



**Ninja ZX-11**  
**ZZ-R1100**



**Motorcycle**  
**Service Manual**

Product: 1993-2001 Kawasaki Ninja ZX-11/ZZ-R1100 Motorcycle Service Repair Workshop Manual

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**Ninja ZX-11  
ZZ-R 1100**

# **Motorcycle Service Manual**

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# 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.

## 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)		



This warning may apply to any of the following components or any assembly containing one or more of these components:-

Brake Shoes or Pads  
Clutch Friction Material  
Gaskets  
Insulators

### SAFETY INSTRUCTIONS

- Operate if possible out of doors or in a well ventilated place.
- Preferably use hand tools or low speed tools equipped, if necessary, with an appropriate dust extraction facility. If high speed tools are used, they should always be so equipped.
- If possible, dampen before cutting or drilling.
- Dampen dust and place it in properly closed receptacle and dispose of it safely.

**Read OWNER'S MANUAL before operating.**

## EMISSION CONTROL INFORMATION

To protect the environment in which we all live, Kawasaki has incorporated crankcase emission (1) and exhaust emission (2) control systems in compliance with applicable regulations of the United States Environmental Protection Agency and California Air Resources Board. Additionally, Kawasaki has incorporated an evaporative emission control system (3) in compliance with applicable regulations of the California Air Resources Board on vehicles sold in California only.

### 1. Crankcase Emission Control System

This system eliminates the release of crankcase vapors into the atmosphere. Instead, the vapors are routed through an oil separator to the intake side of the engine. While the engine is operating, the vapors are drawn into combustion chamber, where they are burned along with the fuel and air supplied by the carburetion system.

### 2. Exhaust Emission Control System

This system reduces the amount of pollutants discharged into the atmosphere by the exhaust of this motorcycle. The fuel and ignition systems of this motorcycle have been carefully designed and constructed to ensure an efficient engine with low exhaust pollutant levels.

### 3. Evaporative Emission Control System

Vapors caused by fuel evaporation in the fuel system are not vented into the atmosphere. Instead, fuel vapors are routed into the running engine to be burned, or stored in a canister when the engine is stopped. Liquid fuel is caught by a vapor separator and returned to the fuel tank.

The Clean Air Act, which is the Federal law covering motor vehicle pollution, contains what is commonly referred to as the Act's "tampering provisions."

"Sec. 203(a) The following acts and the causing thereof are prohibited...

(3)(A) for any person to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title prior to its sale and delivery to the ultimate purchaser, or for any manufacturer or dealer knowingly to remove or render inoperative any such device or element of design after such sale and delivery to the ultimate purchaser.

(3)(B) for any person engaged in the business of repairing, servicing, selling, leasing, or trading motor vehicles or motor vehicle engines, or who operates a fleet of motor vehicles knowingly to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title following its sale and delivery to the ultimate purchaser..."

(Continued on next page.)

## NOTE

- *The phrase "remove or render inoperative any device or element of design" has been generally interpreted as follows:*
  1. *Tampering does not include the temporary or rendering inoperative of devices or elements of design in order to perform maintenance.*
  2. *Tampering could include:*
    - a. *Maladjustment of vehicle components such that the emission standards are exceeded.*
    - b. *Use of replacement parts or accessories which adversely affect the performance or durability of the motorcycle.*
    - c. *Addition of components or accessories that result in the vehicle exceeding the standards.*
    - d. *Permanently removing, disconnecting, or rendering inoperative any component or element of design of the emission control systems.*

**WE RECOMMEND THAT ALL DEALERS OBSERVE THESE PROVISIONS OF FEDERAL LAW, THE VIOLATION OF WHICH IS PUNISHABLE BY CIVIL PENALTIES NOT EXCEEDING \$10,000 PER VIOLATION.**

## TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED

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

Among those acts presumed to constitute tampering are the acts listed below:

- Replacement of the original exhaust system or muffler with a component not in compliance with Federal regulations.
- Removal of the muffler(s) or any internal portion of the muffler(s).
- Removal of the air box or air box cover.
- Modifications to the muffler(s) or air intake system by cutting, drilling, or other means if such modifications result in increased noise levels.

# Foreword

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

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

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

To get the longest life out of your 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.

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## How to Use This Manual

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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 NOTE.
- ★ Indicates a conditional step or what action to take based on the results of the test or inspection in the procedural step or sub-step it follows.

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

# General Information

## Table of Contents

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## 1-2 GENERAL INFORMATION

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### Before Servicing

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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) Battery Ground

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

- (a) the possibility of accidentally turning the engine over while partially disassembled.
- (b) sparks at electrical connections which will occur when they are disconnected.
- (c) damage to electrical parts.

(3) Tightening Sequence

Generally, when installing a part with several bolts, nuts, or screws, start them all in their holes and tighten them to a snug fit. Then tighten them evenly in a cross pattern. This is to avoid distortion of the part and/or causing gas or oil leakage. Conversely when loosening the bolts, nuts, or screws, first loosen all of them by about a quarter turn and then remove them. Where there is a tightening sequence indication in this Service Manual, the bolts, nuts, or screws must be tightened in the order and method indicated.

(4) Torque

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

(5) Force

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

(6) Edges

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

(7) High-Flash Point Solvent

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

(8) Gasket, O-Ring

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

(9) Liquid Gasket, Non-Permanent Locking Agent

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

(10) Press

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

(11) Ball Bearing 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.

(12) 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.

(13) 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.

(14) 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.

(15) Cotter Pin

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

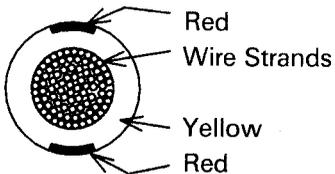
(16) Lubrication

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.

(17) 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
 <p>Red Wire Strands Yellow Red</p>	<p>Yellow/Red</p>

(18) 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.

(19) 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	

(20) 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.

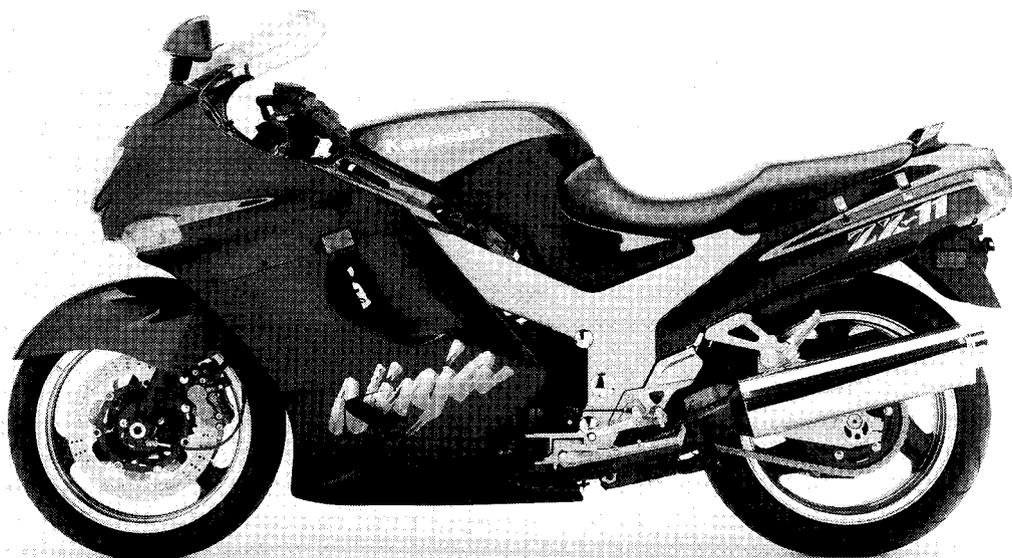
## 1-4 GENERAL INFORMATION

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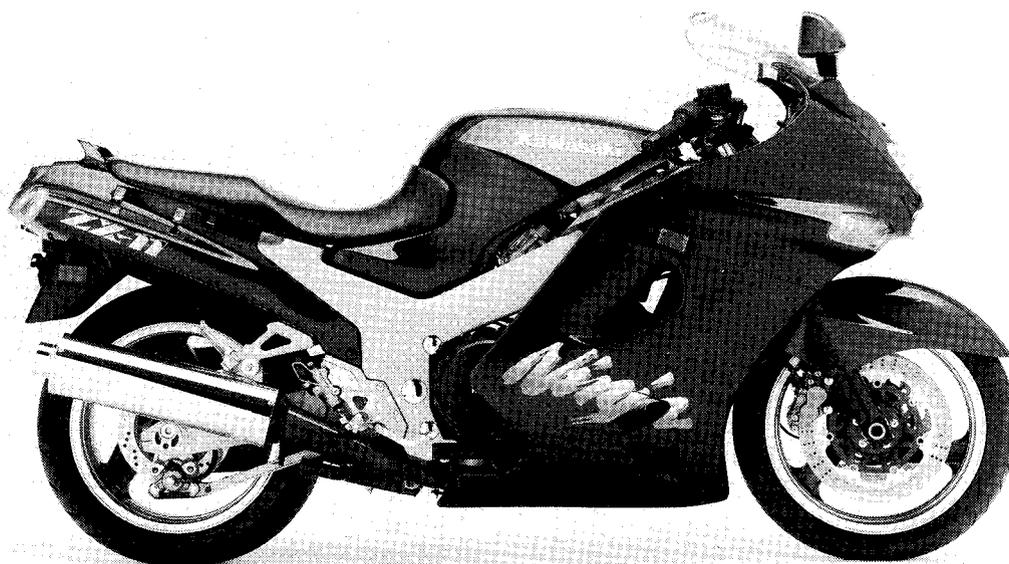
### Model Identification

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**ZX1100-D1 (US and Canadian Models) Left Side View:**



**ZX1100-D1 (US and Canadian Models) Right Side View:**



**ZX1100-D1 (European Model) Left Side View:**



**ZX1100-D1 (European Model) Right Side View:**



## 1-6 GENERAL INFORMATION

### General Specifications

Items	ZX1100-D1, D2, D3
<b>Dimensions:</b> Overall length Overall width Overall height Wheelbase Road clearance Seat height Dry mass Curb mass:     Front Rear Fuel tank capacity	2 165 mm, (G) (N) (S) (Sw) 2 180 mm 730 mm 1 205 mm 1 495 mm, D3:(G) (F) (UK) (Gr) (N) 1 500 mm 110 mm 780 mm 233 kg, (Cal) 233.5 kg 130 kg 139 kg, (Cal) 139.5 kg 24.0 L
<b>Performance:</b> Minimum turning radius	3.0 m
<b>Engine:</b> Type Cooling system Bore and stroke Displacement Compression ratio Maximum horsepower  Maximum torque  Carburetion system Starting system Ignition system Timing advance Ignition timing	4-stroke, DOHC, 4-cylinder Liquid-cooled 76.0 x 58.0 mm 1052 mL 11.0 108 kW (147 PS) @10 500 r/min (rpm), (Ar) 74 kW (100 PS) @9 000 r/min (rpm), (F) 75.1 kW (-) @8 500 r/min (rpm) (UTAC'S norm), D3 : (F) 75.1 kW (-) @8 400 r/min (rpm) (UTAC'S norm), (S) 55 kW (75 PS) @6 000 r/min (rpm), (Sw) 68 kW (92 PS) @8 500 r/min (rpm), (U) - , (UK) 92 kW(-) @9 500 r/min (rpm) (ISO4106), (G) 74 kW (100 PS) @9 000 r/min (rpm) (DIN) 110 N-m(11.2 kg-m, 81 ft-lb) @8 500 r/min(rpm), (Ar) 90 N-m (9.2 kg-m, 67 ft-lb) @7 000 r/min (rpm), (F)(U)(UK) - , (S) 90 N-m (9.2 kg-m, 67 ft-lb) @5 500 r/min (rpm), (Sw) 86 N-m (8.8 kg-m, 64 ft-lb) @4 500 r/min (rpm), (G) 90 N-m (9.2 kg-m, 67 ft-lb) @7 000 r/min (rpm) (DIN) Carburetors, Keihin CVK-D 40 x 4 Electric starter Battery and coil (transistorized) Electronically advanced From 10° BTDC @1 000 r/min (rpm) to 40° BTDC @6 000 r/min (rpm) (Cal) From 7.5° BTDC @1 200 r/min (rpm) to 40° BTDC @6 000 r/min (rpm), (S) From 7.5° BTDC @1 300 r/min (rpm) to 40° BTDC @6 000 r/min (rpm) (U) From 7.5° BTDC @1 000 r/min (rpm) to 40° BTDC @6 000 r/min (rpm)

Items	ZX1100-D1, D2, D3
Spark plug Cylinder numbering method Firing order Valve timing: Inlet Open Close Duration Exhaust Open Close Duration Lubrication system Engine oil: Grade Viscosity Capacity	NGK CR9E or ND U27ESR-N Left to right, 1-2-3-4 1-2-4-3 40° BTDC,(F) 20° 70° ABDC,(F) 50° 290° ,(F) 250° 63° BBDC,(F) 45° 43° ATDC,(F) 25° 286° ,(F) 250° Forced lubrication (wet sump with cooler) SE, SF, or SG class SAE10W-40, 10W-50, 20W-40, or 20W-50 3.5 L
<b>Drive Train:</b> Primary reduction system: Type Reduction ratio Clutch type Transmission: Type Gear ratios: 1st 2nd 3rd 4th 5th 6th Final drive system: Type Reduction ratio Overall drive ratio	Gear 1.637 (95/58) Wet multi disc 6-speed, constant mesh, return shift 2.800 (42/15) 2.055 (37/18) 1.590 (35/22) 1.333 (32/24) 1.153 (30/26) 1.035 (29/28) Chain drive 2.647 (45/17), D3:(G) (F) (UK) (Gr) (N) 2.588 (44/17) 4.490 @Top gear, D3:(G) (F) (UK) (Gr) (N) 4.390 @Top gear
<b>Frame:</b> Type Caster (rake angle) Trail Front tire:      Type Size Rear tire:      Type Size Front suspension: Type Wheel travel Rear suspension: Type Wheel travel Brake type:    Front Rear	Tubular, double cradle 26.5° 107 mm Tubeless 120/70 ZR17 Tubeless 180/55 ZR17 Telescopic fork 120 mm Swing arm (uni-trak) 112 mm Dual disc Single disc

## 1-8 GENERAL INFORMATION

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Items	ZX1100-D1, D2, D3
<b>Electrical Equipment:</b>	
Battery	12 V 12 Ah
Headlight:	Semi-sealed beam
Type	12V60/55W (quartz-halogen)
Bulb	12 V 5/21 W × 2 (C)(Cal)(U) 12V8/27W × 2
Tail/brake light	Three-phase AC
Alternator:	28.6 A @6 000 r/min (rpm), 14 V
Type	
Rated output	

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

(AS) : Australian Model

(Ar) : Austrian Model

(C) : Canada model

(Cal) : California Model

(F) : France Model

(G) : Germany Model

(Gr) : Greece Model

(I) : Italy Model

(N) : Norway Model

(S) : Switzerland

(SA) : South Africa Model

(Sw) : Sweden Model

(U) : US Model

(UK) : UK Model

**Periodic Maintenance Chart**

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

OPERATION	FREQUENCY	† ODOMETER READING							
		Whichever comes first ↓ Every	800 km	5000 km	10000 km	15000 km	20000 km	25000 km	30000 km
Spark plug – clean			•	•	•	•	•	•	
Spark plug – check*			•	•	•	•	•	•	
Valve clearance – check*		•		•				•	
Air suction valve – check*			•	•	•	•	•	•	
Air cleaner element and air vent filter – clean		•		•				•	
Air cleaner element and air vent filter – replace	5 cleaning					•			
Throttle grip play--check*		•		•		•		•	
Idle speed – check*		•	•	•	•	•	•	•	
Engine vacuum synchronization -check *		•	•	•	•	•	•	•	
Fuel system--check *				•		•		•	
Coolant – change	2 years						•		
Evaporative emission control system (Cal) – check*		•	•	•	•	•	•	•	
Engine oil – change	year	•		•		•		•	
Oil filter –replace		•		•		•		•	
Radiator hoses, connections – check*	year	•		•		•		•	
Fuel filter – replace			•		•		•		
Fuel hose – replace	4 years								
Clutch fluid level – check *	month	•	•	•	•	•	•	•	
Clutch fluid – change	2 years					•			
Clutch hose and pipe – replace	4 years								
Clutch master cylinder cup and dust seal –replace	2 years								
Clutch slave cylinder piston seal – replace	2 years								
Drive chain wear –check *			•	•	•	•	•	•	
Drive chain –lubricate	300 km								
Drive chain slack – check *	800 km								
Brake pad wear –check*			•	•	•	•	•	•	
Brake fluid level – check*	month	•	•	•	•	•	•	•	
Brake fluid – change	2 years					•			
Brake hose – replace	4 years								
Brake master cylinder cup and dust seal – replace	2 years								
Caliper piston seal and dust seal – replace	2 years								
Brake light switch – check*		•	•	•	•	•	•	•	
Steering – check*		•	•	•	•	•	•	•	
Steering stem bearing – lubricate	2 years					•			
Front fork oil – change							•		
Tire wear – check*			•	•	•	•	•	•	
Swing arm pivot, uni-trak linkage – lubricate				•		•		•	
Battery electrolyte level – check*	month	•	•	•	•	•	•	•	
General lubrication – perform			•	•	•	•	•	•	
Nuts, bolts, and fasteners tightness – check*		•		•		•		•	

† : For higher odometer readings, repeat at the frequency interval established here.

\* : Replace, add, adjust, clean, or torque if necessary.

(Cal) : California Model only



Fastener	Torque			Remarks
	N-m	kg-m	ft-lb	
Oil pipe banjo bolts(12 mm dia.)	25	2.5	18.0	
Oil pimp gear holder screws	-	-	-	L
Oil pump mounting bolts	12	1.2	104 in-lb	L
Oil filter bolt	20	2.0	14.5	
<b>Engine Removal/Installation:</b>				
Engine mounting nuts 8 mm	20	2.0	14.5	
10 mm	44	4.5	33	
Down tube mounting bolts	44	4.5	33	
<b>Crankshaft/Transmission:</b>				
Crankshaft cap bolts	32	3.3	24	
Balancer shaft guide pin plate bolt	-	-	-	L
Balancer shaft clamp lever mounting bolt	-	-	-	L
Alternator shaft chain tensioner bolts	-	-	-	L
Crankcase bolts: 9 mm dia.	32	3.3	24	S
8 mm dia.	27	2.8	20	
7 mm dia.	18	1.8	13.0	
6 mm dia.	15	1.5	11.0	
Connecting rod big end cap nuts				See p.8-11
Alternator shaft chain sprocket bolt	25	2.5	18.0	
Alternator shaft nut	59	6.0	43	
Alternator shaft bolt	25	2.5	18.0	
One-way clutch bolts	12	1.2	104 in-lb	L
Shift drum bearing holder bolts	-	-	-	L
External shift mechanism return spring pin	29	3.0	22	L
External shift mechanism cover bolts	9.8	1.0	87 in-lb	L(4)
Neutral switch	15	1.5	11.0	
<b>Wheels/Tires:</b>				
Front axle nut	145	15.0	110	
Front axle clamp bolts	20	2.0	14.5	
Rear axle nut	110	11.0	80	
<b>Final Drive:</b>				
Engine sprocket nut	125	13.0	94	
Engine sprocket cover damper bolts	-	-	-	L
Rear sprocket nuts	74	7.5	54	
Rear sprocket studs	-	-	-	L
Chain adjuster clamp bolts	39	4.0	29	
<b>Brakes:</b>				
Brake lever pivot nut	8.8	0.90	78 in-lb	
Front master cylinder clamp bolts	11	1.1	95 in-lb	S
Brake hose banjo bolts	25	2.5	18.0	
Bleed valves	7.8	0.80	69 in-lb	
Caliper mounting bolts : Front	34	3.5	25	
: Rear	25	2.5	18	
Front caliper assembly bolts	21	2.1	15.0	
Brake disc mounting bolts	23	2.3	16.5	
Brake pedal pivot bolt	8.8	0.90	78 in-lb	
Rear master cylinder mounting bolts	23	2.3	16.5	
Push rod nut	18	1.8	13.0	
Torque link bolts/nut	25	2.5	18.0	

## 1-12 GENERAL INFORMATION

Fastener	Torque			Remarks
	N-m	kg-m	ft-lb	
<b>Suspension:</b>				
Front fork top plugs	23	2.3	16.5	
Front fork clamp bolts(Upper)	28	2.9	21	
Front fork clamp nuts(Lower)	21	2.1	15.0	
Front fork bottom Allen bolts	61	6.2	45	L
Front axle clamp bolts	20	2.0	14.5	
Rear shock absorber mounting nuts	59	6.0	43	
Swing arm pivot nut	88	9.0	65	
Rocker arm pivot nut	59	6.0	43	
Tie-rod bolts	59	6.0	43	
<b>Steering:</b>				
Handlebar weight bolts	-	-	-	L
Handlebar holder bolts	20	2.0	14.5	
Steering stem head nut	39	4.0	29	
Steering stem nut	4.9	0.50	43 in-lb	
<b>Frame:</b>				
Downtube bolts	44	4.5	33	
Side stand switch screws	-	-	-	L
Center stand spring hook bolts	-	-	-	L
Side stand bracket mounting bolts	49	5.0	36	L
Side Stand Bolt	34	3.5	25	
<b>Electrical System:</b>				
Spark plugs	14	1.4	10.0	
Pickup coil cover bolts	-	-	-	L(2)
Timing rotor bolt	25	2.5	18.0	
Pickup coil holder bolts	-	-	-	L
Alternator mounting bolts	25	2.5	18.0	
Alternator coupling bolts	9.8	1.0	87 in-lb	
Alternator cover nuts	4.4	0.45	39 in-lb	
Alternator cover studs	8.8	0.90	78 in-lb	

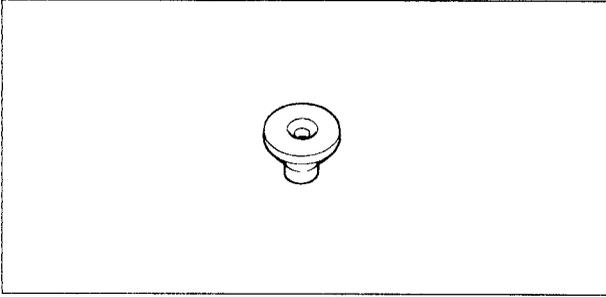
The table below, relating tightening torque to thread diameter, lists the basic torque for the bolts and nuts. Use this table for only the bolts and nuts which do not require a specific torque value. All of the values are for use with dry solvent-cleaned threads.

**Basic Torque for General Fasteners**

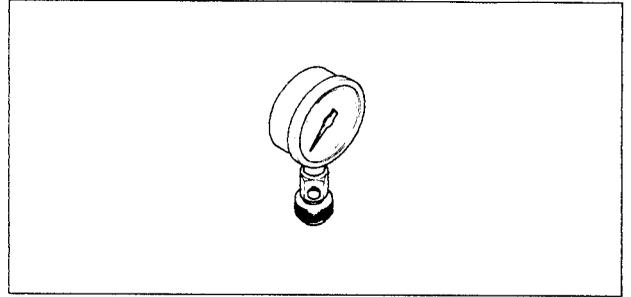
Threads dia. (mm)	Torque		
	N-m	kg-m	ft-lb
5	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in-lb
6	5.9 ~ 7.8	0.60 ~ 0.80	52 ~ 69 in-lb
8	14 ~ 19	1.4 ~ 1.9	10.0 ~ 13.5
10	25 ~ 34	2.6 ~ 3.5	19.0 ~ 25.0
12	44 ~ 61	4.5 ~ 6.2	33 ~ 45
14	73 ~ 98	7.4 ~ 10.0	54 ~ 72
16	115 ~ 155	11.5 ~ 16.0	83 ~ 115
18	165 ~ 225	17.0 ~ 23.0	125 ~ 165
20	225 ~ 325	23 ~ 33	165 ~ 240

**Special Tools and Sealant**

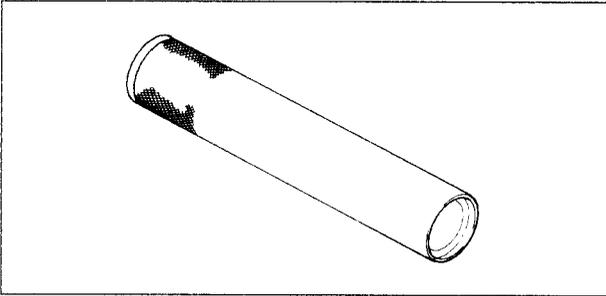
Bearing Puller Adapter: 57001-136



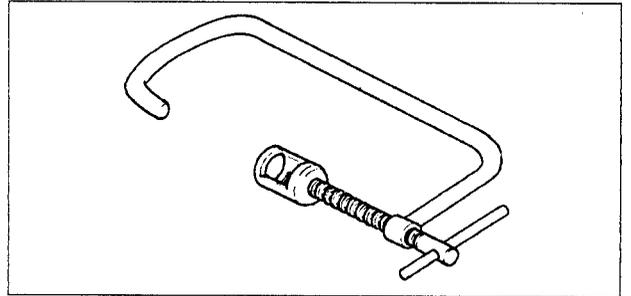
Compression Gauge: 57001-221



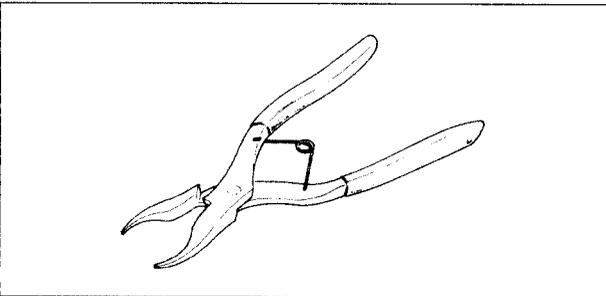
Steering Stem Bearing Driver: 57001-137



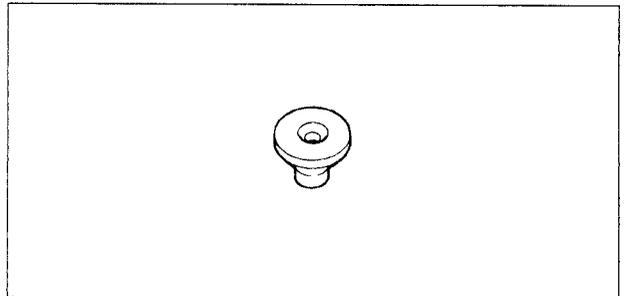
Valve Spring Compressor Assembly: 57001-241



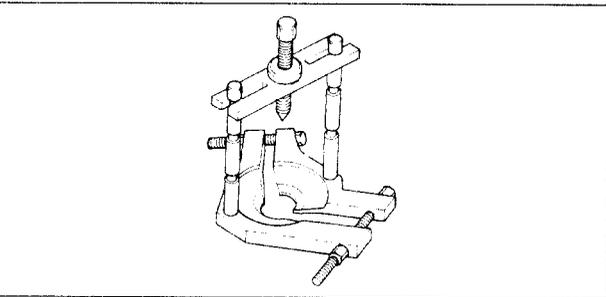
Inside Circlip Pliers: 57001-143



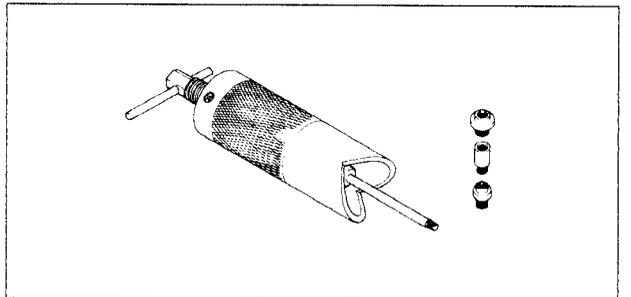
Bearing Puller Adapter: 57001-317



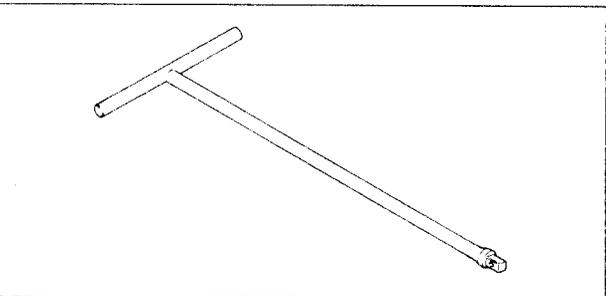
Bearing Puller: 57001-158



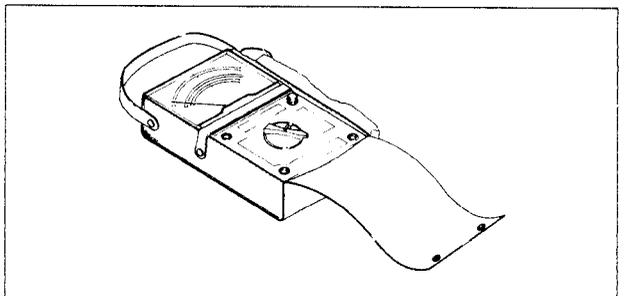
Piston Pin Puller Assembly: 57001-910



Fork Cylinder Holder Handle: 57001-183

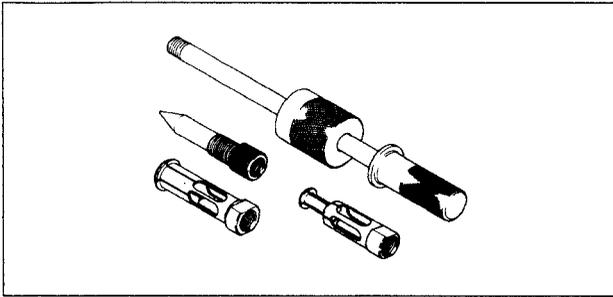


Hand Tester: 57001-983

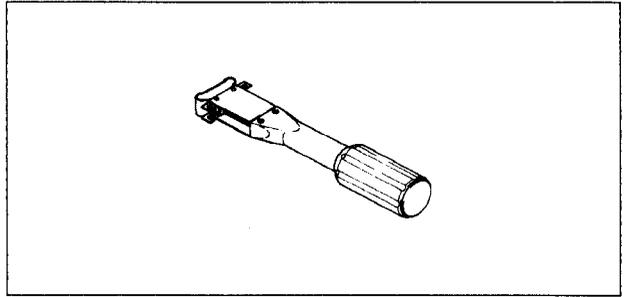


# 1-14 GENERAL INFORMATION

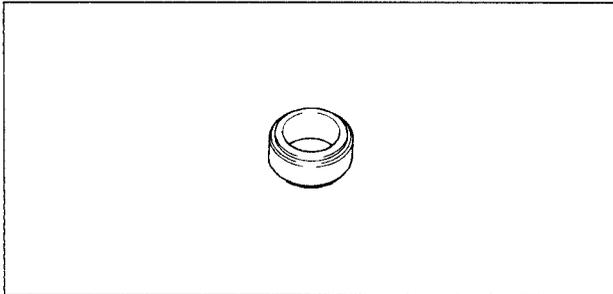
Oil Seal & Bearing Remover: 57001-1058



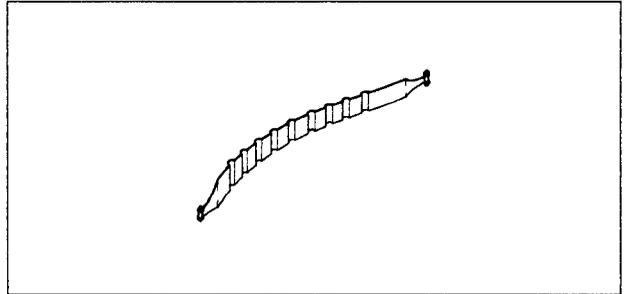
Piston Ring Compressor Grip: 57001-1095



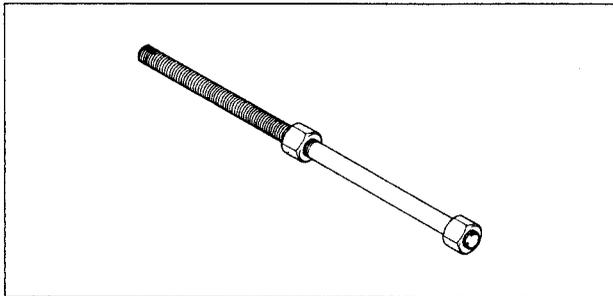
Steering Stem Bearing Driver Adapter: 57001-1074



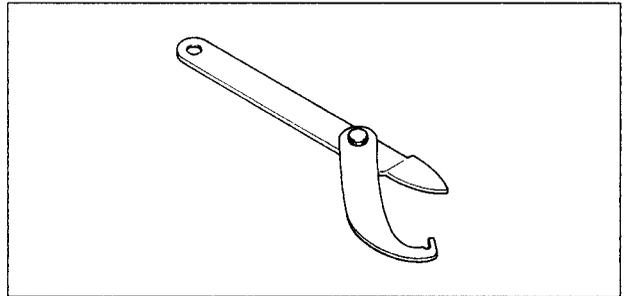
Piston Ring Compressor Belt,  $\phi 67 \sim \phi 79$ : 57001-1097



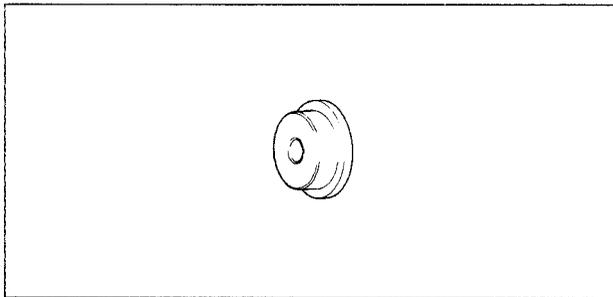
Head Pipe Outer Race Press Shaft: 57001-1075



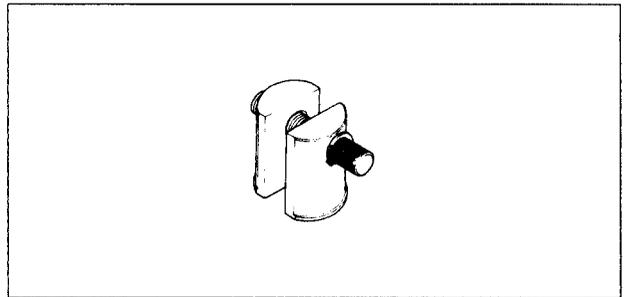
Steering Stem Nut Wrench: 57001-1100



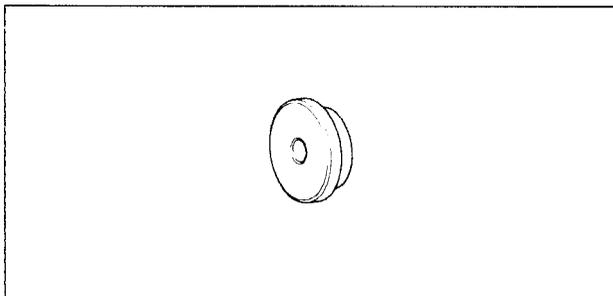
Head Pipe Outer Race Driver: 57001-1076



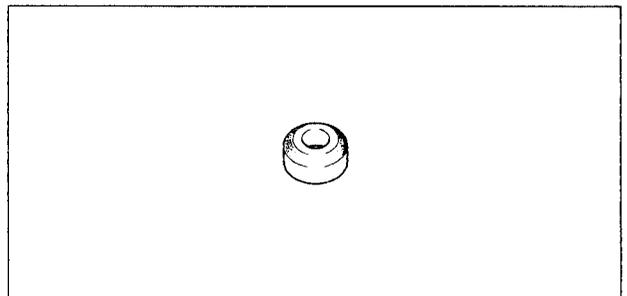
Head Pipe Outer Race Remover: 57001-1107



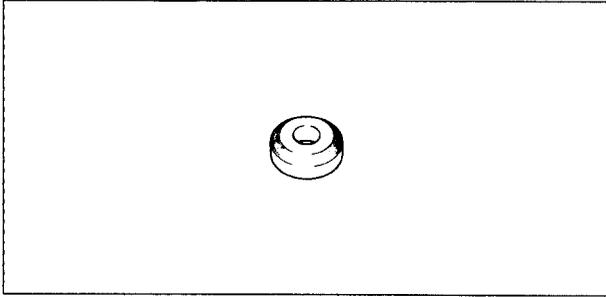
Head Pipe Outer Race Driver: 57001-1077



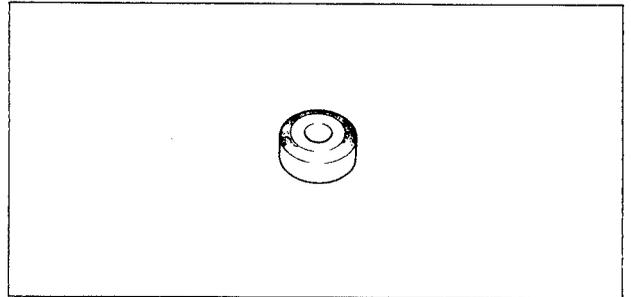
Valve Seat Cutter,  $45^\circ - \phi 27.5$ : 57001-1114



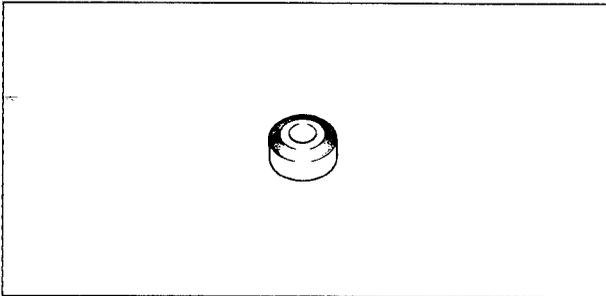
Valve Seat Cutter, 45° –  $\phi 32$ : 57001-1115



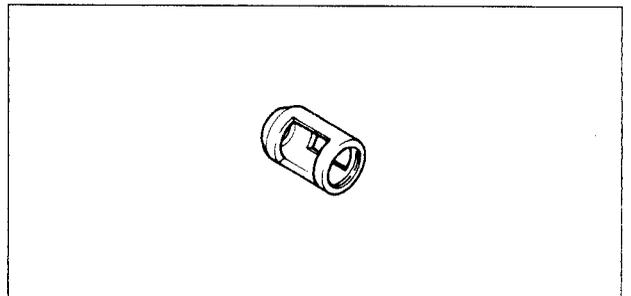
Valve Seat Cutter, 32° –  $\phi 33$ : 57001-1199



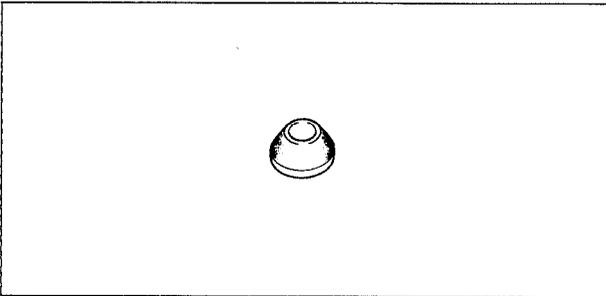
Valve Seat Cutter, 32° –  $\phi 30$ : 57001-1120



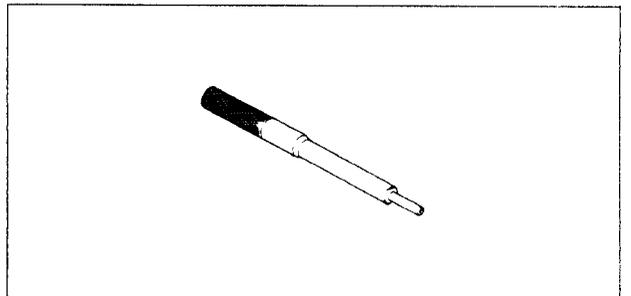
Valve Spring Compressor Adapter,  $\phi 22$ : 57001-1202



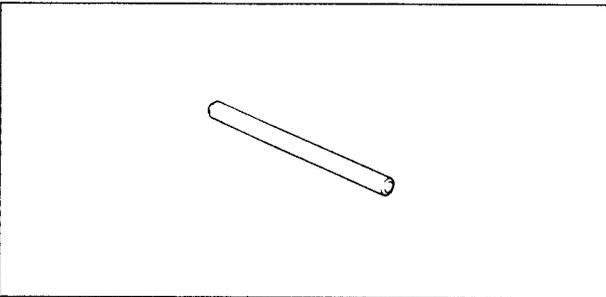
Valve Seat Cutter, 60° –  $\phi 30$ : 57001-1123



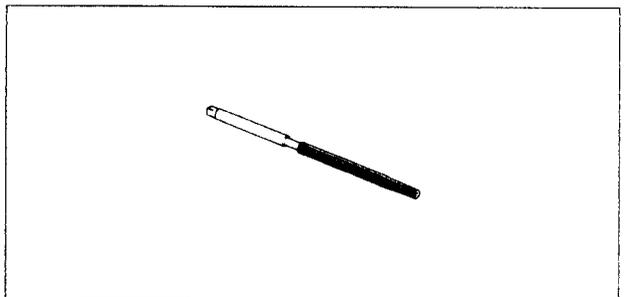
Valve Guide Arbor,  $\phi 5$ : 57001-1203



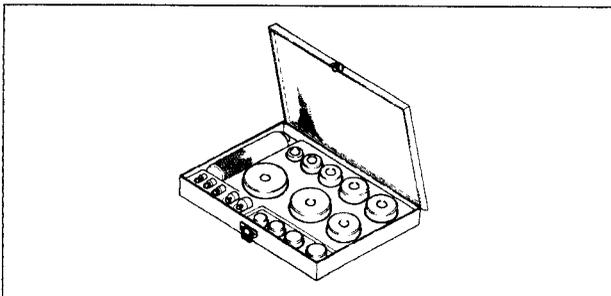
Valve Seat Cutter Holder Bar: 57001-1128



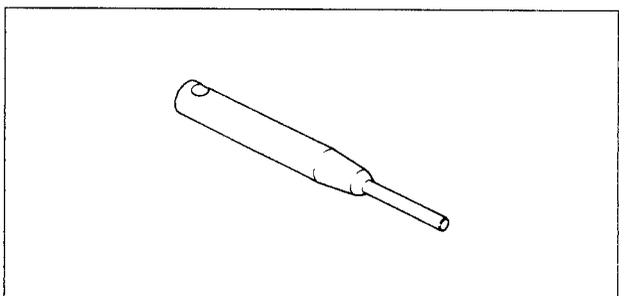
Valve Guide Reamer,  $\phi 5$ : 57001-1204



Bearing Driver Set: 57001-1129

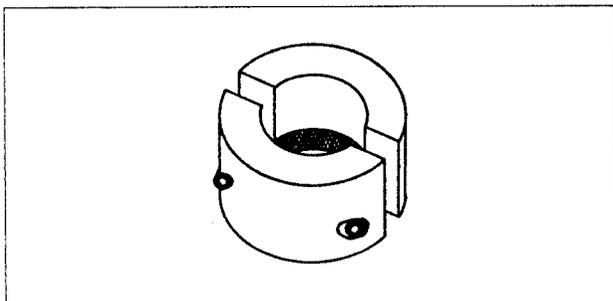


Valve Seat Cutter Holder,  $\phi 5$ : 57001-1208

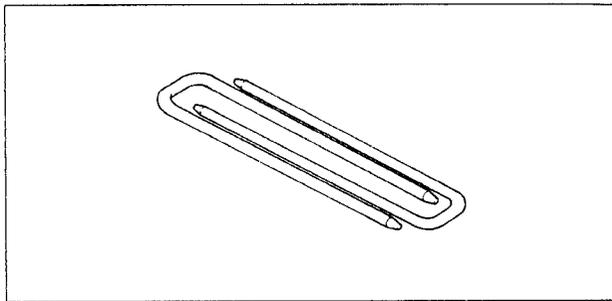


## 1-16 GENERAL INFORMATION

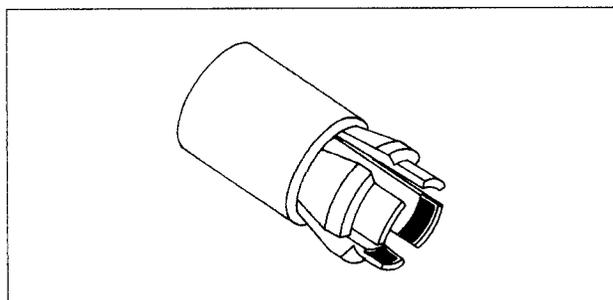
Fork Outer Tube Weight: 57001-1218



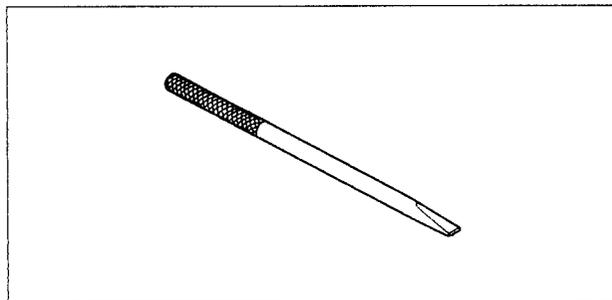
Piston Base,  $\phi 6$ : 57001-1263



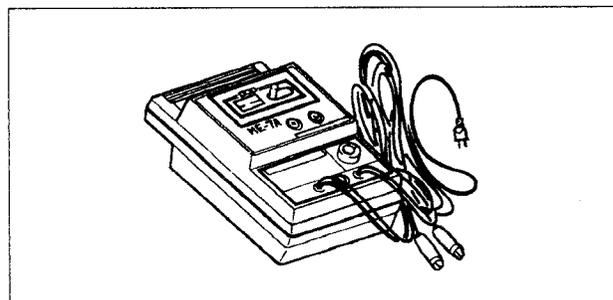
Front Fork Oil Seal Driver: 57001-1219



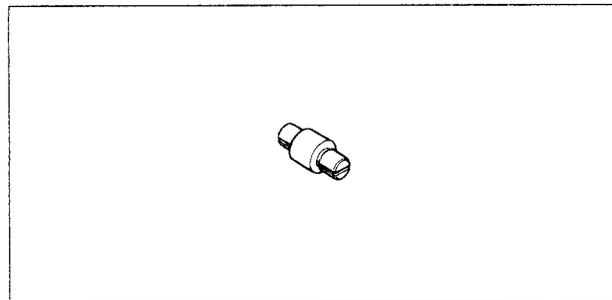
Bearing Remover Shaft: 57001-1265



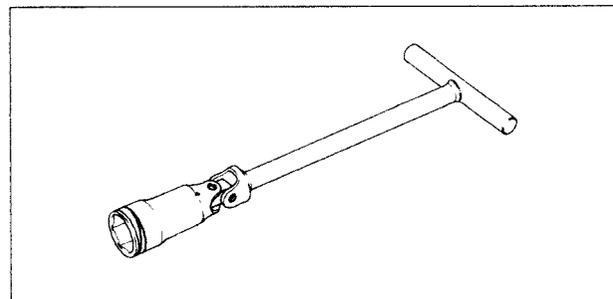
Coil Tester: 57001-1242



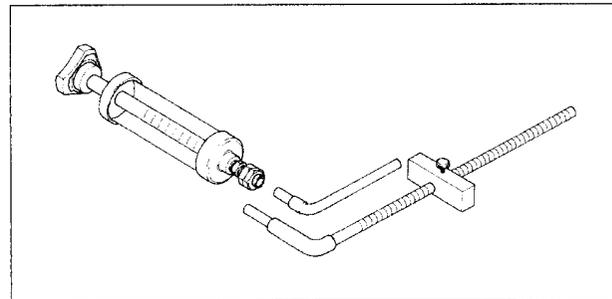
Bearing Remover Head,  $\phi 15 \times \phi 17$ : 57001-1267



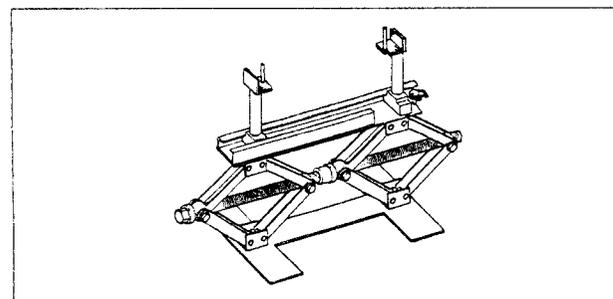
Spark Plug Wrench, Hex 16: 57001-1262



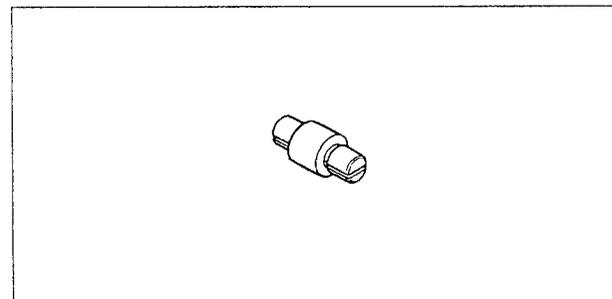
Fork Oil Level Gauge: 57001-1290



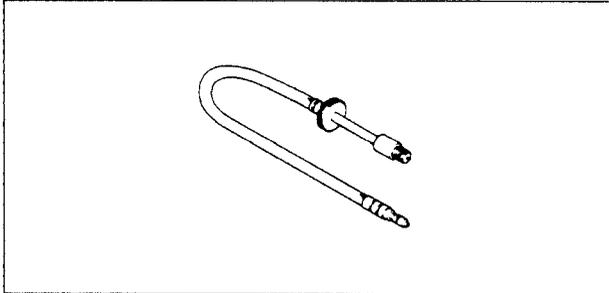
Jack: 57001-1238



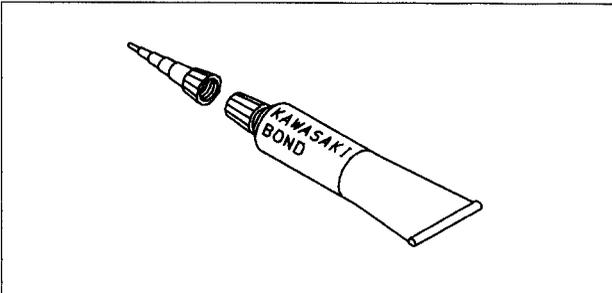
Bearing Remover Head,  $\phi 20 \times \phi 22$ : 57001-1293



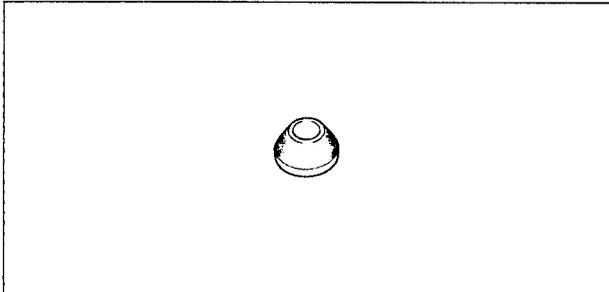
Compression Gauge Adapter, M10 X 1.0: 57001-1317



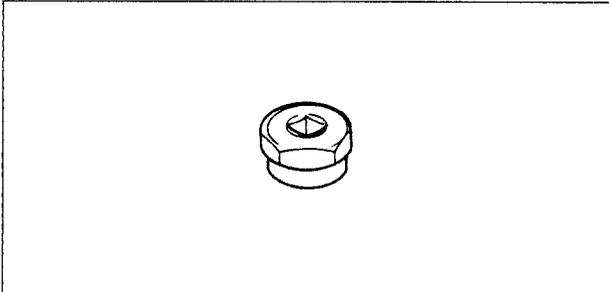
Kawasaki Bond (Liquid Gasket – Black): 92104-1003



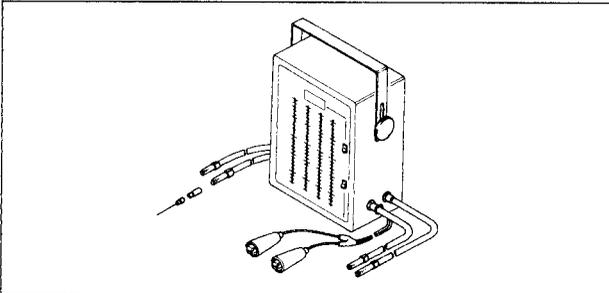
Valve Seat Cutter, 60° –  $\phi$ 33: 57001-1334



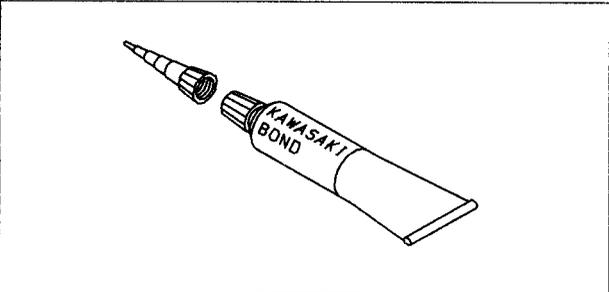
Hexagon Wrench, Hex 29: 57001-1335



Vacuum Gauge: 57001-1369



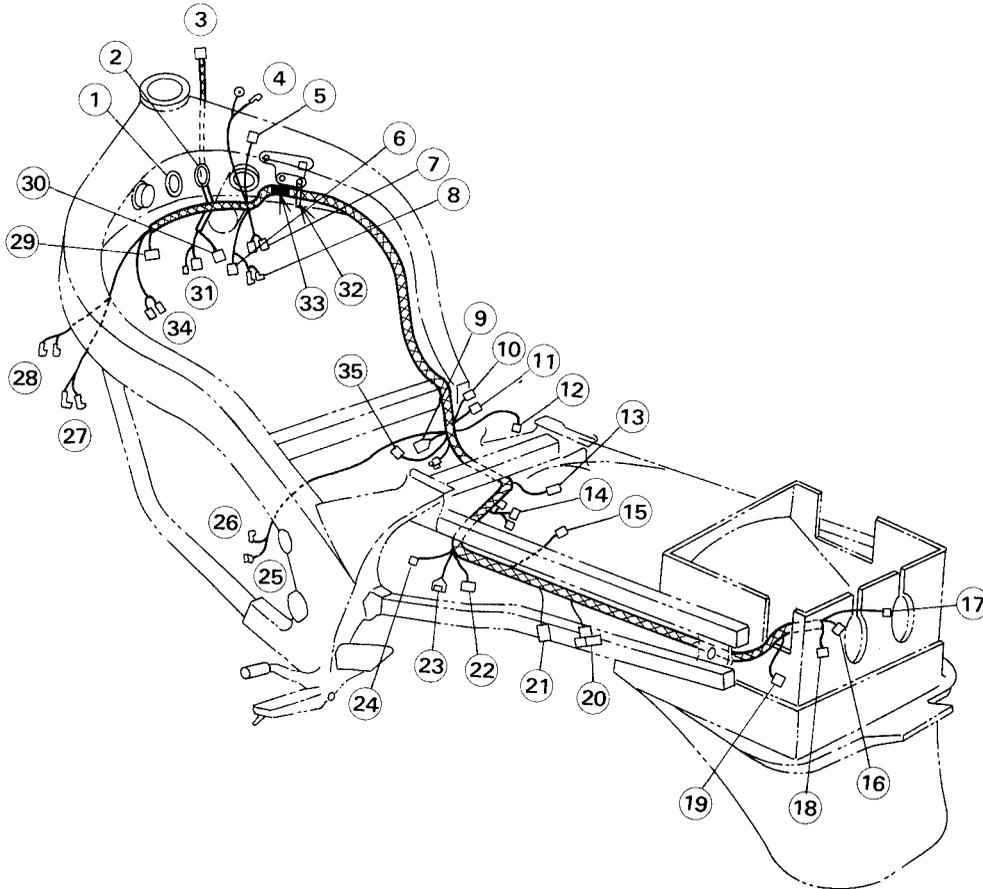
Kawasaki Bond (Silicone Sealant): 56019-120



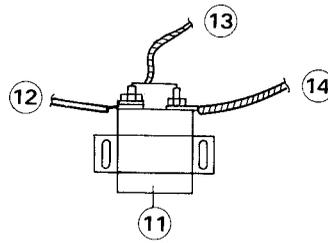
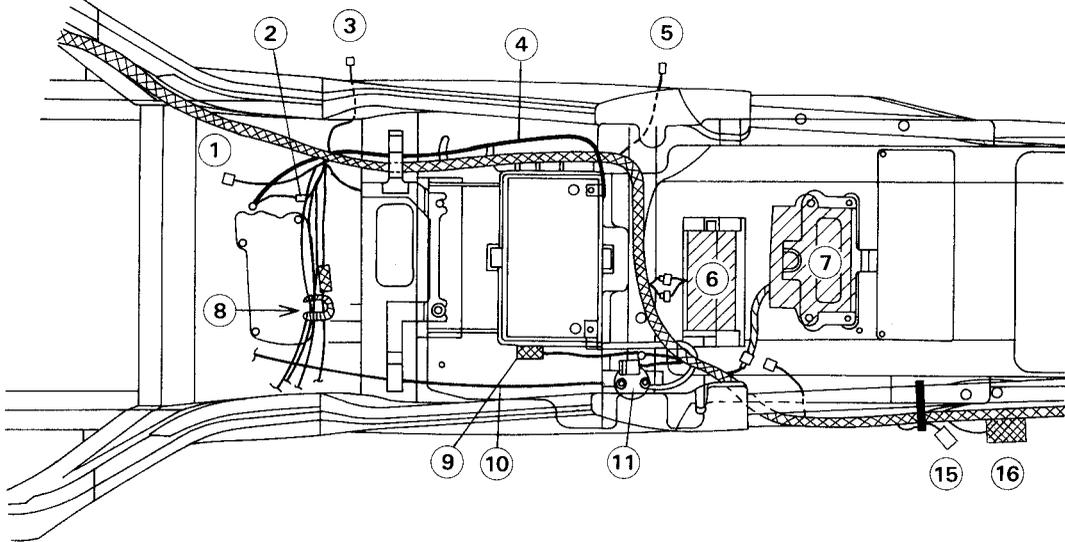
# 1-18 GENERAL INFORMATION

## Cable, Wire, and Hose Routing

1. Cables passing in Left Hole  
Throttle Cable  
Choke Cable  
Ignition Switch Leads  
Left Switch Case Leads
2. Cable passing in Right Hole  
Main Harness  
Right Switch Case Leads



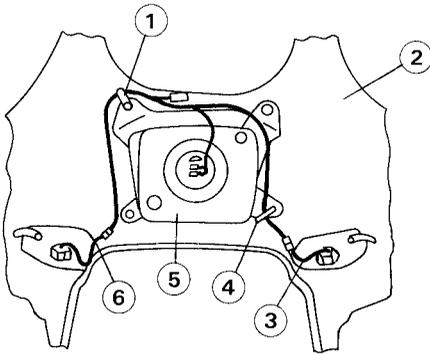
- |                              |                            |                                            |
|------------------------------|----------------------------|--------------------------------------------|
| 3. Main Harness              | 15. Fuel Level Gauge Lead  | 27. Cooling Fan Switch Lead                |
| 4. Water Temp. Sensor Leads  | 16. Tail/Brake Light Lead  | 28. Left Horn Lead                         |
| 5. Ground Lead               | 17. Right Turn Signal Lead | 29. Left Handlebar Switch Lead             |
| 6. Fan Motor Lead            | 18. Licence Light Lead     | 30. Right Handlebar Switch Lead            |
| 7. #2,3 Ignition Coil Leads  | 19. Left Turn Signal Lead  | 31. Ignition Switch Leads                  |
| 8. Right Horn Lead           | 20. Turn Signal Relay Lead | 32. Clamp                                  |
| 9. Alternator Lead           | 21. Rectifier Lead         | 33. White Color Tape Wound on Main Harness |
| 10. Pickup Coil Lead         | 22. IC Igniter Lead        | 34. #1, 4 Ignition Coil Leads              |
| 11. Battery (-) Lead         | 23. Starter Relay Lead     | 35. Fuel Pump Lead                         |
| 12. Oil Pressure Switch Lead | 24. Fuel pump Relay lead   |                                            |
| 13. Rear Brake Switch Lead   | 25. Side Stand Switch Lead |                                            |
| 14. Junction Box Lead        | 26. Neutral Switch Lead    |                                            |



- 1. Fuel Pump Lead
- 2. Ground Lead
- 3. Oil Pressure Switch Lead
- 4. Battery (-) Lead
- 5. Rear Brake Switch Lead
- 6. Junction Box
- 7. Igniter

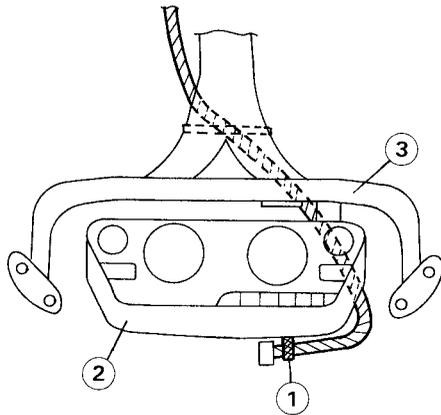
- 8. Clamp Following Leads  
Pickup Coil Lead  
Alternator Lead  
Neutral Switch Lead
- 9. Fuel Pump Relay
- 10. Starter Motor Lead
- 11. Starter Relay
- 12. To Starter Motor
- 13. Main Harness
- 14. Battery (+) Lead
- 15. Rectifier
- 16. Turn Signal Relay

**Fairing Inside Harness Leads**

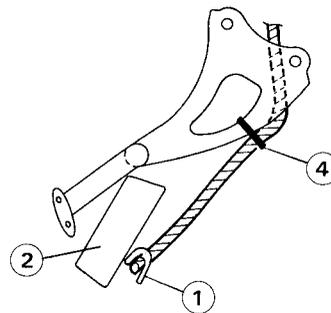


1. Clamp
2. Upper Fairing
3. Right Turn Signal Lead
4. Clamp
5. Headlight
6. Left Turn Signal Lead

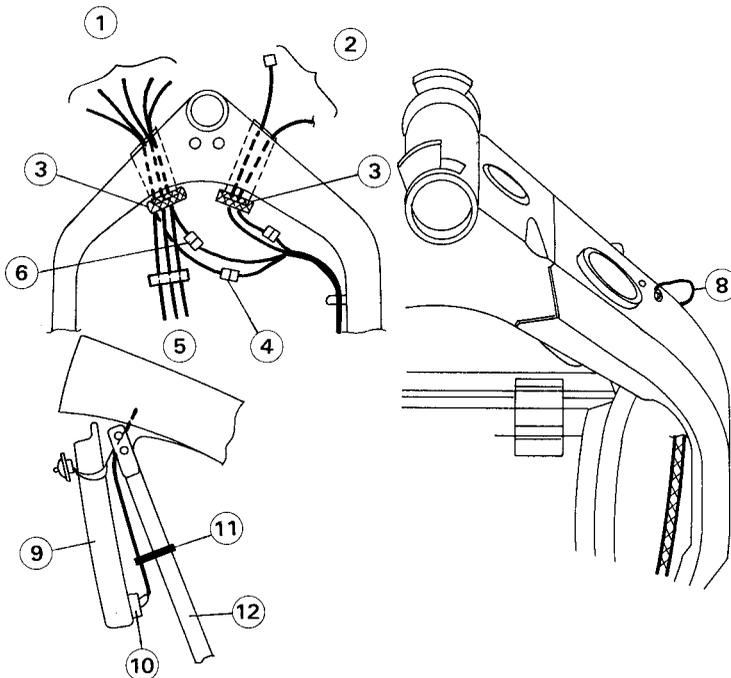
**Speedometer Lead**



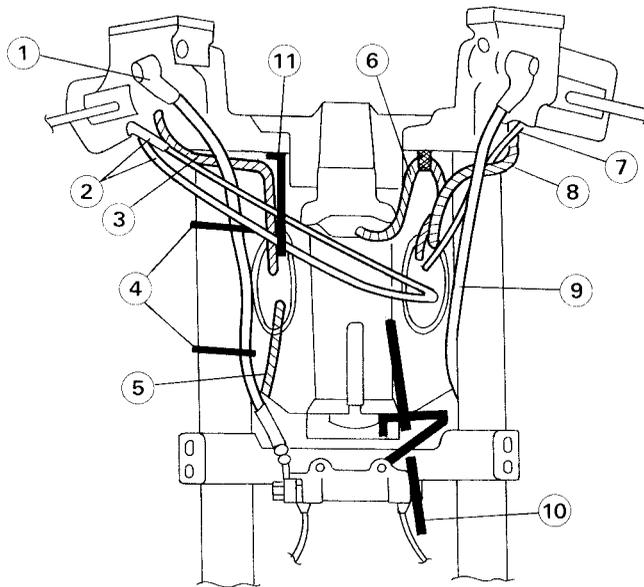
1. Clamp
2. Speedometer
3. Bracket
4. Band



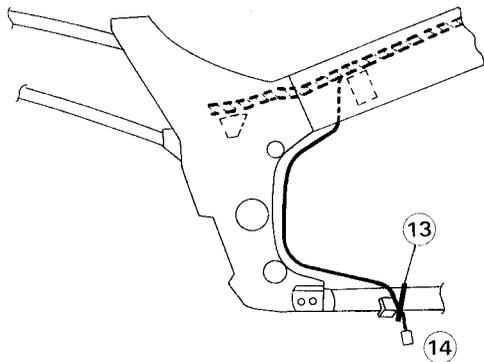
**Frame Front Part Leads**



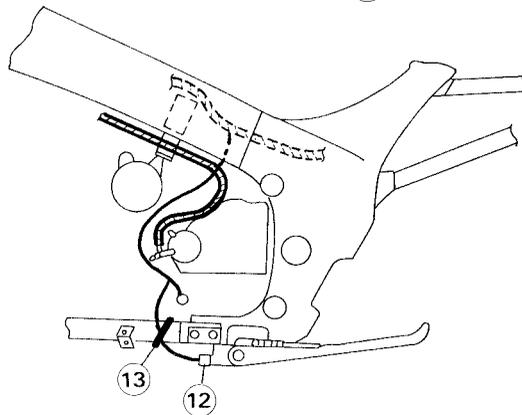
1. Cables passing in Left Hole  
Throttle Cable  
Choke Cable  
Ignition Switch Leads  
Left Handlebar Leads
2. Cable passing in Right Hole  
Main Harness  
Right Handlebar Leads
3. Guards
4. Ignition Switch Lead
5. Throttle and Choke Cables
6. Left Handlebar Switch Lead
7. Clamp
8. Ground Lead
9. Radiator
10. Fan Switch Lead
11. Band
12. Down Tube



- 1. Front Brake Hose
- 2. Throttle Cables
- 3. Right Handlebar Switch Lead
- 4. Bands
- 5. Main Harness
- 6. Ignition Switch Lead
- 7. Choke Cable
- 8. Left Handlebar Switch Lead
- 9. Clutch Hose
- 10. Speedometer Cable
- 11. Clamp



- 12. Side Stand Switch
- 13. Band
- 14. Oil Pressure Switch Lead

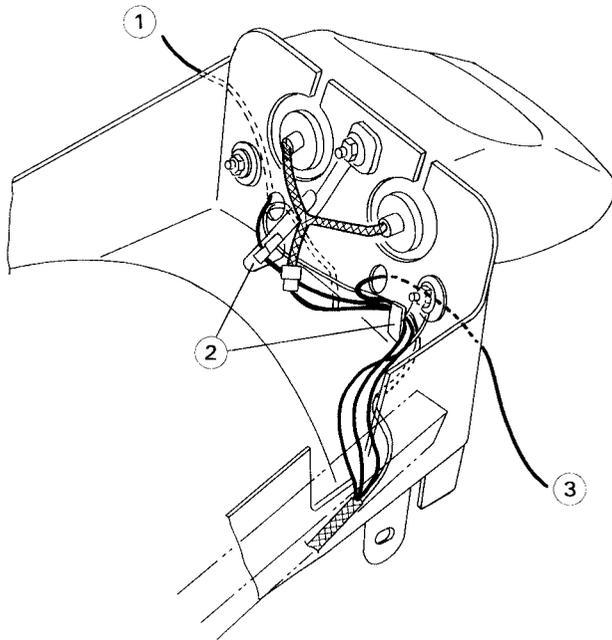


## 1-22 GENERAL INFORMATION

Product: 1993-2001 Kawasaki Ninja ZX-11/ZZ-R1100 Motorcycle Service Repair Workshop Manual

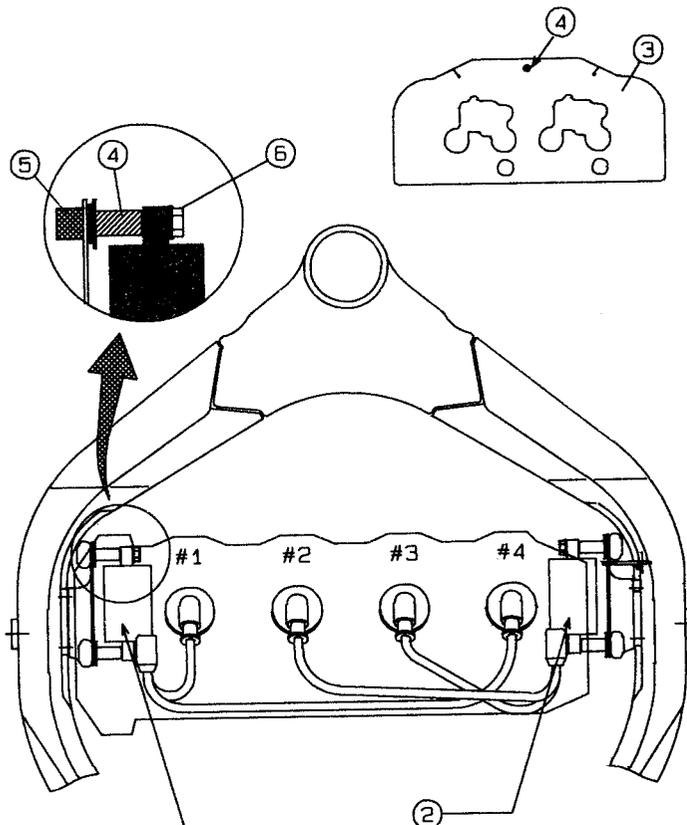
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1. Right Rear Turn Signal Lead
2. Clamp  
Tighten to the tail Light
3. Left Rear Turn Signal Lead

### Ignition Coil Read



1. # 1, 4 Ignition Coil
2. # 2, 3 Ignition Coil
3. Heat Sealed  
(White paint mark should  
be on top).
4. White paint
5. Bolt
6. Nut

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