

## MODEL APPLICATION

| Year | Model     | Beginning Frame No.                       |
|------|-----------|---|
| 2002 | KLX110-A1 | JKALXSA1□2A000001 or<br>JKALX110AAA000001 |
| 2003 | KLX110-A2 | JKALXSA1□3DA08133 or<br>JKALX110AADA08133 |
| 2004 | KLX110-A3 | JKALXSA1□4DA14318                         |
| 2005 | KLX110-A4 | JKALXSA1□5DA21001 or<br>JKALX110AADA23033 |
| 2006 | KLX110A6F | JKALXSA1□6DA31790 or<br>JKALX110AADA33290 |
| 2007 | KLX110A7F | JKALXSA1□7DA44951 or<br>JKALX110AADA49621 |
| 2008 | KLX110A8F | JKALXSA1□8DA56101 or<br>JKALX110AADA56151 |
| 2009 | KLX110A9F | JKALXSA1□9DA66856 or<br>JKALX110AADA68001 |

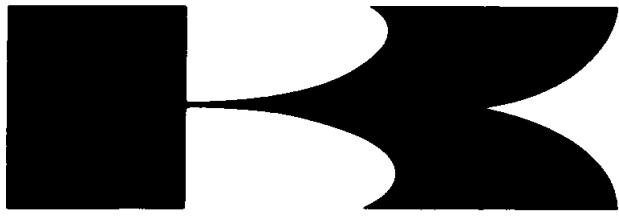
□: This digit in the frame number changes from one machine to another.



**KAWASAKI HEAVY INDUSTRIES, LTD.**  
Consumer Products & Machinery Company

**Part No.99924-1283-08**

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**Kawasaki**

**KLX110**



# **Motorcycle Service Manual**

# Quick Reference Guide

|                                    |           |
|------------------------------------|-----------|
| <b>General Information</b>         | <b>1</b>  |
| <b>Periodic Maintenance</b>        | <b>2</b>  |
| <b>Fuel System</b>                 | <b>3</b>  |
| <b>Engine Top End</b>              | <b>4</b>  |
| <b>Clutch</b>                      | <b>5</b>  |
| <b>Engine Lubrication System</b>   | <b>6</b>  |
| <b>Engine Removal/Installation</b> | <b>7</b>  |
| <b>Crankshaft / Transmission</b>   | <b>8</b>  |
| <b>Wheels/Tires</b>                | <b>9</b>  |
| <b>Final Drive</b>                 | <b>10</b> |
| <b>Brakes</b>                      | <b>11</b> |
| <b>Suspension</b>                  | <b>12</b> |
| <b>Steering</b>                    | <b>13</b> |
| <b>Electrical System</b>           | <b>14</b> |
| <b>Troubleshooting</b>             | <b>15</b> |

## 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.**

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

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## How to Use This Manual

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In this manual, the product is divided into its major systems and these systems make up the manual's chapters. The Quick Reference

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

For example, if you want ignition coil information, use the Quick Reference Guide to locate the Electrical System chapter. Then, use the Table of Contents on the first page of the chapter to find the Ignition Coil section.

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

### **WARNING**

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

### **CAUTION**

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

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

### **NOTE**

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

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

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

# General Information

## Table of Contents

|                                   |      |
|-----------------------------------|------|
| Before Servicing .....            | 1-2  |
| Model Identification.....         | 1-5  |
| General Specifications.....       | 1-6  |
| Torque and Locking Agent.....     | 1-8  |
| Special Tools and Sealants .....  | 1-11 |
| Cable, Wire and Hose Routing..... | 1-17 |
| Unit Conversion Table .....       | 1-22 |

## 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 will 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

Disconnect the ground (–) wire from the battery before performing any disassembly operations on the motorcycle. This prevents the engine from accidentally turning over while work is being carried out, sparks from being generated while disconnecting the cables from electrical parts, as well as damage to the electrical parts themselves. For reinstallation, first connect the positive cable to the positive (+) terminal of the battery

(3) Installation, Assembly

Generally, installation or assembly is the reverse of removal or disassembly. However, if installation or assembly sequence is given in this Service Manual, follow it. 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 whenever possible.

(4) Tightening Sequence

When installing bolts, nuts, or screws for which a tightening sequence is given in this Service Manual, make sure to follow the sequence. When installing a part with several bolts, nuts, or screws, start them all in their holes and tighten them to a snug fit, thus ensuring that the part has been installed in its proper location. Then, tighten them to the specified torque in the tightening sequence and method indicated. If tightening sequence instructions are not given, tighten them evenly in a cross pattern. Conversely, to remove a part, first loosen all the bolts, nuts, or screws that are retaining the part a 1/4-turn before removing them.

(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 removing screws held by non-permanent locking agent) in order to avoid damaging the screw heads.

(7) Edges

Watch for sharp edges, as they could cause injury through careless handling, especially during major engine disassembly and assembly. Use a clean 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

Replace a gasket or an O-ring with a new part when disassembling. Remove any foreign matter from the mating surface of the gasket or O-ring to ensure a perfectly smooth surface to prevent oil or compression leaks.

(10) Liquid Gasket, Locking Agent

Clean and prepare surfaces where liquid gasket or non-permanent locking agent will be used. Apply them sparingly. Excessive amount may block engine oil passages and cause serious damage.

**Before Servicing**

(11) Press

When using a press or driver to install a part such as a wheel bearing, apply a small amount of oil to the area where the two parts come in contact to ensure a smooth fit.

(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. Install bearings with the manufacturer and size marks facing out, applying pressure evenly with a suitable driver. Apply force only to the end of the race that contacts the press fit portion, and press it evenly over the base component.

(13) Oil Seal and Grease Seal

Replace any oil or grease seals that were removed with new ones, as removal generally damages seals. Oil or grease seals should be pressed into place using a suitable driver, applying a force uniformly to the end of seal until the face of the seal is even with the end of the hole, unless instructed otherwise. When pressing in an oil or grease seal which has manufacturer's marks, press it in with the marks facing out.

(14) Circlip, Retaining Ring, and Cotter Pin

When installing circlips and retaining rings, take care to compress or expand them only enough to install them and no more. Install the circlip with its chamfered side facing load side as well.

Replace any circlips, retaining rings, and cotter pins that were removed with new ones, as removal weakens and deforms them. If old ones are reused, they could become detached while the motorcycle is driven, leading to a major problem.

(15) Lubrication

Engine wear is generally at its maximum while the engine is warming up and before all the sliding surfaces have an adequate lubricative film. During assembly, make sure to apply oil to any sliding surface or bearing that has been cleaned. Old grease or dirty oil could have lost its lubricative quality and may contain foreign particles that act as abrasives; therefore, make sure to wipe it off and apply fresh grease or oil. 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.

(16) Direction of Engine Rotation

To rotate the crankshaft manually, make sure to do so in the direction of positive rotation. Positive rotation is counterclockwise as viewed from the left side of the engine. To carry out proper adjustment, it is furthermore necessary to rotate the engine in the direction of positive rotation as well.

(17) Replacement Parts

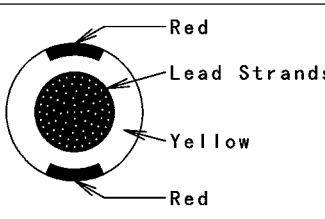

When there is a replacement instruction, replace these parts with new ones every time they are removed.

Replacement parts will be damaged or lose their original function once they are removed. Therefore, always replace these parts with new ones every time they are removed. Although the previously mentioned gasket, O-ring, ball bearing, needle bearing, grease seal, oil seal, circlip, and cotter pin have not been so designated in their respective text, they are replacement parts.

(18) Electrical Leads

All the electrical leads are either one-color or two-color. A two-color lead is identified first by the primary color and then the stripe color. For example, a yellow lead with thin red stripes is referred to as a "yellow/red" lead; it would be a "red/yellow" lead if the colors were reversed. Unless instructed otherwise, electrical leads must be connected to leads of the same color.

**Two-Color Electrical**

| Lead (cross-section)  | Color Indicated on the Lead                   | Color Indicated on the Wiring Diagram   |
|---|---|---|
|  | <p style="text-align: center;">Yellow/Red</p> |  |



## 1-4 GENERAL INFORMATION

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### Before Servicing

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#### (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.

Model Identification

KLX110-A1 Left Side View



KLX110-A1 Right Side View



# 1-6 GENERAL INFORMATION

## General Specifications

| Items  | KLX110-A1 ~  |
|--|--|
| <b>Dimensions</b><br>Overall Length<br>Overall Width<br>Overall Height<br>Wheelbase<br>Road Clearance<br>Seat Height<br>Dry Mass<br>KLX110-A1 ~ A8F<br>Curb Mass:<br>KLX110A9F ~<br>Front<br>Rear<br>Fuel Tank Capacity  | 1 555 mm (61.2 in.)<br>660 mm (26.0 in.)<br>955 mm (37.6 in.)<br>1 065 mm (41.9 in.)<br>190 mm (7.5 in.)<br>650 mm (25.6 in.)<br>64 kg (628 N, 141 lb)<br>64 kg (628 N, 141 lb)<br>31 kg (304 N, 68 lb)<br>37 kg (363 N, 82 lb)<br>3.8 L (1.0 US gal)  |
| <b>Performance</b><br>Minimum Turning Radius   | 1.6 m (5.2 ft)   |
| <b>Engine</b><br>Type<br>Cooling System<br>Bore and Stroke<br>Displacement<br>Compression Ratio<br>Carburetion System<br>Starting System<br>Ignition System<br>Ignition Timing<br>Spark Plug<br>Valve Timing:<br>Inlet:<br>Open<br>Close<br>Duration<br>Exhaust:<br>Open<br>Close<br>Duration<br>Lubrication System<br>Engine Oil:<br>Grade<br>Viscosity<br>Capacity | 4-stroke, SOHC, single cylinder<br>Air-cooled<br>53.0 × 50.6 mm (2.09 × 1.99 in.)<br>111 cm <sup>3</sup> (6.77 cu in.)<br>9.5 : 1<br>Carburetor, KEIHIN PB18<br>Kick<br>Magneto CDI<br>From 10° BTDC @1 300 r/min (rpm) to 31° BTDC @4 000 r/min (rpm)<br>NGK CR6HSA<br>0° BTDC<br>80° ABDC<br>260°<br>35° BBDC<br>45° ATDC<br>260°<br>Forced lubrication (wet sump)<br>API SE, SF or SG<br>API SH or SJ with JASO MA, MA1 or MA2 (KLX110-A1 ~ A6F)<br>API SH, SJ or SL with JASO MA, MA1 or MA2 (KLX110A7F ~)<br>SAE 10W-40<br>1.1 L (1.2 US qt): (when engine is completely dry) |

**General Specifications**

| Items                     | KLX110-A1 ~  |
|---------------------------|--|
| <b>Drive Train</b>        |  |
| Primary Reduction System: |  |
| Type                      | Gear, centrifugal  |
| Reduction Ratio           | 3.048 (64/21) (KLX110-A1)<br>3.409 (75/22) (KLX110-A2 ~)       |
| Clutch Type               | Centrifugal & wet, multi disc                                  |
| Transmission:             |  |
| Type                      | 3-speed, constant mesh, return shift                           |
| Gear Ratios:              |  |
| 1st                       | 3.273 (36/11) (KLX110-A1)<br>3.000 (36/12) (KLX110-A2 ~)       |
| 2nd                       | 1.938 (31/16)  |
| 3rd                       | 1.350 (27/20)  |
| Final Drive System:       |  |
| Type                      | Chain drive  |
| Reduction Ratio           | 2.642 (37/14) (KLX110-A1)<br>2.357 (33/14) (KLX110-A2 ~)       |
| Overall Drive Ratio       | 10.873 @Top gear (KLX110-A1)<br>10.848 @Top gear (KLX110-A2 ~) |
| <b>Frame</b>              |  |
| Type                      | Backbone   |
| Caster (Rake Angle)       | 25.5°  |
| Trail                     | 54 mm (2.1 in.)  |
| Front Tire:               |  |
| Type                      | C803   |
| Size                      | 2.50 - 14 4PR<br>2.50 - 14 M/C 4PR (KLX110-A2 ~)               |
| Rear Tire:                |  |
| Type                      | C803   |
| Size                      | 3.00 - 12 4PR<br>3.00 - 12 M/C 4PR (KLX110-A2 ~)               |
| Rim Size:                 |  |
| Front                     | 14 × 1.40  |
| Rear                      | 12 × 1.60  |
| Front Suspension:         |  |
| Type                      | Telescopic fork  |
| Wheel Travel              | 110 mm (4.3 in.)   |
| Rear Suspension:          |  |
| Type                      | Swingarm   |
| Wheel Travel              | 107 mm (4.2 in.)   |
| Brake Type:               |  |
| Front                     | Drum   |
| Rear                      | Drum   |

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

## 1-8 GENERAL INFORMATION

### Torque and Locking Agent

The following tables lists 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.

S: Tighten the fasteners following the specified sequence.

| Fastener                                | Torque |       |           | Remarks |
|---|--------|-------|-----------|---------|
|   | N·m    | kgf·m | ft·lb     |         |
| <b>Fuel System</b>                      |        |       |           |         |
| Fuel Tap Bolts (KLX110-A3 ~)            | 4.9    | 0.5   | 43 in·lb  |         |
| <b>Engine Top End</b>                   |        |       |           |         |
| Rocker Arm Shaft Stopper Screws         | 5.2    | 0.53  | 46 in·lb  |         |
| Valve Adjusting Screw Locknuts          | 8.8    | 0.9   | 78 in·lb  |         |
| Camshaft Sprocket Bolt                  | 12     | 1.2   | 104 in·lb | L       |
| Cylinder Head Nuts                      | 22     | 2.2   | 16        | S       |
| Cylinder Head Bolts                     | 12     | 1.2   | 104 in·lb | L,S     |
| Spark Plug                              | 13     | 1.3   | 113 in·lb |         |
| Chain Tensioner Mounting Bolts          | 5.2    | 0.53  | 46 in·lb  | L       |
| Tensioner Cap Bolt                      | 5.2    | 0.53  | 46 in·lb  |         |
| Camshaft Sprocket Cover Bolts           | 5.2    | 0.53  | 46 in·lb  |         |
| Camshaft Chain Guide Bolt               | 5.2    | 0.53  | 46 in·lb  |         |
| Camshaft Chain Holder Screws            | 5.2    | 0.53  | 46 in·lb  |         |
| Valve Adjusting Cap Bolts               | 5.2    | 0.53  | 46 in·lb  |         |
| Spark Arrester Mounting Bolts           | 8.8    | 0.9   | 78 in·lb  |         |
| <b>Clutch</b>                           |        |       |           |         |
| Clutch Cover Screws (KLX110-A1 ~ A7F)   | 5.2    | 0.53  | 46 in·lb  | S       |
| Clutch Cover Bolts (KLX110A8F ~)        | 8.8    | 0.9   | 78 in·lb  | S       |
| Clutch Cover Plate Screws               | 2.9    | 0.3   | 26 in·lb  |         |
| Clutch Hub Nut (Primary)                | 72     | 7.3   | 53        |         |
| Clutch Hub Nut (Secondary)              | 72     | 7.3   | 53        |         |
| Clutch Spring Bolts (KLX110-A1 ~ A2)    | 3.4    | 0.35  | 30 in·lb  |         |
| Clutch Spring Bolts (KLX110-A3 ~)       | 5.0    | 0.51  | 44 in·lb  |         |
| Clutch Adjusting Screw Locknut          | 19     | 1.9   | 14        |         |
| Shift Drum Position Plate Screw         | 5.2    | 0.53  | 46 in·lb  |         |
| Shift Drum Positioning Lever Pivot Bolt | 5.2    | 0.53  | 46 in·lb  | L       |
| Kick Guide Screw                        | 5.2    | 0.53  | 46 in·lb  |         |
| Return Spring Pin                       | 22     | 2.2   | 16        |         |
| <b>Engine Lubrication System</b>        |        |       |           |         |
| Oil Pipe Banjo Bolts                    | 15     | 1.5   | 11        |         |
| Oil Pipe Clamp Screw                    | 5.2    | 0.53  | 46 in·lb  |         |
| Oil Pump Mounting Screw                 | 5.2    | 0.53  | 46 in·lb  |         |
| Oil Filter Cap Bolts                    | 5.2    | 0.53  | 46 in·lb  |         |
| Engine Oil Drain Plug                   | 29     | 3.0   | 21        |         |
| <b>Engine Removal/Installation</b>      |        |       |           |         |
| Engine Mounting Nuts                    | 54     | 5.5   | 40        |         |
| Side Stand Mounting Nut                 | 23     | 2.3   | 17        |         |

## GENERAL INFORMATION 1-9

### Torque and Locking Agent

| Fastener                                 | Torque |       |          | Remarks |
|--|--------|-------|----------|---------|
|  | N·m    | kgf·m | ft·lb    |         |
| <b>Crankshaft/Transmission</b>           |        |       |          |         |
| Crankcase Screws                         | 5.2    | 0.53  | 46 in·lb | L(1) S  |
| Bearing Retainer Screw 5 mm              | 2.9    | 0.3   | 26 in·lb |         |
| Bearing Retainer Screw 6 mm              | 5.2    | 0.53  | 46 in·lb |         |
| Shift Return Spring Pin                  | 22     | 2.2   | 16       | L       |
| Shift Drum Allen Bolt                    | 5.2    | 0.53  | 46 in·lb | L       |
| Magneto Flywheel Nut 10 mm (KLX110-A1)   | 42     | 4.3   | 31       |         |
| Magneto Flywheel Nut 12 mm (KLX110-A2 ~) | 54     | 5.5   | 40       |         |
| Clutch Hub Nut                           | 72     | 7.3   | 53       |         |
| <b>Wheels/Tires</b>                      |        |       |          |         |
| Spoke Nipples                            | 1.2    | 0.12  | 10 in·lb |         |
| Front Axle Nut                           | 44     | 4.5   | 32       |         |
| Rear Axle Nut                            | 64     | 6.5   | 47       |         |
| Torque Link Nut                          | 25     | 2.5   | 18       |         |
| <b>Final Drive</b>                       |        |       |          |         |
| Swingarm Pivot Shaft Nut                 | 78     | 8.0   | 58       |         |
| Rear Sprocket Nuts                       | 34     | 3.5   | 25       |         |
| Rear Axle Nut                            | 64     | 6.5   | 47       |         |
| Torque Link Nut                          | 25     | 2.5   | 18       |         |
| <b>Brakes</b>                            |        |       |          |         |
| Front Axle Nut                           | 44     | 4.5   | 32       |         |
| Rear Axle Nut                            | 64     | 6.5   | 47       |         |
| Brake Pedal Bolt                         | 8.8    | 0.9   | 78 in·lb |         |
| Rear Cam Lever Mounting Bolt             | 7.0    | 0.7   | 60 in·lb |         |
| <b>Suspension</b>                        |        |       |          |         |
| Front Fork Clamp Bolts:                  |        |       |          |         |
| Upper                                    | 20     | 2.0   | 15       |         |
| Lower                                    | 29     | 3.0   | 22       |         |
| Front Fork Bottom Allen Bolts            | 20     | 2.0   | 15       |         |
| Torque Link Nuts:                        |        |       |          |         |
| Front                                    | 25     | 2.5   | 18       |         |
| Rear                                     | 25     | 2.5   | 18       |         |
| Swingarm Pivot Shaft Nut                 | 78     | 8.0   | 58       |         |
| Rear Shock Absorber Mounting Nuts:       |        |       |          |         |
| Upper                                    | 39     | 4.0   | 29       |         |
| Lower                                    | 39     | 4.0   | 29       |         |
| <b>Steering</b>                          |        |       |          |         |
| Front Fork Clamp Bolts:                  |        |       |          |         |
| Upper                                    | 20     | 2.0   | 15       |         |
| Lower                                    | 29     | 3.0   | 22       |         |
| Steering Stem Head Nut                   | 44     | 4.5   | 32       |         |
| Handlebar Holder Bolts                   | 25     | 2.5   | 18       |         |
| Steering Stem Locknut                    | 4.9    | 0.5   | 43 in·lb |         |

# 1-10 GENERAL INFORMATION

## Torque and Locking Agent

| Fastener                                 | Torque |       |           | Remarks |
|--|--------|-------|-----------|---------|
|  | N·m    | kgf·m | ft·lb     |         |
| <b>Electrical System</b>                 |        |       |           |         |
| Gear Position Switch Screw               | 2.9    | 0.3   | 26 in·lb  |         |
| Spark Plug                               | 13     | 1.3   | 113 in·lb |         |
| Magneto Flywheel Nut 10 mm (KLX110-A1)   | 42     | 4.3   | 31        |         |
| Magneto Flywheel Nut 12 mm (KLX110-A2 ~) | 54     | 5.5   | 40        |         |
| Exciter Coil Mounting Screws             | 5.2    | 0.53  | 46 in·lb  |         |
| Crankshaft Sensor Mounting Screw         | 2.9    | 0.3   | 26 in·lb  |         |
| Magneto Cover Screws (KLX110-A1 ~ A7F)   | 5.2    | 0.53  | 46 in·lb  | S       |
| Magneto Cover Bolts (KLX110A8F ~)        | 8.8    | 0.9   | 78 in·lb  | S       |
| Exciter Coil Plate Screw                 | 5.2    | 0.53  | 46 in·lb  |         |
| Crankshaft Sensor Plate Screw            | 5.2    | 0.53  | 46 in·lb  |         |
| Magneto Cover Damper                     | 2.9    | 0.3   | 26 in·lb  |         |

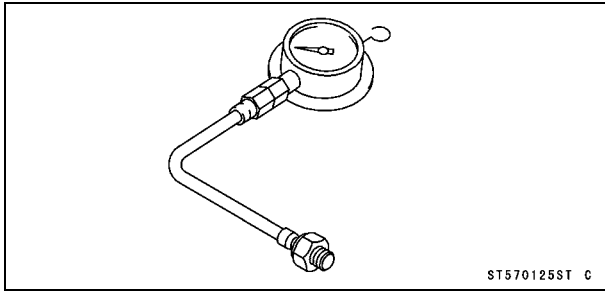
The table below, relating tightening torque to thread diameter, lists the basic torque for the bolts and nuts. Use this table for only the bolts and nuts which do not require a specific torque value. All of the values are for use with dry solvent-cleaned threads.

### Basic Torque for General Fasteners

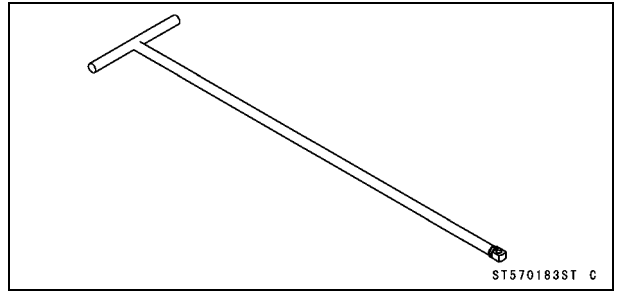
| Threads dia.<br>(mm) | Torque    |             |               |
|----------------------|-----------|-------------|---------------|
|                      | N·m       | kgf·m       | ft·lb         |
| 5                    | 3.4 ~ 4.9 | 0.35 ~ 0.50 | 30 ~ 43 in·lb |
| 6                    | 5.9 ~ 7.8 | 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     |

Special Tools and Sealants

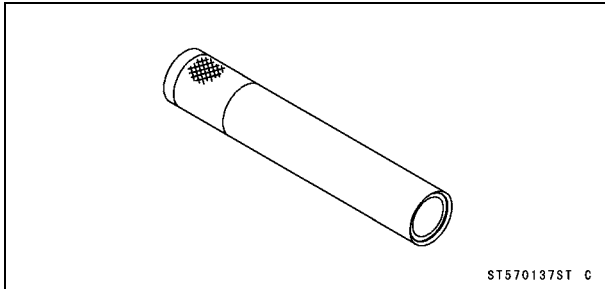
Oil Pressure Gauge, 5 kgf/cm<sup>2</sup>:  
57001-125



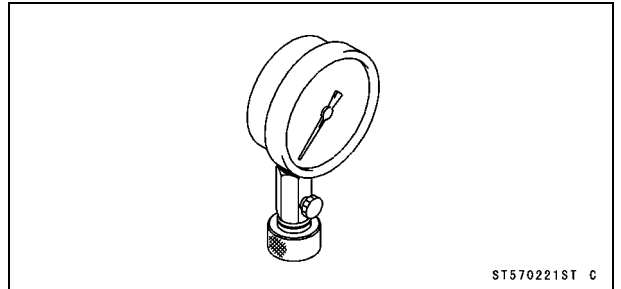
Fork Cylinder Holder Handle:  
57001-183



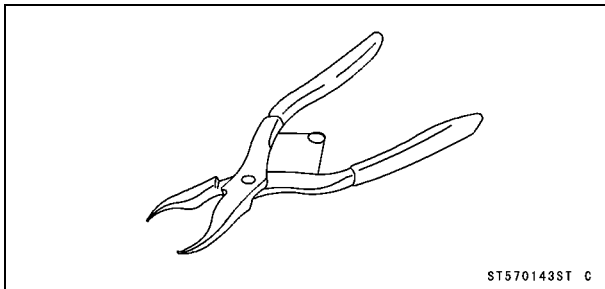
Steering Stem Bearing Driver:  
57001-137



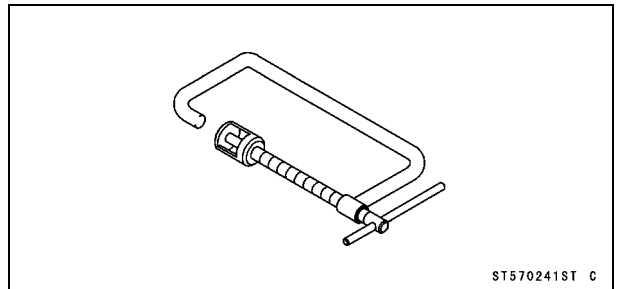
Compression Gauge, 20 kgf/cm<sup>2</sup>:  
57001-221



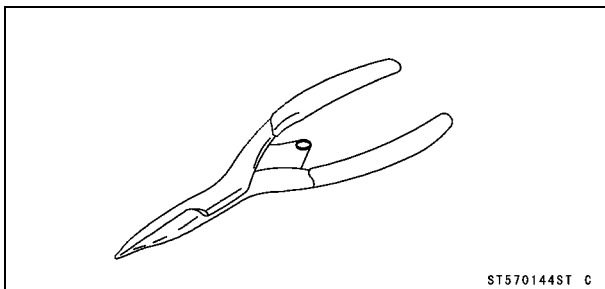
Inside Circlip Pliers:  
57001-143



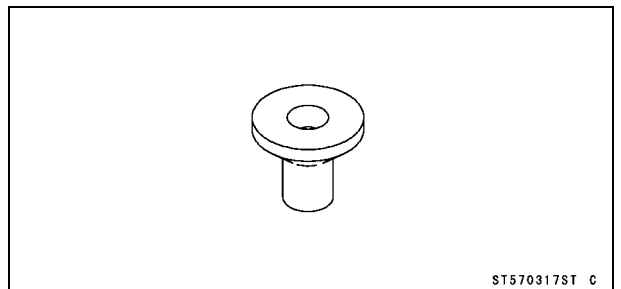
Valve Spring Compressor Assembly:  
57001-241



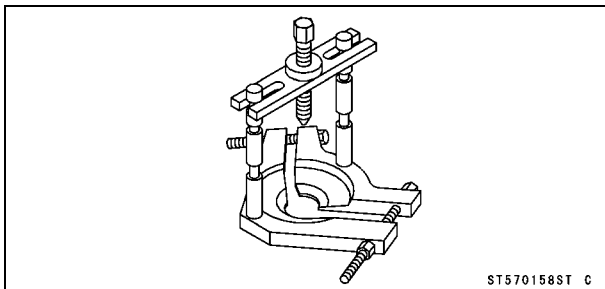
Outside Circlip Pliers:  
57001-144



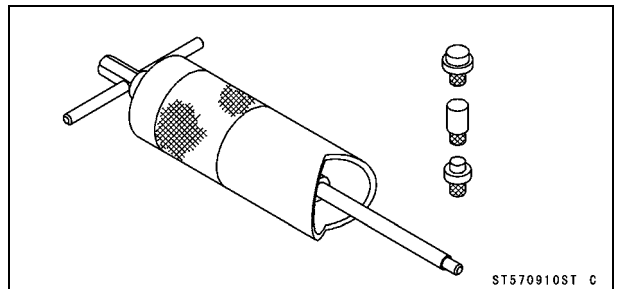
Bearing Puller Adapter:  
57001-317



Bearing Puller:  
57001-158



Piston Pin Puller Assembly:  
57001-910

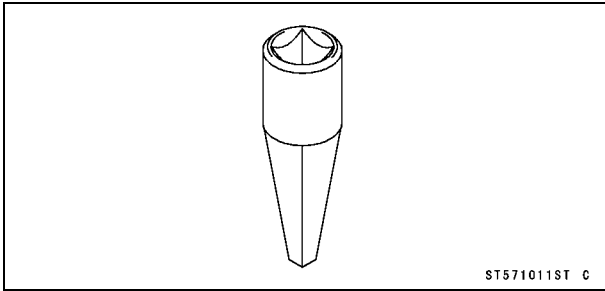




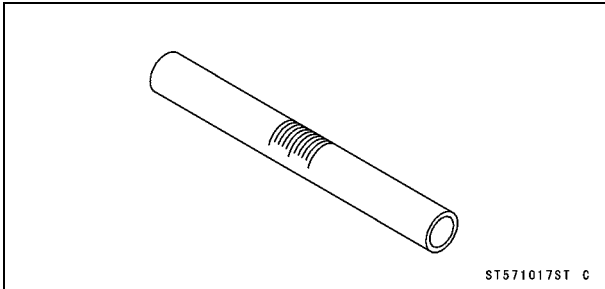
# 1-12 GENERAL INFORMATION

## Special Tools and Sealants

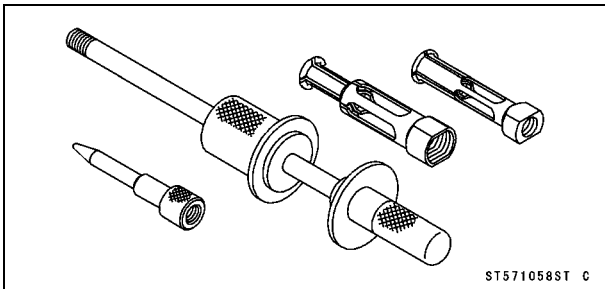
**Fork Cylinder Holder Adapter:**  
57001-1011



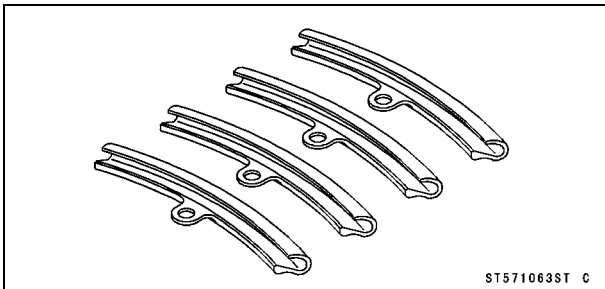
**Fuel Level Gauge:**  
57001-1017



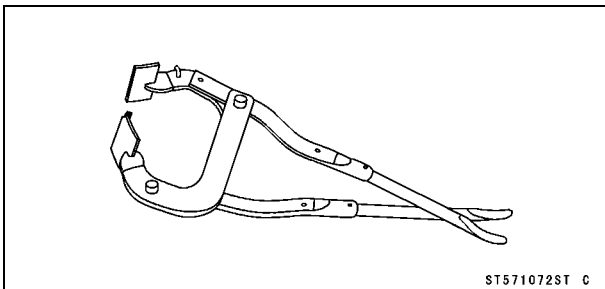
**Oil Seal & Bearing Remover:**  
57001-1058



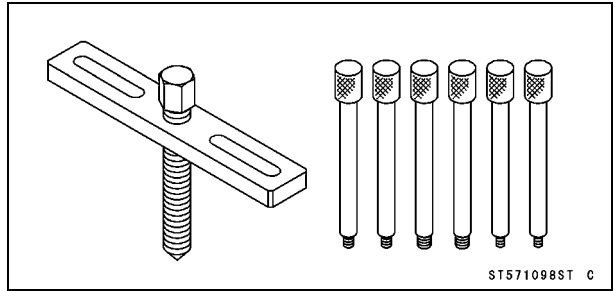
**Rim Protector:**  
57001-1063



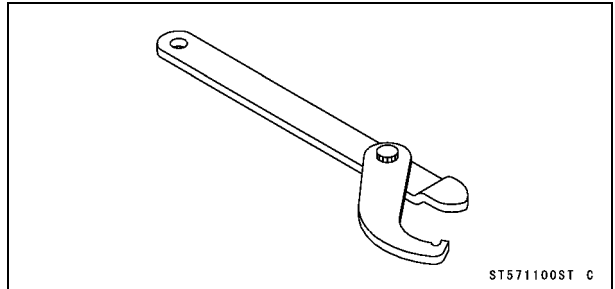
**Bead Breaker Assembly:**  
57001-1072



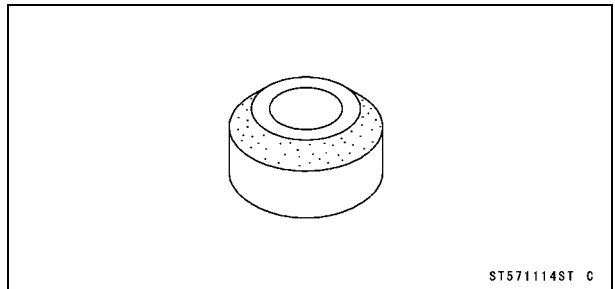
**Crankcase Splitting Tool Assembly:**  
57001-1098



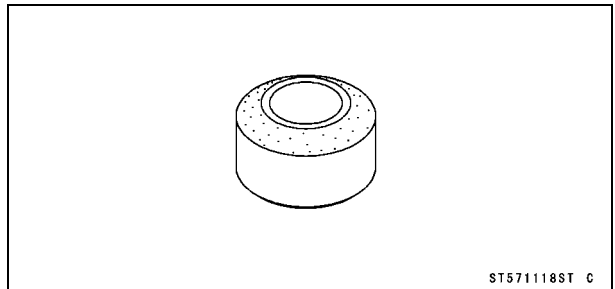
**Steering Stem Nut Wrench:**  
57001-1100



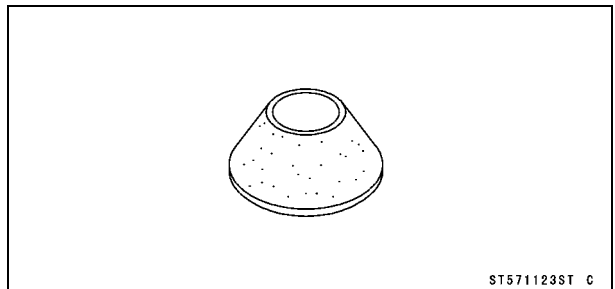
**Valve Seat Cutter, 45° -  $\phi$ 27.5:**  
57001-1114



**Valve Seat Cutter, 32° -  $\phi$ 25:**  
57001-1118

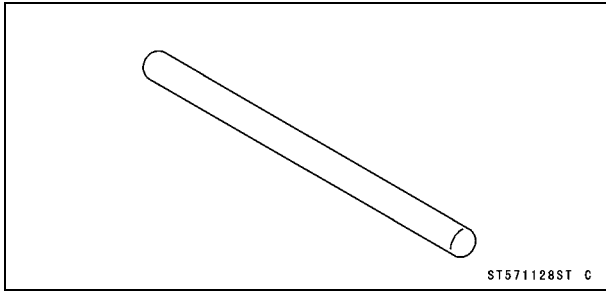


**Valve Seat Cutter, 60° -  $\phi$ 30:**  
57001-1123

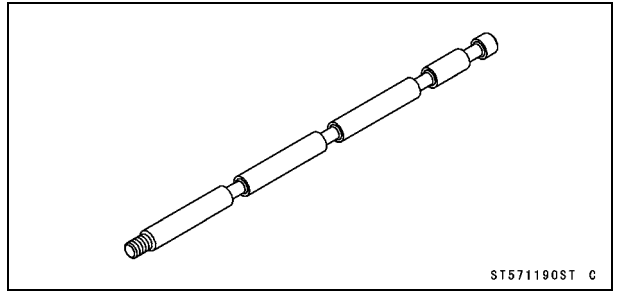


Special Tools and Sealants

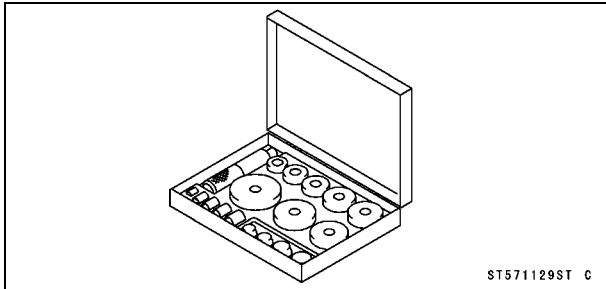
Valve Seat Cutter Holder Bar:  
57001-1128



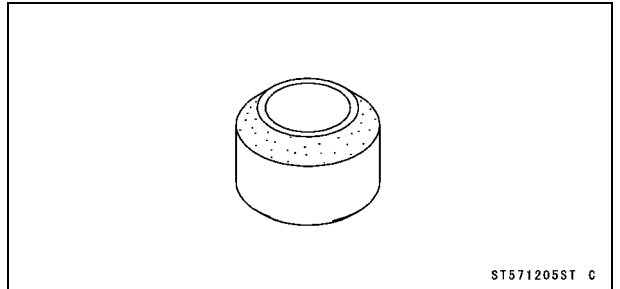
Bearing Puller Stud:  
57001-1190



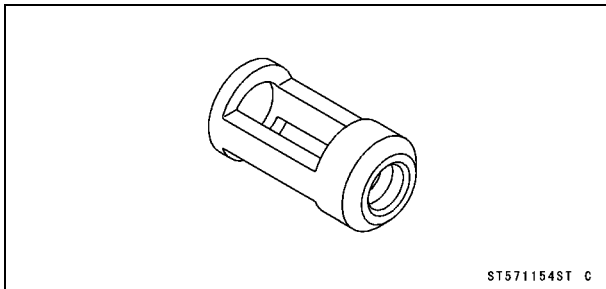
Bearing Driver Set:  
57001-1129



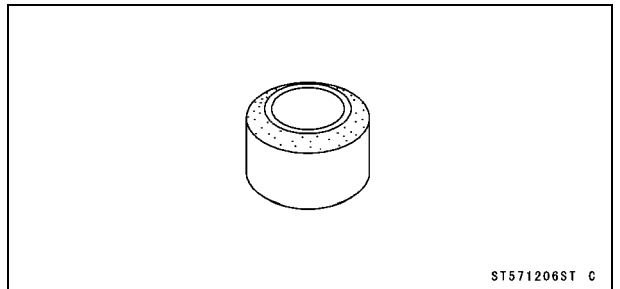
Valve Seat Cutter, 45° -  $\phi 22$ :  
57001-1205



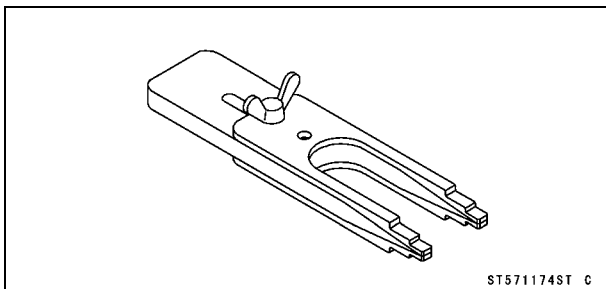
Valve Spring Compressor Adapter,  $\phi 20$ :  
57001-1154



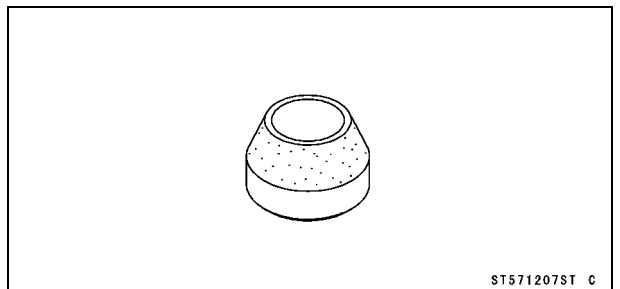
Valve Seat Cutter, 32° -  $\phi 22$ :  
57001-1206



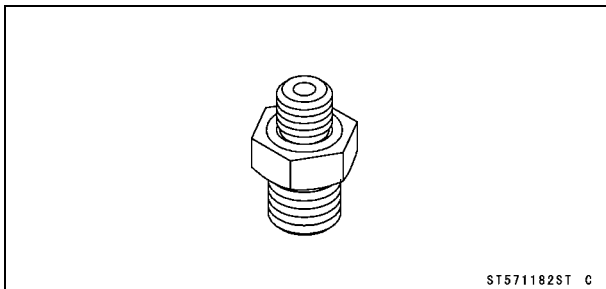
Crankshaft Jig:  
57001-1174



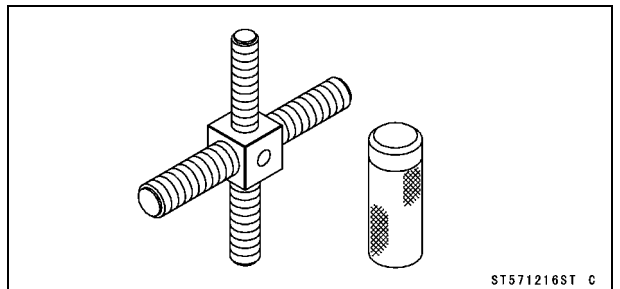
Valve Seat Cutter, 67.5° -  $\phi 22$ :  
57001-1207



Oil Pressure Gauge Adapter, M10  $\times$  1.25:  
57001-1182



Rotor Puller, M16/M18/M20/M22  $\times$  1.5:  
57001-1216

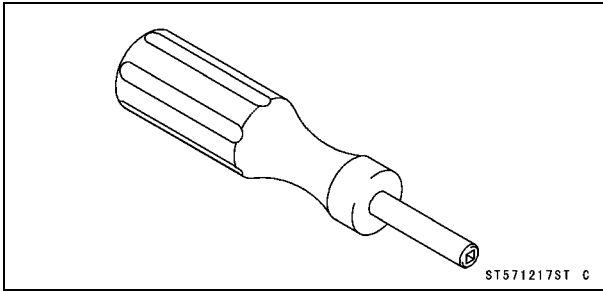


# 1-14 GENERAL INFORMATION

## Special Tools and Sealants

**Valve Adjusting Screw Holder:**

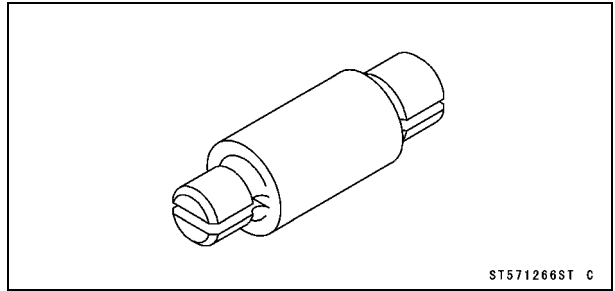
**57001-1217**



ST571217ST C

**Bearing Remover Head,  $\phi 10 \times \phi 12$ :**

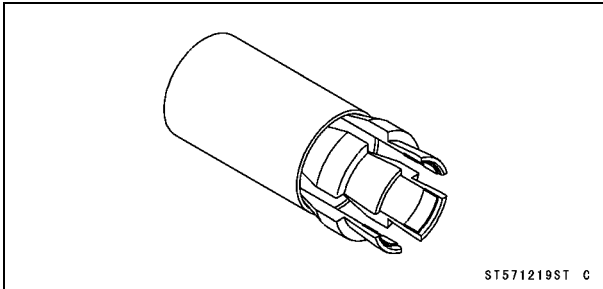
**57001-1266**



ST571266ST C

**Front Fork Oil Seal Driver:**

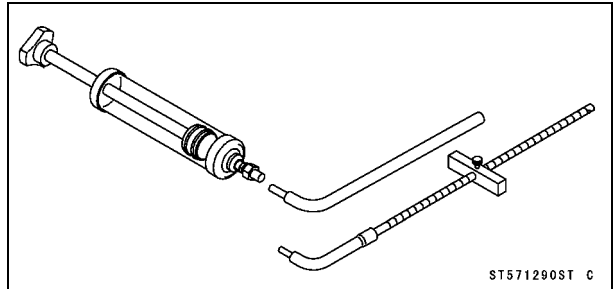
**57001-1219**



ST571219ST C

**Fork Oil Level Gauge:**

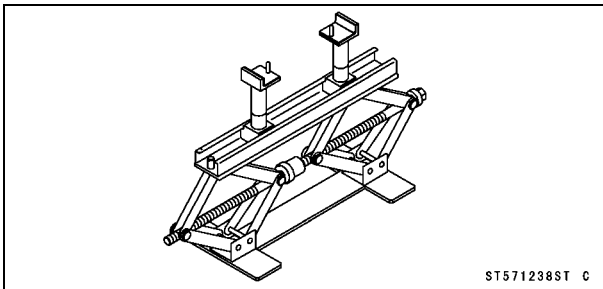
**57001-1290**



ST571290ST C

**Jack:**

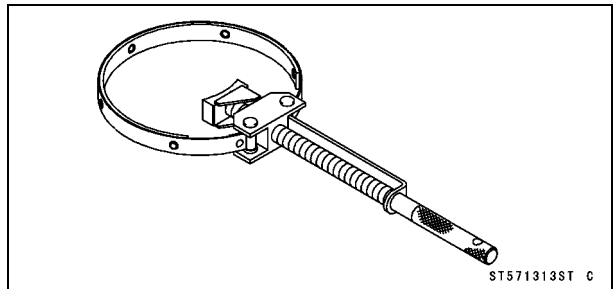
**57001-1238**



ST571238ST C

**Flywheel Holder:**

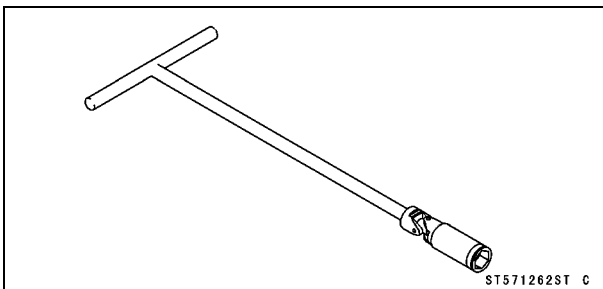
**57001-1313**



ST571313ST C

**Spark Plug Wrench, Hex 16:**

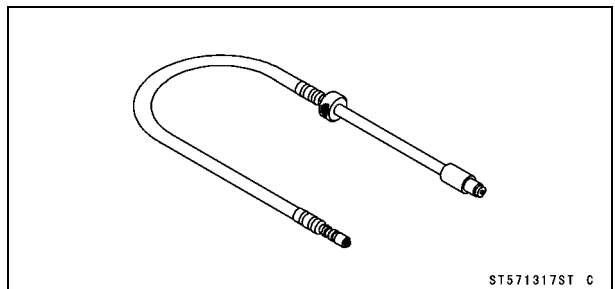
**57001-1262**



ST571262ST C

**Compression Gauge Adapter, M10  $\times$  1.0:**

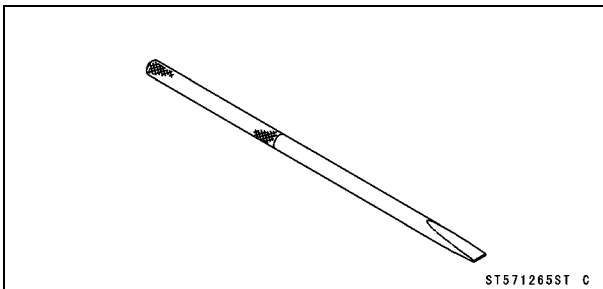
**57001-1317**



ST571317ST C

**Bearing Remover Shaft,  $\phi 9$ :**

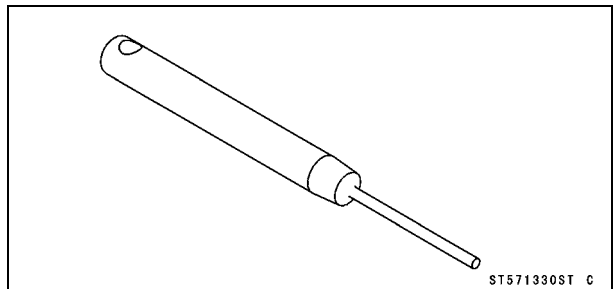
**57001-1265**



ST571265ST C

**Valve Seat Cutter Holder,  $\phi 4.5$ :**

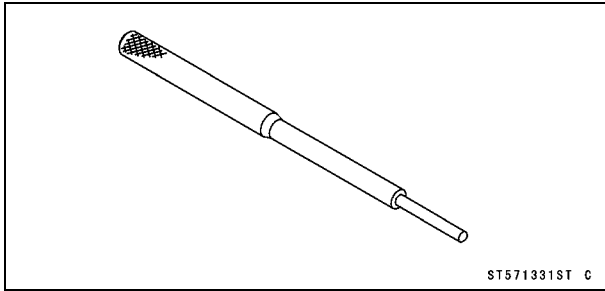
**57001-1330**



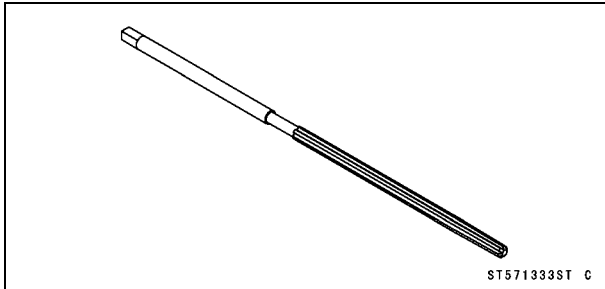
ST571330ST C

Special Tools and Sealants

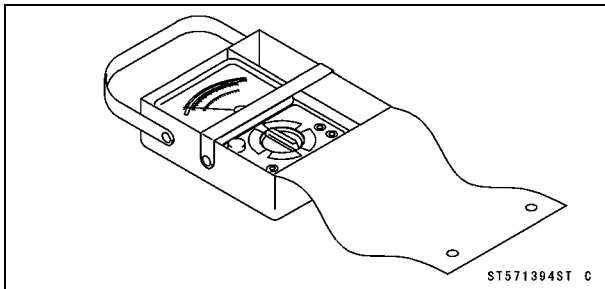
Valve Guide Arbor,  $\phi 4.5$ :  
57001-1331



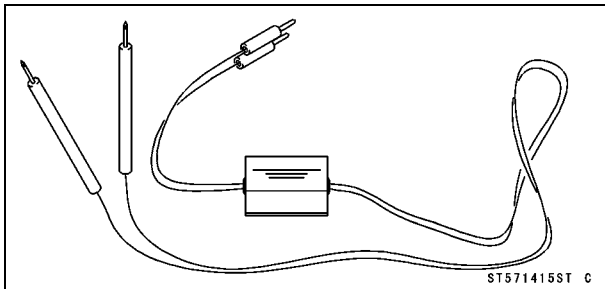
Valve Guide Reamer,  $\phi 4.5$ :  
57001-1333



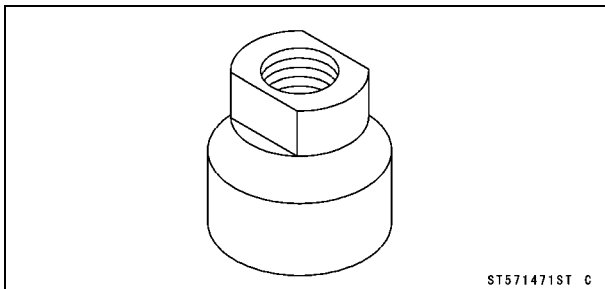
Hand Tester:  
57001-1394



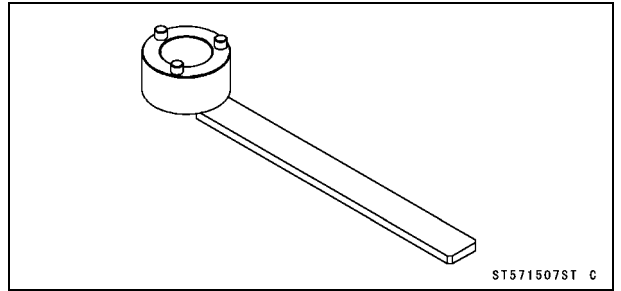
Peak Voltage Adapter:  
57001-1415



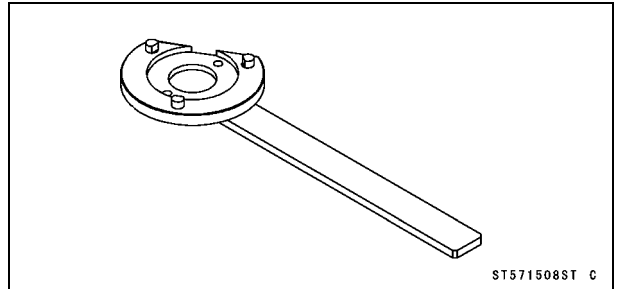
Flywheel Puller, M28 × 1.0:  
57001-1471



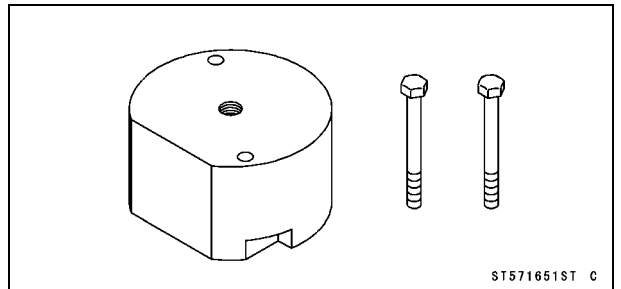
Clutch Holder 1:  
57001-1507



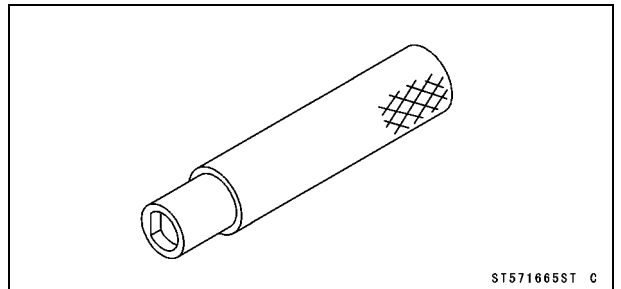
Clutch Holder 2:  
57001-1508



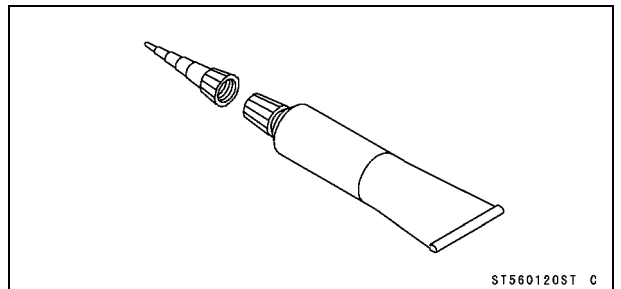
Oil Pressure Cap:  
57001-1651



Pilot Screw Adjuster  
57001-1665



Kawasaki Bond (Silicone Sealant):  
56019-120



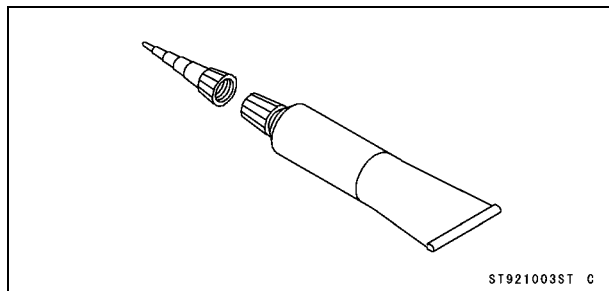
## 1-16 GENERAL INFORMATION

### Special Tools and Sealants

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Kawasaki Bond(Liquid Gasket - Black):

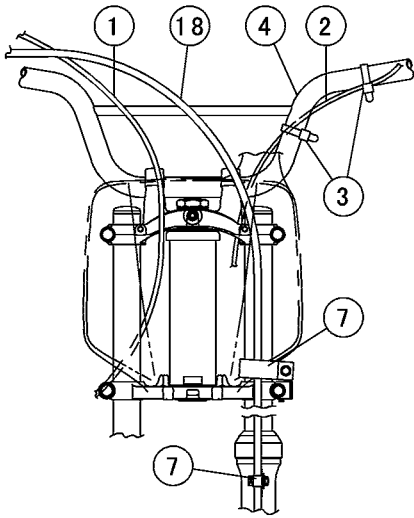
92104-1003



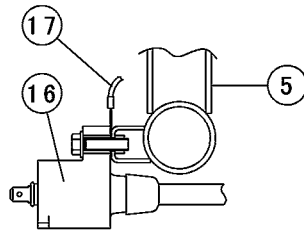
# 1-18 GENERAL INFORMATION

## Cable, Wire and Hose Routing

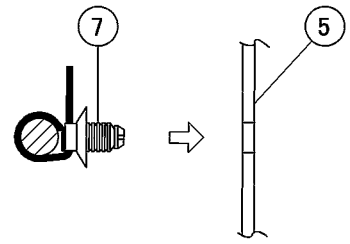
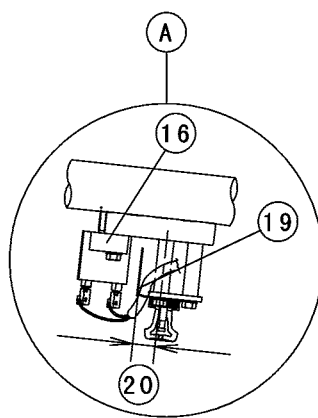
### THROTTLE CABLE AND SWITCH LEAD ROUTING



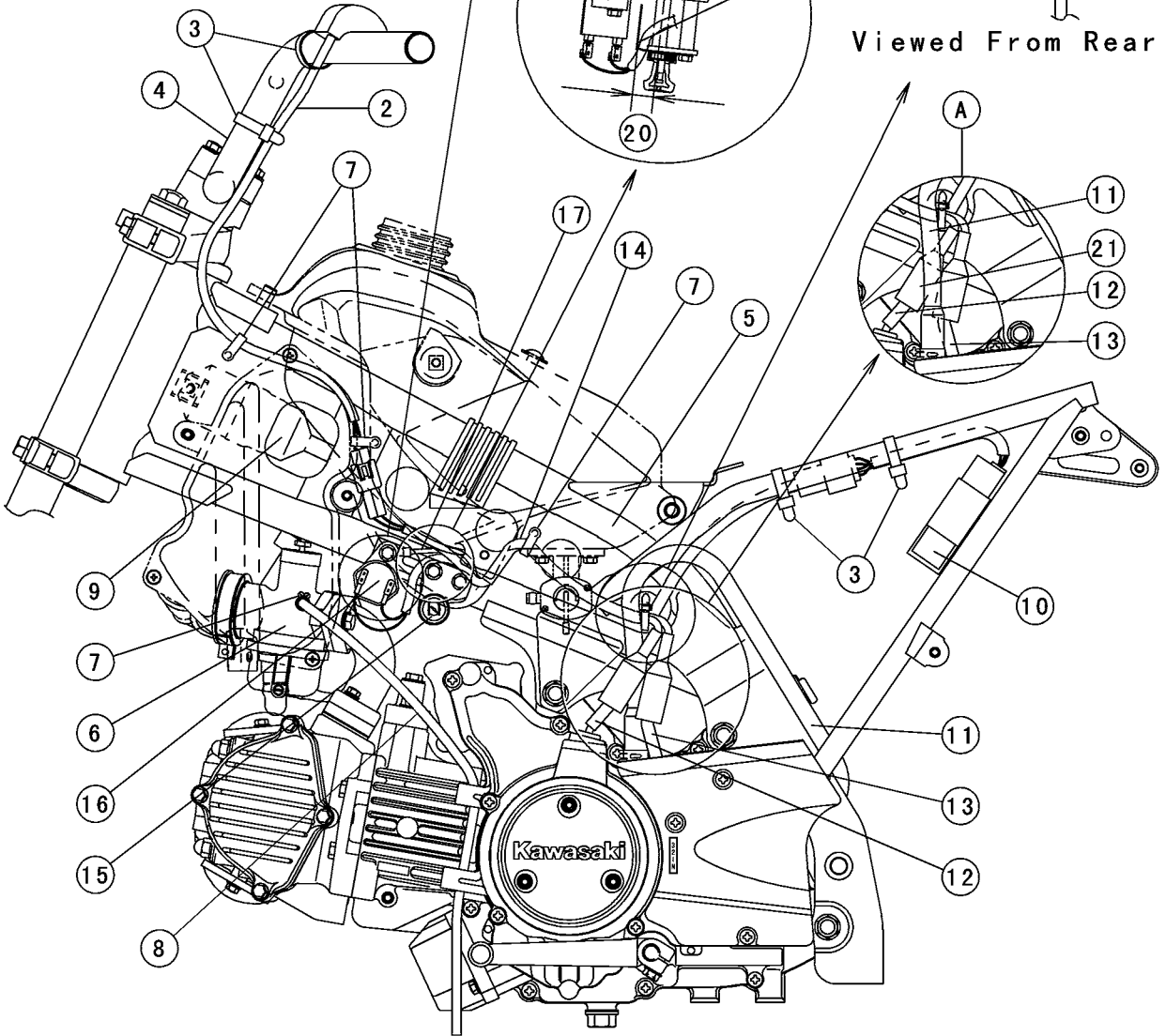
Viewed From Front



Viewed From Rear



Viewed From Rear



Viewed From Left

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**Cable, Wire and Hose Routing**

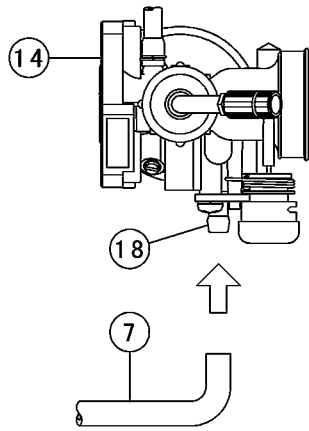
---

1. Throttle Cable
  2. Engine Stop Switch Lead
  3. Band
  4. Handlebar
  5. Frame
  6. Carburetor
  7. Clamp
  8. Air Vent Hose
  9. Regulator/Rectifier
  10. Igniter
  11. Crankcase Breather Hose
  12. Magneto Leads
  13. Gear Position Switch Leads
  14. Main Harness
  15. Choke Knob
  16. Ignition Coil
  17. Ground Lead
  18. Brake Cable
  19. Bend the clamp as shown.
  20. Approx. 15 mm (0.59 in.)
  21. Connect the connector of magneto lead inside of the crankcase breather hose.
- A: KLX110-A3 ~

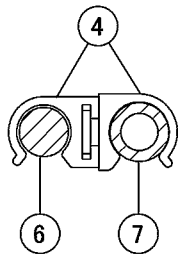
# 1-20 GENERAL INFORMATION

## Cable, Wire and Hose Routing

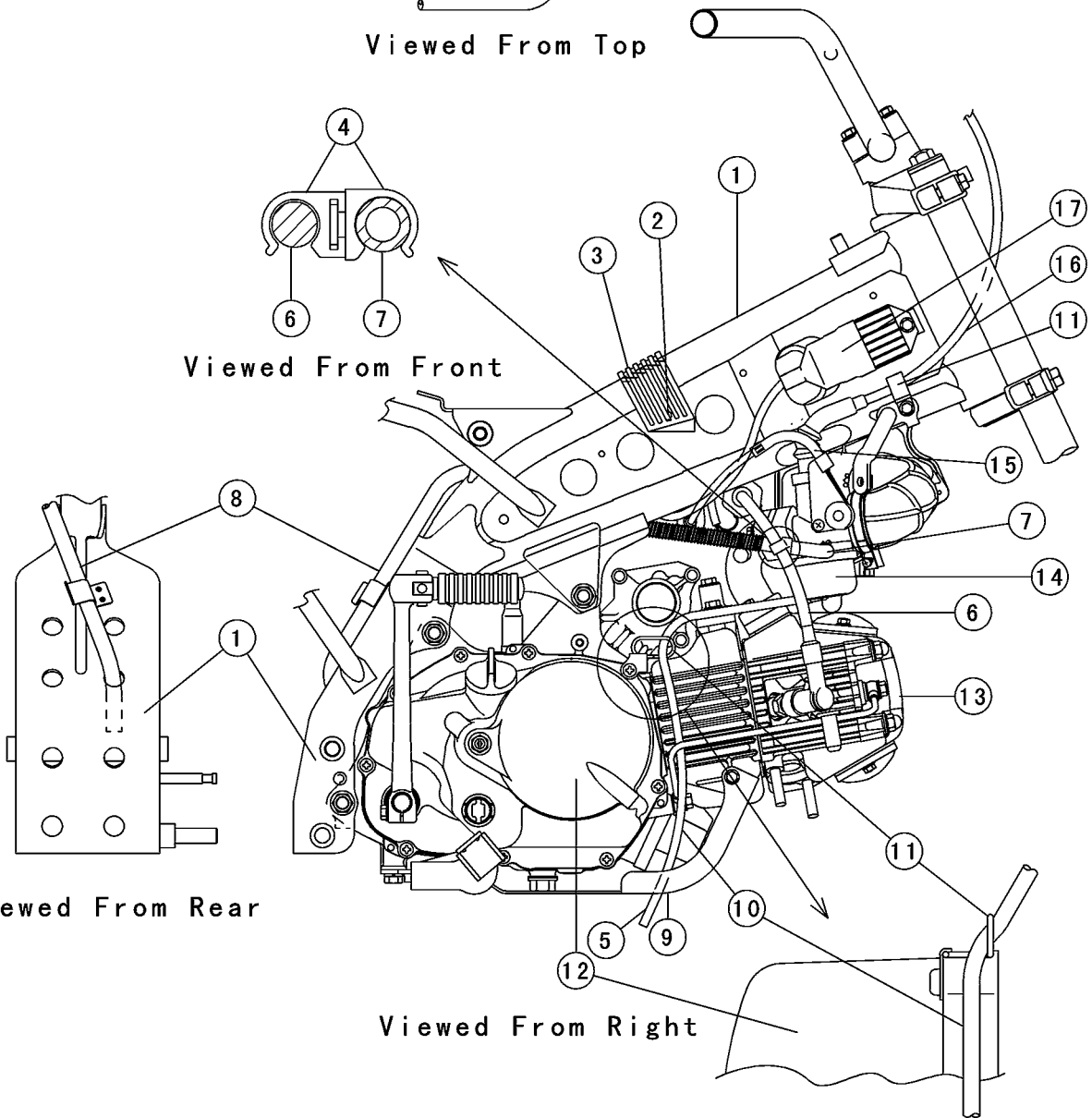
### MAIN HARNESS, HOSE AND CABLE ROUTING



Viewed From Top



Viewed From Front



Viewed From Rear

Viewed From Right

Viewed From Front



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**Cable, Wire and Hose Routing**

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1. Frame
2. Align the damper center with the frame hole.
3. Apply adhesive to diagonal line portion.
4. Clamp
5. Run the carburetor drain hose into a hole of the engine guard.
6. Ignition Coil Lead
7. Inlet Fuel Hose
8. Crankcase Breather Hose
9. Engine Guard
10. Carburetor Drain Hose
11. Clamp
12. Clutch Cover
13. Cylinder Head
14. Carburetor
15. Choke Cable
16. Throttle Cable
17. Regulator/Rectifier
18. Inlet Fitting

# 1-22 GENERAL INFORMATION

## Unit Conversion Table

### Prefixes for Units:

| Prefix | Symbol | Power       |
|--------|--------|-------------|
| mega   | M      | × 1 000 000 |
| kilo   | k      | × 1 000     |
| centi  | c      | × 0.01      |
| milli  | m      | × 0.001     |
| micro  | μ      | × 0.000001  |

### Units of Mass:

|    |   |         |   |    |
|----|---|---------|---|----|
| kg | × | 2.205   | = | lb |
| g  | × | 0.03527 | = | oz |

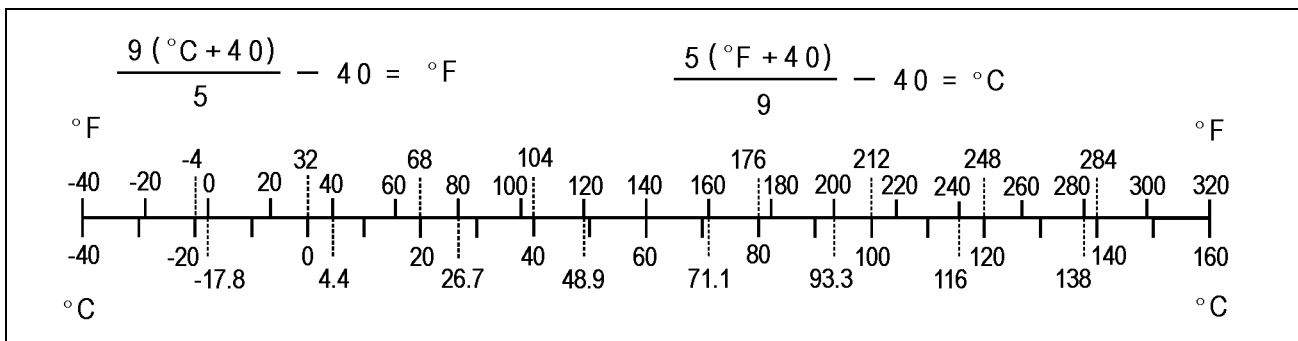
### Units of Volume:

|    |   |         |   |            |
|----|---|---------|---|------------|
| L  | × | 0.2642  | = | gal (US)   |
| L  | × | 0.2200  | = | gal (imp)  |
| L  | × | 1.057   | = | qt (US)    |
| L  | × | 0.8799  | = | qt (imp)   |
| L  | × | 2.113   | = | pint (US)  |
| L  | × | 1.816   | = | pint (imp) |
| mL | × | 0.03381 | = | oz (US)    |
| mL | × | 0.02816 | = | oz (imp)   |
| mL | × | 0.06102 | = | cu in      |

### Units of Force:

|    |   |        |   |    |
|----|---|--------|---|----|
| N  | × | 0.1020 | = | kg |
| N  | × | 0.2248 | = | lb |
| kg | × | 9.807  | = | N  |
| kg | × | 2.205  | = | lb |

### Units of Temperature:



### Units of Length:

|    |   |         |   |      |
|----|---|---------|---|------|
| km | × | 0.6214  | = | mile |
| m  | × | 3.281   | = | ft   |
| mm | × | 0.03937 | = | in   |

### Units of Torque:

|     |   |        |   |       |
|-----|---|--------|---|-------|
| N·m | × | 0.1020 | = | kgf·m |
| N·m | × | 0.7376 | = | ft·lb |
| N·m | × | 8.851  | = | in·lb |

|       |   |       |   |       |
|-------|---|-------|---|-------|
| kgf·m | × | 9.807 | = | N·m   |
| kgf·m | × | 7.233 | = | ft·lb |
| kgf·m | × | 86.80 | = | in·lb |

### Units of Pressure:

|     |   |         |   |                     |
|-----|---|---------|---|---------------------|
| kPa | × | 0.01020 | = | kgf/cm <sup>2</sup> |
| kPa | × | 0.1450  | = | psi                 |
| kPa | × | 0.7501  | = | cmHg                |

|                     |   |       |   |     |
|---------------------|---|-------|---|-----|
| kgf/cm <sup>2</sup> | × | 98.07 | = | kPa |
| kgf/cm <sup>2</sup> | × | 14.22 | = | psi |
| cmHg                | × | 1.333 | = | kPa |

### Units of Speed:

|      |   |        |   |     |
|------|---|--------|---|-----|
| km/h | × | 0.6214 | = | mph |
|------|---|--------|---|-----|

### Units of Power:

|    |   |        |   |    |
|----|---|--------|---|----|
| kW | × | 1.360  | = | PS |
| kW | × | 1.341  | = | HP |
| PS | × | 0.7355 | = | kW |
| PS | × | 0.9863 | = | HP |

# Periodic Maintenance

## Table of Contents

|                                      |      |                                      |      |
|--------------------------------------|------|--------------------------------------|------|
| Periodic Maintenance Chart .....     | 2-2  | Sprocket Wear Inspection.....        | 2-16 |
| Specifications .....                 | 2-3  | Chain Slipper Wear Inspection ...    | 2-17 |
| Periodic Maintenance Procedures..... | 2-5  | Brakes.....                          | 2-17 |
| Fuel System.....                     | 2-5  | Brake Lever, Brake Pedal Free        |      |
| Fuel Hose and Connections            |      | Play Inspection.....                 | 2-17 |
| Inspection.....                      | 2-5  | Front Brake Lever Free Play          |      |
| Fuel Tap Inspection.....             | 2-5  | Adjustment .....                     | 2-18 |
| Fuel Tap Cleaning.....               | 2-5  | Brake Pedal Free Play                |      |
| Throttle Grip Free Play Inspection   | 2-6  | Adjustment .....                     | 2-18 |
| Throttle Grip Free Play              |      | Brake Lining Wear Inspection .....   | 2-18 |
| Adjustment .....                     | 2-6  | Cam Lever Angle Adjustment .....     | 2-20 |
| Idle Speed Inspection .....          | 2-7  | Brake Panel Lubrication.....         | 2-20 |
| Idle Speed Adjustment.....           | 2-7  | Suspension.....                      | 2-21 |
| Air Cleaner Element Cleaning and     |      | Fork Oil Level Adjustment            |      |
| Inspection.....                      | 2-7  | (Simplify) .....                     | 2-21 |
| Engine Top End .....                 | 2-8  | Front Fork Inner Tube Inspection.    | 2-22 |
| Valve Clearance Inspection .....     | 2-8  | Rear Shock Absorber Inspection .     | 2-22 |
| Valve Clearance Adjustment.....      | 2-9  | Swingarm Pivot Inspection.....       | 2-23 |
| Spark Arrester Cleaning.....         | 2-9  | Swingarm Rubber Bushing              |      |
| Clutch.....                          | 2-10 | Inspection.....                      | 2-23 |
| Clutch Adjustment.....               | 2-10 | Steering .....                       | 2-24 |
| Engine Lubrication System.....       | 2-10 | Steering Inspection .....            | 2-24 |
| Oil Level Inspection.....            | 2-11 | Steering Adjustment.....             | 2-24 |
| Oil Change .....                     | 2-11 | Steering Stem Bearing                |      |
| Oil Filter Element Replacement ...   | 2-12 | Lubrication.....                     | 2-25 |
| Wheels/Tires.....                    | 2-12 | Side Stand .....                     | 2-25 |
| Wheels Inspection.....               | 2-12 | Side Stand Inspection.....           | 2-25 |
| Spoke Tightness Inspection.....      | 2-12 | Electrical System .....              | 2-25 |
| Wheel Bearing Inspection .....       | 2-13 | Spark Plug Gap.....                  | 2-25 |
| Rim Runout Inspection.....           | 2-13 | Spark Plug Cleaning and              |      |
| Final Drive.....                     | 2-14 | Inspection.....                      | 2-25 |
| Chain Slack Inspection .....         | 2-14 | General Lubrication .....            | 2-26 |
| Chain Slack Adjustment.....          | 2-14 | Lubrication .....                    | 2-26 |
| Chain Wear Inspection.....           | 2-15 | Nut, Bolt and Fastener Tightness ... | 2-27 |
| Chain Lubrication .....              | 2-16 | Tightness Inspection .....           | 2-27 |

## 2-2 PERIODIC MAINTENANCE

### Periodic Maintenance Chart

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

| OPERATION                                   | FREQUENCY                          | Initial                             | Every                  |                          | See Page |
|---|------------------------------------|-------------------------------------|------------------------|--------------------------|----------|
|   |                                    | 5 hours<br>(1 month)                | 50 hours<br>(6 months) | 100 hours<br>(12 months) |          |
| E   | Engine oil-change                  | •                                   | •                      | •                        | 2-11     |
|   | (e)Spark plug-clean, gap †         |                                     | •                      | •                        | 2-25     |
|   | Clutch-inspection †                | •                                   | •                      | •                        | 2-10     |
|   | (e)Valve clearance-inspection †    |                                     |                        | •                        | 2-8      |
|   | Oil filter element-replace         | •                                   |                        | •                        | 2-12     |
|   | (e)Air cleaner element-clean †     | •                                   | •                      | •                        | 2-7      |
|   | (e)Idle speed-inspection †         |                                     | Every ride             |                          | 2-7      |
|   | (e)Throttle grip play-inspection † | •                                   | •                      | •                        | 2-6      |
|   | Fuel tap-clean                     |                                     | •                      | •                        | 2-5      |
|   | Spark arrester-clean               |                                     |                        | •                        | 2-9      |
|   | Engine sprocket-inspection †       |                                     | •                      | •                        | 2-16     |
|   | Fuel hose, connections-inspection† |                                     | •                      | •                        | 2-5      |
|   | C                                  | Brake lever/pedal play-inspection † |                        | Every ride               |          |
| Brake lining wear-inspection †              |                                    |                                     | Every ride             |                          | 2-18     |
| Brake camshaft-grease                       |                                    |                                     | •                      | •                        | 2-20     |
| Brake cable-inspection †                    |                                    |                                     | Every year             |                          | 2-26     |
| Spoke tightness and rim runout-inspection † |                                    | •                                   | •                      | •                        | 2-12     |
| Drive chain slack-inspection†               |                                    |                                     | Every ride             |                          | 2-14     |
| Drive chain-lubricate                       |                                    |                                     | Every ride             |                          | 2-16     |
| Drive chain wear-inspection †               |                                    | •                                   | •                      | •                        | 2-15     |
| Front fork-inspection †                     |                                    |                                     | •                      | •                        | 2-22     |
| Chain slipper-inspection †                  |                                    |                                     | •                      | •                        | 2-17     |
| Front fork oil-inspection †                 |                                    |                                     | Every year             |                          | 2-21     |
| Nuts, bolts, fasteners-inspection†          |                                    | •                                   | •                      | •                        | 2-27     |
| Steering play-inspection †                  |                                    | •                                   | •                      | •                        | 2-24     |
| Steering stem bearing-grease                |                                    |                                     |                        | •                        | 2-25     |
| Rear sprocket-inspection †                  |                                    |                                     | •                      | •                        | 2-16     |
| General lubrication-perform                 |                                    | •                                   | •                      | •                        | 2-26     |
| Side stand-inspection †                     |                                    | •                                   |                        | •                        | 2-25     |
| Wheel bearing-inspection †                  |                                    |                                     | •                      | •                        | 2-13     |
| Swingarm pivots-inspection †                |                                    | •                                   | •                      | •                        | 2-23     |
| Rear shock absorber-inspection †            |                                    | •                                   | •                      | 2-22                     |          |

C: CHASSIS

E: ENGINE

(e): Emission Related

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

**Specifications**

| Item   | Standard   | Service Limit       |
|--|--|---------------------|
| <b>Fuel System</b>                                   |  |                     |
| Throttle Grip Free Play                              | 2 ~ 3 mm (0.08 ~ 0.12 in.)   | ---                 |
| Idle Speed   | 1 250 ~ 1 350 r/min (rpm)  | ---                 |
| Air Cleaner Element Oil                              | High quality foam air filter oil   | ---                 |
| <b>Engine Top End</b>                                |  |                     |
| Valve Clearance:                                     |  |                     |
| Exhaust  | 0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in.)   | ---                 |
| Inlet  | 0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in.)   | ---                 |
| <b>Clutch</b>  |  |                     |
| Clutch Adjusting Screw                               | 1/4 turn out   | ---                 |
| <b>Engine Lubrication System</b>                     |  |                     |
| Engine Oil:  |  |                     |
| Type   | API SE, SF or SG<br>API SH or SJ with JASO MA, MA1 or MA2 (KLX110-A1 ~ A6F)<br>API SH, SJ or SL with JASO MA, MA1 or MA2 (KLX110A7F ~) |                     |
| Viscosity  | SAE 10W-40   |                     |
| Capacity   | 1.1 L (1.2 us qt)<br>(when engine is completely dry)   | ---                 |
|  | 1.0 L (1.1 us qt)<br>(when filter is removed)  | ---                 |
|  | 0.9 L (1.0 us qt)<br>(when filter is not removed)  | ---                 |
| Level  | Between upper and lower level lines  | ---                 |
| <b>Tires</b>   |  |                     |
| Rim Runout (with tire installed):                    |  |                     |
| Axial  | TIR 0.8 mm (0.03 in.) or less  | TIR 2 mm (0.08 in.) |
| Radial   | TIR 1.0 mm (0.04 in.) or less  | TIR 2 mm (0.08 in.) |
| <b>Final Drive</b>                                   |  |                     |
| Drive Chain Slack                                    | 0 ~ 5 mm (0 ~ 0.2 in.)   | ---                 |
| Drive Chain 20-link Length                           | 254.0 ~ 254.6 mm (10.00 ~ 10.02 in.)   | 259 mm (10.20 in.)  |
| <b>Brakes</b>  |  |                     |
| Brake Lever Free Play                                | 4 ~ 5 mm (0.16 ~ 0.20 in.)   | ---                 |
| Brake Pedal Free Play                                | 20 ~ 30 mm (0.79 ~ 1.18 in.)   | ---                 |
| Brake Cam Lever Angle:                               |  |                     |
| Front  | 80° ~ 90°  | ---                 |
| Rear   | 80° ~ 90°  | ---                 |
| <b>Suspension</b>                                    |  |                     |
| Fork Oil Viscosity                                   | SHOWA SS-8 or equivalent   | ---                 |
| Fork Oil Level<br>(Fully Compressed, Without Spring) | 89 ±2 mm (3.5 ±0.08 in.)   | ---                 |
| <b>Electrical System</b>                             |  |                     |
| Standard Plug  | NGK CR6HSA   | ---                 |
| Spark Plug Gap                                       | 0.6 ~ 0.7 mm (0.024 ~ 0.028 in.)   | ---                 |

## **2-4 PERIODIC MAINTENANCE**

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### **Specifications**

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

**Jack: 57001-1238**

**Fork Oil Level Gauge: 57001-1290**

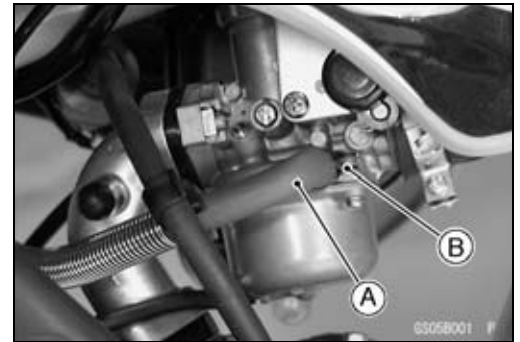
**Steering Stem Nut Wrench: 57001-1100**

**Periodic Maintenance Procedures**

**Fuel System**

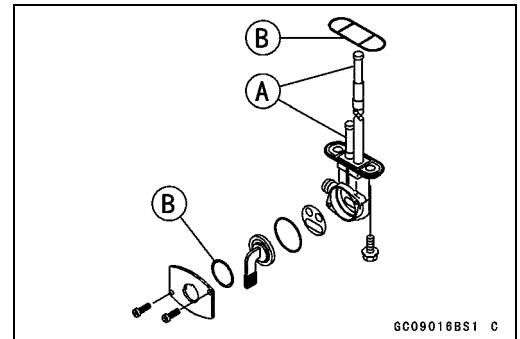
*Fuel Hose and Connections Inspection*

- Check the fuel hose [A] for the following.
  - Fuel leakage
  - Loose or improperly positioned line clamp [B]
  - Deteriorated or damaged line
- ★ Replace the fuel hose if any fraying, cracks or bulges are noticed.
- When installing, route the hoses according to Cable, Wire, and Hose Routing section in the General Information chapter.
- When installing the fuel hoses, avoid sharp bending, kinking, flattening or twisting, and route the fuel hoses with a minimum of bending so that the fuel flow will not be obstructed.
- ★ Replace the hose if it has been sharply bent or kinked.



*Fuel Tap Inspection*

- Remove the fuel tap (see Fuel System chapter).
- Check the fuel tap filter screen [A] for any breaks or deterioration.
- ★ If the fuel tap screen have any breaks or is deteriorated, it may allow dirt to reach the carburetor, causing poor running. Replace the fuel tap.
- ★ If the fuel tap leaks, or allows fuel to flow when it is at OFF position, replace the damaged O-ring [B].



*Fuel Tap Cleaning*

**⚠ WARNING**

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

- Clean the fuel tap filter screen in a high-flash point solvent.
- Pour high-flash point solvent through the tap in all lever positions.
- Dry the tank and tap with compressed air.
- Install the tap in the tank.
  - Torque - Fuel Tap Bolts: 4.9 N·m (0.5 kgf·m, 43 in·lb)**
  - KLX110-A3 ~**
- Install the fuel tank.



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