# Kawasaki 750 turbo


# Motorcycle Service Manual

# Quick Reference Guide

To use, bend the manual back and match the desired chapter below against the black spot showing at the edge of these pages.


General Information 1

Scheduled Maintenance 2

Non-scheduled Maintenance
- Engine 3
- Chassis 4
- Electrical 5

Disassembly
- Engine 6
- Chassis 7

Appendix 8

Kawasaki

# 750 turbo

# Motorcycle Service Manual Supplement



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## SAFETY AWARENESS

Whenever you see the symbols shown below, 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.**

"NOTE"

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

## 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) Celcius | 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 and ignition systems of this motorcycle have been carefully designed and constructed to ensure an efficient engine with low exhaust pollutant levels.
3. Evaporative Emission Control System
   Vapors caused by fuel evaporation in the fuel system are not vented into the atmosphere. Instead, fuel vapors are routed into the running engine to be burned, or stored in a canister when the engine is stopped. Liquid fuel is caught by a vapor separator and returned to the fuel tank.

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

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

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

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

**"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 750 turbo Service Manual Supplement is designed to be used in conjunction with the KZ750 Four Motorcycle Service Manual (P/N 99924-1021-04). The maintenance and repair procedures described in this supplement are only those that are unique to the ZX750E motorcycle. Most service operations for this model remain identical to those described in the base Service Manual. Complete and proper servicing of the ZX750E motorcycle therefore requires both this supplement and the base Service Manual.

The base Service Manual and this Supplement are designed primarily for use by motorcycle mechanics in a properly equipped shop. However, they contain enough detail and basic information to make them useful to the operator who desires to perform his own basic maintenance and repair work. A basic knowledge of mechanics, the proper use of tools, and work shop procedures must be understood in order to carry out maintenance and repair satisfactorily. Whenever the operator has insufficient experience or doubts his ability to do the work, the adjustments, maintenance, and repair should be carried out only by qualified mechanics.

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

"NOTE"

○*This Supplement covers all items of the 750 turbo service data, so it is not necessary to refer to the base Service Manual for any service data.*

**Kawasaki DFI (Digital Fuel Injection) System Precautions**

"NOTE"

○*Engine performance is sensitive to throttle sensor position.*
○*The throttle sensor does not require any periodic maintenance.*
○*Do not alter or adjust sensor position unless otherwise the sensor position has been obviously upset.*
○*Sensor position is the last cause to be suspected in troubleshooting the DFI system.*

WARNING

○**When any fuel hose is disconnected, do not turn on the ignition switch. The fuel pump will operate and fuel will spout from the fuel hose if you turn on the switch while the hose is disconnected.**

1

# General Information

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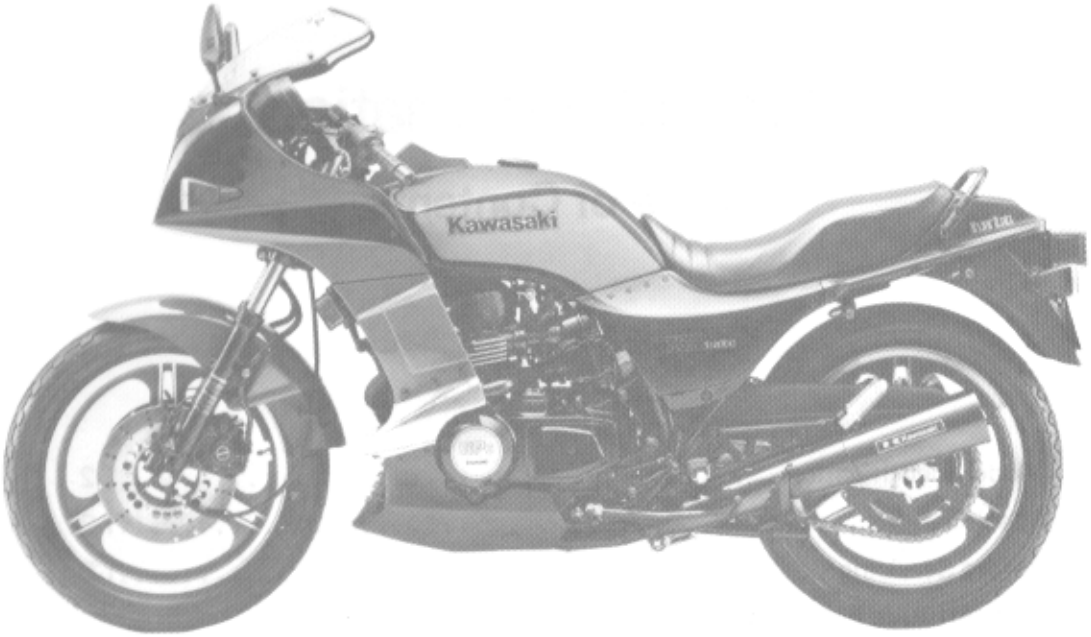
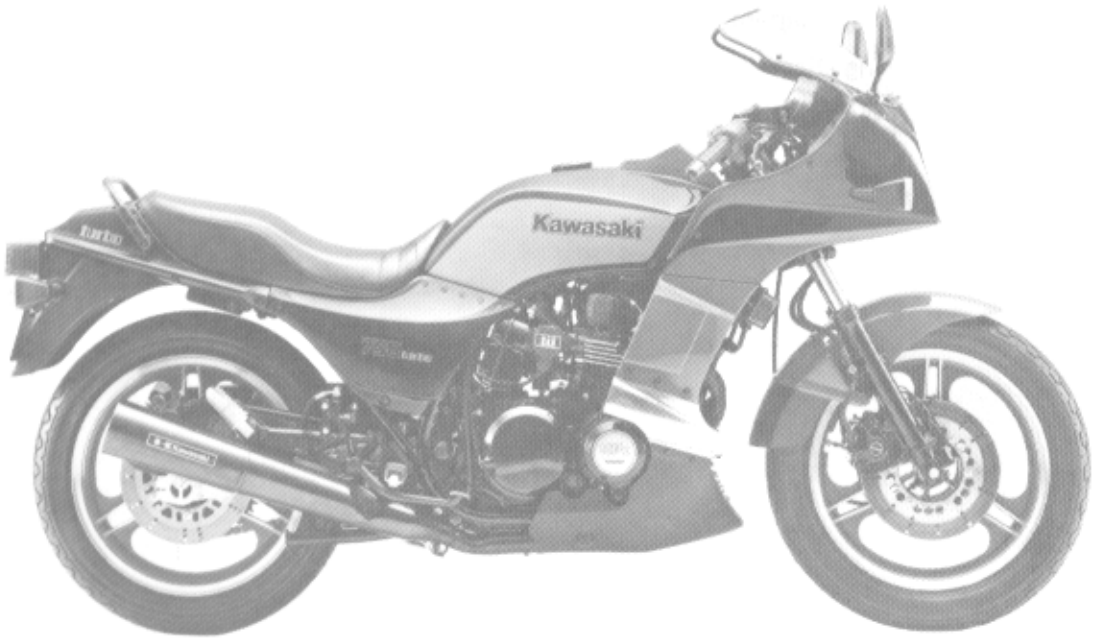
## Model Identification

ZX750-E1 Left Side View:




ZX750-E1 Right Side View:



## Specifications

| Items | | | ZX750-E1 |
|---|---|---|---|
| **Dimensions:** | | | |
| Overall length | | | 2,220 mm, Ⓒ Ⓤ (SA) 2,190 mm |
| Overall width | | | 740 mm, Ⓒ Ⓕ Ⓤ 720 mm |
| Overall height | | | 1,260 mm |
| Wheelbase | | | 1,490 mm |
| Road clearance | | | 155 mm |
| Seat height | | | 780 mm |
| Dry weight | | | 2,285 N (233 kg), (Cal) 2,290 N (233.5 kg) |
| Curb weight: | Front | | 1,206 N (123 kg), (Cal) 1,211 N (123.5 kg) |
| | Rear | | 1,275 N (130 kg), (Cal) 1,275 N (130 kg) |
| Fuel tank capacity | | | 17.0 L |
| **Performance:** | | | |
| Climbing ability | | | 30° |
| Braking distance | | | 12.5 m from 50 km/h |
| Minimum turning radius | | | 2.7 m |
| **Engine:** | | | |
| Type | | | 4-stroke, DOHC, 4-cylinder |
| Cooling system | | | Air cooled |
| Bore and stroke | | | 66.0 x 54.0 mm |
| Displacement | | | 738 mL |
| Compression ratio | | | 7.8 |
| Maximum horsepower | | | 82.4 kW (112 PS) @9,000 r/min (rpm), Ⓖ Ⓢ 73.6 kW (100 PS) @9,000 r/min (rpm), (Swi) 61.0 kW (83 PS) @6,600 r/min (rpm) |
| Maximum torque | | | 99.1 N-m (10.1 kg-m, 73.1 ft-lb) @6,500 r/min (rpm), Ⓖ Ⓢ 94.1 N-m (9.6 kg-m, 69.4 ft-lb) @6,500 r/min (rpm), (Swi) 92.2 N-m (9.4 kg-m, 68.0 ft-lb) @6,000 r/min (rpm) |
| Carburetion system | | | DFI (Digital Fuel Injection), Turbo |
| Starting system | | | Electric starter |
| Ignition system | | | Battery and coil (transistorized) |
| Timing advance | | | Electronically advanced |
| Ignition timing | | | From 10° BTDC @1,050 r/min (rpm) to 30° BTDC @3,300 r/min (rpm) Ⓤ From 10° BTDC @1,200 r/min (rpm) to 30° BTDC @3,300 r/min (rpm) |
| Spark plug | | | NGK BR9EV |
| Cylinder numbering method | | | Left to right, 1-2-3-4 |
| Firing order | | | 1-2-4-3 |
| Valve timing: | Inlet | Open | 22° BTDC |
| | | Close | 52° ABDC |
| | | Duration | 254° |
| | Exhaust | Open | 60° BBDC |
| | | Close | 20° ATDC |
| | | Duration | 260° |

Ⓒ : Canadian model
Ⓖ : West German model
(SA): South African model
(Cal): California model
Ⓢ : Swedish model
(Swi): Switzerland model
Ⓕ : French model
Ⓤ : US model

| Items | | | ZX750-E1 |
|---|---|---|---|
| Lubrication system | | | Forced lubrication (wet sump with cooler) |
| Engine Oil: | Grade | | SE class |
| | Viscosity | | SAE10W40, 10W50, 20W40, or 20W50 |
| | Capacity | | 3.5 L |
| **Drive Train:** | | | |
| Primary reduction system: | | | |
| | Type | | Gear |
| | Reduction ratio | | 1.935 (60/31) |
| Clutch type | | | Wet multi disc |
| Transmission: | Type | | 5-speed, constant mesh, return shift |
| | Gear ratios: | 1st | 2.285 (32/14) |
| | | 2nd | 1.647 (28/17) |
| | | 3rd | 1.272 (28/22) |
| | | 4th | 1.045 (23/22) |
| | | 5th | 0.833 (20/24) |
| Final drive system: | | | |
| | Type | | Chain drive |
| | Reduction ratio | | 3.066 (46/15) |
| | Overall drive ratio | | 4.946 @Top gear |
| **Frame:** | | | |
| Type | | | Tubular, double cradle |
| Caster (rake angle) | | | 28° |
| Trail | | | 117 mm |
| Front tire: | Type | | Tubeless |
| | Size | | 110/90 V 18 |
| Rear tire: | Type | | Tubeless |
| | Size | | 130/80 V 18 |
| Front suspension: | | | |
| | Type | | Telescopic fork (pneumatic) |
| | Wheel travel | | 130 mm |
| Rear suspension: | | | |
| | Type | | Swing arm (uni-trak) |
| | Wheel travel | | 105 mm |
| Brake type: | Front | | Dual disc |
| | Rear | | Single disc |
| **Electrical Equipment:** | | | |
| Battery | | | 12 V 14 AH |
| Headlight: | Type | | Semi-Sealed beam |
| | Bulb | | 12 V 60/55 W (quartz-halogen) |
| Tail/brake light | | | 12 V 5/21 W x 2, Ⓒ Cal SA Ⓤ 12 V 8/27 W x 2 |
| Alternator: | Type | | Three-phase AC |
| | Rated output | | 20 A @8,000 r/min (rpm), 14 V |
| Voltage regulator: | | | |
| | Type | | Short-circuit |

## 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 detail 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 fillings.

(2) Battery Ground

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

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

(3) Tightening Sequence

Generally, when installing a part with several bolts, nuts, or screws, they should all be started in their holes and tightened to a snug fit. Then tighten them evenly in a cross pattern. This is to avoid distortion of the part and/or causing gas or oil leakage. Conversely when loosening the bolts, nuts, or screws, first loosen all of them by about a quarter of turn and then remove them.

Where there is a tightening sequence indication in this Service Manual, the bolts, nuts, or screws must be tightened in the order and method indicated.

(4) Torque

The torque values given in this Service Manual should always be adhered to. Either too little or too much torque may lead to serious damage. Use a good quality, reliable torque wrench.

(5) Force

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

(6) Edges

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

(7) High Flash-point Solvent

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

(8) Gasket, O-Ring

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

(9) Liquid Gasket, Non-permanent Locking Agent

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

(10) Press

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

(11) Ball Bearing

When installing a ball bearing, the bearing race which is affected by friction should be pushed by a suitable driver. This prevents severe stress on the balls and races, and prevents races and balls from being dented. Press a ball bearing until it stops at the stop in the hole or on the shaft.

(12) Oil Seal and Grease Seal

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

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

(13) Seal Guide

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

(14) Circlip, Retaining Ring

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

(15) Lubrication

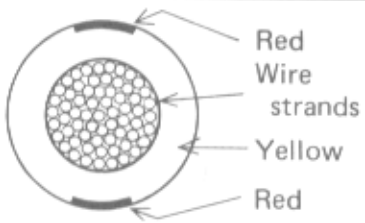
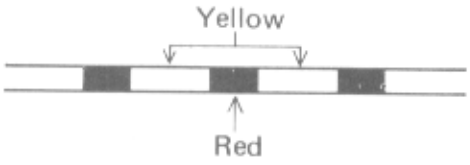
Engine wear is generally at its maximum while the engine is warming up and before all the rubbing surfaces have an adequate lubricative film. During assembly, oil or grease (whichever is more suitable) should be applied to any rubbing surface which has lost its lubricative film. Old grease and dirty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

182100

| Wire (cross-section) | Name of Wire Color | Picture in Wiring Diagram |
|---|---|---|
|   | 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 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) Service Data

Numbers of service data in this text have following meanings:

"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.

(20) DFI (Digital Fuel Injection) System

There are a number of important precautions that must be observed when servicing the Kawasaki DFI system. Failure to observe these precautions can result in serious system damage. Learn and observe all the rules listed below.

**Electrical System:**

- Do not disconnect the battery leads or any other electrical connections when the ignition switch is on, or while the engine is running. This is to prevent control unit damage.

"NOTE"

○*Whenever electrical connections are to be disconnected, first turn off the* **ignition switch,** *disconnect the* **DFI positive (+) lead** *from the battery positive terminal, and then disconnect the required connections. There are other white/red leads which are connected to the battery positive terminal, but these leads can be left connected.*

- Conversely, make sure that all electrical connections are firmly reconnected before starting the engine. Especially, do not forget to connect the DFI negative lead to the battery negative (−) terminal.
- The Kawasaki electronic fuel injection system is designed to be used with a 12-volt battery as its power source. Do not use anything other than a 12-volt battery as a power source.

"NOTE"

○*Do not directly connect a 12-volt battery to a fuel injector. Insert a resistor, which has a resistance of 5 — 7 Ω, in series between the battery and the injector, or use a 3-volt dry battery.*

- Always disconnect the battery positive and negative leads from the terminals, and remove the battery from the motorcycle for charging. This is to prevent the DFI control unit from being damaged by excessive peak voltage.
- Avoid spryaing water with any great force on the electrical components, connectors, leads, and wiring harness of the DFI system.
- Keep the DFI system wiring harness at least 100 mm from all other system leads (especially high tension leads of the ignition system). This to prevent the DFI control unit from malfunctioning due to external electrical noises.
- If a transceiver is installed on the motorcycle, make sure that the operation of the fuel injection system is not influenced by electric wave radiated from the antenna. Check operation of the system with the engine at idle.

"NOTE"

○*Locate the antenna as far as possible from the control unit. The interference from radio waves can be reduced by grounding the unit control box to the motorcycle.*

- Important throttle sensor information for Kawasaki DFI system.

"NOTE"

○*Engine performance is sensitive to throttle sensor position.*
○*The throttle sensor does not require any periodic maintenance.*
○*Do not alter or adjust sensor position unless otherwise the sensor position has been obviously upset.*
○*Sensor position is the last cause to be suspected in troubleshooting the DFI system.*

Fuel System:

- Do not operate the fuel pump if the inside of the pump is completely dry. This is to prevent the pump from running without lubricant at the friction surfaces.
- Blow the fuel system clean with compressed air before removing the parts.
- Any hose clamps on the high-pressure fuel line must be replaced with new ones once they are loosened.

"NOTE"

- Install the hose clamps in the position shown in the Disassembly Chapter and securely tighten the clamp screws. Check the fuel system for leaks.

- To prevent corrosion and deposits in the fuel system, do not add any antifreeze chemicals in fuel.

WARNING

- **When any fuel hose is disconnected, do not turn on the ignition switch. The fuel pump will operate and fuel will spout from the fuel hose if you turn on the switch while the hose is disconnected.**

Air System:

- In order to maintain the correct fuel/air mixture, there must be no air leaks in the air system. Be sure to install the oil filler cap securely after adding engine oil.

## High Altitude Performance Adjustment Information (US Model)

To improve the EMISSION CONTROL PERFORMANCE of vehicles operated above 4,000 feet an Environmental Protection Agency (EPA) approved modification may be required for some models. However, any kind of modification is not necessary for the 1984 model ZX750E.

## Setting Before Ride

Before using this motorcycle check and/or adjust the following to ensure safe and comfortable riding conditions.

### Fuel Requirement:

*Octance Rating*

The octane rating of a gasoline is a measure of its resistance to detonation or "knocking". Use premium gasoline with an octane rating equal to or higher than that shown in the table below.

| Octane Rating Method | Minimum Rating |
|---|---|
| Antiknock Index $\frac{(RON + MON)}{2}$ | 90 |
| Research Octane No. (RON) | 95 |

The Antiknock Index is an average of the Research Octane No. (RON) and the Motor Octane No. (MON). The Antiknock Index is posted on service station pumps in the U.S.A. Research Octane No. is a commonly used term describing a gasoline's octane rating.

**"NOTE"**

○*If "knocking" or "pinging" occurs, try a different brand of gasoline or a higher octane grade.*

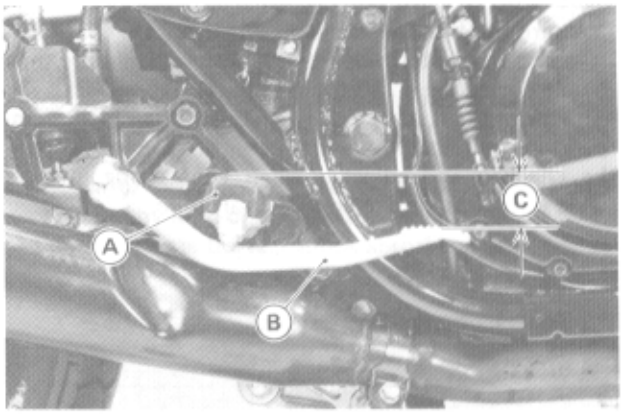
### Brake Pedal:

Brake pedal position is an important factor for safe and confortable riding.

*Inspection of Brake Pedal Position*

●Measure the height difference between the tops of the footpeg and the pedal.

★If the pedal position is not within the limit, adjust it.




A. Footpeg
B. Brake Pedal
C. Pedal Position

**Brake Pedal Position**

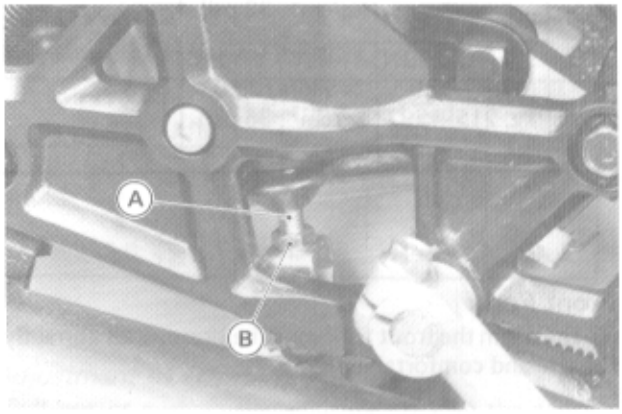
| |
|---|
| 50.5 – 54.5 mm below top of footpeg |

*Adjustment of Brake Pedal Position*

●Loosen the locknut, and turn the push rod of the rear brake master cylinder to adjust the pedal position.

●Be sure to tighten the locknut after adjustment.

●Check operation of the rear brake and the brake light switch.




A. Push Rod
B. Locknut

**"NOTE"**

○*If the brake pedal position cannot be adjusted by turning the push rod, the brake pedal may be deformed or incorrectly installed.*

## Tires:

Failure to maintain proper inflation pressures or observe payload limits for your tires may adversely affect handling and performance of your motorcycle and can result in loss of control.

### *Inspection of Tire Air Pressure*

- Measure the tire pressure when the tires are cold (that is, when the motorcycle has not been ridden more than a mile during the past 3 hours).
- Tire pressure is affected by changes in ambient temperature and altitude, and so the tire pressure should be checked and adjusted when your riding involves wide variations in temperature or altitude.

**Tire Air Pressure (US and Canada)**

| | | |
|---|---|---|
| Front | 196 kPa (2.0 kg/cm², 28 psi) | |
| Rear | Up to 956 N (97.5 kg, 215 lb) load | 221 kPa (2.25 kg/cm², 32 psi) |
| | 956 – 1,770 N (97.5 – 180 kg, 215 – 397 lb) load | 245 kPa (2.5 kg/cm², 36 psi) |

**Tire Air Pressure (Other than US and Canada)**

| | Load | Tire Air Pressure | |
|---|---|---|---|
| | | Under 210 km/h (130 mph) | Over 210 km/h (130 mph) |
| Front | ——— | 196 kPa (2.00 kg/cm², 28 psi) | 221 kPa (2.25 kg/cm², 32 psi) |
| Rear | Up to 956 N (97.5 kg, 215 lb) | 221 kPa (2.25 kg/cm², 32 psi) | 284 kPa (2.90 kg/cm², 41 psi) |
| | 956 – 1,770 N (97.5 – 180 kg, 215 – 397 lb) | 245 kPa (2.50 kg/cm², 36 psi) | |

## Front Fork:

The air in the front fork must be pressurized correctly for safe and comfortable riding.

### *Inspection of Front Fork Air Pressure*

- Put the motorcycle on its center stand, and raise the front wheel off the ground using a jack under the engine.
- Use the air pressure gauge (special tool: P/N 52005-1003) specially made for air suspensions.
- Check and adjust the air pressure when the front fork is cold (room temperature).

"NOTE"

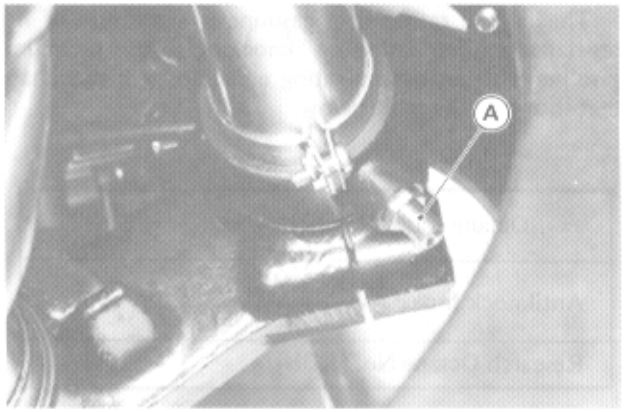
- *Do not use a tire gauge for checking air suspension's air pressure. They do not indicate the correct pressure because of air leaks that occure when the gauge is applied to the valve.*
- *Lower air pressure is for comfortable riding, but it should be increased for high speed riding, or riding on bad roads.*

CAUTION

- **Inject air little by little so that air pressure does not rise rapidly. Air pressure exceeding 245 kPa (2.50 kg/cm², 36 psi) may damage the oil seal.**

WARNING

- **Be sure to adjust the air pressure within the usable range. Pressure too high or too low can produce a hazardous riding condition.**
- **Only air or nitrogen gas can be used. Never inject oxygen or any kind of explosive gas.**
- **Do not incinerate the front fork.**
- **Do not remove the springs and rely on compressed air only. Correct springs must be used in this suspension system. Use without springs can lead to a condition causing accident and injury.**




A. Air Valve

**Front Fork Air Pressure**

| | |
|---|---|
| Standard: | 49 kPa (0.50 kg/cm², 7.1 psi) |
| Usable range: | 39 – 59 kPa (0.4 – 0.6 kg/cm², 5.7 – 8.5 psi) |

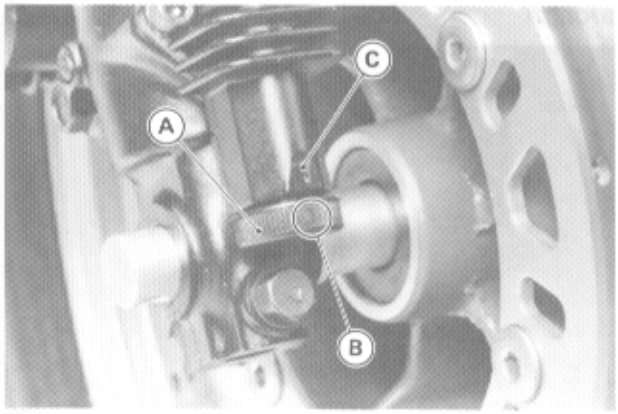
### *Anti-Dive Adjustment*

The anti-dive adjuster on each front fork leg has 3 positions so that the anti-dive system can be adjusted for different road and loading conditions. The numbers on the adjuster show the setting position of the anti-dive system.

- Turn the anti-dive adjuster until you feel a click so that the desired position number aligns with the triangular mark.
- Check to see that both adjusters are turned to the same relative position.

WARNING

**○If both anti-dive adjusters are not adjusted equally, handling may be impaired and a hazardous condition may result.**




A. Anti-Dive Adjuster
B. Position Number
C. Triangular Mark

**Anti-Dive Adjustment**

| Position | 1 | 2 | 3 |
|---|---|---|---|
| Anti-Dive | Weak | Moderate | Strong |

## Rear Shock Absorbers:

The rear shock absorber can be adjusted by changing the air pressure and damping force to suit various riding and loading conditions.

### *Inspection of Air Pressure*

- Put the motorcycle up on its center stand to raise the rear wheel off the ground.
- Remove the side cover.
- Use the air pressure gauge (Special tool: P/N 52005-1003) specially made for air suspensions.
- Check and adjust the air pressure when the rear shock absorbers are cold (room temperature).

"NOTE"

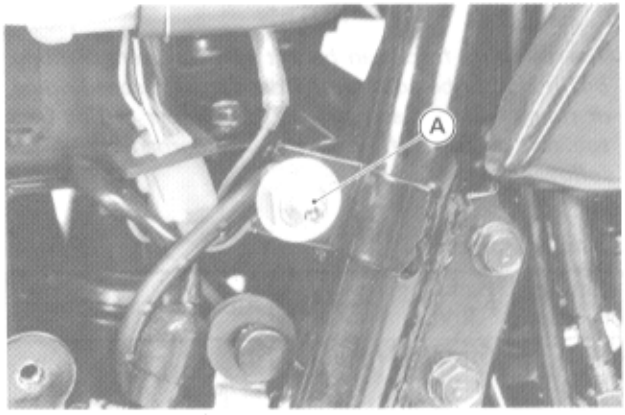
*○Do not use a tire gauge for checking air pressure. They may not indicate the correct air pressure because of air leaks that occur when the gauge is applied to the valve.*
*○Lower air pressure is for comfortable riding for an average-built rider of 68 kg with no accessories. Ordinarily, the heavier the total load becomes, the higher the air pressure should be set.*

CAUTION

**○Inject air little by little so that air pressure does not rise rapidly. Air pressure exceeding 490 kPa (5.0 kg/cm², 71 psi) may damage the oil seal.**

WARNING

**○Be sure to adjust the air pressure within the usable range. Pressure too high or too low can produce a hazardous riding condition.**
**○Only air or nitrogen gas can be used. Never inject oxygen or any kind of explosive gas.**
**○Do not incinerate the rear shock absorbers.**




A. Air Valve

"NOTE"

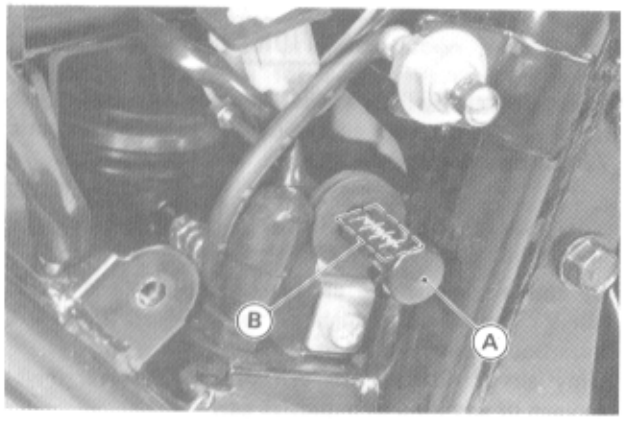
*○The recommended air pressure is 196 kPa (2.00 kg/cm², 28 psi) for one rider with no accessories.*

**Rear Shock Absorber Air Pressure**

| Air Pressure kPa (kg/cm², psi) | Setting | Load | Road |
|---|---|---|---|
| 49 (0.5, 7.1) | Soft | Light | Good |
| ↕ | ↕ | ↕ | ↕ |
| 294 (3.0, 43) | Hard | Heavy | Bad |

### *Adjustment of Damping Force*

- Pull out or push in the adjusting stick to the desired setting position until you feel a click. The numbers on the adjusting stick show the setting position of the damper.
  - Position 1 – the fully-pushed-in position.
  - Position 2 – the first click position on the adjusting stick return way.
  - Position 3 – the second click position on the adjusting stick return way.
  - Position 4 – the fully-pulled-out position.




A. Adjusting Stick B. Position Number

**"NOTE"**

○*The damping force can be left soft for average riding. But it should be adjusted harder for high speed riding, or riding with a passanger. If the damper setting feels too soft or too stiff, adjust it in accordance with the following table:*

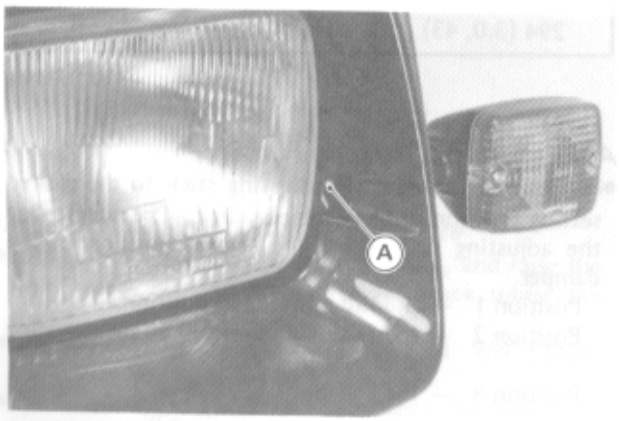
**Damping Force**

| Setting Position | Damping Force | Setting | Load | Road | Speed |
|---|---|---|---|---|---|
| 1 | Stronger | Soft | Light | Good | Low |
| 2 | ↓ | ↕ | ↕ | ↕ | ↕ |
| 3 | | | | | |
| 4 | | Hard | Heavy | Bad | High |

## Headlight:

The headlight beam is adjustable both horizontally and vertically. Headlight aiming must be correctly adjusted for your safe riding as well as oncoming drivers. In most areas it is illegal to ride with improperly adjusted headlights.

### *Horizontal Adjustment*



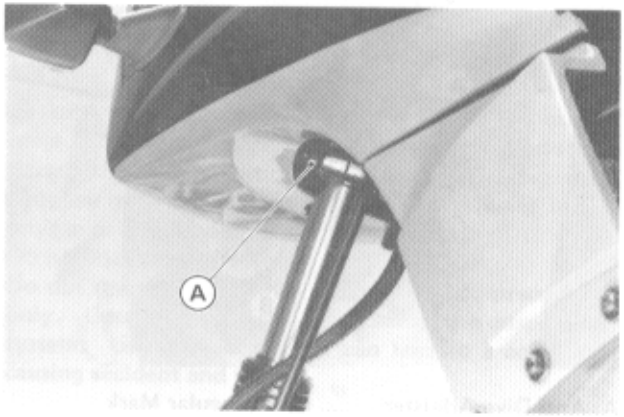

A. Adjusting Screw for Horizontal Adjustment

### *Vertical Adjustment*

- Remove the cowling.
- Loosen the lower headlight bolt.
- Open the headlight unit.
- Loosen the headlight housing mounting nuts, and adjust the headlight vertically.

**"NOTE"**

○*On high beam, the brightest point should be slightly below horizontal with the motorcycle on its wheels and the rider seated. Adjust the headlight to the proper angle according to local regulations.*



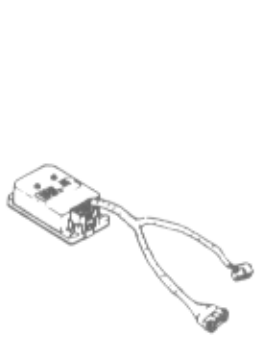

A. Headlight Bolt

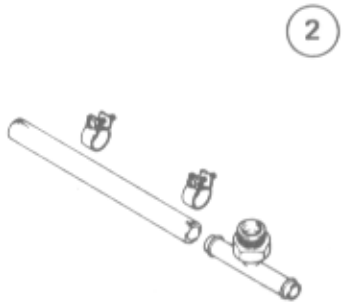
**Vertical Adjustment** 182101

## Special Tools

Refer to p. 383 of the Base Manual noting the following exception.

| Ref. No. | Part No. | Discription | Quantity |
|---|---|---|---|
| 1 | 57001-1003 | Throttle Sensor Positioning Checker | 1 |
| 2 | 57001-1089 | Adapter | 1 |



## Torque and Locking Agent

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

Letters used in the "Remarks" column mean:
A : Apply a non-permanent locking agent to the threads.
G : Apply a liquied gasket to the threads or washers.
S : Tighten the fasteners following the specified sequence.
St : Stake the fasteners to prevent loosening.

| Engine Parts | Threads Dia. (mm) | Quantity | Torque | | | Remarks |
|---|---|---|---|---|---|---|
| | | | N-m | kg-m | ft-lb | |
| **DFI System Parts:** | | | | | | |
| Engine temperature sensor | 10 | 1 | 13 | 1.3 | 9.5 | – |
| Fuel injector mounting bolts | 5 | 8 | 4.9 | 0.50 | 43 in-lb | – |
| **Accessories:** | | | | | | |
| Oil cooler hose fitting: | | | | | | |
| Bolts | 6 | 4 | 9.8 | 1.0 | 87 in-lb | – |
| Nuts | 6 | 2 | 7.8 | 2.2 | 69 in-lb | – |
| **Engine Mounting:** | | | | | | |
| Engine mounting bolts: | 10 | 4 | 39 | 4.0 | 29 | – |
| Engine mounting bracket bolts | 8 | 8 | 24 | 2.4 | 17.5 | – |
| **Top End:** | | | | | | |
| Breather cover bolt | 8 | 1 | 5.9 | 0.60 | 52 in-lb | – |
| Camshaft bearing cap bolts | 6 | 16 | 12 | 1.2 | 104 in-lb | S |
| Camshaft chain tensioner cap | 18 | 1 | 25 | 2.5 | 18 | – |
| Camshaft sprocket bolts | 6 | 4 | 15 | 1.5 | 11.0 | A |
| Cylinder head: Bolts | 8 | 2 | 29 | 3.0 | 22 | S |
| Nuts | 10 | 12 | 39 | 4.0 | 29 | S |
| Cylinder head cover bolts | 6 | 24 | 7.8 | 0.80 | 69 in-lb | – |
| Spark plugs | 14 | 4 | 27 | 2.8 | 20 | – |
| Studs: | | | | | | |
| Cylinder head | 6 | 8 | – | – | – | A |
| Crankcase | 10 | 12 | – | – | – | A |
| Throttle valve holder bolts | 6 | 8 | 14 | 1.4 | 10.0 | A |
| **Left Side:** | | | | | | |
| Engine sprocket nut | 20 | 1 | 98 | 10.0 | 72 | – |
| Alternator cover bolts | 6 | 4 | – | – | – | A |
| Alternator rotor bolt | 12 | 1 | 125 | 13.0 | 94 | – |
| Alternator stator bolts | 6 | 3 | 9.8 | 1.0 | 87 in-lb | A |
| Neutral switch | 12 | 1 | 15 | 1.5 | 11 | – |

(Continued on next page.)

| Engine Parts | Threads Dia. (mm) | Quantity | Torque | | | Remarks |
|---|---|---|---|---|---|---|
| | | | N-m | kg-m | ft-lb | |
| Shift pedal return spring pin | 8 | 1 | 25 | 2.5 | 18.0 | A |
| Starter clutch bolts | 8 | 3 | 34 | 3.5 | 25 | – |
| Secondary shaft nut | 18 | 1 | 59 | 6.0 | 43 | – |
| **Right Side:** | | | | | | |
| Clutch hub nut | 20 | 1 | 130 | 13.5 | 98 | – |
| Clutch spring bolts | 6 | 5 | 8.8 | 0.90 | 78 in-lb | – |
| Oil pressure switch | – | 1 | 15 | 1.5 | 11.0 | – |
| Timing rotor mounting bolt | 8 | 1 | 25 | 2.5 | 18.0 | – |
| **Bottom Side:** | | | | | | |
| Engine drain plug | 12 | 1 | 37 | 3.8 | 27 | – |
| Oil filter mounting bolt | 20 | 1 | 20 | 2.0 | 14.5 | – |
| Oil pan bolts | 6 | 17 | 9.8 | 1.0 | 87 in-lb | – |
| Sub oil pan bolts | 6 | 2 | 9.8 | 1.0 | 87 in-lb | – |
| Oil pressure relief valve | 12 | 1 | 15 | 1.5 | 11.0 | A |
| Turbocharger mounting bolts | 6 | 2 | – | – | – | – |
| Oil pipe banjo bolts | 10 | 2 | 20 | 2.0 | 14.5 | – |
| Oil hose elbow mounting bolts | 2 | – | – | – | – | – |
| Shift drum pin plate screw | 6 | 1 | – | – | – | A |
| **Internal Parts:** | | | | | | |
| Crankcase bolts: | | | | | | |
| 6 mm dia. | 6 | 20 | 9.8 | 1.0 | 87 in-lb | A |
| 8 mm dia. | 8 | 10 | 25 | 2.5 | 18.0 | A, S |
| Connecting rod big end cap nuts | 8 | 8 | 36 | 3.7 | 27 | – |

| Chassis Parts | Threads Dia. (mm) | Quantity | Torque | | | Remarks |
|---|---|---|---|---|---|---|
| | | | N-m | kg-m | ft-lb | |
| **Wheels:** | | | | | | |
| Front axle nut | 14 | 1 | 59 | 6.0 | 43 | – |
| Front axle clamp nut | 8 | 1 | 20 | 2.0 | 14.5 | – |
| Front fender mounting bolts | 8 | 4 | – | – | – | – |
| Rear axle nut | 16 | 1 | 93 | 9.5 | 69 | – |
| Tire air valve nuts | 8 | 4 | 1.5 | 0.15 | 13 in-lb | – |
| **Muffler:** | | | | | | |
| Exhaust pipe holder nuts | 8 | 8 | – | – | – | – |
| Exhaust manifold mouting nuts | 8 | 3 | 20 | 2.0 | 14.5 | – |
| Connecting pipe mounting bolts | 8 | 2 | 20 | 2.0 | 14.5 | – |
| Muffler body clamp bolts | 8 | 2 | – | – | – | – |
| Rear mounting bolts | 8 | 4 | – | – | – | – |

(Continued on next page.)

| Chassis Parts | Threads Dia. (mm) | Quantity | Torque | | | Remarks |
|---|---|---|---|---|---|---|
| | | | N-m | kg-m | ft-lb | |
| **Brakes:** | | | | | | |
| Air bleed valves | 7 | 5 | 7.8 | 0.80 | 69 in-lb | – |
| Brake hose banjo bolts | 10 | 9 | 29 | 3.0 | 22 | – |
| Brake lever pivot bolt | 6 | 1 | 2.9 | 0.30 | 26 in-lb | – |
| Brake lever pivot bolt locknut | 6 | 1 | 5.9 | 0.60 | 52 in-lb | – |
| Brake pipe nipples | 10 | 4 | 23 | 2.3 | 16.5 | – |
| Brake pedal bolt | 8 | 1 | – | – | – | – |
| Caliper mounting bolt (front and rear) | 10 | 6 | 32 | 3.3 | 24 | – |
| Disc mounting bolts | 8 | 18 | 23 | 2.3 | 16.5 | – |
| Front brake light switch mounting screw | 4 | 1 | – | – | – | A |
| Front master cylinder clamp bolts | 6 | 2 | 8.8 | 0.90 | 78 in-lb | – |
| Torque link nuts | 10 | 2 | 29 | 3.0 | 22 | – |
| **Steering:** | | | | | | |
| Handlebar clamp bolts | 6 | 4 | 9.8 | 1.0 | 87 in-lb | – |
| Handlebar holder mounting bolts | 32 | 2 | 74 | 7.5 | 54 | – |
| Handlebar weight mounting bolts | 8 | 2 | – | – | – | A |
| Steering stem head bolt | 14 | 1 | 42 | 4.3 | 31 | – |
| Clutch lever holder bolt | 6 | 1 | – | – | – | – |
| **Suspension and Drive Train:** | | | | | | |
| Anti-Dive brake plunger assembly mounting bolts | 5 | 4 | 4.4 | 0.45 | 39 in-lb | – |
| Anti-Dive valve assembly mounting bolts | 6 | 4 | 6.9 | 0.70 | 61 in-lb | – |
| Eccentric chain adjuster clamp bolts | 10 | 2 | 32 | 3.3 | 24 | – |
| Front fork air valve | 8 | 1 | 7.8 | 0.80 | 69 in-lb | A |
| Front fork bottom bolts | 8 | 2 | 23 | 2.3 | 16.5 | A, G |
| Front fork clamp bolts: Upper | 8 | 2 | 20 | 2.0 | 14.5 | – |
| Lower | 12 | 2 | 39 | 4.0 | 29 | – |
| Front fork drain screws | 4 | 2 | – | – | – | G |
| Front fork top plugs | 32 | 2 | 23 | 2.3 | 16.5 | – |
| Rear shock absorber nuts: | | | | | | |
| Upper | 10 | 1 | 37 | 3.8 | 27 | – |
| Lower | 12 | 1 | 69 | 7.0 | 51 | – |
| Rear shock absorber air valve | 8 | 1 | 7.8 | 0.80 | 69 in-lb | A |
| Rear shock absorber air hose male pipe | 8 | 1 | 12 | 1.2 | 104 in-lb | A |
| Rear sprocket nuts | 10 | 6 | 39 | 4.0 | 29 | – |

(Continued on next page.)

| Chassis Parts | Threads Dia. (mm) | Quantity | Torque | | | Remarks |
|---|---|---|---|---|---|---|
| | | | N-m | kg-m | ft-lb | |
| Swing arm pivot shaft nut | 16 | 1 | 98 | 10.0 | 72 | – |
| Uni-trak links: | | | | | | |
| Rocker arm pivot shaft nut | 12 | 1 | 69 | 7.0 | 51 | – |
| Tie-rod nuts: Upper | 10 | 2 | 37 | 3.8 | 27 | – |
| Lower | 12 | 1 | 69 | 7.0 | 51 | – |
| **Electrical Equipments:** | | | | | | |
| Front brake light switch mounting screw | 4 | 1 | – | – | – | A |
| Starter motor end cover screws | 6 | 2 | 5.4 | 0.55 | 48 in-lb | – |
| Starter motor terminal nut | 6 | 1 | 11 | 1.1 | 95 in-lb | – |
| Turn signal mounting nuts | 10 | 4 | 13 | 1.3 | 113 in-lb | – |
| Side stand switch mounting screws | 5 | 2 | – | – | – | A |

The table below, relating tightening torque to thread diameter, lists the basic torque for the bolts and nuts used on Kawasaki Motorcycles. However, the actual torque that is necessary may vary among bolts and nuts with the same thread diameter. Tightening torque listed in the preceding tables varies to a greater or lesser extent from what is given in the table below. Refer to this table for only the bolts and nuts not included in the tables on the previous pages. All of the values are for use with dry, solvent cleaned threads.

General Fasteners:

| Threads dia. (mm) | Torque | | |
|---|---|---|---|
| | N-m | kg-m | ft-lb |
| 5 | 3.4 – 4.9 | 0.35 – 0.50 | 30 – 43 in-lb |
| 6 | 5.9 – 7.8 | 0.60 – 0.80 | 52 – 69 in-lb |
| 8 | 14 – 19 | 1.4 – 1.9 | 10.0 – 13.5 |
| 10 | 25 – 39 | 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 | 125 – 165 |
| 20 | 225 – 325 | 23 – 33 | 165 – 240 |

## Service Data

The following tables list the service data which show criteria for servicing 1984 model. Although reliable measurements can only be obtained by using the proper instruments and following the procedures explained in this manual, detail has not been explained in this section. See each section for a detailed account.

"NOTE"

- *"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 performace, replace the damaged parts.*

### Engine:

| Item | | Standard | Service Limit | See Page |
|---|---|---|---|---|
| Throttle grip play | | 2 – 3 mm | | 291 |
| Idle speed | | 1,050 ±50 r/min (rpm), Ⓤ 1,200 ±50 r/min (rpm) | | 2-7 |
| Engine vacuum synchronization | | Less than 2.7 kPa (2 cmHg) difference between any two cylinders | | 2-7 |
| **Camshafts, Chain:** | | | | |
| Cam height | | 35.746 – 35.854 mm | 35.65 mm | 157 |
| Camshaft bearing oil clearance | | 0.100 – 0.141 mm | 0.23 mm | 158 |
| Camshaft journal diameter | | 21.94 – 21.96 mm | 21.91 mm | 158 |
| Camshaft bearing inside diameter | | 22.060 – 22.081 mm | 22.14 mm | 158 |
| Camshaft runout | | – – – | 0.1 mm TIR | 158 |
| Cam chain 20-link length | | 127.00 – 127.36 mm | 128.9 mm | 159 |
| **Cylinder Compression:** | | 785 – 980 kPa (8.0 – 10.0 kg/cm$^2$, 114 – 142 psi), and less than 98 kPa (1 kg/cm$^2$, 14 psi) difference between any two cylinders | 620 – 980 kPa (6.3 – 10.0 kg/cm$^2$, 90 – 142 psi), or 98 kPa (1 kg/cm$^2$, 14 psi) difference between any two cylinders | 169 |
| **Cylinder Head, Valves:** | | | | |
| Valve clearance: | Inlet | 0.13 – 0.23 mm | – – – | 2-4 |
| | Exhaust | 0.08 – 0.18 mm | – – – | 2-4 |
| Cylinder head warp | | – – – | 0.05 mm | 160 |
| Combustion chamber volume | | 24.6 ±0.4 mL | – – – | 160 |
| Valve head thickness: | Inlet | 0.8 – 1.2 mm | 0.5 mm | 161 |
| | Exhaust | 0.8 – 1.2 mm | 0.7 mm | 161 |
| Valve stem bend | | – – – | 0.05 mm TIR | 162 |
| Valve stem diameter | | 6.95 – 6.97 mm | 6.94 mm | 162 |
| Valve guide inside diameter | | 7.000 – 7.015 mm | 7.08 mm | 163 |
| Valve/valve guide clearance (wobble method) | | 0.08 – 0.16 mm | 0.33 mm | 163 |
| Valve seating area outside diameter: | | | | |
| | Inlet | 33 mm | – – – | 279 |
| | Exhaust | 29 mm | – – – | 279 |

(Continued on next page.)

**Engine: (Cont.)**

| Item | | Standard | Service Limit | See Page |
|---|---|---|---|---|
| Valve seating area width | | 0.5 – 1.0 mm | – – – | 279 |
| Valve installed height: | Inlet | 36.56 – 37.48 mm | – – – | 164 |
| | Exhaust | 37.11 – 38.03 mm | – – – | 164 |
| Valve spring free length: | Inlet | 37.25 mm | 35.3 mm | |
| | Exhaust | 41.85 mm | 40.3 mm | |
| **Cylinder Block, Pistons:** | | | | |
| Cylinder inside diameter | | 66.005 – 66.017 mm, and less than 0.01 mm difference between any two measurements | 66.10 mm, or 0.05 mm difference between any two measurements | 169 |
| Piston diameter | | 65.951 – 65.966 mm | 65.81 mm | 170 |
| Piston/cylinder clearance | | 0.040 – 0.067 mm | – – – | 170 |
| Piston ring groove width: | Top | 1.02 – 1.04 mm | 1.12 mm | 171 |
| | Second | 1.21 – 1.23 mm | 1.31 mm | 171 |
| | Oil | 2.50 – 2.52 mm | 2.60 mm | 171 |
| Piston ring thickness: | Top | 0.970 – 0.990 mm | 0.90 mm | 171 |
| | Second | 1.170 – 1.190 mm | 1.10 mm | 171 |
| Piston ring/groove clearance: | Top | 0.03 – 0.07 mm | 0.17 mm | 171 |
| | Second | 0.02 – 0.06 mm | 0.16 mm | 171 |
| Piston ring end gap (top and second) | | 0.20 – 0.40 mm (installed in standard cylinder bore) | 0.7 mm | 171 |
| **Crankshaft, Connecting Rods:** | | | | |
| Connecting rod bend | | – – – | 0.2/100 mm | 172 |
| Connecting rod twist | | – – – | 0.2/100 mm | 173 |
| Connecting rod bearing insert/ crankpin clearance | | 0.036 – 0.066 mm | 0.10 mm | 173 |
| Crankpin diameter: | | 34.984 – 35.000 mm | 34.97 mm | 173 |
| | None | 34.984 – 34.994 mm | | |
| | ○ | 34.995 – 35.000 mm | | |
| Connecting rod big end inside diameter: | | 38.000 – 38.016 mm | – – – | 174 |
| | None | 38.000 – 38.008 mm | | |
| | ○ | 38.009 – 38.016 mm | | |
| Connecting rod big end bearing insert thickness: | Brown | 1.475 – 1.480 mm | – – – | 174 |
| | Black | 1.480 – 1.485 mm | – – – | 174 |
| | Green | 1.485 – 1.490 mm | – – – | 174 |
| Connecting rod bearing insert selection: | | | | 174, 351 |

| | | Marking for con-rod big end bore | |
|---|---|---|---|
| | | ○ | None |
| Marking for crankpin diameter | ○ | Black P/N: 92028-1204 | Brown P/N: 92028-1205 |
| | None | Green P/N: 92028-1203 | Black P/N: 92028-1204 |

(Continued on next page.)

**Engine: (Cont.)**

| Item | Standard | Service Limit | See Page |
|---|---|---|---|
| Connecting rod big end side clearance | 0.13 – 0.33 mm | 0.50 mm | 174 |
| Crankshaft runout | – – – | 0.05 mm TIR | 174 |
| Crankshaft main bearing insert/ journal clearance | 0.020 – 0.044 mm | 0.08 mm | 175 |
| Crankshaft main journal diameter: | 35.984 – 36.000 mm | 35.96 mm | 175 |
| None | 35.984 – 35.992 mm | | |
| ○ | 35.993 – 36.000 mm | | |
| Crankshaft main bearing bore inside diameter: | 39.000 – 39.016 mm | – – – | 175 |
| ○ | 39.000 – 39.008 mm | | |
| None | 39.009 – 39.016 mm | | |
| Crankshaft main bearing insert thickness: Brown | 1.490 – 1.494 mm | – – – | 176 |
| Black | 1.494 – 1.498 mm | – – – | 176 |
| Blue | 1.498 – 1.502 mm | – – – | 176 |
| Crankshaft main bearing insert selection: | | | 176 |

| Marking for crankshaft journal dia. | Marking for con-rod big end bore: ○ | Marking for con-rod big end bore: None |
|---|---|---|
| 1 | Brown P/N: 92028-1102 | Black P/N: 92028-1101 |
| None | Black P/N: 92028-1101 | Blue P/N: 92028-1100 |

| | | | |
|---|---|---|---|
| Crankshaft side clearance | 0.05 – 0.15 mm | 0.35 mm | 176 |
| **Primary Reduction System:** | | | |
| Secondary gear/clutch housing gear backlash | 0 – 0.10 mm | 0.14 mm | 180 |
| **Clutch:** | | | |
| Clutch lever play | 2 – 3 mm | – – – | 17,346 |
| Friction plate thickness | 2.90 – 3.10 mm | 2.8 mm | 178 |
| Friction and steel plate warp | – – – | 0.3 mm | 179 |
| Clutch spring free length | 35.0 mm | 33.9 mm | |
| **Transmission:** | | | |
| Gear backlash | 0 – 0.17 mm | 0.25 mm | 184 |
| Shift fork ear thickness | 4.9 – 5.0 mm | 4.8 mm | 184 |
| Gear shift fork groove width | 5.05 – 5.15 mm | 5.25 mm | 184 |
| Shift fork guide pin diameter: | | | |
| 1st, 2nd – 3rd gear shift fork | 7.9 – 8.0 mm | 7.8 mm | 185 |
| 4th – 5th gear shift fork | 7.985 – 8.000 mm | 7.9 mm | 185 |
| Shift drum groove width | 8.05 – 8.20 mm | 8.3 mm | 185 |
| **Engine Lubrication System:** | | | |
| Relief valve opening pressure | 4.4 – 6.0 kg/cm$^2$ | | 186 |
| Oil pressure @4,000 r/min (rpm), 90°C (194°F) oil temp. | 196 – 245 kPa (2.0 – 2.5 kg/cm$^2$, 28 – 36 psi) | | 186 |

(Continued on next page.)

## Engine: (Cont.)

| Item | | Standard | Service Limit | See Page |
|---|---|---|---|---|
| Engine oil: | Grade | SE class | | 18 |
| | Viscosity | SAE 10W40, 10W50, 20W40, or 20W50 | | 18 |
| | Amount | 3.5 L | | 18 |
| | Level | Between upper and lower levels | | 18 |
| **Turbocharger:** | | | | |
| Actuator valve opening pressure @0.5 mm Actuator rod stroke | | 49 – 69 kPa (0.50 – 0.70 kg/cm$^2$, 7.1 – 10.0 psi) | | 3-7 |

## Chassis:

| Item | Standard | Service Limit | See Page |
|---|---|---|---|
| **Wheels:** | | | |
| Wheel balance | Imbalance of less than 0.1 N (10 g) | | 27,348 |
| Tire payload | 1,770 N (180 kg) | | 2-9 |
| Standard tires: | | | 2-9 |

| Front | Rear |
|---|---|
| 110/90 V 18<br>Michelin A48<br>Tubeless | 130/80 V 18<br>Michelin M48<br>Tubeless |

Air pressure: 2-9

**US and Canada**

| | | |
|---|---|---|
| Front | 196 kPa (2.0 kg/cm$^2$, 28 psi) | |
| Rear | Up to 956 N (97.5 kg, 215 lb) load | 221 kPa (2.25 kg/cm$^2$, 32 psi) |
| | 956 – 1,770 N (97.5 – 180 kg, 215 – 397 lb) load | 245 kPa (2.5 kg/cm$^2$, 36 psi) |

**Other than US and Canada**

| | Load | Tire Air Pressure | |
|---|---|---|---|
| | | Under 210 km/h (130 mph) | Over 210 km/h (130 mph) |
| Front | ——— | 196 kPa (2.00 kg/cm$^2$, 28 psi) | 221 kPa (2.25 kg/cm$^2$, 32 psi) |
| Rear | Up to 956 N (97.5 kg, 215 lb) | 221 kPa (2.25 kg/cm$^2$, 32 psi) | 284 kPa (2.90 kg/cm$^2$, 41 psi) |
| | 956 – 1,770 N (97.5 – 180 kg, 215 – 397 lb) | 245 kPa (2.50 kg/cm$^2$, 36 psi) | |

| | | | | |
|---|---|---|---|---|
| Tire tread depth: | Front | 4.5 mm | 1 mm | 2-9 |
| | Rear | 7.0 mm | 2 mm, Under 130 km/h | 193 |
| | | | 3 mm, Over 130 km/h | 193 |
| Rim runout: | Axial | – – – | 0.5 mm TIR | 193 |
| | Radial | – – – | 0.8 mm TIR | 193 |

(Continued on next page.)

## Chassis: (Cont.)

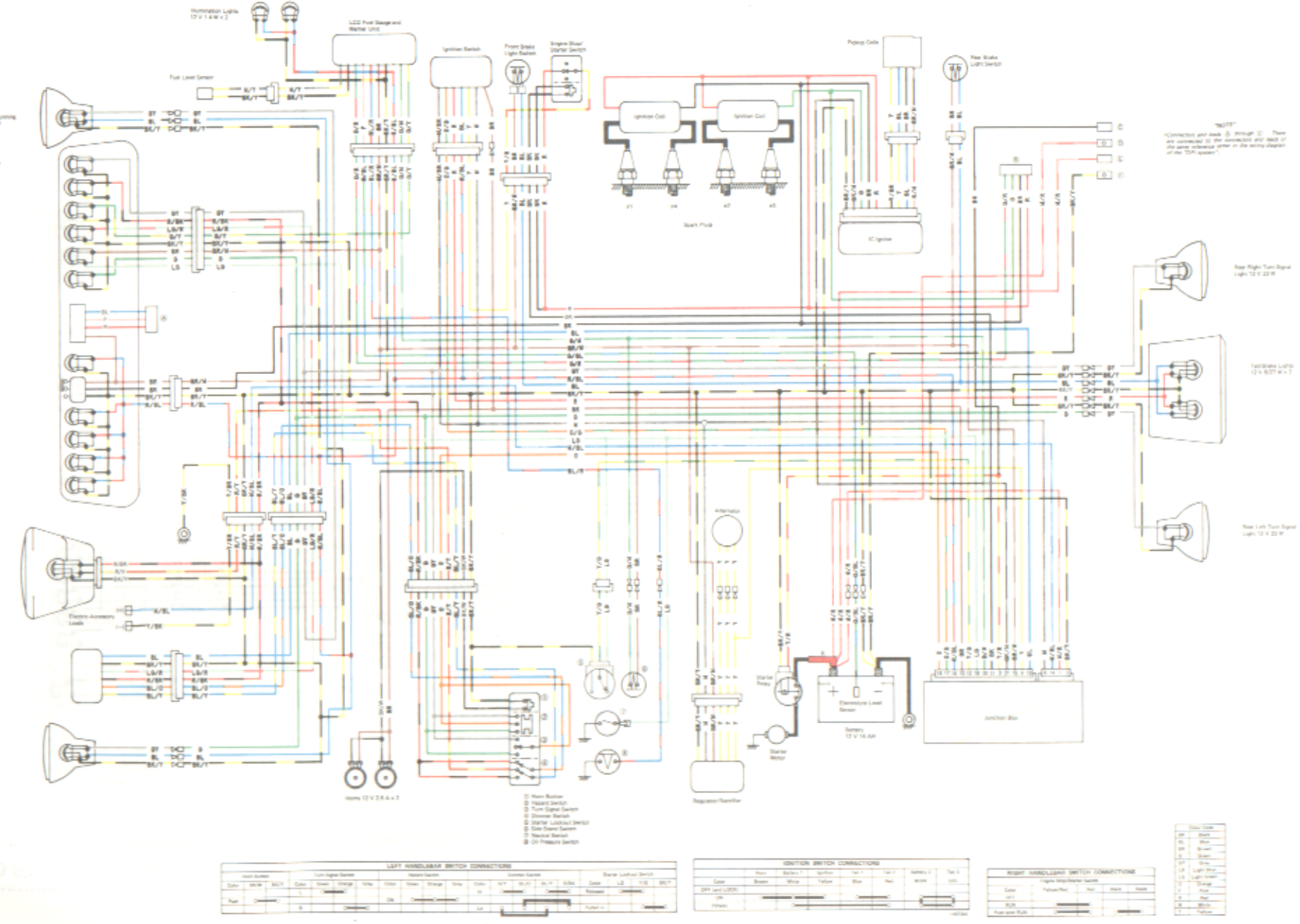
| Item | | Standard | Service Limit | See Page |
|---|---|---|---|---|
| **Drive Train:** | | | | |
| Drive chain slack | | 35 – 40 mm | 35 – 45 mm | 347 |
| Drive chain 20-link length | | 381.0 – 382.0 mm | 389 mm | 198 |
| Front sprocket diameter | | 79.01 – 79.21 mm | 78.3 mm | 199 |
| Rear sprocket diameter | | 267.29 – 267.79 mm | 267.0 mm | 199 |
| Rear sprocket warp | | – – – | 0.5 mm TIR | 199 |
| **Disc Brake:** | | | | |
| Brake fluid grade | | DOT3 | – – – | 205 |
| Pad lining thickness: | Front | 4.85 mm | 1 mm | 203 |
| | Rear | 5.00 mm | 1 mm | 203 |
| Disc warp | | – – – | 0.3 mm TIR | 205 |
| Disc thickness: | Front | 4.8 – 5.1 mm | 4.5 mm | 205 |
| | Rear | 6.8 – 7.1 mm | 6.0 mm | 205 |
| Brake pedal position | | 50.5 – 54.5 mm | | 293 |
| Brake light switch operation: | Front | Non-adjustable | | 25 |
| | Rear | On after about 15 mm pedal travel | | 25 |
| **Front Fork:** | | | | |
| Air pressure | | 39 – 59 kPa (0.4 – 0.6 kg/cm$^2$, 5.7 – 8.5 psi) | | 292 |
| Oil viscosity | | SAE10W | | |
| Oil amount | | 271 ±4 mL | | 212 |
| Oil level | | 176 ±2 mm (Compressed) | | 212 |
| **Rear Shock Absorber:** | | | | |
| Air pressure | | 49 – 294 kPa (0.5 – 3.0 kg/cm$^2$, 7.1 – 43 psi) | | 346 |

## Electrical Equipment:

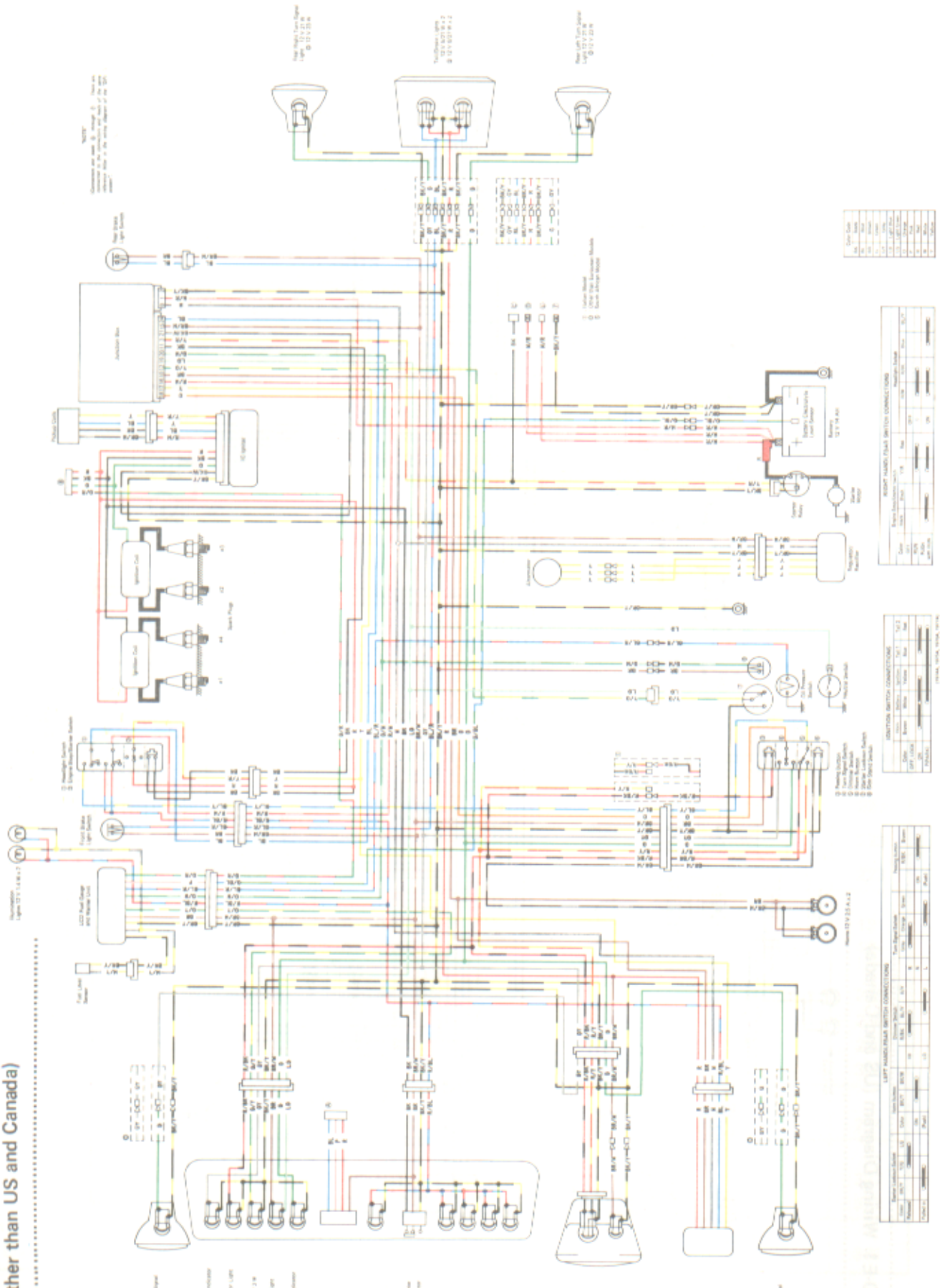
| Item | | Standard | Service Limit | See Page |
|---|---|---|---|---|
| **Charging System:** | | | | |
| Regulator/rectifier output voltage | | Battery voltage – 15 V | | 223 |
| Alternator output @4,000 r/min (rpm), no load | | About 50 V | | 223 |
| Stator coil resistance | | 0.45 – 0.55 Ω | | 223 |
| **Ignition System:** | | | | |
| Spark plug: | Electrode gap | 0.5 – 0.6 mm | | 12 |
| | Type | NGK BR9EV | | 12 |
| Ignition Coil: | | | | |
| Arcing distance (3-needle method) | | 7 mm or more | | 230 |
| Primary winding resistance | | 1.8 – 2.8 Ω | | 230 |
| Secondary winding resistance | | 10 – 16 kΩ | | 230 |
| Pickup coil resistance | | 380 – 560 Ω | | 373 |
| **Electric Starter System:** | | | | |
| Starter motor carbon brush length | | 12.0 – 12.5 mm | 6 mm | 234 |
| **Fuel Gauge:** | | | | |
| Fuel level sensor resistance: | Full | 1 – 5 Ω | | 327 |
| | Empty | 103 – 117 Ω | | 327 |
| **Battery:** | | | | |
| Electrolyte level sensor resistance | | 600 – 750 Ω | | 381 |

Ⓤ: U.S. Model

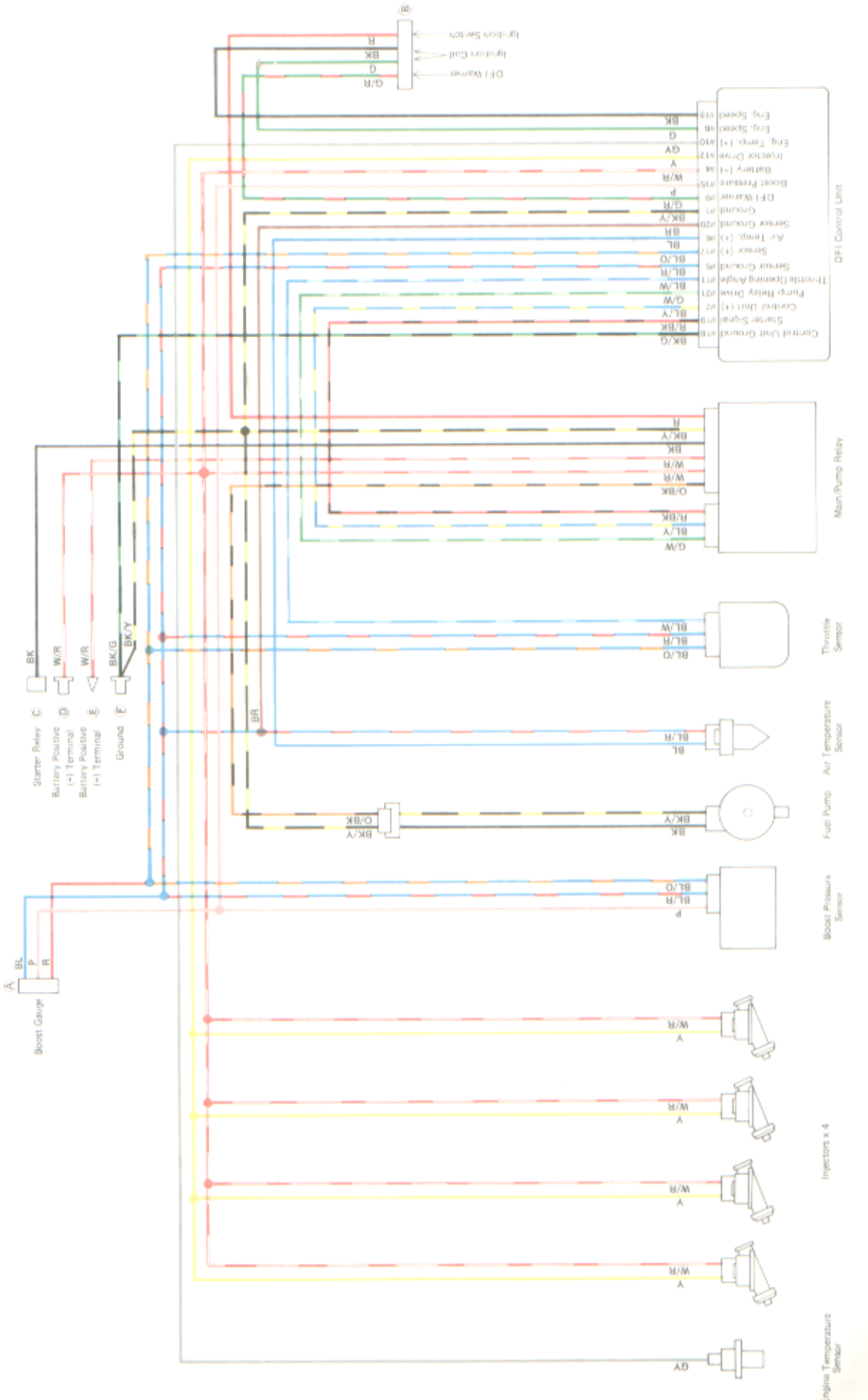
# ZX750-E1 Wiring Diagram (US and Canada)



## ZX750-E1 Wiring Diagram (Other than US and Canada)



## DFI System Wiring Diagram



# Scheduled Maintenance

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## 2-2 SCHEDULED MAINTENANCE

### Periodic Maintenance Chart

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

| OPERATION \ FREQUENCY | Whichever comes first ➡ Every ⬇ | *ODOMETER READING 800 km | 5,000 km | 10,000 km | 15,000 km | 20,000 km | 25,000 km | 30,000 km | See Page |
|---|---|---|---|---|---|---|---|---|---|
| Spark plug – clean | | • | • | • | • | • | • | • | 2-3 |
| Spark plug – check † | | • | • | • | • | • | • | • | 2-3 |
| Valve clearance –check † | | • | • | • | • | • | • | • | 2-4 |
| Air cleaner element – clean | | | • | | • | | • | | 2-6 |
| Air cleaner element – replace | 5 cleanings | | • | | • | | • | | – |
| Throttle grip play – check † | | • | • | • | • | • | • | • | 291 |
| Idle speed – check † | | • | • | • | • | • | • | • | 2-7 |
| Engine vacuum synchronization – check † | | • | • | • | • | • | • | • | 2-7 |
| Cylinder head bolt tightness – check † | | • | | • | | • | | • | 35 |
| Cylinder head nut tightness – check † | | • | | • | | • | | • | 35 |
| Evaporative emission control system – check † (for Cal model) | | • | • | • | • | • | • | • | 2-11 |
| Engine oil – change | year | • | • | • | • | • | • | • | 2-3 |
| Oil filter – replace | | • | | • | | • | | • | 2-3 |
| Oil screen – clean | | • | | • | | • | | • | 2-3 |
| Fuel filter – replace | | | • | | • | | • | | 2-10 |
| Low-pressure fuel hose – replace | 4 years | | | | | | | | 2-10 |
| High-pressure fuel hose – replace | 2 years | | | | | | | | 2-10 |
| Clutch – adjust | | • | • | • | • | • | • | • | 346 |
| Drive chain wear – check † | | | • | • | • | • | • | • | 198 |
| Drive chain – lubricate | 300 km | | | | | | | | 198 |
| Drive chain slack – check † | 800 km | | | | | | | | 347 |
| Brake lining wear – check † | | | • | • | • | • | • | • | 203 |
| Brake fluid level – check † | month | • | • | • | • | • | • | • | 207 |
| Brake fluid – change | year | | | • | | • | | • | 206 |
| Brake hose and pipe – replace | 4 years | | | | | | | | 208 |
| Anti-dive brake plunger assembly – replace | 2 years | | | | | | | | 367 |
| Master cylinder cup and dust seal – replace | 2 years | | | | | | | | 201 |
| Caliper piston seal and dust seal – replace | 2 years | | | | | | | | 204 |
| Brake light switch – check † | | • | • | • | • | • | • | • | 25 |
| Steering – check † | | • | • | • | • | • | • | • | 293 |
| Steering stem bearing – lubricate | 2 years | | | | | • | | | 318 |
| Front fork oil – change | | | | • | | • | | • | 2-9 |
| Tire wear – check † | | | • | • | • | • | • | • | 2-9 |
| Wheel bearing – lubricate | 2 years | | | | | • | | | 197 |
| Speedometer gear – lubricate | 2 years | | | | | • | | | 197 |
| Swing arm pivot, uni-trak linkage – lubricate | | | | • | | • | | • | 368 |
| General lubrication – perform | | | • | • | • | • | • | • | 381 |
| Nut, bolt, and fastener tightness – check † | | • | | • | | • | | • | 2-10 |

* : For higher odometer readings, repeat at the frequency interval established here.
† : Replace, add, adjust, clean, or torque if necessary.
Cal: California Vehicle

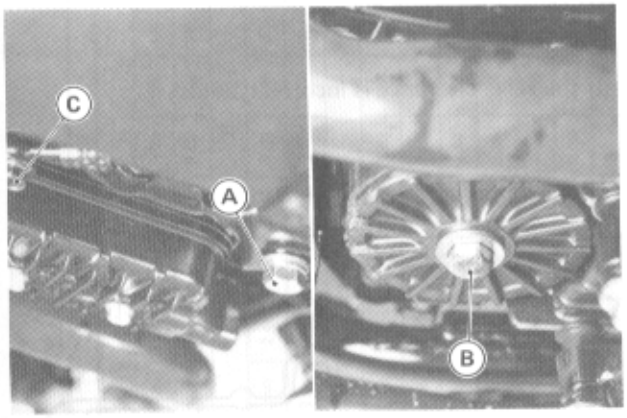
## Engine Oil
## Oil Filter

### *Oil Level Inspection*

Refer to p. 18 of the Base Manual.

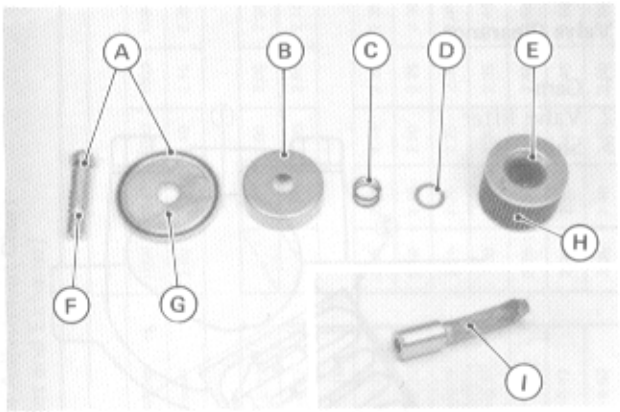
### *Oil and/or Oil Filter Change, Oil Screen Cleaning*

- Warm up the engine thoroughly, and then stop the engine.
- Place an oil pan beneath the engine.
- Remove the engine drain plug.




A. Drain Plug
B. Oil Filter Mounting Bolt
C. Banjo Bolt

- With the motorcycle perpendicular to the ground, let the oil completely drain.
- If the oil filter is to be changed and the oil screen cleaned, remove the oil filter mounitng bolt and drop out the oil filter, and remove the banjo bolt and the oil screen.
- Replace the oil filter element with a new one.




A. O-Rings
B. Element Fence
C. Spring
D. Flat Washer
E. Grommet
F. Mounting Bolt
G. Filter Cover
H. Element
I. Oil Screen

**"NOTE"**

○*Check for O-ring damage. If necessary, replace them with new ones.*
○*When installing the oil filter, make sure the O-rings are in place.*

- Apply a little engine oil to the O-ring on the filter mounting bolt, fit the filter cover and element fence on the bolt, and install the spring and flat washer.
- Apply a little engine oil to the grommets on both sides of the element, and turn the filter to work the element into place. Be careful that the element grommets do not slip out of place.
- Install the oil filter, tightening its mounting bolt to the specified torque.
- Clean the oil screen in a bath of a high flash-point solvent.
- Install the oil screen and tighten the banjo bolt with gaskets to the specified torque.
- After the oil has completely drained out, install the engine drain plug with its gasket. Proper torque for it is shown in the table.

**"NOTE"**

○*Replace the damaged gasket with new ones.*

- Fill the engine up to the upper level with a good quality motor oil specified in the table.
- The oil cooler is equipped in the engine lubrication system. So the additional 0.2 liters of oil will be required for oil cooler and hoses.
- Check the oil level.

**Tightening Torque**

| | |
|---|---|
| Engine Drain Plug: | 29 N-m (3.0 kg-m, 22 ft-lb) |
| Oil Filter Mounting Bolt and Banjo Bolt: | 20 N-m (2.0 kg-m, 14.5 ft-lb) |

**Engine Oil**

| | |
|---|---|
| Grade: | SE class |
| Viscosity: | SAE 10W40, 10W50, 20W40, or 20W50 |
| Capacity: | 3.0 L (3.2 US qt) [when filter is not removed] |
| | 3.5 L (3.7 US qt) [when filter is removed] |
| Oil Cooler and Hose: | 0.2 L (0.21 US qt) |

## Spark Plugs

Refer to p. 12 of the Base Manual noting the following exception.

*Cleaning and Gapping*

**Spark Plugs**

| |
|---|
| NGK BR9EV |

**Plug Gap**

| |
|---|
| 0.5 – 0.6 mm |

**Tightening Torque**

| |
|---|
| 27 N-m (2.8 kg-m, 20 ft-lb) |

## Valve Clearance

*Inspection*

- If the engine is hot, wait until the engine cools. Valve clearance must be checked when the engine is cold (room temperature).
- Remove the cylinder head cover and pickup coil cover.
- Check the valve clearance when pistons are at TDC.

○Using a 17 mm wrench on the timing rotor, turn the crankshaft until a TDC mark on the timing rotor is aligned with the timing mark on the crankcase.

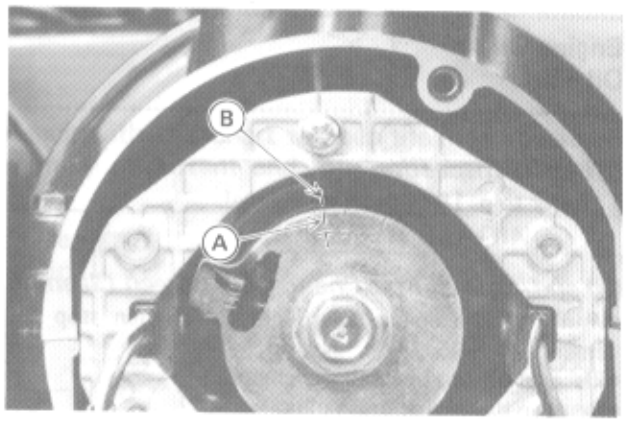
**Measuring Position***

| |
|---|
| TDC of the #1 and #4 pistons →<br>Exhaust #1 and #2 valve clearances or<br>Exhaust #3 and #4 valve clearances<br>TDC of the #2 and #3 piston →<br>Inlet #1 and #2 valve clearances or<br>Inlet #3 and #4 valve clearances |

* : Measure the valve clearance of the valves of which cam lobe is pointing away from the valve lifter.

**"NOTE"**

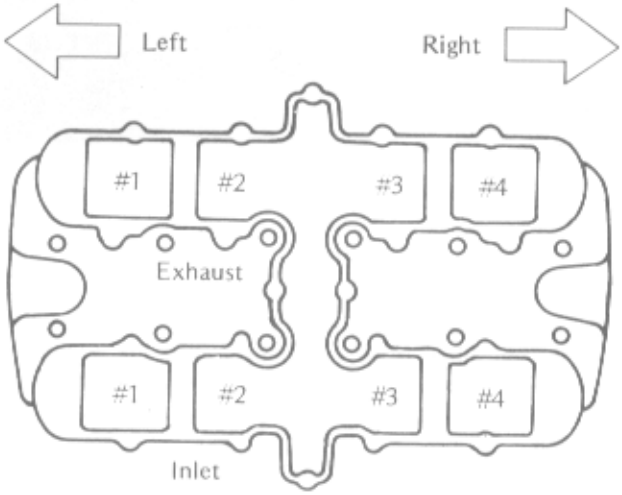
○*Check the valve clearance with the proper method in the text. Checking the clearance at any other cam position may result in improper valve clearance.*




A. TDC Mark for #1 and #4 Pistons
B. Crankcase Timing Mark

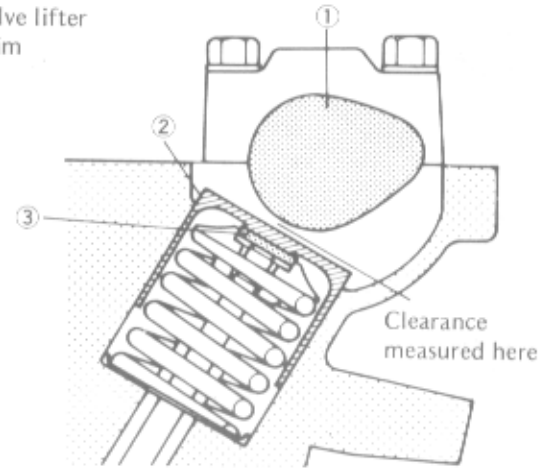
★If the valve clearance is incorrect, adjust it.

**Valve Numbering Method (viewed from top)**




**Valve Clearance**

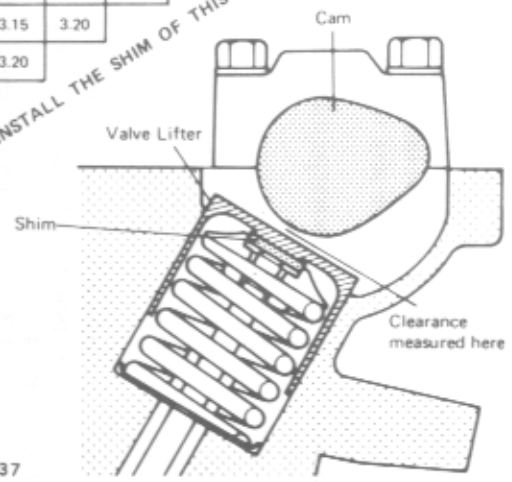
1. Cam
2. Valve lifter
3. Shim



## Valve Clearance Adjustment Chart
## (both Inlet and Exhaust)

| | PRESENT SHIM SIZE | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PART NUMBER (92025- ) | 1090 | 1091 | 1092 | 1093 | 1094 | 1095 | 1096 | 1097 | 1098 | 1099 | 1100 | 1101 | 1102 | 1103 | 1104 | 1105 | 1106 | 1107 | 1108 | 1109 | 1110 | 1111 | 1112 | 1113 | 1114 |
| THICKNESS (mm) | 2.00 | 2.05 | 2.10 | 2.15 | 2.20 | 2.25 | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 |

| VALVE CLEARANCE (mm) | INSTALL THE SHIM OF THIS THICKNESS (mm) | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 ~ 0.03 | | | 2.00 | 2.00 | 2.05 | 2.10 | 2.15 | 2.20 | 2.25 | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 |
| 0.04 ~ 0.07 | | 2.00 | 2.00 | 2.05 | 2.10 | 2.15 | 2.20 | 2.25 | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 |
| 0.08 ~ 0.18 | SPECIFIED CLEARANCE / NO CHANGE REQUIRED | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.19 ~ 0.22 | 2.05 | 2.10 | 2.15 | 2.20 | 2.25 | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | |
| 0.23 ~ 0.27 | 2.10 | 2.15 | 2.20 | 2.25 | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | |
| 0.28 ~ 0.32 | 2.15 | 2.20 | 2.25 | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | |
| 0.33 ~ 0.37 | 2.20 | 2.25 | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | |
| 0.38 ~ 0.42 | 2.25 | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | |
| 0.43 ~ 0.47 | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | |
| 0.48 ~ 0.52 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | |
| 0.53 ~ 0.57 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | |
| 0.58 ~ 0.62 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | |
| 0.63 ~ 0.67 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | |
| 0.68 ~ 0.72 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | |
| 0.73 ~ 0.77 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | | |
| 0.78 ~ 0.82 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | | | |
| 0.83 ~ 0.87 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | | | | |
| 0.88 ~ 0.92 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | | | | | |
| 0.93 ~ 0.97 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | | | | | | |
| 0.98 ~ 1.02 | 2.85 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | | | | | | | |
| 1.03 ~ 1.07 | 2.90 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | | | | | | | | |
| 1.08 ~ 1.12 | 2.95 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | | | | | | | | | |
| 1.13 ~ 1.17 | 3.00 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | | | | | | | | | | |
| 1.18 ~ 1.22 | 3.05 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | | | | | | | | | | | |
| 1.23 ~ 1.27 | 3.10 | 3.15 | 3.20 | | | | | | | | | | | | | | | | | | | | | | |
| 1.28 ~ 1.32 | 3.15 | 3.20 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.33 ~ 1.38 | 3.20 | | | | | | | | | | | | | | | | | | | | | | | | |




282537

1. Measure the clearance (when engine cold).
2. Check present shim size.
3. Match clearance in vertical column with present shim size in horizontal column.
4. The shim specified where the lines intersect is the one that will give you the proper clearance.

"NOTE"

*If there is no clearance, select a shim which is several sizes smaller and then measure the clearnace.*

**Valve Clearance**

| | | |
|---|---|---|
| Standard: | Inlet | 0.13 – 0.23 mm |
| | Exhaust | 0.08 – 0.18 mm |

*Adjustment*

- To change the valve clearance, remove the camshafts and the valve spring retainer with a shim of different thickness.
- To select a new shim which brings valve clearance the specified limit, refer to the Valve Clearance Adjustment Chart.
- Shim thickness is printed on the shim surface. When installing, face the marked side toward the spring retainer. This avoids the marking from being polished off by the action of the valve lifter.
- Install the camshafts. Be sure to time the camshafts properly.
- Remeasure the valve clearance that was adjusted. Readjust if necessary.

CAUTION

- **Do not put shim stock under the shim. This may cause the shim to pop out at high rpm, causing extensive engine damage.**
- **Do not grind the shim. This may cause it to fracture, causing extensive engine damage.**
- **Do not grind the valve stem end to repair it or to permit additional valve clearance. If the valve end is ground, the shim may contact the spring retainer and/or split keepers during operation, allowing the keeper to loosen. Consequently, the valve may drop into the engine, causing serious damage.**

## Air Cleaner

A clogged air cleaner restricts the engine's air intake, increasing fuel consumption, reducing engine power, and causing spark plug fouling.

The air cleaner element must be cleaned and replaced in accordance with the Periodic Maintenance Chart. In dusty areas, the element should be cleaned more frequently than the recommended interval. After riding through rain or on muddy roads, the element should be cleaned immediately. The element should be replaced if it is damaged.

*Inspection and Cleaning*

**Element Removal**

- Remove the Allen bolt on the air cleaner cap on the left side of the engine, and remove the air cleaner cap.
- Remove the bolt and pull out the element.
- Pull the element out of the wire frame.
- Push a clean, lint-free towel into the air cleaner housing to keep dirt or other foreign material from entering.
- Inspect the element material and sponge gasket for damage. If any part of the element is damaged, the element must be replaced.

WARNING

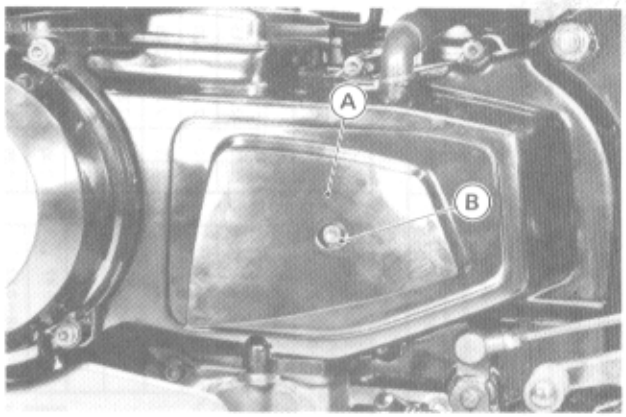
- **If dirt or dust is allowed to pass through into the throttle valves, they may become stuck, possibly causing an accident.**

CAUTION

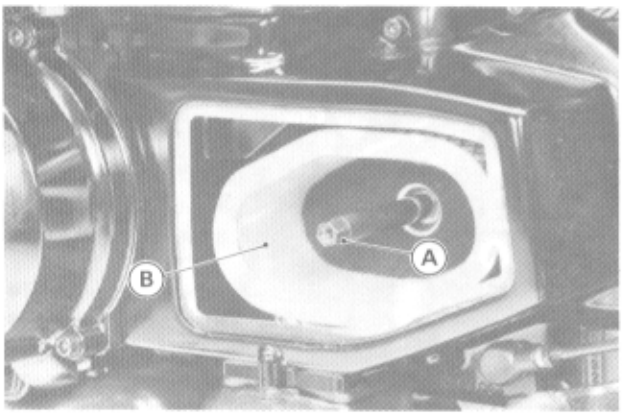
- **If dirt gets through into the engine, excessive engine wear and possibly engine damage will occur.**

"NOTE"

- *Element installation is performed in the reverse order of removal.*
- *If the gasket is damaged, replace it with a new one.*




A. Air Cleaner Cap B. Allen Bolt



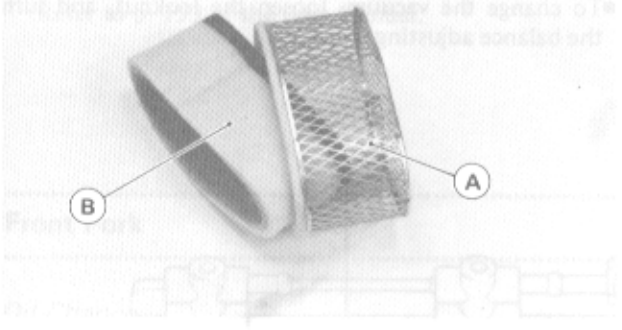

A. Bolt B. Element

**Element Cleaning**

- Clean the element in a bath of a high flash-point solvent.
- Dry the element with compressed air or squeeze it.
- After cleaning, saturate the element with SE class SAE 30 motor oil, squeeze out the excess, than wrap it in a clean rag and squeeze it as dry as possible. Be careful not to tear the element.

WARNING

○**Clean the element in a well ventilated area, and take care that there are no sparks or flame anywhere near the working area; this includes any appliance with a pilot light. Do not use gasoline or a low flash-point solvent to clean the element. A fire or explosion could result.**




A. Wire Frame B. Air Cleaner Element

## Idle Speed

*Inspection*

- Thoroughly warm up the engine.
- With the engine idling, turn the handlebar to both sides.
- ★If handlebar movement changes the idle speed; the throttle cable may be improperly adjusted or incorrectly routed, or it may be damaged. Be sure to correct any of these conditions before riding.

WARNING

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

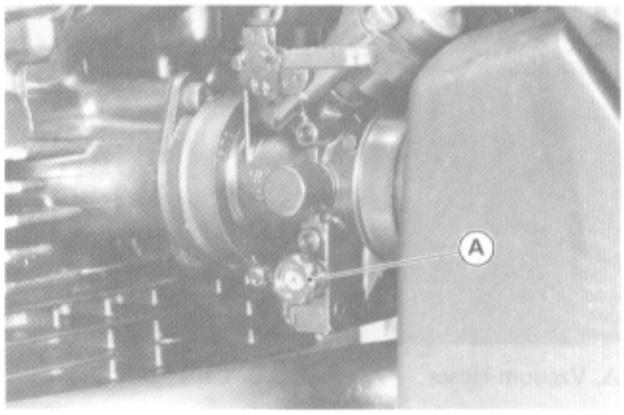
- Check that the idle speed is within the specified range.
- ★If the idle speed is out of the specified range, adjust it.

**Idle Speed**

| | |
|---|---|
| US: | 1,150 – 1,250 r/min (rpm) |
| Other than US: | 1,000 – 1,100 r/min (rpm) |

*Adjustment*

- Turn the idle adjusting screw to adjust the idle speed.




A. Idle Adjusting Screw

- Open and close the throttle a few times to make sure that the idle speed is within the specified range. Readjust if necessary.

## Engine Vacuum Synchronization

### Throttle Valve Link Mechanism Inspection:

- Check the throttle valve and the fast idle link mechanism for smooth operation.
- ★If there is any binding or other unusual operation in the link mechanism, repair it or replace the throttle valve.

**"NOTE"**

○*If any one of the throttle valves is replaced, synchronize the valve as explained below. If the whole throttle valve assembly is replaced, synchronization is not required.*

## Synchronization:

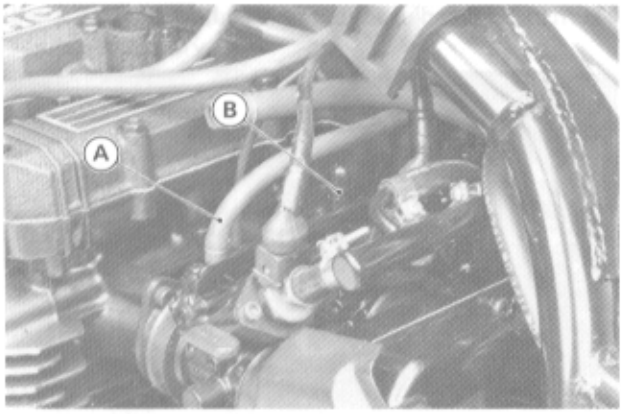
If one of the throttle valves is replaced, or if combustion varies from cylinder to cylinder, synchronize the throttle valves.

**"NOTE"**

○*These procedures are explained on the assumption that the intake and exhaust systems of the engine are in good condition.*

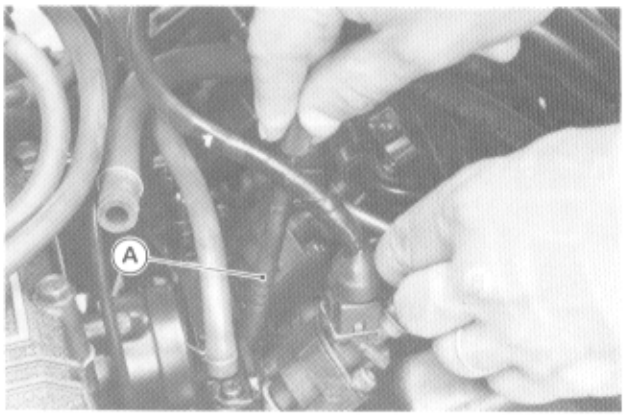
**Checking engine vacuum:**

- Warm up the engine thoroughly.
- Remove the fuel tank, and put it on the work bench near the motorcycle on the same level as the original position.
- Pull off the two vacuum hoses from the #1 and #4 throttle valves, and two rubber caps from the #2 and #3 valves, and connect a vacuum gauge to the fittings on the valves.




A. Vacuum Hoses B. Caps

- Use the balance adjuster (special tool) to turn the locknut and balance adjusting screw.




A. Balance Adjuster: 57001-351

- Using suitable hoses, connect the fuel tap to the fuel filter, and the check valve to the pressure regulator.
- Start the engine, and let it idle.
- Adjust the idle speed.
- Note the gauge readings.

**Engine Vacuum**

| | |
|---|---|
| Difference between any two cylinders | Less than 2 cm Hg |

★If the gauges show more vacuum difference than specified in the table, synchronize the valves.

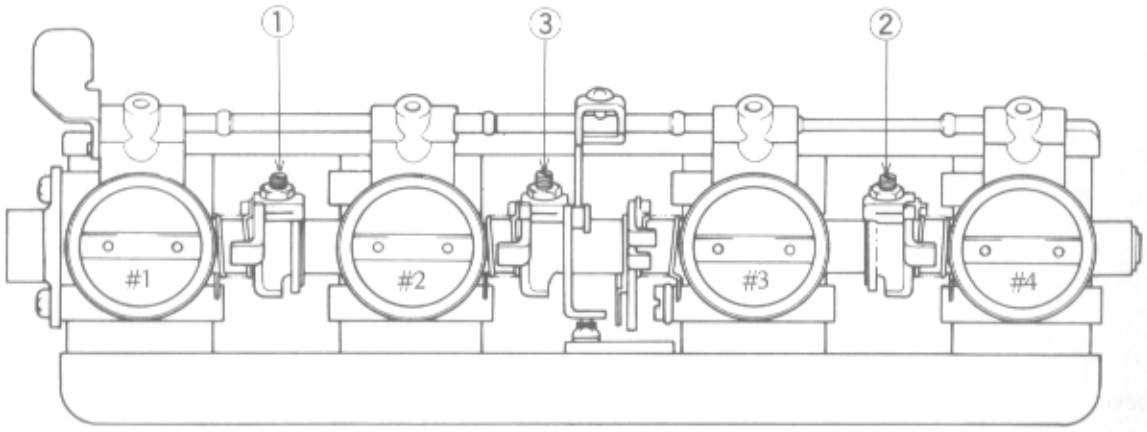
**"NOTE"**

○*After checking or synchronizing the valves, and installing the fuel tank, adjust the idle speed.*

**Synchronizing the throttle valves:**

- Stop the engine.
- To change the vacuum, loosen the locknut, and turn the balance adjusting screw.

**Adjusting Screw for Synchronization**




1. Left Adjusting Screw: Turn this screw clockwise to lower #1 cylinder vacuum.
3. Center Adjusting Screw: Turn this screw clockwise to lower #1 and #2 cylinder vacuum simultaneously.
2. Right Adjusting Screw: Turn this screw clockwise to lower #4 cylinder vacuum.

"NOTE"

○*Loosen the locknut with the throttle valves opened.*
○*First synchronize the left two or right two cylinders by means of the adjusting screw ① or ② between #1 and #2 cylinders, or #3 and #4 cylinders. Then synchronize the left two cylinders and the right two cylinders using the center adjusting screw ③. Adjust the idle speed as necessary.*

- Tighten the locknuts.
- Open and close the throttle a few times to make sure that the throttle valves are synchronized. Readjust if necessary.
- Install all parts previously removed, and adjust the idle speed.

## Drive Chain

### Wheel Alignment Adjustment:

Refer to p. 347 of the Base Manual noting the following exception.

**Tightening Torque**

| | |
|---|---|
| Adjuster Clamp Bolts: | 32 N-m (3.3 kg-m, 24 ft-lb) |
| Axle Nut: | 93 N-m (9.5 kg-m, 69 ft-lb) |

### Wear Inspection:

Refer to pp. 197 and 198 of the Base Manual.

### Lubrication:

Refer to p. 199 of the Base Manual.

## Front Fork

*Oil Change*

Refer to p. 366 of the Base Manual noting the following exception.

**Fork Oil**

| Oil Type | Capacity | | Level* |
|---|---|---|---|
| | At Oil Change | After Disassembly (Dry) | |
| SAE 10W20 | Approx. 230 mL | 271 ±4 mL | 176 ±2 mL |

* Distance from the top of the inner tube, measured with the fork tube fully compressed and with the spring removed.

## Wheels

### Tires:

*Tire Wear, Damage*

Refer to p. 193 of the Base Manual noting the following exception.

**Tire Payload**

| |
|---|
| 1,770 N (180 kg) |

**Standard Tire**

| Front | Rear |
|---|---|
| 110/90 V 18 Michelin A48 Tubeless | 130/80 V 18 Michelin M48 Tubeless |

**Tire Air Pressure (US and Canada)**

| | | |
|---|---|---|
| Front | 196 kPa (2.0 kg/cm², 28 psi) | |
| Rear | Up to 956 N (97.5 kg, 215 lb) load | 221 kPa (2.25 kg/cm², 32 psi) |
| | 956 – 1,770 N (97.5 – 180 kg, 215 – 397 lb) load | 245 kPa (2.5 kg/cm², 36 psi) |

**Tire Air Pressure (Other than US and Canada)**

| | Load | Tire Air Pressure | |
|---|---|---|---|
| | | Under 210 km/h (130 mph) | Over 210 km/h (130 mph) |
| Front | ——— | 196 kPa (2.00 kg/cm², 28 psi) | 221 kPa (2.25 kg/cm², 32 psi) |
| Rear | Up to 956 N (97.5 kg, 215 lb) | 221 kPa (2.25 kg/cm², 32 psi) | 284 kPa (2.90 kg/cm², 41 psi) |
| | 956 – 1,770 N (97.5 – 180 kg, 215 – 397 lb) | 245 kPa (2.50 kg/cm², 36 psi) | |

**Tire Tread Depth**

| | |
|---|---|
| Front: | |
| Standard | 4.5 mm |
| Service Limit | 1 mm |
| Rear: | |
| Standard | 7.0 mm |
| Service Limit | 2 mm (Up to 130 km/h) |
| | 3 mm (Over 130 km/h) |

### Wheel Bearings:

*Lubrication*

Refer to 197 of the Base Manual.

### Fuel Filter Replacement:

●Replace the fuel filter in accordance with the Periodic Maintenance Chart. Refer to p. 2-2 for the procedure.

## Fuel System

### Fuel Hose Replacement:

●Replace the fuel hoses in accordance with the Periodic Maintenance Chart. Refer to p. 2-2 for instructions.

High-pressure hoses:

○Hose between fuel pump and fuel distributing pipe.

○Hose between fuel distributing pipe and pressure regulator.

Low-pressure hoses:

○Hose between fuel tap and fuel filter

○Hose between fuel fliter and fuel pump

○Hose between pressure regulator and check valve

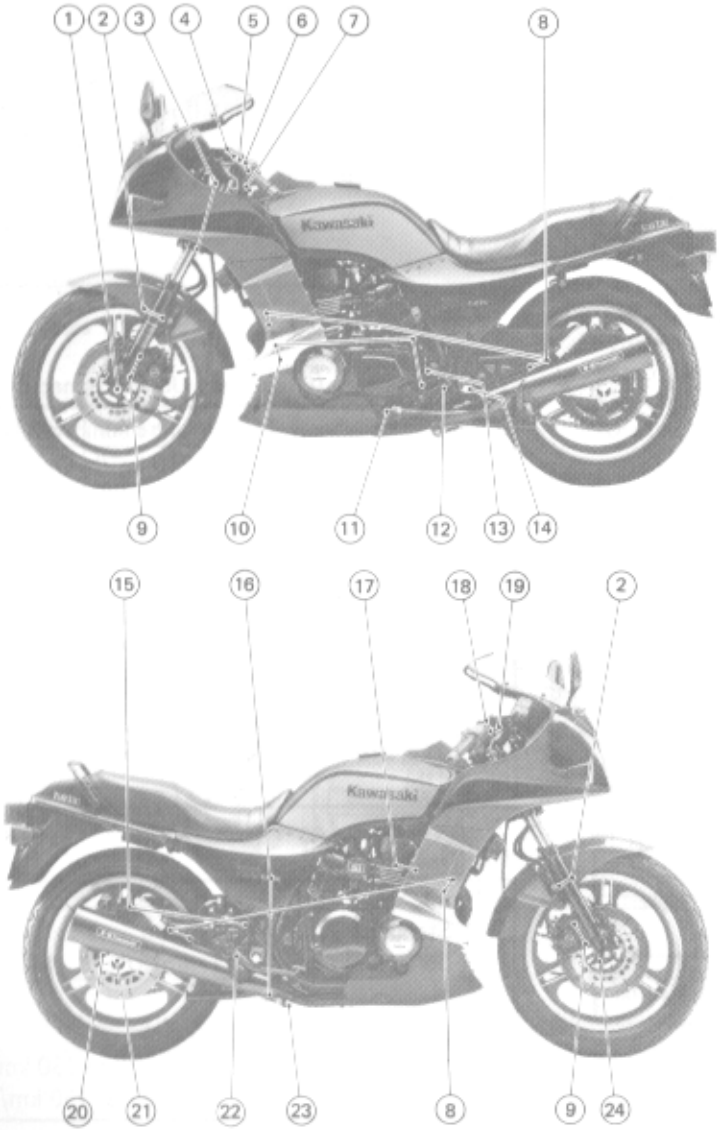
## Bolt and Nut Tightening

In accordance with the Periodic Maintenance Chart, it is very important to check the tightness of the bolts and nuts listed here. Also, check to see that each cotter pin is in place and in good condition.

**"NOTE"**

○*For the engine fasteners, check the tightness of them when the engine is cold (at room temperature).*

○*When retorquing the cylinder head nuts and bolts, follow the tigntening sequence specified in the "Disassembly" chapter.*




1. Front Axle Nut
2. Front Fender Mounting Bolts
3. Front Fork Clamp Bolts
4. Handlebar Holder Mounting Bolt
5. Clutch Lever Holder Bolt
6. Handlebar Clamp Bolt
7. Stem Head Bolt
8. Muffler Mounting Bolts and Nuts
9. Caliper Mounting Bolts
10. Engine Mounting Bolts and Nuts
11. Side Stand Bolt
12. Shift Pedal Bolt
13. Pivot Shaft Nut
14. Footpeg Mounting Nut
15. Torque Link Nuts
16. Rear Shock Absorber Mounting Bolts
17. Cylinder Head Bolts and Nuts
18. Master Cylinder Clamp Bolts
19. Brake Lever Pivot Bolt
20. Chain Adjuster Clamp Bolt
21. Rear Axle Nut
22. Brake Pedal Bolt
23. Muffler Connecting Pipe Clamp Bolts
24. Front Axle Clamp Nut

## Evaporative Emission Control System (California Vehicle)

The Evaporative Emission Control System routes fuel vapors from the fuel system into the running engine or stores the vapors in a canister when the engine is stopped. Although no adjustments are required, a thorough visual inspection must be made at the intervals specified by the Periodic Maintenance Chart.

### Scheduled Maintenance:

*Inspection*

- Check that the hoses are securely connected.
- Replace any kinked, deteriorated or damaged hoses.

# Non-scheduled Maintenance – Engine

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## Cylinder Head
## Valves

### Cylinder Head:
*Cylinder Head Warp*

Refer to p. 160 of the Base Manual.

*Combustion Chamber Volume Measurement*

Refer to pp. 160 and 161 of the Base Manual.

### Valve Guide, Valve, Valve Seat:
*Valve Inspection*

Refer to p. 161 of the Base Manual noting the following exception.

CAUTION

**○Do not grind the valve stem end to repair it or to permit additional valve clearance.**

**○If the valve end is ground, the shim may contact the spring retainer and/or split keepers during operation, allowing the keeper to loosen. Consequently, the valve may drop into the engine, causing serious damage.**

*Valve Guide Inside Diameter*

Refer to p. 163 of the Base Manual.

*Valve Seat Repair*

Refer to p. 279 of the Base Manual.

*Valve Installed Height*

Refer to p. 164 of the Base Manual noting the following exception.

CAUTION

**○Do not grind the valve stem end to repair it or to permit additional valve clearance.**

**○If the valve end is ground, the shim may contact the spring retainer and/or split keepers during operation, allowing the keeper to loosen. Consequently, the valve may drop into the engine, causing serious damage.**

### Valve Spring:
*Spring Tension*

Refer to p. 165 of the Base Manual.

*Spring Squareness*

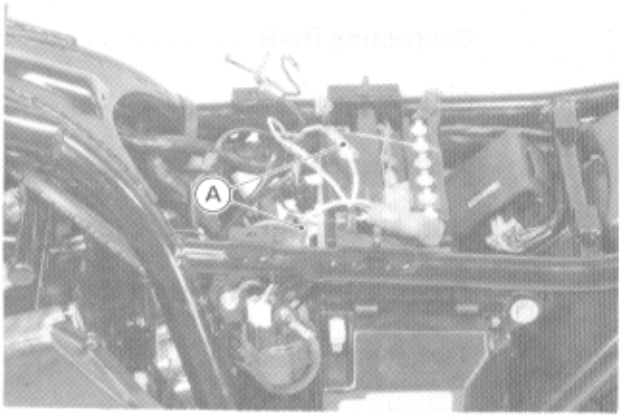
Refer to p. 166 of the Base Manual.

## Cylinder Block
## Pistons

*Compression Measurement*

Refer to p. 168 of the Base Manual noting the following exception.

●To stop fuel injector operation during cylinder compression measurement, disconnect the white/red lead which connects the battery positive terminal to the fuel injection system harness.




A. DFI System White/Red Lead

**Valve Installed Height**

| Height (mm) | Probable Cause | Recommendation |
|---|---|---|
| Inlet: 36.56 – 37.48<br>Exhaust: 37.11 – 38.03 | Normal/acceptable | ●After assembling check and adjust valve clearance. |
| More than 38.04 | Valve face or seat worn out, or ground excessively. | ●Move valve to shallower cut seat. Remeasure.<br>●Replace valve. Remeasure.<br>●Replace cylinder head. Remeasure. |

**Cylinder Compression**

| | |
|---|---|
| Usable Range: | 620 – 980 kPa (6.3 – 10.0 kg/cm², 90 – 142 psi), and less than 98 kPa (1 kg/cm², 14 psi) difference between any two cylinders |

*Cylinder Diameter*
Refer to pp. 169 and 170 of the Base Manual.

*Piston Diameter*
Refer to p. 170 of the Base Manual.

*Piston Cylinder Clearance*
Refer to p. 170 of the Base Manual.

*Boring, Honing*
Refer to p. 170 of the Base Manual.

*Piston/Cylinder Seizure*
Refer to p. 170 of the Base Manual.

*Piston Ring, Piston Ring Groove Wear*
Refer to p. 171 of the Base Manual.

*Piston Ring End Gap*
Refer to p. 171 of the Base Manual.

## Clutch

*Spring Tension*
Refer to p. 178 of the Base Manual.

*Friction Plate Thickness, Damage*
Refer to p. 179 of the Base Manual noting the following exception.

**Friction Plate Thickness**

| | |
|---|---|
| Standard: | 2.90 – 3.10 mm |
| Service Limit: | 2.8 mm |

*Friction and Steel Plate Warp*
Refer to p. 179 of the Base Manual.

*Friction Plate/Clutch Housing Clearance*
Refer to p. 179 of the Base Manual.

*Clutch Housing/Primary Gear Backlash*
Refer to p. 180 of the Base Manual.

*Clutch Housing Bearing Sleeve Diameter*
Refer to p. 180 of the Base Manual.

*Clutch Release Inspection*
●Visually inspect the clutch release lever, needle bearing and the teeth of pusher for damage or excessive wear.
★If there is any damage or excessive wear, replace them.

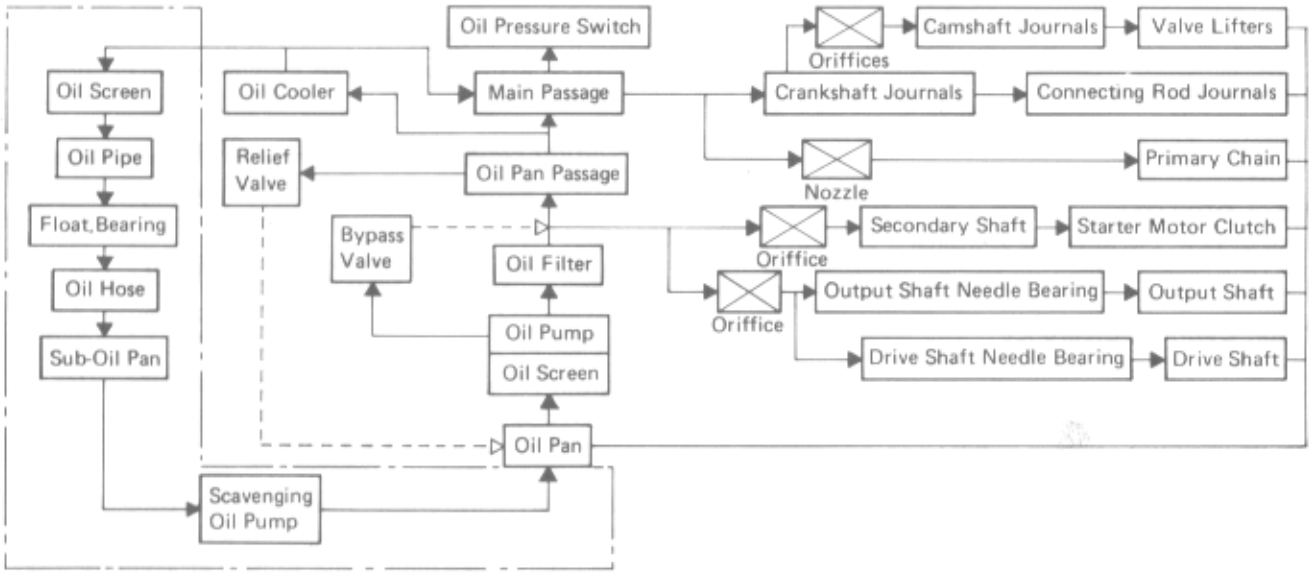
## Engine Lubrication System

**General Information:**
The lubrication system of ZX750-E1 is based on that of ZX750-A1. The differences between the two are that a new oil flow passage is added, which is routed from the oil cooler through the turbocharger, the sub-oil pan and the scavenging oil pump to the oil pan.

**Oil Pressure:**
*Oil Pressure Measurement*
Refer to p. 186 of the Base Manual.

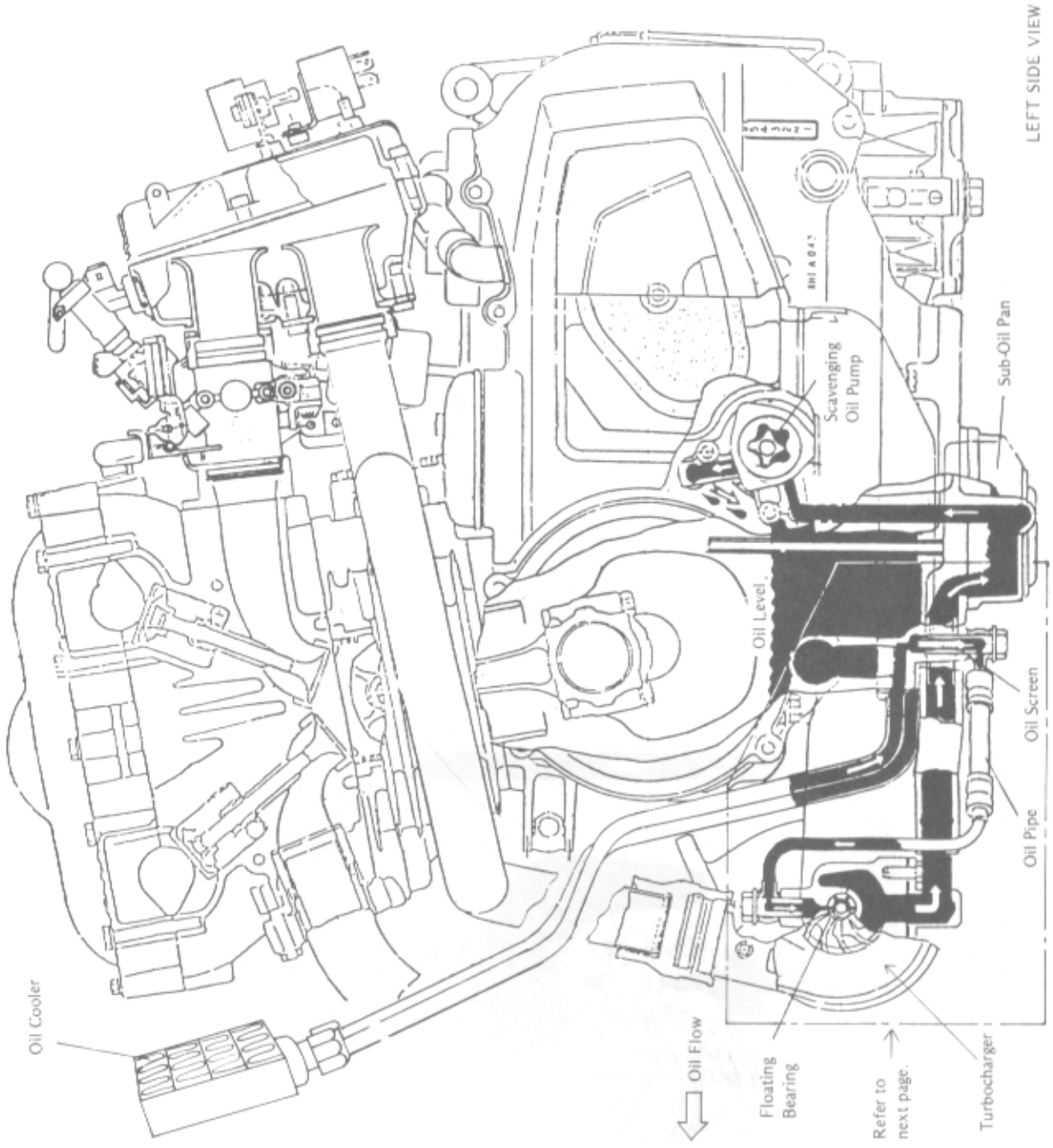
*Oil Pressure Switch Inspection*
Refer to p. 188 of the Base Manual.

**Engine Oil Flow Chart**

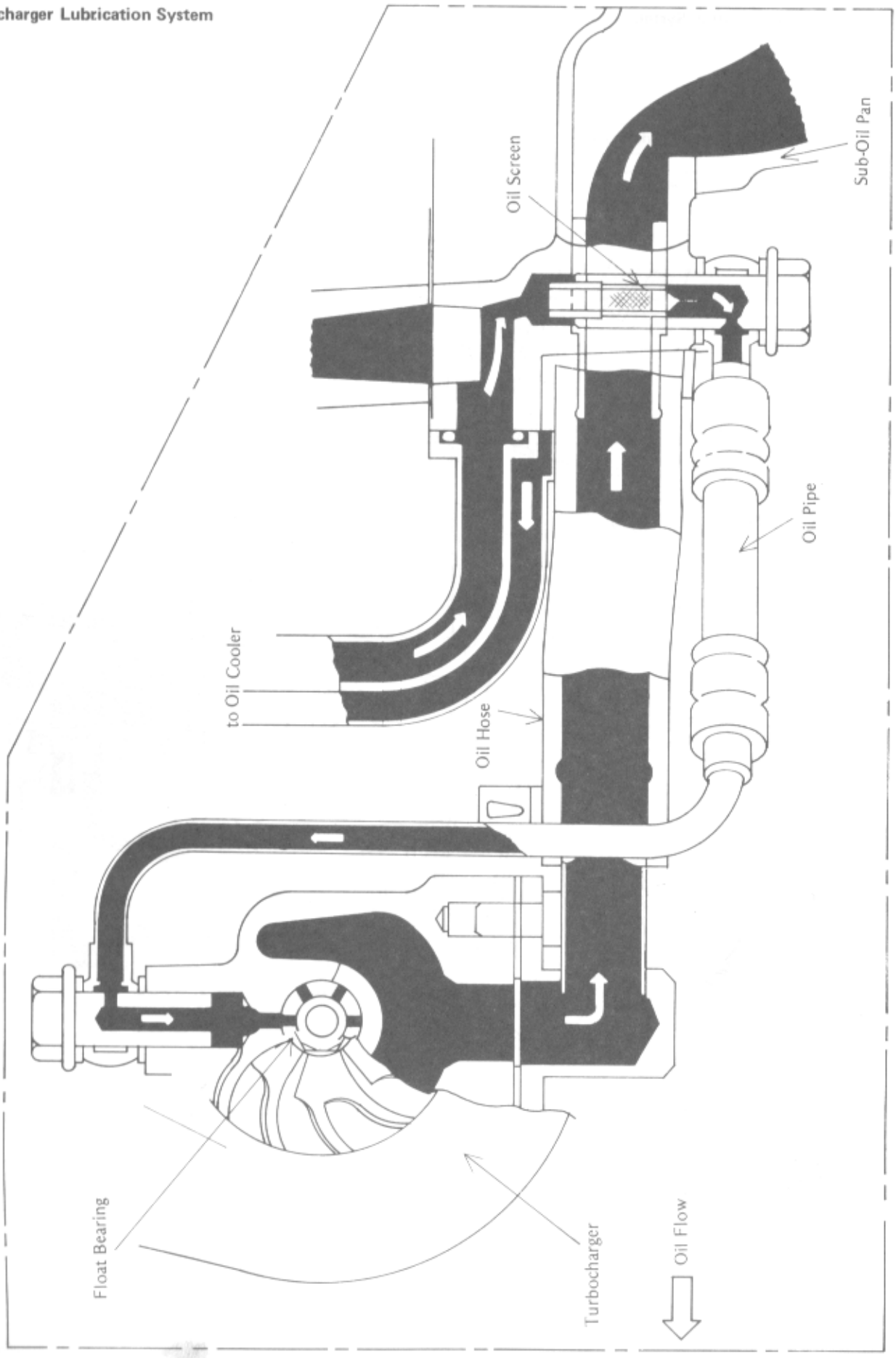



NOTE: The oil flow passage is added, which is encircled by the line of "——— - ———".

**Turbocharger Lubrication System**



**Turbocharger Lubrication System**



### Engine Oil Pump and Scavenging Oil Pump:

*Visual Inspection*

- Disassemble the engine oil pump and scavenging oil pump.
- Check that there are no scratches, rust or pitting on the inside of the oil pump housings and on the outside of the pump rotors.
- ★If the oil pump housings or pump rotors show any damage, replace the oil pump assembly or pump rotors.

*Oil Screen Inspection*

The oil screen at the oil pump inlet removes any metal particles and other foreign matter which could damage the oil pump.

- When the oil pan and/or pump are removed, remove the oil screen, and clean any metal particles and other dirt out of the screen. If the oil screen is damaged, replace it with a new one.

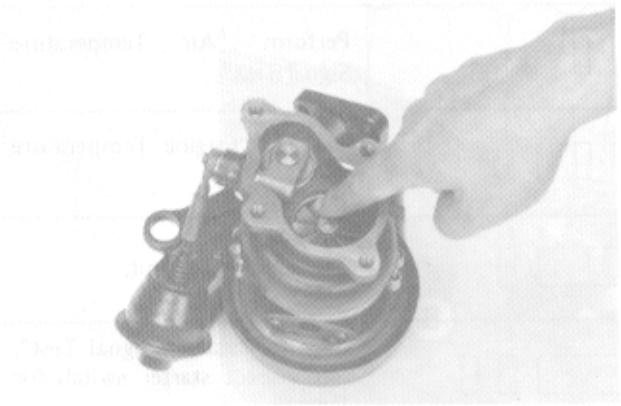
### Oil Pressure Relief Valve:

Refer to p. 186 of the Base Manual.

## Turbocharger

*Turbine Wheel*

- Ensure that the turbine wheel turns smoothly with your finger.
- ★If the wheel does not turn, or if it should bind at any point, replace the turbocharger.



*Actuator*

- Pull off the pressure hose from the compressor housing of turbocharger.
- Install the pressure gauge, compression pump, and dial gauge as shown below.

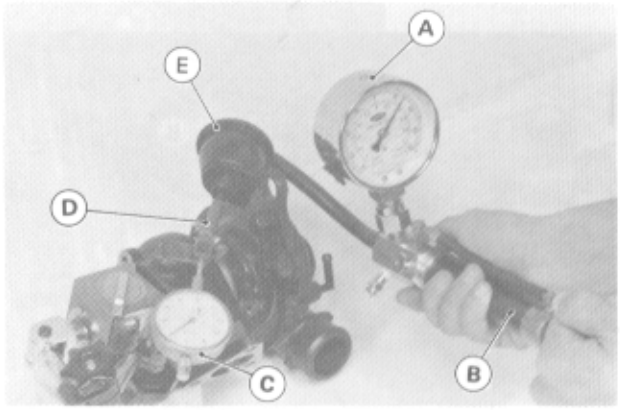
| Dial gauge read | Pressure gauge read |
|---|---|
| 0.5 mm (0.02 in) | 49 – 69 kPa (0.50 – 0.70 kg/cm², 7.1 – 10.0 psi) |

**CAUTION**

**○Do not carry the turbocharger by holding the actuator rod to prevent it from bending.**

**○During the air filling procedure, do not apply more than 98 kPa (1.0 kg/cm², 14 psi) air pressure, otherwise the actuator may be damaged.**

**○Do not attempt to disassemble the actuator rod, which is staked.**




A. Pressure Gauge
B. Compression Pump
C. Dial Gauge
D. Actuator Rod
E. Actuator

## DFI (Digital Fuel Injection) System

### General Information:

**Self-Diagnosis and Fail-Safe Function:**

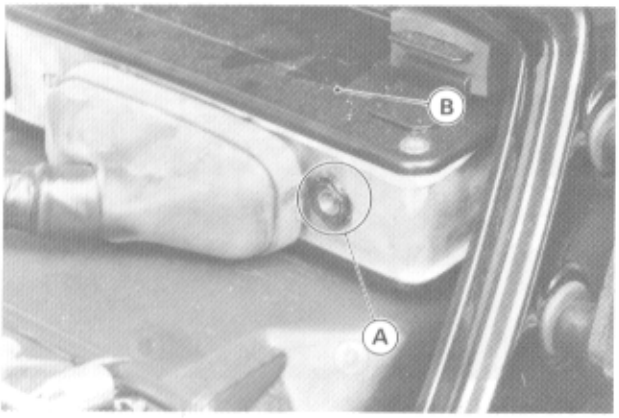
The 1984 DFI control unit diagnoses the DFI system while the engine is running. If trouble occurs in the DFI system while riding, the DFI control unit takes the following measures:

- If it turns on the sends a signal to the warning unit to notify the rider of the DFI system trouble.
- If it turns on the fail-safe system. By ignoring abnormal signals which are sent from damaged sensor(s) or through damaged wires and by using the fail-safe data, the DFI control unit computes the fuel amount to be injected. The fail-safe data are chosen to minimize the influence of system damage.

Until the ignition switch is turned off, the DFI control unit keeps the faults in its memory and continues to turn the green LED (Light Emitting Diode) on and off repeatedly to notify the mechanics of faults. This greatly helps them to troubleshoot the DFI system. Pulses of green light can be seen through the inspection hole in the control unit. Arrangement of long and short pulses express the trouble codes which correspond to the faults.

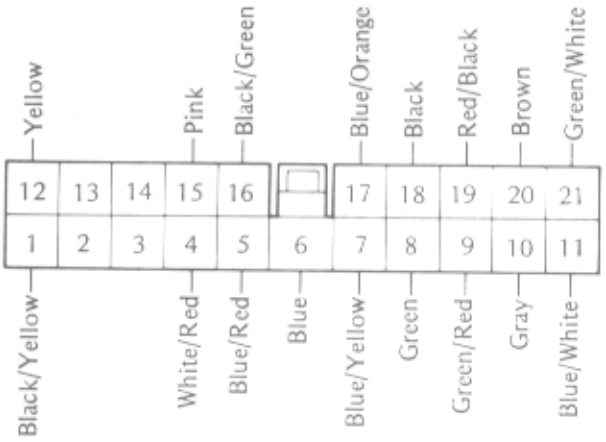
**"NOTE"**

○*The DFI control unit keeps system troubles in its memory, even if they occur for time while the ignition switch is on. However, the control unit resets and clears the memory when the igntion switch is turned off.*




A. Trouble Code Inspection Hole
B. DFI Control Unit

**Pin Numbers and Wire Colors in Control Unit Connector (viewed from wire side)**



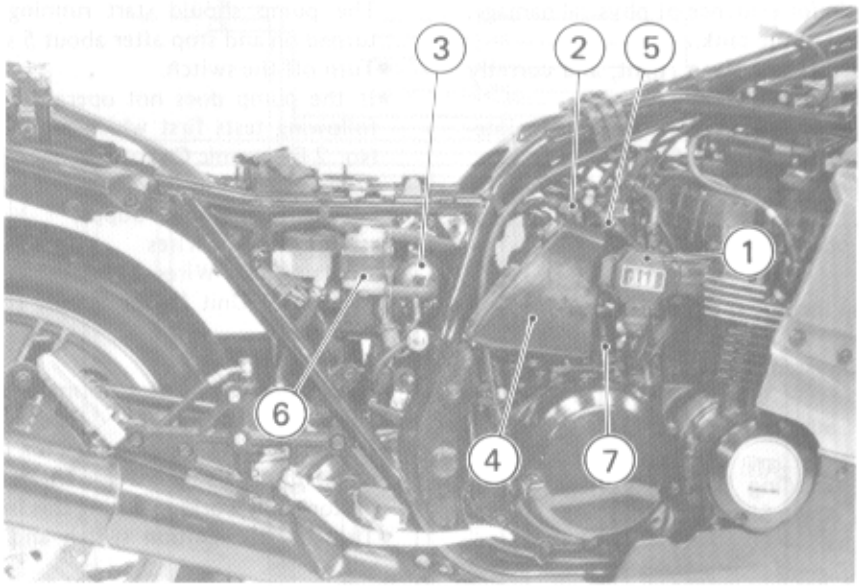

**Self-Diagnosis and Trouble Code**

382538

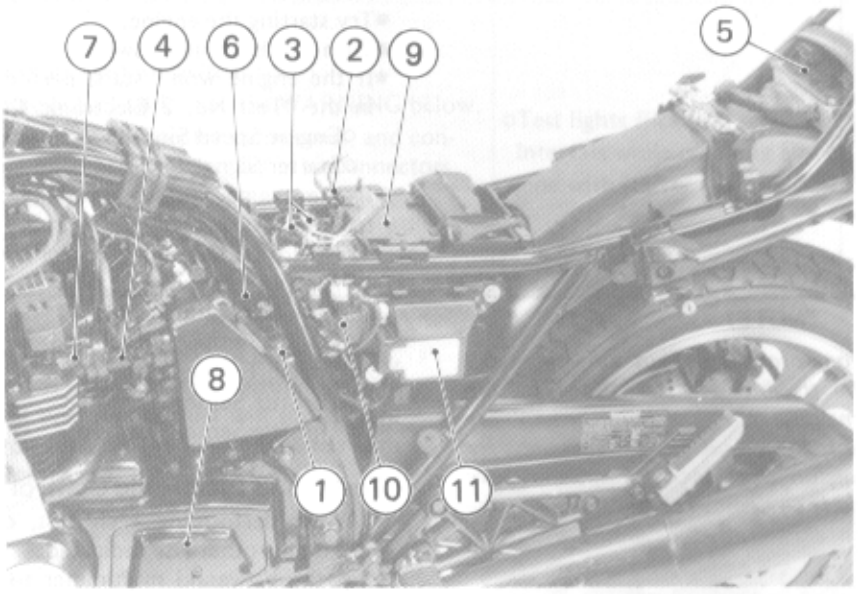
| Items | Criteria | Trouble Codes | Arrangement of Pulses* | Action |
|---|---|---|---|---|
| Throttle Sensor | Open or Short | 11 | ▭ ▯ | Perform "Throttle Opening Angle Signal Test". |
| Air Temperature Sensor | Open or Short | 12 | ▭ ▯ ▯ | Perform "Air Temperature Signal Test". |
| Engine Temperature Sensor | Open or Short | 13 | ▭ ▯ ▯ ▯ | Perform "Engine Temperature Signal Test". |
| Boost Sensor | Open or Short | 21 | ▭ ▭ ▯ | Replace control unit. |
| Starter Switch | Continues on after engine starts. | 22 | ▭ ▭ ▯ ▯ | Perform "Starter Signal Test", and inspect starter switch for damage. |
| Ignition Pulse | No ignition pulses are transmitted to control unit when cranking engine. | 23 | ▭ ▭ ▯ ▯ ▯ | Perform "Engine Speed Signal Test", and inspect ignition system damage. |
| CPU** Memory | Memories in CPU do not operate properly. | 31 | ▭ ▭ ▭ ▯ | Replace control unit. |

*: ▭ Long pulse, ▯ Short pulse
**: Central Processing Unit

DFI System Location of Parts




1. Throttle Sensor
2. Air Temperature Sensor
3. Fuel Pump
4. Surge Tank
5. Fuel Injectors
6. Fuel Filter
7. Pressure Regulator




1. Main/Pump Relay
2. DFI Negative (–) Lead Connector
3. DFI Positive (+) Lead Connector
4. Throttle Valve
5. Control Unit
6. Boost Sensor
7. Engine Temperature Sensor (between #1 and #2 inlet)
8. Air Cleaner (chain cover)
9. Battery
10. Starter Relay
11. Junction Box Connector

## DFI System Inspection:

The section explains the diagnostic procedures for the Kawasaki DFI system. Before diagnosing the DFI system, check the items listed below, and replace, add, adjust, or repair if necessary.

- Check the motorcycle for evidence of physical damage.
- There is sufficient fuel in the tank.
- All electrical connectors are clean, tight, and corretly connected. Fuses are not blown out.
- The engine is in good condition. The periodic maintenance should be properly performed.
- The engine is cranked over normally with the starter motor.
- The ignition system operates normally.

Tests in this section include the following:

1. Quick Initial Check
2. Electronic Control System Tests:
   - ○Injector Signal
   - ○Fuel Pump Power Supply
   - ○Pump Relay Wires
   - ○Injector Wires (Including Battery Voltage Signal)
   - ○Throttle Opening Angle Signal
   - ○Engine Speed Signal
   - ○Air Temperature Signal
   - ○Engine Temperature Signal
   - ○Starter Signal
   - ○Throttle Sensor
   - ○Throttle Sensor Position
   - ○Air Temperature Sensor
   - ○Engine Temperature Sensor
   - ○Main/Pump Relay
   - ○Wires and Connectors
   - ○DFI Warning Function
3. Fuel System Tests:
   - ○Fuel Pump
   - ○Injector
   - ○Pressure Regulator
   - ○Fuel Leak
   - ○Fuel System Cleaning
   - ○Fuel Filter
4. Air System Tests:
   - ○Throttle Valves
   - ○Air Leak
   - ○Surge Tank Draining

**"NOTE"**

○*If all above inspections prove good but the engine still operates poorly, the trouble may be caused by the engine itself. It may be necessary to overhaul the engine. Especially inspect the pistons and cylinders for wear and seizure, piston rings for sticking, and valve seats for any irregularity. Remove the carbon from the piston heads, piston ring grooves, cylinder head and valves.*

## Test No. 1 Quick Initial Check:

Give the system a quick initial check before starting a series of time consuming tests, or worse yet, removing parts for repair or replacement. Such a check will often turn up the source of the trouble.

*Quick Initial Check*

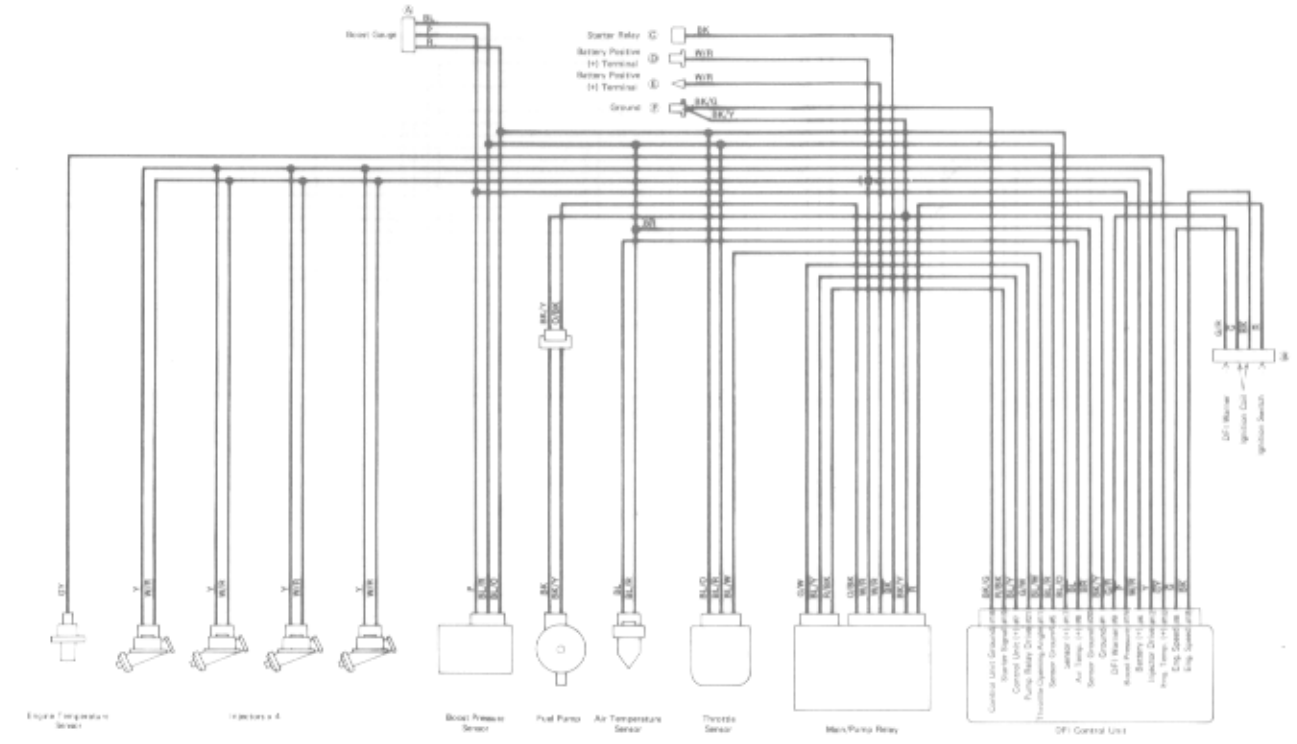
- Confirm the DFI system trouble by reading the trouble code emitted through the inspection hole in the control unit.
- Turn on the ignition switch and listen to the fuel pump. The pump should start running when the switch is turned on and stop after about 5 seconds.
- Turn off the switch.
- ★If the pump does not operate as above, perform the following tests first which are explained in the "Test No. 2 Electronic Control System Tests" and "Test No.3 Fuel System tests."
  - ○Fuel Pump Power Supply
  - ○Pump Relay Wires
  - ○Main Relay Wires
  - ○Control Unit Power Supply (including Ignition ON Signal)
  - ○Fuel Pump
- ★If the pump operates normally, proceed to the next check.
- Disconnect the 2-pin connector from the starter relay under the left side cover. This is to prevent the starter motor from working during this inspection.
- Turn on the ignition switch and wait until the pump stops.
- Turn on the starter switch (with the clutch lever pulled in), and listen to the fuel pump.
- ★If the above check shows good pump operation, proceed to the next check.
- ★If the pump does not run when the starter switch is on, perform the following test in the "Test No. 2 electronic Control System Tests.")
  - ○Pump Relay Wires
- ★If the above check shows good pump operation, proceed to the next check.
- Reconnect the starter motor relay connector.
- Try starting the engine.
- Turn off the ignition switch.
- ★If the engine won't start, perform the following tests in the "Test No. 2 Electronic Control System Tests."
  - ○Engine Speed Signal
  - ○Starter Signal
- ★If the engine starts but runs poorly, fuel/air mixture trouble is suspected. Perform the following tests in the "Test No. 2 Electronic Control System Tests."
  - ○Air Temperature Signal
  - ○Air Temperature Sensor
  - ○Engine Temperature Signal
  - ○Engine Temperature Sensor
  - ○Throttle Sensor
  - ○Throttle Sensor Position

## Test No. 2 Electronic Control System Tests:

When performing each test, observe the following rules unless otherwise indicated:

- Set the Kawasaki multimeter to the 25 V DC range, and connect the meter negative (–) lead to the battery negative (–) terminal.
- Set the engine stop switch in the RUN position.
- Set the motorcycle up on its center stand and the gear in neutral. Kick up the side stand. This is to crank over the engine only by pushing the starter switch.
- Measure the voltages with all connectors left connected.

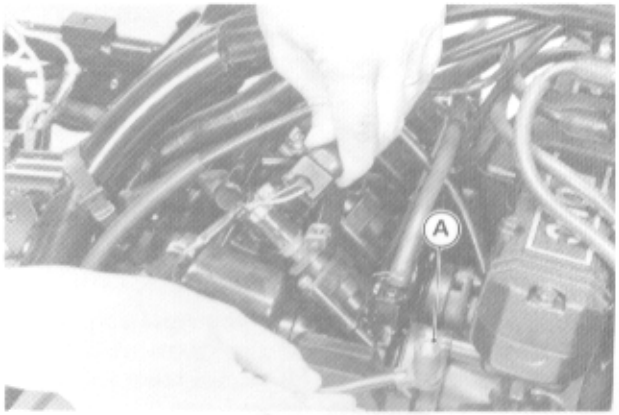
*Injector Signal Test*



| Wire Location | Connections | Criteria | Test Items when out of Criteria |
|---|---|---|---|
| ○Injector connectors x 4 | ○Turn off ignition switch.<br>○Remove fuel tank. See the WARNING below.<br>○Disconnect all injector connectors, and connect injector signal test lights to connectors.<br>○Install fuel tank and connect fuel hoses.<br>○Turn on ignition switch. | ○Test lights flicker at regular intervals while cranking engine with starter motor. | ○Control unit power supply<br>○Main relay wires<br>○Injector wires<br>○Engine speed signal<br>○Starter signal<br>○Main/pump relay<br>○Replace control unit. |

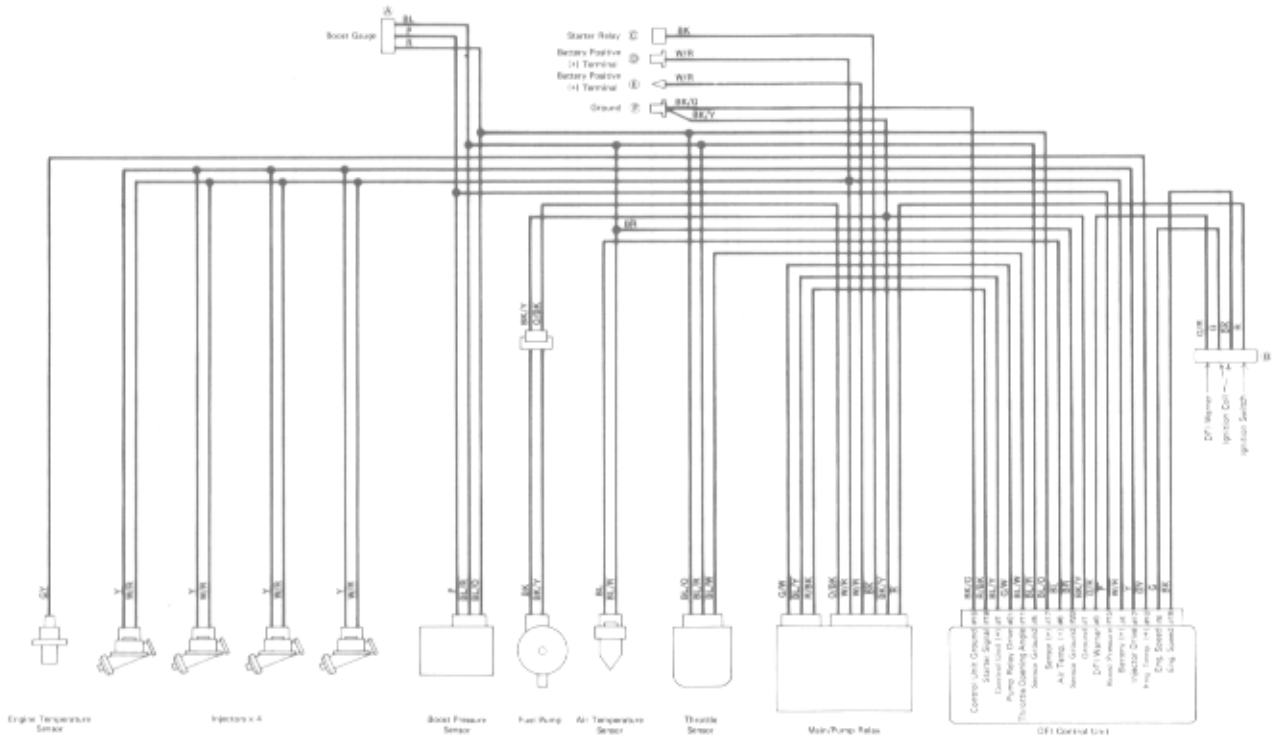
**WARNING**

**1. While the fuel hoses are disconnected, do not turn on the ignition switch. The fuel pump will operate and fuel will spout from the fuel hose if you turn on the ignition switch with the fuel hoses disconnected.**



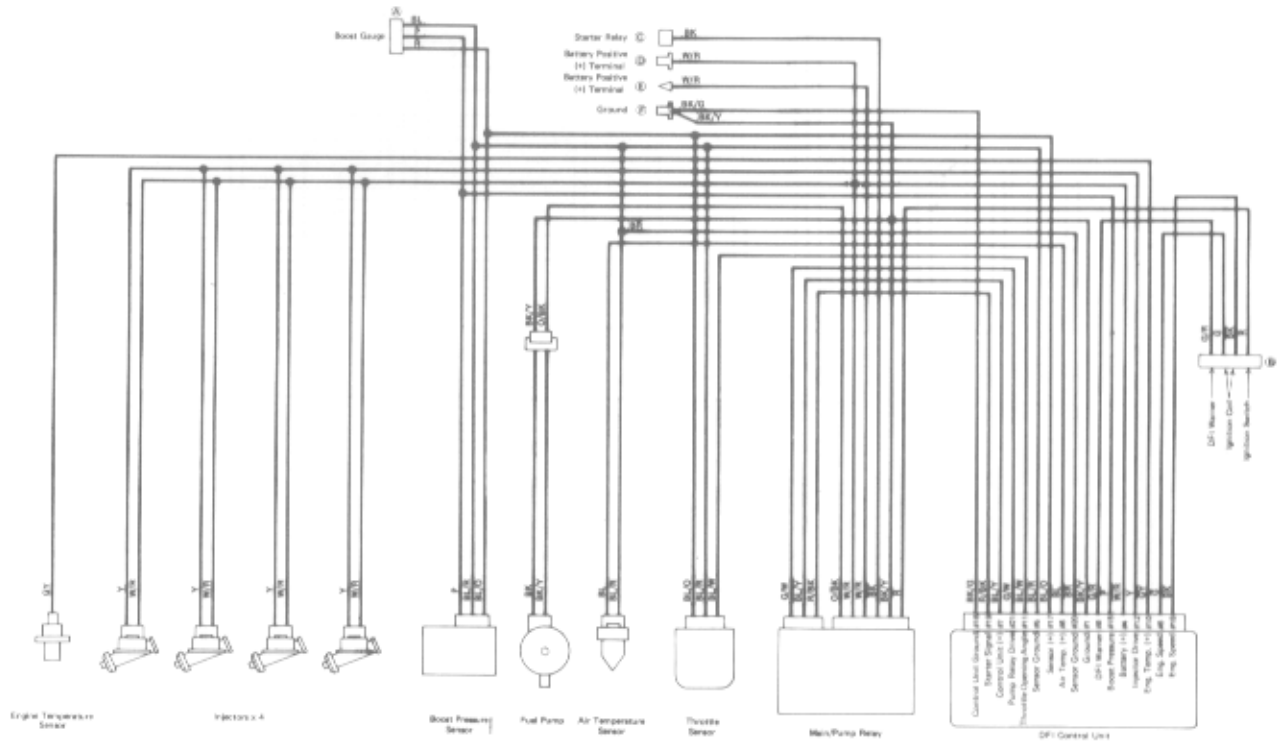

A. Injector Signal Test Light

*Control Unit Power Supply Test*
*(including Ignition ON Signal Test)*



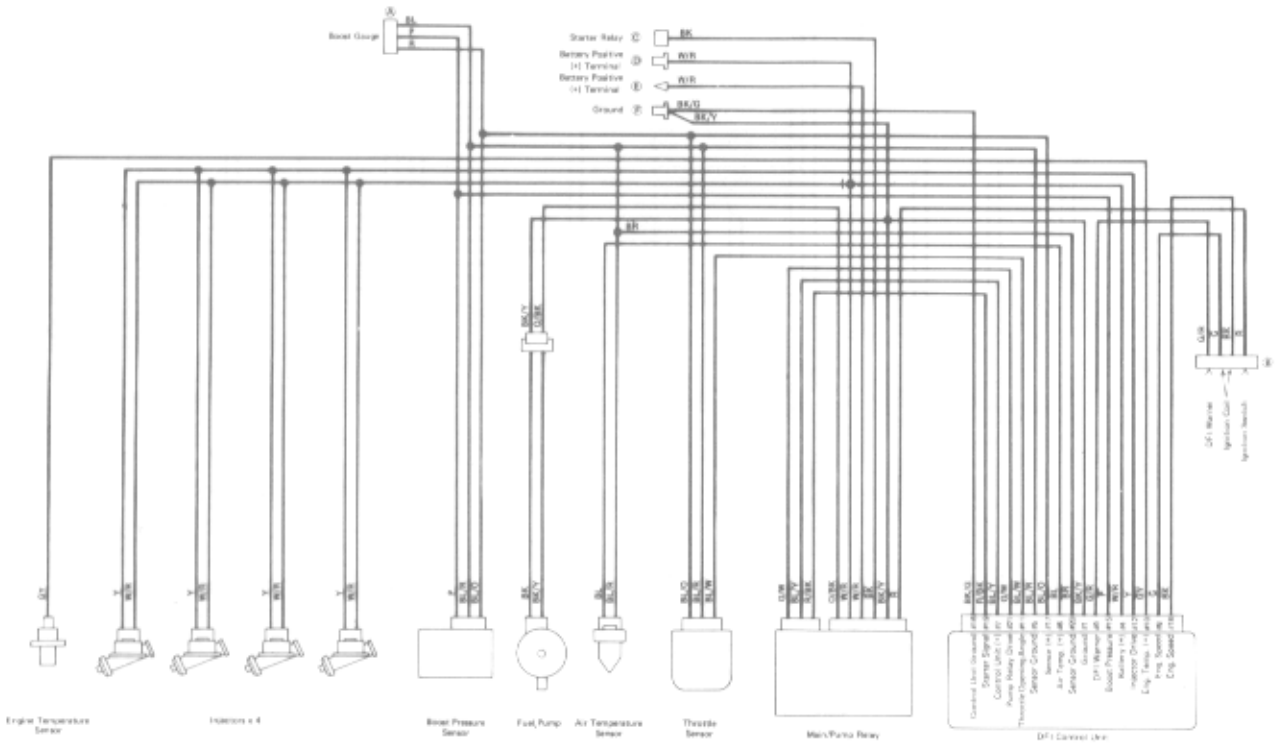
| Wire Location | Connections | Meter Reading (Criteria) | Test Items when out of Criteria |
|---|---|---|---|
| ○Control unit connector | ○Meter (+) → No.16 pin (black/green wire) | ○0 V regardless of ignition switch positions. | ○Black/Green wire |
| | ○Meter (+) → No.7 pin (blue/yellow wire) | ○Battery voltage when ignition switch is on.<br>○0 V when ignition swtich is off. | ○Blue/yellow wire<br>○Main relay wires<br>○Main/pump relay |

*Main Relay Wire Test*



| Wire Location | Connections | Meter Reading (Criteria) | Test Items when out of Criteria |
|---|---|---|---|
| ○Relay white connector | ○Meter (+) → Black/yellow wire | ○0 V regardless of ignition switch positions. | ○Black/yellow wire |
| | ○Meter (+) → Red wire | ○Battery voltage when ignition switch is on.<br>○0 V when ignition switch is off. | ○Red wire |
| | ○Meter (+) → White/red wire | ○Battery voltage regardless of ignition siwtch positions. | ○White/red wire |

*Fuel Pump Power Supply Test*

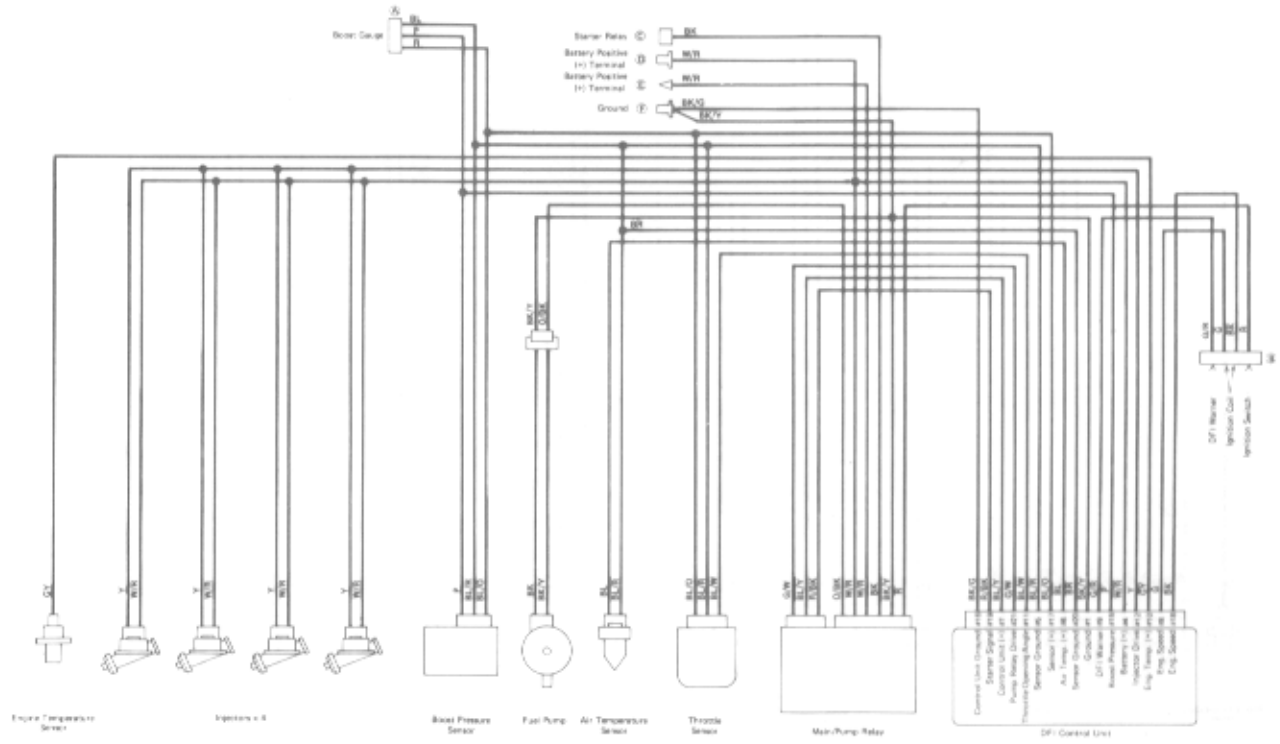


| Wire Location | Connections | Meter Reading (Criteria) | Test Items when out of Criteria |
|---|---|---|---|
| ○Fuel pump 2-pin connector | ○Meter (+) → Black/yellow wire | ○0 V regardless of ignition switch positions. | ○Black/yellow wire |
| | ○Meter (+) → Orange/black wire | ○Battery voltage for about 5 sec immediately after igniton switch is turned on, then 0 V.<br>○Battery voltage when starter switch is on.<br>○0 V when starter switch is off.<br>*○Battery voltage when engine speed signal is sent to control unit, and 0 V in about 1 sec after signal stops. | ○Orange/black wire<br>○Pump relay wires<br>○Main/pump relay<br>○Black wire<br>○Green wire<br>○Replace control unit. |

*How to send the engine speed signal to the control unit:

- Prepare an auxiliary wire which can reach to the battery from the control unit.
- Ground the one end of the wire to the battery negative (–) terminal.
- Connect the other end of the wire repeatedly to the #18 pin (black wire) or #8 pin (green wire) in the control unit connector. This motion sends the engine speed signal to the control unit.
- Remove the auxiliary wire after this test is over.

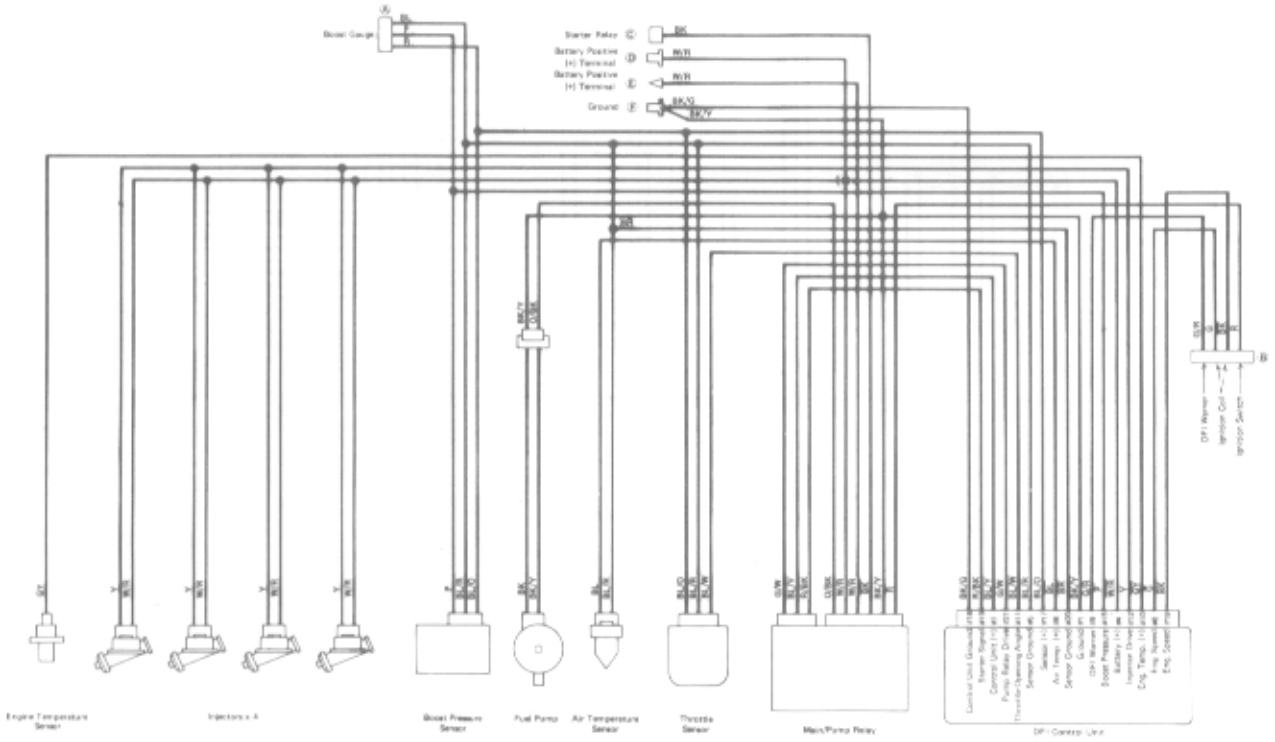
*Pump Relay Wire Test*



| Wire Location | Connections | Meter Reading (Criteria) | Test Items when out of Criteria |
|---|---|---|---|
| ○Relay white connector | ○Meter (+) → Black/yellow wire | ○0 V regardless of ignition switch positions. | ○Black/yellow wire |
| ○Control unit connector | ○Meter (+) → No. 21 pin (green/white wire) | ○Battery voltage for about 5 sec immediately after ignition switch is turned on, then 0 V.<br>*○Battery voltage when engine speed signal is sent to control unit, and 0 V in about 1 sec after signal stops. | ○Green/white wire<br>○Control unit power supply<br>○Replace control unit |
| ○Relay white connector | ○Meter (+) → Black wire | ○Battery voltage when starter switch is on.<br>○0 V when starter switch is off. | ○Black wire |
| | ○Meter (+) → White/red wire | ○Battery voltage regardless of ignition switch position. | ○White/red wire |

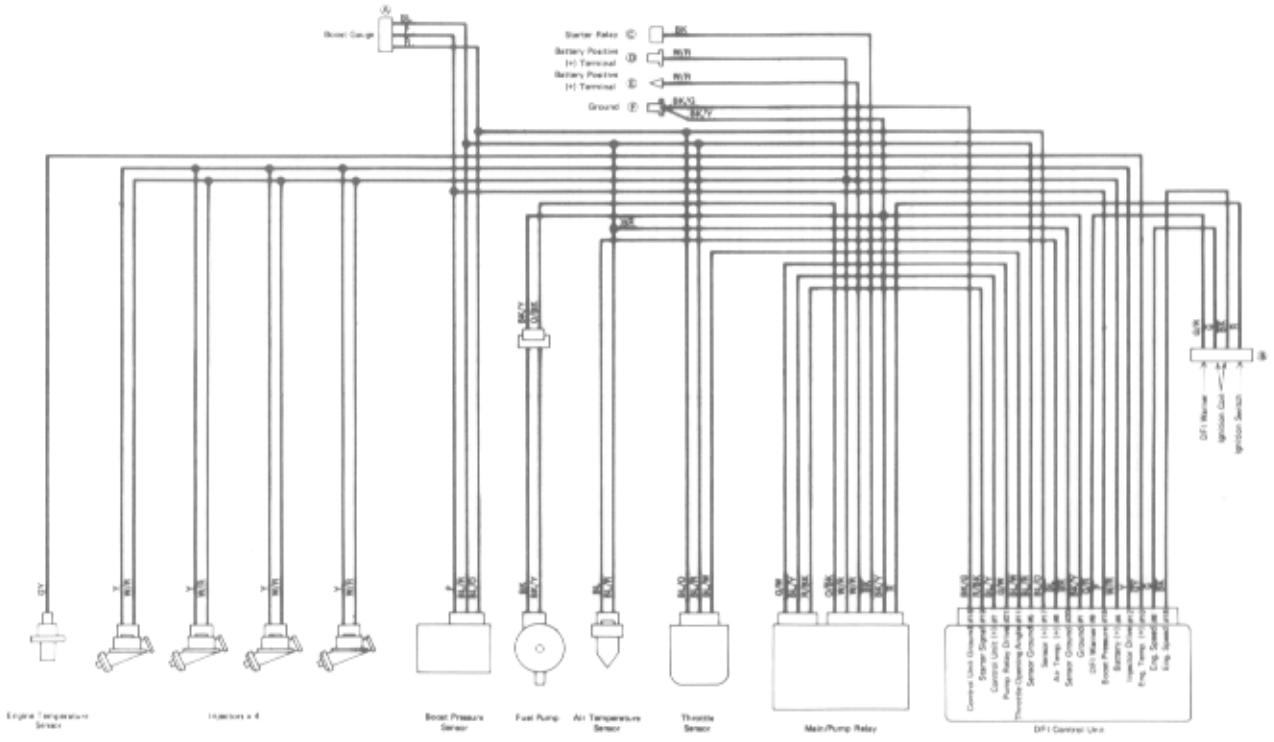
*Refer to p. 3-14 for how to send the engine speed signal to the control unit.

*Injector Wire Test*
*(including Battery Voltage Signal Test)*



| Wire Location | Connections | Meter Reading (Criteria) | Test Items when out of Criteria |
|---|---|---|---|
| ○Control unit connector | ○Meter (+) → No. 12 (yellow wire) | ○Battery voltage regardless of ignition switch positions. | ○Yellow wire<br>○Injectors<br>○Injector connectors |
| | ○Meter (+) → No. 4 pin (white/red wire) | ○Battery voltage regardless of ignition switch positions. | ○White/red wire |
| | ○Meter (+) → No. 1 pin (black/yellow wire) | ○0 V regardless of ignition switch positions. | ○Black/yellow wire |

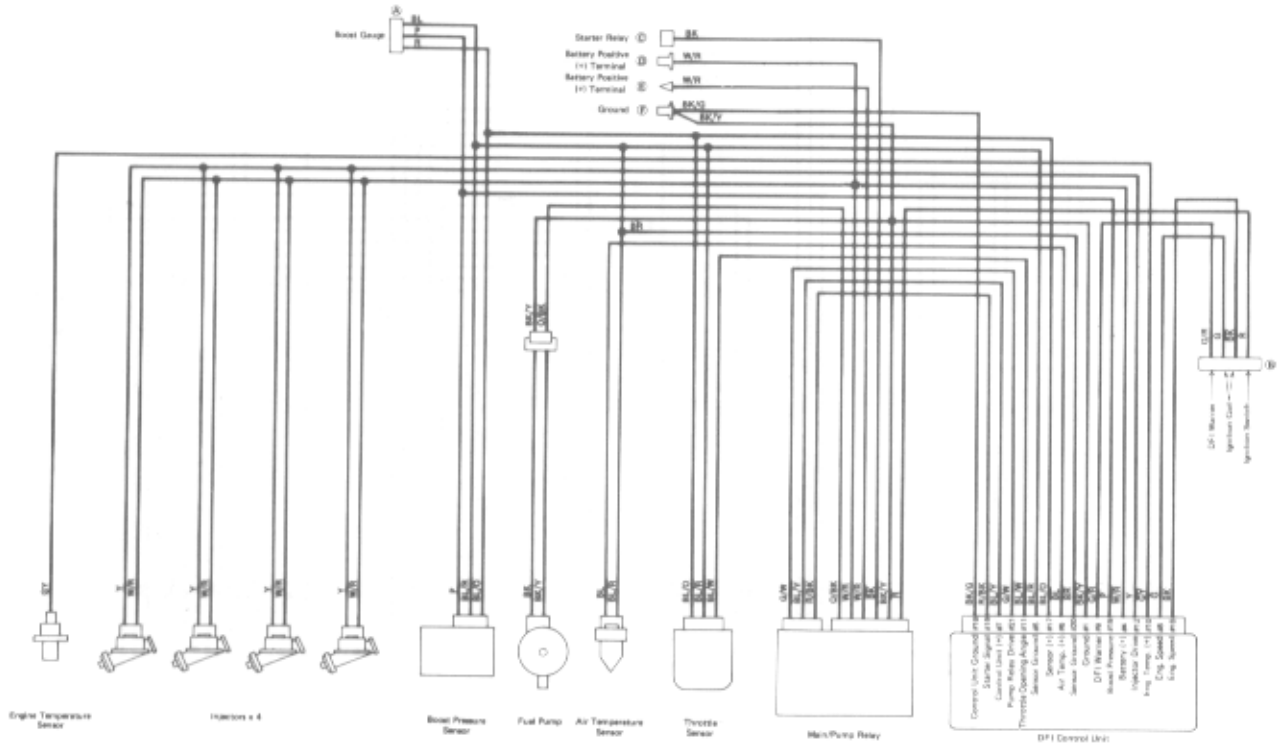
*Throttle Opening Angle Signal Test*



| Wire Location | Connections | Meter Reading* (Criteria) | Test Items when out of Criteria |
|---|---|---|---|
| ○Control unit connector | ○Meter (+) → No.5 pin (blue/red wire) | ○0 V regardless of ignition switch positions. | ○Blue/red wire<br>○Replace control unit. |
| | ○Meter (+) → No. 11 pin (blue/white wire) | ○0V when ignition switch is off.<br>○0.5 – 5.2 V when ignition switch is on, decreasing smoothly as throttle opens. | ○Blue/white wire<br>○Throttle sensor<br>○Throttle sensor position |
| | ○Meter (+) → No. 17 pin (blue/orange wire) | ○0 V when ignition switch is off.<br>○7.2 – 8.8 V when ignition switch is on. | ○Blue/orange wire<br>○Throttle sensor<br>○Control unit power supply<br>○Replace control unit. |

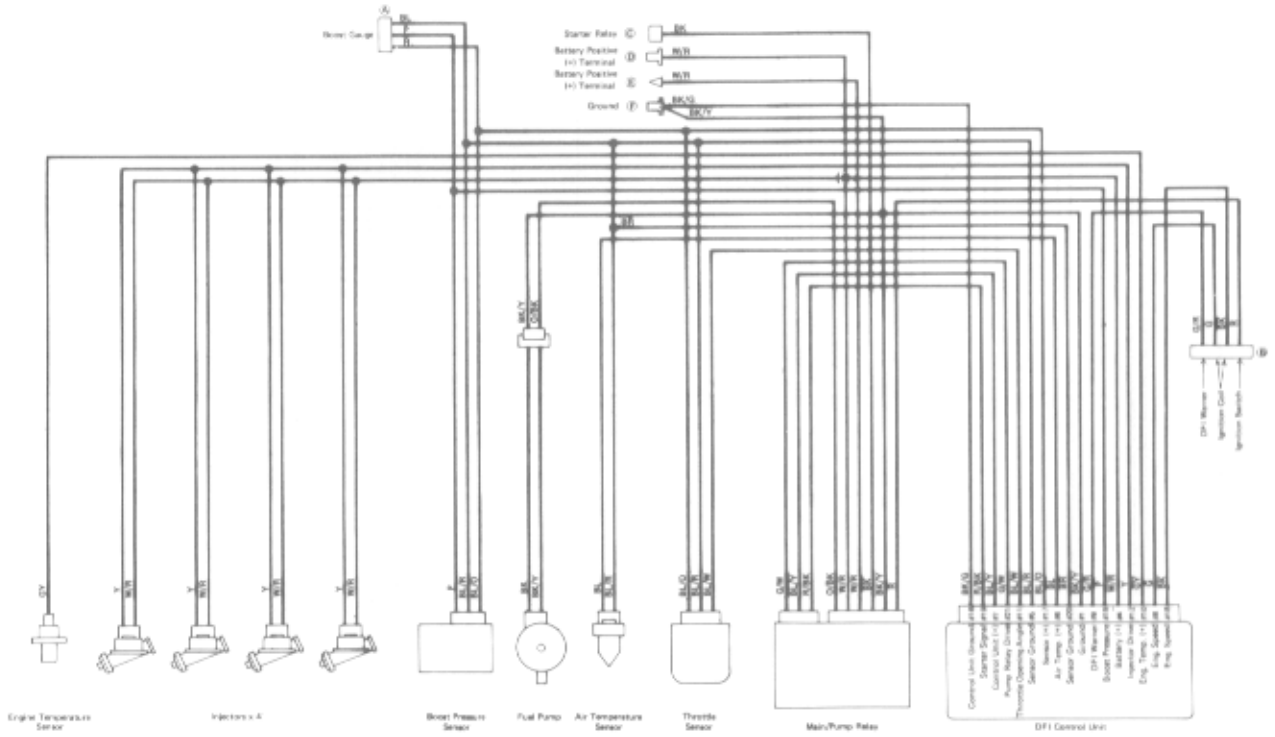
*Set the multimeter to the 10V DC range for this test.

*Engine Speed Signal Test*




| Wire Location | Connections | Meter Reading (Criteria) | Test Items when out of Criteria |
|---|---|---|---|
| ○Control unit connector | ○Meter (+) → No. 8 pin (green wire) or No. 28 pin (black wire) | ○0 V when ignition switch is off.<br>○Battery voltage when ignition switch is on. | ○Green wire<br>○Black wire |

*Air Temperature Signal Test*

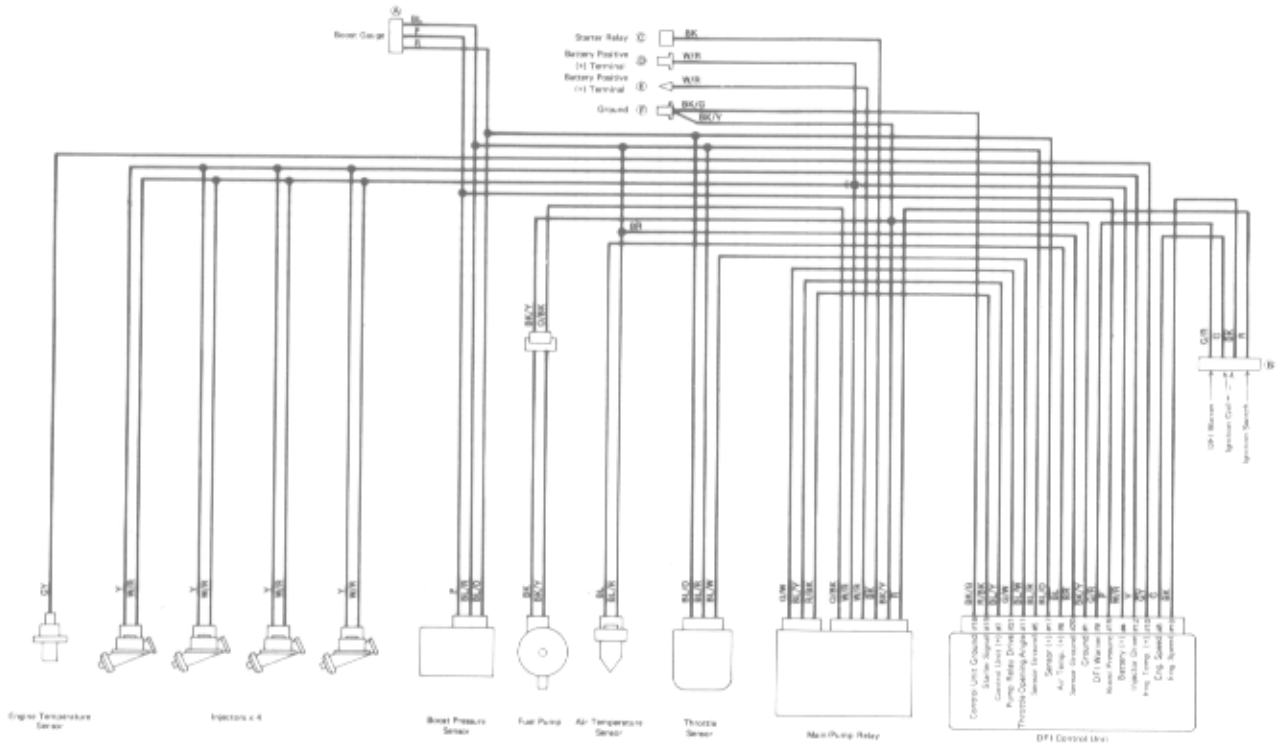


| Wire Location | Connections | Meter Reading* (Criteria) | Test Items when out of Criteria |
|---|---|---|---|
| ○Control unit connector | ○Meter (+) → No.6 pin (blue wire) | ○0V when ignition switch is off.<br>**○2.3 – 3.4 V when ignition switch is on.<br>○3.4 – 4.6 V when temperature sensor 2-pin connector is disconnected and ignition switch is on. | ○Blue wire<br>○Air temperature sensor<br>○Control unit power supply<br>○Replace control unit. |
| | ○Meter (+) → No.5 pin (blue/red wire) | ○0 V regardless of ignition switch positions. | ○Blue/red wire<br>○Replace control unit. |

* Set the multimeter to the 10 V DC range for this test.

** This is true when sensor temperature is 20°C (68°F), 2.8 – 4.0 V when 0°C (32°F), and 2.1 – 2.9 V when 30°C (86°F).

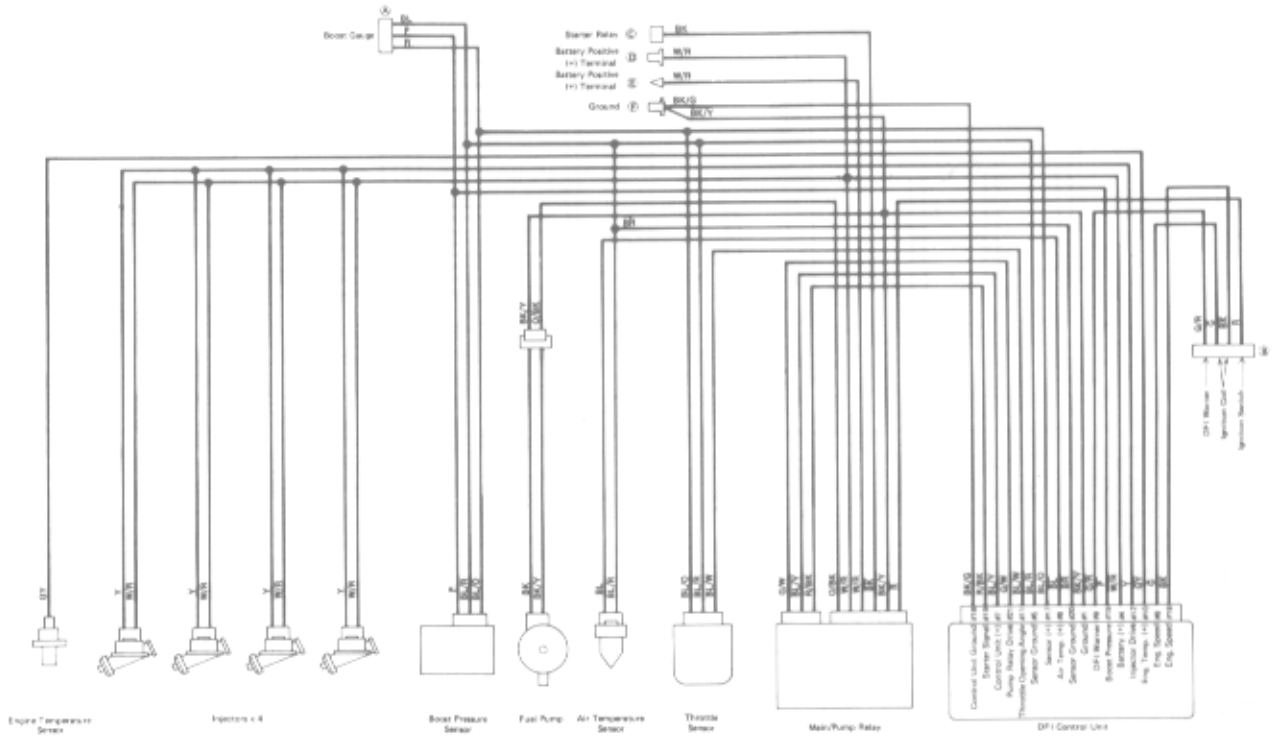
*Engine Temperature Signal Test*



| Wire Location | Connections | Meter Reading* (Criteria) | Test Items when out of Criteria |
|---|---|---|---|
| ○Control unit connector | ○Meter (+) →No.10 pin (gray wire) | ○0 V when ignition siwtch is off.<br>**○2.0 – 3.1 V when ignition switch is on.<br>○3.4 – 4.6 V when gray sensor lead is disconnected from the sensor and ignition switch is on. | ○Gray wire<br>○Engine temperature sensor<br>○Control unit power supply<br>○Replace control unit. |

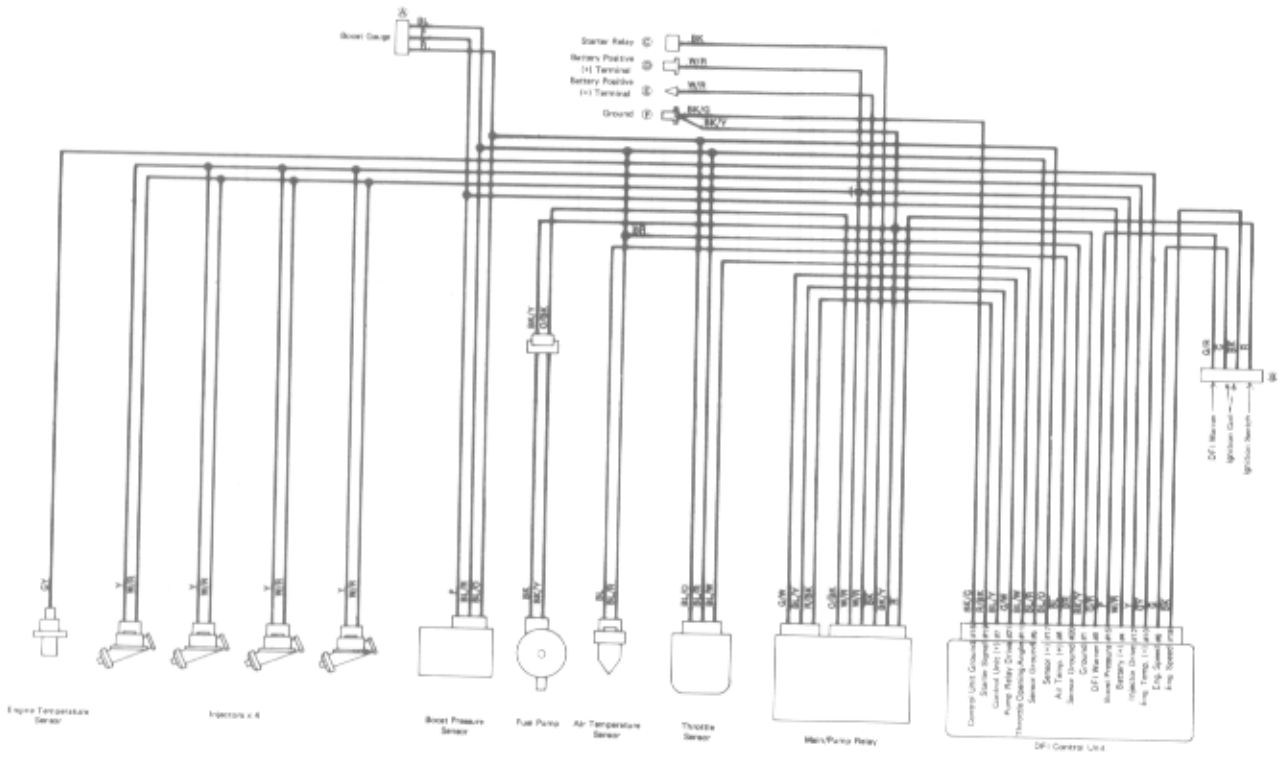
*Set the multimeter to the 10V DC scale for this test.
**This is true when sensor temperature is 20°C (68°F), 2.6 – 3.8 V when 0°C (32°F), and 0.52 – 0.96 V when 80°C (176°F).

*Starter Signal Test*



| Wire Location | Connections | Meter Reading (Criteria) | Test Items when out of Criteria |
|---|---|---|---|
| ○Control unit connector | ○Meter (+) → No.19 pin (red/black wire) | ○Battery voltage when starter switch is on. | ○Red/black wire<br>○Main/pump relay |
| ○Relay white connector | ○Meter (+) → Black wire | ○Battery voltage when starter switch is on. | ○Black wire |

*Boost Signal Test*



| Wire Location | Connections | Meter Reading* (Criteria) | Test Items when out of Criteria |
|---|---|---|---|
| ○Control unit connector | ○Meter (+) → No.15 Pin (pink wire) | ○0 V when ignition switch is off,<br>**○1.9 – 2.8 V when ignition switch is on. | ○Pink wire<br>○Replace boost sensor |
| | ○Meter (+) → No.5 pin (blue/red wire) | ○0 V regardless of ignition switch positions. | ○Blue/red wire<br>○Replace control unit |
| | ○Meter (+) → No.17 pin (blue/orange wire) | ○0 V when ignition switch is off.<br>○7.2 – 8.8 V when ignition switch is on. | ○Blue/orange wire<br>○Boost sensor<br>○Control unit power supply<br>○Replace control unit |

* Set the multimeter to the 10 V DC range for this test.

** This is true when atmospheric pressure is 1,013 mb (760 mmHg), 1.7 – 2.5 V when 898 mb (674 mmHg), 1.5 – 2.2 V when 795 mb (596 mmHg).

*Throttle Sensor Test*

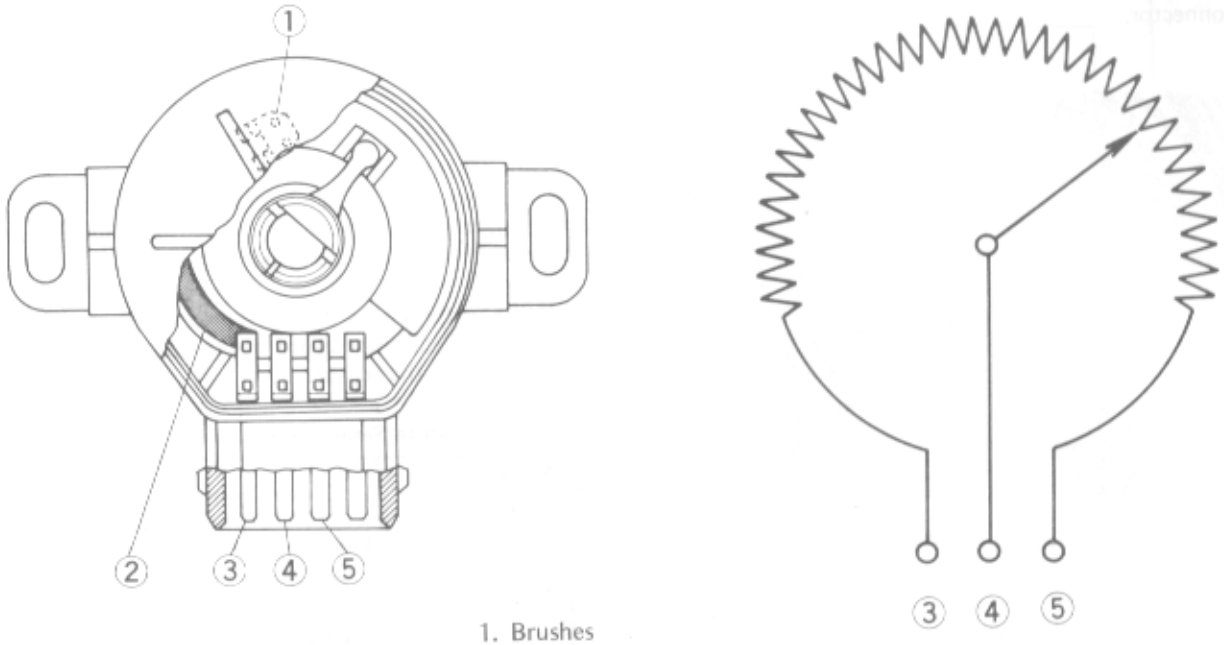
- Turn off the ignition switch.
- Disconnect the connector from the throttle sensor.
- Connect an ohmmeter to the sensor according to the following table, and measure the internal resistance.
- ★If the meter shows the resistances specified in the table, the throttle sensor is good. If it does not, replace the throttle sensor.

**Throttle Sensor Resistance**

| Meter Range | Connections | Throttle position | Reading |
|---|---|---|---|
| x 1 kΩ | ○One meter lead → Ground terminal<br>○Other meter lead → Voltage source terminal | ○Any position from idle to full open. | ○3.3 – 6.8 kΩ |
| | ○One meter lead → Ground terminal<br>○Other meter lead → Output terminal | ○Idle position | ○2.1 – 4.2 kΩ * |
| | | ○Fully opened | ○0.35 – 0.71 kΩ |

*Reading should change smoothly as the throttle is turned.

**Throttle Sensor**




1. Brushes
2. Carbon Film Resistors
3. Ground Terminal
4. Output Terminal
5. Voltage Source Terminal

### *Throttle Sensor Position Inspection*

Engine performance is sensitive to the throttle sensor position. To obtain the best sensor position, you must use the throttle sensor position checker (special tool: P/No. 57001-1003) and the vacuum gauge following the inspection and adjustment chart on the next page.
Before and After Throttle Sensor Inspection:
- Check that the engine is maintained correctly according to the Periodic Maintenance Chart. Replace, add, adjust, clean, or torque if necessary.
- Warm up the engine thoroughly, and then stop it.
- Remove the fuel tank, and put it on a work bench somewhere near the motorcycle.
- Connect the fuel tank to the fuel hoses using suitable hoses.
- Set the engine idle speed to the value specified below during throttle sensor position inspection and adjustment.

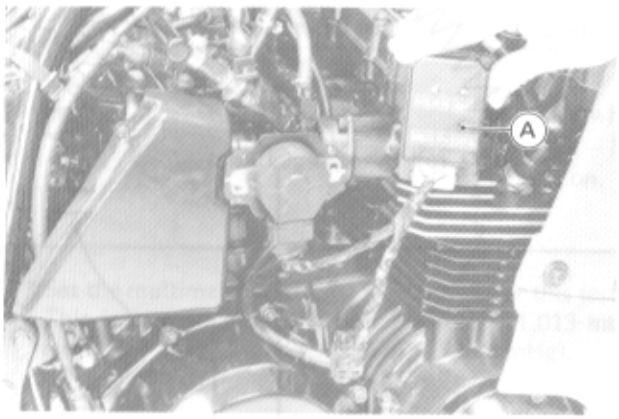
**Engine Speed During Throttle Sensor Position Inspection and Adjustment**

| |
|---|
| 1,000 r/min (rpm) |

"NOTE"

○*After inspection and adjustment of the throttle sensor position, adjust the engine idle speed to the standard, r/min (rpm).*

**How to Use Position Checker:**
- Turn off the ignition switch.
- Disconnect the connector from the throttle sensor.
- Connect the checker to the sensor and the disconnected connector.




A. Throttle Sensor Position Checker: 57001-1003

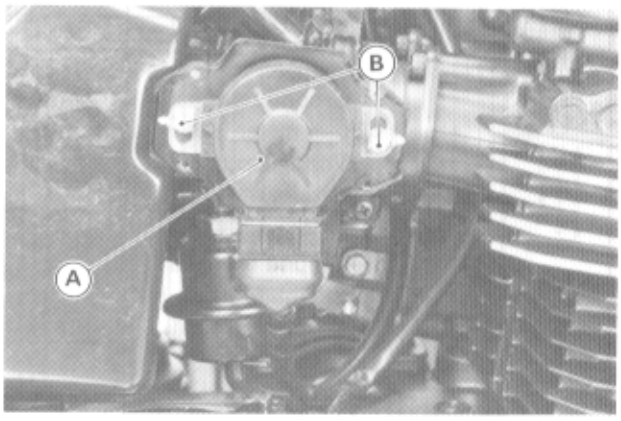
- Turn on the ignition switch to supply electricity to the sensor. Engine starting is not necessary.

★Both indicators on the checker should go on when the throttle is at the idle position. If they do not, adjust the sensor position.

**How to Adjust Sensor Position:**
- Remove the throttle sensor cover. Refer to "Engine Disassembly Chapter" for cover removal of the US model.
- Loosen the sensor mounting screws (2) just enough to move it.
- Turn the sensor so that both indicators go on.

"NOTE"

○*The position where only on indicator goes on is not far wide of the mark, but is not the exact position.*




A. Throttle Sensor B. Mounting Screws

- Tighten the mounting screws.
- Open and close the throttle a few times to make sure both indicators go on. Readjust if necessary.
- Turn off the ignition switch.

After the sensor is fixed at the best position–
- Install the sensor cover. Refer to "Engine Disassembly Chapter" for cover installation of the US model.
- Remove the checker and reconnect the sensor connector to the sensor.

### *Air Temperature Sensor Inspection*
- Turn off the ignition switch.
- Disconnect the air temperature sensor 2-pin connector.
- Connect an ohmmeter to the sensor connector (male, 2-pin) to measure the resistance of the air temperature sensor.

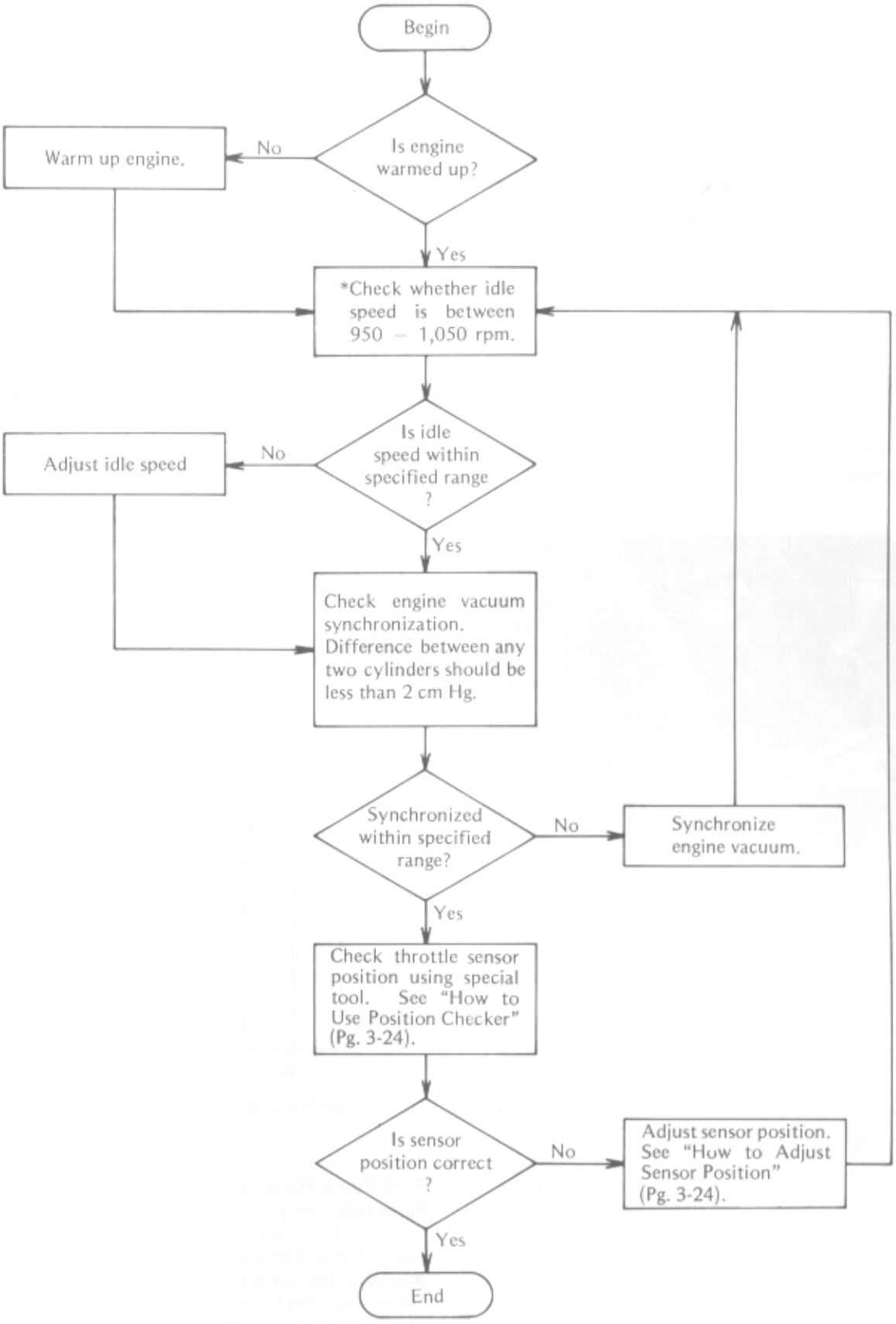
★If the meter shows the resistance shown in the table at the specified temperature, the sensor is good. If it does not, replace the sensor.

**Air Temperature Sensor Resistance**

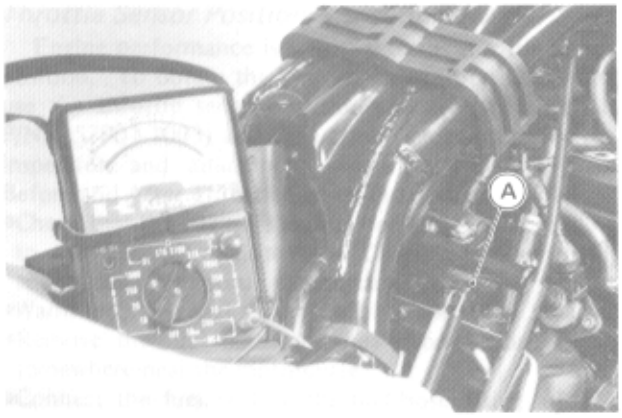
| Meter Range | Connections | Reading |
|---|---|---|
| x 1 kΩ | ○One meter lead → One sensor lead<br>○Other meter lead → Othe sensor lead | *3.0 – 4.0 kΩ @20°C (68°F) |

*This reading is true when sensor temperature is 20°C (68°F), 8.0 – 9.0 kΩ when 0°C (32°F), and 2.0 – 3.0 kΩ when 30°C (86°F).

**Throttle Sensor Position**
**Inspection and Adjustment Chart**




*When checking idle speed following engine vacuum synchronization inspection, disconnect the vacuum gauge hoses from the throttle valves, and connect the hoses, which lead to the pressure regulator, to the fittings on the throttle valves.

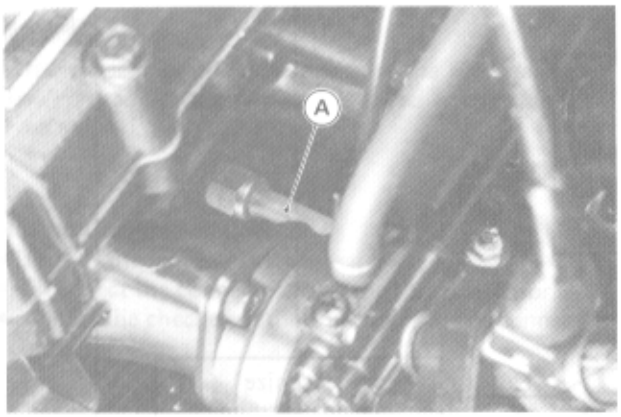



A. Air Temperature Sensor

*Engine Temperature Sensor Inspection*

- Turn off the ignition switch, and disconnect the lead from the engine temperature sensor.
- Measure the resistance of the sensor with an ohmmeter.

★If the meter shows the resistance shown in the table at the specified temperature, the sensor is good.




A. Engine Temperature Sensor

**Engine Temperature Sensor Resistance**

| Meter Range | Connections | Reading |
|---|---|---|
| x 1 kΩ | ○One meter lead → Sensor terminal<br>○Other meter lead → Chassis ground | *2.0 – 3.0 kΩ @20°C (68°F) |

*This reading is true when sensor temperature is 20°C (68°F), 4.7 – 7.6 kΩ when 0°C (32°F), and 1.4 – 2.2 kΩ when 30°C (86°F).

*Main/Pump Relay Inspection*

The relay is divided into two parts: the main and fuel pump relays. The two parts can be tested separately. Before starting the relay inspection, prepare a 12-volt battery, a test light (12 V 3 – 3.4 W), and two auxiliary leads, and remove the relay.

**Main Relay Inspection:**

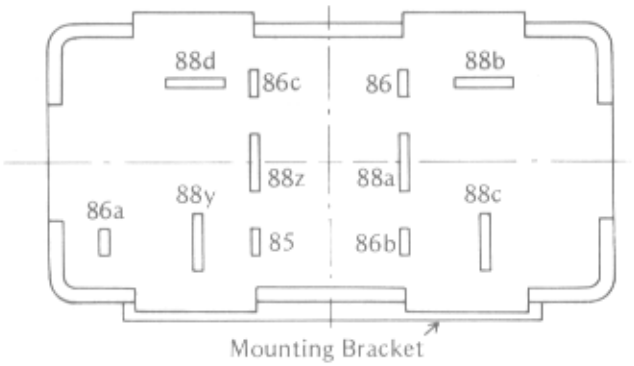
- Remove the relay.
- Connect the battery to the relay terminals, two at a time, and check the conductivity between the other two terminals as specified in the following table.

★If the terminals specified in the table conduct, the main relay is good.

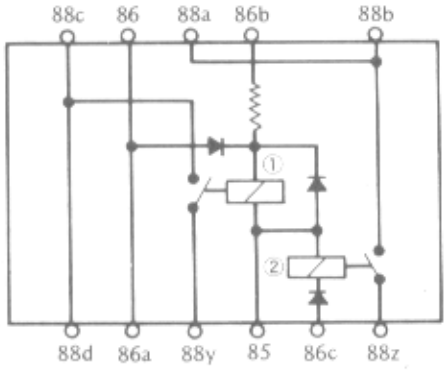
**Main Relay Inspection**

| No. | Connections | | Conductivity between #88z and #88a |
|---|---|---|---|
| | + Lead | – Lead | |
| 1 | #86c | #85 | 0 Ω |
| 2 | #85 | #86c | ∞ Ω |

**Relay Terminals**




**Internal Circuit of Relay**




1. Fuel Pump Relay 2. Main Relay

**Fuel Pump Relay Inspection:**

**Pump relay test 1:**

Using the 12-volt battery and ohmmeter, check the pump relay as follows:

- Connect the battery to the relay terminals, two at a time, and check the conductivity between the other two terminals as specified in the following table.

★If the terminals conduct as shown in the table, the fuel pump relay is good.

**Fuel Pump Relay Inspection**

| No. | Connections | | Conductivity between #88y and #88d terminals |
|---|---|---|---|
| | + Lead | – Lead | |
| 1 | #86 | #85 | 0 Ω |
| 2 | #85 | #86 | ∞ Ω |
| 3 | #86a | #85 | 0 Ω |
| 4 | #85 | #86a | ∞ Ω |
| 5 | #86b | #85 | 0 Ω |

**Pump relay test 2:**

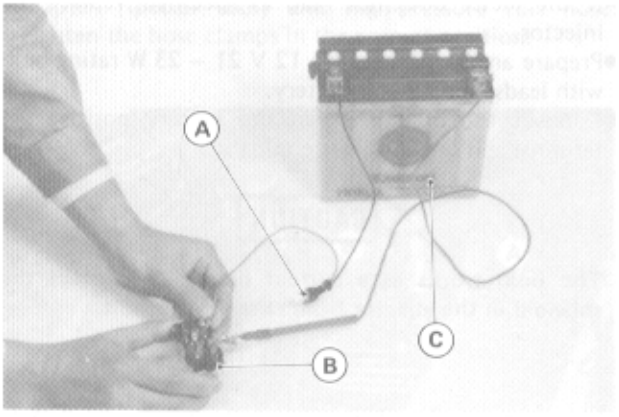
Using the test light, 12-volt battery, and ohmmeter, check the pump relay as follows:

- Connect the battery + terminal to the relay #85 terminal.
- Connect the test light between the battery – terminal and the relay #86b terminal.

**CAUTION**

○**The test light works as an indicator and also as a current limiter to protect the resistor in the relay from excessive current. Do not connect the battery directly to the relay terminals in the "pump relay test 2," or the resistor will be burnt out.**

★If the light goes on and the relay does not work (the terminals #88y and #88d do not show conductivity), the fuel pump relay is good.




A. Test Light (12 V 3 – 3.4 W)
B. Relay
C. 12 V Battery

*Wires and Connectors Inspection*

If each component checks out good upon individual inspection, but the system does not work well when they are connected together, inspect the harness for the electronic fuel injection system as follows:

- Remove the harness.
- Make sure all connectors are clean and tight, and none of the male pins in the connector have been displaced during the connection of the connector. Tug on the wires to see if any pins are loose. Push any loose pins all the way into the connector until you feel the small locking tang catch in place.
- Examine wires for signs of burning, fraying, etc.
- Check conductivity of the wires in the harness. Both ends of the same color wire should conduct.
- Check the O-ring in the multi-pin connectors for damage, and check the retaining clip of the connector for deformation.

★If there are poor wires or bad connections, replace the harness.

★If there are open wires, replace the harness.

★If the O-rings or clips are damaged, replace them.

## DFI Warning Function Test

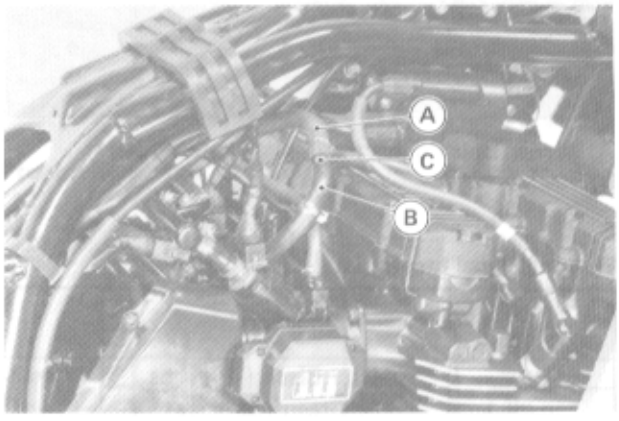
When the DFI system trouble occurs while riding, the DFI control unit sends a signal to the warner unit to warn the rider.

*Warning Signal Test*

- Remove the fuel tank, and disconnect the warner unit 8-pin connector.
- Connect the open ends of the fuel hoses using the vacuum gauge adapter (special tool).

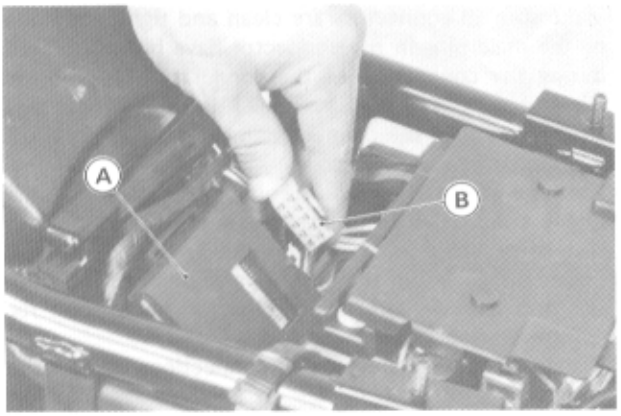
**WARNING**

○**If the ends of the fuel hoses are not connected together using a suitable pipe, fuel will spout from the fuel hoses when the ignition switch is turned on. Fuel spilled from the hoses is hazardous.**




A. Outlet Hose
B. Return Hose
C. Adapter: 57001-401

- Disconnect the igniter connector to stop ignition system operation.



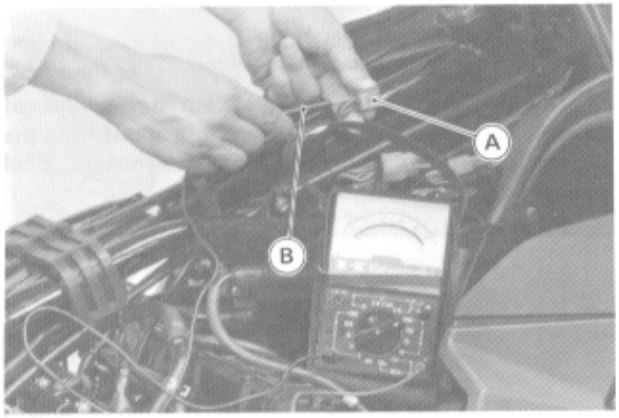

A. Igniter B. Connector

●Connect the ohmmeter to the wire shown in the table, and inspect the warning signal.

"NOTE"

○*The acts to kill the ignition system and to push the starter switch with the ignition switch turned on it to let the DFI control unit recongnize no ignition pulses reach.*

★If the meter does not read as specified in the table, check the green/red wire and its connectors for damage.
★If green/red wire and its connectors check out good, replace the DFI control unit.




A. Warner Unit Connector (Main Harness Side)
B. Black Probe

**Warning Signal Inspection**

| Meter Range | Connections* | Meter Reading (Criteria) |
|---|---|---|
| x 100 Ω | ○Meter Black (–) Probe → Green/red (Main harness side)<br>○Meter Red (+) Probe → Chassis ground | ○∞Ω with ignition switch turned on, and before starter switch is pushed on.<br>○Shows continuity (less than 100 Ω) with ignition switch turned on, and after starter switch is pushed on for more than 0.5 second. |

* : Do not reverse the ohmmeter connections as this gives different readings.

**Test No. 3 Fuel System Tests:**

*Fuel Pump Inspection*

●Disconnect the pump 2-pin connector.
●Connect a 12-volt battery to the 2-pin connector (pump side), and check whether the pump operates.

**Connecting Battery to Fuel Pump**

| |
|---|
| Battery (+) → Orange/black lead |
| Battery (–) → Black/yellow lead |

★If the pump does not operate, the trouble is with the pump or pump leads. Check the pump and leads, and replace them if necessary.

*Injector Inspection*

●Turn off the ignition switch.
●Remove the fuel tank, and disconnect the connector from the injector.
●Set the multimeter to the ohmmeter range, and measure the injector resistance.

**Injector Resistance**

| Meter Range | Connections | Reading |
|---|---|---|
| x 1 Ω | ○One meter lead → One injector terminal<br>○Other meter lead → Other injector terminal | *1.8 – 3.0 Ω @20°C (68°F) |

*Measured when the injector is cold (room or ambient temperature).

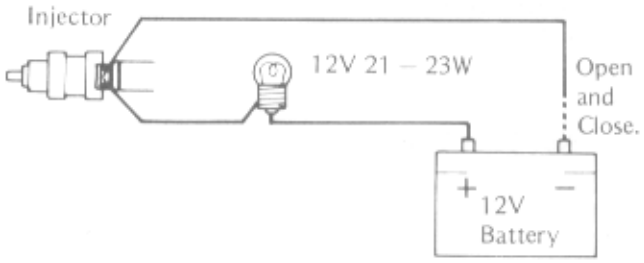
★If the meter shows conductivity as shown in the table, perform the test below.
★If the meter does not read as specified, replace the injector.
●Prepare an auxiliary lead, a 12 V 21 – 23 W rating bulb with leads, and 12-volt battery.
●Connect the bulb between the battery positive (+) terminal and one injector terminal.

CAUTION

**○The bulb works as a current limiter to protect the solenoid in the injector from excessive current.**

●Connect one end of the auxiliary lead to the other injector terminal, and connect the other end of the lead repeatedly to the battery negative (–) terminal.
★The injector should click every time the lead contacts to the battery terminal. If the injector does not click, replace the injector.

**Injector Inspection**



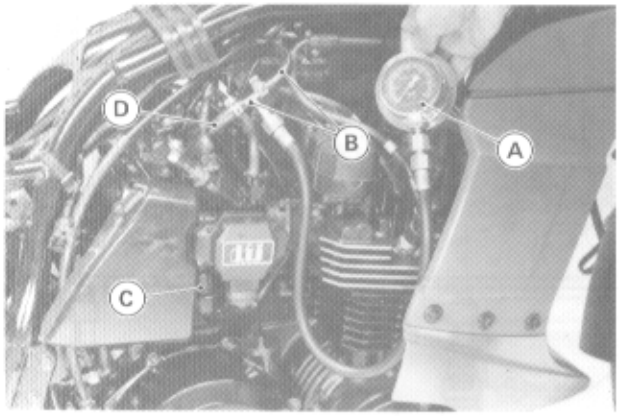

*Pressure Regulator Inspection*

First measure the fuel pressure as follows:
Case 1: If the engine will start–
●Disconnect the high pressure fuel hose from the pressure regulator.

**WARNING**

**When the fuel hose is pulled off, a small amount of fuel may spout out because of residual pressure in the fuel line. Cover the hose connection with a clean cloth to prevent the fuel from flying about.**

●Install the pressure gauge (special tool) between the pressure regulator and the hose disconnected using the adapter (special tool) and high-pressure fuel hose.
●Tighten the hose clamps in the correct position.




A. Pressure Gauge: 57001-125
B. Adapter: 57001-1089
C. Pressure Regulator
D. High Pressure Hose Fitting

●Start the engine, and read the gauge.

**Fuel Pressure**

| Conditions | Reading* |
|---|---|
| Engine idling | about 226 kPa (2.3 kg/cm², 33 psi) |
| The moment throttle is fully opened | about 245 kPa (2.5 kg/cm², 36 psi) |

*The gauge needle will oscillate. Read the pressure at the average of the maximum and the minimum indications.

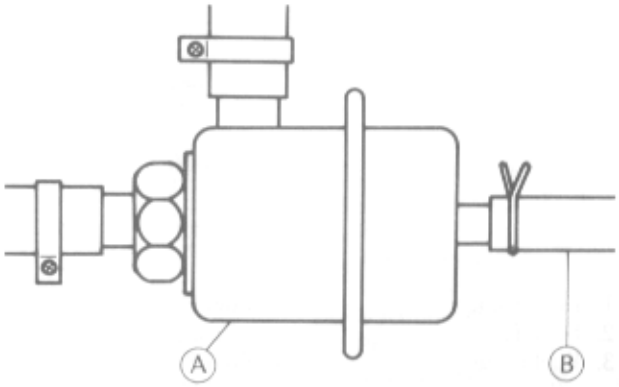
★If the gauge shows the pressure specified in the table, the fuel pressure is good.
★If the fuel pressure is abnormal, check the pressure regulator.

Case 2: If the engine will not start–
●Install the pressure gauge (special tool) in the fuel pressure line as explained in the "If the engine will start" paragraph.

●Turn on the ignition switch to run the fuel pump. Read the pressure gauge while the pump is running. The pump continues to run for 5 seconds after the ignition switch is turned on.
★If the gauge reads about 245 kPa (2.5 kg/cm², 36 psi), the fuel pressure is good.
★If the fuel pressure is abnormal, check the pressure regulator.

Check the pressure regulator as follows:
★If the fuel pressure is higher than the specified values, check the fuel return line (from the pressure regulator to the check valve in the tank) for obstructions, and the vacuum hose of the pressure regulator for air leaks. If they prove good, replace the pressure regulator.
★If the fuel pressure is lower than the specified values, check the fuel line for obstructions (from the fuel tap to the pump inlet) and fuel leaks (in the high-pressure fuel line). If the line is good, replace the pressure regulator or fuel pump.

**Pressure Regulator**




A. Pressure Regulator B. Vacuum Hose

*Fuel Leak Inspection*

Inspect the connections between the parts shown in the figure for leaks.

*Fuel System Cleaning*

**WARNING**

○**Clean the fuel system in a well ventilated area, and take ample care there are no sparks or flame anywhere near the working area. Never clean out the fuel system when the engine is still warm. Wipe any fuel off the engine before starting it.**

- Remove the fuel tank, and drain it.
- Remove the fuel tap from the tank, and clean the fuel tap filter with a high flash-point solvent.
- Flush out the fuel tank with a high flash-point solvent.
- Clean the air vent in the tank cap with compressed air.
- Remove the fuel pump, fuel injectors, fuel distributing pipe, and pressure regulator; and clean them using a high flash-point solvent.
- Replace the fuel filter and hoses with new ones.
- Install the parts on the motorcycle. Use new hose clamps.

*Fuel Filter Inspection*

Regular replacement of the fuel filter is required, but replacement is not otherwise necessary unless the filter has been damaged.

If water accumulates in the filter, clean the fuel system. See above.

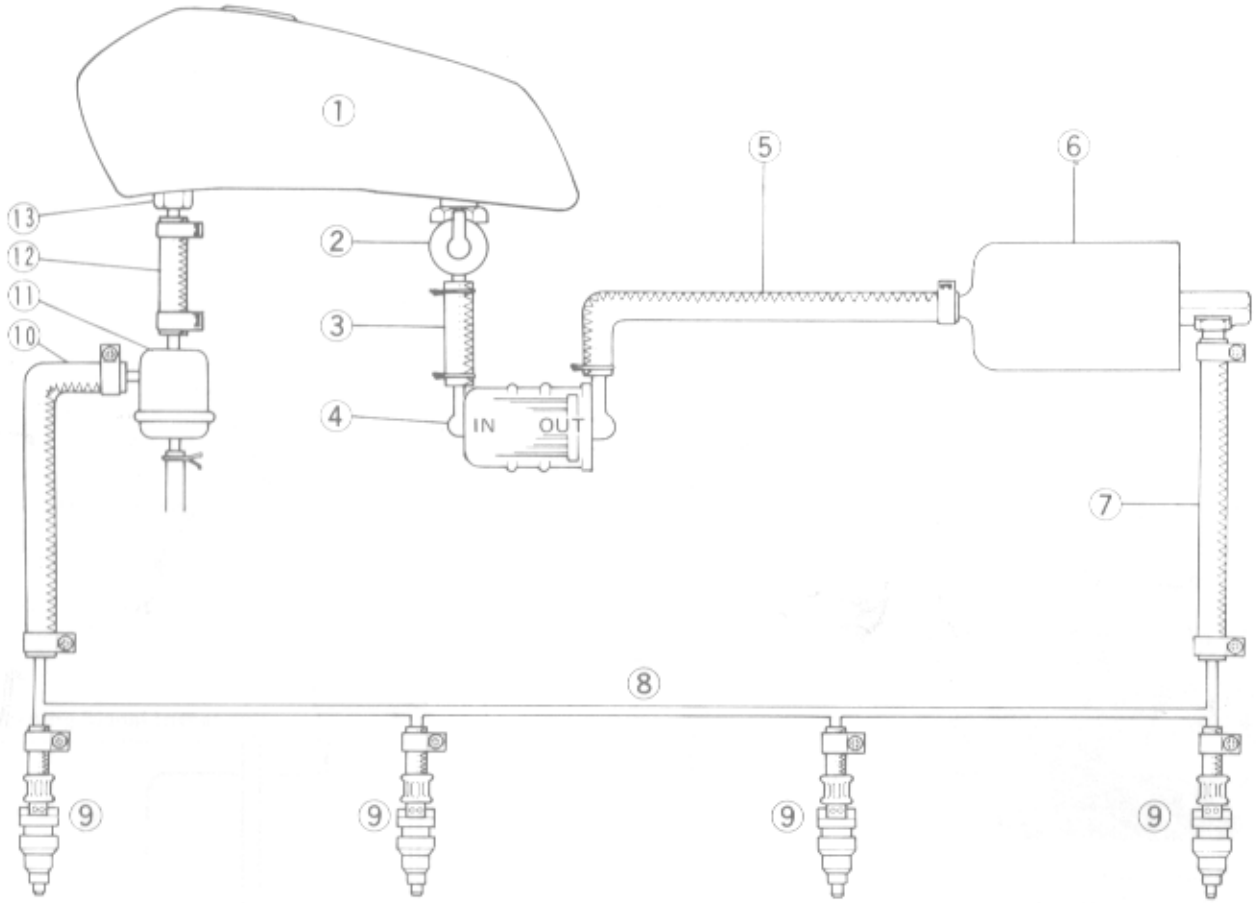
**Test No. 4 Air System Inspection:**

*Throttle Valve Inspection*

- Check the engine vacuum synchronization.
- Check the throttle valve and the fast idle link mechanism for smooth operation.

★If there is any binding or other unusual operation in the link mechanism, repair it or replace the throttle valve.

**Fuel Leak Inspection**




1. Fuel Tank
2. Fuel Tap
3. Fuel Hose (low pressure)
4. Fuel Filter
5. Fuel Hose (low pressure)
6. Fuel Pump
7. Fuel Hose (high pressure)
8. Fuel Distributing Pipe
9. Fuel Injectors
10. Fuel Hose (high pressure)
11. Pressure Regulator
12. Fuel Hose (low pressure)
13. Check Valve

**"NOTE"**

○*If any one of the throttle valves is replaced, synchronize the valves as explained on the p. 2-7. If the whole throttle valve assembly is replaced, synchronization is not required.*

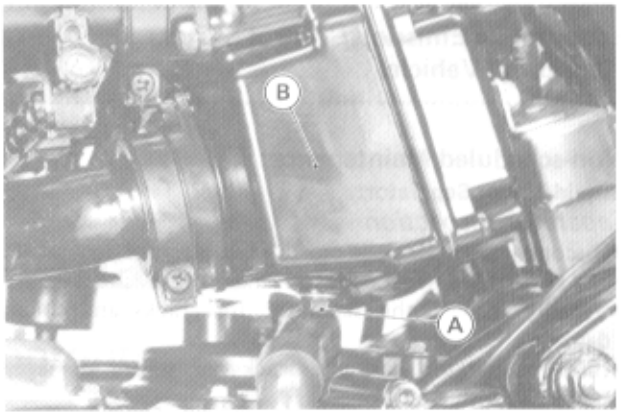
### *Air Leak Inspection*

●Inspect the connections between the parts shown in the figure for air leaks.

### *Surge Tank Draining*

Usually water, oil, etc. do not collect at the bottom of the tank. In the event that rain water is drawn in through the air cleaner, or if engine oil is blown back; pull off the drain plugs from the ends of the drain hoses.

Before installing the drain plugs, check the plugs and drain hoses for damage. If they are damaged, replace them with new ones.

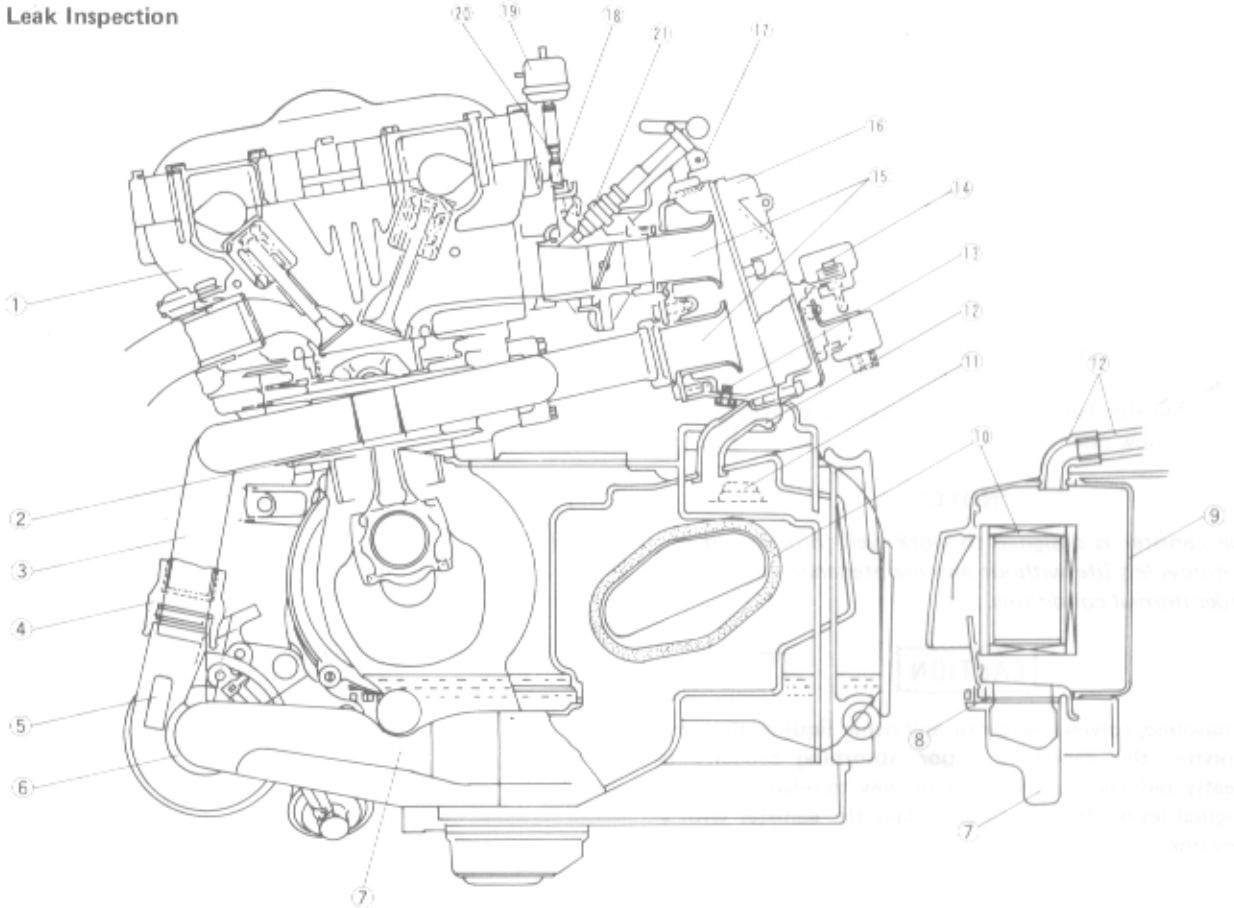



A. Drain Bolt B. Surge Tank

**CAUTION**

○**If air is drawn in through a damaged or loose drain bolt, the fuel injection system will not operate properly.**

**Air Leak Inspection**



1. Cylinder Head
2. Intake Pipe Seal
3. Intake Pipe
4. Turbocharger Seal (outlet)
5. Turbocharger
6. Turbocharger Seal (inlet)
7. Intake Pipe
8. Gasket
9. Air Cleaner Housing (Chain Cover)
10. Air Cleaner Element
11. Oil Filler Cap
12. Breather Tubes
13. Drain Bolt
14. Boost Sensor
15. Duct
16. Surge Tank
17. Air Temperature Sensor
18. Vacuum Hoses
19. Pressure Regulator
20. Vacuum Hose Joint
21. Fuel Injectors

## Evaporative Emission Control System (California Vehicle)

### Non-scheduled Maintenance:

**Liquid/Vapor Separator:**

*Separator Inspection*

- Disconnect the hoses from the liquid/vapor separator, and remove the separator from the motorcycle.
- Visually inspect the separator for cracks and other damage.
- ★If the separator has any cracks or severe damage, replace it with a new one.

*Separator Test*

- Connect the hoses to the separator, and install the separator on the motorcycle.
- Disconnect one of the breather hoses from the separator, and inject about 20mL of gasoline into the separator through the hose fitting.
- Disconnect the fuel return hose from the fuel tank.
- Run the open end of the return hose into the container level with the tank top.
- Start the engine, and let it idle.
- ★If the gasoline in the separator comes out of the hose, the separator works well. If it does not, replace the separator with a new one.

**Canister:**

*Canister Inspection*

- Remove the canister, and disconnect the hoses from the canister.
- Visually inspect the canister for cracks and other damage.
- ★If the canister has any cracks or severe damage, replace it with a new one.

"NOTE"

○*The canister is designed to work well through out the motorcycle's life without any maintenance, if it is used under normal conditions.*

CAUTION

○**If gasoline, solvent, water or any other liquid enters the canister, the canister's vapor absorbing capacity is greatly reduced, and there is no way to return it to the original level. In that case, replace the canister with a new one.**

**Fuel Tank and Cap:**

*Cap Inspection*

- Visually inspect the gasket on the tank cap for any damage.
- ★Replace the gasket if it is damaged.
- Blow the air vent in the tank cap free with compressed air.

*Tank Inspection*

- Remove the hoses from the fuel tank, and open the tank cap.
- Check to see if the breather and fuel return pipes in the tank are not clogged.
- ★If they are clogged, blow them out with compressed air.

# Non-scheduled Maintenance – Chassis

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## Brakes

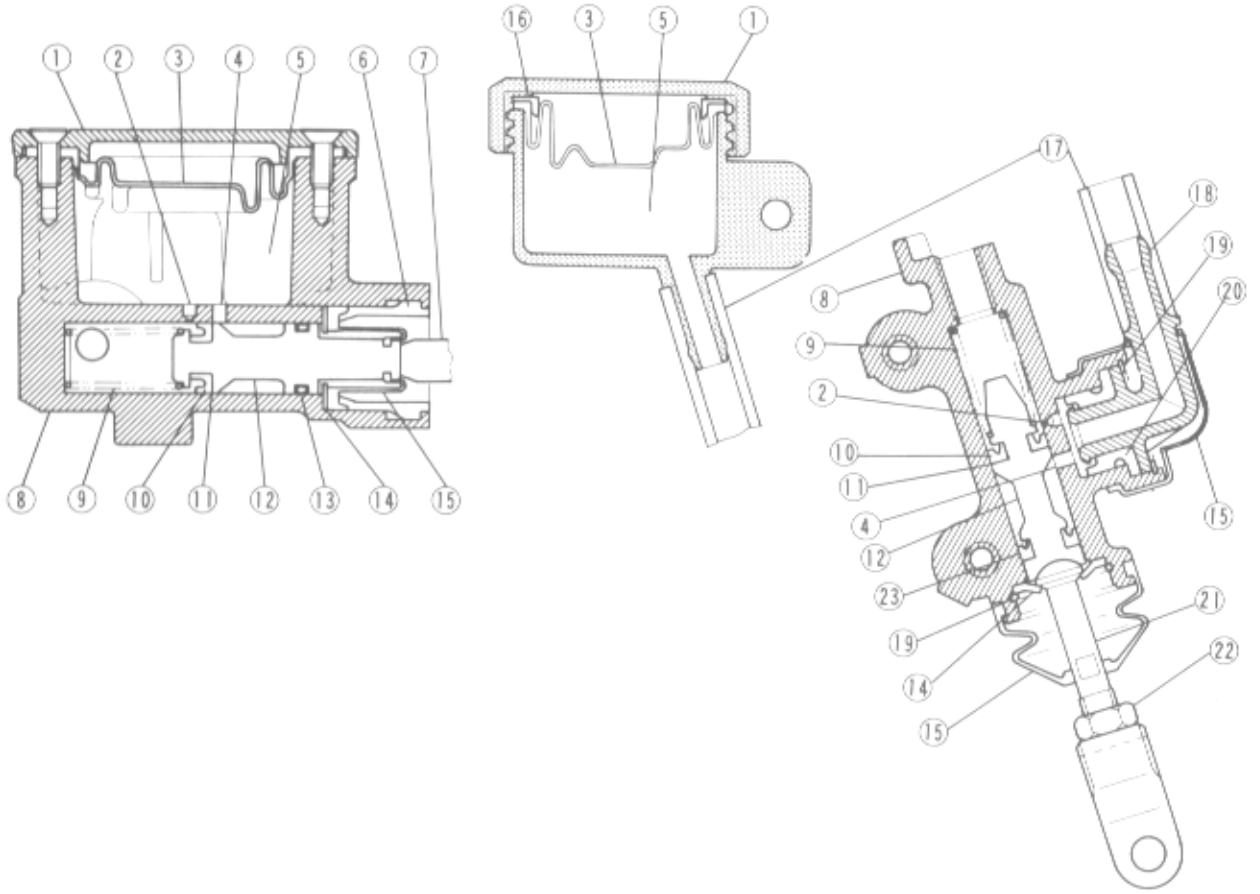
### Master Cylinders:

*Visual Inspection*

- Disassemble the front and rear master cylinders.
- Check that there are no scratches, rust or pitting on the inside of the master cylinder and on the outside of the piston.
- ★If the master cylinder or piston shows any damage, replace the master cylinder and piston.
- Inspect the primary cups, secondary cup, and O-ring on the pistons.
- ★If a cup or O-ring is worn, damaged, softened (rotted), or swollen, replace the piston assembly.
- ★If fluid leakage is noted at the brake lever, the piston assembly should be replaced to renew the cup(s) and O-ring.
- Check the dust covers for damage.
- ★If they are damaged, replace them.
- Check that the relief and supply ports are not plugged.
- ★If the small relief port becomes plugged, especially with a swollen or damaged primary cup, the brake pads will drag on the disc. Blow the ports clean with compressed air.
- Check the piston return springs for any damage.
- ★If the spring is damaged, replace the piston assembly.

**Front and Rear Master Cylinders**

482533



1. Reservoir Cap
2. Relief Port
3. Diaphragm
4. Supply port
5. Reservoir
6. Liner
7. Brake Lever
8. Master Cylinder Body
9. Return Spring
10. Primary Cup
11. Non-return Valve
12. Piston
13. O-Ring
14. Piston Stop
15. Dust Cover
16. Plate
17. Brake Fluid Hose
18. Hose Connector
19. Retainer
20. Grommet
21. Push Rod
22. Locknut
23. Secondary Cup

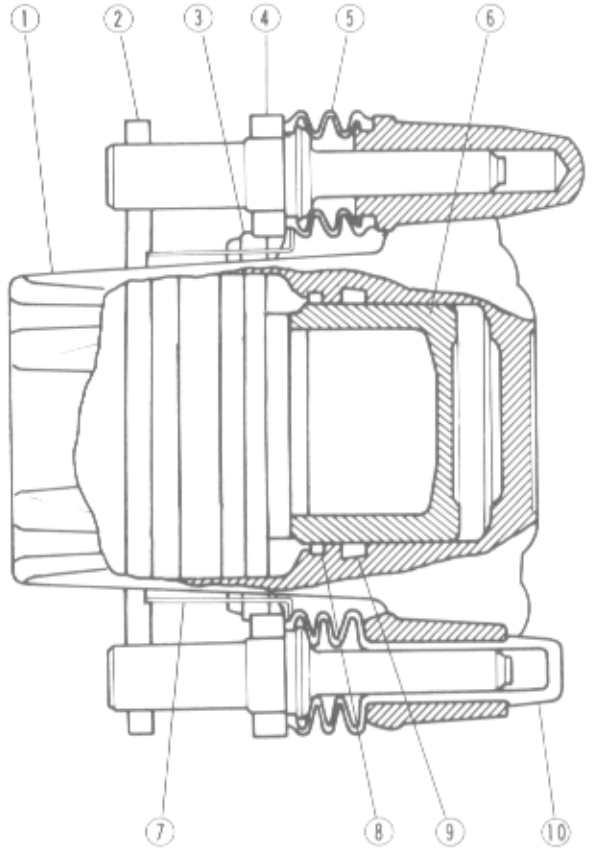
**Calipers:**

*Fluid Seal Damage*

The fluid seal around the piston maintains the proper pad/disc clearance. If this seal is not satisfactory, pad wear will increase, and constant pad drag on the disc will raise brake and brake fluid temperature.

Caliper

482534




1. Caliper
2. Brake Pad
3. Brake Pad
4. Caliper Holder
5. Dust Cover
6. Piston
7. Anti-Rattle Spring
8. Dust Seal
9. Fluid Seal
10. Friction Boot

Replace the fluid seals under any of the following conditions: (a) fluid leakage around the pad; (b) brakes overheat; (c) there is large difference in left and right pad wear; (d) the seal is stuck to the piston. If the fluid seal is replaced, replace the dust seal as well. Also, replace all seals every other time the pads are changed.

*Dust Seal and Cover Damage*

●Check that the dust seals and covers are not cracked, worn, swollen, or otherwise damaged.

★If they show any damage, replace them.

*Piston Cylinder Damage*

●Visually inspect the piston and cylinder surfaces.

★Replace the cylinder and piston if they are badly scored or rusty.

*Caliper Holder Shaft Wear*

The caliper body must slide smoothy on the caliper holder shafts. If the body does not slide smoothly, one pad will wear more than the other, pad wear will increase, and constant drag on the disc will raise brake and brake fluid temperature.

●Check to see that the caliper holder shafts are not badly worn or stepped, or that the rubber friction boot is not damaged.

★If the shafts or rubber friction boot are damaged, replace the rubber friction boot, and the caliper holder.

**Brake Discs:**

*Disc Warp*

Refer to p. 205 of the Base Manual.

*Disc Wear*

Refer to p. 205 of the Base Manual.

**Brake Hoses:**

*Brake Line Damage*

Refer to p. 208 of the Base Manual noting the following exception.

●The metal pipes which feed the brake fluid to the anti-dive units are made of plated steel, and will rust if the plating is damaged. Replace the pipe if it is rusted, cracked (especially check the fittings), or if the plating is badly scratched.

# Non-scheduled Maintenance – Electrical

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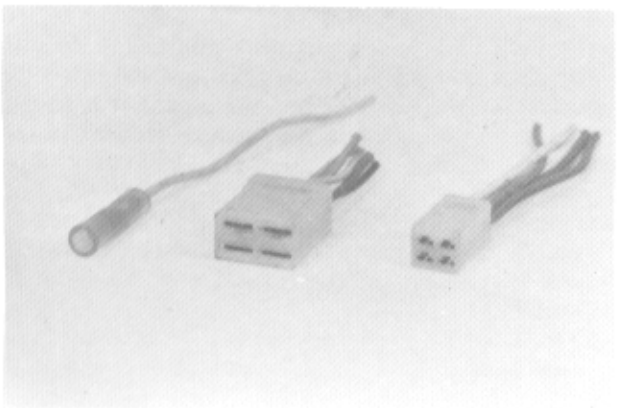
5

## Precautions

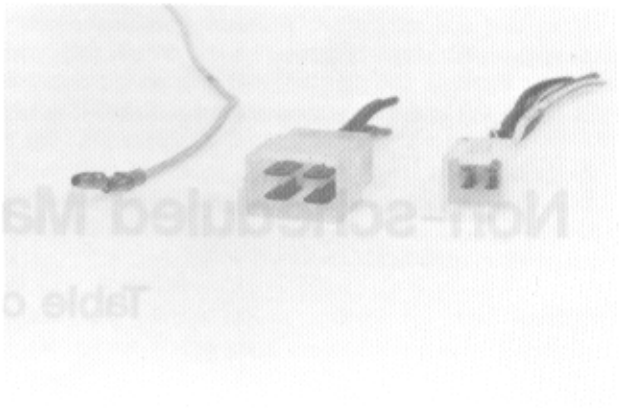
There are numbers of important precautions that are musts when servicing electrical systems. Though cautions that apply to the indications are listed below, failure to observe these rules can result in serious system damage. Learn and observe all the rules below.

(a) Do not reverse the battery lead connections. This will burn out the diodes in the electrical parts.
(b) Always check battery condition before condemning other parts of an electrical system. A fully charged battery is a must for conducting accurate electrical system tests.
(c) The electrical parts should never be struck sharply, as with a hammer, or allowed to fall on a hard surface. Such a shock to the parts can damage them.
(d) To prevent damage to electrical parts, unless otherwise there is instruction during a test, do not disconnect the battery leads or any other electrical connections when the ignition switch is on, or during the engine is running.
(e) Because of the large amount of current, never keep the starter switch pushed when the starter motor will not turn over, or the current may burn out the starter motor windings.
(f) Do not use a meter illumination bulb rated for other than the voltage or wattage specified in the wiring diagram, as the meter or gauge panel could be warped by excessive heat radiated from the bulb.
(g) Take care not to short the leads that are directly connected to the battery positive (+) terminal to the chassis ground.
(h) Troubles may involve one or in some cases all items. Never replace a defective part without determining what CAUSED the failure. If the failure was brought on by some other item or items, they too must be repaired or replaced, or the new replacement will soon fail again.
(i) Make sure all connectors in the circuit are clean and tight, and examine wires for signs of burning, fraying. etc. Poor wires and bad connections will affect electrical system operation.
(j) Electrical Connectors.

**Female Connectors**



**Male Connectors**



(k) Color Codes:

| | |
|---|---|
| BK | Black |
| BL | Blue |
| BR | Brown |
| CH | Chocolate |
| DG | Dark green |
| G | Green |
| GY | Gray |
| LB | Light blue |
| LG | Light green |
| O | Orange |
| P | Pink |
| R | Red |
| W | White |
| Y | Yellow |

(l) Measure coil and winding resistance when the part is cold (at room temperature).

## Ignition System

Refer to p. 371 of the Base Manual noting the following exception.

### Ignition System Inspection:

If trouble is suspected in the ignition system, check the following items. Before inspecting these items, make sure that all connectors and leads in the ignition system are clean, tight, and in good condition.

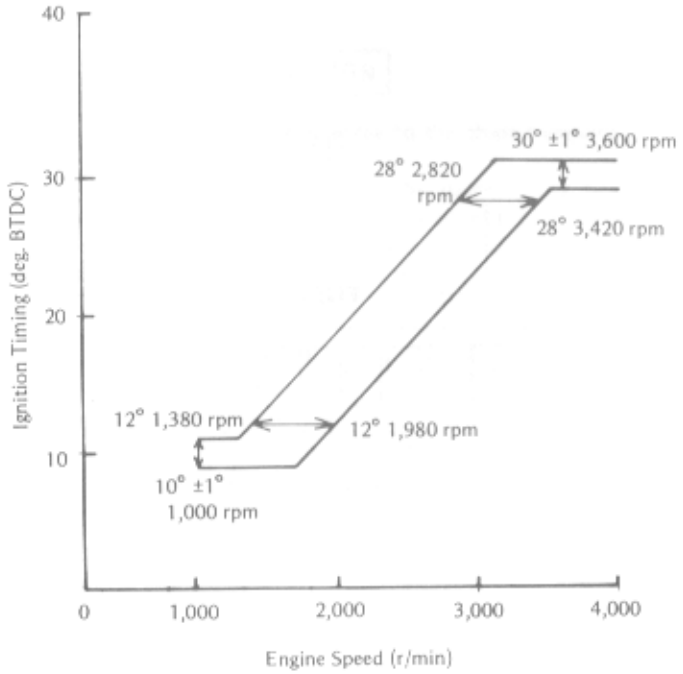
1. Dynamic Ignition Timing Inspection
2. Checking Power Supply to IC Igniter
3. Ignition Coil Inspection
4. Pickup Coil Inspection
5. IC Igniter Inspection
6. Switches Inspection

**Description of Each Testing Procedure:**

*1. Dynamic Ignition Timing Insepction*

Check the ignition timing with a strobe light for both low and high speed operations.

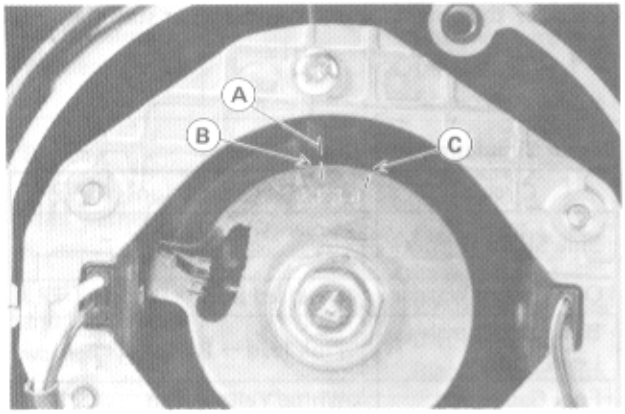
**Ignition Timing/Engine Speed Relationship**




- Connect strobe light to the #1 or #4 spark plug lead in the manner prescribed by the manufacturer in order to check the ignition timing under operation conditions.
- Start the engine, and direct the strobe light at the timing marks.
- Check the ignition timing at low and high engine speeds.

**Checking Engine Speed**

| | |
|---|---|
| Low Speed : | Idle speed |
| High Speed : | Above 3,600 r/min (rpm) |




A. Timing Mark
B. "F" Mark
C. Advanced Mark

★At low speed, the "F" mark on the timing rotor should be aligned with the timing mark on the engine.
★At high speed, the timing mark on the engine should be aligned with the advanced timing mark.

2. *Checking Power Supply to IC Igniter*
   Refer to p. 371 of the Base Manual.
3. *Ignition Coil Inspection*
   Refer to p. 371 of the Base Manual.
4. *Pickup Coil Inspection*
   Refer to p. 371 of the Base Manual.
5. *IC Igniter Inspection*
   Refer to p. 371 of the Base Manual.
6. *Switches Inspection*
   Refer to p. 371 of the Base Manual.

## LCD Fuel Gauge and Warner Unit

### Outline:

Refer to p. 378 of the Base Manual noting the following exception.

1. The DFI warner is newly added to the LCD warner unit.
   ○DFI (DFI Warning): This red LCD warner consists of two segments, upper and lower halves. When the DFI system is troubled, this warner warns the rider by flashing.
2. The oil pressure warner is newly added to the LCD warner unit. The oil level warner mounted in the ZX750A1 LCD warner unit is not needed.

### Gauge and Warning System Troubleshooting:

Refer to p. 379 of the Base Manual noting the following exception.

*Test No. 1-Quick Initial Check*
Refer to p. 379 of the Base Manual.

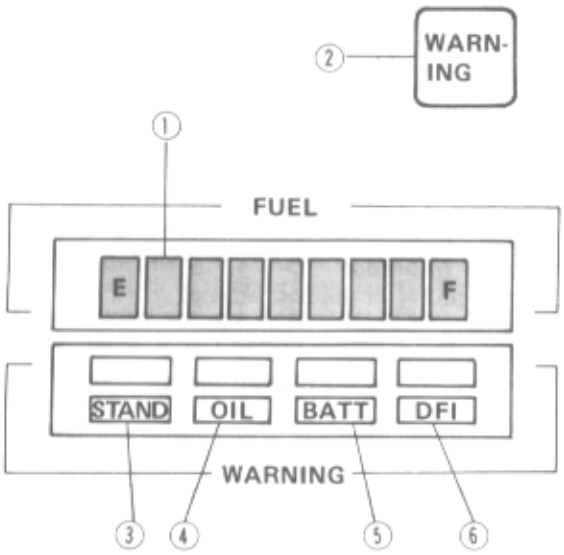
*Test No. 2-Power Supply Test*
Refer to p. 379 of the Base Manual.

*Test No. 3-Gauge and Warner Unit Test*

- Prepare eight auxiliary wires, two to supply battery power to the unit, five to simulate the sensors, and one to connect to the warning light.
- Remove the gauge and warner unit from the fuel tank.

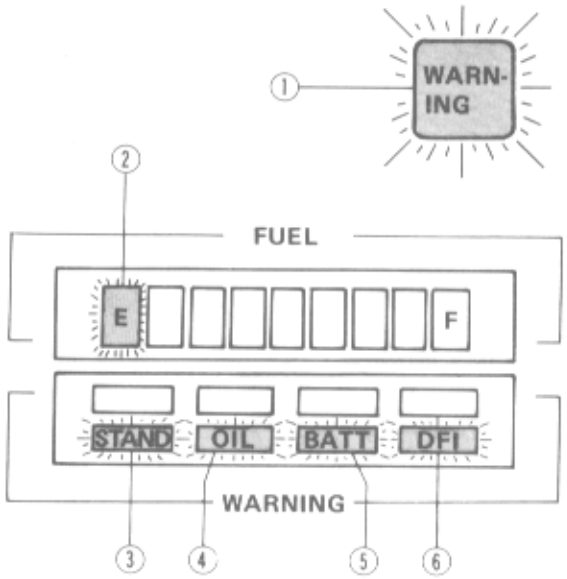
**Gauge and Warner Unit Test**

(a) All sensor-simulating wires are connected.




1. Fuel Gauge: Nine segments appear.
2. Warning Light: Unlits.
3. Side Stand Warner: Does not appear.
4. Oil Pressure Warner: Does not appear.
5. Battery Electrolyte Level Warner: Does not appear.
6. DFI Warner: Does not Appear.

(b) Sensor-simulating wires are disconnected.




1. Warning Light: Flashes when any one of simulating wires is disconnected.
*2. Fuel Warner: Flashes when white/yellow wire is disconnected.
3. Side Stand Warner: Flashes when green/white wire is disconnected.
4. Oil Pressure Warner: Flashes when blue/red wire is connected.
5. Battery Electrolyte Level Warner: Flashes when pink wire is disconnected.
6. DFI Warner: Flashes when green/red wire is connected to battery (–) terminal.

*The time delay circuit is provided in the fuel gauge circuit to stabilize the gauge display. It takes 3 to 12 seconds for each segment to disappear or appear. Also it takes 3 to 7 seconds for the bottom segment to begin or stop flashing.

- Connect one wire between the green/yellow wires in the male unit connector and female main harness connector.
- Connect the five sensor simulating wires to the terminals in the unit connectors.

**Sensor Simulating Wire Connections**

| Circuit | Connections |
|---|---|
| Side Stand Warner | ○Green/white lead → Battery (–) |
| Oil Pressure Warner | ○Blue/red lead → Battery (–) |
| Battery Electrolyte Level Warner | ○Pink lead → Battery (+) |
| Fuel Gauge and Warner | ○White/Yellow lead → Battery (–) |
| DFI Warner | ○Green/red lead → Open |

●Using the wires to supply battery power to the unit, connect the brown terminal in the connector with the battery positive (+) terminal and connect the black/yellow terminal in the connector with the battery negative (–) terminal.

CAUTION

○**Take care not to short the wires to the chassis ground.**

★When the unit is connected to the battery, the self-checking procedure should start. After the procedure is completed, the gauge and warner display should be as shown. If the self-checking procedure did not start, or if there is any fault on the display; replace the gauge and warner unit.

●Disconnect one of the sensor simulating wires from the connector.

★If both the LCD warner and the red warning light flash as shown the unit works properly. Proceed to the "Test No. 4-Wiring and Connector Test" If any of them does not flash, or if any of them stays on without flashing, replace the gauge and warner unit.

*Test No. 4-Wiring and Connector Test*

●Set the motorcycle on the center stand.

●Connect the multimeter to wire in the disconnected female connector (main wiring harness side connector) as indicated in the table and read the meter. When checking the wiring for the fuel gauge and low fuel warner, disconnect the fuel level sensor connector.

★If the multimeter does not read as shown in the table, first inspect the related wire(s) and connector(s), then repair or replace the damaged part(s). If the wire(s) and connector(s) prove good, proceed to the "Test No. 5-Sensor Test."

*Test No. 5-Sensor Test*

**(a) Side Stand Switch:**

●Disconnect the side stand switch leads.

●Zero the ohmmeter, and connect the meter to the switch leads as indicated in the table to check the switch operation.

★If the meter does not read as indicated in the table, check to see that the side stand switch is properly installed on the frame. If the switch is not correctly installed, re-mount it correctly. If the switch is correctly mounted, replace the side stand switch.

**Wiring and Connector Test**

| Wire | Meter Range | Connections | Meter Reading (Criteria) |
|---|---|---|---|
| Side Stand Warner | x 1 Ω | ○One meter lead → Green/white wire<br>○Other meter lead → Black/yellow wire | ○0 Ω when side stand is up.<br>○∞ Ω when side stand is down. |
| Oil Pressure Warner | x10 Ω | ○One meter lead → Blue/red wire<br>○Other meter lead → Black/yellow wire | ○0 Ω when engine oil pressure is lower than the specified value.<br>○∞ Ω when engine oil pressure is much higher than the specified value. |
| Battery electrolyte level warner | 10V DC | ○Meter (+) → Pink wire<br>○Meter (–) → Black/yellow wire | ○More than 6 V when electrolyte level is higher than "lower level line."<br>○0 V when electrolyte level is lower than "lower level line." |
| Fuel gauge and low fuel warner | x 10 Ω | ○One meter lead → White/yellow wire<br>○Other meter lead → Black/yellow wire | ○0.5 – 118 Ω |
| DFI warner | Refer to *"Warning Function Test"* in the DFI System section. | | |

**Side Stand Switch Operation**

| Meter Range | Connections | Meter Reading (Criteria) |
|---|---|---|
| x 1 Ω | ○One meter lead → Brown switch lead<br>○Other meter lead → Green/white switch lead | ○0 Ω when the side stand is up.<br>○∞ Ω when the side stand is down. |

**(b) Oil Pressure Switch:**
Refer to p. 188 of the Base Manual.

**(c) Electrolyte Level Sensor:**
Refer to p. 327 ånd p. 364 of the Base Manual.

**(d) Fuel Level Sensor:**
Refer to the *"Fuel Level Sensor Test"* on p. 327 of the Base Manaul.

**(e) DFI Sensor:**
Refer to *"Warning Function Test"* in the DFI System section.

# Disassembly – Engine

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## Precautions

- Set the motorcycle up on its center stand so that it is stable during removal and installation operations.
- An arrow mark is placed on some parts. The arrow shows either the orientation or the direction of rotation of a part.

If the arrow mark shows orientation, install the part so that the arrow points foward the front of the motorcycle when it is installed.

If the arrow mark shows direction of rotation, install the part so that the arrow mark coincides with the rotational direction.

- For later installation convenience, note and record how and where cables, wiring, and hoses are routed. They should not be allowed sharp bends, kinking or twisting.
- Install the gaskets in the correct position and direction so that they perfectly match with the mating surfaces where they are to be installed.
- Before assembling parts, wear an eye protector, and blow the oil passages in the parts clean with compressed air.

WARNING

○**When any fuel hose is disconnected, do not turn on the ignition switch. The fuel pump will operate and fuel will spout from the fuel hose if you turn on the ignition switch while the hose is disconnected.**

## Fuel Hoses

### Removal:

*Fuel Hose Removal Note*

WARNING

○**When the fuel hoses are pulled off, a small amount of fuel may spout out because of residual pressure in the fuel line. Cover the hose connection with a clean cloth to prevent the fuel from flying about.**

### Installation:

*Fuel Hoses Installation Notes*

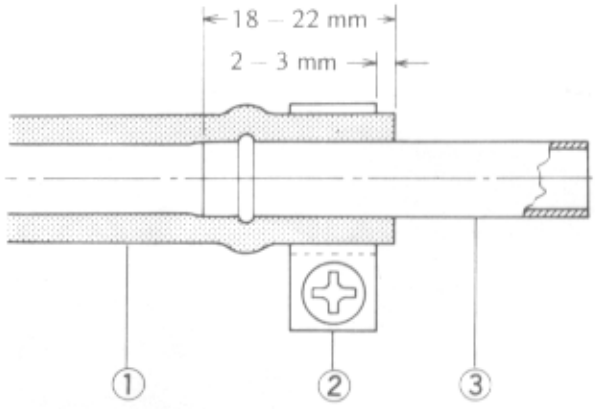
○The inner surfaces of the high-pressure fuel hoses are coated with a special material. If this special layer is damaged, replace the hose with a new one. Also replace the hose if it is sharply bent or kinked.

○Discard the old hose clamps, and use new clamps when assembling the system.

○Route the fuel hoses with a minimum of bending so that the fuel flow will not be obstructed.

○Install the clamps for the high-pressure fuel hoses in the position indicated in the figure below.

**Hose Clamp Installation**

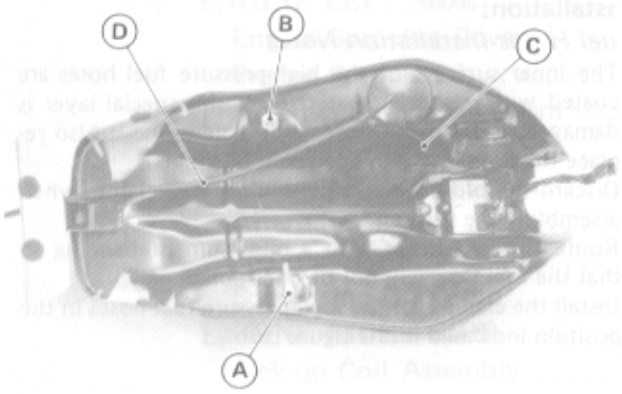



1. Fuel Hose 2. Clamp 3. Pipe of Fitting

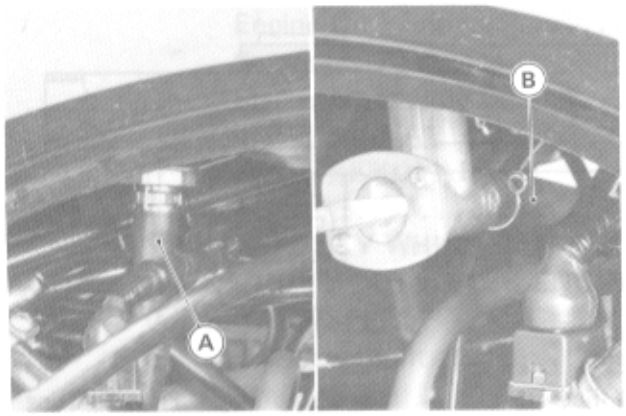
## Fuel Tank, Fuel Level Sensor

*Fuel Tank Installation Note*

○Connect the fuel hose, which comes from the pressure regulator to the check valve; and connect the fuel hose, which comes from the fuel filter, to the fuel tap.



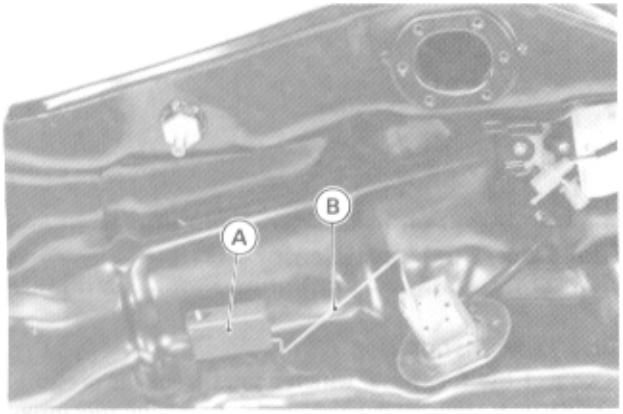

A. Fuel Tap (To Fuel Hose)
B. Check Valve (To Return Hose)
C. Fuel Sensor Lead
D. Drain Hose




A. Hose from pressure Regulator
B. Hose to Fuel Filter

*Fuel Level Sensor Removal*

- Remove the fuel level sensor cover and breather hose by prying the cover flange.
- Remove the bolts (6), and remove the sensor. Be careful not to bend the float arm.




A. Float B. Arm

*Fuel Level Sensor Installation Notes*

- Match the bolt holes so that the float is positioned directly forward of the sensor body. Float movement will be hindered in any other position.
- Replace the O-ring with a new one if it is swollen or otherwise damaged.
- Check for fuel leaks after installing and filling the tank.

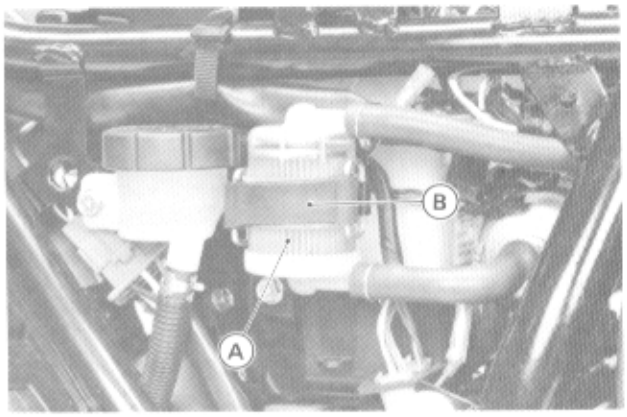
## Fuel Filter

*Removal Note*

- Remove the R.H. side cover before fuel filter removal.

**WARNING**

- **Perform procedures in a well ventilated area, and take care that there is no spark or flame anywhere near the working area.**



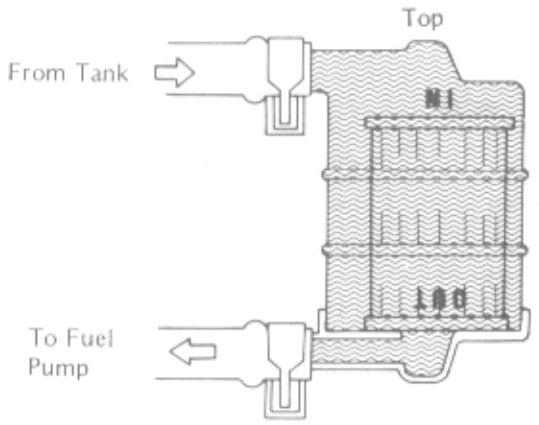

A. Fuel Filter B. Filter Clamp Band

*Installation Note*

- In order to feed the fuel pump with fuel quickly after running out of fuel, observe the following:

1. Install the filter so that the "IN" side is on top.
2. Install the fuel hose to the fuel pump on the lower fitting (marked "OUT"), and the hose from the fuel tank on the upper fitting (marked "IN")

**Fuel Filter Installation**




## Throttle Valves
## Fuel Injectors
## Fuel Distributing Pipe

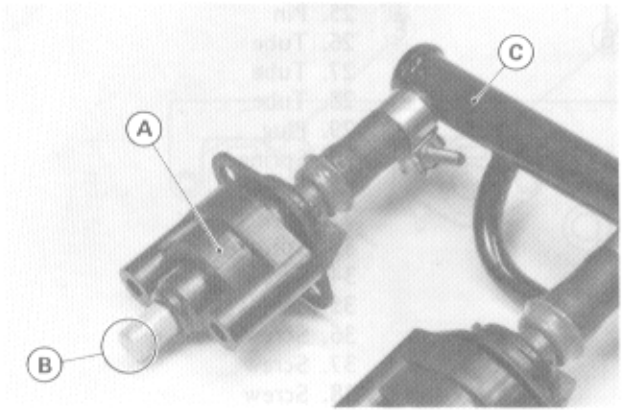
### Removal:

*Throttle Valve Removal Notes*
*Fuel Injectors, and Fuel Distributing Pipe*

- Remove the fuel tank and surge tank.
- Remove the throttle valves, fuel injectors, and fuel distributing pipe as an assembly, and then separate them.

**CAUTION**

- **Do not damage injector nozzles. A damaged nozzle will adversely affect the injector performance.**

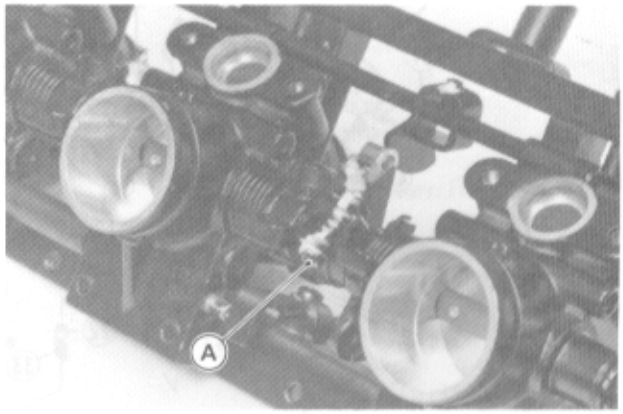



A. Injector
B. Nozzle
C. Fuel Distributing Pipe

### Installation:

*Throttle Valve Installation Notes*
*Fuel Injectors, and Fuel Distributing Pipe*

- Check the seal and damper for deterioration or other damage, and replace them if necessary.
- Observe the "Fuel Hose Installation Point" (p. 6-3).
- Tighten the injector mounting bolt (8) to 4.9 N-m (0.50 kg-m, 43 in-lb) of torque.
- Tighten the hose clamps after all injectors and fuel distributing pipe are correctly positioned in place.
- The four fuel injector 2-pin connectors differ in the length of their leads. The cylinder number is marked on the lead sheath.
- If the throttle sensor position is altered, adjust the sensor position using the position checker (special tool). See p. 3-24.
- If the throttle valve is replaced, synchronize the engine intake vacuum, and adjust the throttle sensor position using the position checker (special tool). See p. 3-24.
- If a throttle valve or the whole assembly is replaced, adjust the fast idle engine speed after engine intake vacuum synchronization, and throttle sensor position adjustment. Engine speed should rise to about 3,000 r/min (rpm) when the fast idle lever is pulled up fully with the engine completely warmed up. If it does not, adjust fast idle speed by turning the adjusting screw.




A. Fast Idle Speed Adjusting Screw

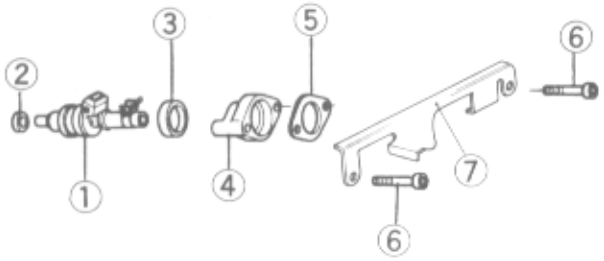
### Disassembly and Assembly:

*Throttle Valve Assembly Notes*

- Remove the clip ㊵ from the fast idle lever shaft ⑦.
- Remove the screw ⑰, and pull off the fast idle lever shaft. The positioning spring ㉛, ball ㊶, and washer ⑲ will fall off.
- Remove the four screws ㊱ and ㊲ for each valve, and separate the valves ⑨, ⑩, ⑪, and ⑫ from the moutning frames ⑤ and ⑥.

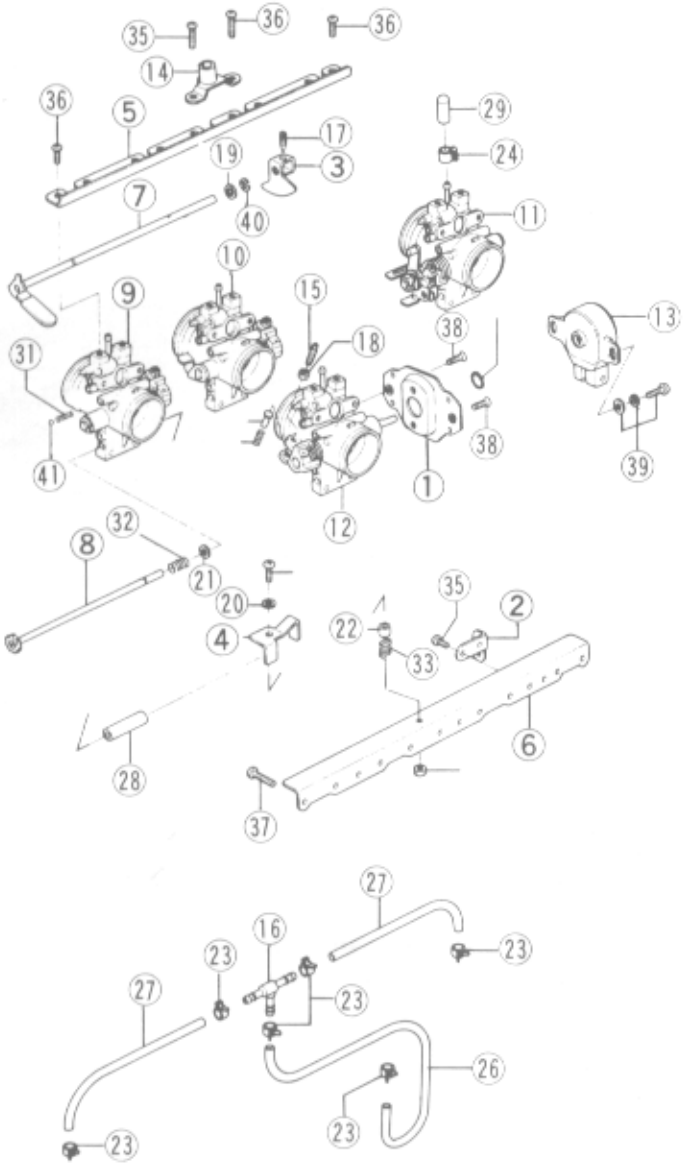
## 6-6 DISASSEMBLY – ENGINE

### Fuel Injectors



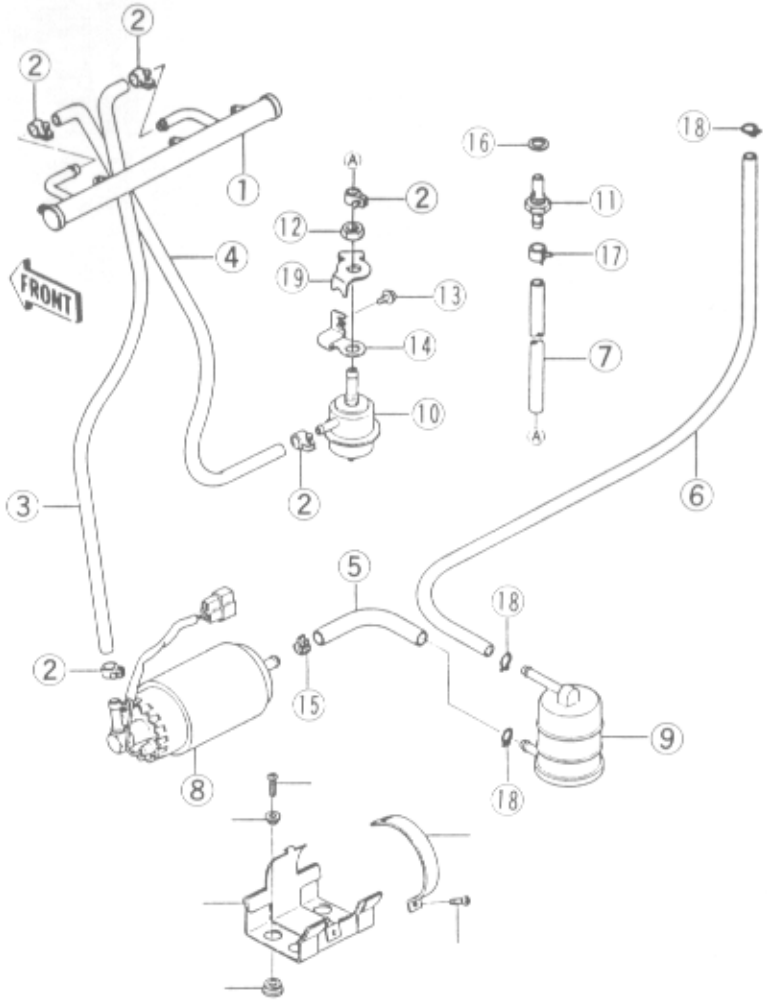
1. Injectors
2. Seal
3. Damper
4. Injector Holder
5. Plate
6. Bolt
7. Protector

### Throttle Valves

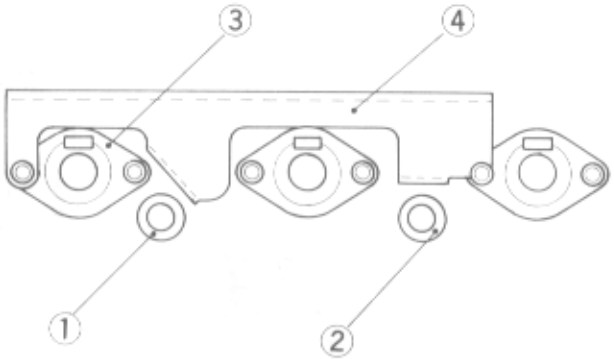
1. Throttle Sensor Bracket
2. Bracket
3. Fast Idle Cam
4. Bracket
5. Mounting Frame
6. Mounting Frame
7. Fast Idle Lever Shaft
8. Throttle Stop Screw
9. #1 Throttle Valve
10. #2 Throttle Valve
11. #3 Throttle Valve
12. #4 Throttle Valve
13. Throttle Sensor
14. Cable Bracket
15. Balance Adjusting Screw
16. 3-Way Joint
17. Screw
18. Locknut
19. Nylon Washer
20. Washer
21. Washer
22. Collar
23. Clamp
24. Clamp
25. Pin
26. Tube
27. Tube
28. Tube
29. Plug
30. Spring
31. Spring
32. Spring
33. Spring
34. Screw
35. Screw
36. Screw
37. Screw
38. Screw
39. Screw
40. Circlip
41. Ball

**Fuel Distributing Pipe**




1. Fuel Distributing Pipe
2. Clamp
3. (Feed Hose)
4. (Return Hose)
5. Hose
6. Hose
7. Hose
8. Pump
9. Filter
10. Pressure Regulator
11. Check Valve
12. Nut
13. Screw
14. Regulator Holder
15. Clamp
16. Gasket
17. Clamp
18. Clamp
19. Fuel Return Hose Guide

**Fuel Feed and Return Hoses Route**



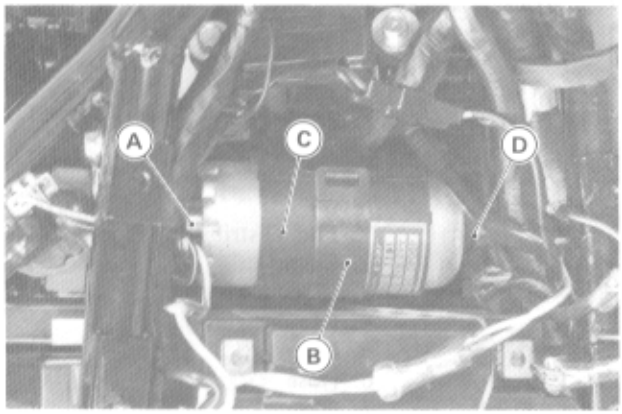
1. Feed Hose
2. Return Hose
3. Injector (No. 2 Cylinder)
4. Protector

## Fuel Pump

### Removal:

*Fuel Pump Removal*

- Remove the battery case before fuel pump removal.
- The fuel pump is secured by the screw and holding plate.




A. Hose (to fuel distributing pipe)
B. Holding Plate
C. Fuel Pump
D. Hose (from filter)

### Installation:

*Fuel Pump Installation Notes*

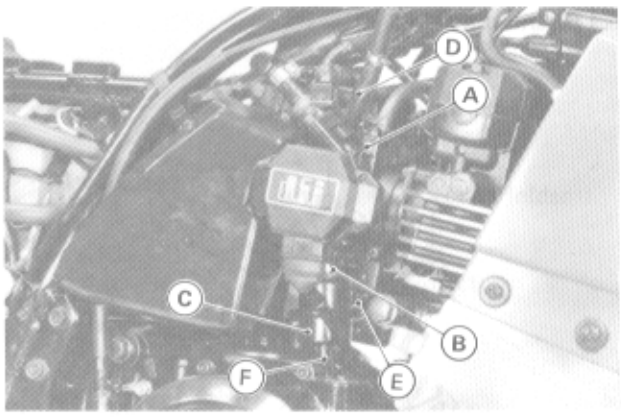
- Observe the "Fuel Hose Installation Point" (p. 6-3).
- If a new fuel pump is installed, bleed the air in the fuel line before starting the engine.
  - Check to see if the fuel tank is full. If not, top up the tank.
  - Turn on the ignition switch to operate the fuel pump. When the fuel pump stops, turn off the switch and turn it on again.
  - Repeat the previous step a few times.
  - Turn off the switch.

## Pressure Regulator

### Removal:

*Pressure Regulator Removal*

- The pressure regulator is installed under the throttle valves.



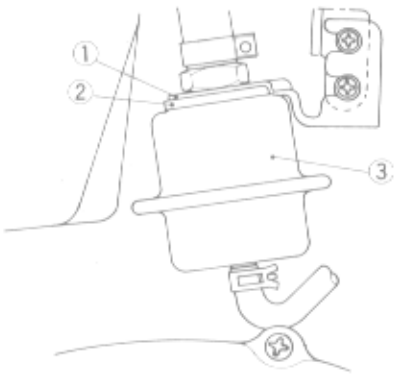

A. Throttle Valves
B. Mounting Nut
C. Pressure Regulator
D. Return Fuel Hose (to tank)
E. Fuel Hose (from distributing pipe)
F. Vacuum Hose (from throttle valve)

### Installation:

*Pressure Regulator Installation*

- Observe the "Fuel Hose Installation Point" (Pg. 6-3)
- Install the regulator holder and fuel return hose guide on the pressure regulator.
- Tighten the regulator holder to the bracket with screws, set the screw closely to the circle in a groove.

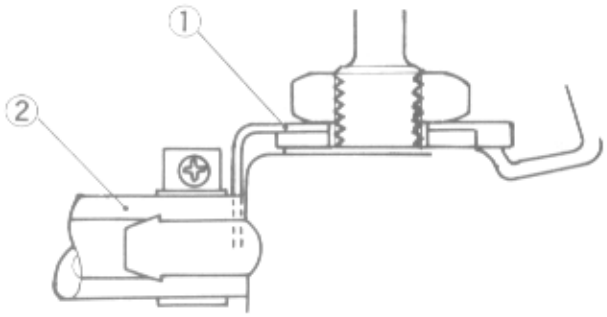
**Regulator Bracket Installation**




1. Fuel Return Hose Guide
2. Regulator Holder
3. Pressure Regulator

- Hold the fuel return hose with the guide.

**Fuel Return Hose Guide Installation**




1. Guide
2. Fuel Return Hose

## Evaporative Emission Control System (California Vehicle)

### Disassembly and Assembly:

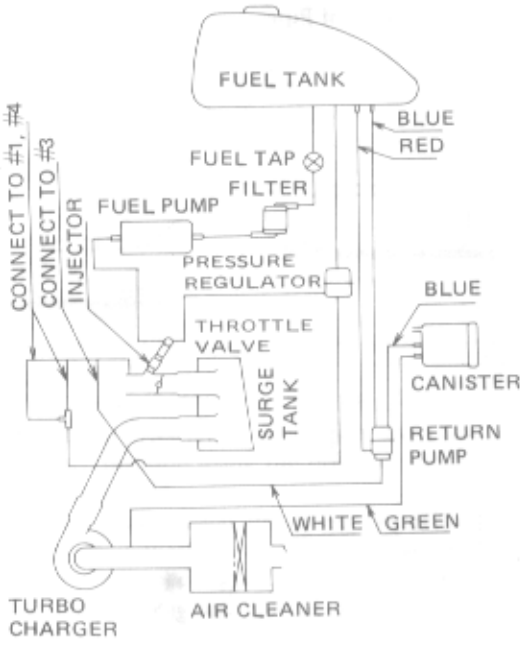
*Removal Note*

- When the fuel tank is removed, breather and return hoses should be disconnected from the tank.

*Installation Points*

- Hold the separator perpendicular to the ground.
- Connect the hoses as shown in the figure. The front hose fitting on the fuel tank is for the fuel return hose, and the rear one is for the breather hose.

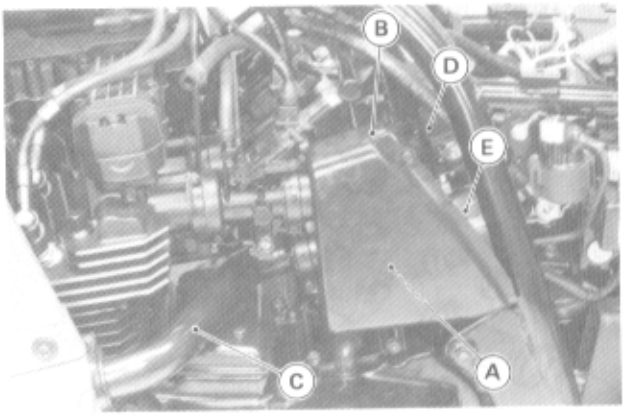
**Evaporative Emission Control System**



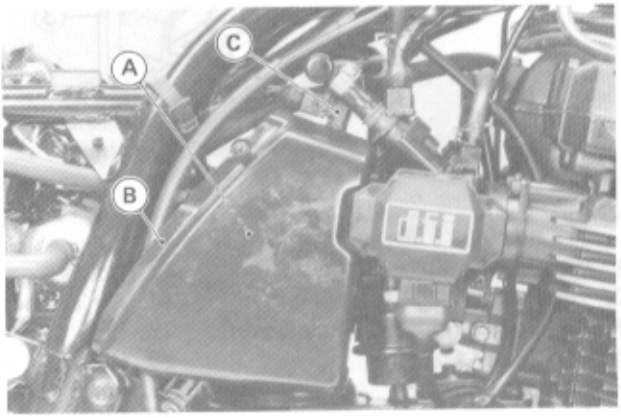

## Surge Tank
## Air Cleaner Housing

*Surge Tank Removal Notes*

- Remove the following parts before surge tank removal.
  - Intake pipe (from turbocharger)
  - Surge tank cover
  - Boost pressure sensor
  - Main/pump relay
  - Air temperature sensor




A. Surge Tank
B. Surge Tank Cover
C. Intake Pipe (from turbocharger)
D. Boost Pressure Sensor
E. Main/Fuel Pump Relay

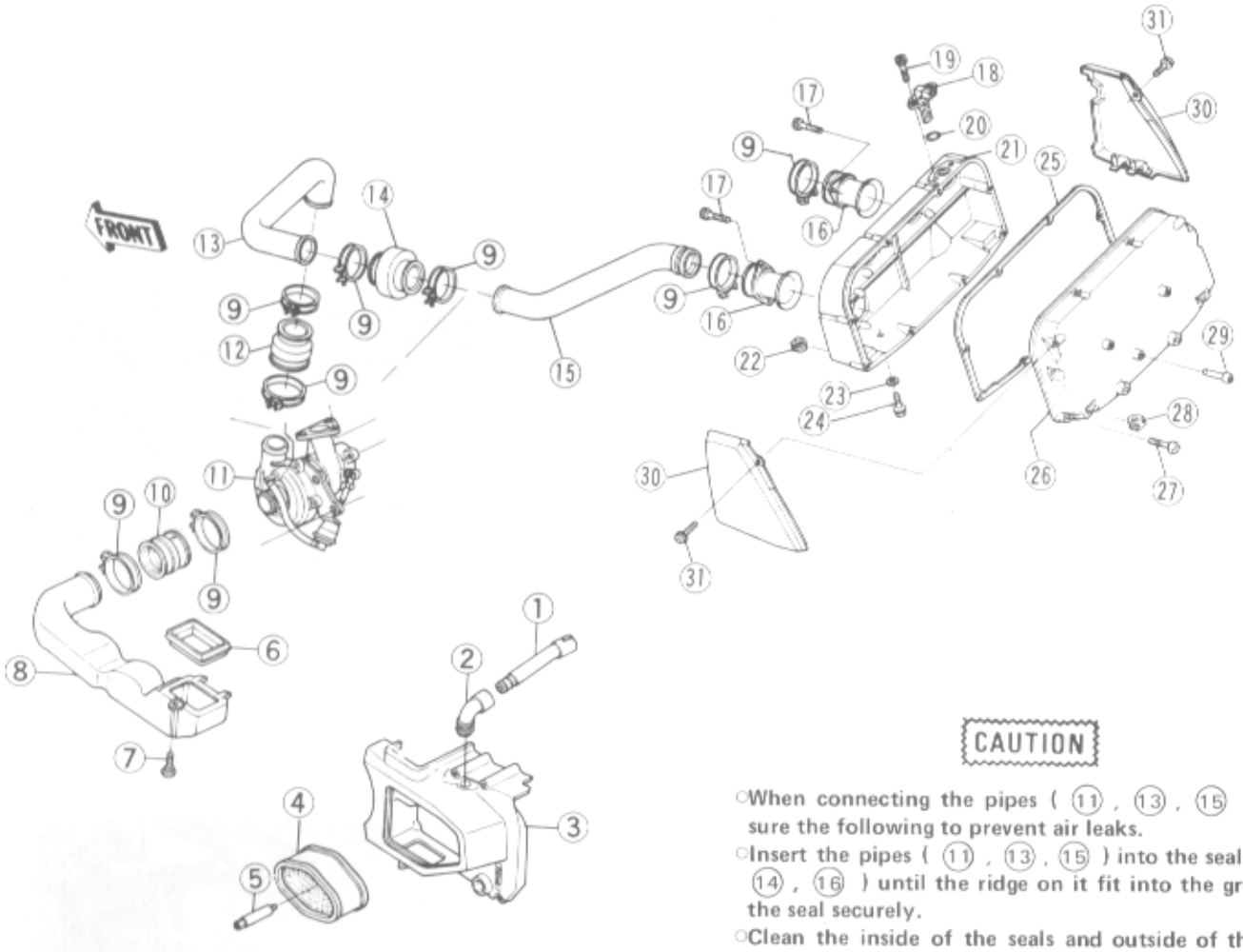



A. Surge Tank
B. Surge Tank Cover
C. Air Temperature Sensor

*Air Cleaner Housing Removal Notes*

- Remove the following parts before air cleaner housing removal.
  - Shift pedal linkage
  - Intake pipe and gasket
  - Breather tube
  - Air cleaner cover
  - Element bolt and element
- Loosen the starter motor cover mounting bolts
- Remove the air cleaner housing mounting bolts.

## Surge Tank and Air Cleaner Housing



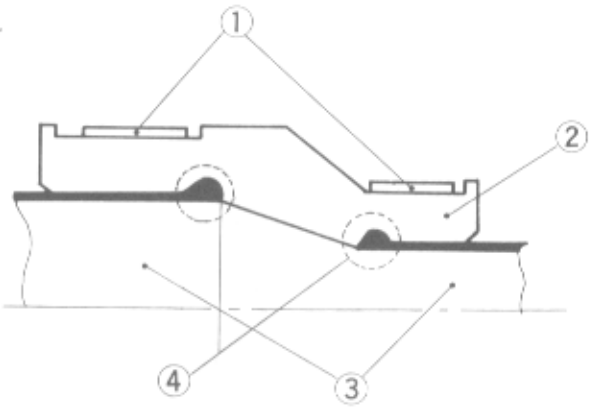

1. Breather Tube
2. Tube
3. Air Cleaner Housing (Chain Cover)
4. Air Cleaner Element
5. Element Bolt
6. Gasket
7. Screw
8. Intake Pipe
9. Clamp
10. Turbocharger Seal (inlet)
11. Turbocharger
12. Turbocharger Seal (outlet)
13. Intake Pipe
14. Intake Pipe Seal
15. Intake Pipe
16. Duct
17. Bolt
18. Air Temperature Sensor
19. Bolt
20. O-Ring
21. Surge Tank (front)
22. Grommet
23. Washer
24. Bolt
25. Gasket
26. Surge Tank (rear)
27. Bolt
28. Grommet
29. Pipe
30. Surge Tank Cover
31. Screw

**Apply Non-Permanent Locking Agent to :** **Pipe (29)**

**CAUTION**

- When connecting the pipes ( (11) , (13) , (15) ), make sure the following to prevent air leaks.
- Insert the pipes ( (11) , (13) , (15) ) into the seals ( (12) , (14) , (16) ) until the ridge on it fit into the groove of the seal securely.
- Clean the inside of the seals and outside of the pipes with an oilless high flash point solvent.

### Connection of Pipes

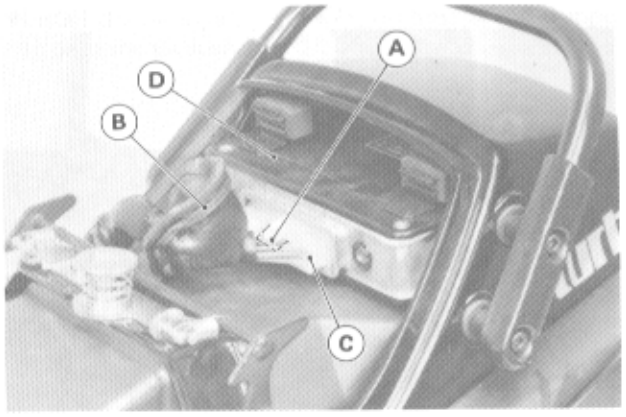


1. Clamps
2. Seals
3. Pipes
4. Connection of ridge and groove

## DFI Control Unit

*Removal Notes*

- Turn off the ignition switch, and disconnect the white/red fuel injection system lead from the battery positive side.
- Removed the seat.
- Slide the rubber dust cover out of position, and pressing in the lock on the 21-pin connector, pull the connector straight off the control unit.




A. Lock
B. Dust Cover
C. 21-Pin Connector
D. Control Unit

*Installation Note*

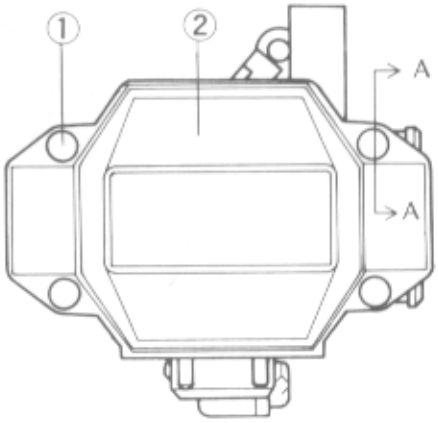
- Fit the dust cover properly on the control unit.

## Throttle Sensor

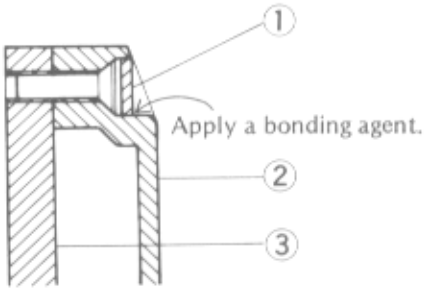
*Removal and Installation Notes*

- If the sensor position is altered for any reason, adjust the sensor position using the position checker (special tool). See p. 3-24.
- US model only: Each throttle-sensor-cover screw is sealed with a plastic plug. After the throttle sensor position is adjusted correctly, seal the screws with new plugs. Apply bonding agent to the circumference of each plug.

**Seal Plug Installation (US model)**




A: Detailed

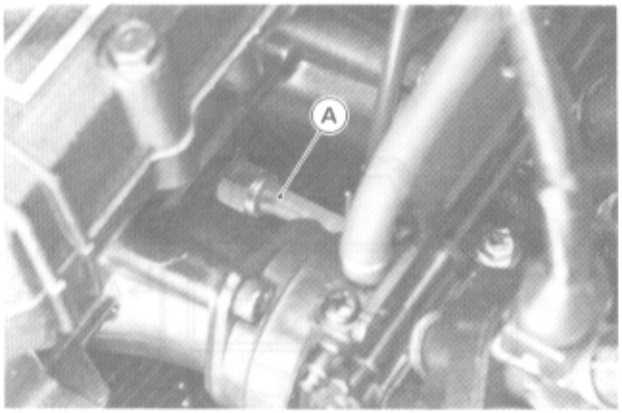



1. Seal Plugs
2. Sensor Cover
3. Mounting Bracket

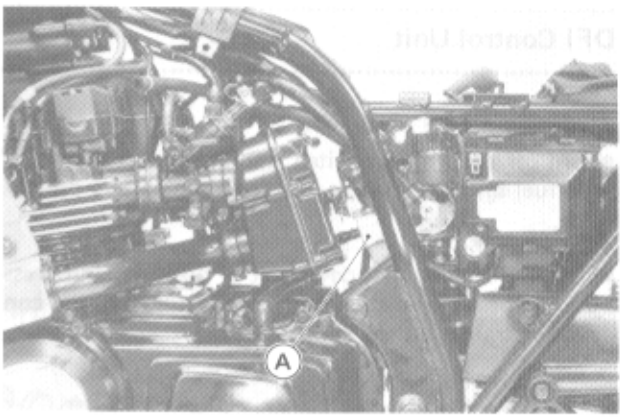
## Engine Temperature Sensor

*Installation Note*

- Tighten the sensor to 13 N-m (1.3 kg-m, 9.5 ft-lb) of torque.




A. Engine Temperature Sensor

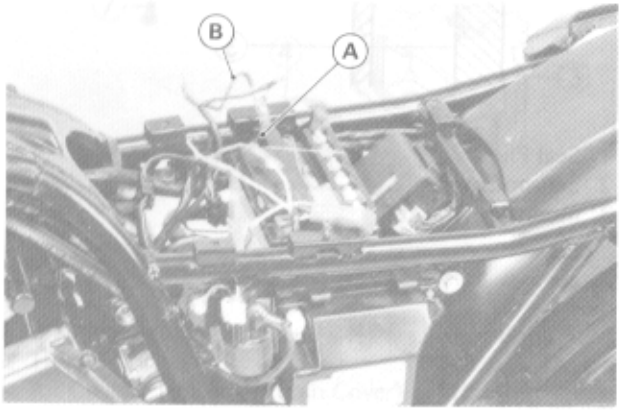



A. Relay

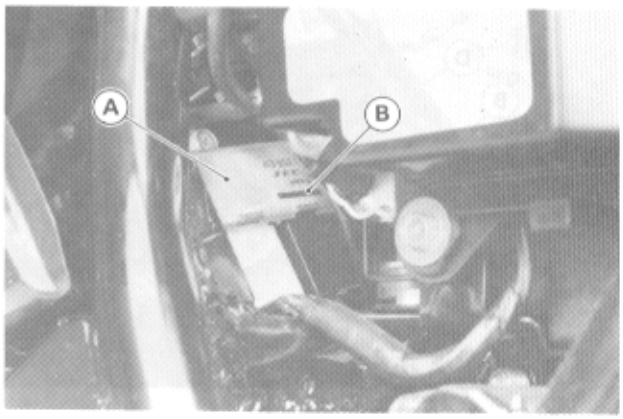
## Fuel Injection System Harness

*Installation Note*

- Be sure to connect the two fuel injection system leads (black/green and black/yellow) to the battery negative side, and black lead to the starter relay.




A. Black/Green and Black/Yellow Leads
B. Battery Negative (–) Lead




A. Relay B. Black Line

## Relay

*Installation Note*

"NOTE"

- *Install the black connector on the marking side (black line).*

## Turbocharger
## Muffler

### Removal:

*Turbocharger and Muffler Removal Notes*

- Remove the following parts before turbocharger removal.
  - Lower cowling
  - Cowling stay
  - Side cowling
  - Shift mechanism
  - Air cleaner intake pipe (See p. 6-9).
  - Air cleaner housing (See p. 6-9).
  - Intake pipes (See p. 6-9).
  - Muffler bodys (R.H. & L.H.)

●Remove the banjo bolt ⑰ which connects the oil pipe ⑭ to the oil pan and clamp ㉑ which connects the oil hose ㉒ to the sub oil pan (See p. x-xx).
●Remove the exhaust pipe holder tightening nuts ④, the turbocharger mounting bolt ⑩ and the bolt ㉘ which fixes the connecting pipe ㉕ to the oil pan.
●Remove the exhaust manifold ⑤, the turbocharger ⑨ and the exhaust pipe ㉕ as an assembly.
●Remove from the turbocharger ⑨, the exhaust manifold ⑤, the connecting pipe ㉕, the oil pipe ⑭ and the elbow ⑲ with the oil hose ㉒ and the turbocharger seals (inlet and outlet).

### Installation:

*Turbocharger and Muffler Installation Notes*

●Install the oil pipe ⑭, elbow ⑲, oil hose ㉒ and damper ⑪ onto the turbocharger ⑨.

**CAUTION**

○**Take care to install the oil pipe ⑭ in the correct direction (See p. 3-6).**

●Install the exhaust manifold ⑤ on the turbocharger ⑨.
●Temporarily install the turbocharger ⑨, exhaust manifold ⑤ and the connecting pipe ㉕ on the engine.

**CAUTION**

○**Take care to insert the oil screen ⑮ in the correct direction into the banjo bolt ⑰.**

●Tighten the above components to the engine with a correct torque in the following order.
○Tighten the exhaust pipe holders
○Install the connecting pipe ㉕ on the oil pan.
○Install the turbocharger ⑨ on the crankcase.
○Install the banjo bolt ⑰ on the oil pan.
○Tighten the connecting pipe ㉕ and the turbocharger ⑨.

**CAUTION**

○**This procedure is extremely important and must be performed correctly.**

●Install other removed parts.

**CAUTION**

○**When installing the intake pipe seals (inlet and outlet), remove any grease from the seal surface to prevent the pipe from being disengaged.**

## Camshaft

### Removal:

*Camshaft Removal*

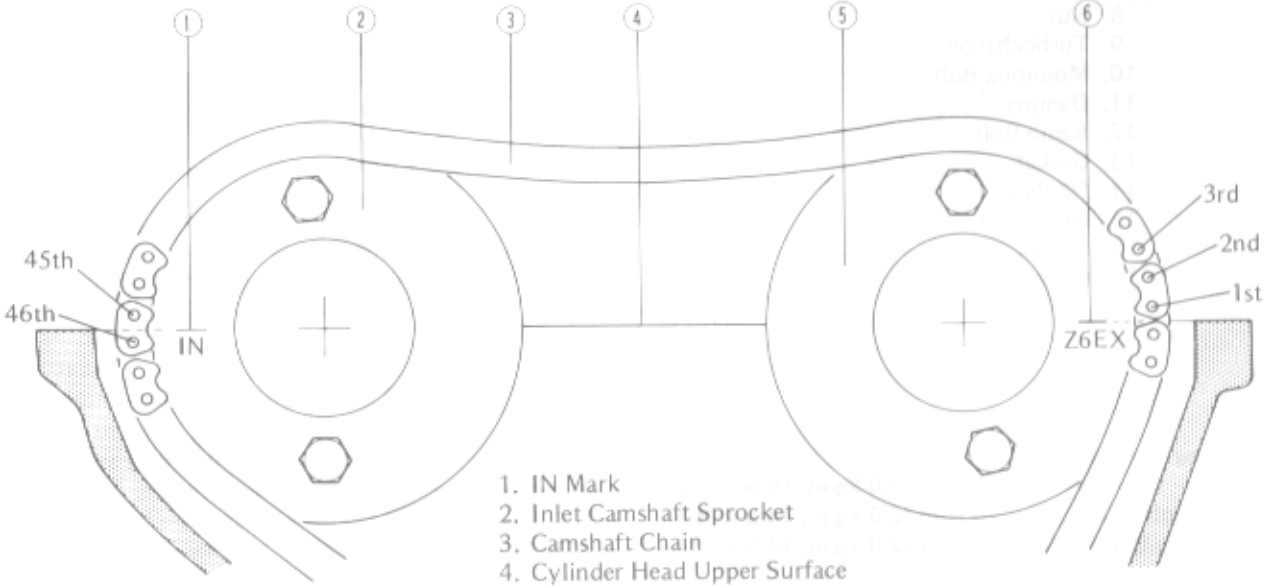
Refer to p. 53 of the Base Manual.

### Installation:

*Camshaft Installation*

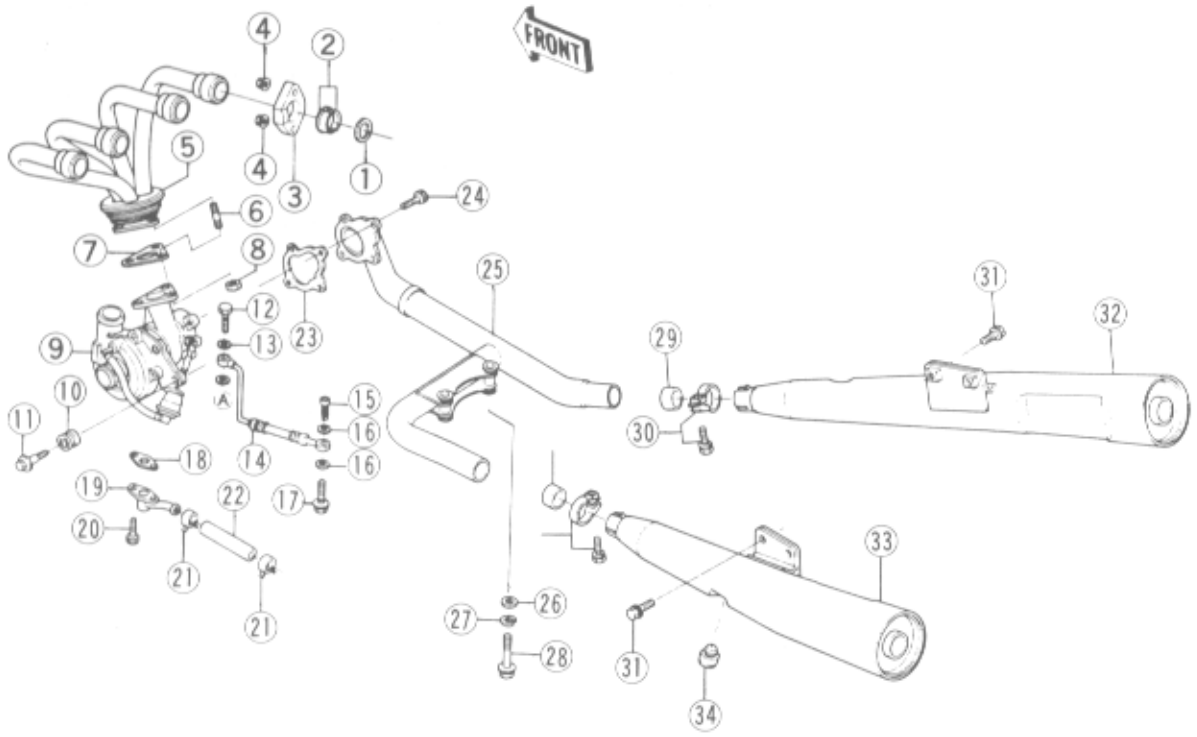
Refer to p. 53 of the Base Manual noting the following exception.

**Camshaft Chain Timing**




1. IN Mark
2. Inlet Camshaft Sprocket
3. Camshaft Chain
4. Cylinder Head Upper Surface
5. Exhaust Camshaft Sprocket
6. Z6EX Mark

**Turbocharger and Muffler**




1. Gasket
2. Collar
3. Exhaust Pipe Holder
4. Nut
5. Exhaust Manifold
6. Stud
7. Gasket
8. Nut
9. Turbocharger
10. Mounting Bolt
11. Damper
12. Banjo Bolt
13. Gasket
14. Oil Pipe
15. Oil Screen
16. Gasket
17. Banjo Bolt
18. Gasket
19. Elbow
20. Bolt
21. Clamp
22. Oil Hose
23. Gasket
24. Bolt
25. Connecting Pipe
26. Washer
27. Spring Washer
28. Mounting Bolt
29. Gasket
30. Clamp
31. Bolt
32. Muffler Body (R.H.)
33. Muffler Body (L.H.)
34. Damper

**Tightening Torque:**

| | | |
|---|---|---|
| **Nut** | ⑧ | **20 N-m (2.0 kg-m, 14.5 in-lb)** |
| **Banjo Bolt** | ⑫, ⑰ | **20 N-m (2.0 kg-m, 14.5 in-lb)** |
| **Mounting Bolt** | ㉘ | **20 N-m (2.0 kg-m, 14.5 in-lb)** |

## Camshaft Sprockets

### Removal:

*Camshaft Sprockets Removal*

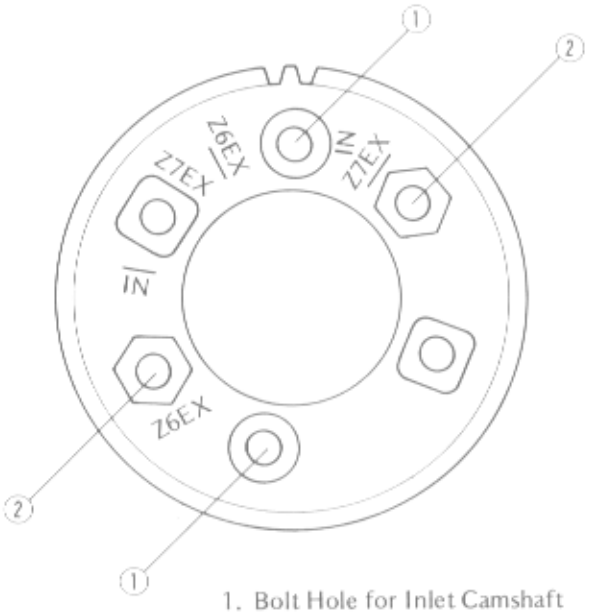
Refer to p. 56 of the Base Manual.

### Installation:

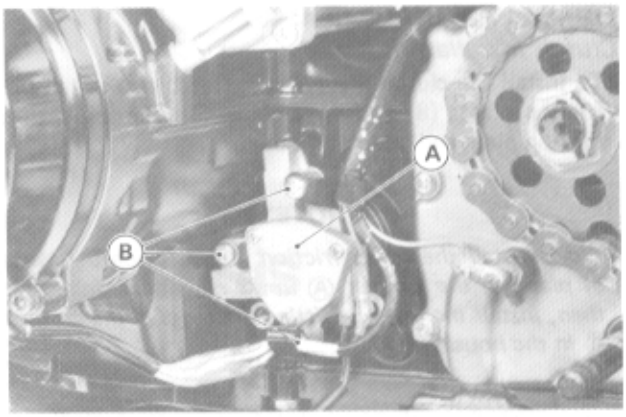
*Camshaft Sprockets Installation*

Refer to p. 56 of the Base Manual noting the following exception.

**Camshaft Sprocket Installation**




1. Bolt Hole for Inlet Camshaft
2. Bolt Hole for Exhaust Camshaft

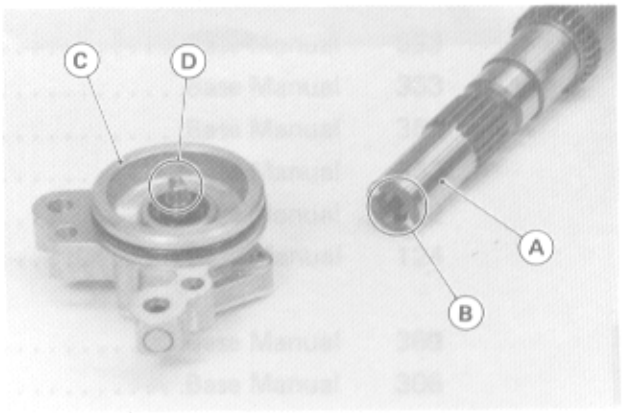



A. Scavenging Oil Pump B. Mounting Screws

### Installation:

*Scavenging Oil Pump Installation Note*

- When mounting the scavenging oil pump, note the position of the notch on the oil pump drive secondary shaft and then turn the oil pump shaft so that it will fit into the notch.




A. Secondary Shaft
B. Notch
C. Scavenging Oil Pump
D. Shaft

## Scavenging Oil Pump

### Removal:

*Scavenging Oil Pump Removal Notes*

- Remove the shift mechanism.
- Loosen the starter cover mounting bolts.
- Loosen the clamps which tighten the seal connecting the air cleaner intake pipe with the turbocharger.
- Unscrew the air cleaner intake pipe mounting screw.
- Disconnect the breather tube.
- Remove the air cleaner housing.
- Remove the scavenging oil pump mounting bolts.

## Clutch

Refer to p. 351 of the Base Manual noting the following exception.

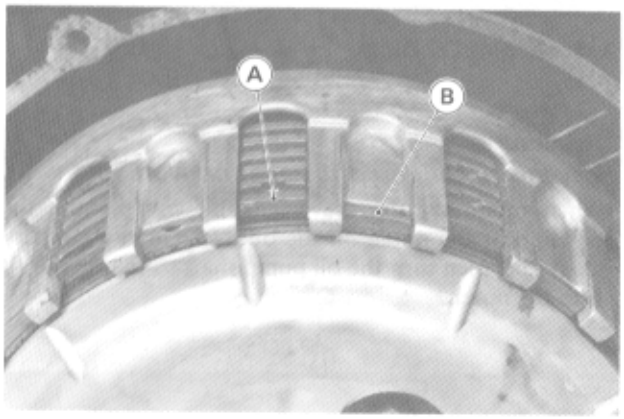
### Removal and Installation:

*Clutch Installation Notes*

- To install the clutch plates in the clutch hub install the friction plates (8) and steel plates (7), starting with a friction plate and alternating them.

**"NOTE"**

○*First, Install the seven friction plates fitting the tangs of plates in the grooves Ⓐ in the clutch housing. And then, install the last one fitting the tangs in the grooves Ⓑ in the housing.*



# Disassembly – Chassis

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## 7-2 DISASSEMBLY – CHASSIS

### Precautions

- Set the motorcycle up on its center stand so that it is stable during removal and installation operation.
- For later installation convenience, note and record how and where cables, wirings, and hoses are routed. They should not be allowed sharp bend, kinking, nor twisting.
- To lift the front wheel off the ground, use a jack under the engine.

# Appendix

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## Additional Considerations for Racing

This motorcycle has been manufactured for use in a reasonable and prudent manner and as a vehicle only. However, some may wish to subject this motorcycle to abnormal operation, such as would be experienced under racing conditions. KAWASAKI STRONGLY RECOMMENDS THAT ALL RIDERS RIDE SAFELY AND OBEY ALL LAWS AND REGULATIONS CONCERNING THEIR MOTORCYCLE AND ITS OPERATION.

Racing should be done under supervised conditions, and recognized sanctioning bodies should be contacted for further details. For those who desire to participate in competitive racing or related use, the following technical information may prove useful. However, please note the following important points.

- You are entirely responsible for the use of your motorcycle under abnormal conditions such as racing, and Kawasaki shall not be liable for any damages which might arise from such use.
- US model only: Kawasaki's Limited Motorcycle Warranty and Limited Emission Control Systems Warranty specifically exclude motorcycles which are used in competitive or related uses. Please read the warranty carefully.
- Motorcycle racing is a very sophisticated sport, subject to many variables. The following information is theoretical only, and Kawasaki shall not be liable for any damages which might arise from alterations utilizing this information.
- When the motorcycle is operated on public roads, it **must** be in its original state in order to ensure safety and compliance with applicable regulations.

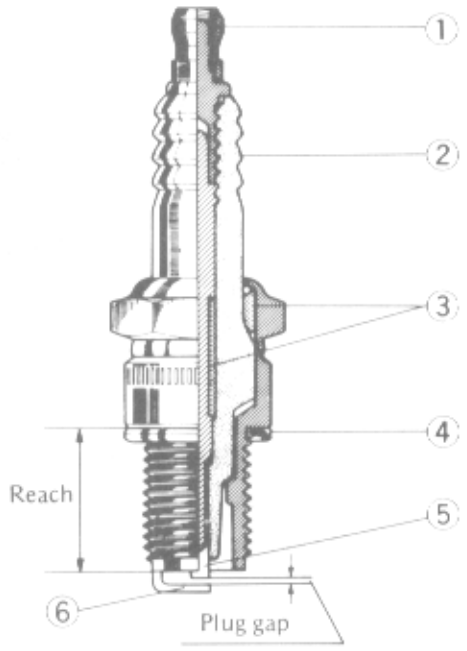
### Spark Plug:

The spark plug ignites the fuel/air mixture in the combustion chamber. To do this effectively and at the proper time, the correct spark plug must be used, and the spark plug must be kept clean and adjusted.

Test have shown the plug listed in the "Specifications" section in the chapter 1 to be the best plug for general use.

Since spark plug requirements change with the ignition and carburetion adjustments and with riding conditions, whether or not a spark plug of a correct heat range is used should be determined by removing and inspecting the plug.

**Spark Plug** 882101

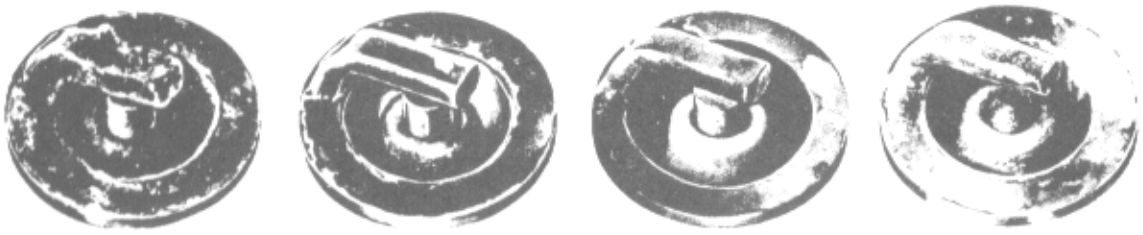



1. Terminal
2. Insulator
3. Cement
4. Gasket
5. Center electrode
6. Side electrode

When a plug of the correct heat range is being used, the electrodes will stay hot enough to keep all the carbon burned off, but cool enough to keep from damaging the engine and plug itself. This temperature is about 400 – 800°C (750 – 1,450°F) and can be judged by noting the condition and color of the ceramic insulator around the center electrode. If the ceramic is clean and of a light brown color, the plug is operating at the right temperature.

A spark plug for higher operating temperatures is used for racing. Such a plug is designed for better cooling efficiency so that it will not overheat and thus is often called a "colder" plug. If a spark plug with too high a heat range is used – that is, a "cold" plug that cools itself too well – the plug will stay too cool to burn off the carbon, and the carbon will correct on the electrodes and the ceramic insulator.

**Spark Plug Condition** 882102



Carbon fouling | Oil fouling | Normal operation | Overheating

The carbon on the electrodes conducts electricity, and can short the center electrode to ground by either coating the ceramic insulator or bridging across the gap. Such a short will prevent an effective spark. Carbon build-up on the plug can also cause other troubles. It can heat up red-hot and cause preignition and knocking, which may eventually burn a hole in the top of the piston.

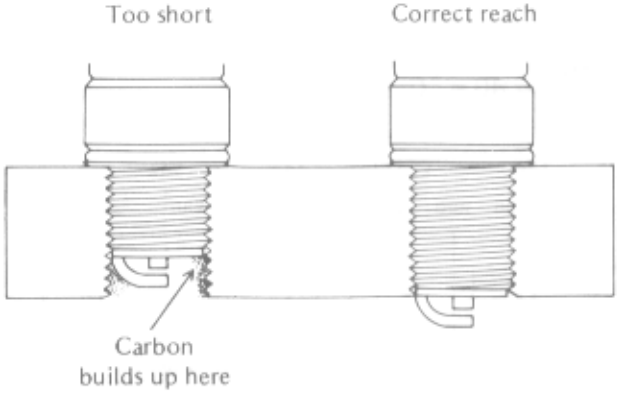
### *Spark Plug Inspection*

- ●Remove the spark plug and inspect the ceramic insulator.
- ★Whether or not the right temperature plug is being used can be determined by noting the condition of the ceramic insulator around the electrode. A light brown color indicates the correct plug is being used. If the ceramic is white, the plug is operating at too high a temperature and it should be replaced with the next colder type.

**CAUTION**

- ○**If the spark plug is replaced with a type other than the standard plug, listed in the "Specifications" section, make certain the replacement plugs have the same thread pitch and reach (length of threaded portion) and the same insulator type (regular type or projected type) as the standard plug.**
- ○**If the plug reach is too short, carbon will build up on the plug hole threads in the cylinder head, causing overheating and making it very difficult to insert the correct spark plug later.**
- ○**If the reach is too long, carbon will build up on the exposed spark plug threads causing overheating, preignition, and possibly burning a hole in the piston top. In addition, it may be impossible to remove the plug without damaging the cylinder head.**

**Plug Reach** 882103




**Standard Spark Plug Threads**

| | |
|---|---|
| Diameter: | 14 mm |
| Pitch: | 1.25 mm |
| Reach: | 19.0 mm |

**"NOTE"**

○*The heat range of the spark plug functions like a thermostat for the engine. Using the wrong type of spark plug can make the engine run too hot (resulting in engine damage) or too cold (with poor performance, misfiring, and stalling). The standard plug has been selected to match the normal usage of this motorcycle in combined street and highway riding. Unusual riding conditions may require a different spark plug heat range. For racing, install the colder plug.*

## Unit Conversion Table

### Prefixes for Units:

| Prefix | Symbol | Power |
|---|---|---|
| mega | M | x 1,000,000 |
| kilo | k | x 1,000 |
| centi | c | x 0.01 |
| mili | m | x 0.001 |
| micro | $\mu$ | x 0.000001 |

### Units of Mass:

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

### Units of Volume:

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

### Units of Force:

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

### Units of Length:

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

### Units of Torque:

| | | | | |
|---|---|---|---|---|
| N-m | x | 0.1020 | = | kg-m |
| N-m | x | 0.7376 | = | ft-lb |
| N-m | x | 8.851 | = | in-lb |
| kg-m | x | 9.807 | = | N-m |
| kg-m | x | 7.233 | = | ft-lb |
| kg-m | x | 86.80 | = | in-lb |

### Units of Pressure:

| | | | | |
|---|---|---|---|---|
| kPa | x | 0.01020 | = | $kg/cm^2$ |
| kPa | x | 0.1450 | = | psi |
| kPa | x | 0.7501 | = | cm Hg |
| $kg/cm^2$ | x | 98.07 | = | kPa |
| $kg/cm^2$ | x | 14.22 | = | psi |
| cm Hg | x | 1.333 | = | kPa |

### Units of Speed:

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

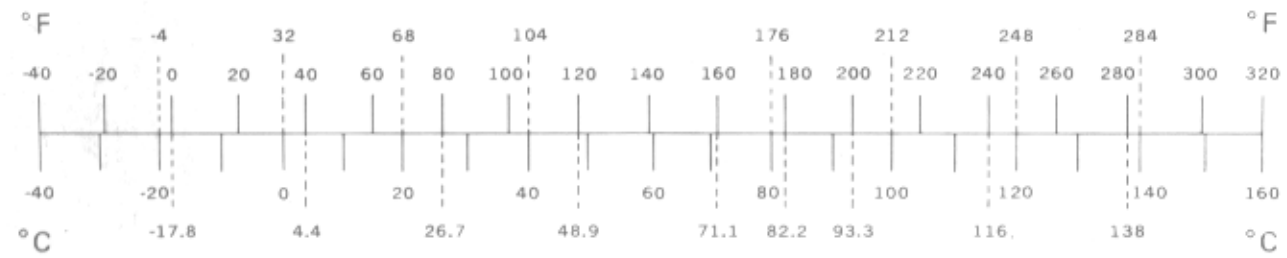
### Units of Power:

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

### Units of Temperature:

882559

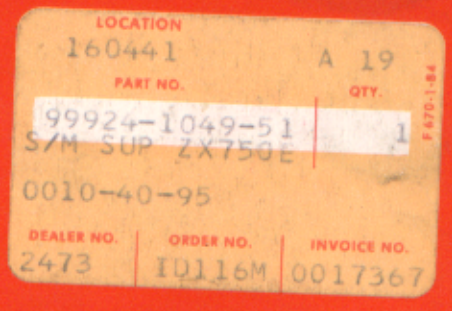
$$\frac{9\,(°C + 40)}{5} - 40 = °F \qquad \frac{5\,(°F + 40)}{9} - 40 = °C$$



## MODEL APPLICATION

| Year | Model | Beginning Frame Number |
|---|---|---|
| 1984 | ZX750-E1 | ZX750E-000001 or JKAZXDE1□EB500001 |

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

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