Kawasaki Ninja ZX-12R

Motorcycle Service Manual

Kawasaki

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Quick Reference Guide

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	pound(s)
ABDC	after bottom dead center	m	meter(s)
AC	alternating current	min	minute(s)
ATDC	after top dead center	N	newton(s)
BBDC	before bottom dead center	Pa	pascal(s)
BDC	bottom dead center	PS	horsepower
BTDC	before top dead center	psi	pound(s) per square inch
°C	degree(s) 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.

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, ignition, and exhaust 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..."

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 removal 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 vehicle:

- 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 Catalog or Manual. Genuine parts provided as spare parts are listed in the Parts Catalog.
- Follow the procedures in this manual carefully. Don't take shortcuts.
- Remember to keep complete records of maintenance and repair with dates and any new parts installed.

How to Use This Manual

In preparing this manual, we divided the product into its major systems. These systems became the manual's chapters. All information for a particular system from adjustment through disassembly and inspection is located in a single chapter.

The Quick Reference Guide shows you all of the product's system and assists in locating their chapters. Each chapter in turn has its own comprehensive Table of Contents.

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

If you want spark plug information, for example, go to the Periodic Maintenance Chart first. The chart tells you how frequently to clean and gap the plug. Next, use the Quick Reference Guide to locate the Electrical System chapter. Then, use the Table of Contents on the first page of the chapter to find the Spark Plug section.

Whenever you see these WARNING and CAUTION symbols, heed their instructions! Always follow safe operating and maintenance practices.

⚠WARNING

This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury, or loss of life.

CAUTION

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

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.

MODEL APPLICATION

Year	Model	Beginning Frame No.
2000	ZX1200-A1	JKAZX9A1□YA000001 or JKAZXT20AAA000001 or ZXT20A-000001

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

Kawasaki
KAWASAKI HEAVY INDUSTRIES, LTD.
Consumer Products & Machinery Group

Part No. 99924-1253-01

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General Information

Table of Contents

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) Battery Leads

Remove the ground (–) lead from the battery before performing any disassembly operations on the motorcycle. When installing, connect the positive (+) lead first, then the negative (–) lead to the battery. 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) Installation, Assembly

Generally, installation or assembly is the reverse of removal or disassembly. But if this Service Manual has installation or assembly procedures, follow them. Note parts locations and cable, wire, and hose routing during removal or disassembly so they can be installed or assembled in the same way. It is preferable to mark and record the locations and routing as much as possible.

(4) 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.

(5) 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.

(6) 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.

(7) 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.

(8) High-Flash Point Solvent

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

(9) 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 leakage.

(10) 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).

(11) 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.

(12) Ball Bearing and Needle Bearing

Do not remove a ball bearing or a needle bearing unless it is absolutely necessary. Replace any ball or needle bearings that were removed with new ones, as removal generally damages bearings. Install bearings with the marked side facing out applying pressure evenly with a suitable driver. Only press on the race that forms the press fit with the base component to avoid damaging the bearings. This prevents severe stress on the balls or needles and races, and prevent races and balls or needles from being dented. Press a ball bearing until it stops at the stops in the hole or on the shaft.

(13) 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. Before a shaft passes through a seal, apply a little high temperature grease on the lips to reduce rubber to metal friction.

Before Servicing

(14) Circlip, Retaining Ring, and Cotter Pin

Replace any circlips and retaining rings, and cotter pins 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.

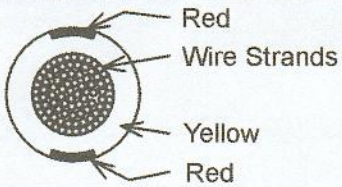
(15) Lubrication

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

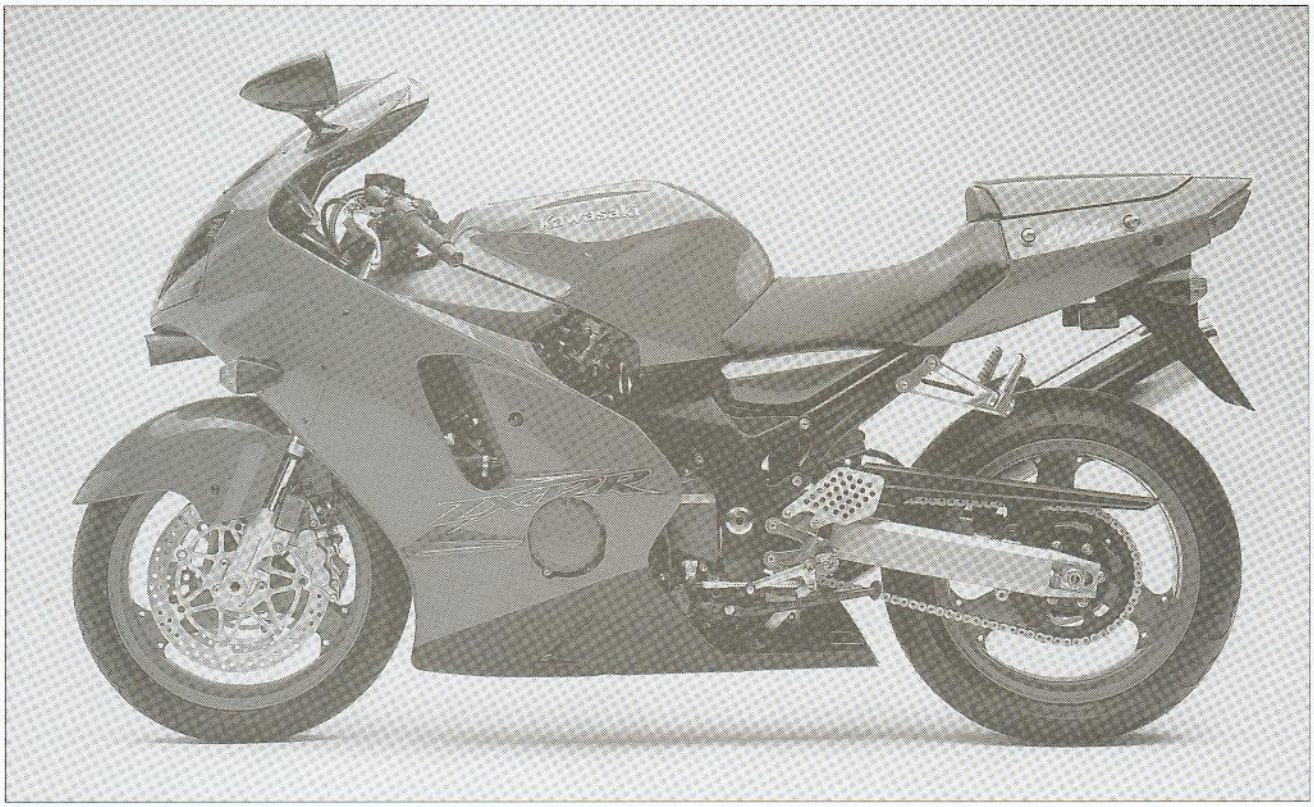
Specification terms are defined as follows:

"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.

Model Identification

ZX1200–A1 Left Side View:



ZX1200–A1 Right Side View:

General Specifications

Items		ZX1200-A1
Dimensions:		
Overall length		2 080 mm (81.89 in.), (HN) 2 180 mm (85.83 in.)
Overall width		725 mm (28.5 in.)
Overall height		1 185 mm (46.65 in.)
Wheelbase		1 440 mm (56.69 in.)
Road clearance		120 mm (4.72 in.)
Seat height		810 mm (31.9 in.)
Dry mass		210 kg (463 lb.)
Curb mass:	Front	125 kg (276 lb.)
	Rear	118 kg (260 lb.)
Fuel tank capacity		20.0 L (5.3 US gal.)
Performance:		
Minimum turning radius		3.0 m (118.1 in.)
Engine:		
Type		4-stroke, DOHC, 4-cylinder
Cooling system		Liquid-cooled
Bore and stroke		83.0 × 55.4 mm (3.27 × 2.18 in.)
Displacement		1199 mL (73.16 cu in.)
Compression ratio		12.2
Maximum horsepower		131 kW (178 PS) @10 500 r/min (rpm), (AS) 130 kW (177 PS) @10 500 r/min (rpm), (N) 133 kW (181 PS) @10 500 r/min (rpm), (HR) 78.2 kW (106.4 PS) @8 500 r/min (rpm), (CN) 131 kW (178 PS) @9 500 r/min (rpm), (MA) 133 kW (181 PS) @ 9 500 r/min (rpm), (US) - - -
Maximum torque		134 N·m (13.7 kg·m, 99 ft·lb) @7 500 r/min (rpm), (N) 135 N·m (13.8 kg·m, 100 ft·lb) @7 500 r/min (rpm), (HR) 111 N·m (11.3 kg·m, 82 ft·lb) @5 000 r/min (rpm), (CN) 136 N·m (13.9 kg·m, 101 ft·lb) @7 500 r/min (rpm), (MA) 137 N·m (14.0 kg·m, 101 ft·lb) @7 500 r/min (rpm), (US) - - -
Carburetion system		FI (Fuel Injection), MIKUNI 46 EIS × 4
Starting system		Electric starter
Ignition system		Battery and coil (transistorized)
Timing advance		Electronically advanced (digital igniter in ECU)
Ignition timing		10° BTDC @1000 r/min (rpm)
Spark plugs		NGK CR9EK PA
Cylinder numbering method		Left to right, 1-2-3-4
Firing order		1-2-4-3
Valve timing:		
Inlet	Open	46° BTDC
	Close	74° ABDC
	Duration	300°
Exhaust	Open	69° BBDC
	Close	45° ATDC
	Duration	294°
Lubrication system		Forced lubrication (wet sump with cooler)
Engine oil:		
Grade		API SE, SF or SG class
Viscosity		SAE10W-40, 10W-50, 20W-40 or 20W-50
Capacity		3.6 L (3.8 US qt.)

General Specifications

Items		ZX1200-A1
Drive Train:		
Primary reduction system:		
Type		Gear
Reduction ratio		1.596 (83/52)
Clutch type		Wet, multi disc
Transmission:		
Type		6-speed, constant mesh, return shift
Gear ratios:		
	1st	2.429 (34/14)
	2nd	1.824 (31/17)
	3rd	1.440 (36/25)
	4th	1.250 (30/24)
	5th	1.130 (26/23)
	6th	1.033 (31/30)
Final drive system:		
Type		Chain drive
Reduction ratio		2.556 (46/18)
Overall drive ratio		4.215 @Top gear
Frame:		
Type		Press backbone
Caster (rake angle)		23.5°
Trail		93 mm (3.66 in.)
Front tire:	Type	Tubeless
	Size	120/70 ZR17 (58W)
Rear tire:	Type	Tubeless
	Size	200/50 ZR17 (75W)
Front suspension:		
	Type	Telescopic fork (upside-down)
	Wheel travel	120 mm (4.72 in.)
Rear suspension:		
	Type	Swingarm (uni-trak)
	Wheel travel	140 mm (5.51 in.)
Brake Type:	Front	Dual discs
	Rear	Single disc
Electrical Equipment:		
Battery		12 V 12 Ah
Headlight:	Type	Semi-sealed beam
	Bulb	12 V 60/55 W (quartz-halogen) × 2
Tail/brake light		12 V 5/21 W × 2
Alternator:	Type	Three-phase AC
	Rated output	35 A/ 14 V @5 000 r/min (rpm)

Specifications are subject to change without notice, and may not apply to every country.
(AS): Australia Model
(US): U.S.A. Model
(CN): Canada Model
(MA): Malaysia Model
(HN): Norway Model, WVTA Approval Model, Honeycomb Catalytic Converter
(N): WVTA Approval Model, Non-Catalytic Converter (Full Power)
(HR): WVTA Approval Model, Honeycomb Catalytic Converter (Restricted Power)

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.**

FREQUENCY / OPERATION	Whichever comes first → ↓ / Every	* ODOMETER READING: 1 000 km (600 mile)	6 000 km (4 000 mile)	12 000 km (7 500 mile)	18 000 km (12 000 mile)	24 000 km (15 000 mile)	30 000 km (20 000 mile)	36 000 km (24 000 mile)
Spark plug - clean and gap †			●	●	●	●	●	●
Valve clearance - check †				●		●		●
Air suction valve - check †			●	●	●	●	●	●
Air cleaner element - clean† #				●		●		●
Throttle control system - check †		●	●	●	●	●	●	●
Idle speed - check †		●		●		●		●
Engine vacuum synchronization - check †				●		●		●
Engine oil - change #	6 months	●	●	●	●	●	●	●
Oil filter - replace		●		●		●		●
Evaporative emission control system (CA) - check †		●	●	●	●	●	●	●
Drive chain wear - check †#			●	●	●	●	●	●
Drive chain roller wear - check †#			●	●	●	●	●	●
Fuel hoses, connections - check †			●	●	●	●	●	●
Brake hoses, connections - check †			●	●	●	●	●	●
Brake pad wear - check †#			●	●	●	●	●	●
Brake light switch - check †		●	●	●	●	●	●	●
Steering - check †		●	●	●	●	●	●	●
Front fork oil - change	2 years					●		
Rear shock absorber oil leak - check †				●		●		●
Front fork oil leak - check †				●		●		●
Tire wear - check †			●	●	●	●	●	●
Swingarm pivot, Unit-trak linkage - lubricate				●		●		●
General lubtication - perform				●		●		●
Nut, bolts, and fasteners tightness - check †		●		●		●		●
Drive chain - lubricate #	600 km							
Drive chain slack - check †#	1000 km							
Brake fluid level - check †	month	●	●	●	●	●	●	●
Clutch adjust - check †		●	●	●	●	●	●	●
Radiator hoses, connections - check †		●						
Brake fluid - change	2 years					●		
Brake master cylinder cup and dust seal - replace	4 years							
Coolant - change	2 years					●		
Caliper piston seal and dust seal - replace	4 years							
Steering stem bearing - lubricate	2 years					●		

: Service more frequently when operating in severe conditions; dusty, wet, muddy, high speed, or frequent starting / stopping.

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

† : Replace, add, adjust, clean, or torque if necessary.

(CA): California Model only

Technical Information – KLEEN (KAWASAKI LOW EXHAUST EMISSION SYSTEM)

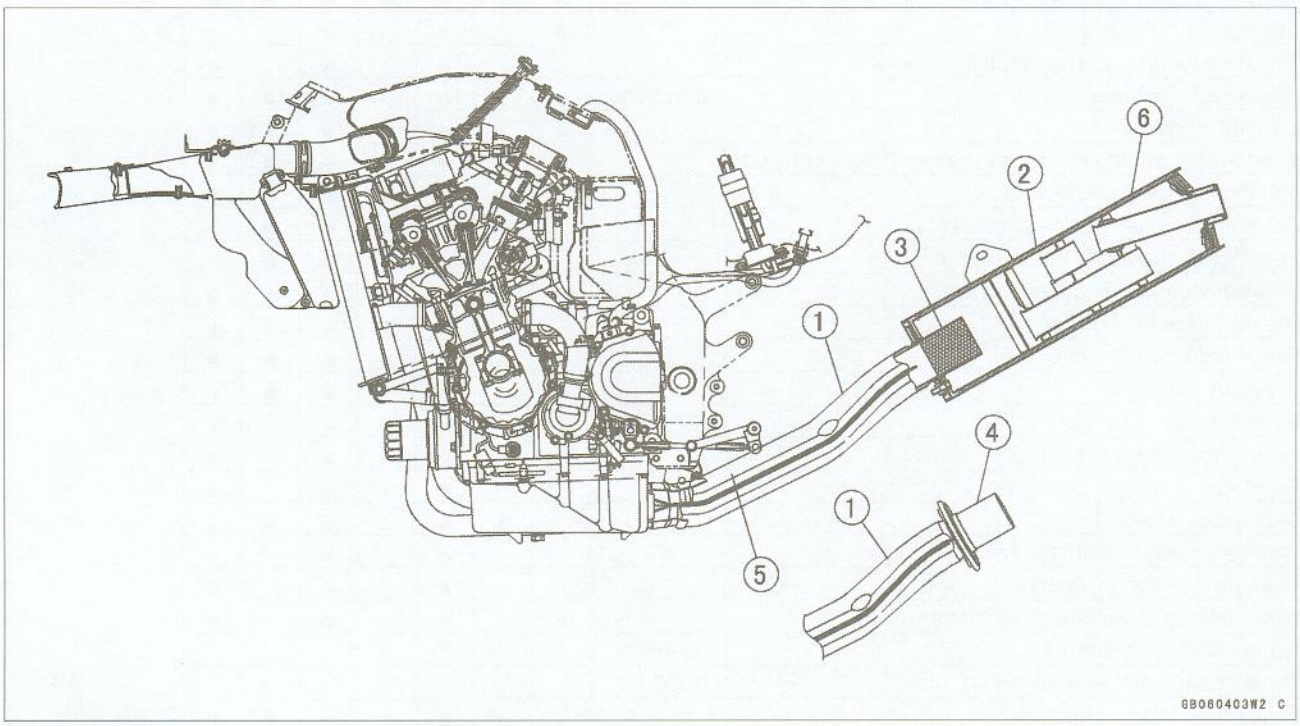
Since the emission regulations become more severe, Kawasaki has adopted a type of simplified KLEEN, which have no catalyst protection system, according to each regulation of different countries.

The muffler with built-in catalyst has the same durability as the conventional muffller, however, do not use leaded gasoline and do not coast with the ignition system OFF. Running the engine without ignition damages catalyst.

Refer to the ZX900E Service Manual (Part No. 99924-1255) for more information about the KLEEN (theory, maintenance, and handling precautions), including the secondary air injection system.

Honeycomb Type Catalytic Converter

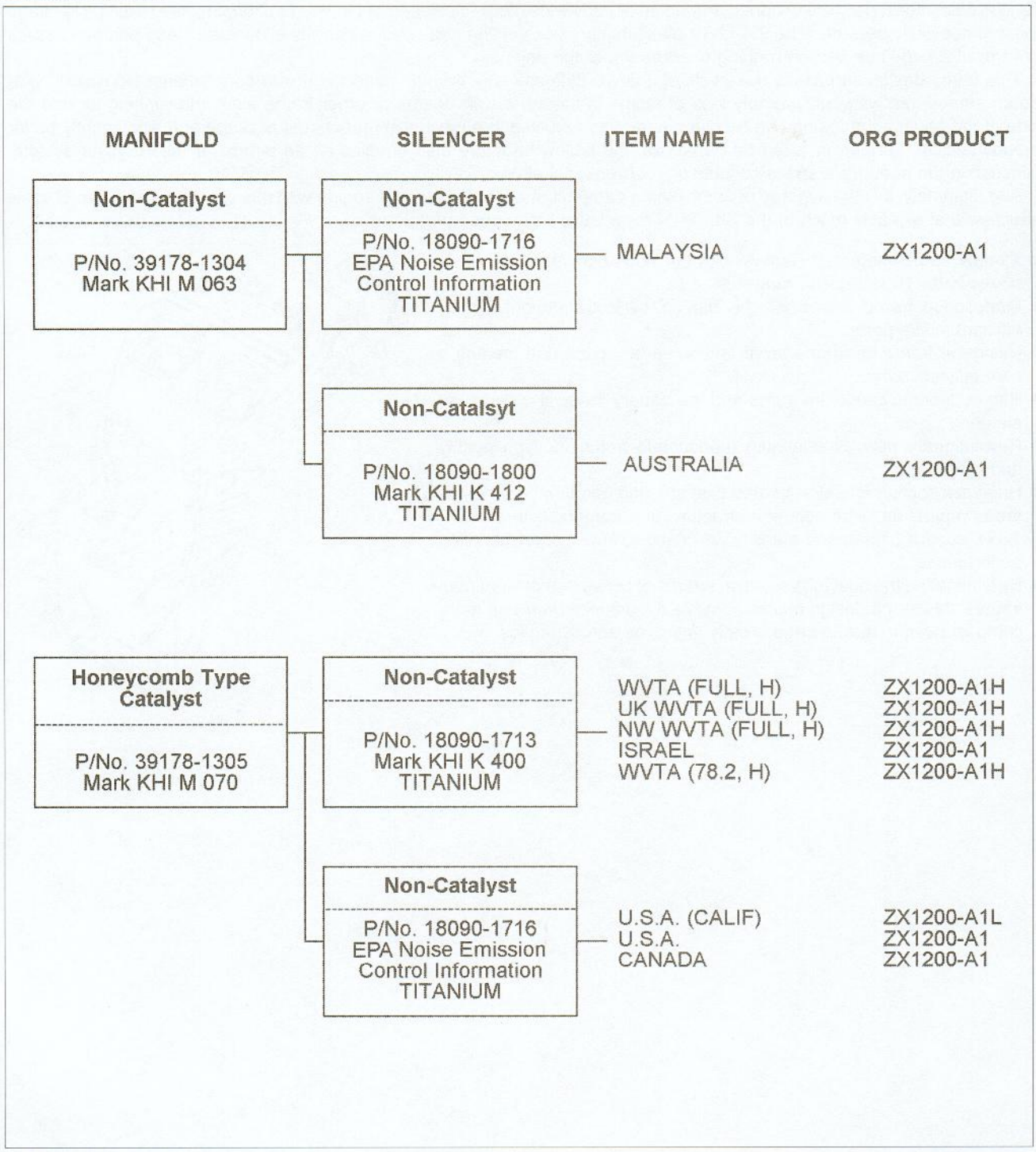
- The converter is a three-way catalytic converter, and its surface is covered with alumina upon which platinum and rhodium are applied, and has a cylindrical metalic honeycomb structure made by bending a corrugated sheet and a flat sheet of stainless steel into a spiral of increasing diameter. The honeycomb structure is convenient for the catalytic converter because it has a large surface area but small size to react effectively and has low exhaust resistance. In addition, its inherent strength helps resist vibration, and has simple structure welded directly on the silencer.
- Generally, the temperature of the exhaust gas must be higher than activation temperature, so the converters are installed in the exhaust manifold rear end where the temperature of exhaust gas is still high. And, the converters will be activated even under low load conditions.
- After the exhasut gas is diluted with the secondary air injection, the catalytic converter works well because of rich oxygen to reduce CO, HC, and NOx. Accordingly, we can keep the exhaust gas emission within regulation.
- This type of converter works more efficiently as a three-way catalytic converter to reduce CO, HC, and NOx than the pipe type catalytic converter because of its more and denser catalysts.



1. Manifold
2. Silencer
3. Honeycomb Type Catalyst
4. Non-Catalyst
5. Mark for Manifold
6. Mark for Silencer

Technical Information – KLEEN (KAWASAKI LOW EXHAUST EMISSION SYSTEM)

Exhaust System



UK: U.K. Model
NW: Norway Model
Full: Full Power
78.2: Horsepower 78.2 kW (106.3 ps)
H: Honeycomb Type Catalyst

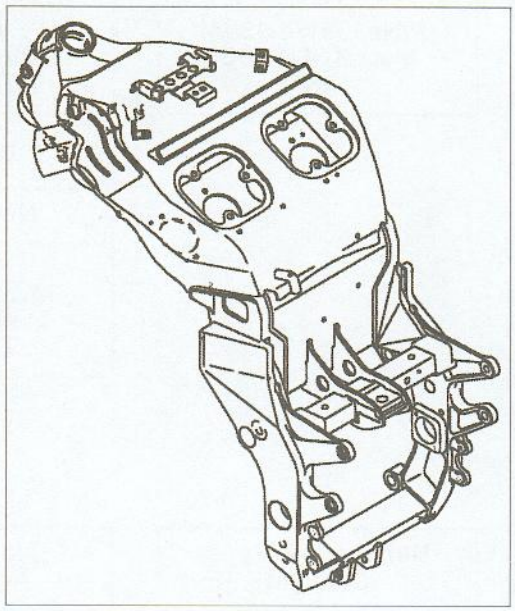
Technical Information — Monocoque Frame

Why a monocoque? Like all breakthrough innovations, the choice appears quite obvious after the fact. When large-section aluminium spars are wrapped around an already wide, large-displacement in-line Four engine, the resulting package must of necessity be wide. The ZX-12R's all-aluminium box-section monocoque chassis eliminates these perimeter spars in favor of a large box section running over the top of the engine.

This frame design surpasses the levels of chassis stiffness and strength associated with conventional aluminium twin-beam frames, but with considerably less breadth. Without the twin beams or other frame elements running around the side of the engine, the fairing can be much narrower, resulting in a much slimmer overall package and significantly better aerodynamics. Further, in a radical departure, the hollow structure also doubles as an airbox for the Ram Air system, eliminating the need for a space-consuming, conventional airbox.

And ultimately, it is the synergy of combining a compact, massively powerful engine with this super stiff and slim chassis structure that explains much of the ZX-12R's superlative high-speed performance.

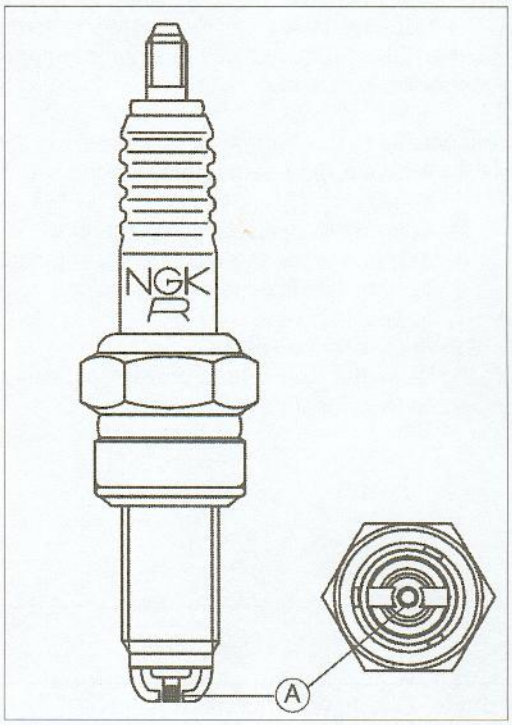
- All-new frame-integrated Ram Air system adds considerable horse-power in the higher speed ranges.
- Monocoque frame allows for the use of perfectly straight, highly efficient intake ports.
- Using the frame backbone as an airbox saves space and creates a very efficient airbox.
- Battery mounts inside the frame and the battery cover is a structural element.
- Revolutionary new all-aluminum monocoque frame for high rigidity and lightweight.
- Huge box section and heat-freated cast steering head/swingarm pivot areas realize an extremely stiff structure and contribute to the ZX-12R's superb high-speed stability and nimble, super sport handling performance.
- By eliminating the dual large-section beams of conventional aluminum frames, this frame design makes possible a much narrower and more compact overall package and greatly improves aerodynamics.



Technical Information — Spark Plug

ZX1200-A1 is equipped with the Kawasaki recommended spark plug (NGK CR9EKPA). By using the Kawasaki recommended spark plug, the idling stability, the fuel consumption improvement, and the maintenance free spark plug is planed.

This spark plug is calculated 3 or 4 times as durable as the usual one (NGK CR9EK).



Feature:

1. This spark plug is more superior to the usual one with the ignition for the ignition point protruding.
2. Further, this spark plug is superior to the usual one with the endurance for the Pt alloy [A] covering around the center electrode and for the opposed area improvement of the side electrodes.

Specification:

1. Standard Spark Plug CR9EKPA, two side electrodes, M10 threads
2. Hotter Spark Plug CR8EKPA, two side electrodes, M10 threads

CAUTION
Use only the recommender spark plug. Do not use other spark plug, even though it may fit, because it could cause the engine failure of the idling stability, etc.

Torque and Locking Agent

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

Letters used in the "Remarks" column mean:

L: Apply a non-permanent locking agent to the threads.
M: Apply molybdenum disulfide grease.
O: Apply oil to the threads and seating surface.
S: Tighten the fasteners following the specified sequwnce.
SS: Apply silicone sealant.
St: Stake the fasteners to prevent loosening.
R: Replacement parts

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
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

Fastener	Torque			Remarks
	N·m	kg·m	ft·lb	
Digital Fuel Injection System:				
Fuel Level Sensor Bolts	6.9	0.7	61 in·lb	
Fuel Pump Bolts	6.9	0.7	61 in·lb	S, L
Fuel Hose Clamp Bolts	1.5	0.15	13 in·lb	
Fuel Relief Valve	20	2.0	14	
Inlet Air Pressure Sensor Bolt	12	1.2	106 in·lb	
Inlet Air Pressure Sensor Bracket Nut	12	1.2	106 in·lb	
Atmospheric Pressure Sensor Bolts	12	1.2	106 in·lb	
Gear Position Switch Screws	4	0.4	35 in·lb	L
Crankshaft Sensor Bolts	6	0.6	53 in·lb	
Cam Sensor Bolt	12	1.2	106 in·lb	
Cam Sensor Rotor Bolt	12	1.2	106 in·lb	L
Cooling System:				
Coolant Hose Clamp Screws	2.0	0.20	17 in·lb	
Coolant Fitting Nozzles	12	1.2	106 in·lb	
Coolant Drain Plug (Water Pump)	12	1.2	106 in·lb	
Coolant Drain Plug (Cylinder)	10	1.0	87 in·lb	
Radiator Fan Switch	18	1.8	13	
Water Temperature Sensor	25	2.5	18	SS
Impeller Bolt	10	1.0	87 in·lb	
Water Pump Cover Bolts	12	1.2	106 in·lb	
Coolant Pipe Bolt	12	1.2	106 in·lb	
Thermostat Housing Cover Bolts	8	0.8	71 in·lb	
Fitting Bolts	12	1.2	106 in·lb	
Engine Top End:				
Spark Plugs	13	1.3	115 in·lb	
Air Suction Valve Cover Bolts	12.5	1.3	111 in·lb	
Baffle Plate Bolts	10.5	1.1	93 in·lb	
Cylinder Head Cover Bolts	10	1.0	87 in·lb	
Crankshaft Sensor Cover Bolts	15	1.5	11	L

Torque and Locking Agent

Fastener		Torque			Remarks
		N·m	kg·m	ft·lb	
Camshaft Chain Tensioner Mounting Bolts		12	1.2	106 in·lb	L
Camshaft Cap Bolts		12	1.2	106 in·lb	
Upper Camshaft Chain Guide Bolts		12	1.2	106 in·lb	
Front Camshaft Chain Guide Bolt (Upper)		25	2.5	18	
Front Camshaft Chain Guide Bolt (Lower)		12	1.2	106 in·lb	
Rear Camshaft Chain Guide Bolt		25	2.5	18	
Cam Sensor Bolt		12	1.2	106 in·lb	
Cam Sensor Rotor Bolt		12	1.2	106 in·lb	L
Cylinder Head Bolts:	M11 First Tighten	23	2.3	17	S, O (Washer)
	M11 Final Tighten	59	6.0	43	S, O (Washer)
	M7	20	2.0	15	S
Cylinder Head Jacket Plugs		22	2.2	16	L
Throttle Valve Holder Bolts		12	1.2	106 in·lb	
Muffler Body Connection Nuts		34	3.5	25	
Exhaust Pipe Holder Studs		–	–	–	(Stopped)
Clutch:					
Clutch Cover Bolts		15	1.5	11	L (2)
Clutch Cover Damper Plate Bolts		7	0.7	62 in·lb	L
Clutch Spring Bolts		8.8	0.9	78 in·lb	
Clutch Hub Nut		135	14	100	R
Engine Lubrication System:					
Oil Level Gauge Bolts		12	1.2	106 in·lb	
Oil Filler Plug		1.0 or Hand-Tight	0.10 or Hand-Tight	9 in·lb or Hnad-Tight	
Engine Drain Plug		20	2.0	14.5	
Oil Filter (Cartridge Type)		27	2.7	19.5	R, O
Oil Cooler Passage Bolt		78	7.8	57	O
Oil Cooler Mounting Bolts		25	2.5	18	
Oil Pan Bolts		15	1.5	11	
Oil Pipe Holder Bolts		12	1.2	106 in·lb	L
Oil Pressure Relief Valve		15	1.5	11	L
Oil Pressure Switch		15	1.5	11	SS
Oil Pressure Switch Terminal Screw		1.5	0.15	13 in·lb	
Impeller Bolt		10	1.0	87 in·lb	
Engine Removal/Installation:					
Engine Mounting Bolts and Nuts	ϕ12	59	6.0	43	
	ϕ10	44	4.5	33	
Engine Mounting Bracket Bolts	ϕ8	25	2.5	18	
Adjusting Collars		25	2.5	18	
Cranckshaft/Transmission:					
Breather Plate Bolts		10	1.0	87 in·lb	L
Breather Tube Bracket Bolts		12	1.2	106 in·lb	
Crankcase Bolts	ϕ10	45	4.5	33	M, S
	ϕ7	20	2.0	14.5	S
Upper Crankcase Bolts	ϕ8 L85	28	2.8	21	S
Lower Crankcase Bolts	ϕ8 L99	23	2.3	17	S

Torque and Locking Agent

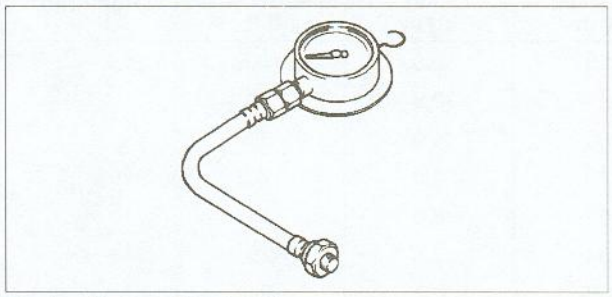
Fastener	Torque			Remarks
	N·m	kg·m	ft·lb	
Oil Passage Plugs (Each Side)	20	2.0	14.5	L
Connecting Rod Big End Nuts	in the text	←	←	←
Timing Rotor Bolt	39	4.0	29	
Starter Torquelimiter Cover Bolts	12	1.2	106 in·lb	L
Oil Pressure Switch	15	1.5	11	SS
Gear Positioning Lever Bolt	10	1.0	87 in·lb	L
Shift Shaft Return Spring Pin (Bolt)	30	3.1	22	L
Speed Sensor Bolt	12	1.2	106 in·lb	L
Shift Drum Bearing Holder Bolt	12	1.2	106 in·lb	L
Shift Drum Bearing Holder Screw	5.4	0.55	48 in·lb	L
Shift Drum Cam Bolt	12	1.2	106 in·lb	L
Balancer Shaft Clamp Lever Bolt	25	2.5	18	L
Balancer Shaft Clamp Bolt	12	1.2	106 in·lb	
Oil Pipe Holder Bolts	12	1.2	106 in·lb	L
Oil Nozzle	2.5	0.25	22 in·lb	St
Starter Clutch Shaft Bolt	25	2.5	18	L
Starter Clutch Shaft Plate Bolt	12	1.2	106 in·lb	L
Wheels/Tires:				
Front Axle Clamp Bolts	20	2.0	14.5	
Front Axle Nut	125	13	94	
Rear Axle Nut	125	13	94	
Air Valve Nut	12	1.2	106 in·lb	
Final Drive:				
Engine Sprocket Nut	127	13	94	O
Engine Sprocket Cover Bolts	12	1.2	106 in·lb	
Rear Sprocket Nuts	59	6.0	43	
Rear Sprocket Studs	–	–	–	L
Brakes:				
Bleed Valves	7.8	0.80	69 in·lb	
Brake Hose Banjo Bolts	25	2.5	18	
Brake Lever Pivot Bolt	1.0	0.10	9 in·lb	
Brake Lever Pivot Bolt Locknut	5.9	0.60	52 in·lb	
Front Reservoir Cap Screws	1.5	0.15	13 in·lb	
Front Brake Light Switch Screws	1.2	0.10	9 in·lb	
Front Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	S
Front Brake Pad Spring Bolts	2.9	0.30	26 in·lb	
Front Caliper Mounting Bolts	34	3.5	25	
Front Caliper Assembly Bolts	21	2.1	15	
Brake Disc Mounting Bolts	27	2.8	20	L
Rear Caliper Mounting Bolts	25	2.5	18	
Brake Pedal Mounting Bolt	8.8	0.90	78 in·lb	
Rear Master Cylinder Guard Bolts	25	2.5	18	
Rear Master Cylinder Push Rod Locknut	18	1.8	13	
Suspension:				
Front Fork Clamp Bolts (Upper)	20	2.0	14.5	
Front Fork Clamp Bolts (Lower)	20	2.0	14.5	

Torque and Locking Agent

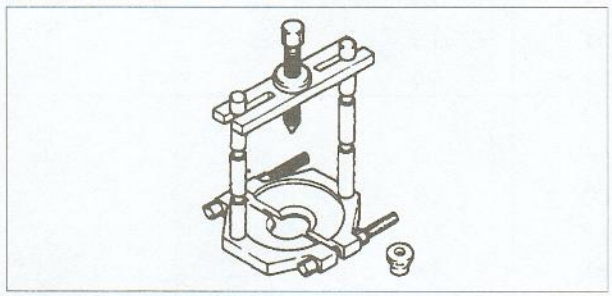
Fastener	Torque			Remarks
	N·m	kg·m	ft·lb	
Front Fork Top Plugs	23	2.3	16.5	
Piston Rod Nut	27	2.8	20	
Front Fork Bottom Allen Bolts	39	4.0	29	L
Front Axle Clamp Bolts	20	2.0	14.5	
Rear Shock Absorber Bracket Nut	59	6.0	43	
Rear Shock Absorber Nuts (Upper and Lower)	34	3.5	25	
Swingarm Pivot Shaft Nut	125	13	94	
Swingarm Pivot Shaft Lock Nut	98	10	72	
Uni-Track Rocker Arm Nut	34	3.5	25	
Tie-rod Nuts	59	6.0	43	
Steering:				
Steering Stem Head Nut	49	5.0	36	
Steering Stem Nut	20	2.0	14.5	
Steering Stem Locknut	9.8	1.0	88 in·lb	
Handlebar Bolts	34	3.5	25	L
Handlebar Weight Bolts	–	–	–	L
Handlebar Switch Housing Screws	3.4	0.35	30 in·lb	
Frame:				
Rear Frame Bolts and Nuts	44	4.5	33	
Footpeg Holder Bolts	25	2.5	18	
Rear Footpeg Bracket Bolts	34	3.5	25	
Side Stand Bracket Bolts	49	5.0	36	
Side Stand Mounting Bolt and Nut	44	4.5	33	
Side Stand Switch Bolt	8.8	0.9	77 in·lb	L
Electrical System:				
Spark Plugs	13	1.3	115 in·lb	
Alternator Rotor Bolt	110	11	80	
Stator Coil Bolts	22	2.2	16	L
Alternator Wire Holding Plate Bolts	8.6	0.88	76 in·lb	L
Engine Gound Wire Terminal Bolt	10	1.0	87 in·lb	
Alternator Cover Bolts	15	1.5	11	
Crankshaft Sensor Cover Bolts	15	1.5	11	L
Crankshaft Sensor Bolts	6	0.6	53 in·lb	
Timing Rotor Bolt	39	4.0	29	
Cam Sensor Bolt	12	1.2	106 in·lb	
Starter Motor Mounting Bolts	12	1.2	106 in·lb	
Handlebar Switch Housing Screws	3.4	0.35	30 in·lb	
Radiator Fan Switch	18	1.8	13	
Water Temperature Sensor	25	2.5	18	SS
Oil Pressure Switch	15	1.5	11	SS
Oil Pressure Switch Terminal Bolt	1.5	0.15	13 in·lb	
Gear Position Switch Screws	4	0.4	35 in·lb	L
Starter Lockout Switch Screws	1.0	0.10	9 in·lb	
Tail/Brake Light Assy Mounting Nuts	5.9	0.6	52 in·lb	

Special Tools and Sealant

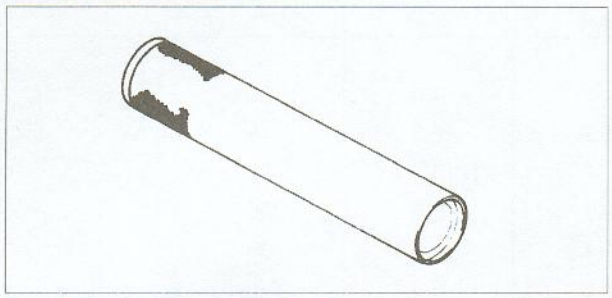
Oil Pressure Gauge, 5 kg/cm^2 : 57001–125



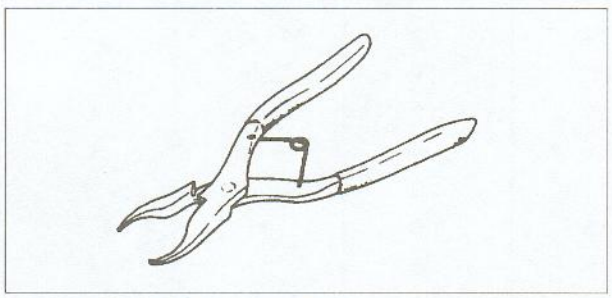
Bearing Puller : 57001–135



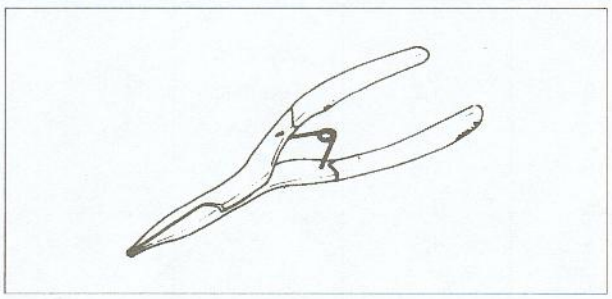
Steering Stem Bearing Driver : 57001–137



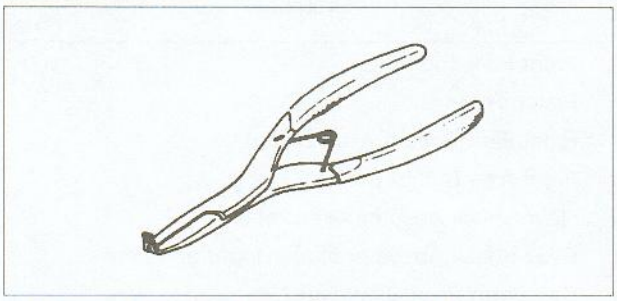
Inside Circlip Pliers : 57001–143



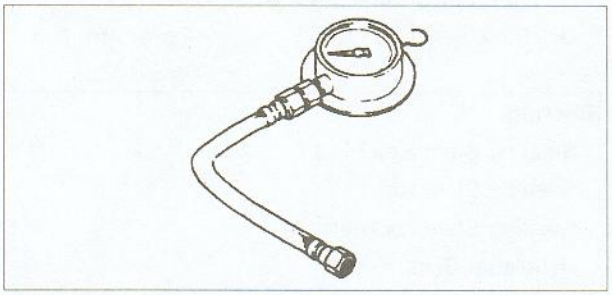
Outside Circlip Pliers : 57001–144



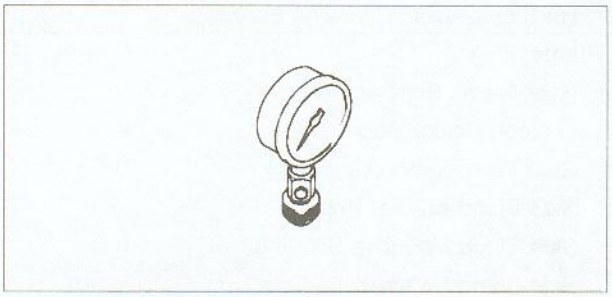
Circlip Pliers: 57001–154



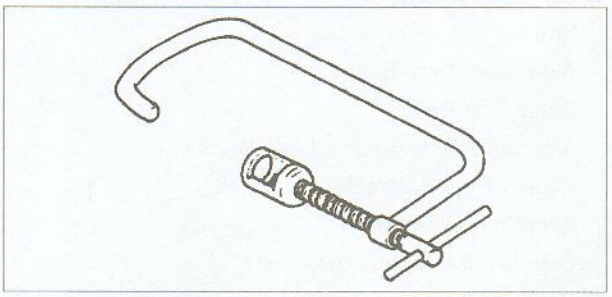
Oil Pressure Gauge, 10 kg/cm^2 : 57001–164



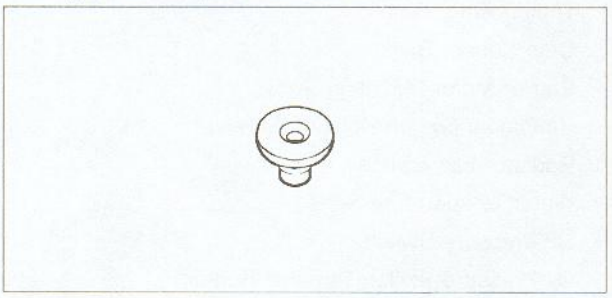
Compression Gauge : 57001–221



Valve Spring Compressor Assembly : 57001–241

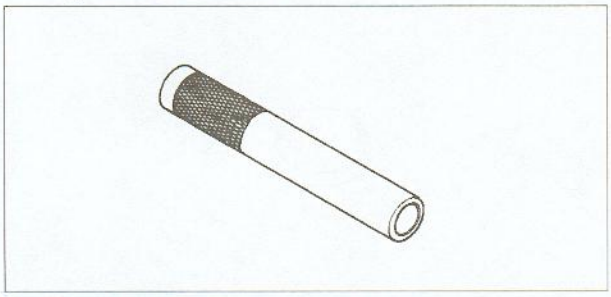


Bearing Puller Adapter : 57001–317

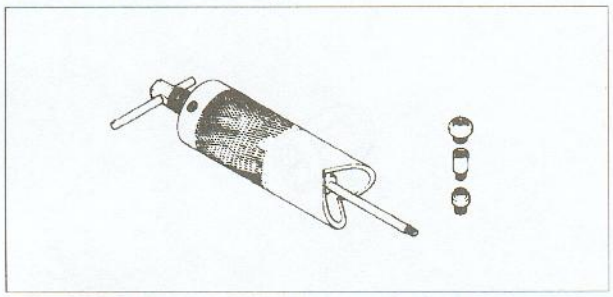


Special Tools and Sealant

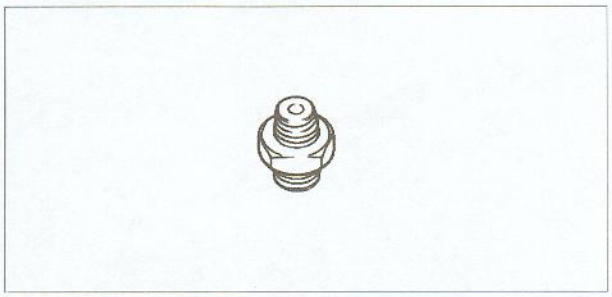
Bearing Driver : 57001–382



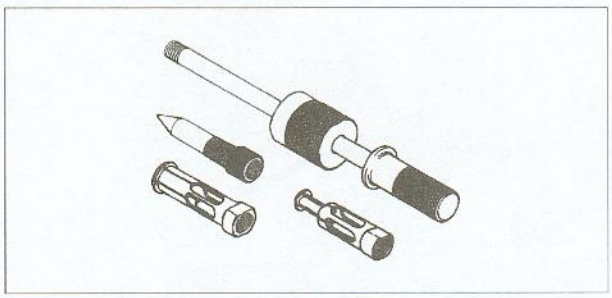
Piston Pin Puller Assembly : 57001–910



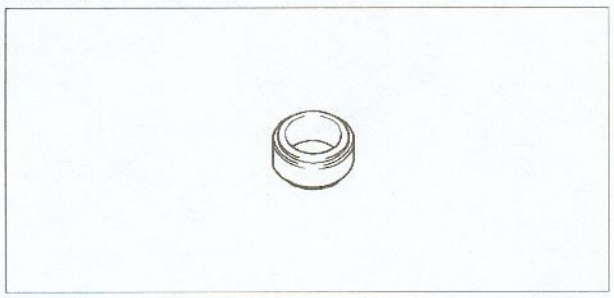
Oil Pressure Gauge Adapter, PT 1/8 : 57001–1033



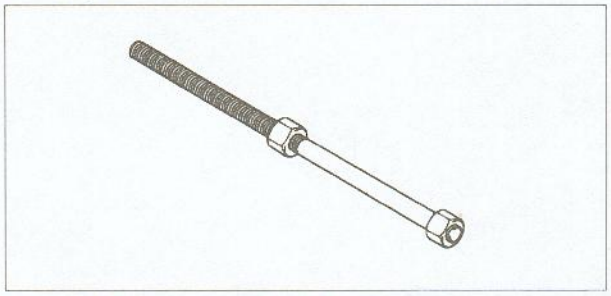
Oil Seal & Bearing Remover : 57001–1058



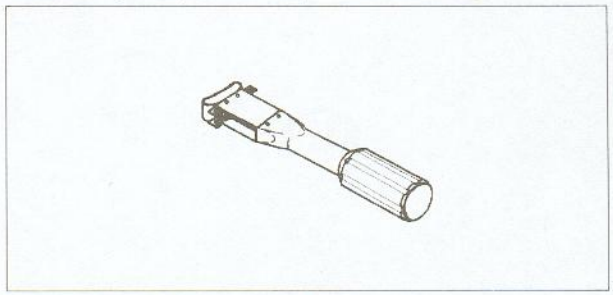
Steering Stem Bearing Driver Adapter : 57001–1074



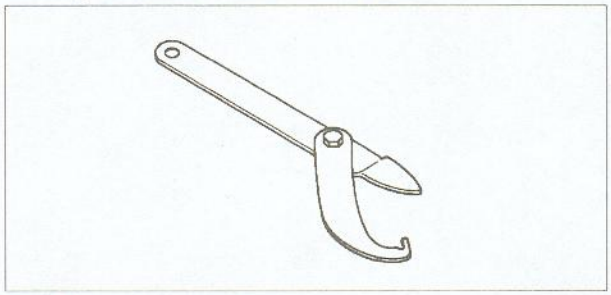
Head Pipe Outer Race Press Shaft : 57001–1075



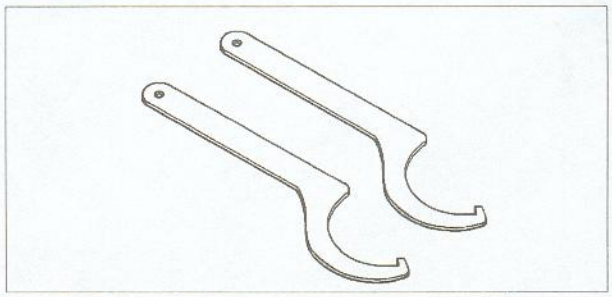
Piston Ring Compressor Grip : 57001–1095



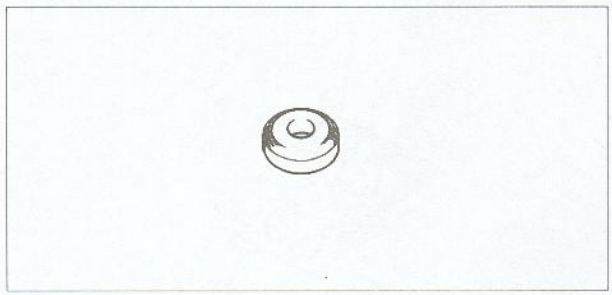
Steering Stem Nut Wrench : 57001–1100



Hook Wrench : 57001–1101

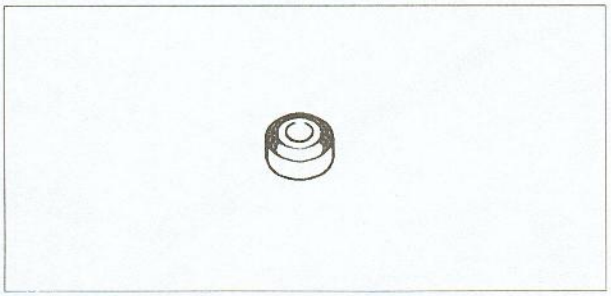


Valve Seat Cutter, 45° – φ35 : 57001–1116

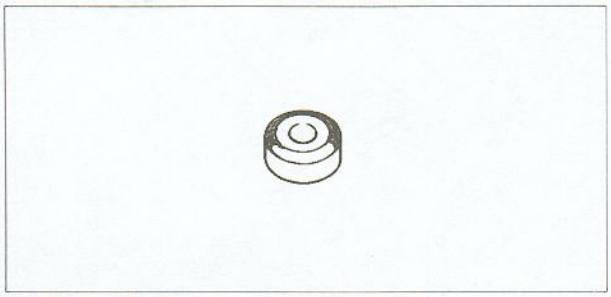


Special Tools and Sealant

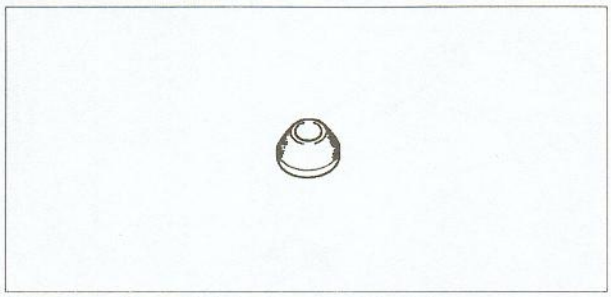
Valve Seat Cutter, 30° – φ30 : 57001–1120



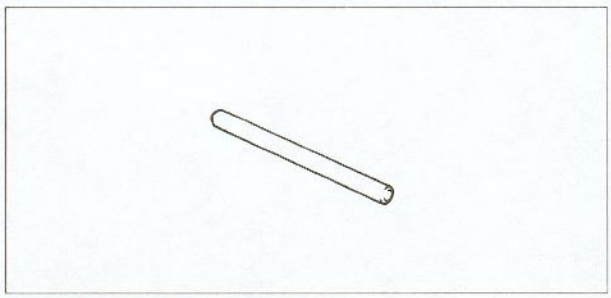
Valve Seat Cutter, 32° – φ35 : 57001–1121



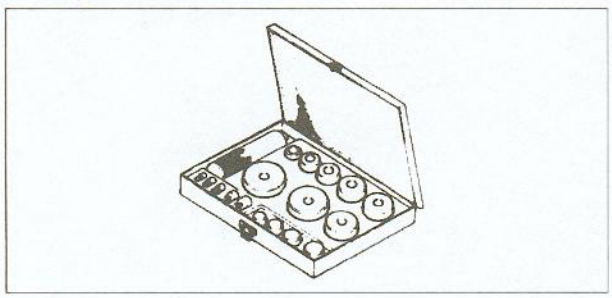
Valve Seat Cutter, 60° – φ30 : 57001–1123



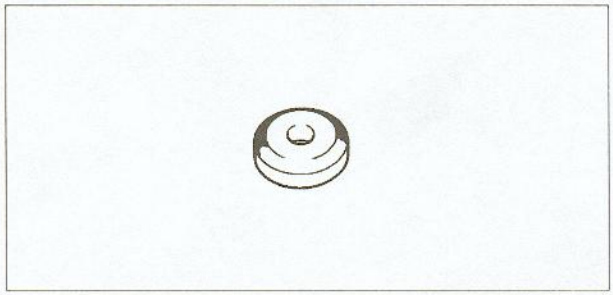
Valve Seat Cutter Holder Bar : 57001–1128



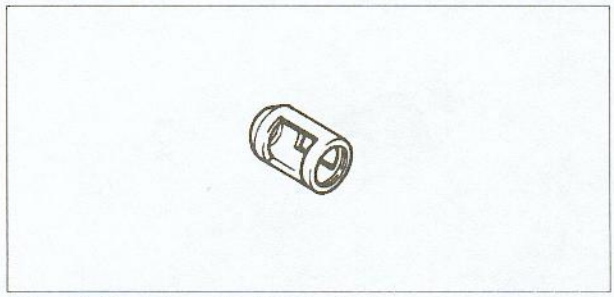
Bearing Driver Set : 57001–1129



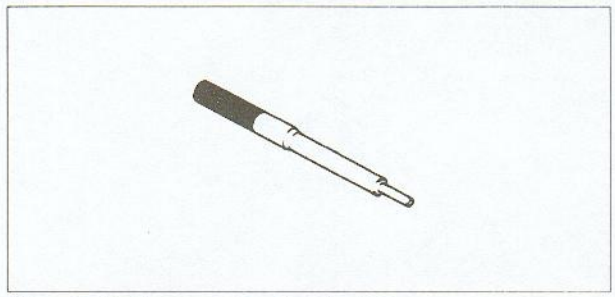
Valve Seat Cutter, 45° – φ30 : 57001–1187



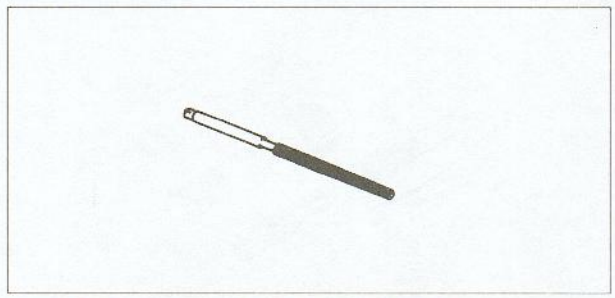
Valve Spring Compressor Adapter, φ22 : 57001–1202



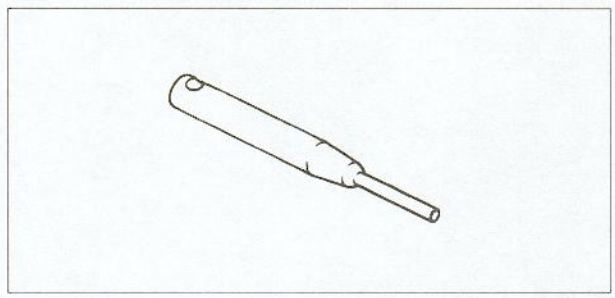
Valve Guide Arbor, φ5 : 57001–1203



Valve Guide Reamer, φ5 : 57001–1204

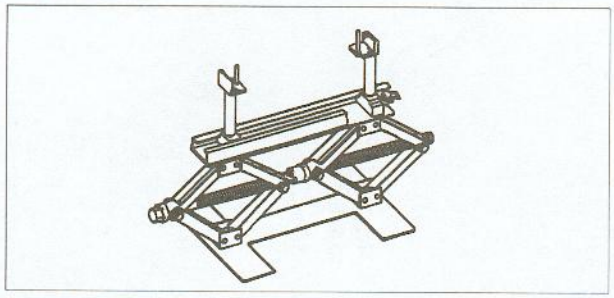


Valve Seat Cutter Holder, φ5 : 57001–1208

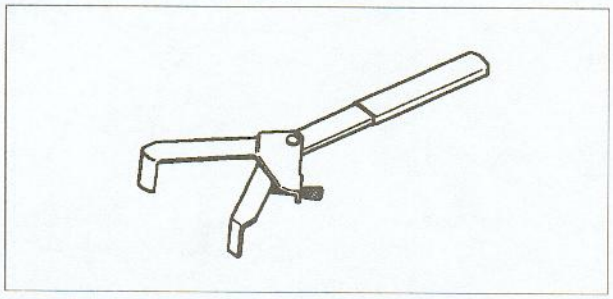


Special Tools and Sealant

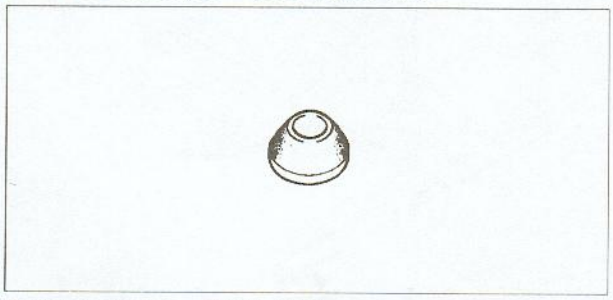
Jack : 57001–1238



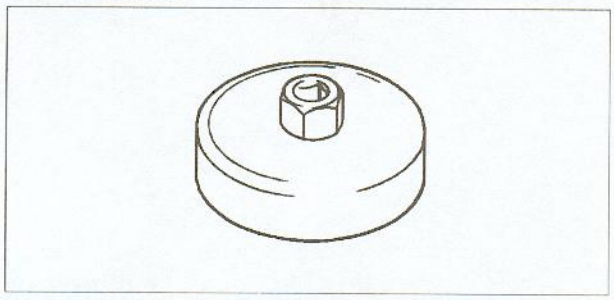
Clutch Holder : 57001–1243



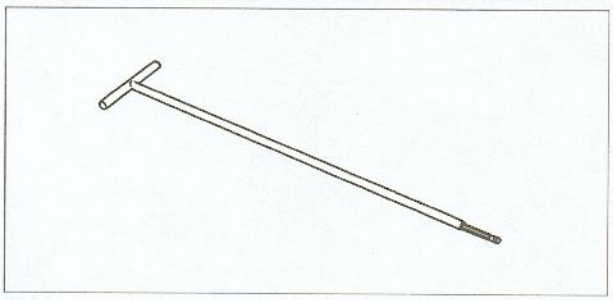
Valve Seat Cutter, 55° – φ35 : 57001–1247



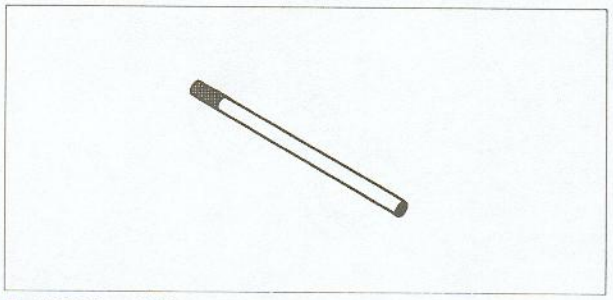
Oil Filter Wrench : 57001–1249



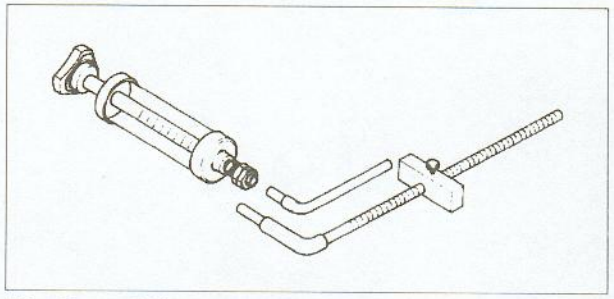
Carburetor Drain Plug Wrench, Hex 3 : 57001–1269



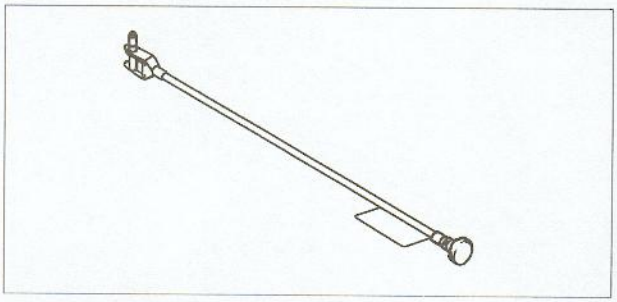
Fork Piston Rod Puller, M12 x 1.25 : 57001–1289



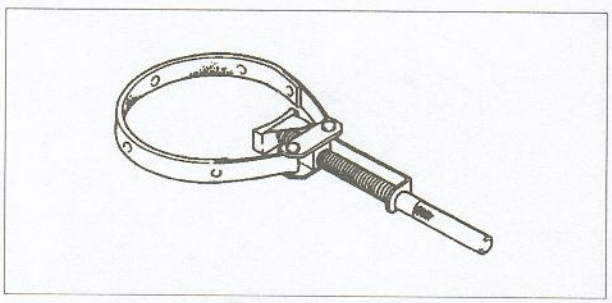
Fork Oil Level Gauge : 57001–1290



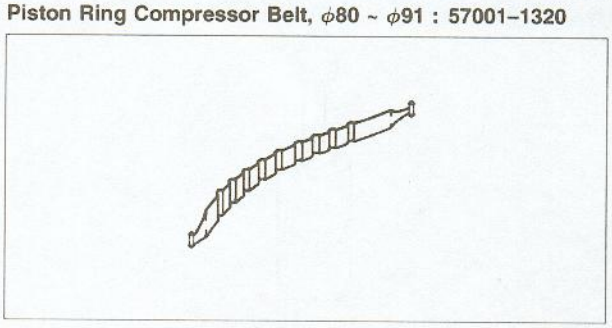
Pilot Screw Adjuster, C: 57001–1292



Flywheel Holder : 57001–1313

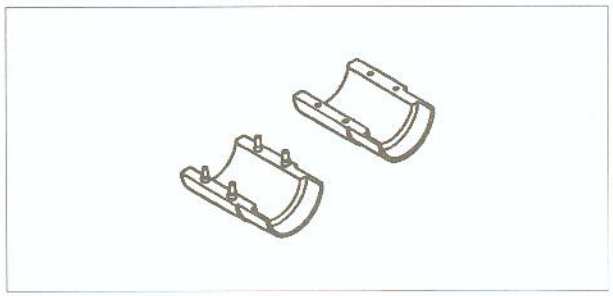


Piston Ring Compressor Belt, φ80 ~ φ91 : 57001–1320

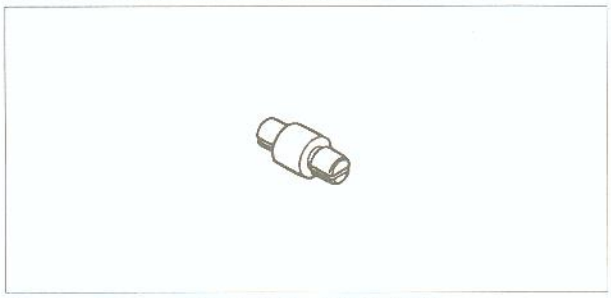


Special Tools and Sealant

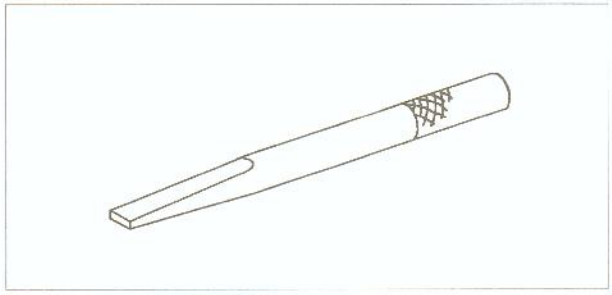
Fork Oil Seal Driver, φ43 : 57001–1340



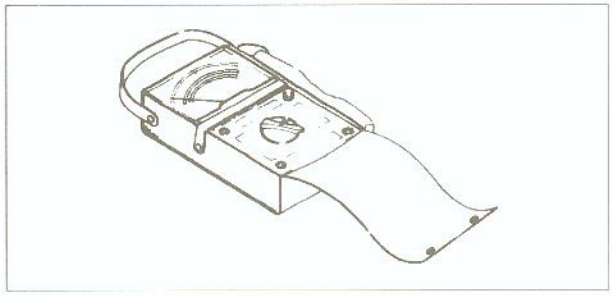
Bearing Remover Head, φ25 x φ28 : 57001–1346



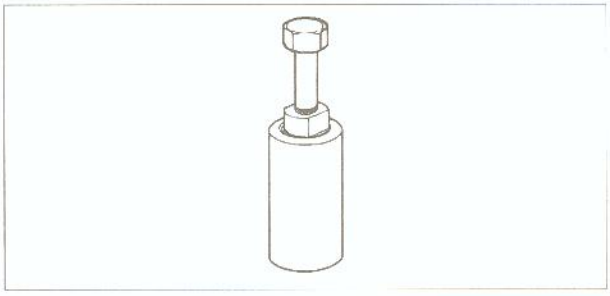
Bearing Remover Shaft, φ13 : 57001–1377



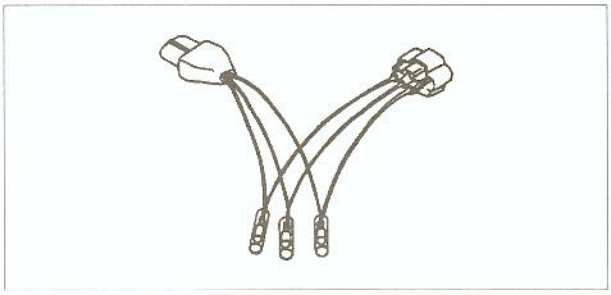
Hand Tester : 57001–1394



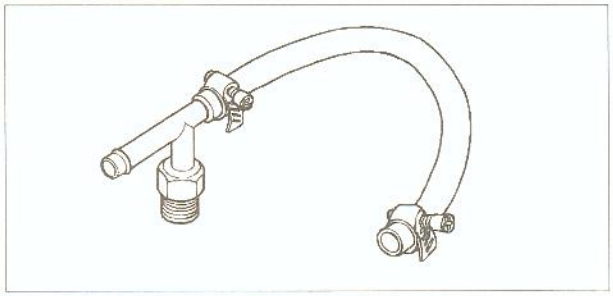
Flywheel Puller Assembly : 57001–1405



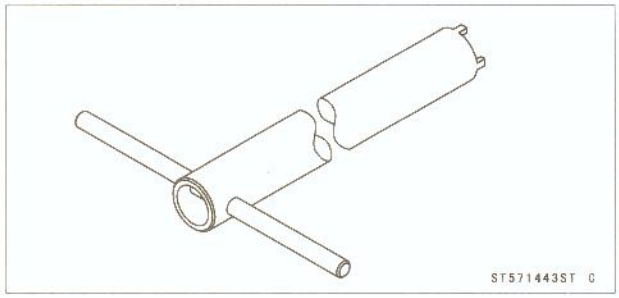
Throttle Sensor Setting Adepter #2 : 57001–1408



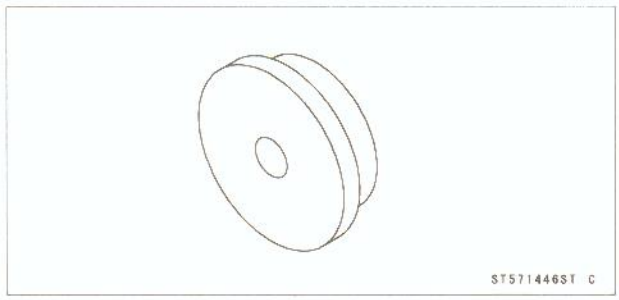
Fuel Pressure Gauge Adapter : 57001–1417



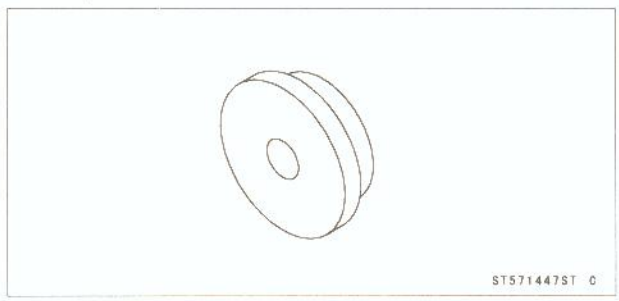
Fork Cylinder Holder: 57001–1443



Head Pipe Outer Race Driver: 57001–1446

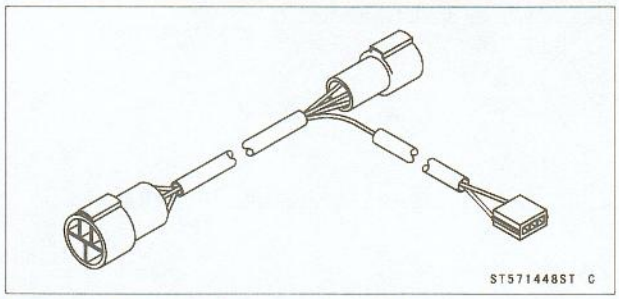


Head Pipe Outer Race Driver: 57001–1447

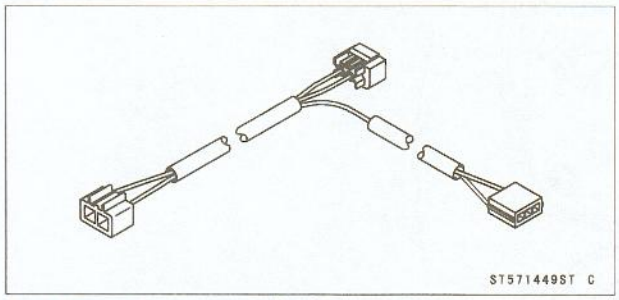


Special Tools and Sealant

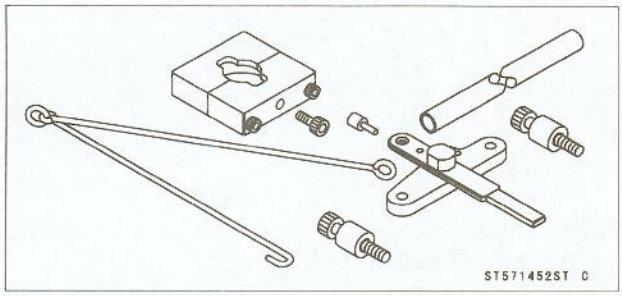
Lead Wire – Voltage Regulator Adapter: 57001–1448



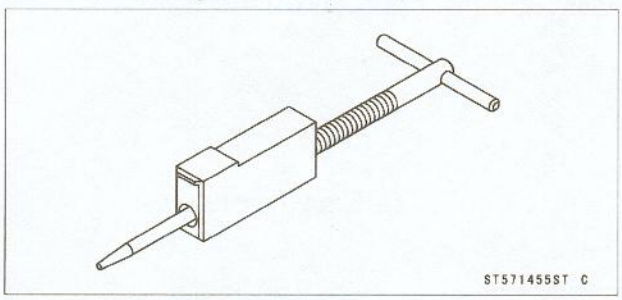
Lead Wire – Voltage Adapter: 57001–1449



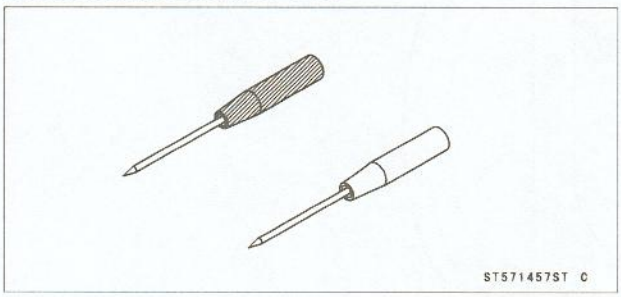
Fork Spring Compressor Set: 57001–1452



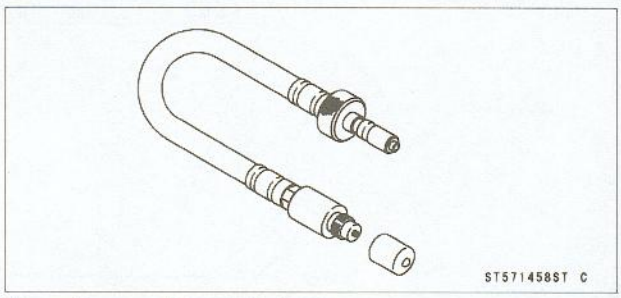
Clutch Gear Setting Screw: 57001–1455



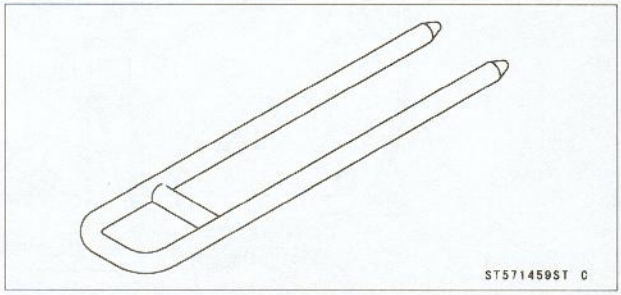
Needle Adapter Set: 57001–1457



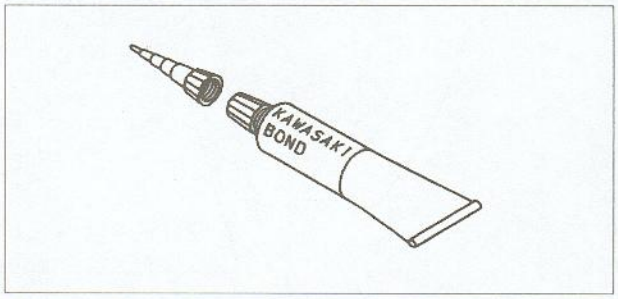
Compression Gauge Adapter: 57001–1458



Piston Base, ϕ1.0: 57001–1459



Kawasaki Bond (Silicone Sealant): 56019–120



Kawasaki Bond (Silicone Sealant): 92104–1062