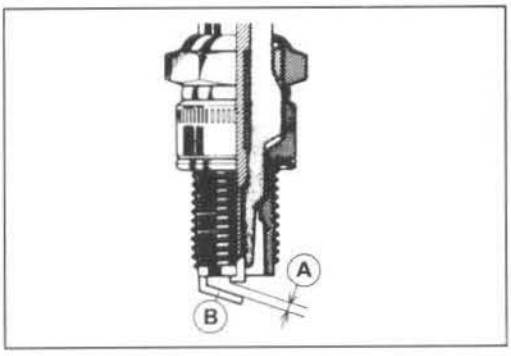
●Check the spark plug lead for visible damage.
★If the spark plug lead is damaged, replace the coil.

Spark Plug Cleaning and Inspection

●Remove the spark plug, and visually inspect it.
●Clean the spark plug, preferably in a sandblasting device, and then clean off any abrasive particles. The plug may also be cleaned using a high flash point solvent and a wire brush or other suitable tool.
★If the spark plug electrodes are corroded or damaged, or if the insulator is cracked, replace the plug. Use the standard spark plug.

Spark Plug Gap Inspection

●Measure the gap [A] with a wire-type thickness gauge.
★If the gap is incorrect, carefully bend the side electrode [B] with a suitable tool to obtain the correct gap.

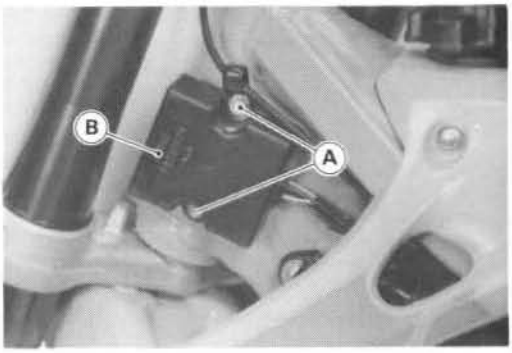


Spark Plug Gap
Standard:

KX125	**NGK R6254K-105** **NGK R6252K-105**	**0.7 ~ 0.8 mm**
KX250	**NGK R6254E-9** **NGK R6252E-9**	**0.5 ~ 0.6 mm**

Igniter Removal

●Remove:
Side Covers
Seat
Radiator Covers
Fuel Tank
●Disconnect the igniter lead.
●Unscrew the mounting bolts [A], and remove the igniter [B].



Igniter Inspection

●Set the hand tester to the ×1kΩ range, connect the tester to the terminals in the igniter lead, and check the internal resistance following the table.

★If the readings do not correspond to the table, replace the igniter.

Special Tool – Hand Tester: 57001-983

CAUTION
Use only the Kawasaki Hand Tester for this test. A tester other than the Kawasaki Hand Tester may show different readings. **Do not use a megger or a meter with a large capacity battery, or the igniter will be damaged.**

Igniter Tester Using the Kawasaki Hand Tester

		Tester Positive (+) Lead Connection							
	Lead Color	BK/Y (Ground)	BK/W (Stop)	R (Exciter)	BK (Ign. Coil)	W (Exciter)	BK/R (Exciter)	W/R (Pickup)	W/G (Pickup)
Tester Negative (−) Lead Connection	BK/Y (Ground)		6.8–19.2	2.2–4.7	∞	∞	2.2–4.8	0	7.7–13.4
	BK/W (Stop)	∞		∞	∞	∞	∞	∞	∞
	R (Exiter)	116–330	2.2–4.6		∞	∞	272– 1200	116–330	128–420
	BK (Ign. Coil)	2.0–4.4	22.7–120	6.8–18.2		∞	7.0–19.4	2.0–4.4	12.8–24.4
	W (Exciter)	∞	2.2–4.7	∞	∞		∞	∞	∞
	BK/R (Exciter)	44–114	over 360	108–540	∞	∞		44–114	68–180
	W/R (Pickup)	0	6.8–19.2	2.2–4.7	∞	∞	2.2–4.8		7.7–13.4
	W/G (Pickup)	8.0 –13.8	24–54.6	13.4–25.8	∞	∞	13.6–26.4	8.0 –13.8	

∞ : Infinity
Range : ×1kΩ
Unit : kΩ

Color	Code
BK	Black
G	Green
O	Orange
R	Red
W	White
Y	Yellow

Stator Coil Inspection

- Remove:
  Side Covers
  Seat
  Radiator Covers
  Fuel Tank
- Disconnect the magneto lead.
- Zero the ohmmeter, and connect it as shown in the table.

Stator Coil Resistance (at 20°C)

Connections	Reading
White/Red-White/Green	396 ~ 594 Ω
Red – Black/Red	288 ~ 432 Ω
White – Red	14 ~ 21 Ω

● Note the resistance reading.

★ If there is more resistance than shown in the table, the stator has a broken wire, the leads between the stator and the connector are open, or the connections are bad. Check the stator and the leads, and fix or replace the damaged parts.

★ If there is much less resistance than shown in the table, the stator is shorted, or the leads between the stator and the connector is grounded. Check the stator and the leads, and fix or replace the damaged parts.

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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:

Engine won't turn over:
- Cylinder, piston seizure
- Crankshaft seizure
- Connecting rod small end seizure
- Connecting rod big end seizure
- Transmission gear or bearing seizure
- Kick shaft return spring broken
- Kick ratchet gear not engaging

No fuel flow:
- No fuel in tank
- Fuel tap turned off
- Tank cap air vent obstructed
- Fuel tap clogged
- Fuel line clogged
- Float valve clogged

Engine flooded:
- Float level too high
- Float valve worn or stuck open
- Starting technique faulty
- (when flooded, kick with the throttle fully open 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
- Ignition coil resistor open
- Flywheel magneto damaged
- Wiring shorted or open

Fuel/air mixture incorrect:
- Idle adjusting screw maladjusted
- Slow jet or air passage clogged
- Air cleaner clogged, poorly sealed, or missing
- Starter jet clogged

Compression Low:
- Spark plug loose
- Cylinder head not sufficiently tightened down
- Cylinder, piston worn
- Piston ring bad (worn, weak, broken, or sticking)
- Piston ring/land clearance excessive
- Cylinder head gasket damaged
- Cylinder head warped
- Cylinder base gasket damaged
- Reed valve damaged
- Cylinder nut loose

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
- Flywheel magneto damaged
- Ignition coil lead or igniter lead not in good contact

Fuel/air mixture incorrect:
- Idle adjusting screw maladjusted
- Slow jet or air passage clogged
- Air cleaner clogged, poorly sealed, or missing
- Starter plunger stuck open
- Float level too high or too low
- Fuel tank air vent obstructed
- Carburetor holder loose
- Air cleaner duct loose

Compression low:
- Spark plug loose
- Cylinder head not sufficiently tightened down
- Cylinder, piston worn
- Piston ring bad (worn, weak, broken, or sticking)
- Piston ring/land clearance excessive
- Cylinder head gasket damaged
- Cylinder head warped
- Cylinder base gasket damaged
- Reed valve damaged
- Cylinder nut loose

KIPS ports stuck open:
- KIPS exhaust valve stuck open (valve seizure, or carbon accumulation)
- KIPS exhaust valves assembled incorrectly
- Exhaust advancer spring damaged
- Exhaust valve operating rod seizure
- Rod (for KIPS) seized in cylinder

Other:
- Igniter trouble
- Transmission oil viscosity too high
- Brake dragging

Poor Running or No Power at High Speed:

Firing incorrect:
- Spark plug dirty, damaged, or maladjusted
- Spark plug cap or high tension wiring damaged
- Spark plug cap shorted or not in good contact
- Spark plug incorrect
- Igniter trouble
- Ignition coil trouble
- Flywheel magneto damaged
- Ignition coil lead or igniter lead not in good contact

Fuel/air mixture incorrect:
- Main jet clogged or wrong size
- Jet needle or needle jet worn
- Jet needle clip in wrong position
- Float level too high or too low
- Air jet or air passage clogged
- Air cleaner clogged, poorly sealed, or missing
- Starter plunger stuck open
- Fuel to carburetor insufficient
- Water or foreign matter in fuel
- Fuel tank air vent obstructed
- Carburetor holder loose
- Air cleaner duct loose
- Fuel tap clogged
- Fuel line clogged

Compression low:
- Spark plug loose
- Cylinder head not sufficiently tightened down
- Cylinder, piston worn
- Piston ring bad (worn, weak, broken, or sticking)
- Piston ring/land clearance excessive
- Cylinder head gasket damaged
- Cylinder head warped
- Cylinder base gasket damaged
- Reed valve damaged
- Cylinder nut loose

Engine rpm will not rise properly:
- Starter plunger stuck open
- Float level too high or too low
- Main jet clogged
- Throttle valve does not fully open
- Air cleaner clogged
- Muffler clogged
- Water or foreign matter in fuel
- Cylinder exhaust port clogged
- Brake dragging
- Clutch slipping
- Overheating
- Transmission oil level too high
- Transmission oil viscosity too high
- Crankshaft bearing worn or damaged

KIPS ports stuck closed:
- KIPS ports stuck closed
- KIPS exhaust valves stuck closed (valve seizure, or carbon accumulation)
- KIPS exhaust valves assembled incorrectly
- KIPS ports clogged (carbon accumulation)
- Exhaust valve operating rod seizure
- Rod (for KIPS) seized in cylinder

Knocking:
- Carbon built up in combustion chamber
- Fuel poor quality or incorrect
- Spark plug incorrect
- Igniter trouble

Overheating:

Firing incorrect:
- Spark plug dirty, broken, or maladjusted
- Spark plug incorrect
- Igniter trouble

Fuel/air mixture incorrect:
- Main jet clogged or wrong size
- Fuel level in carburetor float bowl too low
- Carburetor holder loose
- Air cleaner poorly sealed, or missing
- Air cleaner duct poorly sealed
- Air cleaner clogged

Compression high:
- Carbon built up in combustion chamber

Engine load faulty:
- Brake dragging
- Clutch slipping
- Transmission oil level too high
- Transmission oil viscosity too high

Lubrication inadequate:
- Transmission oil level too low
- Transmission oil poor quality or incorrect

Coolant incorrect:
- Coolant level too low
- Coolant deteriorated

Cooling system component incorrect:
- Radiator clogged
- Radiator cap trouble
- Water pump not rotating

Clutch Operation Faulty:

Clutch slipping:
- No clutch lever play
- Clutch cable maladjusted
- Clutch inner cable catching
- Friction plate worn or warped
- Steel plate worn or warped
- Clutch spring broken or weak
- Clutch release mechanism trouble
- Clutch hub or housing unevenly worn

Clutch not disengaging properly:
- Clutch lever play excessive
- Clutch plate warped or too rough
- Clutch spring tension uneven
- Transmission oil deteriorated
- Transmission viscosity too high
- Transmission oil level too high
- Clutch housing frozen on drive shaft
- Clutch release mechanism trouble

Gear Shifting Faulty:

Doesn't go into gear; shift pedal doesn't return:
- Clutch not disengaging
- Shift fork bent or seized
- Gear stuck on the shaft
- Gear positioning lever binding
- Shift return spring weak or broken
- Shift return spring pin loose
- Shift mechanism arm spring broken
- Shift mechanism arm broken
- Shift drum broken

Jumps out of gear:
- Shift fork worn
- Gear groove worn
- Gear dogs and/or dog holes worn
- Shift drum groove worn
- Gear positioning lever spring weak or broken
- Shift fork guide pin worn
- Drive shaft, output shaft, and/or gear splines worn

Overshifts:
- Gear positioning lever spring weak or broken
- Shift mechanism arm spring broken

Abnormal Engine Noise:

Knocking:
- Igniter trouble
- Carbon built up in combustion chamber
- Fuel poor quality or incorrect
- Spark plug incorrect
- Overheating

Piston slap:
- Cylinder/piston clearance excessive
- Cylinder, piston worn
- Connecting rod bent

Piston pin, piston pin holes worn

Other noise:

Connecting rod small end clearance excessive
Connecting rod big end clearance excessive
Piston ring worn, broken or stuck
Piston seizure or damaged
Cylinder head gasket leaking
Exhaust pipe leaking at cylinder head connection
Crankshaft runout excessive
Engine mounts loose
Crankshaft bearing worn
Primary gear worn or chipped

Abnormal Drive Train Noise:

Clutch noise:

Clutch housing/friction plate clearance excessive
Clutch housing gear/primary gear backlash excessive
Metal chip jammed in clutch housing gear teeth

Transmission noise:

Crankcase bearing worn or damaged
Transmission gear worn or chipped
Metal chip jammed in gear teeth
Transmission oil insufficient or too thin
Kick ratchet gear not properly disengaging from kick gear
Output shaft idle gear worn or chipped

Drive chain noise:

Drive chain adjusted improperly
Chain worn
Rear and/or engine sprocket(s) worn
Chain lubrication insufficient
Rear wheel misaligned

Abnormal Frame Noise:

Front fork noise:

Oil insufficient or too thin
Spring weak or broken

Rear shock absorber noise:

Shock absorber damaged

Disc brake noise:

Pad installed incorrectly
Pad surface glazed
Disc warped
Caliper trouble
Cylinder damaged

Other noise

Bracket, nut, bolt, etc. not properly mounted or tightened

Exhaust Smoke:

Excessive white smoke:

Throttle cable maladjusted

Brownish smoke:

Air cleaner clogged
Main jet too large or fallen out
Starter Plunger stuck open
Float level too high

Handling and/or Stability Unsatisfactory:

Handlebar hard to turn:

Control Cable routing incorrect
Wiring routing incorrect
Steering stem locknut too tight
Bearing roller damaged
Bearing race dented or worn
Steering stem lubrication inadequate
Steering stem bent
Tire air pressure too low

Handlebar shakes or excessively vibrates:

Tire worn
Swing arm sleeve or needle bearing damaged
Rim warped, or not balanced
Front, rear axle runout excessive
Wheel bearing worn
Handlebar clamp loose
Steering stem head nut loose

Handlebar pulls to one side:

Frame bent
Wheel misalignment
Swing arm bent or twisted
Swing arm pivot shaft runout excessive
Steering maladjusted
Steering stem bent
Front fork leg bent
Right/left front fork oil level uneven

Shock absorption unsatisfactory:

(Too hard)
Front fork oil excessive
Front fork oil viscosity too high
Front fork leg bent
Tire air pressure too high
Rear shock absorber maladjusted
(Too soft)
Front fork oil insufficient and/or leaking
Front fork oil viscosity too low
Front fork, rear shock absorber spring weak
Rear shock absorber gas leaking
Rear shock absorber maladjusted

Brakes Don't Hold:

Air in the brake line
Pad or disc worn
Brake fluid leak
Disc warped
Contaminated pads
Brake fluid deteriorated
Primary or secondary cup damaged
Master cylinder scratched inside
Brake maladjustment (lever or pedal play excessive)

General Lubrication

Lubrication

- Before lubricating each part, clean off any rusty spots with rust remover and wipe off any grease, oil, dirt, or grime.
- Lubricate the points listed below with indicated lubricant.

NOTE

○ *Whenever the vehicle has been operated under wet or rainy conditions, or especially after using a high-pressure water spray, perform the general lubrication.*

Pivots: Lubricate with Motor Oil.

Clutch Lever
Brake Lever
Kick Pedal
Shift Pedal
Rear Brake Rod Joint
Drive Chain

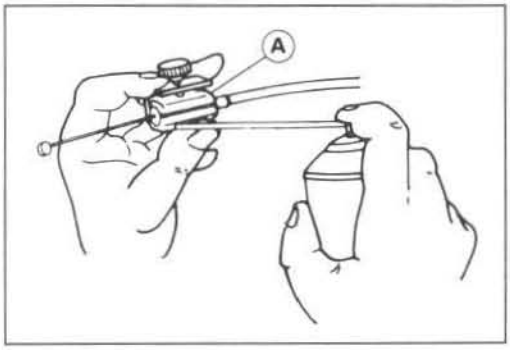
Points: Lubricate with Grease.

Clutch Inner Cable Upper and Lower Ends
Throttle Inner Cable Upper Ends
Swing Arm Pivot
Tie-Rod Pivot
Rocker Arm Pivot
Steering Stem Bearing

Cables: Lubricate with Rust Inhibiter.

Throttle Cable
Clutch Cable

Special Tool – Pressure Cable Luber: K56019-021 [A]



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	=	kg-m
N-m	×	0.7376	=	ft-lb
N-m	×	8.851	=	in-lb
kg-m	×	9.807	=	N-m
kg-m	×	7.233	=	ft-lb
kg-m	×	86.80	=	in-lb

Units of Pressure:

kPa	×	0.01020	=	kg/cm²
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cm Hg
kg/cm²	×	98.07	=	kPa
kg/cm²	×	14.22	=	psi
cm Hg	×	1.333	=	kPa

Units of Speed:

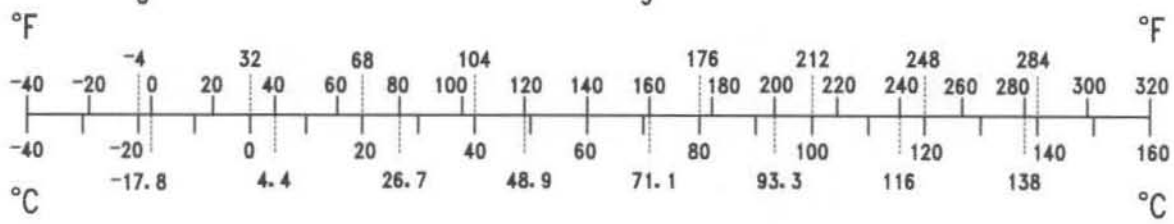
km/h	×	0.6241	=	mph

Units of Power:

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

Units of Temperature:

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



Supplement - 1993 Model

This supplement chapter contains only the information unique to the models covered. Also read the base model chapters in front of this chapter for complete service information.

Models covered by this chapter		Base Models	
1993	KX125-J2	1992	KX125-J1
1993	KX250-J2	1992	KX250-J1

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KX125-J2 Left Side View

KX125-J2 Right Side View

KX250-J2 Left Side View

KX250-J2 Right Side View

General Specifications - 1

Items			KX125-J2
Dimensions:			
Overall length			2 160 mm
Overall width			815 mm
Overall height			1 215mm
Wheelbase			1 470 mm
Road clearance			395 mm
Seat height			950 mm
Dry weight			86.5 kg
Curb weight:	Front		45.5 kg
	Rear		48.5 kg
Fuel tank capacity			8.5 L
Engine:			
Type			2-stroke, single cylinder, crankcase reed valve
Cooling system			Liquid-cooled
Bore and stroke			54.0 × 54.5 mm
Displacement			124 mL
Compression ratio			Low speed : 9.1 : 1
			High speed : 8.1 : 1
Maximum horse power			29.1 kw (39.6 PS) @11 500 r/min(rpm)
Maximum torque			25.01 N-m (2.55 kg-m, 18.4 ft-lb) @11 000 r/min (rpm)
Carburation system			Carburetor, KEIHIN PWK36
Starting system			Primary kick
Ignition system			CDI
Ignition timing			14.5° BTDC @11000 r/min (rpm)
Spark plug			NGK R6254K-105, (A) (C) (E) NGK R6252K-105
Port timing:	Inlet	Open	Full open
		Close	–
	Scavenging	Open	65.5° BBDC
		Close	65.5° ABDC
	Exhaust	Open	86.0° BBDC (low speed), 95° BBDC (high speed)
		Close	86.0° ABDC (low speed), 95° ABDC (high speed)
Lubrication system (Gasoline: oil)			Petrol mix (32:1) using 2-stroke racing oil
Drive Train:			
Primary reduction system:			
	Type		Gear
	Reduction ratio		3.500 (56/16)
Clutch type			Wet, multi disc
Transmission:	Type		6-speed, constant mesh, return shift
	Gear ratios:	1st	2.142 (30/14)
		2nd	1.714 (24/14)
		3rd	1.400 (28/20)
		4th	1.181 (26/22)
		5th	1.041 (25/24)
		6th	0.920 (23/25)
Final drive system:	Type		Chain drive
	Reduction ratio		4.083 (49/12)
Overall drive ratio			13.148 @Top gear
Transmission oil:	Grade		SE class
	Viscosity		SAE 10W-30 or 10W-40
	Capacity		0.7 L

(Continued on next page.)

Items			KX125-J2
Frame:			
Type			Tubular, semi-double cradle
Steering angle			45° to either side
Caster (rake angle)			25.5°
Trail			105 mm
Front tire:	Make/Type		DUNLOP K490, (E) DUNLOP D752, Tube type
	Size		80/100-21 51M
Rear tire:	Make/Type		DUNLOP K695, (E) DUNLOP D752, Tube type
	Size		100/90-19 57M
Front suspension:		Type	Telescopic fork (upside down)
		Wheel travel	310 mm
Rear suspension:		Type	Swing arm (Uni-trak)
		Wheel travel	330 mm
Brake type:		Front and Rear	Single disc
Effective disc diameter:			
		Front	220 mm
		Rear	190 mm

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

(A) : Australian model
(C) : Canadian model
(E) : European model

General Specifications – 2

Items			KX250-J2
Dimensions:			
Overall length			2 185 mm
Overall width			815 mm
Overall height			1 215mm
Wheelbase			1 490 mm
Road clearance			385 mm
Seat height			955 mm
Dry weight			96.5 kg
Curb weight:	Front		50 kg
	Rear		52 kg
Fuel tank capacity			8.5 L
Engine:			
Type			2-stroke, single cylinder, piston reed valve
Cooling system			Liquid-cooled
Bore and stroke			66.4 × 72.0 mm
Displacement			249 mL
Compression ratio			10.2 : 1 (low speed), 8.7 : 1 (high speed)
Maximum horsepower			39.4 kW (53.6 PS) @8 500 r/min (rpm)
Maximum torque			49.0 N-m (5.0 kg-m, 36 ft-lb) @7 500 r/min (rpm)
Carburation system			Carburetor, KEIHIN PWK38
Starting system			Primary kick
Ignition system			CDI
Ignition timing			14° BTDC @6 000 r/min (rpm)
Spark plug			NGK R6254E-9, (A) (C) (E) NGK R6252E-9
Port timing:	Inlet	Open	Full open
		Close	–
	Scavenging	Open	60° BBDC
		Close	60° ABDC
	Exhaust	Open	80.5° BBDC (low speed), 92.5° BBDC (high speed)
		Close	80.5° ABDC (low speed), 92.5° ABDC (high speed)
Lubrication system (Gasoline: oil)			Petrol mix (32:1) using 2-stroke racing oil
Drive Train:			
Primary reduction system:			
	Type		Gear
	Reduction ratio		2.750 (55/20)
Clutch type			Wet, multi disc
Transmission:	Type		5-speed, constant mesh, return shift
	Gear ratios:	1st	2.133 (32/15)
		2nd	1.687 (27/16)
		3rd	1.388 (25/18)
		4th	1.136 (25/22)
		5th	1.000 (24/24)
Final drive system:	Type		Chain drive
	Reduction ratio		3.500 (49/14)
Overall drive ratio			9.625 @Top gear
Transmission oil:	Grade		SE class
	Viscosity		SAE 10W-30 or 10W-40
	Capacity		0.85 L

(Continued on next page.)

Items			KX250-J2
Frame:			
Type			Tubular, semi-double cradle
Steering angle			45° to either side
Caster (rake angle)			26°
Trail			108 mm
Front tire:	Make/Type		DUNLOP K490, (E) D752, Tube type
	Size		80/100-21 51M
Rear tire:	Make/Type		DUNLOP K695, (E) D752, Tube type
	Size		110/90-19 62M
Front suspension:		Type	Telescopic fork (upside down)
		Wheel travel	310 mm
Rear suspension:		Type	Swing arm (Uni-trak)
		Wheel travel	330 mm
Brake type:		Front and Rear	Single disc
Effective disc diameter:			
		Front	220 mm
		Rear	190 mm

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

(A) : Australian Model
(C) : Canadian Model
(E) : European Model

Torque and Locking Agent

Refer to p.1-11 noting the following.

Fastener	Torque			Remarks
	N-m	kg-m	ft-lb	
Engine Top End:				
Cylinder Head Nuts	25	2.5	18.0	
Spark Plug	27	2.8	20.0	
Coolant Drain Plug (Cylinder)	21	2.1	15.0	
Cylinder Nuts (KX125)	25	2.5	18.0	
(KX250)	34	3.5	25	
Engine Brackets Mounting Nuts (Engine Side)	34	3.5	25	
(Frame Side)	26	2.7	19.5	
Shaft Lever Nut	8.8	0.9	78 in-lb	
Operating Rod Left Side Plug	15	1.5	11	
Main Lever Mounting Allen Bolt (KX125)	3.9	0.4	35 in-lb	
Main Shaft Nut	8.8	0.9	78 in-lb	Left-hand threads
Elbow Fitting Bolts (KX250)	8.8	0.9	78 in-lb	
Carburetor Holder Mounting Bolts	8.8	0.9	78 in-lb	
Main Valve Rod Cover Screw	4.9	0.5	43 in-lb	
Main Lever Mounting Allen Bolt	3.9	0.4	35 in-lb	
Main Valve Cover Bolts (KX250)	5.9	0.6	52 in-lb	
Main Valve Screws (KX250)	5.9	0.6	52 in-lb	

Fuel System

Specifications

KX125 :

Item	Standard	Service Limit
Throttle grip free play	2 ~ 3 mm	---
Carburetor:		
Make/type	KEIHIN PWK36	---
Main jet	# 168	---
Throttle valve cutaway	# 5	---
Jet needle	N1BM,(E) N1AL	---
Jet needle clip position	3rd groove from the top	---
Slow jet	# 50,(E)# 52	---
Air screw	1¼ (turns out)	---
Service fuel level	2 mm above ~ 0 mm below the float bowl mating surface	
Main Air Jet	# 200	---
Float height	16 ±2 mm	---
Air Cleaner:		
Element oil	High-quality foam-air filter oil	---
Reed Valve:		
Reed warp	---	0.2 mm

KX250 :

Item	Standard	Service Limit
Throttle grip free play	2 ~ 3 mm	---
Carburetor:		
Make/type	KEIHIN PWK38	---
Main jet	#162	---
Throttle valve cutaway	# 7	---
Jet needle	NOZF	---
Jet needle clip position	3rd groove from the top	---
Slow jet	# 50	---
Air screw	1¼ (turns out)	---
Service fuel level	2 mm above ~ 0 mm below the float bowl mating surface	
Main air jet	# 200	---
Float height	16 ±2 mm	---
Air Cleaner:		
Element oil	High-quality foam-air filter oil	---
Reed Valve:		
Reed warp	---	0.2 mm

Special Tools – Fuel Level Gauge, M18 x 1.0: 57001-122
Pressure Cable Luber: k56019-021

Cooling System

Specifications

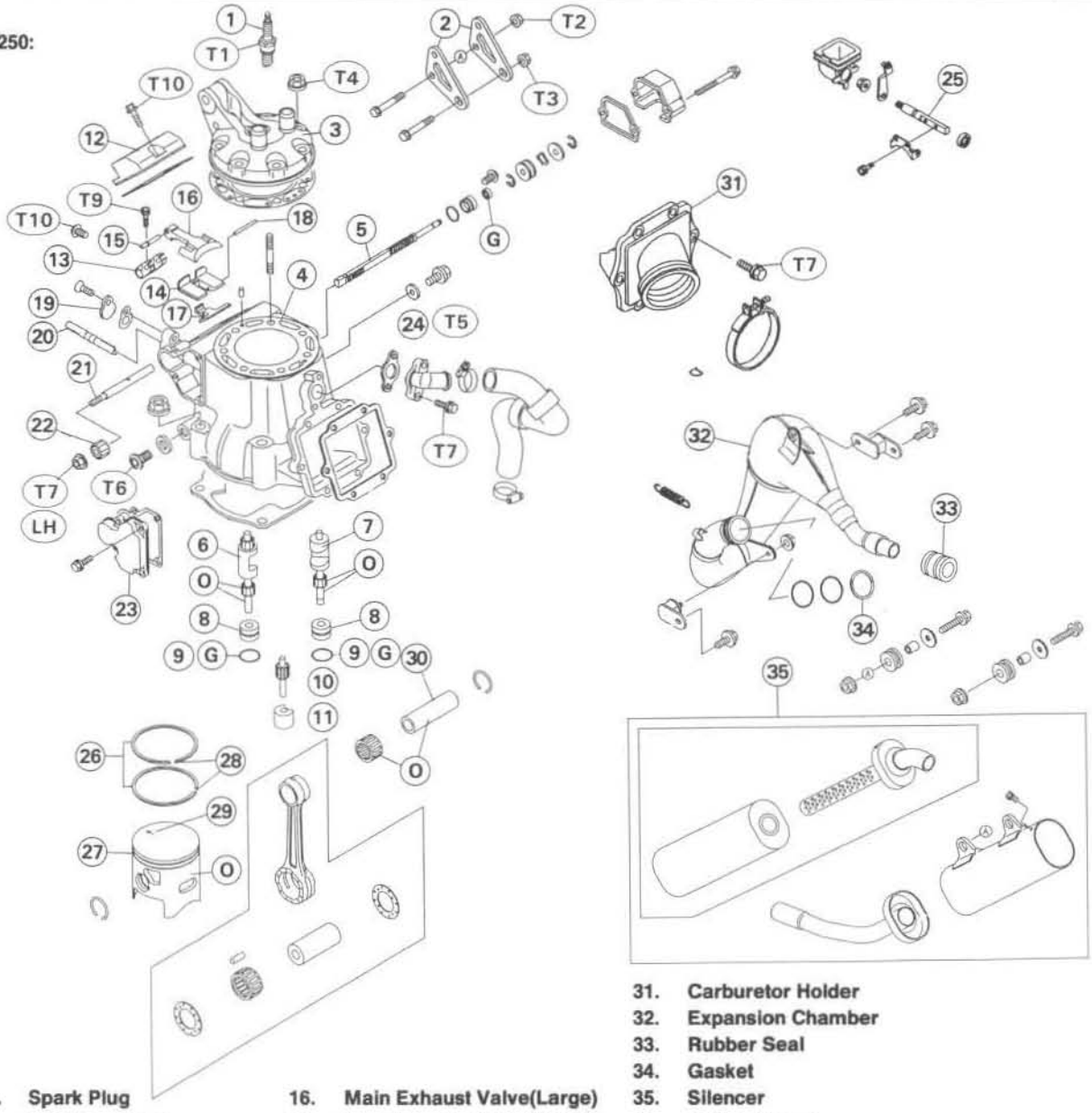
Refer to p.3-4, noting the following.

Item	Standard
Coolant Provided when Shipping:	
Total amount	1.15 L

Engine Top End

Exploded View

KX250:



1.	Spark Plug	16.	Main Exhaust Valve(Large)	31.	Carburetor Holder
2.	Engine Bracket	17.	Main Exhaust Valve(Small)	32.	Expansion Chamber
3.	Cylinder Head	18.	Roller	33.	Rubber Seal
4.	Cylinder	19.	Main Valve Rod Cover	34.	Gasket
5.	Operating Rod	20.	Main Valve Rod	35.	Silencer
6.	Exhaust Valve (Left)	21.	Main Shaft	G:	Apply grease.
7.	Exhaust Valve(Right)	22.	Main Valve Gear	Lh:	Left-hand Threads
8.	Guide	23.	Resonator Cover	M:	Apply Molybdenum disulfide grease.
9.	O-ring	24.	Elbow Fitting:	O:	Apply 2-stroke engine oil.
10.	Idle Gear	25.	Shaft Lever	T1:	27 N-m(2.8 kg-m, 20 ft-lb)
11.	Guide	26.	Piston Ring	T2:	26 N-m(2.7 kg-m, 19.5 ft-lb)
12.	Main Valve Cover	27.	Piston	T3:	34 N-m(3.5 kg-m, 25 ft-lb)
13.	Main Lever	28.	"R" Mark	T4:	25 N-m(2.5 kg-m, 18 ft-lb)
14.	Valve Holder	29.	Arrow must point forward	T5:	21 N-m (2.1 kg-m, 15 ft-lb)
15.	Pin	30.	Piston Pin	T6:	15 N-m(1.5 kg-m, 11.0 ft-lb)
				T7:	8.8 N-m(0.9 kg-m, 78 in-lb)
				T8:	4.9 N-m (0.5 kg-m, 43 in-lb)
				T9:	3.9 N-m (0.4 kg-m, 35 in-lb)
				T10:	5.9 N-m(0.6 kg-m, 52 in-lb)

Specifications

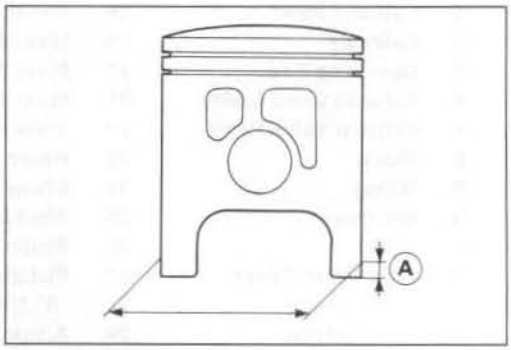
KX125 :

Item	Standard	Service Limit
Cylinder Head:		
Cylinder compression	(usable range) 770 ~ 1 200 kPa (7.7 ~ 12.0 kg/cm², 109 ~ 171 psi)	---
Cylinder head warp	---	0.03 mm
Cylinder, Piston:		
Cylinder inside diameter	54.000 ~ 54.015 mm	54.11 mm
Piston diameter	53.943 ~ 53.958 mm	53.80 mm
Piston/cylinder clearance	0.052 ~ 0.062 mm	---
Piston ring/groove clearance	0.04 ~ 0.08 mm	0.18 mm
Piston ring groove width	1.03 ~ 1.05 mm	1.10 mm
Piston ring thickness	0.97 ~ 0.99 mm	0.90 mm
Piston ring end gap	0.35 ~ 0.55 mm	0.90 mm
Piston pin diameter	15.995 ~ 16.000 mm	15.96mm
Piston pin hole diameter	16.000 ~ 16.020 mm	16.07 mm
Small end inside diameter	21.003 ~ 21.014 mm	21.05 mm

KX250 :

Item	Standard	Service Limit
Cylinder Head:		
Cylinder compression	(usable range) 780 ~ 1 220 kPa (7.8 ~ 12.2 kg/cm², 111 ~ 173 psi)	---
Cylinder head warp	---	0.03 mm
Cylinder, Piston:		
Cylinder inside diameter	66.400 ~ 66.415 mm	66.48 mm
Piston diameter	66.336 ~ 66.351 mm	66.19 mm
Piston/cylinder clearance	0.059 ~ 0.069 mm	---
Piston ring/groove clearance	0.04 ~ 0.08 mm	0.18 mm
Piston ring groove width	1.23 ~ 1.25 mm	1.30 mm
Piston ring thickness	1.17 ~ 1.19 mm	1.10 mm
Piston ring end gap	0.25 ~ 0.45 mm	0.75 mm
Piston pin diameter	17.995 ~ 18.000 mm	17.96mm
Piston pin hole diameter	18.000 ~ 18.020 mm	18.07 mm
Small end inside diameter	22.003 ~ 22.012 mm	22.05 mm

Piston diameter
(A):KX125 – 10 mm
KX250 – 15mm



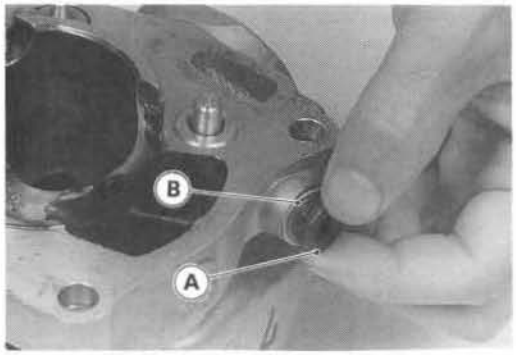
Exhaust Valve (KIPS)

Removal

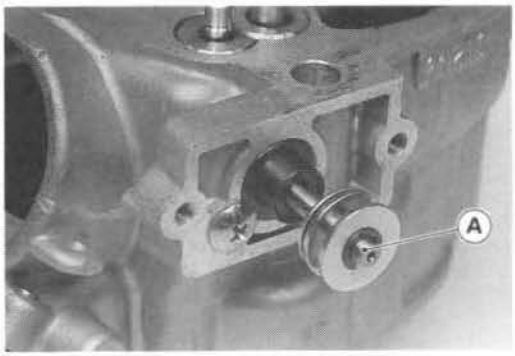
The KX250-J2 main exhaust valve can be removed or installed with the same procedure as that of the KX125-J1/J2.

- Remove:
  Carburetor
  Cylinder Head
- Remove the right cover at the cylinder with the shaft lever mounted on it (see Right Engine Cover).
- Remove the cylinder (see Cylinder Removal).

- Turn the cylinder up side down.
- Remove the plug [A] and the gasket [B] at the left side of the cylinder.

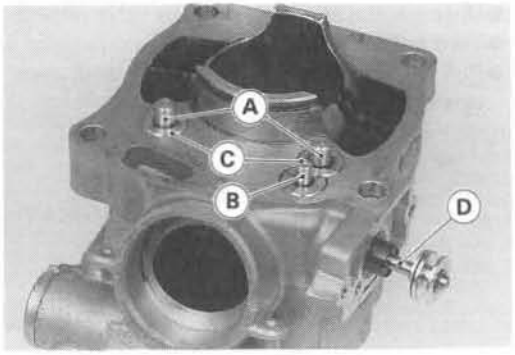


- Pull out the operating rod [A] as far as it goes.
- Remove the operating rod retaining screw [B].

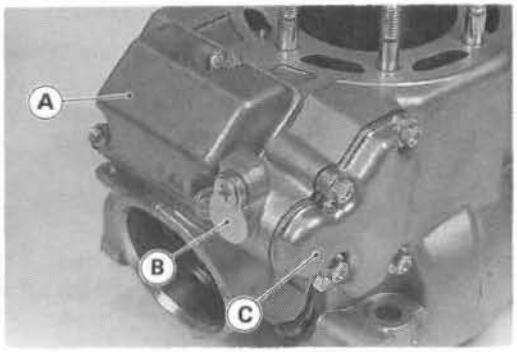


- Remove the exhaust valve in accordance with the following procedure.

○ Remove the idle gear [B].
○ Lift up the exhaust valves [A], and remove the valve guides [C].
○ Lift up the exhaust valves, and pull out the operating rod [D]. Then take out the exhaust valves.

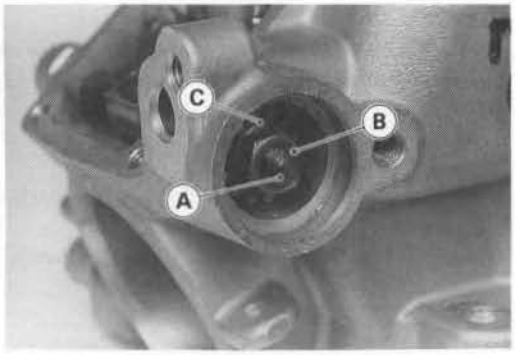


- Remove the main exhaust valve in accordance with the following procedure.
- Remove the main valve cover [A], main valve rod cover [B] and resonator cover [C] from the cylinder.

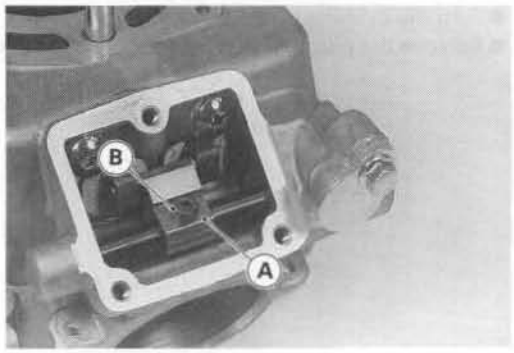


● Remove the main shaft nut [B] from the main shaft [A], and pull out the main valve gear [C].

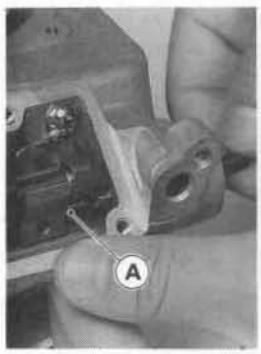
CAUTION
Main shaft nut has left-hand threads.

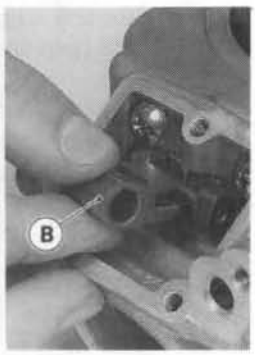


● Unbolt the Allen bolt [B] from the main lever [A].

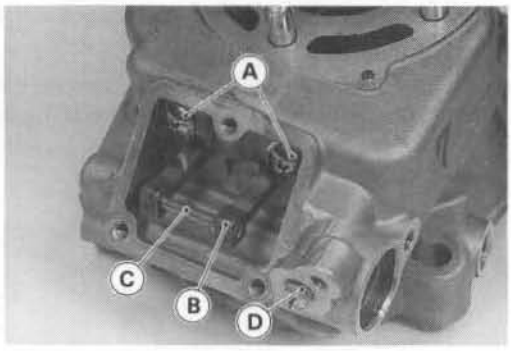


● Position the main exhaust valve full open, and pull out the main shaft [A].
● Set the main exhaust valve full closed position, and remove the main lever [B].



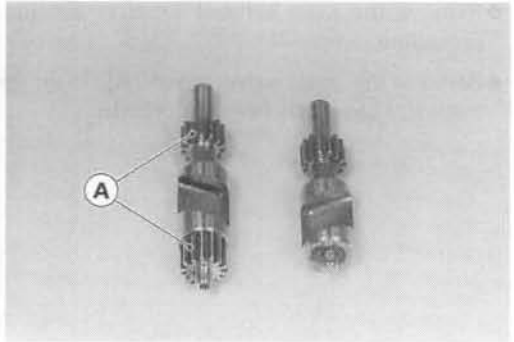


● Unscrew the two main exhaust valve retaining screws [A].
● Take out the pin [C] from the main exhaust valve [B].
● Pull out the main exhaust valve and main valve rod [D] from the cylinder.



Installation Notes

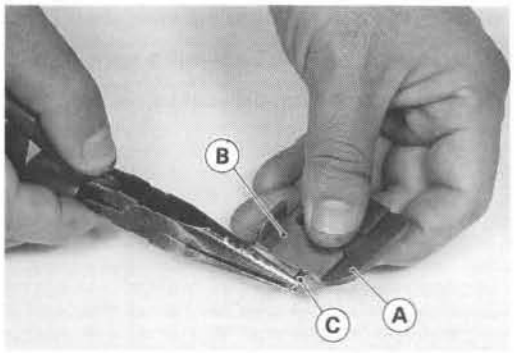
● Scrape out any carbon and clean the valves with a high flash-point solvent.
● Check the following or signs of damage:
  Exhaust Valves and Valve Operated Rod
  Oil Seal on Rod Seal Plug
  O-rings
  Gaskets
★ If necessary, replace them with new ones.
● Be careful not to mix up the right and left exhaust valves. The left valve has two gears [A].



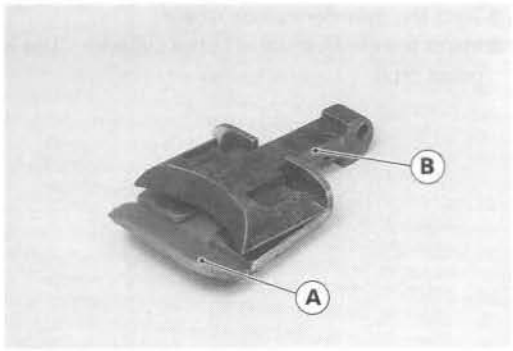
- Apply a 2-stroke engine oil to the following:
  Exhaust Valve Upper and lower Journals
  Exhaust Valve Pinions
  Valve Fluids (inside)
  Valve Operating Rod Journals
  Valve Operating Rod Rack
  Main Exhaust Valve Parts
- Apply a high temperature grease to the oil seal lip on the operating rod.

Adjust the exhaust valve position in accordance with the following procedure.

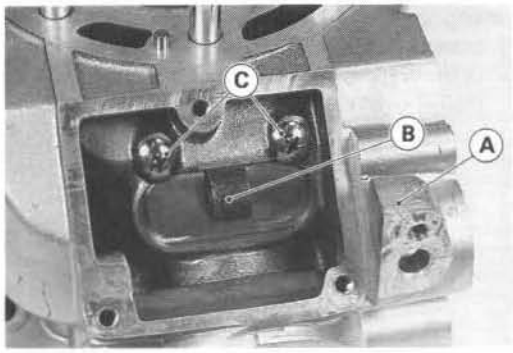
- Install small main exhaust valve [A] on the valve holder [B] with pin [C].



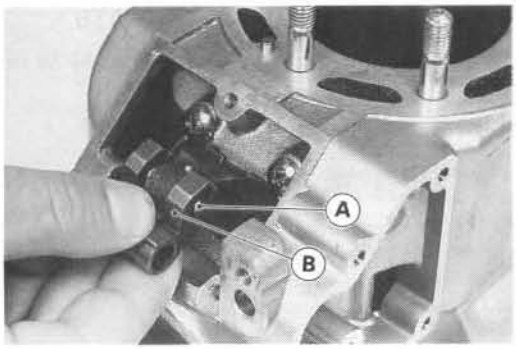
- Put the main exhaust valves [B] on the valve holder [A].



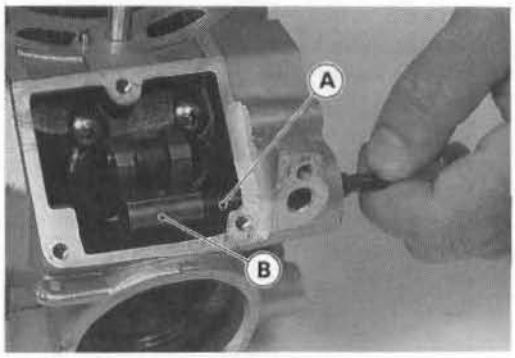
- Insert the main exhaust valve sets [B] into their holes in the cylinder [A].
- Install the retaining screws [C] securely.
- Check that the left and right main exhaust valves slide smoothly.



- Put the pin [A] in the main exhaust valve holes.
- Fit the main lever [B] to the pin.



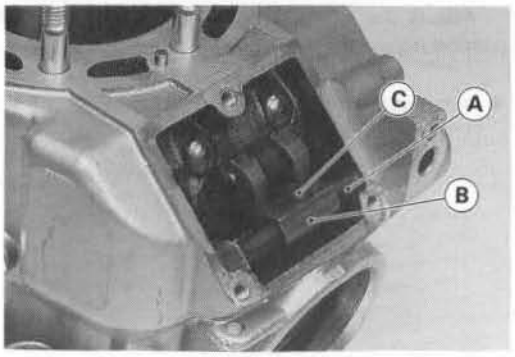
● Insert the main shaft [A] in the hole of the left upper end at the cylinder and through the hole in the main lever [B]. Then put the main shaft into the cylinder holds.



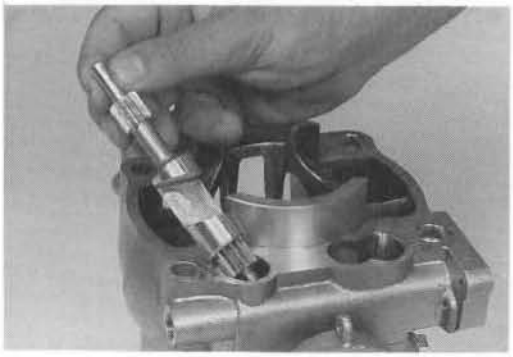
● Fix the main lever [B] to the main shaft [A] with the Allen bolt [C].

Torque – Allen Bolt: 3.9 N-m(0.4 kg-m, 35 in-lb)

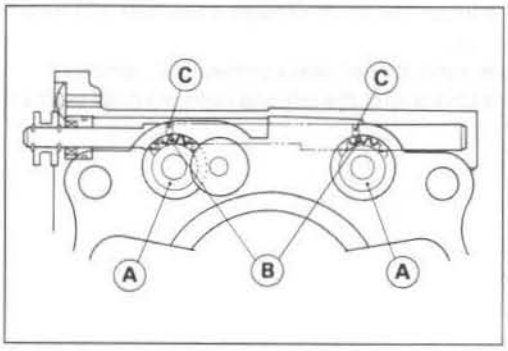
● Check that the main exhaust valves slide smoothly.



● Turn the cylinder upside down.
● Insert the exhaust valve in the cylinder. The left exhaust valve has two gears on it.

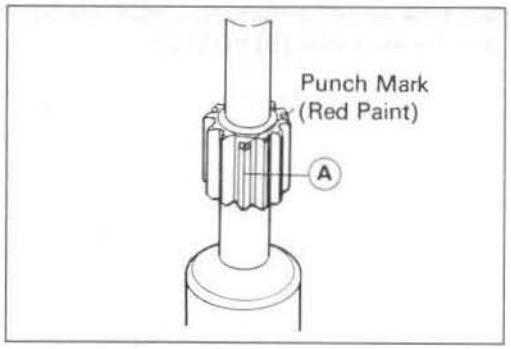


● Engage the valve pinions with the rod rack [A] so that the punch marks (Red Paint) [B] on the pinions are positioned toward the front of the engine. The punch marks on the valve pinions should align with the groove [C] on the rod.



NOTE

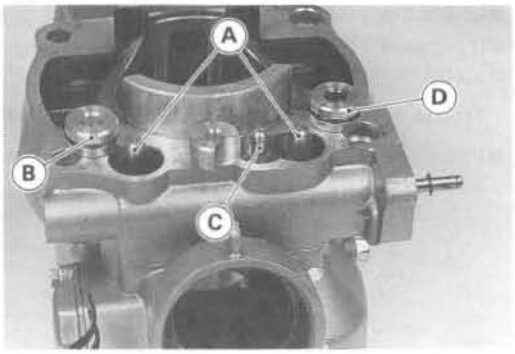
○ *The marked tooth [A] is identified by its shape also.*



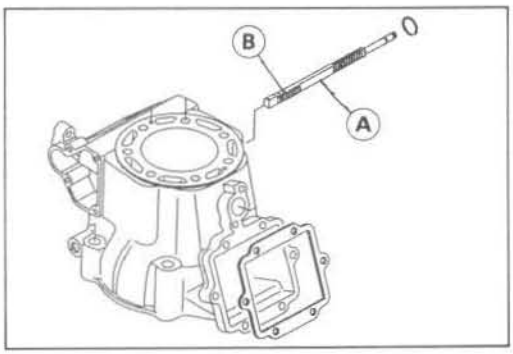
● Check the gasket on the left plug for signs of damage.
★ If necessary, replace ir with a new one.
● Install the plug on the left side of the cylinder.

Torque – Operating Rod Left Side Plug: 15 N-m (1.5 kg-m, 11 ft-lb)

● Mount the valve guides [B, D] on the exhaust valves [A] and idle gear [C].
○ Before installing the right valve guide, insert the idle gear valve guide.



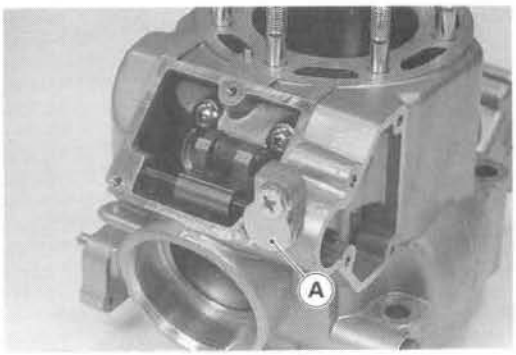
● Turn the cylinder upside down.
● Push the rod seal plug into the cylinder until the O-ring portion.
● Pull out the operating rod as far as it goes.
● Install the main valve rod [A] in the cylinder so that grooved side [B] faces outward.



● Install the main valve rod cover [A] except gasket.

NOTE

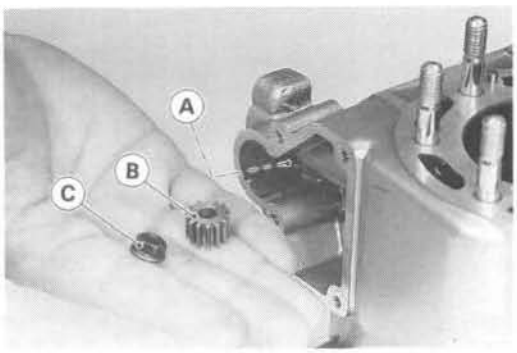
○ *Install the main valve rod cover to prevent the main valve rod pulling out.*



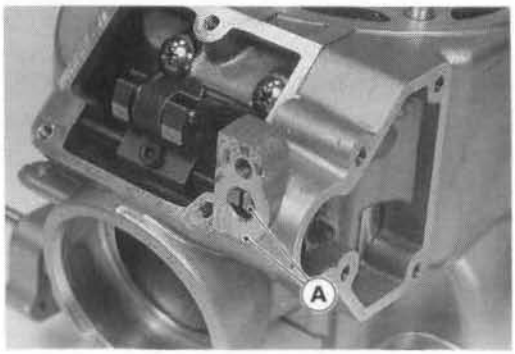
● Install the main valve gear [B] and nut [C] on the main shaft [A], and tighten the nut.

CAUTION
Main Shaft nut has left-hand threads.

Torque – Main Shaft Nut: 8.8 N-m(0.9 kg-m, 78 in-lb)



- Position the main exhaust valves full open.
- Remove the main valve rod cover.
- With the main exhaust valves full open, check that the end of the main valve rod and cylinder are aligned [A].



- Check the gasket on the left plug for signs of damage.

★If necessary replace it with a new one.

- Install the left plug on the cylinder.

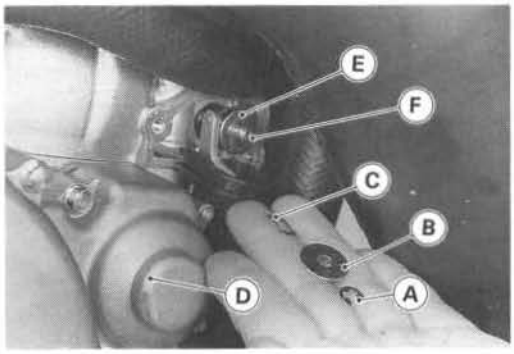
Torque – Operating Rod Left Side Plug: 15 N-m (1.5 kg-m, 11.0 ft-lb)

- Install the main valve cover, main valve rod cover and main shaft cover on the cylinder.

Right Engine Cover

- Remove:
  Transmission Oil (drain)
  Coolant (drain)
  Coolant Hose Lower End
  Kick Starter
  Brake Pedal
  Water Pump Cover
  Impeller
- Remove the KIPS cover from the right side of the cylinder.

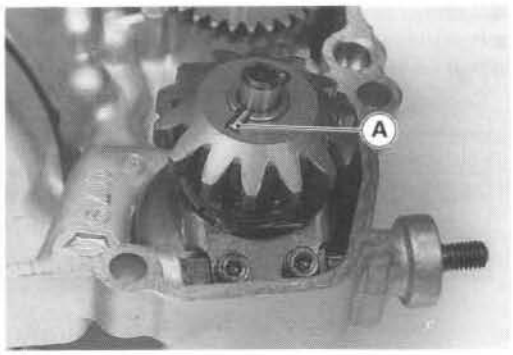
- Remove the E clip [A], washer [B] and wave washer [C] from the operating rod.
- Remove the right cover bolts and take off the cover [D] with the operating rod collar [E] fitted to the exhaust advancer shaft boss [F].



Installation Notes

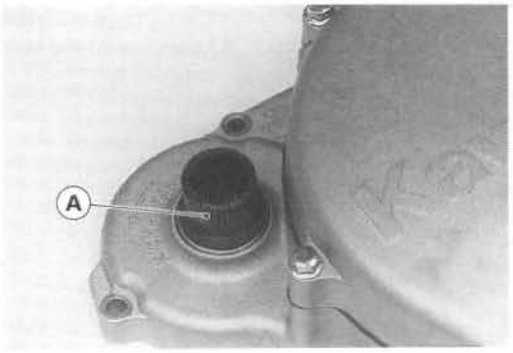
- There are two knock pins on the mating surfaces of the crankcase and eight engine cover.
- In case the exhaust advancer assembly has been removed, install it and turn the gear so as to level the gear drive pin [A].

CAUTION
If the gear drive pin is not positioned level, it may fall out when installing the right engine cover.



- Install the eight engine cover using the kick shaft oil seal guide [A] to protect the cover oil seal.

Special Tool – Oil Seal Guide, Φ16: 57001-267 [A]



- Install the wave washer, washer and E-clip securely.
- Tighten the right engine cover bolts.

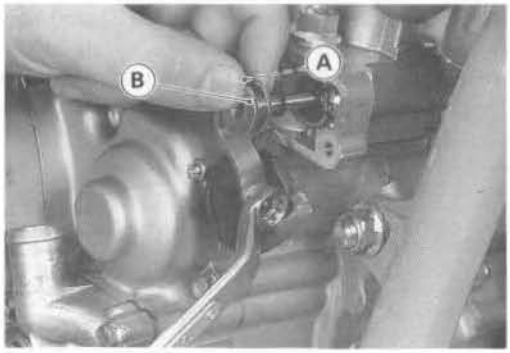
● Install the wave washer, washer and E-clip securely.
● Tighten the right engine cover bolts.

● Fit the groove of the valve operating rod collar [B] on the shaft lever boss [A] and install the collar to the operating rod while turning the shaft lever nut counterclockwise with a wrench.

NOTE

○ *There will be a gap between the right engine cover and crankcase before the right engine cover is tightened to the crankcase because an inclined shaft lever pulls back the operating rod.*

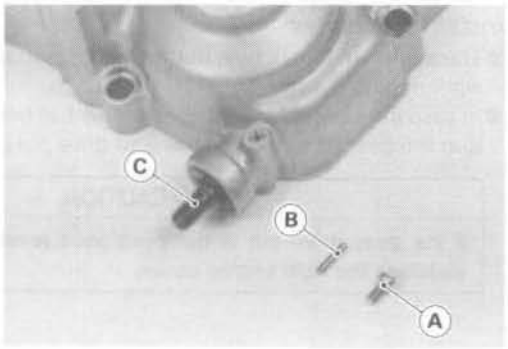
● Tighten the right engine cover bolts.



● Remove the plug screw [A] and take out the position pin [B].
● Pull the lever shaft [C] out of the right engine cover.
● Pull off the water pump shaft (see Water Pump Shaft Removal in the Cooling System chapter).

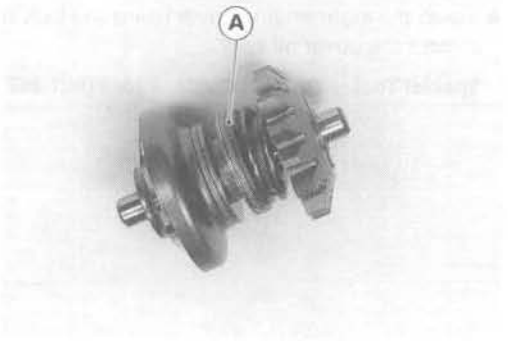
CAUTION

For KX125 model; do not remove the clutch release shaft unless it is absolutely necessary. If removed, you must replace the oil seal with a new one.

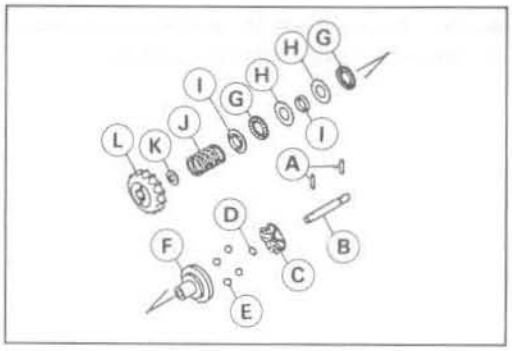


Exhaust Advancer Disassembly/Assembly Notes

● The exhaust advancer [A] consists of the following parts.



A. Pins
B. Rod
C. Guide
D. O-ring
E. Steel Balls
F. Holder
G. Needle Bearing
H. Spacer
I. Collar
J. Spring
K. Washer
L. Gear

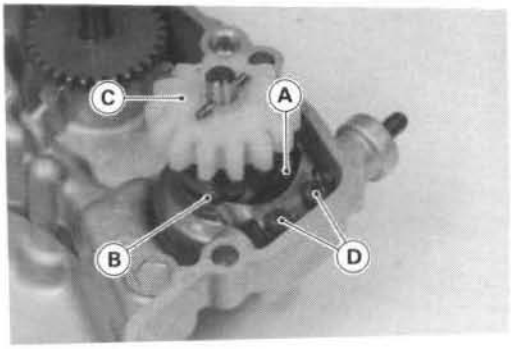


Assembly Notes

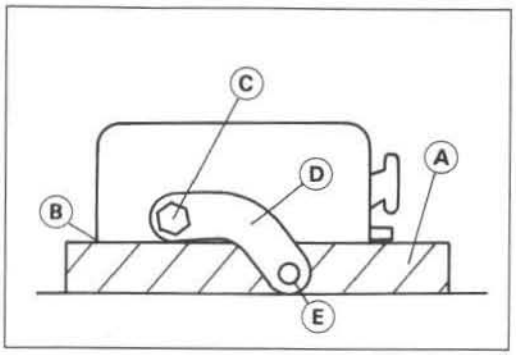
- Apply high temperature grease to the oil seal lips before inserting the lever shaft.
- Apply molybdenum disulfide grease to the surface of the lever shaft, and insert the lever shaft into the right engine cover hole.
- Torque the advancer lever mounting Allen bolts [D].

Torque – Advancer Lever Mounting Allen Bolts: 3.9 N-m(0.4 kg-m, 35 in-lb)

- Fit the advancer lever pin [A] into the groove [B] on the exhaust advancer [C], and install the exhaust advancer in the engine cover while turning the lever shaft to the right.
- Tighten the exhaust valve advancer shaft plug screw securely.



- The boss end of shaft lever must be positioned at 0 to 3.0 mm from the right crankcase mating surface, tighten the shaft lever to the governor shaft with the following procedures.
- Place the right engine cover mating surface on a suitable plate that has a thickness of 0 to 3.0 mm.
  - Install the shaft lever so that the boss end touches the ground [E].
  - Tighten the shaft lever nut with the above shaft lever condition.
  - Then the projecting amount of the lever boss will become 0 to 3.0 mm from the right engine cover mating surface.



Suspension

Specifications

Item	Standard	Service Limit
Front Fork:		
Air pressure	Atmospheric pressure	---
Rebound damping adjustment	12th click from the first click of the fully clockwise position	(Adjustable Range) 16 clicks
Compression damping adjustment	9 th (KX125), 12th(KX250) click from the first click of the fully clockwise position	(Adjustable Range) 16 clicks
Oil viscosity	KAYABA 01 or SAE 5W	---
Oil capacity	510 ± 4 mL	---
Oil level (fully compressed, spring removed)	120 ± 2 mm (from top of outer tube)	(Adjustable Range) 105 ~ 155 mm
Fork spring free length	490 mm	480 mm
Rear Suspension (Uni-Trak):		
Rear Shock Absorber;		
Rebound damping adjustment	12 th (KX125),10 th (KX250) click from the first click of the fully clockwise position	(Adjustable Range) 16 clicks
Spring preload adjustment (Adjusting nut position from the center of the upper mounting hole)		(Adjustable Range)
KX125:	130.5 mm	118 ~ 137 mm
KX250:	132.5 mm	118 ~ 137 mm
Rear shock spring free length	275 mm	270 mm
Gas Reservoir;		
Compression damping adjustment	12 th click from the first click of the fully clockwise position	(Adjustable Range) 16 clicks
Gas pressure	1000 kPa (10 kg/cm², 142 psi)	---
Tie-Rod, Rocker Arm;		
Sleeve outside diameter:		
Long	21.987 ~ 22.000 mm	21.85 mm
Short	15.989 ~ 16.000 mm	15.85 mm
Rocker Arm Mounting Bolt Runout	under 0.1 mm	0.2 mm

Special Tools – **Hook Wrench: 57001-1101**
Jack: 57001-1238
Fork Spring Holder: 57001-1286
Fork Cylinder Holder: 57001-1287
Fork Oil Seal Driver, Φ43: 57001-1340
Fork Piston Rod Puller, M12 x 1.25: 57001-1289
Fork Oil Level Gauge: 57001-1290

MODEL APPLICATION

Year	Model	Beginning Frame No.
1992	KX125-J1	JKAKXRJ1 NA000001 or KX125J-000001
	KX250-J1	JKAKXMJ1 NA000001 or KX250J-000001
1993	KX125-J2	JKAKXRJ1 PA007501 or KX125J-007501
	KX250-J2	JKAKXMJ1 PA007501 or KX250J-007501

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

KAWASAKI
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