

**Kawasaki**

*Voyager XII*



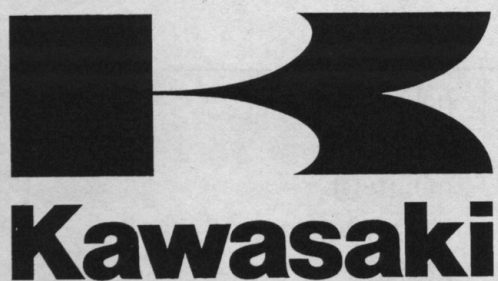
**Motorcycle  
Service Manual  
Supplement**

# Quick Reference Guide

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

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



*Voyager* **XII**

# Motorcycle Service Manual Supplement

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No liability can be accepted for any inaccuracies or omissions in this publication, although every possible care has been taken to make it as complete and accurate as possible.

The right is reserved to make changes at any time without prior notice and without incurring an obligation to make such changes to products manufactured previously. See your Motorcycle dealer for the latest information on product improvements incorporated after this publication.

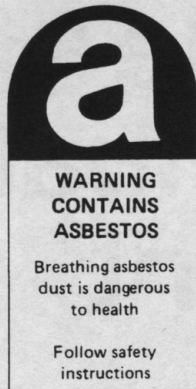
All information contained in this publication is based on the latest product information available at the time of publication. Illustrations and photographs in this publication are intended for reference use only and may not depict actual model component parts.

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## LIST OF ABBREVIATIONS

A	ampere(s)	lb	pound(s)
ABDC	after bottom dead center	m	meter(s)
AC	alternating current	min	minute(s)
ATDC	after top dead center	N	newton(s)
BBDC	before bottom dead center	Pa	pascal(s)
BDC	bottom dead center	PS	horsepower
BTDC	before top dead center	psi	pound(s) per square inch
°C	degree(s) Celsius	r	revolution
DC	direct current	rpm	revolution(s) per minute
F	farad(s)	TDC	top dead center
°F	degree(s) Fahrenheit	TIR	total indicator reading
ft	foot, feet	V	volt(s)
g	gram(s)	W	watt(s)
h	hour(s)	Ω	ohm(s)
L	Liter(s)		

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



Brake Shoes or Pads  
Clutch Friction Material  
Gaskets  
Insulators

### SAFETY INSTRUCTIONS

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

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

## EMISSION CONTROL INFORMATION

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

### 1. Crankcase Emission Control System

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

### 2. Exhaust Emission Control System

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

### 3. Evaporative Emission Control System

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

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

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

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

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

(Continued on next page)

## NOTE

- The phrase "remove or render inoperative any device or element of design" has been generally interpreted as follows:
1. Tampering does not include the temporary 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 ZG1200B Service Manual Supplement is designed to be used in conjunction with the ZG1200A Service Manual (P/N 99924-1064-01). The maintenance and repair procedures described in this Supplement are only those that are unique to the ZG1200B. Most service operations are identical to those for the ZG1200A. Complete and proper servicing of the ZG1200B therefore requires both this Supplement and the base Service Manual.

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

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

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

To get the longest life out of your Motorcycle:

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

- Follow the procedures in this manual carefully. Don't take shortcuts.
- Remember to keep complete records of maintenance and repair with dates and any new parts installed.

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## How to Use this Manual

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

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

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

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

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

### WARNING

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

### CAUTION

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

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

### NOTE

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

● Indicates a procedural step or work to be done.

○ Indicates a procedural sub-step or how to do the work of the procedural step it follows. It also precedes the text of a WARNING, CAUTION, or NOTE.

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

☆ Indicates a conditional sub-step or what action to take based upon the results of the conditional step it follows.

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



# General Information

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\*Refer to Base Manual

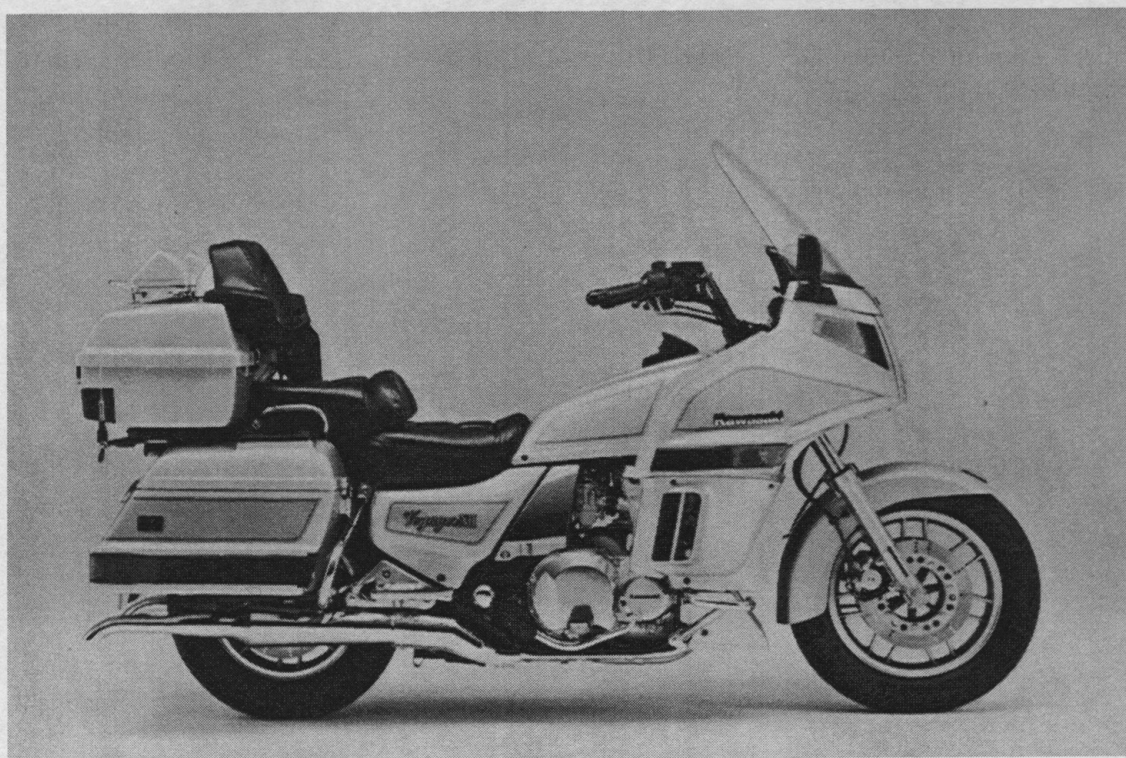
## 1-2 GENERAL INFORMATION

.....  
**Model Identification**  
.....

**ZG1200-B1 Left Side View:**



**ZG1200-B1 Right Side View:**



.....  
**General Specifications**  
 .....

(Cal) : California Model

Items	ZG1200-B1~
<b>Dimensions:</b>	
Overall length	2520 mm
Overall width	965 mm
Overall height	1505 mm
Wheelbase	1620 mm
Road clearance	140 mm
Seat height	755 mm
Dry weight	330 kg (Cal) 330.5 kg
Curb weight: Front	158.5 kg
Rear	202.5 kg (Cal) 203 kg
Fuel tank capacity	23.2 L
<b>Performance:</b>	
Braking distance	12.5 m from 50 km/h
Minimum turning radius	2.9 m
<b>Engine:</b>	
Type	4-stroke, DOHC, 4-cylinder
Cooling system	Liquid-cooled
Bore and stroke	78.0 x 62.6 mm
Displacement	1196 mL
Compression ratio	10.0
Carburetion system	Carburetors, Keihin CVK30 x 4
Starting system	Electric starter
Ignition system	Battery and coil (transistorized)
Timing advance	Electronically advanced
Ignition timing	10° BTDC @800 r/min (rpm)
Spark plug	NGK DPR8EA-9 or ND X24EPR-U9
Cylinder numbering method	Left to right, 1-2-3-4
Firing order	1-2-4-3
Valve timing:	
Inlet	Open 20° BTDC
	Close 48° ABDC
	Duration 248°
Exhaust	Open 54° BBDC
	Close 14° ATDC
	Duration 248°
Lubrication system	Forced lubrication (wet sump)
Engine oil:	
Grade	SE, SF or SG class
Viscosity	SAE10W40, 10W50, 20W40, or 20W50
Capacity	4.0 L
<b>Drive Train:</b>	
Primary reduction system:	
Type	Gear
Reduction ratio	1.706 (99/58)
Clutch type	Wet multi disc

## 1-4 GENERAL INFORMATION

Items	ZG1200-B1~
<b>Transmission:</b> Type Gear ratios: 1st 2nd 3rd 4th 5th <b>Final drive system:</b> Type Reduction ratio Overall drive ratio <b>Final gear case oil:</b> Type  Capacity	5-speed, constant mesh, return shift 2.733 (41/15) 1.800 (36/20) 1.333 (32/24) 1.035 (29/28) 0.838 (26/31)  Shaft 2.424 (15/22 x 32/9) 3.470 @Top gear  API GL-5 Hypoid gear oil SAE 80 (~ 5°C), SAE 90 (5°C~)  210 mL
<b>Frame:</b> Type Caster (rake angle) Trail <b>Front tire:</b> Type Size <b>Rear tire:</b> Type Size <b>Front suspension:</b> Type Wheel travel <b>Rear suspension:</b> Type Wheel travel <b>Brake type:</b> Front Rear	Tubular, double cradle 30° 121 mm  Tubeless M130/90-16  Tubeless M150/90-15 M/C  Telescopic fork (pneumatic) 140 mm  Swing arm 100 mm  Dual disc Single disc
<b>Electrical Equipment:</b> Battery <b>Headlight:</b> Type Bulb Tail/brake light <b>Alternator:</b> Type Rated output <b>Voltage regulator:</b> Type	12 V 20 Ah  Semi-sealed beam 12 V 60/55 W (quartz-halogen) 12 V 8/27 W x 4, B2 ~ : 12 V 8/27 W x 2  Three-phase AC 35 A @7500 r/min (rpm), 13.5 V  Short-circuit

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

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	Which ever comes first		† ODOMETER READING						
		Every	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			•	•	•	•	•	•	•	(15-20)
Spark plug -- check*			•	•	•	•	•	•	•	(15-20)
Air suction valve -- check (US)*			•	•	•	•	•	•	•	(4-7)
Air cleaner element -- clean		•		•		•		•		(2-15)
Throttle grip play -- check*		•		•		•		•		2-3
Idle speed -- check*		•	•	•	•	•	•	•	•	(2-8)
Carburetor synchronization -- check*		•	•	•	•	•	•	•	•	(2-9)
Fuel hose, connections -- check*			•	•	•	•	•	•	•	
Fuel system -- check*				•		•		•		(2-10)
Cylinder head bolt tightness -- check*		•		•		•		•		---
Evaporative emission control system --check (Cal)*		•	•	•	•	•	•	•	•	(2-20)
Engine oil -- change	year	•		•		•		•		(6-5)
Oil filter -- replace		•		•		•		•		(6-5)
Air cleaner oil drain reservoir -- check*			•	•	•	•	•	•	•	2-5
Radiator hoses, connections -- check*	year	•		•		•		•		(3-12)
Coolant -- change	2 years							•		(3-4)
Final gear case oil level -- check*				•		•		•		(10-5)
Final gear case oil -- change		•						•		(10-5)
Propeller shaft joint -- lubricate				•				•		(10-9)
Fuel hose -- replace	4 years									---
Clutch fluid level -- check*	month	•	•	•	•	•	•	•	•	(5-5)
Clutch fluid -- change	2 years					•				(5-5)
Clutch fluid hose and pipe -- replace	4 years									---
Clutch master cylinder cup and dust seal -- replace	2 years									(5-7)
Clutch slave cylinder piston seal -- replace	2 years									(5-8)
Brake lining or pad wear -- check*			•	•	•	•	•	•	•	(11-13)
Brake fluid level -- check*	month	•	•	•	•	•	•	•	•	(11-5)
Brake fluid -- change	2 years					•				(11-6)
Brake hose -- replace	4 years									(11-14)
Brake hoses, connections -- check*			•	•	•	•	•	•		
Brake master cylinder cup and dust seal -- replace	2 years									(11-8)
Caliper piston seal and dust seal -- replace	2 years									(11-11)
Brake light switch -- check*		•	•	•	•	•	•	•	•	(15-39)
Steering -- check*		•	•	•	•	•	•	•	•	(13-4)
Steering stem bearing -- lubricate	2 years					•				(13-8)
Front fork oil -- change								•		(12-5)
Tire wear -- check*			•	•	•	•	•	•	•	(9-10)
Swing arm pivot -- lubricate				•				•		(12-13)
General lubrication -- perform			•	•	•	•	•	•	•	(16-8)
Nut, bolt, and fastener tightness -- check*		•		•		•		•		(16-8)

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

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

(Cal) : California vehicle only

(US) : U.S.A. only

(page) : See base manual

## 1-6 GENERAL INFORMATION

.....  
**Torque and Locking Agent**  
.....

Refer to the base manual, adding the following.

Fastener	Torque			Remarks
	N-m	kg-m	ft-lb	
<b>Clutch:</b> Clutch spring bolt holders (ZG1200-B5 ~ )	—	—	—	L
<b>Electrical System:</b> Cancel switch (throttle) adjusting screw locknut	—	—	—	L
Cancel switch (throttle) mounting screws	—	—	—	L
Cancel switch (rear brake) mounting screws	—	—	—	L
Rear speaker mounting nuts	4.9	0.50	43 in-lb	—

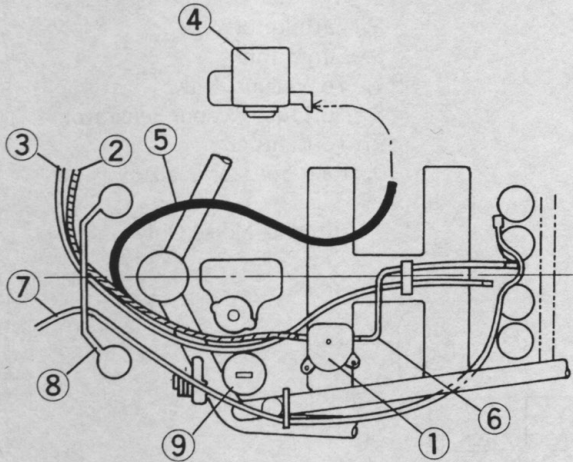
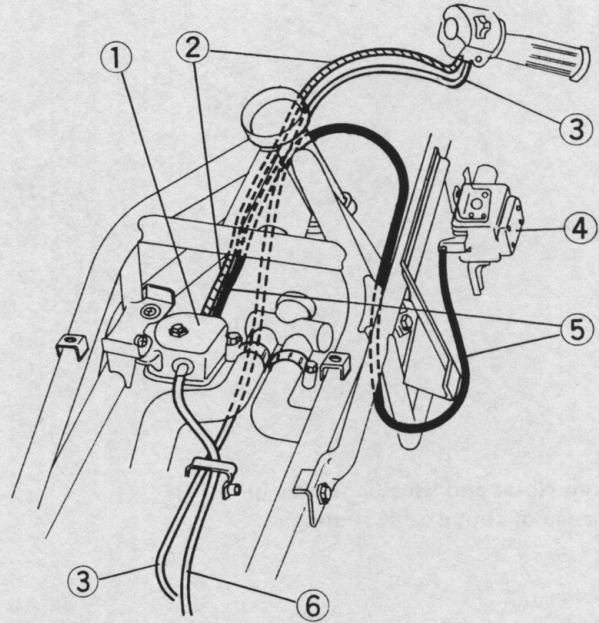
L : Apply a non-permanent locking agent to the threads.

**Cable, Wire, and Hose Routing**

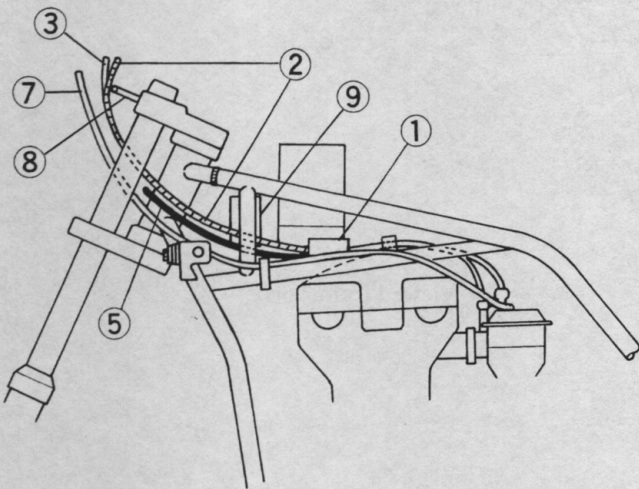
Refer to the base manual, noting the following.

- Change of throttle cables and their routing.
- Change of choke cable routing.
- Change of antenna mount.

**Control Cables (p. 1-12)**



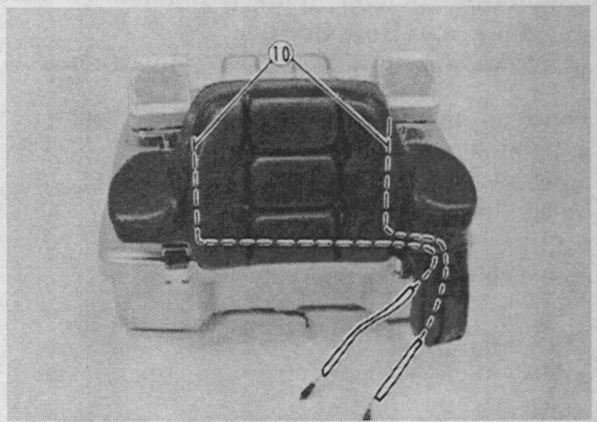
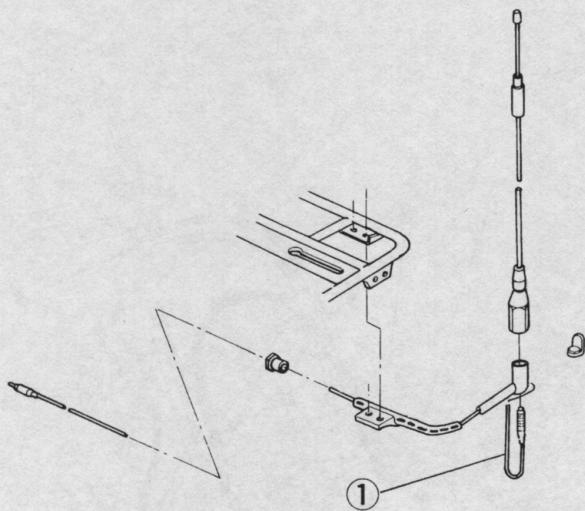
Viewed from Top



1. Junction Box
2. Throttle Accelerator Cable (for throttle grip)
3. Throttle Decelerator Cable
4. Actuator
5. Throttle Accelerator Cable (for actuator)
6. Throttle Accelerator Cable (for carburetors)
7. Choke Cable
8. Connecting Pipe
9. Ignition Coil (#1 & 4)

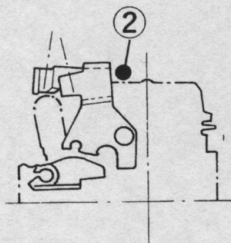
# 1-8 GENERAL INFORMATION

## Electrical Wires (p. 1-13)

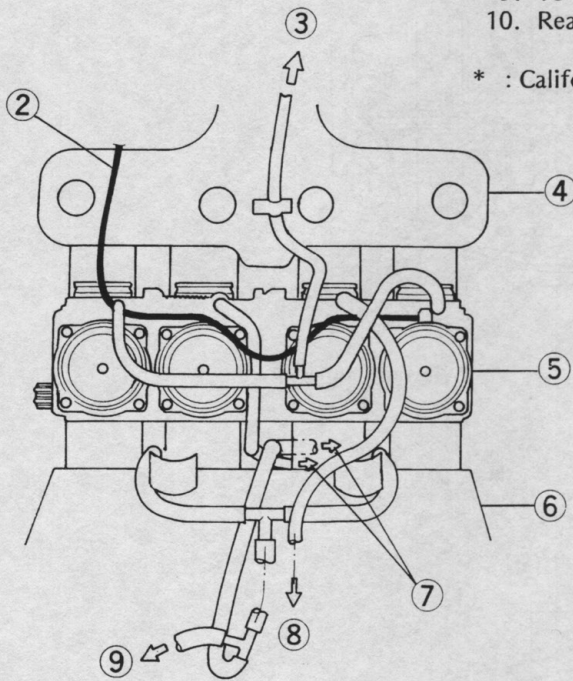


## Vacuum Hoses and Breather Hoses (p. 1-18)

Change of choke cable routing.



Viewed from Left



Viewed from Top

1. Antenna Lead
2. Choke Cable
3. To Vacuum Switch Valve
4. Cylinder Head Cover
5. Carburetors
6. Surge Tank
- \*7. To Vacuum Valve
- \*8. To Liquid/Vapor Separator
- \*9. To Canister
10. Rear Speaker Leads

\* : California Model Only



# Fuel System

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\* Refer to Base Manual

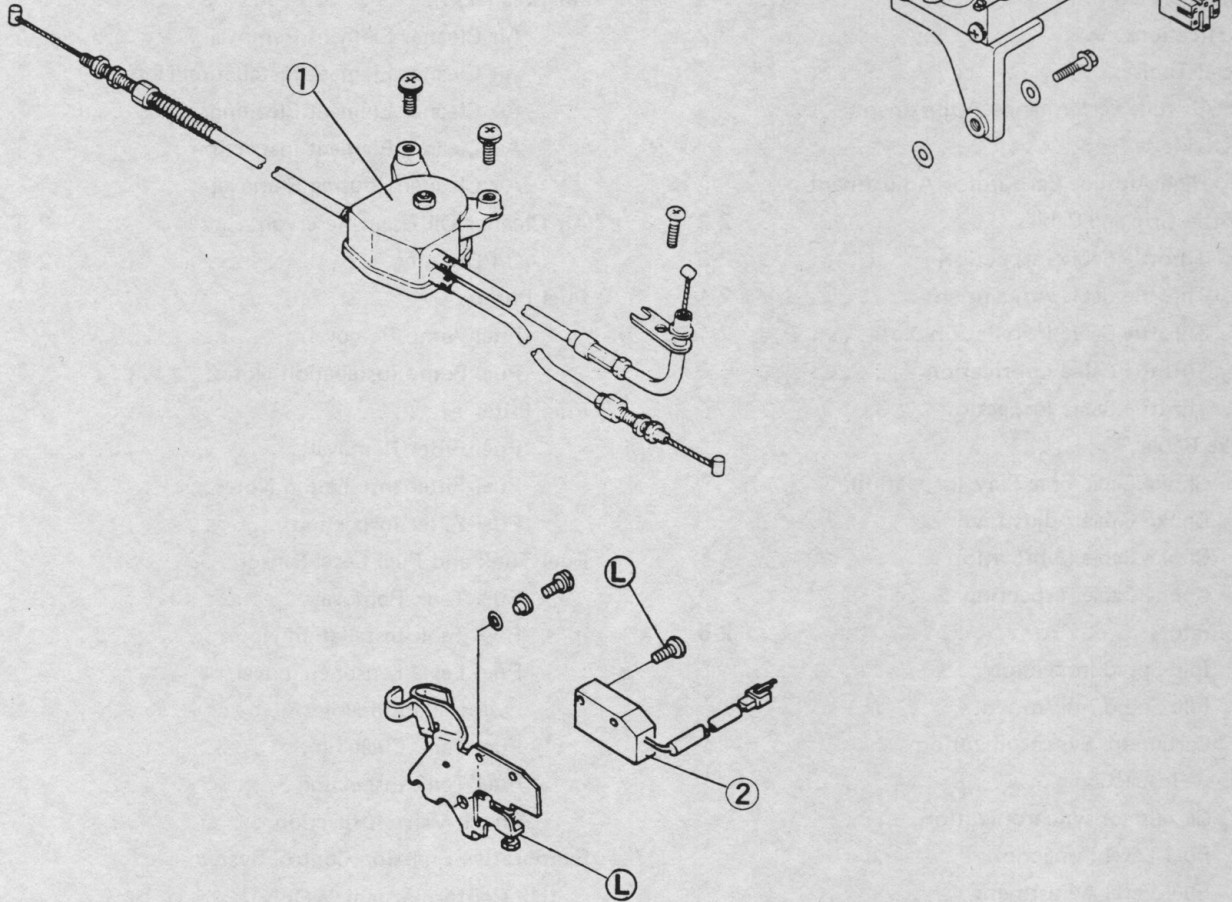
## 2-2 FUEL SYSTEM

### Exploded View

- Refer to the base manual, noting the following.
- Change of throttle accelerator cable.
  - Addition of cancel switch for cruise control.

1. Junction Box of Throttle Accelerator Cable Assembly
2. Cancel Switch (throttle)

L : Non-permanent locking agent



### Specifications

Refer to the base manual, noting the following.

Item	Standard
<b>Throttle Grip and Cables:</b>	
Throttle grip free play	2 – 4 mm
Actuator pulley free play	3.0 – 5.5 mm

.....  
**Throttle Grip and Cables**  
 .....

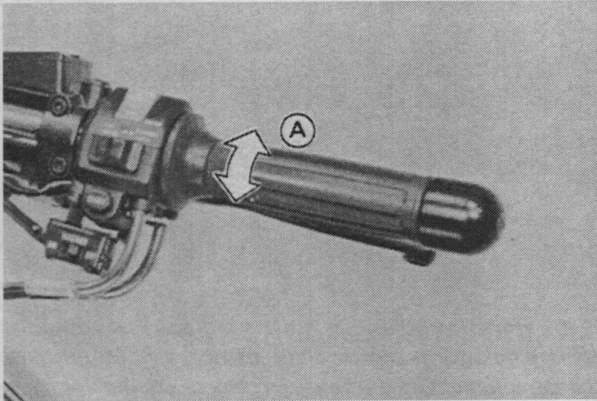
*Throttle Cable Inspection*

**Throttle Grip Free Play Inspection**

- Check throttle grip free play by lightly turning the throttle grip back and forth.
- ★ If free play is not correct, adjust the throttle cables.

**Throttle Grip Free Play**

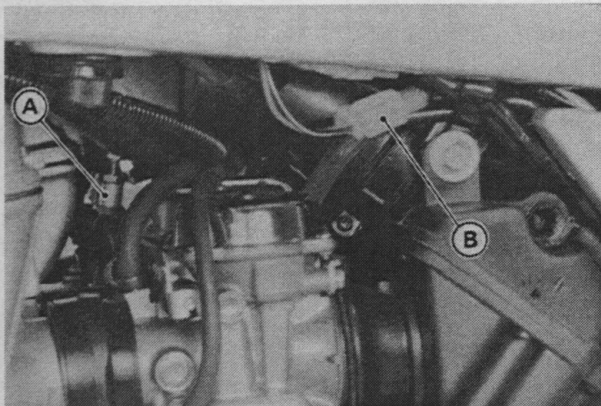
2 – 4 mm



A. Throttle Grip Free Play

**Cancel Switch Operation Inspection**

- Check the decelerator cable mounting bracket at the carburetors moves down by pushing the throttle grip closed. At this time, check the cancel switch (throttle) at the carburetors operates properly using an ohmmeter.



A. Decelerator Cable Mounting Bracket  
 B. Cancel Switch (throttle) Connector

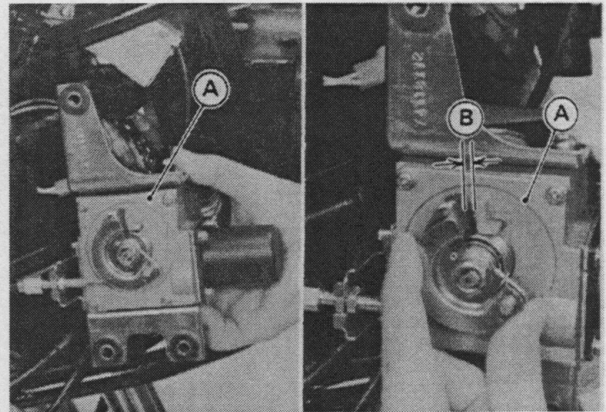
**Cancel Switch (Throttle) Connections**

	BL	BK
When throttle grip is completely closed		

- ★ If the cancel switch does not operate properly, adjust the throttle cables.

**Actuator Pulley Free Play Inspection**

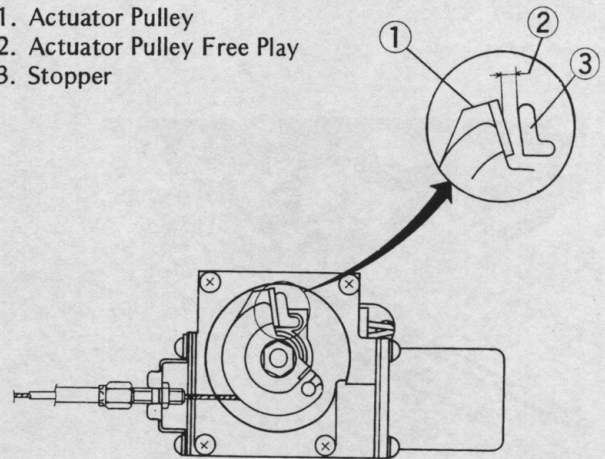
- Remove the fairing.
- Holding the actuator in its original position if it is removed, check actuator pulley free play at the pulley. Turn the actuator pulley until the carburetor pulley starts to move; the distance between the pulley and the stopper is the amount of actuator pulley free play.



A. Actuator                      B. Actuator Pulley Free Play

**Actuator Pulley Free Play**

1. Actuator Pulley
2. Actuator Pulley Free Play
3. Stopper



## 2-4 FUEL SYSTEM

### Actuator Pulley Free Play

3.0 – 5.5 mm

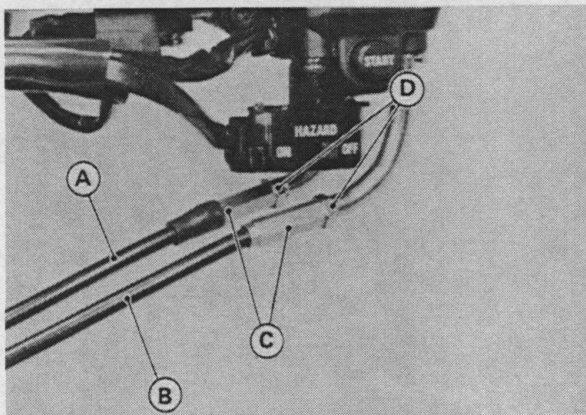
- ★If the actuator pulley free play is incorrect, adjust the throttle cables.
- ★If all checks are correct, make the following test:
  - Start the engine.
  - Turn the handlebar from side to side while idling the engine.
- ★If idle speed varies, the throttle cables may be poorly routed or they may be damaged.
- Correct any problem before operating the motorcycle.

#### WARNING

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

### Throttle Cable Adjustment

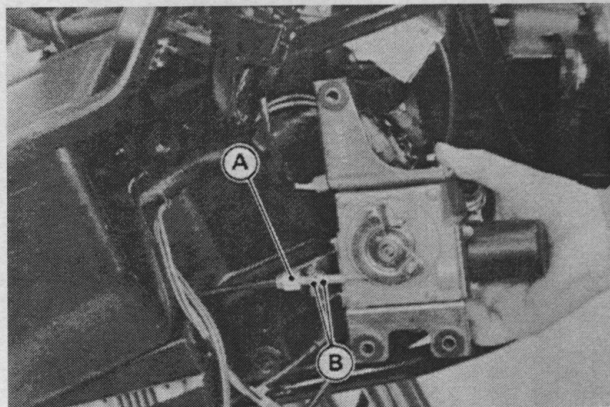
- Loosen the locknut and turn out the decelerator cable adjuster at the throttle grip until the inner cable just becomes tight. Tighten the locknut.
- Push the throttle grip completely closed, and check the cancel switch at the carburetors operates properly using an ohmmeter.
- ★If the cancel switch does not operate properly, turn out the decelerator cable adjuster until the cancel switch turns to off with the throttle grip closed and stop it. Then, turn out the adjuster continuously one more turn.
- Loosen the locknut and turn the accelerator cable adjuster at the throttle grip until the correct throttle grip free play is obtained. Tighten the locknut.



A. Accelerator Cable  
B. Decelerator Cable

C. Adjusters  
D. Locknuts

- Loosen the locknuts and slide the accelerator cable adjuster at the actuator until the correct actuator pulley free play is obtained. Tighten the locknuts.



A. Adjuster

B. Locknuts

#### NOTE

- If the throttle cables can not be adjusted by using the cable adjusters at the throttle grip or the actuator, use the cable adjusters at the carburetors. Do not forget to securely tighten the locknuts after adjustment.

- Start the engine.
- Turn the handlebar from side to side while idling the engine.
- ★If idle speed varies, the throttle cables may be poorly routed or they may be damaged.
- Correct any problem before operating the motorcycle.

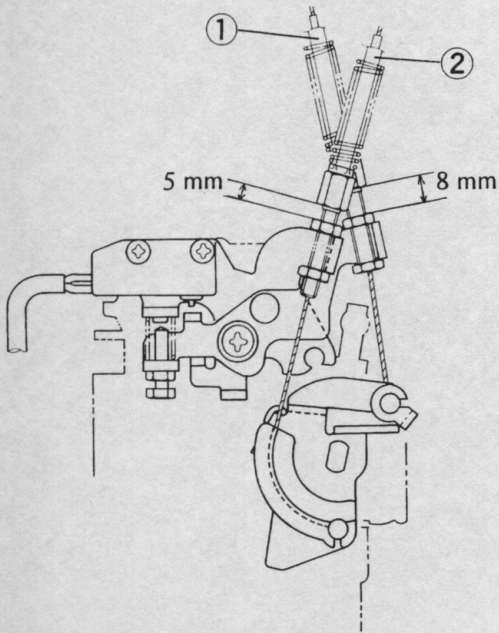
#### WARNING

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

### Throttle Cable Installation Note

- When replacing throttle cables with new ones, mount the cable lower ends on their brackets as shown.

**Throttle Cable Installation**



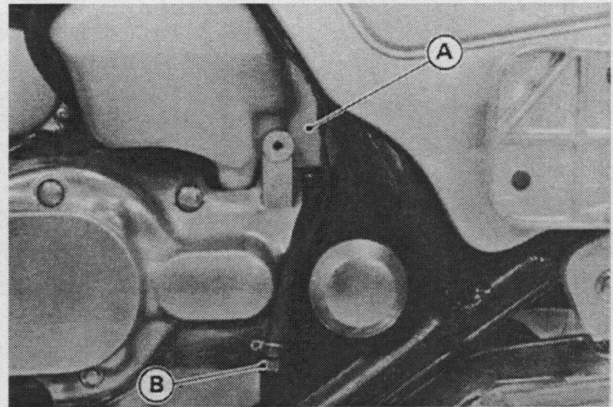
- 1. Throttle Decelerator Cable
- 2. Throttle Accelerator Cable

**CAUTION**

○Do not disassemble the junction box of the accelerator cable assembly. Disassembling the box may upset the cable joints and cause the cable malfunction.

**Oil Draining**

- Visually check the reservoir if the water or oil accumulates in it.
- ★If any water or oil accumulates in the reservoir, drain it by taking off the drain plug at the lower end of the drain hose.
- Be sure to install the plug firmly, or the air is drawn in through it.



A. Oil Drain Reservoir      B. Drain Plug

.....  
**Carburetors**  
 .....

**Carburetor Disassembly/Assembly Notes**

- Refer to the base manual, noting the following.
- If the cancel switch (throttle) was removed, install and adjust the cancel switch (see Switches in the Electrical System chapter).

.....  
**Air Cleaner Oil Drain Reservoir**  
 .....

An air cleaner oil drain reservoir is provided beneath the surge tank, and catches water or oil from the bottom of the surge tank. Check and drain the reservoir in accordance with the Periodic Maintenance Chart.

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\* Refer to Base Manual

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\* Refer to Base Manual

# Clutch

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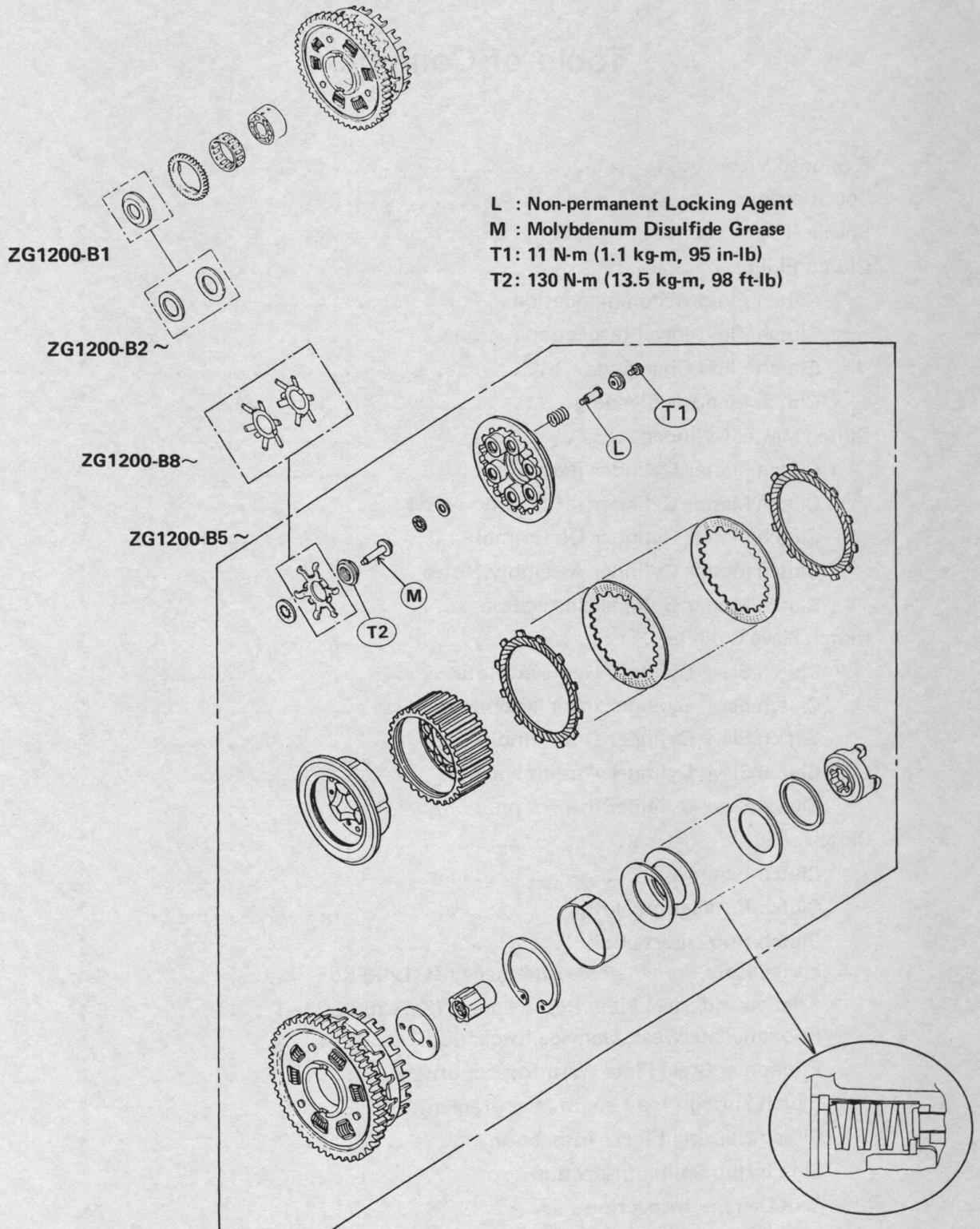
\* Refer to Base Manual



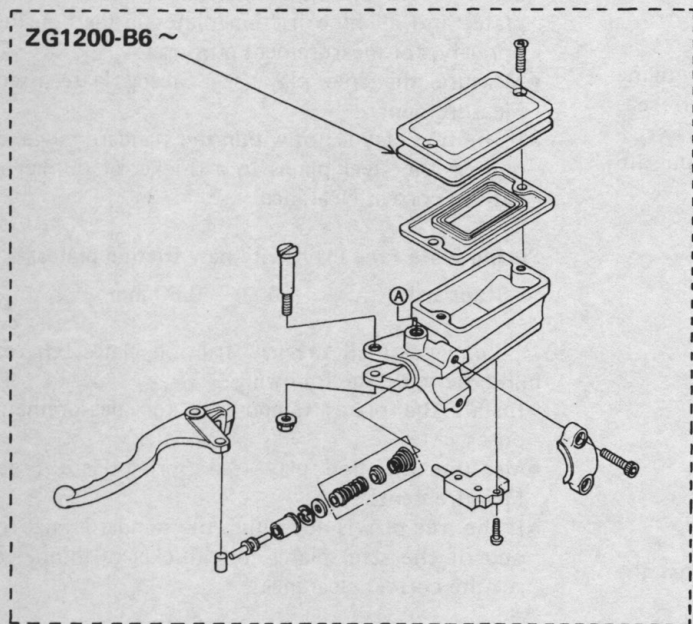
## 5-2 CLUTCH

### Exploded View

Refer to the base manual, noting the following.



●Addition of diaphragm plate.



.....  
**Specifications**  
 .....

ZG1200-B5 ~ :

Item	Standard	Service Limit
<b>Clutch Fluid:</b> Grade Brand (recommended)	D.O.T.4 Heavy Duty Brake Fluid Castrol Girling-Universal Castrol GT (LMA) Castrol Disc Brake Fluid Check Shock Premium Heavy Duty	
<b>Clutch:</b> Spring plate free play	0.30 – 0.60 mm (with new friction plates) 0.55 – 0.85 mm (with new friction plates but reassembled)	--- ---
Friction and steel plate warp	0.55 – 0.85 mm (with used friction plates)	1.15 mm
Clutch spring free length	Less than 0.2 mm 33.2 mm	0.3 mm 32.1 mm

## 5-4 CLUTCH

### Clutch

Refer to the base manual, noting the following.

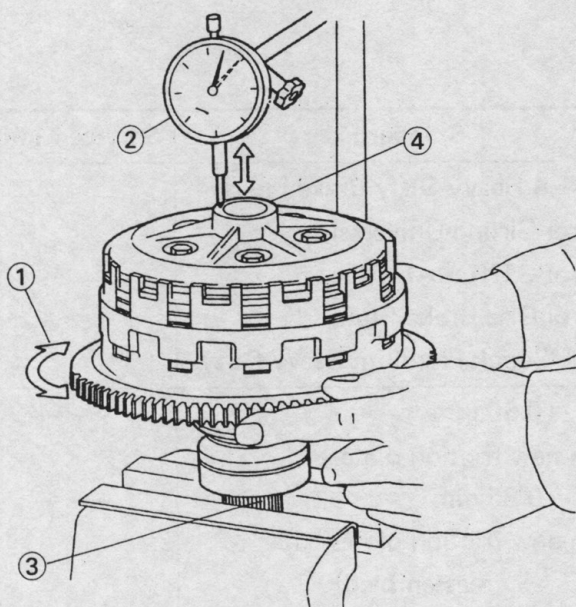
#### Spring Plate Free Play Measurement (ZG1200-B5 ~ )

Insufficient clutch free play will cause the engine braking effect to be more sudden, resulting in rear wheel hop. On the other hand, if the free play is excessive, the clutch lever may feel "spongy" or pulsate when pulled.

- Assemble the clutch hub.
- Install the following parts on an extra drive shaft.

Spacers  
Oil Pump Driven Gear  
Clutch Housing Bearing and Collar  
Clutch Housing  
Thrust Washer  
Sleeve  
Clutch Hub (Assembled)  
Friction Plates  
Steel Plates  
Spring Plate

- To measure the free play, set a dial gauge against the raised center of the clutch spring plate.
- Move the clutch housing gear back and forth while holding the drive shaft steady. The difference between the highest and lowest gauge readings is the amount of free play.



1. Move back and forth.      3. Drive Shaft  
2. Dial Gauge                      4. Raised Center

#### Friction and Steel Plate Replacement (ZG1200-B5 ~ )

When using all the new friction plates, do the following.

- If the steel plates are also replaced with new ones, install seven 2.3 mm thick steel plates, one 2.6 mm plate, and all nine friction plates in the housing temporarily, for measurement purposes.
- Measure the free play (see Spring Plate Free Play Measurement).
- ★ If the free play is not within the standard range, change one of the steel plates to a thicker or thinner one to get the correct clearance.

#### Spring Plate Free Play (with new friction plates)

Standard:                      0.30 – 0.60 mm

When using all the new friction plates but reassembling them, do the following.

- Install the plates temporarily for measurement purposes.
- Measure the free play (see Spring Plate Free Play Measurement).
- ★ If the free play is not within the standard range, change one of the steel plates to a thicker or thinner one to get the correct clearance.

#### Spring Plate Free Play

(with new friction plates but reassembled)

Standard:                      0.55 – 0.85 mm

When reusing all the used plates, do the following.

- Install the plates temporarily for measurement purposes.
- Measure the free play (see Spring Plate Free Play Measurement).
- ★ If the free play exceeds the service limit, change all of the friction plates.

#### Spring Plate Free Play (with used friction plates)

Standard:                      0.55 – 0.85 mm  
Service Limit:                1.15 mm

#### Steel Plates

Thickness (mm)	Part Number
2.0	13089-1068
2.3	13089-1004
2.6	13089-1067

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\* Refer to Base Manual

# Engine Removal/Installation

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\* Refer to Base Manual

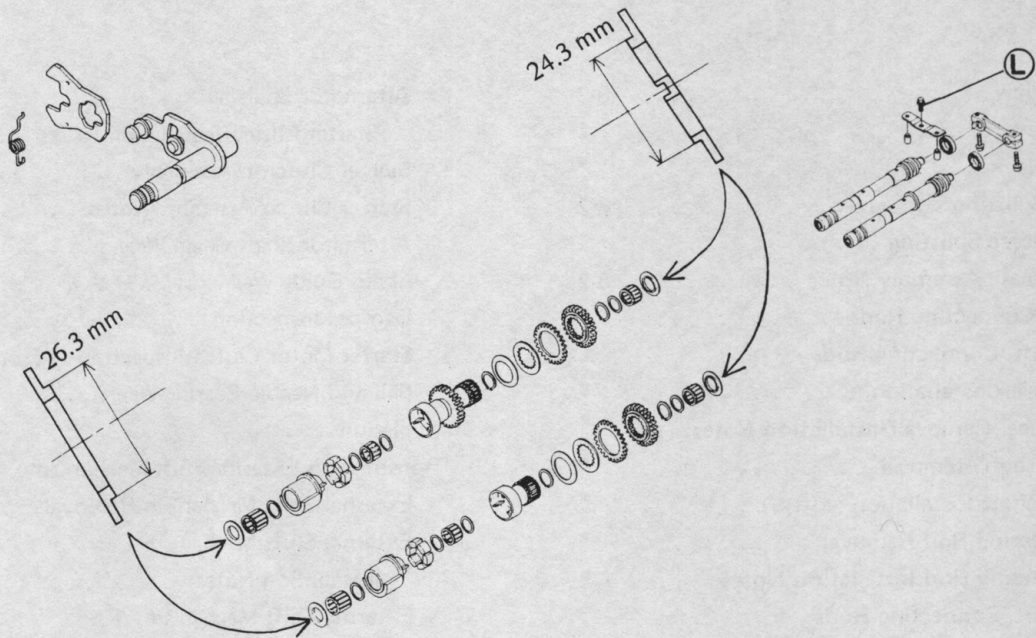
## 8-2 CRANKSHAFT/TRANSMISSION

### Exploded View

Refer to the base manual, noting the following.

- Change of external shift mechanism arm spring type.
- Distinction of balancer mechanism side washers.

L : Non-permanent locking agent



### Crankcase Splitting

#### Crankcase Assembly Notes

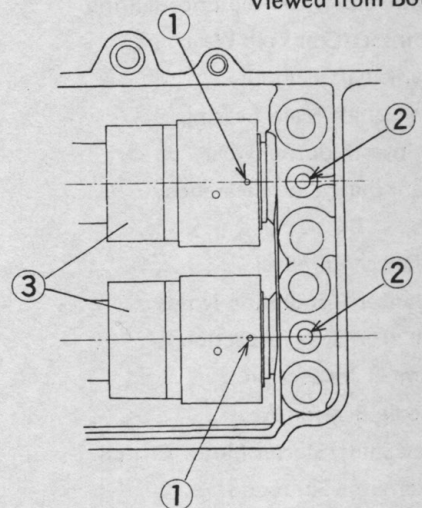
Refer to the base manual, noting the following.

- When fitting the lower crankcase half on the upper crankcase half, hold the balancers so that the mark on each balancer weight aligns with the center of the oil passage hole (see the figure in Balancers section).

### Balancer Timing

Front

Viewed from Bottom



### Balancers

#### Balancer Installation Notes

Refer to the base manual, noting the following.

1. Mark
2. Oil Passage Hole
3. Balancer Weights

# Wheels/Tires

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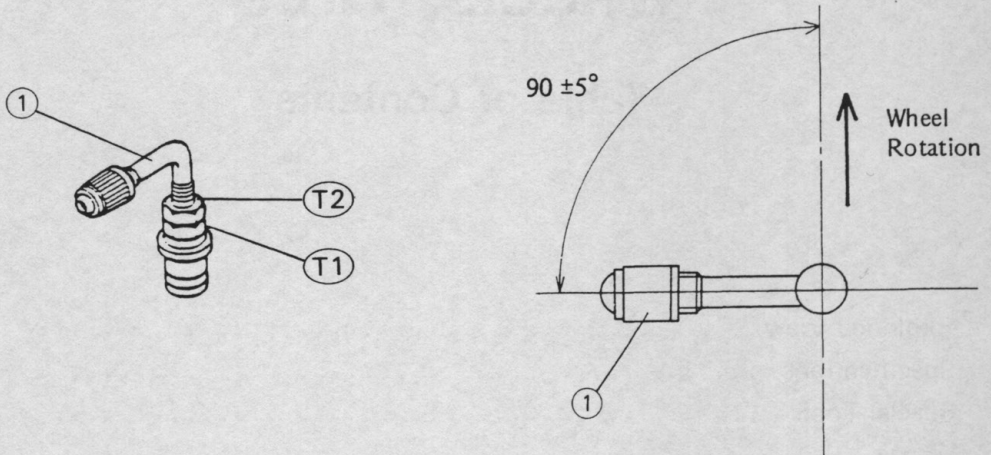
\* Refer to Base Manual



## 9-2 WHEELS/TIRES

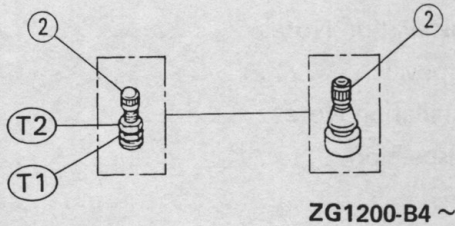
### Exploded View

Refer to the base manual, noting the following.  
 ●Change of rear wheel air valve type.



- 1. Air Valve (rear wheel)
- 2. Air Valve (front wheel)

T1: 1.5 N-m (0.15 kg-m, 13 in-lb)  
 T2: 5.9 N-m (0.60 kg-m, 52 in-lb)



### Specifications

Refer to the base manual, noting the following.

Item		Standard
<b>Tires:</b>		
Standard tire:	Front	M130/90-16 DUNLOP F21 Tubeless
	Rear	M150/90-15 M/C DUNLOP K425A Tubeless
<b>Tire air pressure:</b>		
Front	225 kPa (2.25 kg/cm <sup>2</sup> , 32 psi)	
Rear	Up to 120 kg (265 lb) load	225 kPa (2.25 kg/cm <sup>2</sup> , 32 psi)
	120 – 202 kg (265 – 445 lb) load	280 kPa (2.8 kg/cm <sup>2</sup> , 40 psi)

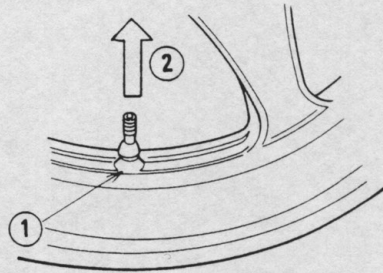
**Tires**

New air valve and rim are used on the front wheel.  
Air valve installation procedures are only those that are unique to the ZG1200-B4 ~

**Tire Installation**

- Refer to the base manual, noting the following.
- Remove the air valve and discard it.

- Install a new valve in the rim.
- Remove the valve cap, lubricate the stem with a soap and water solution, and pull the stem through the rim from the inside out until it snaps into place.



1. Apply soap and water solution.
2. Pull the stem out.

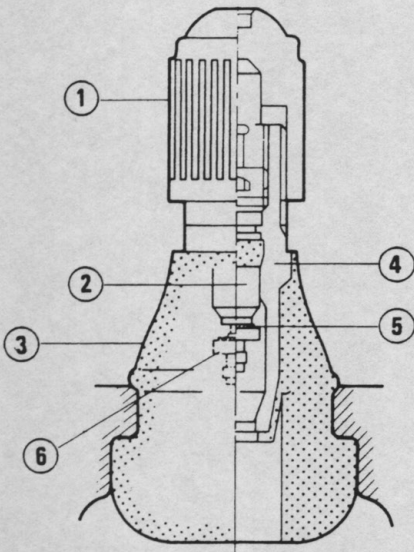
**CAUTION**

- Replace the air valve whenever the tire is replaced.
- Do not reuse the air valve.

**CAUTION**

- Do not use engine oil or petroleum distillates to lubricate the stem because they will deteriorate the rubber.

**Air Valve**



- |                |                 |
|----------------|-----------------|
| 1. Plastic Cap | 4. Valve Stem   |
| 2. Valve Core  | 5. Valve Seat   |
| 3. Stem Seal   | 6. Valve Opened |

# Final Drive

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\* Refer to Base Manual

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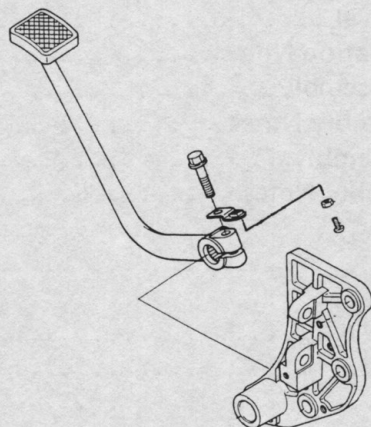
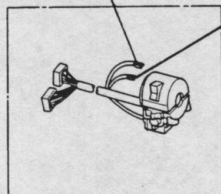
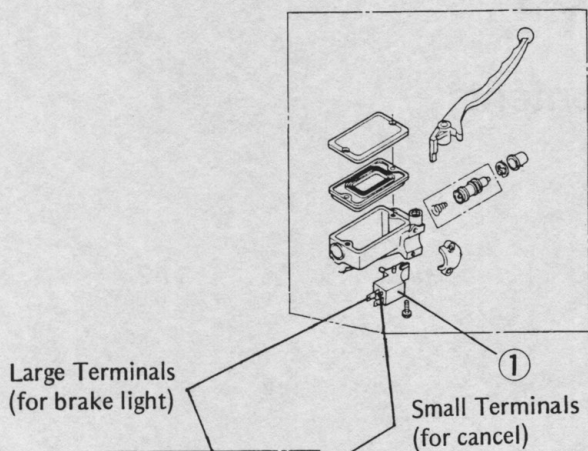
\* Refer to Base Manual

## 11-2 BRAKES

### Exploded View

Refer to the base manual, noting the following.

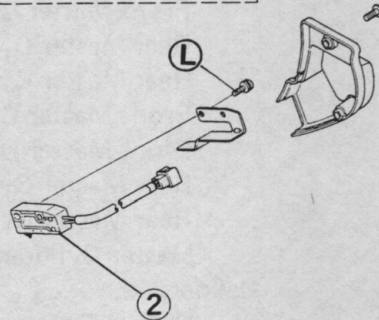
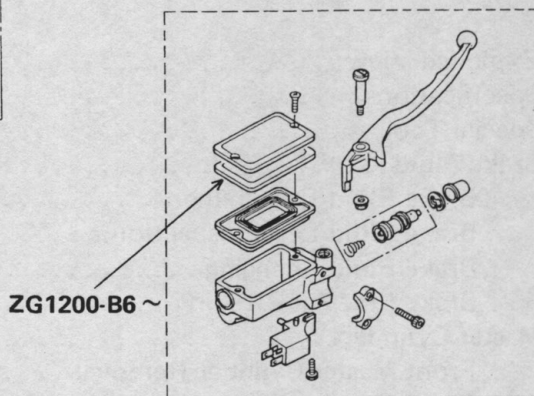
- Addition of cancel switches for cruise control.



1. Front Brake Light Switch and Cancel Switch (front brake)
2. Cancel Switch (rear brake)

L : Non-permanent locking agent

- Addition of diaphragm plate.



### Master Cylinders

#### Front Master Cylinder Installation Note

Refer to the base manual, noting the following.

- The front brake light switch and the cancel switch (front brake) are combined in a unit. There are two types of terminal on the unit: the large terminals for the front brake light switch and the small ones for the cancel switch.

#### Rear Master Cylinder Installation Notes

Refer to the base manual, noting the following.

- If the cancel switch (rear brake) was removed from the master cylinder bracket, perform the following.
  - Apply a non-permanent locking agent to the threads of the switch mounting screws, and tighten them to install the switch.
  - Check and adjust the cancel switch (see Switches in the Electrical System chapter).

#### Wire Connections

Switch	Wire Color	Terminal
Front brake light switch	BK	Large
Cancel switch (front brake)	BL	Small

# Suspension

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Swing Arm Bearing Lubrication .....	*

\* Refer to Base Manual

## 12-2 SUSPENSION

.....  
**Specifications**  
.....

Refer to the base manual, noting the following.

Item	Standard
<b>Front Fork:</b> Fork oil:      Viscosity Amount/side Oil level	SAE 10W20 336 (352 : ZG1200-B4 ~ ) ±2.5 mL 177 (158 : ZG1200-B4 ~ ) ±2 mm (fully compressed)

# Steering

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\* Refer to Base Manual



# Frame

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Seat Removal Note .....	*
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\* Refer to Base Manual

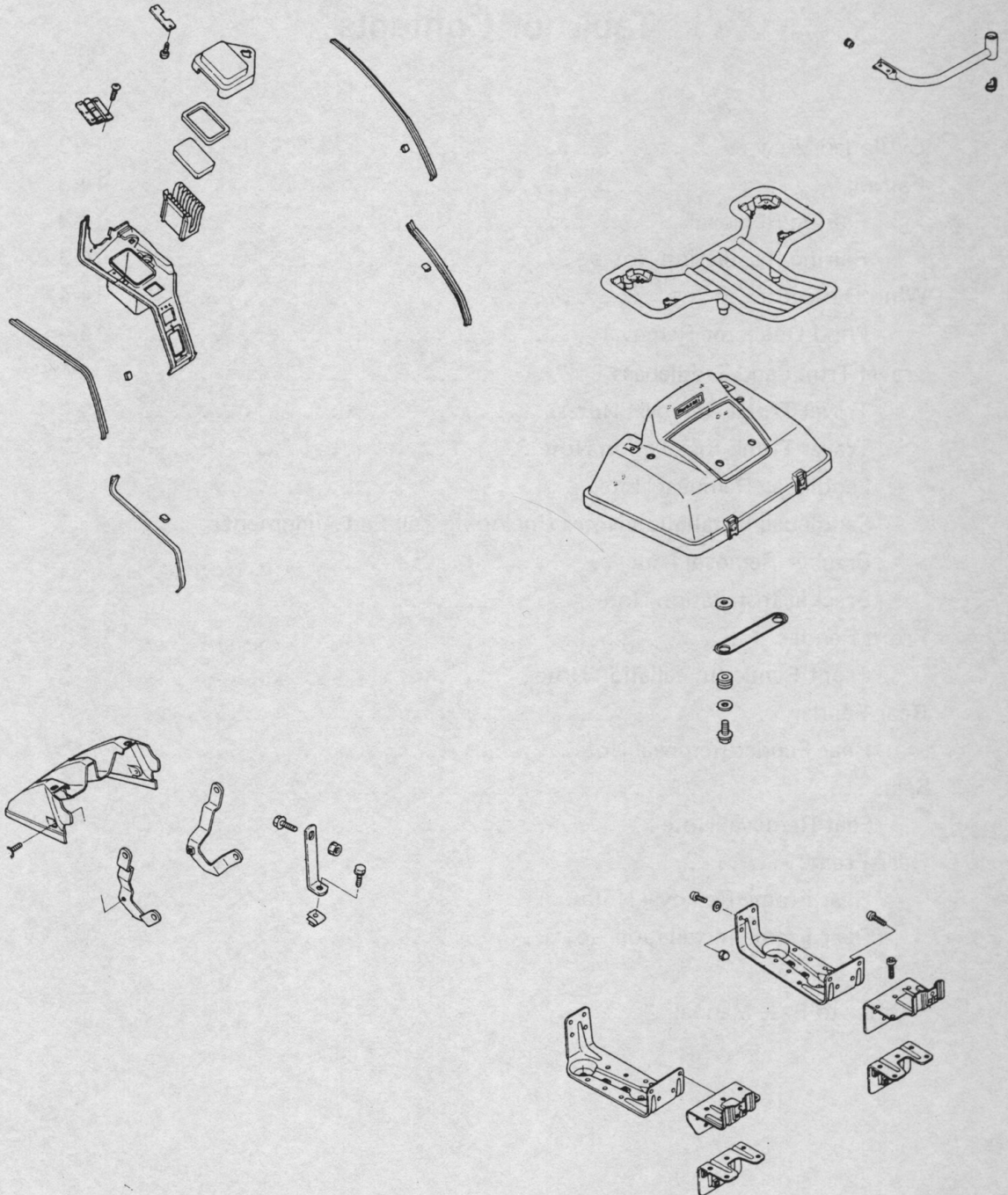
## 14-2 FRAME

---

### Exploded View

---

- Refer to the base manual, noting the following.
- Addition of wind deflectors on fairing edges.
  - Addition of bottom cover of fairing.
  - Change of pocket on left inner cover of fairing.
  - Addition of rear speaker bracket on travel trunk.
  - Change of travel trunk braces.
  - Change of antenna mount.

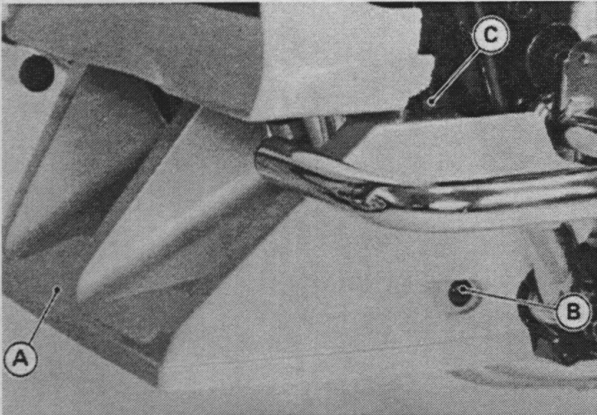


**Fairing**

**Fairing Removal**

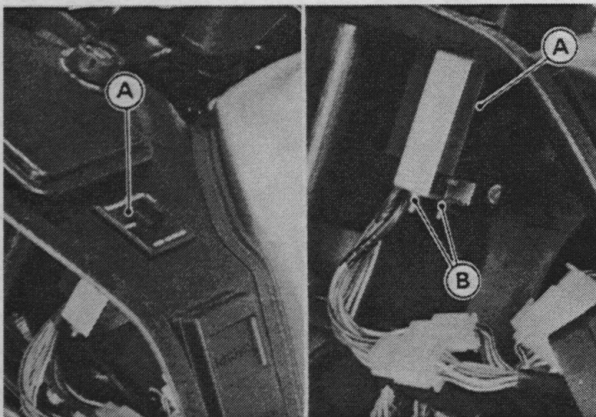
Refer to the base manual, noting the following.

- Remove the fairing bottom cover.



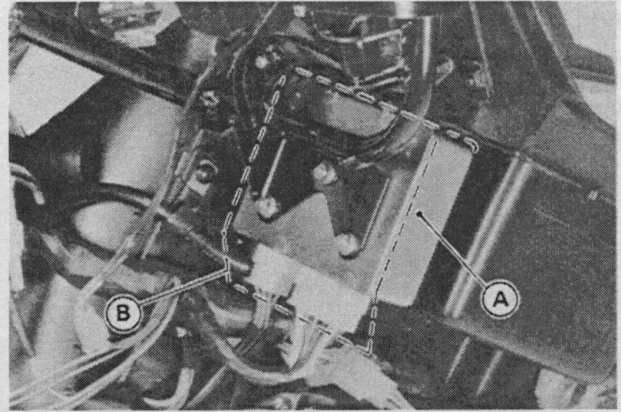
A. Bottom Cover      B. Screws      C. Bolts

- The fader control unit of the audio system is mounted on the fairing left inner cover.

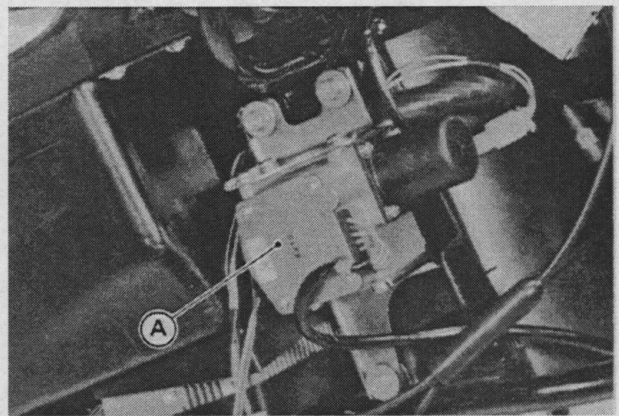


A. Fader Control Unit      B. Mounting Nuts

- Remove the electrical components from the fairing bracket.



A. Cruise Control Unit      B. Watertight Seat



A. Actuator (for cruise control)

**Fairing Installation Notes**

Refer to the base manual, noting the following.

- Check and adjust the throttle cables if the actuator was free from the throttle cable.
- Be sure to cover the cruise control unit with the watertight seat.

## 14-4 FRAME

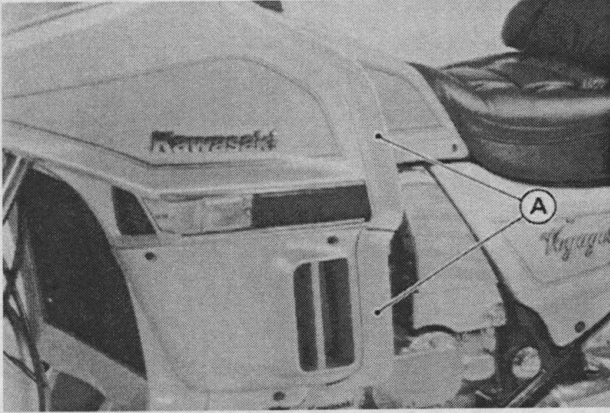
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### Wind Deflectors

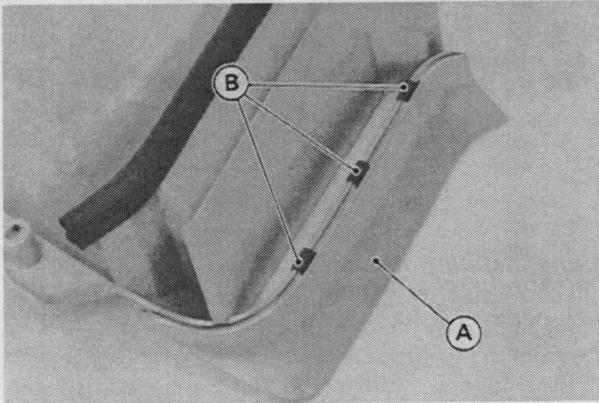
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#### *Wind Deflector Removal*

- Pull the wind deflectors off the edges of the fairing. The clamps come off with the deflectors.



A. Wind Deflectors



A. Wind Deflector

B. Clamps

# Electrical System

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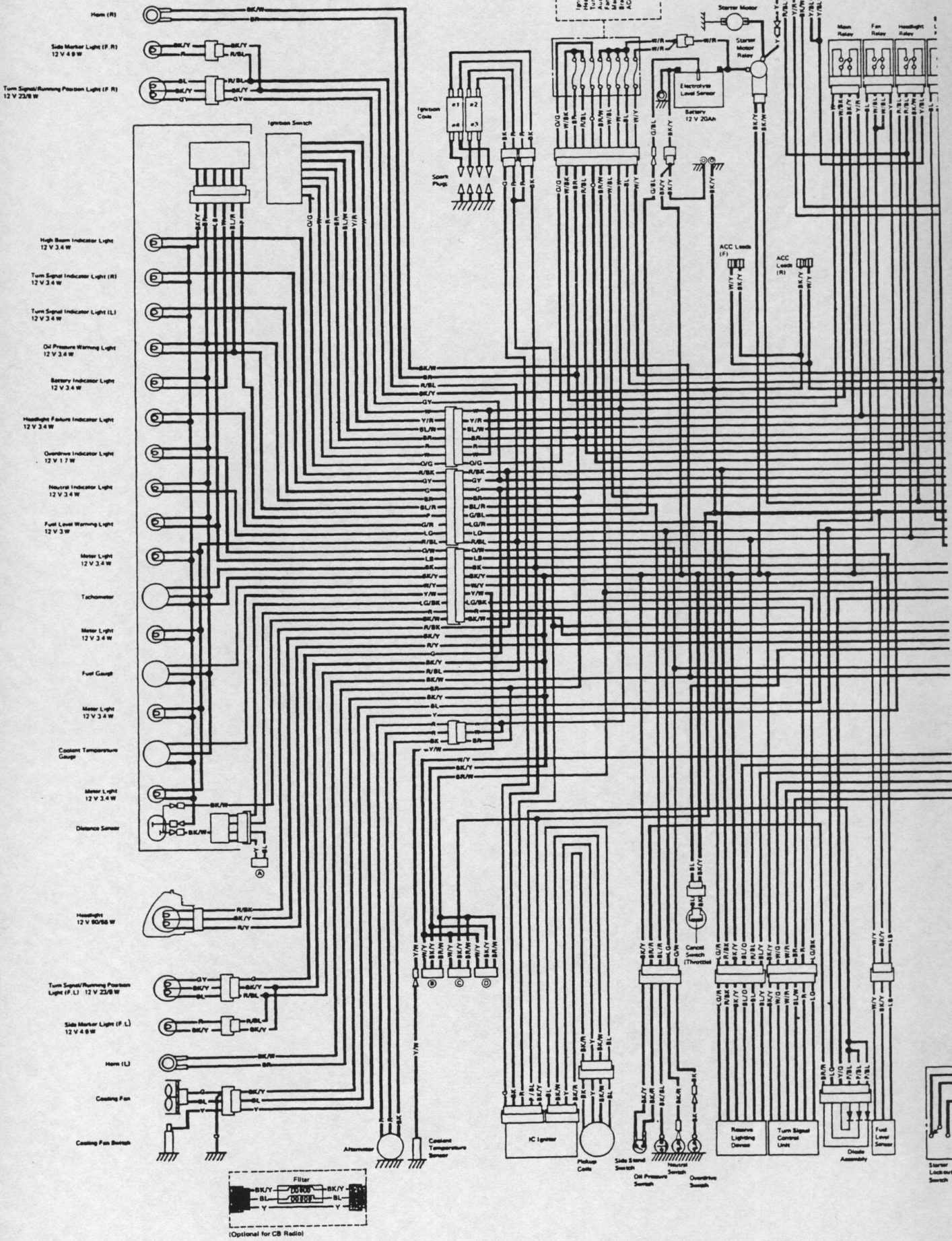
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## 15-2 ELECTRICAL SYSTEM

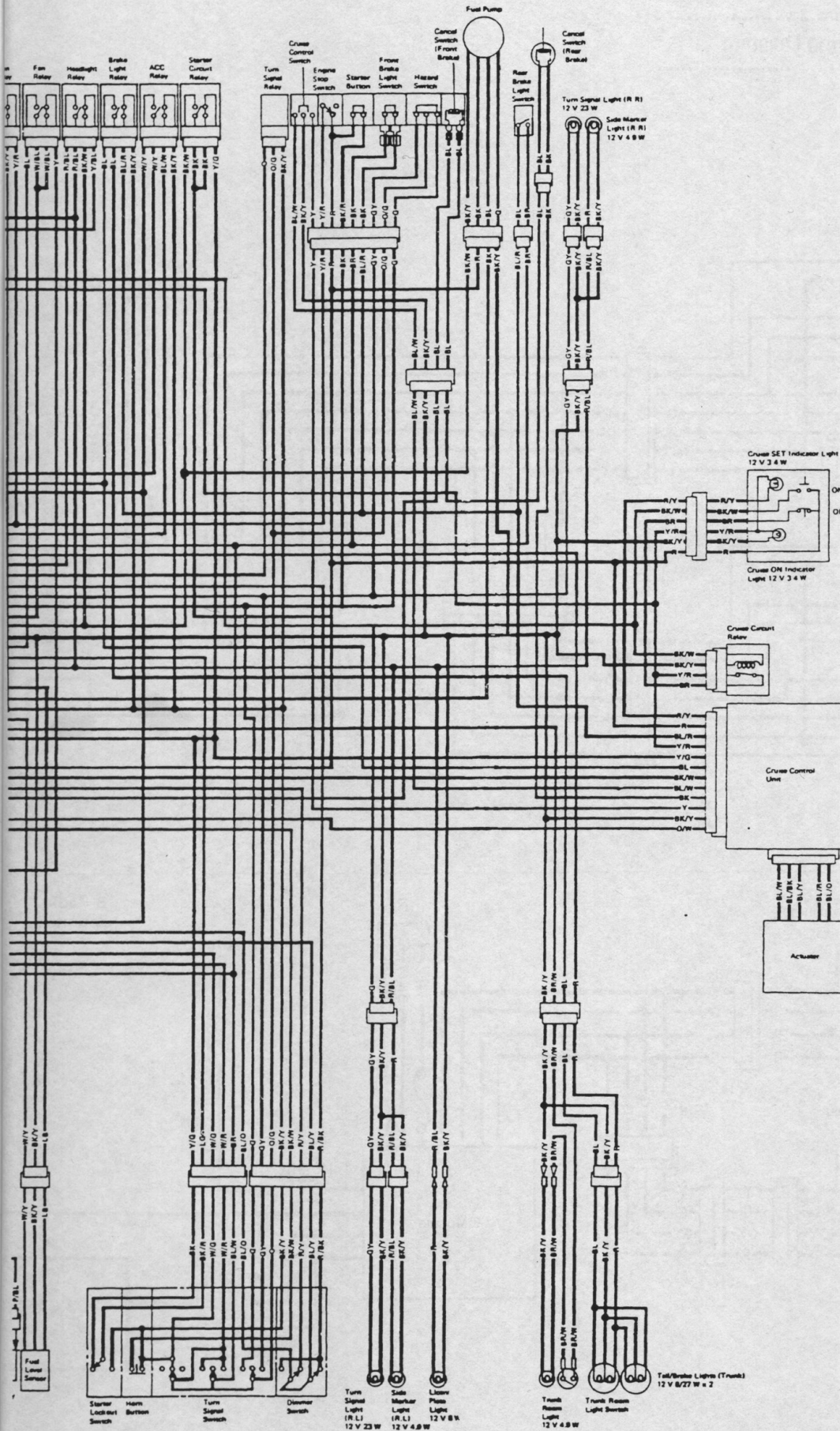
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\* Refer to Base Manual

# ZG1200B Main Wiring Diagram



# ELECTRICAL SYSTEM 15-3



**CRUISE CONTROL MAIN SWITCH CONNECTIONS**

ON Button	R	BK/W	R
OFF Button	C	BR	R
Push on	C		Push on

**IGNITION SWITCH CONNECTIONS**

W	Y/R	BL/W	BR	R	W	O/G
OFF LOCK						
ACC						
ON						
P (Park)						

**RIGHT HANDLEBAR SWITCH CONNECTIONS**

Cruise Control Switch	BL/W	BK/Y	Y
SET			
RESUME			
Engine Stop Switch	R	Y/R	
Start Button	R	BK/R	
Push on	C		Push on
Front Brake Light Switch	BK	BK	
Released			
Pulled in			
Hazard Switch	GY	O/G	G
OFF			
ON			
Cancel Switch (Front Brake)	BL	BL	
Released			
Pulled in			

**Color Code**

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
PU	Purple
R	Red
W	White
Y	Yellow

**LEFT HANDLEBAR SWITCH CONNECTIONS**

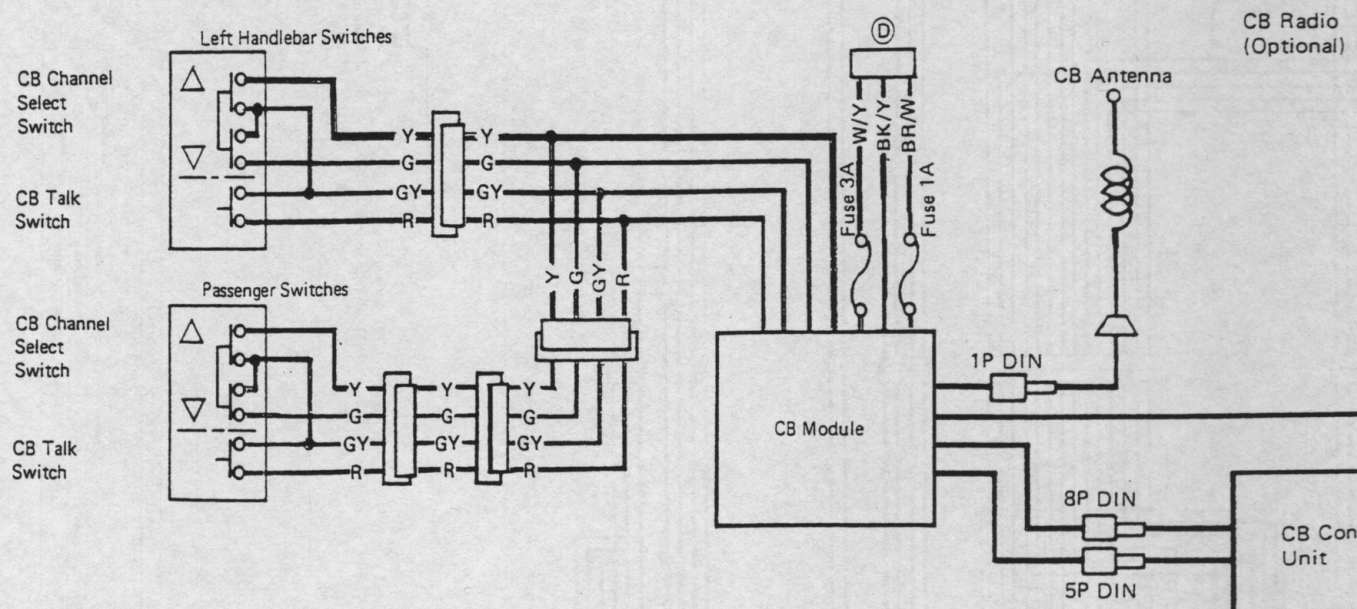
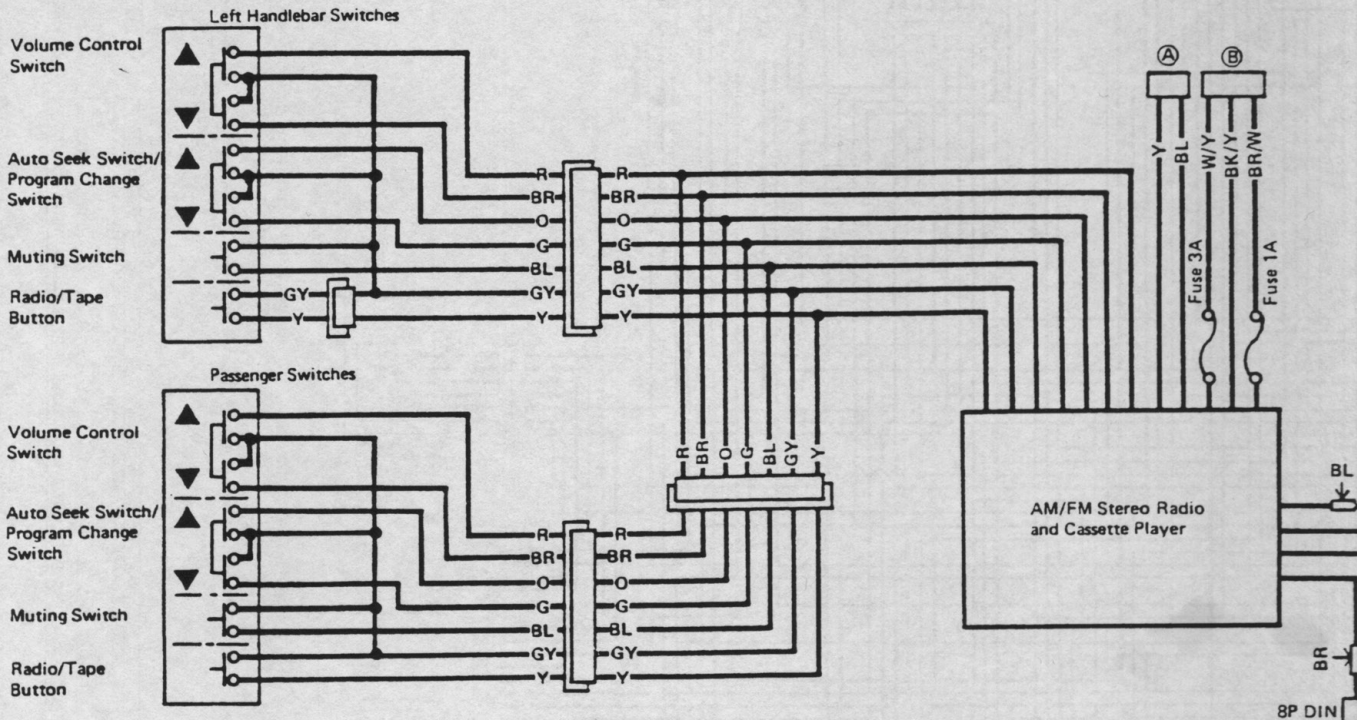
Starter Lockout Switch	BK/Y	BK/R	BK
Released			
Pulled in			
Horn Button	BK/W	BK/Y	
Push on			
Turn Signal Switch	GY	O	G
HI			
LO			
Dimmer Switch	BL/Z	BL/O	BK/Y

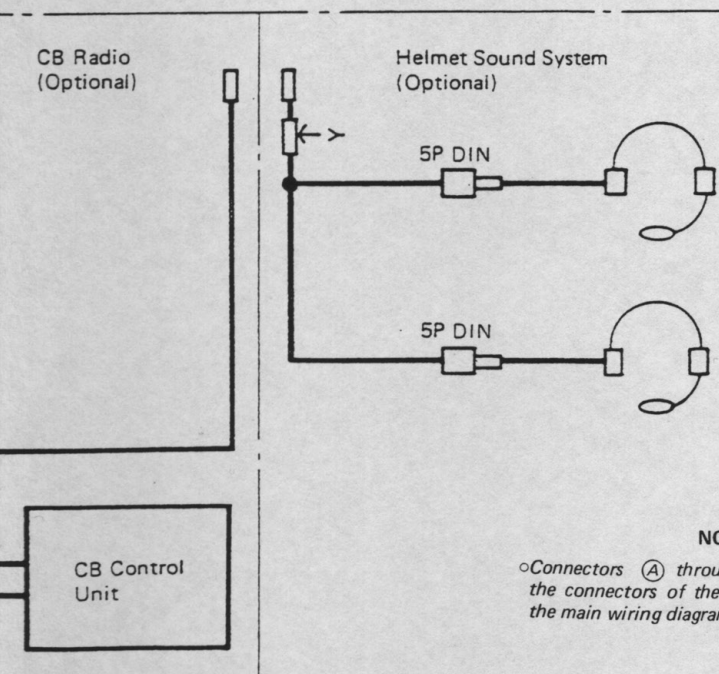
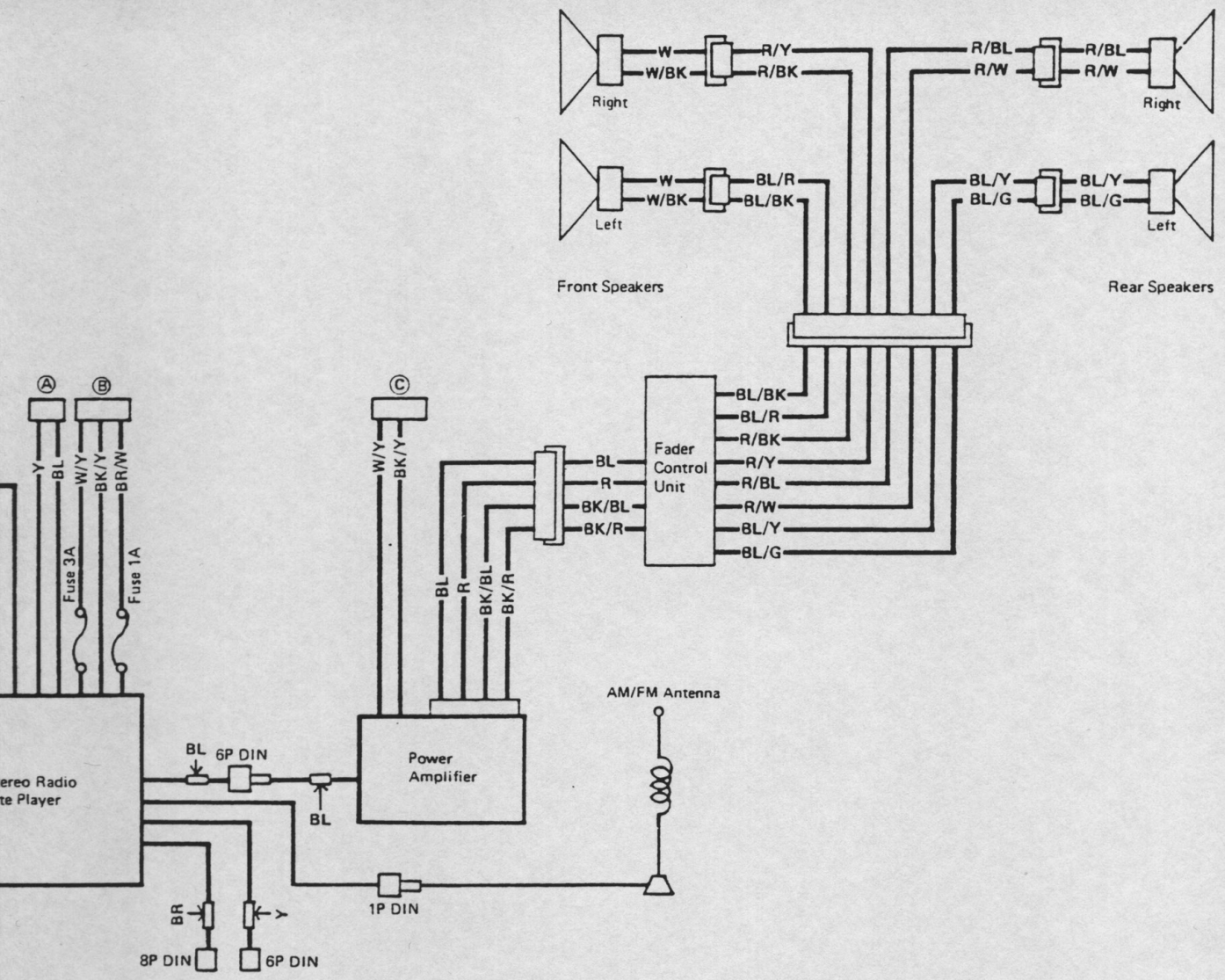
100A 10784



# 15-4 ELECTRICAL SYSTEM

## ZG1200B Audio System Wiring Diagram





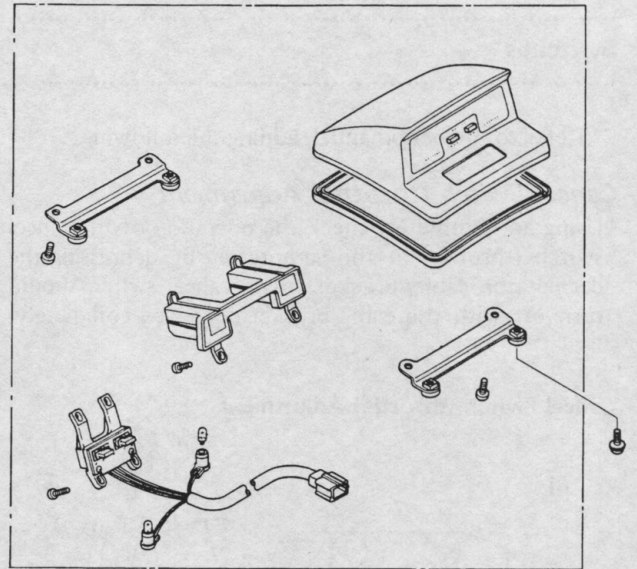
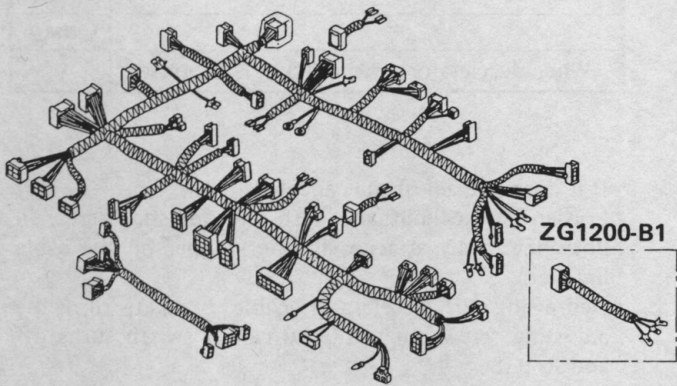
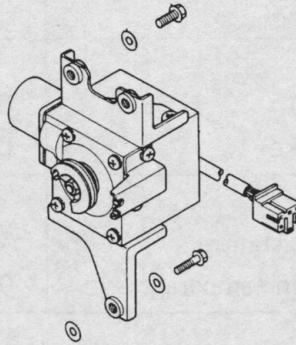
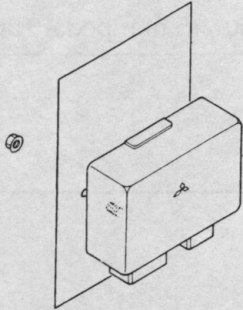
**NOTE**

○Connectors **A** through **D** are connected to the connectors of the same reference letter in the main wiring diagram.

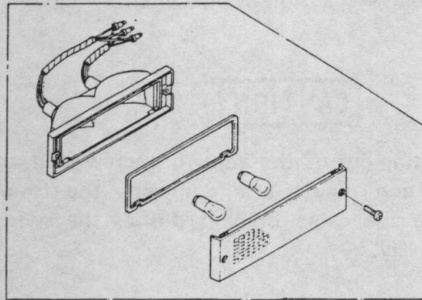
Exploded View

- Refer to the base manual, noting the following.
- Addition of cruise control system.
  - Addition of fader control and rear speakers.

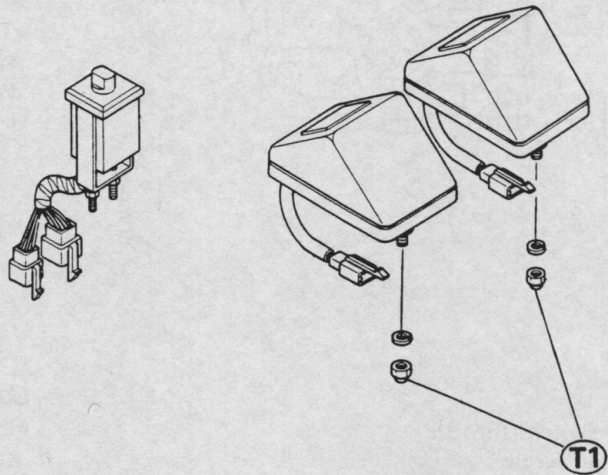
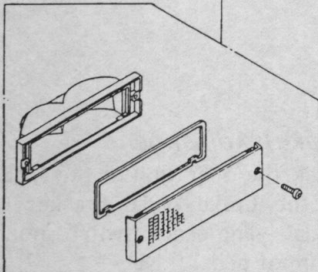
T1 : 4.9 N-m (0.50 kg-m, 43 in-lb)



ZG1200-B1



ZG1200-B2 ~



## 15-6 ELECTRICAL SYSTEM

### Specifications

Refer to the base manual, noting the following.

Item	Standard
<b>Switches:</b> Cancel switch (throttle) Cancel switch (rear brake)	OFF with throttle grip completely closed OFF after about 15 mm pedal travel
<b>Cruise Control System:</b> Actuator clutch coil resistance Actuator motor operating amperage	Approx. 20 $\Omega$ 0.5 A or less

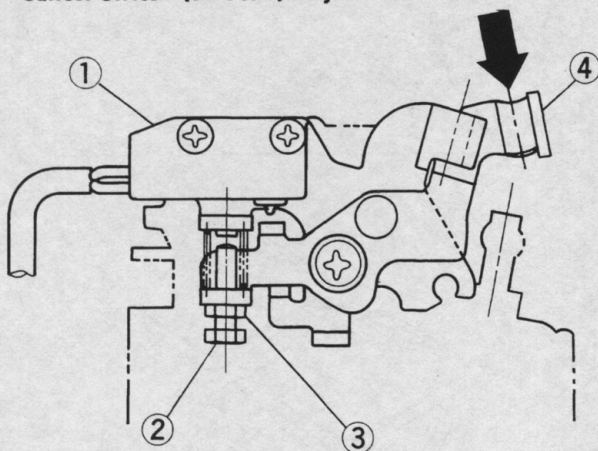
### Switches

Refer to the base manual, adding the following.

#### Cancel Switch (throttle) Adjustment

- Using an ohmmeter, check the operation of the cancel switch (throttle) at the carburetors by depressing the decelerator cable bracket. The cancel switch should turn off with the cable bracket depressed completely.

#### Cancel Switch (throttle) Adjustment



1. Cancel Switch (throttle)
2. Adjusting Screw
3. Locknut
4. Decelerator Cable Bracket

#### Cancel Switch (throttle) Connections

	BL	BK
When decelerator cable bracket is depressed		

- ★If it does not, adjust the cancel switch.
- Loosen the locknut and turn the adjusting screw in until the screw attaches to the stopper on the cable bracket.
- Depressing the decelerator cable bracket, turn the adjusting screw out until the cancel switch turns off and stop it.
- Then, turn the screw out more 3/4 to 1 turn. Tighten the locknut applying a non-permanent locking agent to the threads.

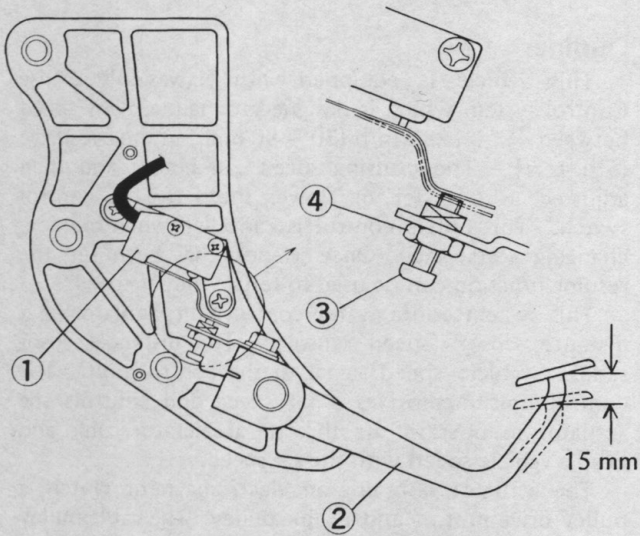
#### CAUTION

- Too much turning out of the adjusting screw from the switching position may cause damaging the cancel switch because the cable bracket pushes the switch contact excessively.

#### Cancel Switch (rear brake) Adjustment

- Using an ohmmeter, check the operation of the cancel switch (rear brake) at the brake pedal bracket by depressing the brake pedal. The cancel switch should turn off after about 15 mm of pedal travel.

Cancel Switch (rear brake) Adjustment



1. Cancel Switch (rear brake)
2. Brake Pedal
3. Adjusting Screw
4. Locknut

Cancel Switch (rear brake) Connections

	BL	BK
	○ — ●	
When brake pedal is depressed 15 mm or more		

- ★If it does not, adjust the cancel switch.
- Loosen the locknut and turn the adjusting screw until the correct switch operation can be obtained.
- Tighten the locknut.

Switch Inspection

Refer to the base manual, noting the following.

Cancel Switch (throttle) Connections

	BL	BK
	○ — ●	
When throttle grip is closed		

Cancel Switch (front brake) Connections

	BL	BL
	○ — ●	
When brake lever is pulled in		

Cancel Switch (rear brake) Connections

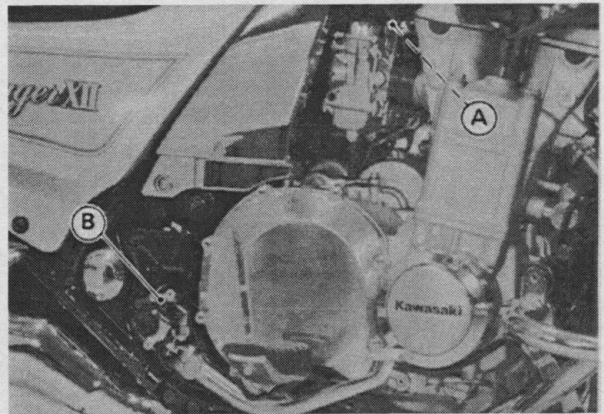
	BL	BK
	○ — ●	
When brake pedal is depressed		

Cruise Control Switch Connections

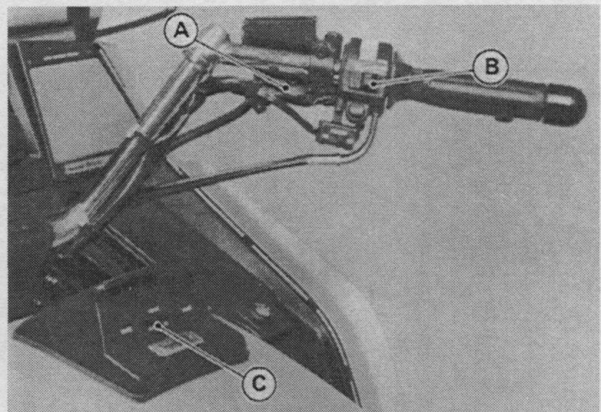
	BL/W	BK/Y	Y
SET/DECEL	○ — ●		
RESUME/ACCEL		○ — ●	

Cruise Control Main Switch Connections

	BK/W	R	BR
When ON button is pushed on	○ — ●		
When OFF button is pushed on		○ — ●	



- A. Cancel Switch (throttle)
- B. Cancel Switch (rear brake)



- A. Cancel Switch (front brake)
- B. Cruise Control Switch
- C. Cruise Control Main Switch

## 15-8 ELECTRICAL SYSTEM

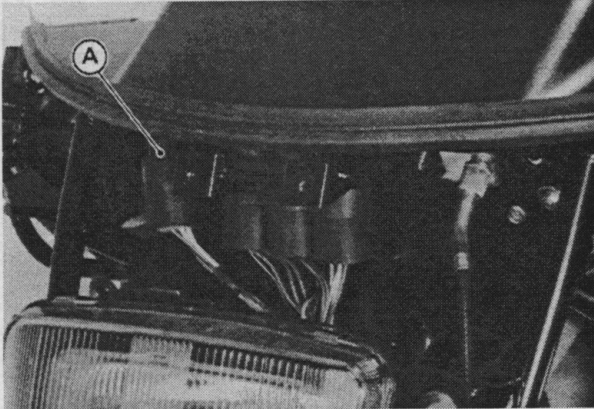
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### Relays

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#### Relay Inspection

Refer to the base manual for inspection of the cruise circuit relay.



A. Relay (cruise circuit)

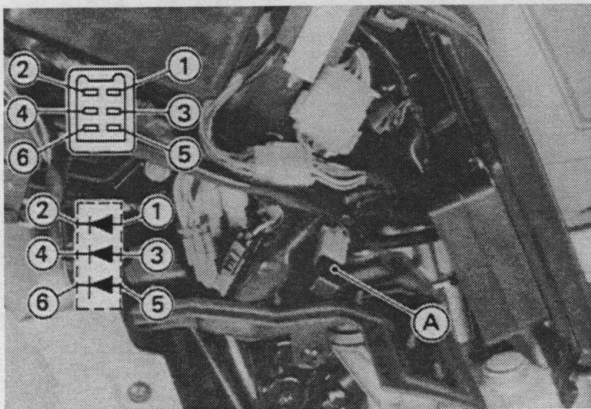
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### Diodes

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#### Diode Inspection

Refer to the base manual for inspection of the diode for the cruise control system.



A. Diode Assembly (Headlight and Cruise)

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### Cruise Control System

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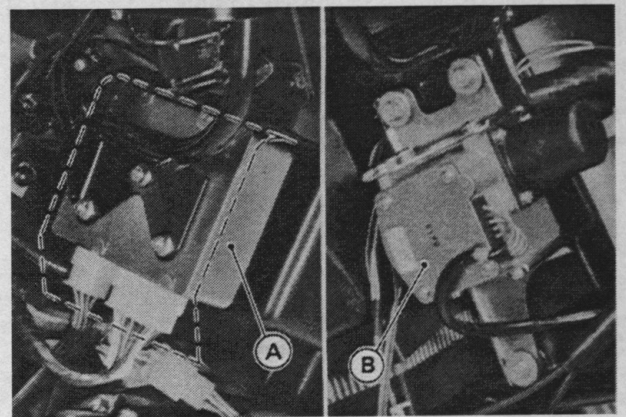
#### Outline:

This vehicle is equipped with Kawasaki's Cruise Control system which is designed to maintain any speed between 48 – 128 km/h (30 – 80 mph) in the overdrive (5th gear). The cruising speed can be set and then adjusted to a faster or slower speed by the control switch. This cruise control is cancelled when braking, changing gears, etc. Once a speed has been set, the resume function can be used to return the set speed.

This system contains the control unit, actuator, and distance sensor (speed sensor). The distance sensor sends a vehicle speed signal to the control unit. The control unit memorizes a set speed and controls the actuator to operate the throttle accelerator cable and keep a vehicle speed with the set speed.

The actuator contains an electromagnetic clutch, a pulley drive motor, and a cable pulley. The cable pulley is ordinarily free from the pulley drive motor. It is engaged with the motor by the electromagnetic clutch when the cruise control is set. At the same time, the motor moves the pulley and operates the throttle accelerator cable. When the cruise control is cancelled, the pulley is disengaged from the motor and returned back the original position with its spring.

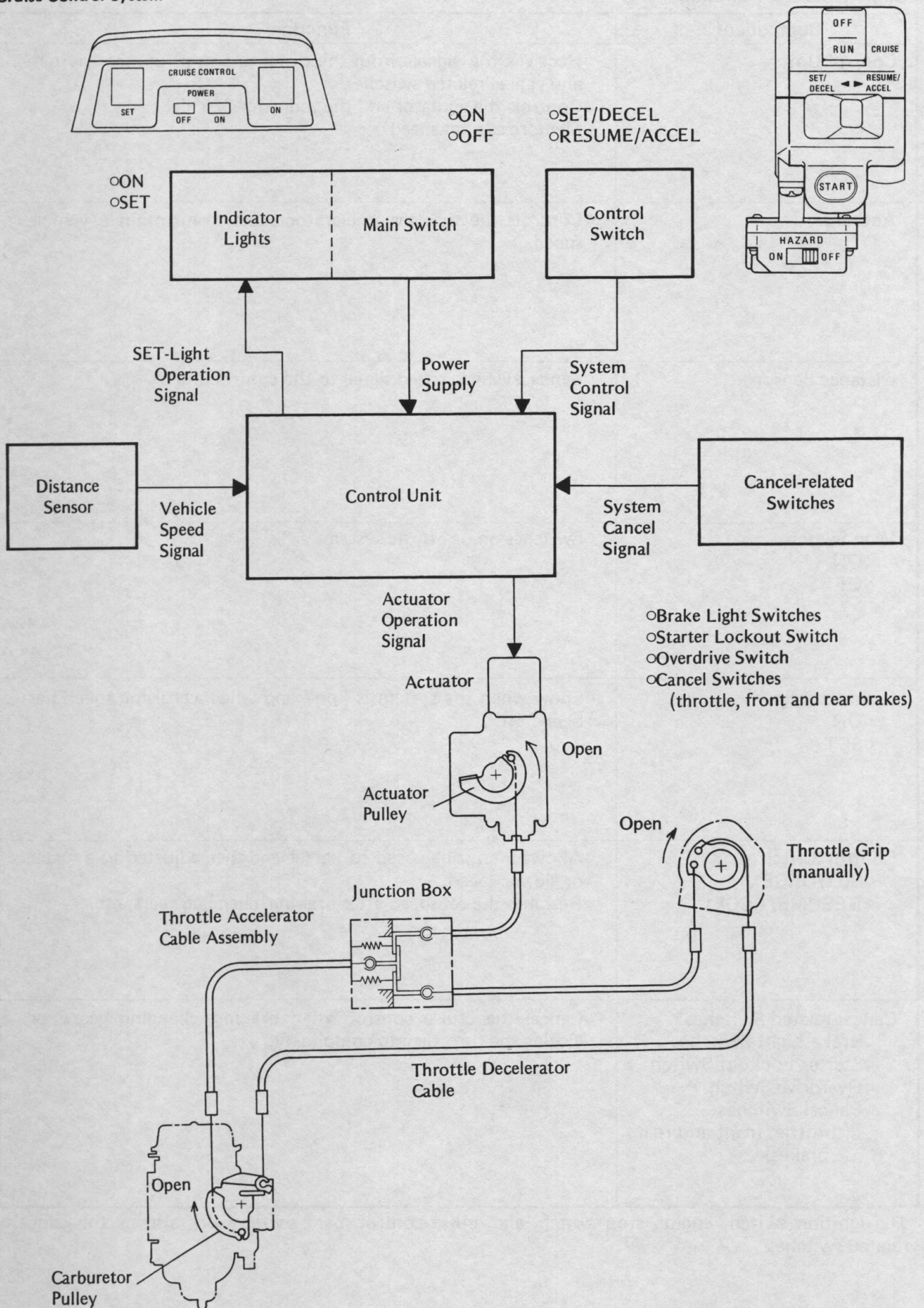
The throttle acceleration cable assembly has the junction box in the middle so that the carburetor pulley can be controlled by the actuator besides the throttle grip.



A. Control Unit

B. Actuator

Cruise Control System



## 15-10 ELECTRICAL SYSTEM

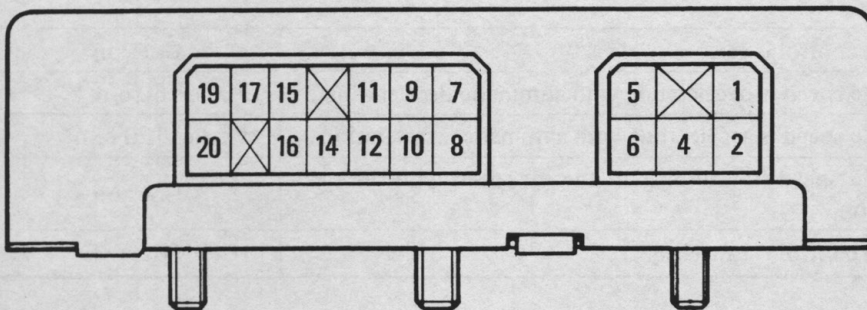
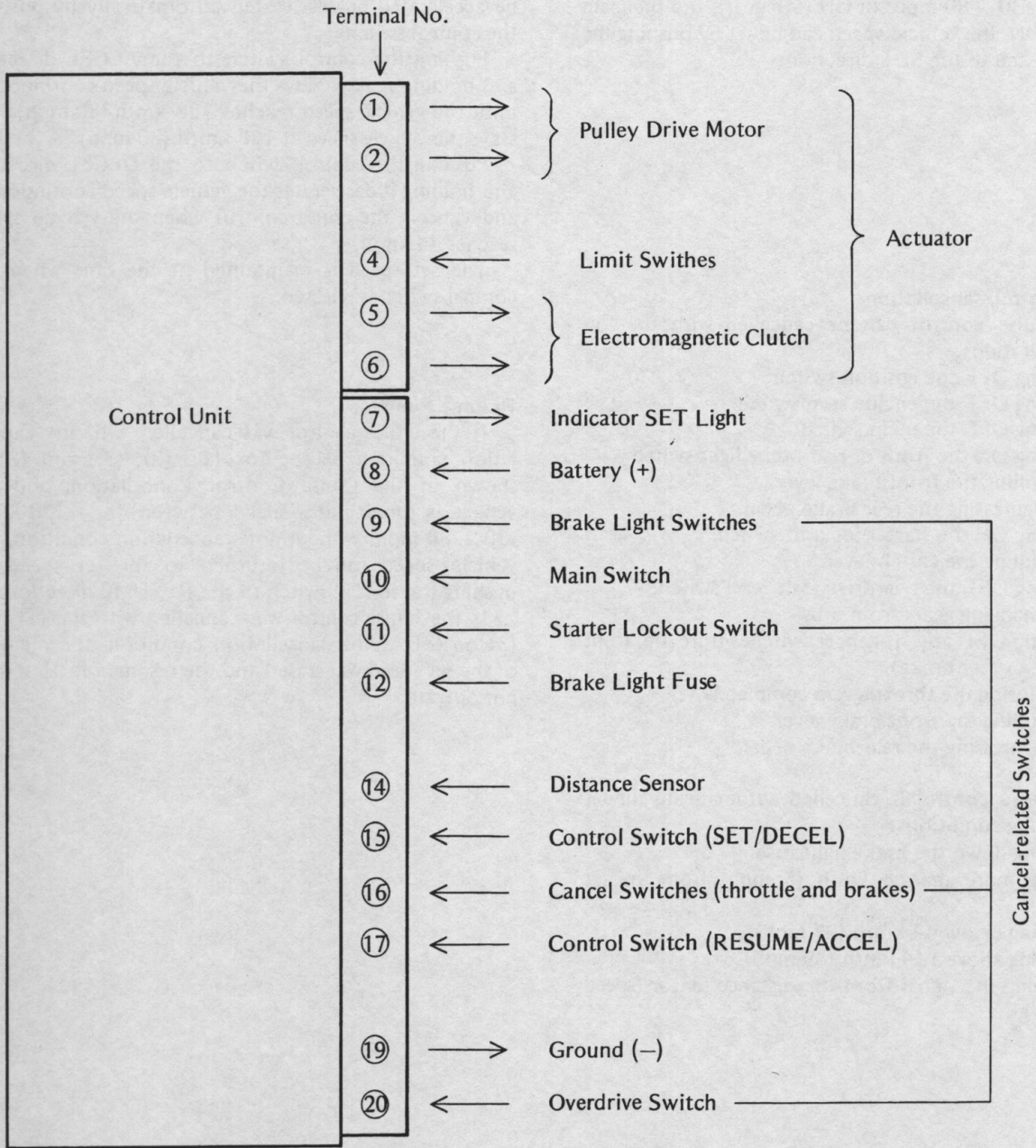
### Components and Functions

Component	Function
Control Unit	<ul style="list-style-type: none"><li>○ Receives the signals from the distance sensor, control switch, and cancel-related switches.</li><li>○ Controls the actuator and the indicator SET light.</li><li>○ Memorizes a set speed.</li></ul>
Actuator	<ul style="list-style-type: none"><li>○ Controls the throttle accelerator cable to maintain a vehicle speed.</li></ul>
Distance Sensor	<ul style="list-style-type: none"><li>○ Sends a vehicle speed signal to the control unit.</li></ul>
Main Switch <ul style="list-style-type: none"><li>○ ON</li><li>○ OFF</li></ul>	<ul style="list-style-type: none"><li>○ Switches on or off the system.</li></ul>
Indicator Lights <ul style="list-style-type: none"><li>○ ON</li><li>○ SET</li></ul>	<ul style="list-style-type: none"><li>○ Show when the system is "on" and when a cruising speed has been "set".</li></ul>
Control Switch <ul style="list-style-type: none"><li>○ SET/DECEL</li><li>○ RESUME/ACCEL</li></ul>	<ul style="list-style-type: none"><li>○ Allows a cruising speed to be set and then adjusted to a faster or slower speed.</li><li>○ Resumes the set speed after braking, changing gears, etc.</li></ul>
Cancel-related Switches* <ul style="list-style-type: none"><li>○ Brake Light Switches</li><li>○ Starter Lockout Switch</li><li>○ Overdrive Switch</li><li>○ Cancel Switches (throttle, front and rear brakes)</li></ul>	<ul style="list-style-type: none"><li>○ Cancel the cruise control when braking, changing gears, or closing the throttle grip completely.</li></ul>

\*The ignition switch, engine stop switch, and cruise control main switch work also as the cancel-related switches.



Control Unit Terminals



## 15-12 ELECTRICAL SYSTEM

### Cruise Control Setting

When the vehicle is running at a speed between 48 – 128 km/h (30 – 80 mph) in OD (5th gear), and the main switch is ON, the vehicle speed can be set by pushing the control switch to the SET direction.

### Cruise Control Cancellation

The cruise control can be cancelled with the following operations.

- (1) Turning OFF the ignition switch.
- (2) Turning OFF the engine stop switch.
- (3) Turning OFF the main switch.
- (4) Turning ON the front or rear brake light switch.
  - Pulling the front brake lever.
  - Depressing the rear brake pedal.
- (5) Turning ON the starter lockout switch.
  - Pulling the clutch lever.
- (6) Turning OFF the overdrive (5th gear) switch.
  - Changing gears from 5th.
- (7) Turning OFF any of cancel switches (throttle, front brake, or rear brake).
  - Closing the throttle grip completely.
  - Pulling the front brake lever.
  - Depressing the rear brake pedal.

The cruise control is cancelled automatically under the following conditions.

- (8) Blowing down the brake light fuse.
- (9) Losing more than 8 km/h (5 mph) from the set speed.
- (10) Running below 44 km/h (27 mph).
- (11) Running above 144 km/h (89 mph).
- (12) Stopping the signal from the distance sensor (speed sensor).

### Automatic Acceleration and Deceleration

When the cruise control is set, the vehicle speed can be accelerated or decelerated automatically by pushing the control switch.

Pushing the control switch to the ACCEL direction and holding it accelerates the vehicle speed continuously until the vehicle speed reaches 128 km/h (80 mph), and stays the vehicle speed at 128 km/h (80 mph).

Pushing the control switch to the DECEL direction and holding it decelerates the vehicle speed continuously and cancels the cruise control when the vehicle speed reaches 44 km/h.

The set speed is maintained at the time when the control switch is released.

### Resume Function

If the cruise control was cancelled with any cancellation condition except for (1), (2), (3), and (8) as shown in the Cruise Control Cancellation, and the vehicle is running at a speed between 48 – 128 km/h (30 – 80 mph) without any cancellation condition, the vehicle speed can be returned to the set speed by pushing the control switch to the RESUME direction.

If the cruise control was cancelled with the (1), (2), (3) or (8) of the cancellation condition, the memory of the set speed was erased and the resume function does not operate.

### Indicator Light Operation

Condition		Indicator Light	
Main Switch	Cruise Control Function	SET	ON
OFF		OFF	OFF
ON	Cruise control is set.	Goes on	Goes on
	Vehicle speed is decelerating with automatic deceleration.	Flashes 60 c/m*	
	Vehicle speed is accelerating with automatic acceleration.	Flashes 120 c/m*	
	Vehicle speed is returning to the set speed with resume function.	Goes on	
	Cruise control is cancelled.	Goes off	

\*c/m : cycle(s) per minute

**Troubleshooting:**

If trouble is suspected in the cruise control system, check the system by the following "Troubleshooting Guide" table. The "Troubleshooting Guide" shows

the relationship between various kinds of symptoms of cruise control system trouble and the test item by which the system should be inspected. Each test procedure is explained individually on the pages before the table.

**Troubleshooting Guide**

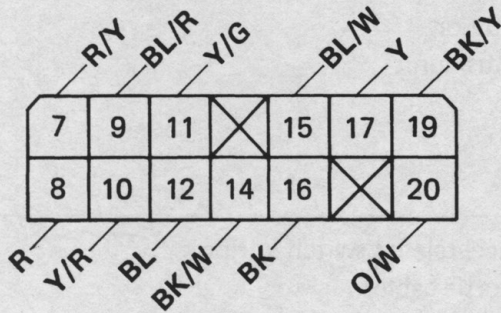
Symptoms	Test Items
Vehicle speed can not be set.	<ul style="list-style-type: none"> <li>○Control unit power supply wiring</li> <li>○Control switch wiring</li> <li>○Distance sensor wiring</li> <li>○Cancel-related switch wiring</li> <li>○Brake light fuse wiring</li> <li>○Throttle cables</li> <li>○Actuator</li> <li>○Control unit</li> </ul>
Set speed can not be cancelled.	<ul style="list-style-type: none"> <li>○Cancel-related switch wiring</li> <li>○Throttle cables</li> <li>○Actuator</li> <li>○Control unit</li> </ul>
Automatic acceleration/deceleration or resume function does not operate correctly.	<ul style="list-style-type: none"> <li>○Control switch wiring</li> <li>○Actuator</li> <li>○Control unit</li> </ul>
Vehicle speed fluctuates largely when running with cruise control.	<ul style="list-style-type: none"> <li>○Distance sensor wiring</li> <li>○Actuator</li> <li>○Control unit</li> <li>○Throttle cables</li> </ul>
Indicator SET light does not operate correctly.	<ul style="list-style-type: none"> <li>○Indicator SET light wiring</li> <li>○Control unit</li> </ul>

## 15-14 ELECTRICAL SYSTEM

### *Wiring Inspection*

- Disconnect the control unit 13P connector.
- Connect the multimeter to the terminal (wire) in the disconnected female connector (main harness side) as indicated in the table and read the meter.
- ★ 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, inspect the related switch, relay, diode assembly, or fuse referring to the appropriate sections. Refer to the Meters and Gauges section for the distance sensor.

### **Terminal Numbers and Wire Colors in Control Unit 13P Connector (viewed from unit side)**



### *Indicator SET Light Inspection*

- Disconnect the control unit 13P connector.
- Turn on the ignition switch, engine stop switch, and main switch.
- Ground the #7 terminal (R/Y) in the harness side connector with an auxiliary wire. The indicator SET light should turn on.
- ★ If the indicator SET light does not turn on, inspect the bulb and the wire(s) supplying battery power.
- ★ If the above check proves good, the control unit must be replaced.

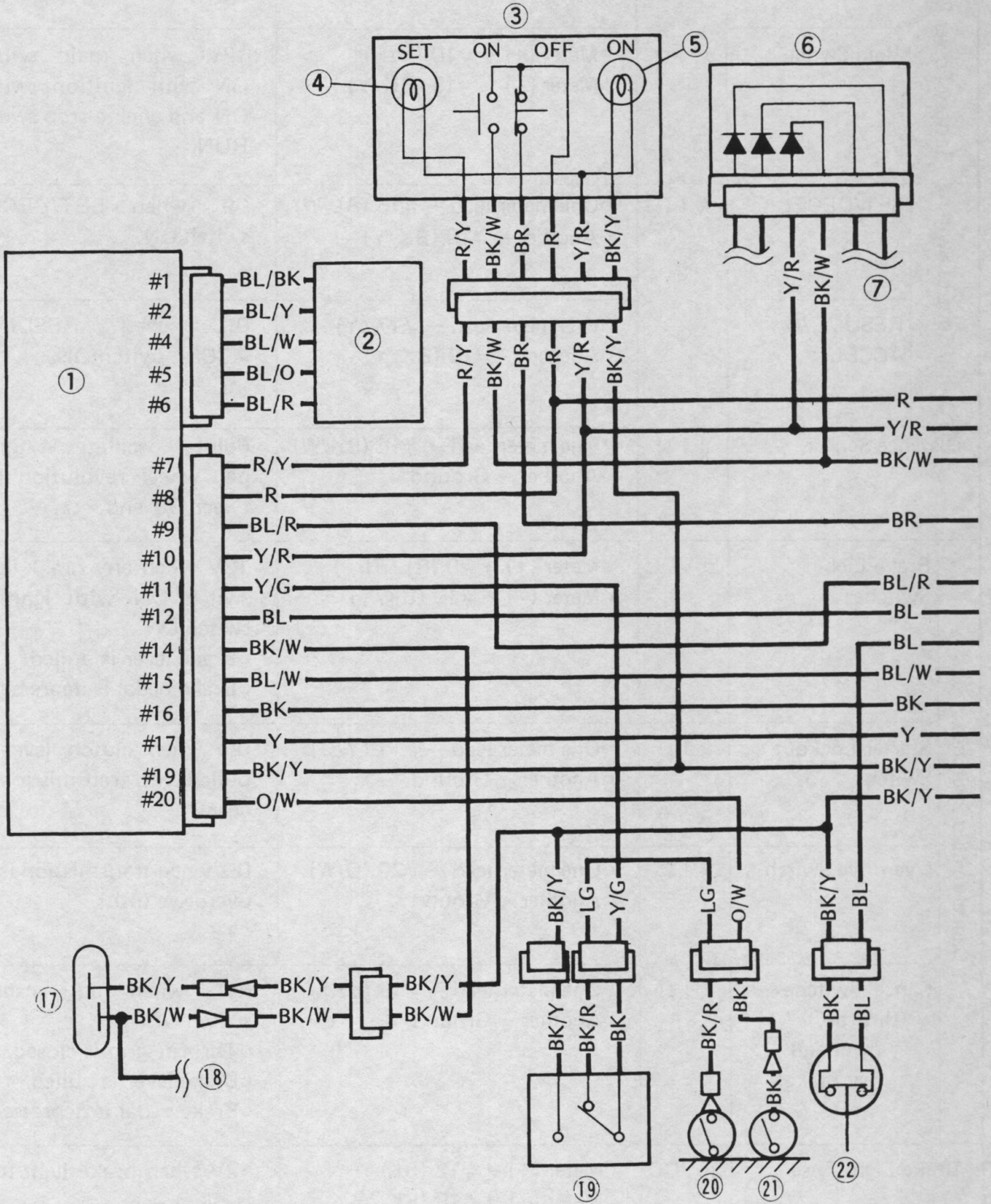
## Wiring Test

Wiring		Meter Range	Connections	Meter Reading (Criteria)
Battery Power Supply	Battery (+)	25VDC	<ul style="list-style-type: none"> <li>○Meter (+) → #8 (R)</li> <li>○Meter (-) → #19 (BK/Y)</li> </ul>	12V when ignition switch ON and engine stop switch RUN.
	Main Switch		<ul style="list-style-type: none"> <li>○Meter (+) → #10 (Y/R)</li> <li>○Meter (-) → #19 (BK/Y)</li> </ul>	12V when main switch ON with ignition switch ON and engine stop switch RUN.
Cruise Control Switch	SET/DECEL	x 1 Ω	<ul style="list-style-type: none"> <li>○One meter lead → #15 (BL/W)</li> <li>○Another → #19 (BK/Y)</li> </ul>	0Ω when SET/DECEL switch ON.
	RESUME/ACCEL		<ul style="list-style-type: none"> <li>○One meter lead → #17 (Y)</li> <li>○Another → #19 (BK/Y)</li> </ul>	0Ω when RESUME/ACCEL switch ON.
Distance Sensor		x 1 Ω	<ul style="list-style-type: none"> <li>○One meter lead → #14 (BK/W)</li> <li>○Another → Ground</li> </ul>	Pointer oscillates 4 times per wheel revolution between 0Ω and ∞Ω.
Cancel-related Switches	Brake Light Switches	25VDC	<ul style="list-style-type: none"> <li>○Meter (+) → #9 (BL/R)</li> <li>○Meter (-) → #19 (BK/Y)</li> </ul>	12V when any brake light switch ON with ignition switch ON. <ul style="list-style-type: none"> <li>○Brake lever is pulled.</li> <li>○Brake pedal is depressed.</li> </ul>
	Starter Lockout Switch	x 1 Ω	<ul style="list-style-type: none"> <li>○One meter lead → #11 (Y/G)</li> <li>○Another → Ground</li> </ul>	0Ω when clutch lever is pulled with transmission in gear.
	Overdrive Switch	x 1 Ω	<ul style="list-style-type: none"> <li>○One meter lead → #20 (O/W)</li> <li>○Another → Ground</li> </ul>	0Ω when transmission is in overdrive (5th).
	Cancel Switches (throttle, front and rear brakes)	x 1 Ω	<ul style="list-style-type: none"> <li>○One meter lead → #16 (BK)</li> <li>○Another → Ground</li> </ul>	∞Ω when any cancel switch OFF. <ul style="list-style-type: none"> <li>○Throttle grip is closed.</li> <li>○Brake lever is pulled.</li> <li>○Brake pedal is depressed.</li> </ul>
Brake Light Fuse		25VDC	<ul style="list-style-type: none"> <li>○Meter (+) → #12 (BL)</li> <li>○Meter (-) → #19 (BK/Y)</li> </ul>	12V when brake light fuse is OK.

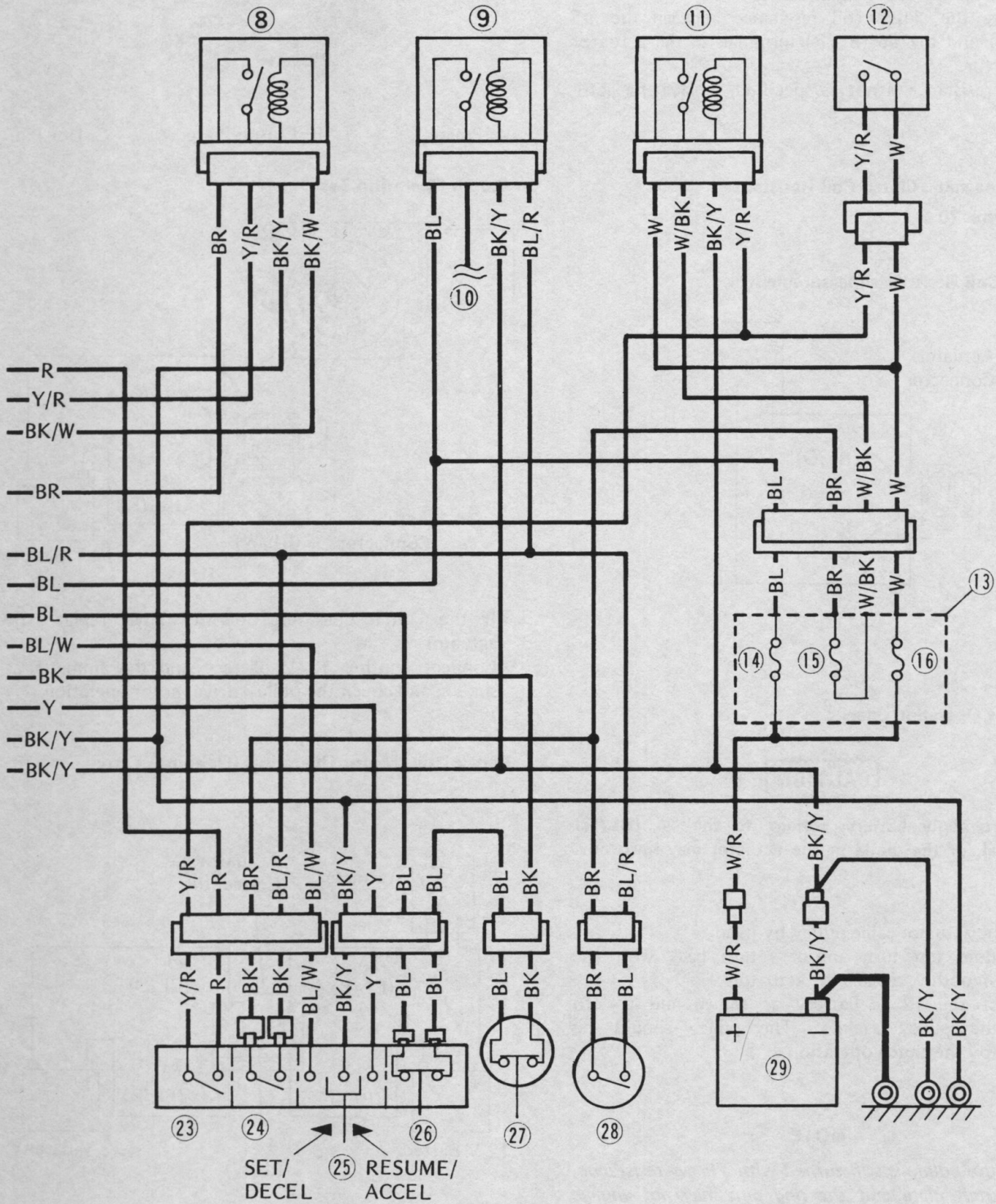
# 15-16 ELECTRICAL SYSTEM

## Cruise Control Circuit

- |                        |                         |                     |
|------------------------|-------------------------|---------------------|
| 1. Control Unit        | 6. Diode Assembly       | 11. Main Relay      |
| 2. Actuator            | 7. Headlight Circuit    | 12. Ignition Switch |
| 3. Main Switch         | 8. Cruise Circuit Relay | 13. Fuse Case       |
| 4. Indicator SET Light | 9. Brake Light Relay    | 14. 10 A Fuse       |
| 5. Indicator ON Light  | 10. To Brake Lights     | 15. 10 A Fuse       |



- |                             |                              |                                 |
|-----------------------------|------------------------------|---------------------------------|
| 16. 30 A Fuse               | 21. Overdrive Switch         | 26. Cancel Switch (Front Brake) |
| 17. Distance Sensor         | 22. Cancel Switch (Throttle) | 27. Cancel Switch (Rear Brake)  |
| 18. Meter and Gauge Circuit | 23. Engine Stop Switch       | 28. Rear Brake Light Switch     |
| 19. Starter Lockout Switch  | 24. Front Brake Light Switch | 29. 12 V Battery                |
| 20. Neutral Switch          | 25. Control Switch           |                                 |



## 15-18 ELECTRICAL SYSTEM

### Actuator Inspection

#### CAUTION

- Disconnect the actuator connector from the control unit whenever the actuator is inspected, or the control unit may be damaged.

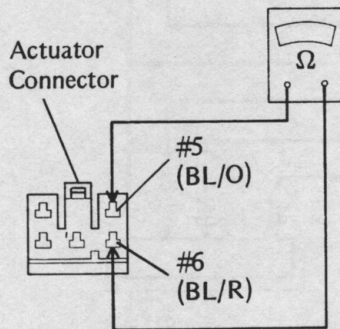
#### Electromagnetic Clutch Coil Resistance:

- Measure the clutch coil resistance between the #5 (BL/O) and the #6 (BL/R) terminals in the actuator connector.
- ★ If the resistance is not as specified, replace the actuator.

#### Electromagnetic Clutch Coil Resistance

Approx. 20 Ω

#### Clutch Coil Resistance Measurement



#### Actuator Operation Check:

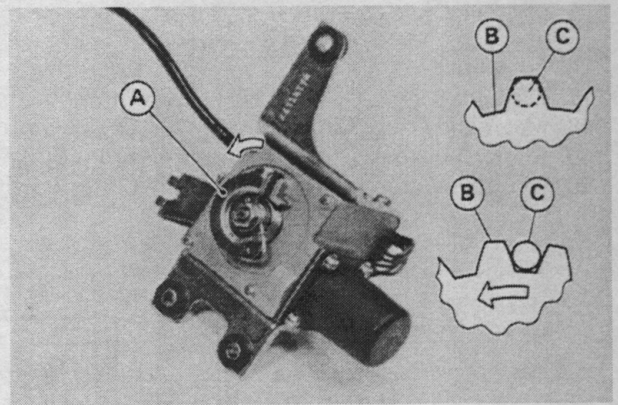
#### CAUTION

- Do not apply battery voltage to the #4 (BL/W) terminal, or the diode in the actuator may burn out.

- Turn the actuator cable pulley by hand.
- ★ If it does not turn and/or return back with the spring smoothly, replace the actuator.
- Connect the 12 V battery as shown and try to turn the pulley again. The pulley should be locked by the clutch operation.

#### NOTE

- When the pulley is still turned with a heavy resistance, the clutch plate and the dog pins may not engage completely. Turn the pulley counterclockwise until the clutch plate engages with the dog pins (until the pulley is locked).

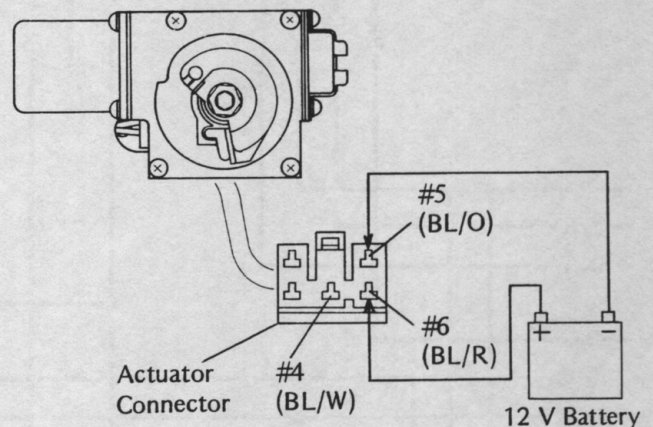


A. Pulley

B. Clutch Plate

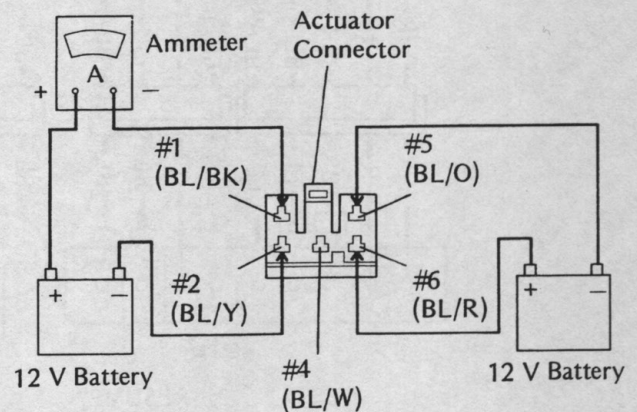
C. Dog Pin

#### Clutch Operation Test



- ★ If the clutch does not operate above, replace the actuator.
- Connect another 12 V battery and the ammeter as shown, and check the pulley drive motor operation.

#### Pulley Drive Motor Operation (Opening) Test





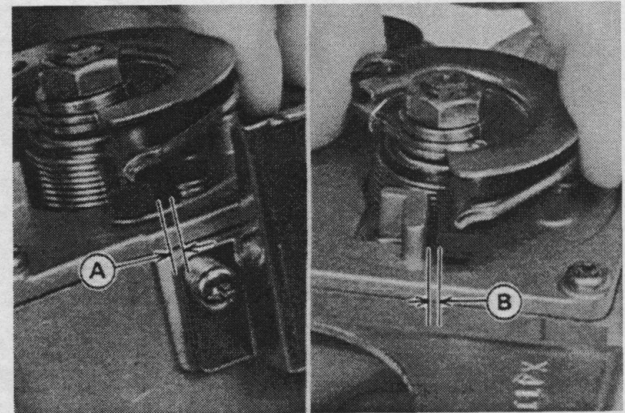
Pulley Drive Motor Operation (Opening)	
Correct	Incorrect
<ul style="list-style-type: none"> <li>○Pulley turns counter-clockwise automatically and ammeter shows 0.5A or less, then pulley stops at full opening position and ammeter shows 0A at the same time.</li> </ul>	<ul style="list-style-type: none"> <li>○Pulley turns counter-clockwise automatically but ammeter shows 1A or more.</li> <li>○Pulley does not turn and ammeter shows 1A or more.</li> <li>○Pulley does not turn and ammeter shows 0A.</li> </ul>

Pulley Drive Motor Operation (Closing)	
Correct	Incorrect
<ul style="list-style-type: none"> <li>○Pulley turns clockwise automatically and ammeter shows 0.5A or less, then pulley stops at full closing position and ammeter shows 0A at the same time.</li> </ul>	<ul style="list-style-type: none"> <li>○Pulley turns clockwise automatically but ammeter shows 1A or more.</li> <li>○Pulley does not turn and ammeter shows 1A or more.</li> <li>○Pulley does not turn and ammeter shows 0A.</li> </ul>

- ★If the pulley drive motor does not operate correctly, replace the actuator.
- While the pulley turns automatically, disconnect the wire from the #6 terminal (BL/R) to stop supplying battery power to the clutch, and check the clutch operation.

- ★If the pulley drive motor does not operate correctly, replace the actuator.

Clutch Operation	
Correct	Incorrect
<ul style="list-style-type: none"> <li>○Pulley returns back to original position.</li> </ul>	<ul style="list-style-type: none"> <li>○Pulley does not return back to original position.</li> </ul>



A. Full Opening Position      B. Full Closing Position

- ★If the clutch does not operate correctly, replace the actuator.
- Connect the battery leads, connecting the #1 (BL/BK) and #2 (BL/Y) terminals reversely, and check the pulley drive motor operation.

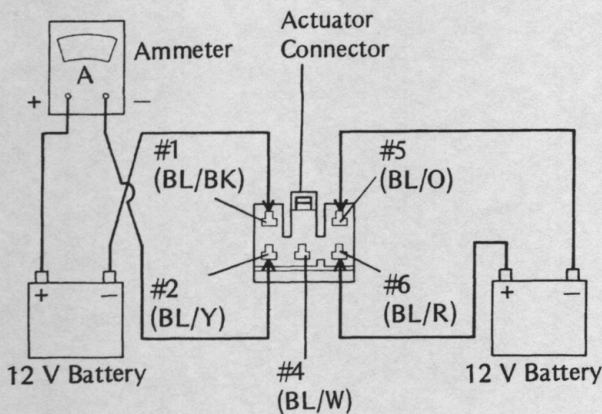
**Pulley Drive Motor Operation (Closing) Test**

**Control Unit Inspection**

- ★If all wirings and components other than the control unit check out good, the control unit is trouble.

**Throttle Cable Inspection**

- Refer to Fuel System chapter for the throttle cables.

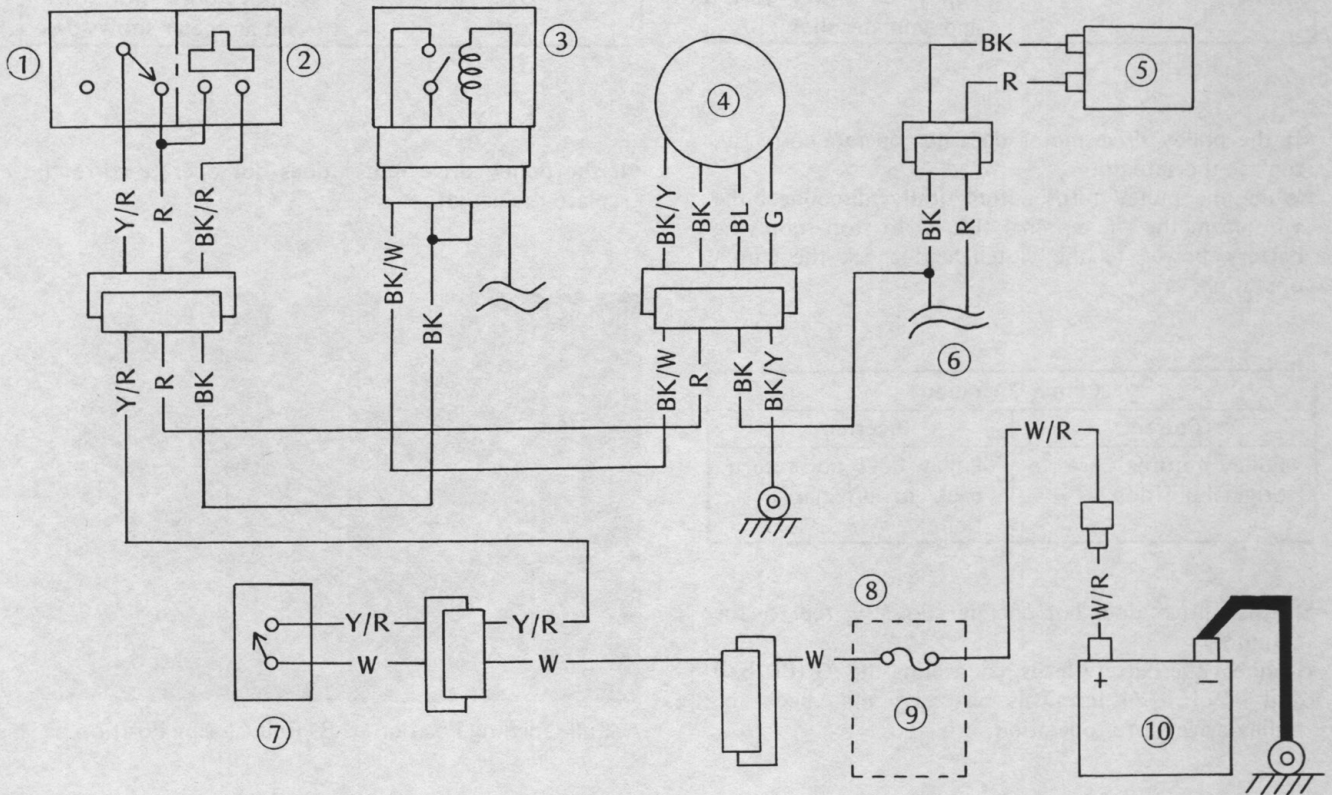


## 15-20 ELECTRICAL SYSTEM

### Fuel Pump

Refer to the base manual, noting the following.

#### Fuel Pump Circuit (ZG1200-B2 ~ )



1. Engine Stop Switch
2. Starter Button
3. Starter Circuit Relay
4. Fuel Pump
5. Ignition Coil (#1 & 4)
6. Ignition Circuit
7. Ignition Switch
8. Fuse Case
9. 30A Fuse
10. Battery

# Appendix

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Carburetor .....	*
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Spark Plug Inspection .....	*
Troubleshooting Guide .....	16-2
General Lubrication .....	*
Lubrication .....	*
Nut, Bolt, and Fastener Tightness .....	*
Tightness Inspection .....	*
Unit Conversion Table .....	*

\* Refer to Base Manual

## 16-2 APPENDIX

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### Troubleshooting Guide

---

Refer to the base manual, adding the following.

#### **Cruise Control Faulty:**

##### **Vehicle speed can't be set:**

- Engine stop switch trouble
- Ignition switch trouble
- Diode trouble
- Relay trouble
- Main-switch trouble
- Control switch trouble
- Distance sensor trouble
- Brake light switch maladjustment or trouble
- Starter lockout switch trouble
- Overdrive switch trouble
- Cancel switch maladjustment or trouble
- Throttle cable maladjustment or trouble
- Actuator trouble
- Control unit trouble
- Wiring open or shorted
- Fuse blown

##### **Set speed can't be cancelled:**

- Brake light switch trouble
- Starter lockout switch trouble
- Overdrive switch trouble
- Cancel switch trouble
- Throttle cable maladjustment or trouble
- Actuator trouble
- Control unit trouble
- Wiring open or shorted

##### **Automatic acceleration/deceleration or resume**

##### **function doesn't operate correctly:**

- Control switch trouble
- Actuator trouble
- Control unit trouble
- Wiring open or shorted

##### **Vehicle speed fluctuates largely when running with**

##### **cruise control:**

- Distance sensor trouble
- Throttle cable maladjustment or trouble
- Actuator trouble
- Control unit trouble

##### **Indicator SET light doesn't operate correctly:**

- Wiring open or shorted
- Control unit trouble

# Supplement – 1999 ~ 2003 Models

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## 17-2 SUPPLEMENT – 1999 ~ 2003 MODELS

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### Foreword

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#### How to Use this Manual

This “ Supplement – 1999 ~ 2003 Models” designed to be used in conjunction with the front part of this manual (up to 16-2) and/or Base Manual ZG1200A Service Manual – Part No. 99924-1064 -01. The specifications and maintenance procedures described in this chapter are only those that are unique to the ZG1200-B13 ~ B17 models.

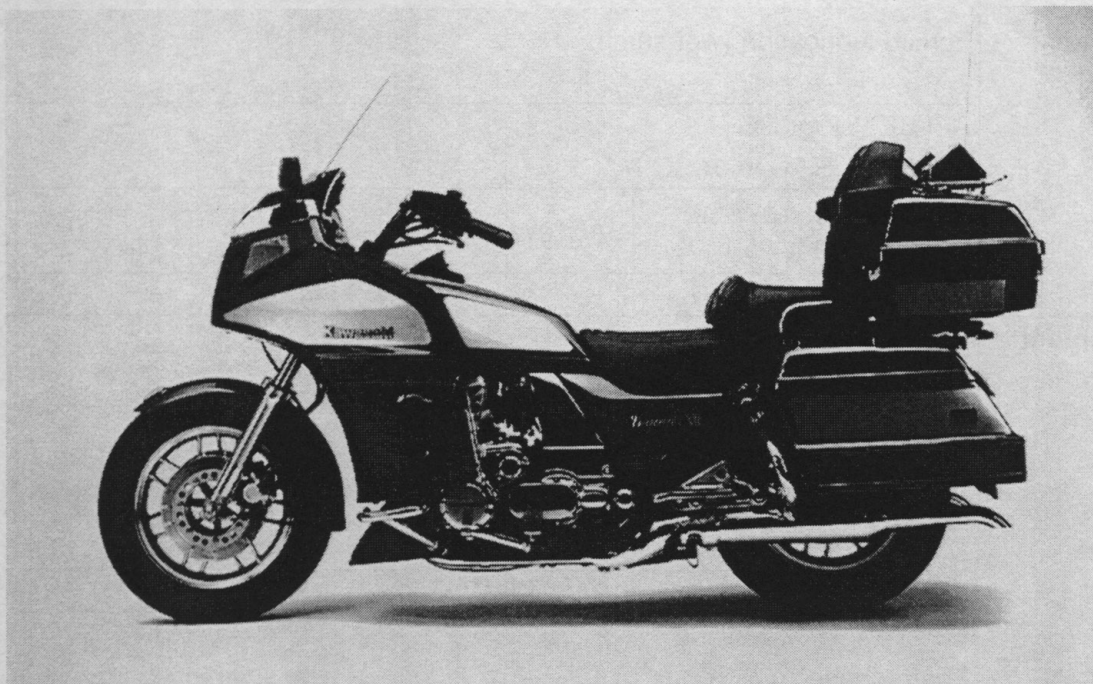
Complete and proper servicing of the ZG1200-B13 ~ B17 models therefore requires mechanics to read both this chapter and the front of this manual.

General Information

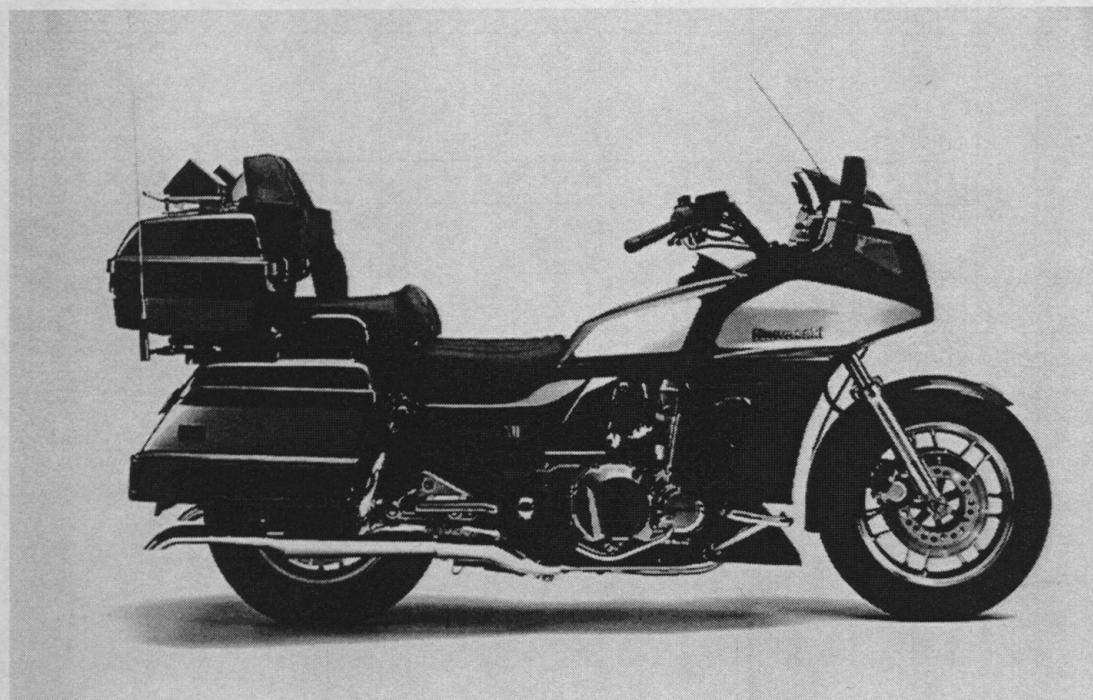
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Model Identification

ZG1200-B14 Left Side View



ZG1200-B14 Right Side View



# 17-4 SUPPLEMENT – 1999 ~ 2003 MODELS

## General Information

### General Specifications

Items	ZG1200-B13, B14	ZG1200-B15, B16	ZG1200-B17
<b>Engine:</b>			
Lubrication system	Forced lubrication (wet sump)		
Engine oil:			
Type	API SE, SF or SG API SH or SJ with JASO MA		
Viscosity	SAE10W-40, 10W-50, 20W-40 or 20W-50	SAE10W-40	
Capacity	4.0 L		
<b>Electrical Equipment:</b>			
Battery	12 V 20 Ah		
Headlight:			
Type	Semi-sealed beam		
Bulb	12 V 60/55 W (quartz-halogen)		
Tail/brake light:			
Bulb	12 V 27/8 W × 2	12 V 21/5 W × 2	
Alternator:			
Type	Three-phase AC		
Rated output	35 A @7 500 r/min (rpm), 13.5 V		
Voltage regular:			
Type	Short-circuit		
<b>Frame:</b>			
Front tire:			
Type	Tubeless		
Size	M130/90–16 67H	130/90–16 M/C 67H	
Rear tire:			
Type	Tubeless		
Size	M150/90–15 M/C 74H		

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



Engine Lubrication System

Specifications

Item	Standard
<b>Engine Oil:</b>	
Type	API SE, SF or SG API SH or SJ with JASO MA
Viscosity	SAE 10W-40, 10W-50, 20W-40 or 20W-50 (ZG1200-B14, B15) SAE 10W-40 (ZG1200-B16 on and after)
Capacity	3.2 L (when filter is not removed) 3.5 L (when filter is removed) 4.0 L (when engine is completely dry)
Oil level	Between upper and lower levels
<b>Oil Pump and Relief Valve:</b>	
Oil Pressure @4 000 r/min (rpm), Oil Temp. 80°C (176°F)	About 370 kPa (3.8 kg/cm <sup>2</sup> , 54 psi)

Engine Oil and Oil Filter

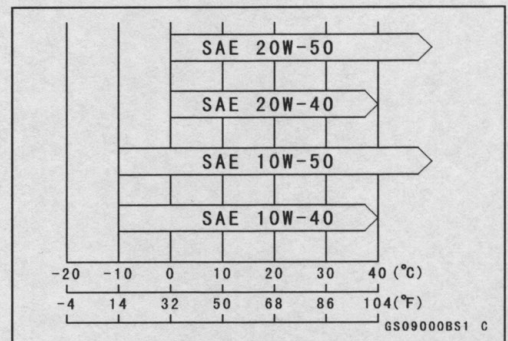
Engine Oil Change

Recommended Engine Oil

- Type: API SE, SF or SG  
API SH or SH with JASO MA
- Viscosity: SAE10W-40
- Capacity: 3.2 L (when filter is no removed)  
3.5 L (when filter is removed)  
4.0 L (when engine is completely dry)

**NOTE**

○Although 10W-40 engine oil is the recommended oil for most conditions, the oil viscosity may need to be changed to accommodate atmospheric conditions in your riding area.



# 17-6 SUPPLEMENT – 1999 ~ 2003 MODELS

## Wheels/Tires

### Specifications

Item	Standard				
<b>Tires:</b> Standard tire: <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">Front</td> <td>130/90-16 67H 130/90-16 M/C 67H (ZG1200-B17) DUNLOP F21 Tubeless (ZG1200-B14-B15) DUNLOP D404F W Tubeless (ZG1200-B16-B17)</td> </tr> <tr> <td>Rear</td> <td>M150/90-15M/C 74H 150/90B15 MC 74H (ZG1200-B17) DUNLOP K425A Tubeless (ZG1200-B14-B15) DUNLOP D404G Tubeless (ZG1200-B16-B17)</td> </tr> </table>	Front	130/90-16 67H 130/90-16 M/C 67H (ZG1200-B17) DUNLOP F21 Tubeless (ZG1200-B14-B15) DUNLOP D404F W Tubeless (ZG1200-B16-B17)	Rear	M150/90-15M/C 74H 150/90B15 MC 74H (ZG1200-B17) DUNLOP K425A Tubeless (ZG1200-B14-B15) DUNLOP D404G Tubeless (ZG1200-B16-B17)	
Front	130/90-16 67H 130/90-16 M/C 67H (ZG1200-B17) DUNLOP F21 Tubeless (ZG1200-B14-B15) DUNLOP D404F W Tubeless (ZG1200-B16-B17)				
Rear	M150/90-15M/C 74H 150/90B15 MC 74H (ZG1200-B17) DUNLOP K425A Tubeless (ZG1200-B14-B15) DUNLOP D404G Tubeless (ZG1200-B16-B17)				
Tire air pressure:					
Front	225 kPa (2.25 kgf/cm <sup>2</sup> , 32 psi)				
Rear	Up to 120 kg (265 lb) load	225 kPa (2.25 kgf/cm <sup>2</sup> , 32 psi)			
	120-202 kg (265-445 lb) load	280 kPa (2.8 kgf/cm <sup>2</sup> , 40 psi)			

**Wheels/Tires**

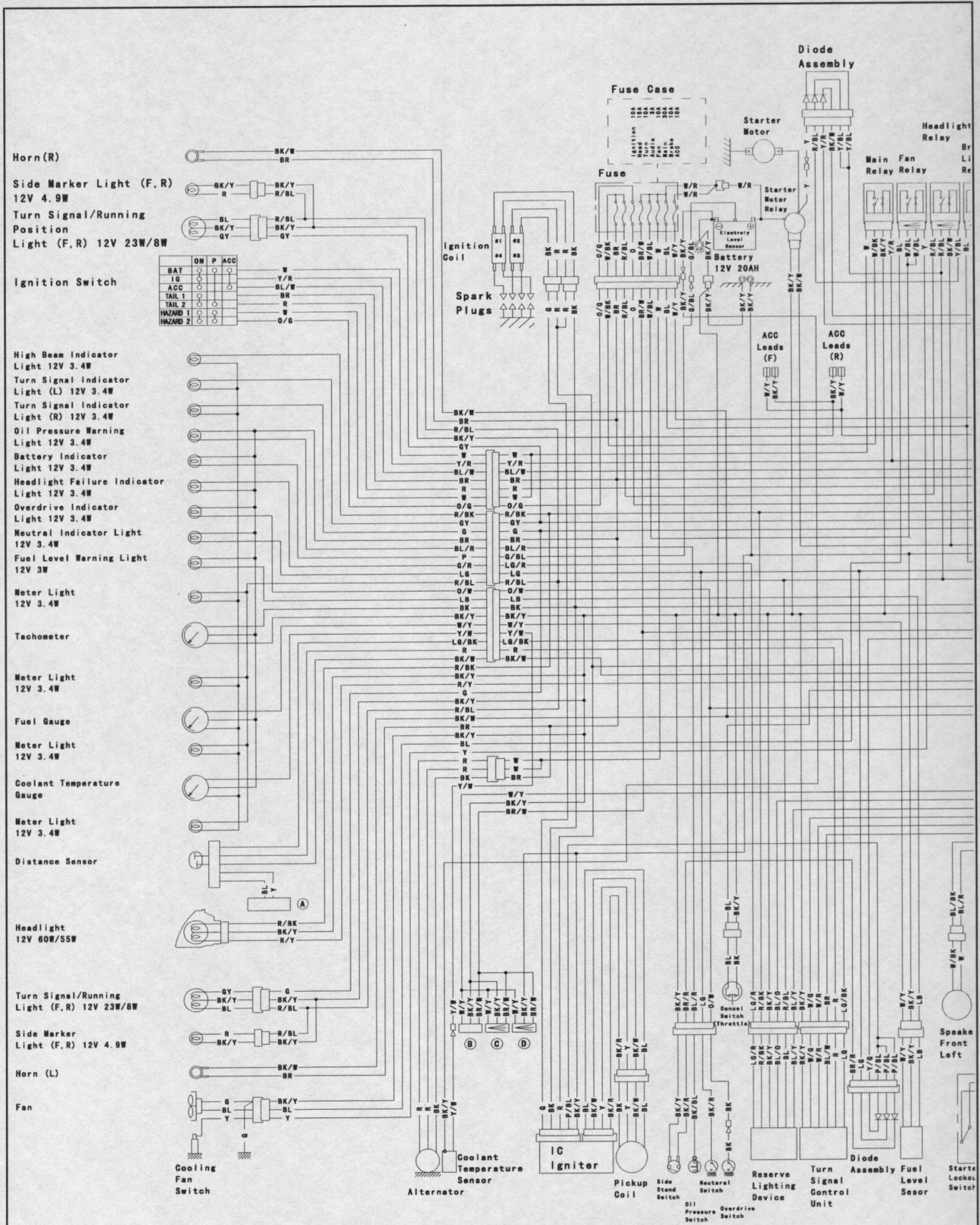
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Dummy Page

# 17-8 SUPPLEMENT – 1999 ~ 2003 MODELS

## Electrical System

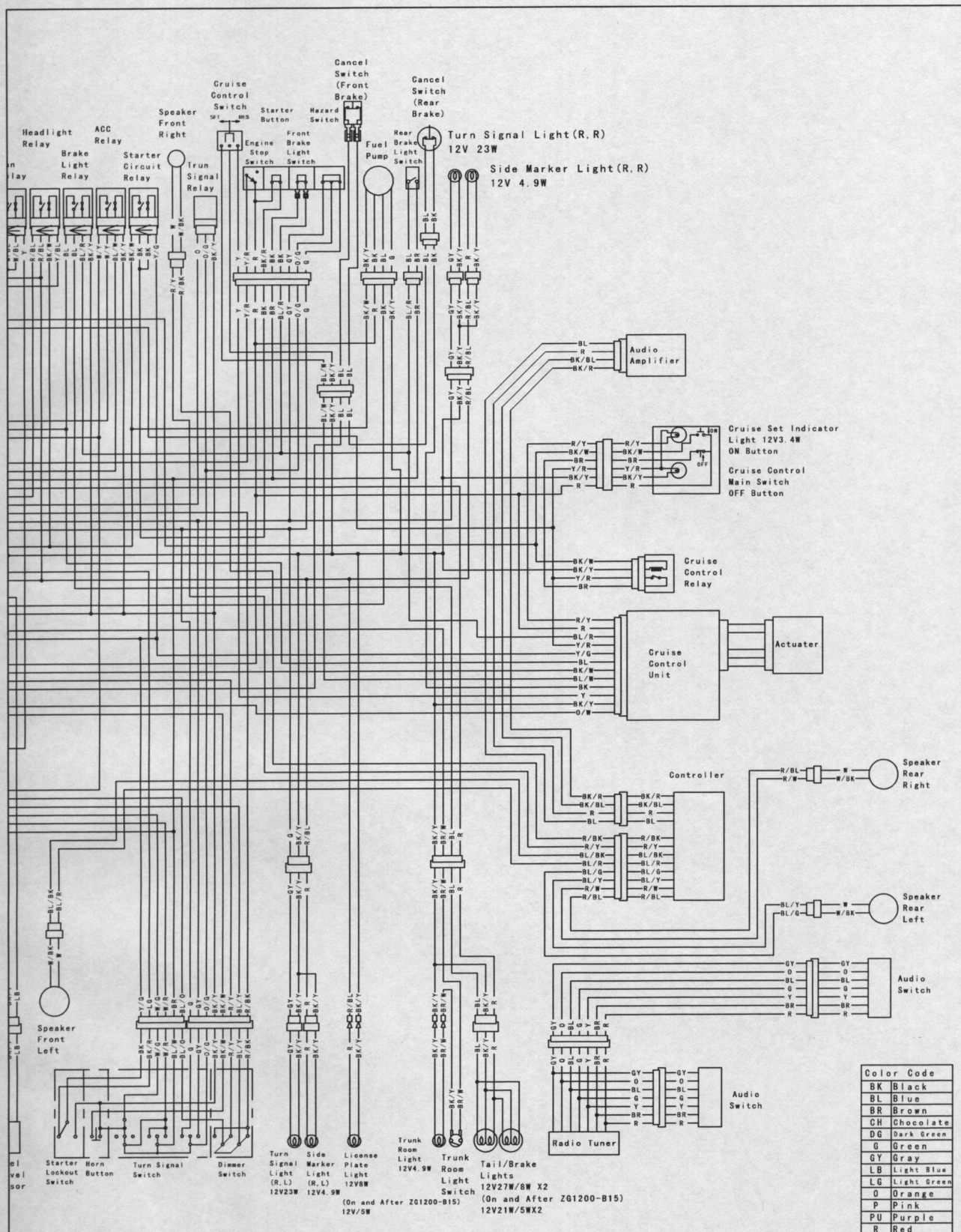
### ZG1200-B13 ~ B17 Wiring Diagram



LEFT HANDLEBAR SWITCH CONNECTIONS									
Starter Lockout Switch	Horn Button	Turn Signal Switch				Dimmer Switch			
Released	Push on	R	O	O	BL/W/R/BK/Y/W/G	BL/YBL/GR/Y/R/BK			
Pushed in		L							

RIGHT HANDLEBAR SWITCH CONNECTIONS			
Cruise Control Switch	Engine Stop Switch	Starter Button	
SET	OFF	Push on	R BK
RESERVE	RUN		

Electrical System



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
PU	Purple
R	Red
W	White
Y	Yellow

HANDLEBAR SWITCH CONNECTIONS						
Starter Button	Front Brake Light Switch	Hazard Switch	Cancel Switch (Front Brake)	Cancel Switch (Rear Brake)	Turn Signal Light (R, L)	Trunk Room Light Switch
Push on	Released	OFF	Released	Released	12V23W	12V4.9W
Push on	Pulled in	ON	Pulled in			

CRUISE CONTROL MAIN-SWITCH CONNECTIONS			
ON Button	OFF Button	Trunk Room Light	Tail/Brake Lights
Push on	Push on	12V4.9W	12V21W/5W X2

IGNITION SWITCH CONNECTIONS							
OFF, LOCK	ACC	ON	P (Park)	W	Y	R/BL	W/BK
OFF, LOCK	ACC	ON	P (Park)				

(98051-17888)

## MODEL APPLICATION

Year	Model	Beginning Frame No.
1987	ZG1200-B1	JKAZG9B1□HA000001, or JKAZG9B1□HB500001
1988	ZG1200-B2	JKAZG9B1□JA000901, or JKAZG9B1□JB500501
1989	ZG1200-B3	JKAZG9B1□KA001201, or JKAZG9B1□KB501701
1990	ZG1200-B1	JKAZG9B1□LA001401, or JKAZG9B1□LB502501
1991	ZG1200-B5	JKAZG9B1□MB503301
1992	ZG1200-B6	JKAZG9B1□NB504201
1993	ZG1200-B7	JKAZG9B1□PB504901
1994	ZG1200-B8	JKAZG9B1□RB505751
1995	ZG1200-B9	JKAZG9B1□SB506651
1996	ZG1200-B10	JKAZG9B1□TB507601
1997	ZG1200-B11	JKAZG9B1□VB508501
1998	ZG1200-B12	JKAZG9B1□WB509101
1999	ZG1200-B13	JKAZG9B1□XB509901
2000	ZG1200-B14	JKAZG9B1□WB509101
2001	ZG1200-B15	JKAZG9B1□1B511901
2002	ZG1200-B16	JKAZG9B1□2B513201
2003	ZG1200-B17	JKAZG9B1□3B514201

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



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

**Part No.99924-1089-61**



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