'92
SERVICE
GUIDE

FJ1200
FJ1200A

YAMAHA

90894-90300

FOREWORD

This service guide provides new and important service information about the FJ1200 / FJ1200A and is intended for use in the new model training school.
For detailed procedures, you can refer to the respective service manual. This guide describes predelivery, gives service notes and serves as a guide for initial inspection steps. It is our sincere hope and belief that this guide will help enhance your technical knowledge and service ability.

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YAMAHA MOTOR CO., LTD.

FJ1200/1200A
SERVICE GUIDE
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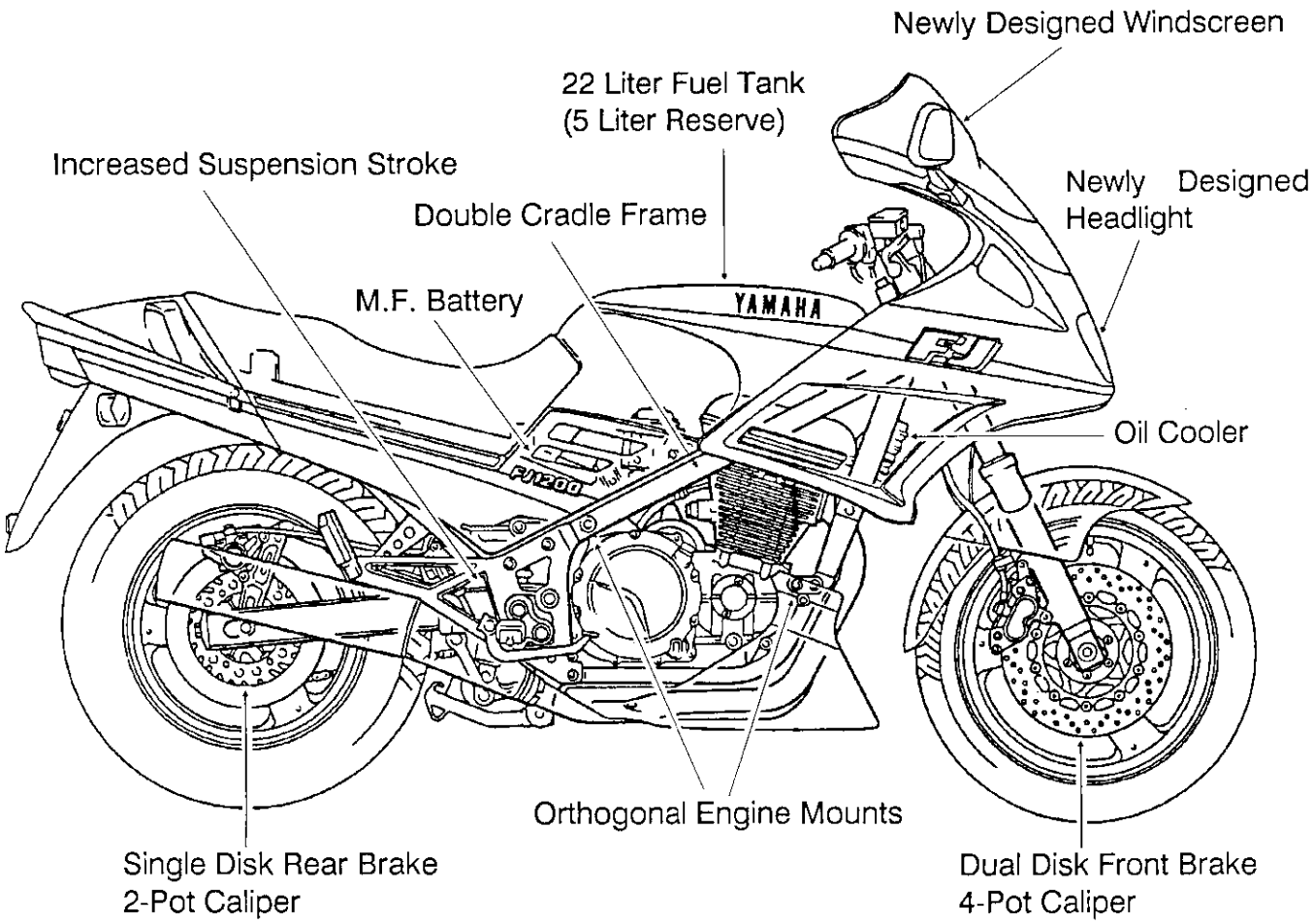
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OUTLINE OF FJ1200 / FJ1200A

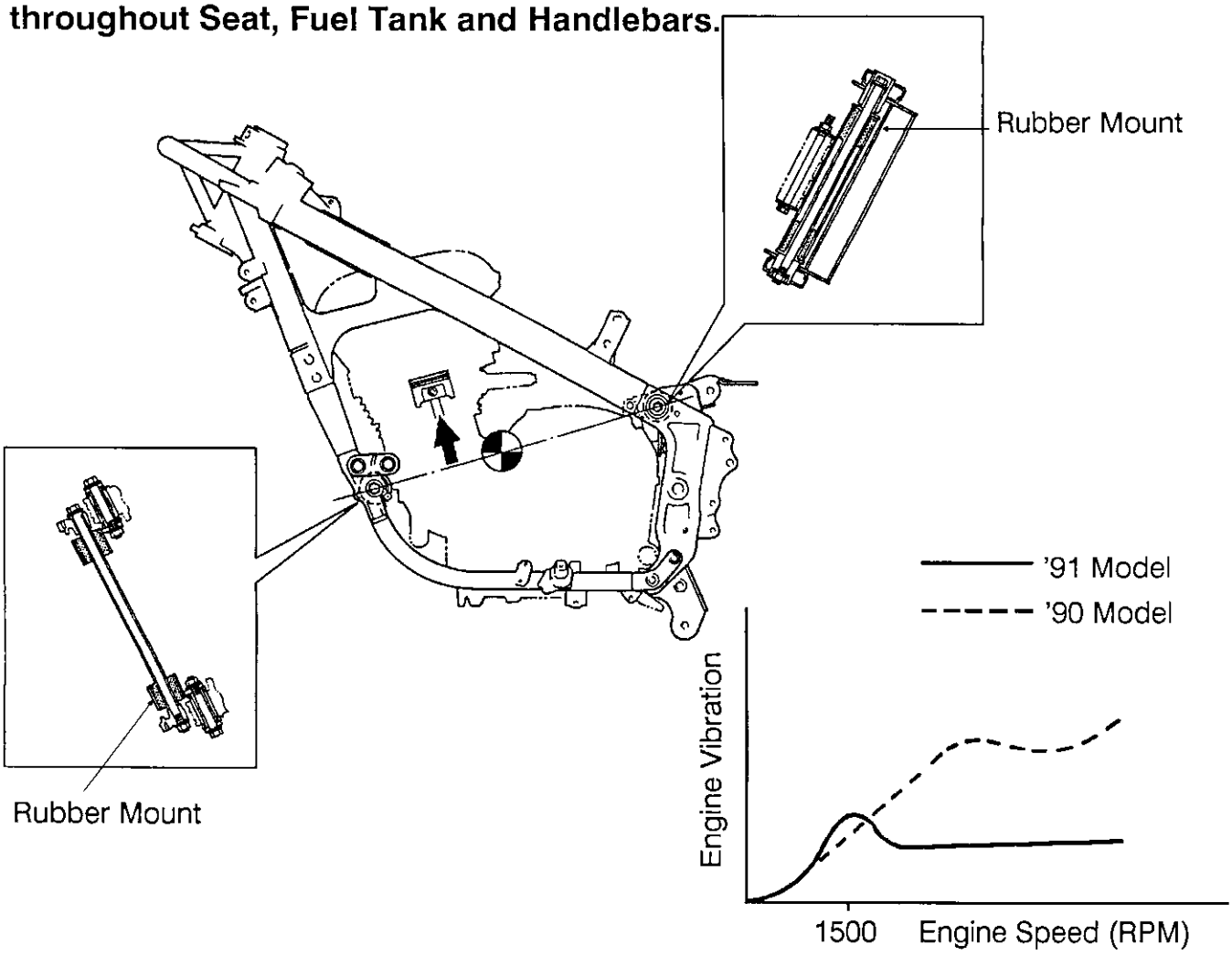


Specifications
Air-Cooled, 4-Stroke, DOHC,
Forward Inclined, Parallel 4-Cylinder
Displacement: 1188cc
Bore x Stroke: 77.0 x 63.8mm
Compression Ratio: 9.7:1
Carburetor: MIKUNI BS36/4
Transmission: 5-Speed
Ignition: T.C.I. Digital

CHASSIS

FRAME

Orthogonal Engine Mount is employed to reduce vibration throughout Seat, Fuel Tank and Handlebars.



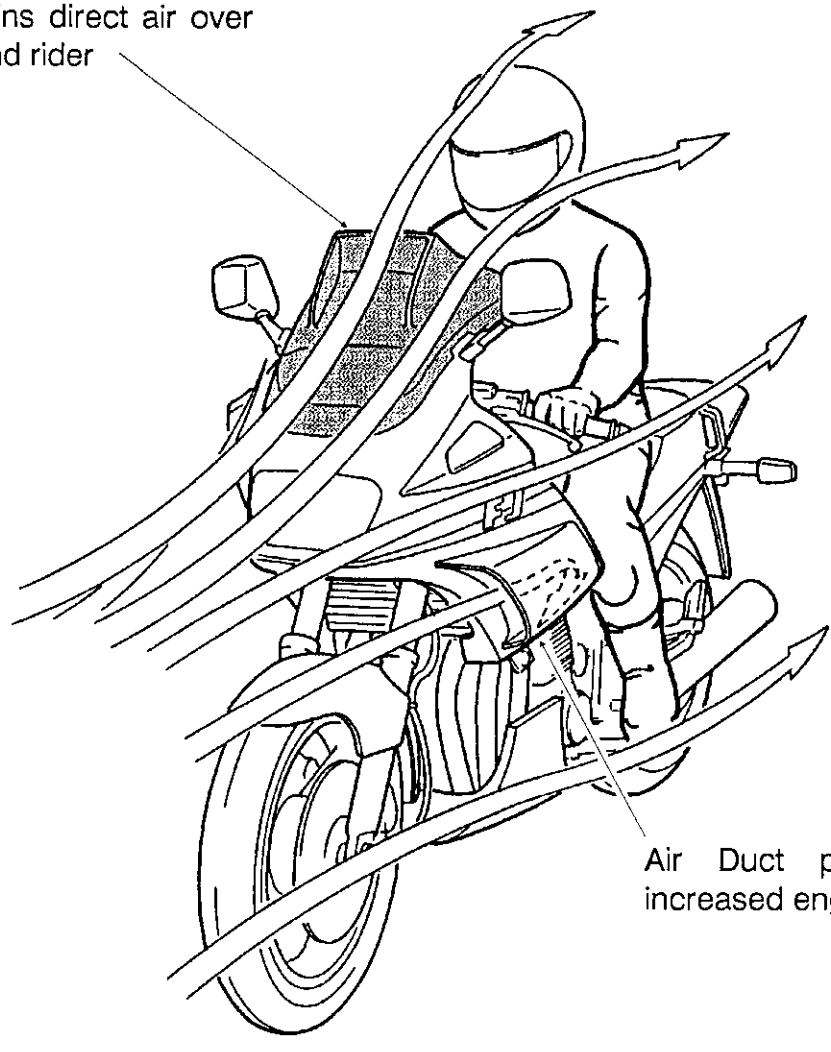
The upward and downward movement of the piston creates most of engine vibration. Revolution and balance of weight distribution also cause vibration but in different directions than that of the piston.

THEORY OF OPERATION

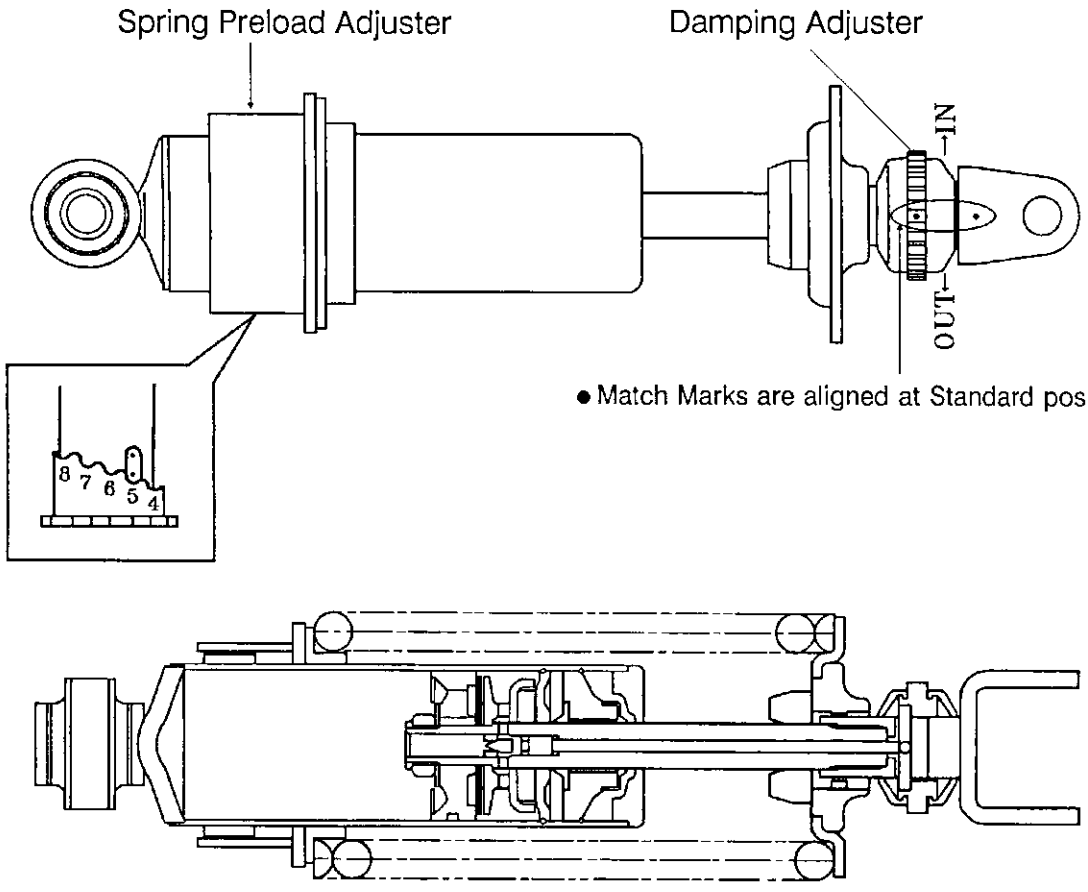
An axis is established that passes through the center of gravity of the engine at a prescribed angle to the cylinder, and engine mounts are positioned at both ends of this axis. When all the vibrations produced in a number of different directions are converted into a rolling vibration, a vibration system with only one resonance is created. The resonant RPM can be determined by the stiffness and widths of the mounts. Therefore the resonant RPM is kept at the usable engine operating speed by employing rubber mounts with properly preset stiffness, so that vibrations outside this resonance level can be absorbed.

WINDSCREEN

Newly designed windscreen provides rider with better wind protection.



REAR SHOCK ABSORBER



● Match Marks are aligned at Standard position.

Spring Preload Adjustment

Standard Position	5
Softest Position	1
Stiffest Position	9

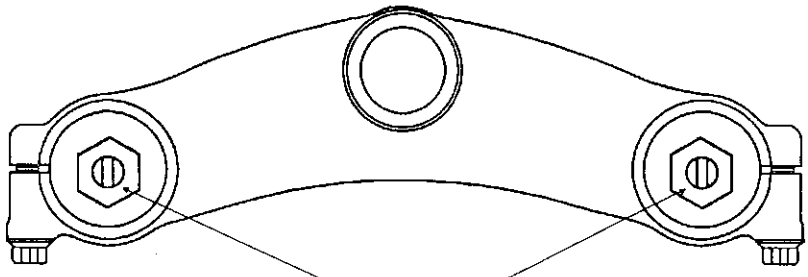
● Special Tool included in the Owner's Tool Kit is used to adjust spring preload.

Damping Adjustment

Maximum	3 clicks out from fully turned-in position
Standard	7 clicks out
Minimum	12 clicks out

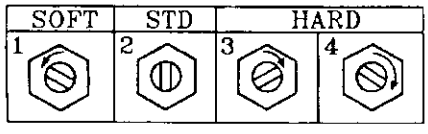
SPECIFICATIONS
Shock Absorber Travel: 48mm
Spring Free Length: 181mm
Fitting Length: 164mm
Spring Rate: 13.5Kg/mm

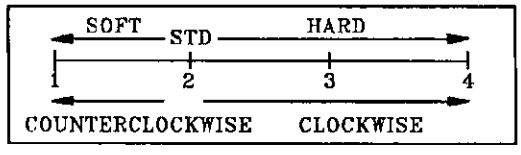
FRONT FORK
Spring Preload Adjustment



A Flat-Head screwdriver is used to make adjustment.

1. Push the adjuster downward with the screwdriver until it stops.
2. The adjuster can then be turned to desired setting



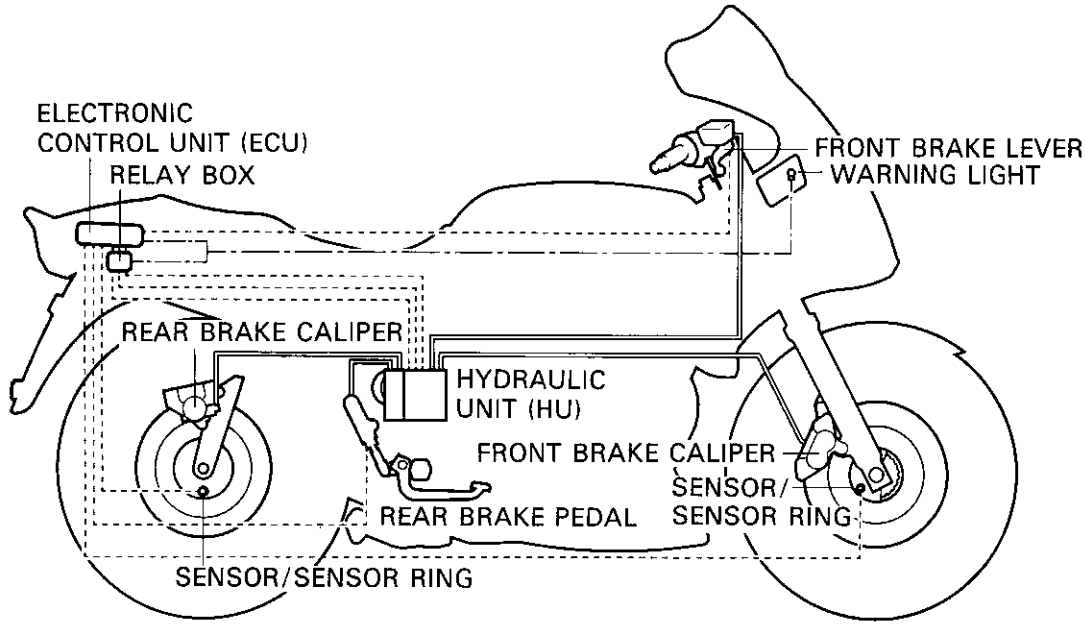


NOTE:

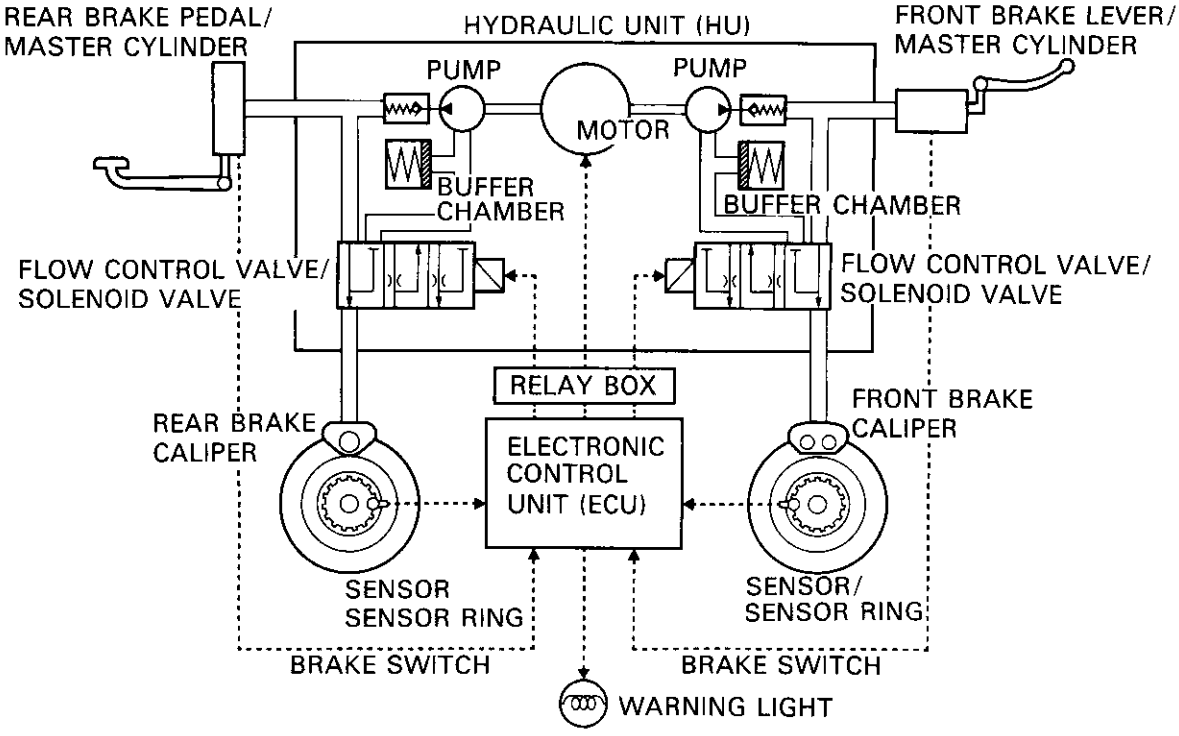
- Never turn adjuster directly from 1 to 4 or 4 to 1. Always turn in progressive steps.
- Always adjust each fork preload to the same setting. Different settings can cause loss of stability and poor handling.

ABS (ANTI-LOCK BRAKING SYSTEM) FJ1200A (Only)

OUTLINE



CONSTRUCTION

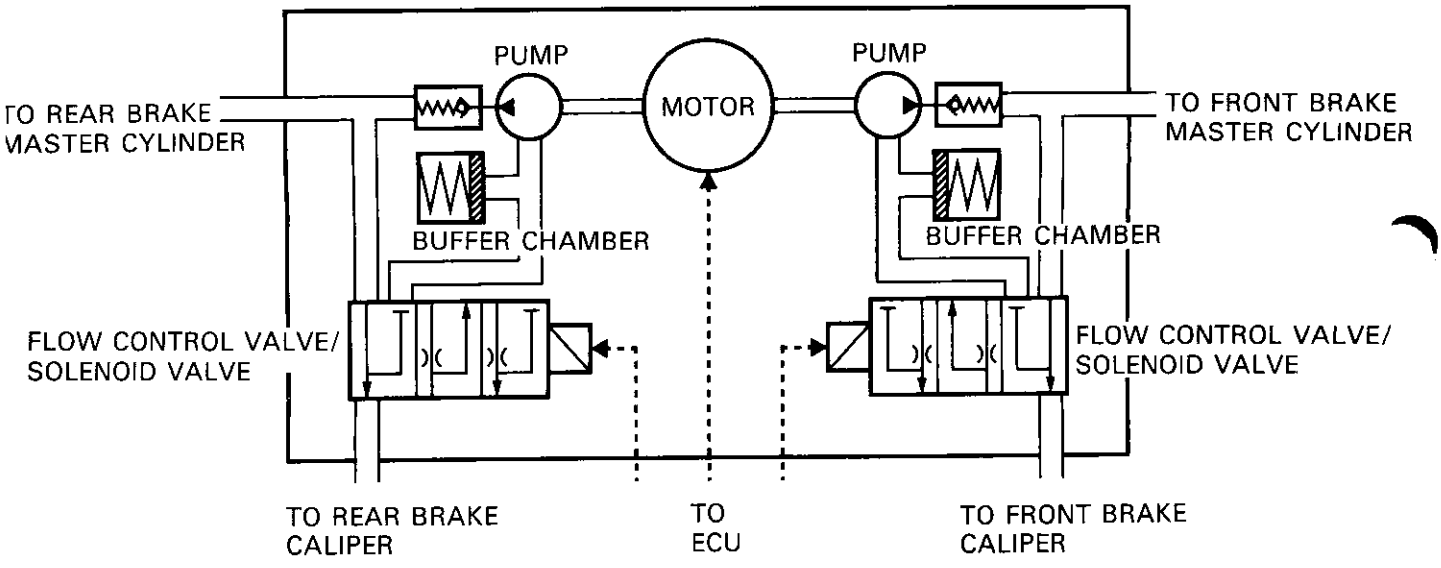


COMPONENTS

ABS is an electronically controlled braking system consisting of an independent control system for both front and rear wheels. The purpose of ABS is to control wheel lock-up while braking.
ABS consists of six main components.

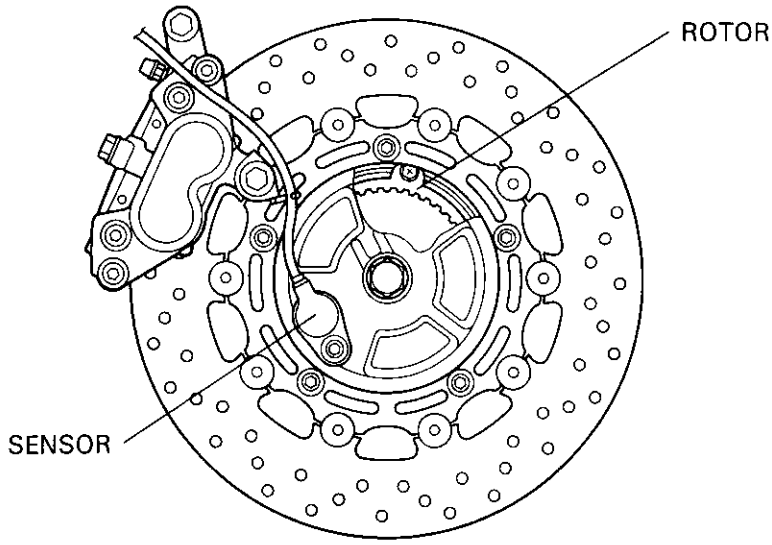
1. Hydraulic Unit (HU)
2. Sensor Units
3. Electronic Control Unit (ECU)
4. Relay Box
5. Brake Switch
6. Warning Lamp

HU



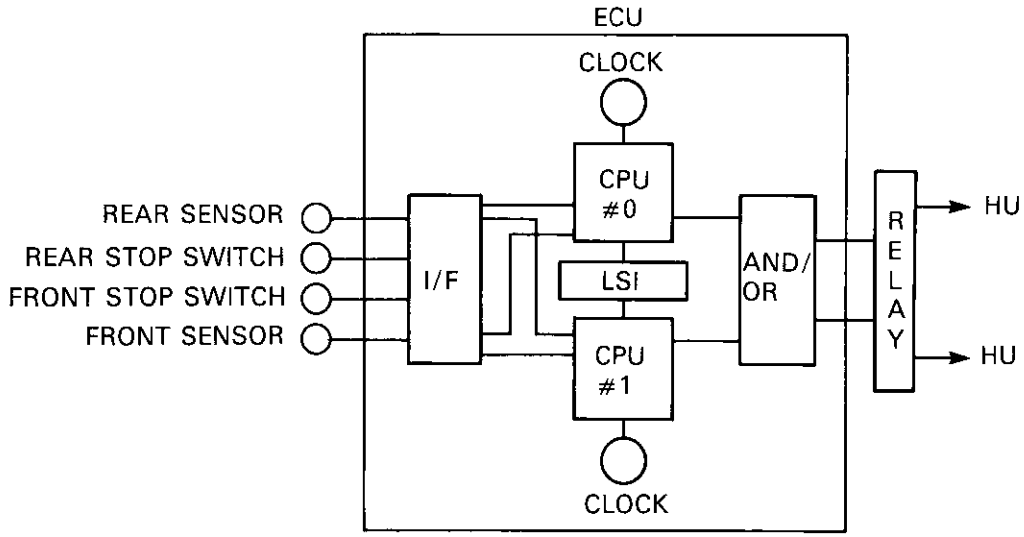
The HU is composed mainly of control valves, motor-driven pumps and also buffer chambers which serve as "storage tanks" for brake fluid during the ABS "reduced pressure stage". The HU's purpose is to regulate the flow of brake fluid to the wheel calipers.

SENSOR AND ROTOR UNITS



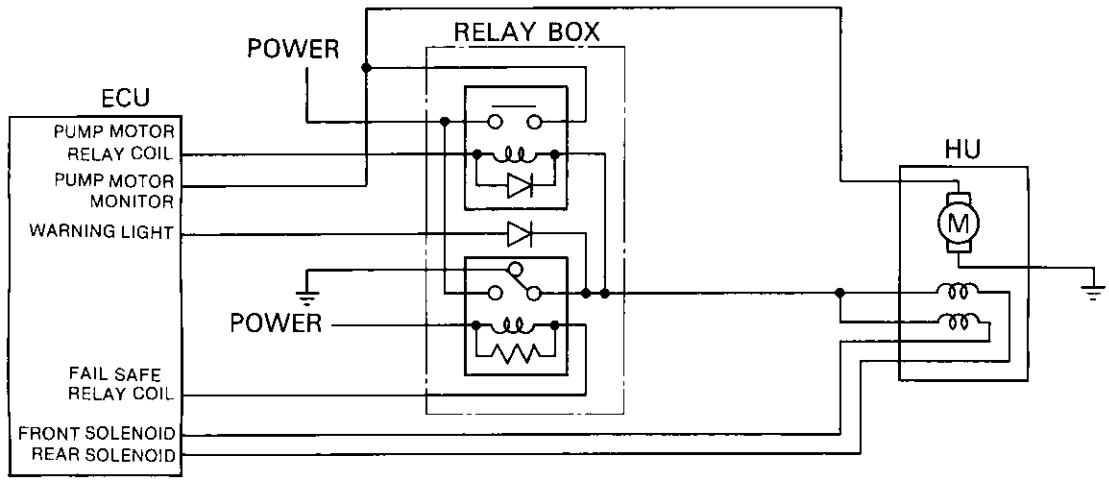
A Sensor and Rotor is equipped on each wheel. Electric signals are generated due to the change of magnetic flux as the wheel turns. The Sensor sends the signals generated to the ECU.

ECU



The ECU is designed with two independent CPU's driven by the exact same software logic. It can be said that no control is made by the ECU before both CPU's arrive at the same decision. The ECU constantly reads the "rotation speed" signals from the Sensor Units equipped on both front and rear wheels. With use of these signals, the ECU electronically controls the HU.

RELAY BOX



The Relay Box controls HU power.

BRAKE SWITCH

A three-terminal brake switch is equipped on each brake to detect cutoffs in circuits and disconnection of connectors. The ECU utilizes signals from the brake switches to compensate for stopping distance if one of the brake systems are not in operation.

WARNING LIGHT

The warning light mounted in the meter assembly alerts the rider of failure in the ABS. The warning light comes on in the following occasions.

- For approximately 1.4 seconds after turning the ignition switch to "ON". A system check is being performed during this time.
- Actuation of the starter switch.
- ABS is down.
- Failure in one or more components of the ABS.
- Diagnosis indication for troubleshooting ABS failures.

NOTE:
Braking is returned to "NORMAL BRAKING SYSTEM" when warning light comes on.

SYSTEM CONCEPT

Braking torque should be controlled properly to achieve the optimum tire-to- road surface traction during braking. Our system, as well as other systems, modulates brake fluid pressure to vary braking torque and then attain best controlled slip. The brake fluid pressure is modulated by a hydraulic unit which is comprised of valves and a pump. A buffer chamber is provided in the line connecting these parts to temporarily accumulate brake fluid. During the ABS operation, the brake fluid used for control is returned to the brake line. In this manner, our system can be categorized as a recirculation type system.

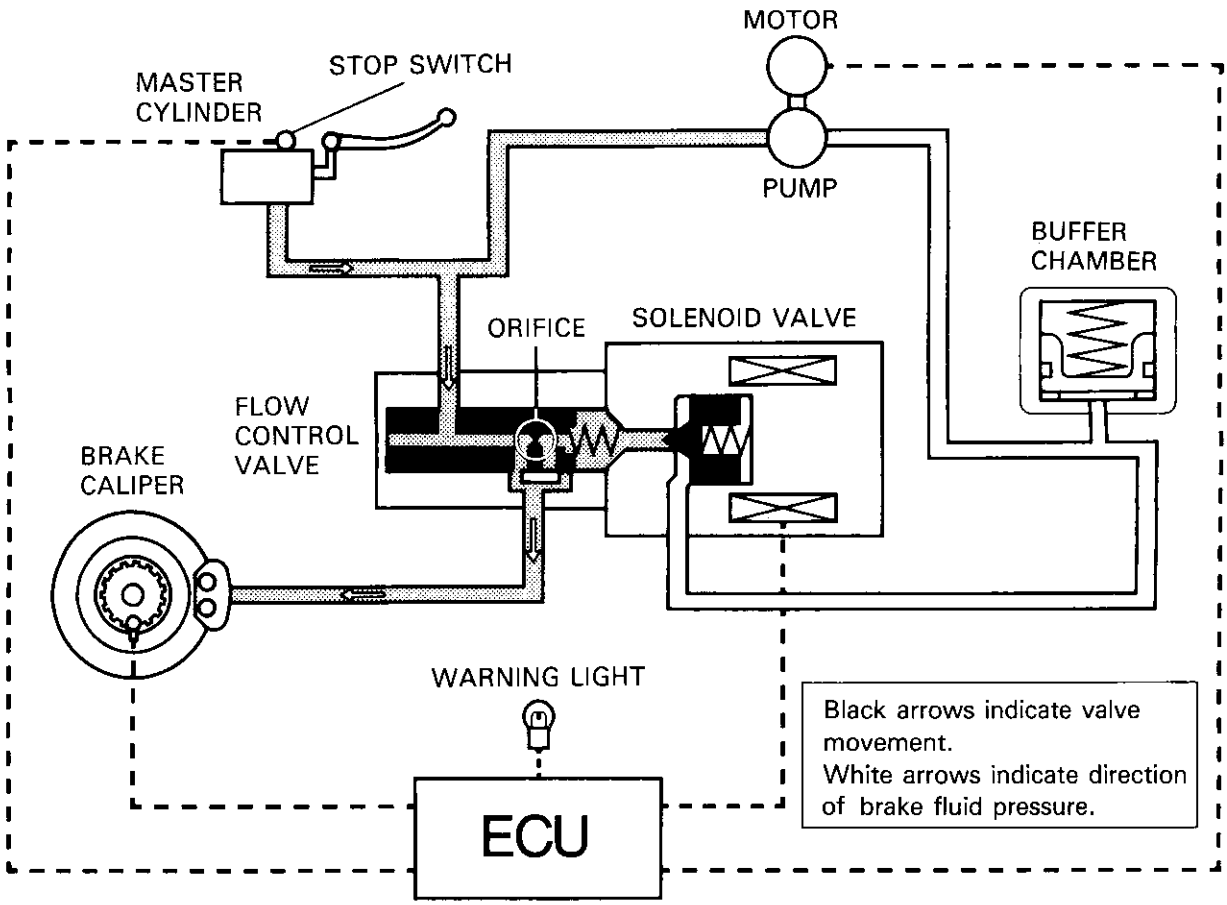
As mentioned above, the brake fluid pressure is modulated by a hydraulic unit while the unit is controlled by an electronic control unit(ECU). First, the ECU checks that the system operates correctly; a function of fail-safe concept. Second, it determines various parameters representing running conditions of the motorcycle by processing signals and accurately determines the state of which the motorcycle is in. Lastly, it determines whether braking force should be increased or decreased. These tasks are carried out regardless if the motorcycle is braking or not. As a result, the hydraulic unit comes to receive, throughout the operating periods, commands from the ECU to apply or reduce the brake pressure.

Our system may be categorized as an electronic system in that a microcomputer recognizes the overall state of the system and gives all operational commands.

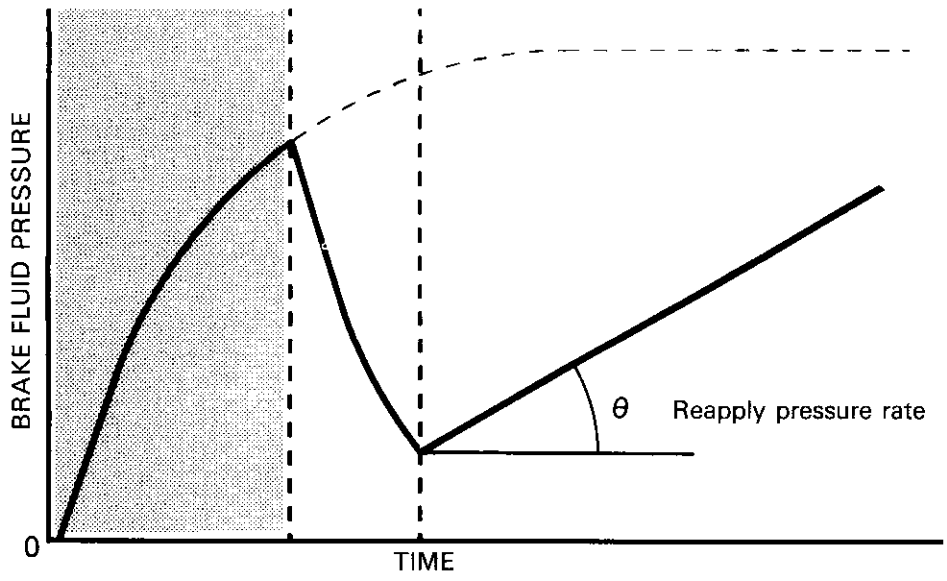
OPERATION

The speed of the front and rear wheel is generated into signals by the rotor and sent to the ECU by the sensor. The ECU constantly monitors this information. When the speeds of the front and rear wheel while braking are different than the optimum pre-determined braking speed programmed in the ECU, the ECU activates the hydraulic unit which in turn regulates the brake fluid pressure sent to the brake calipers. Judges are made by the ECU every 8 milliseconds to avoid "wheel lock".

NORMAL BRAKING OPERATION

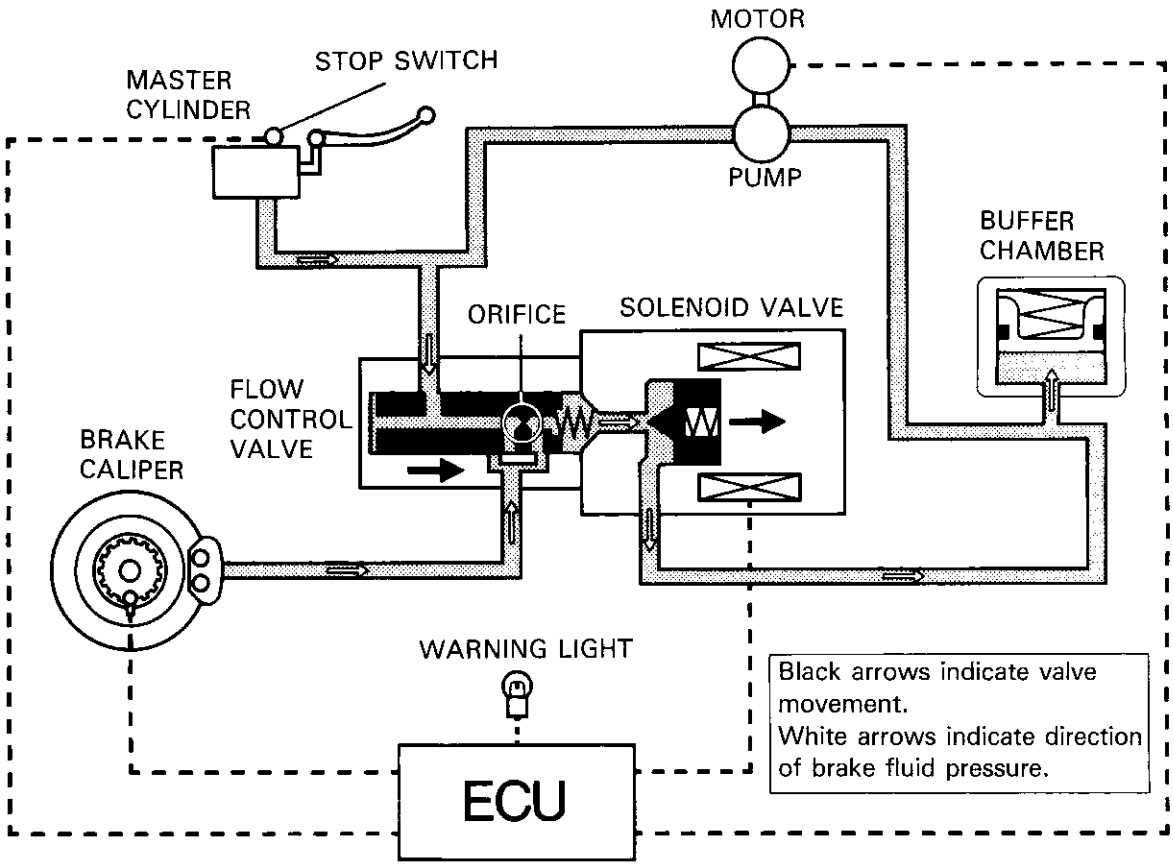


During normal braking operation, the master cylinder pressurizes the brake caliper directly.

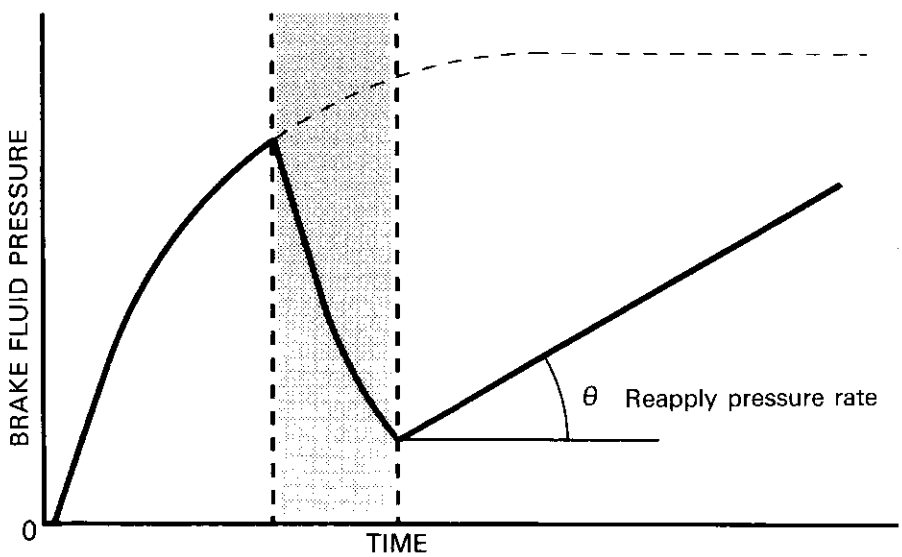


*Front and rear system operation is identical although only one system is shown.

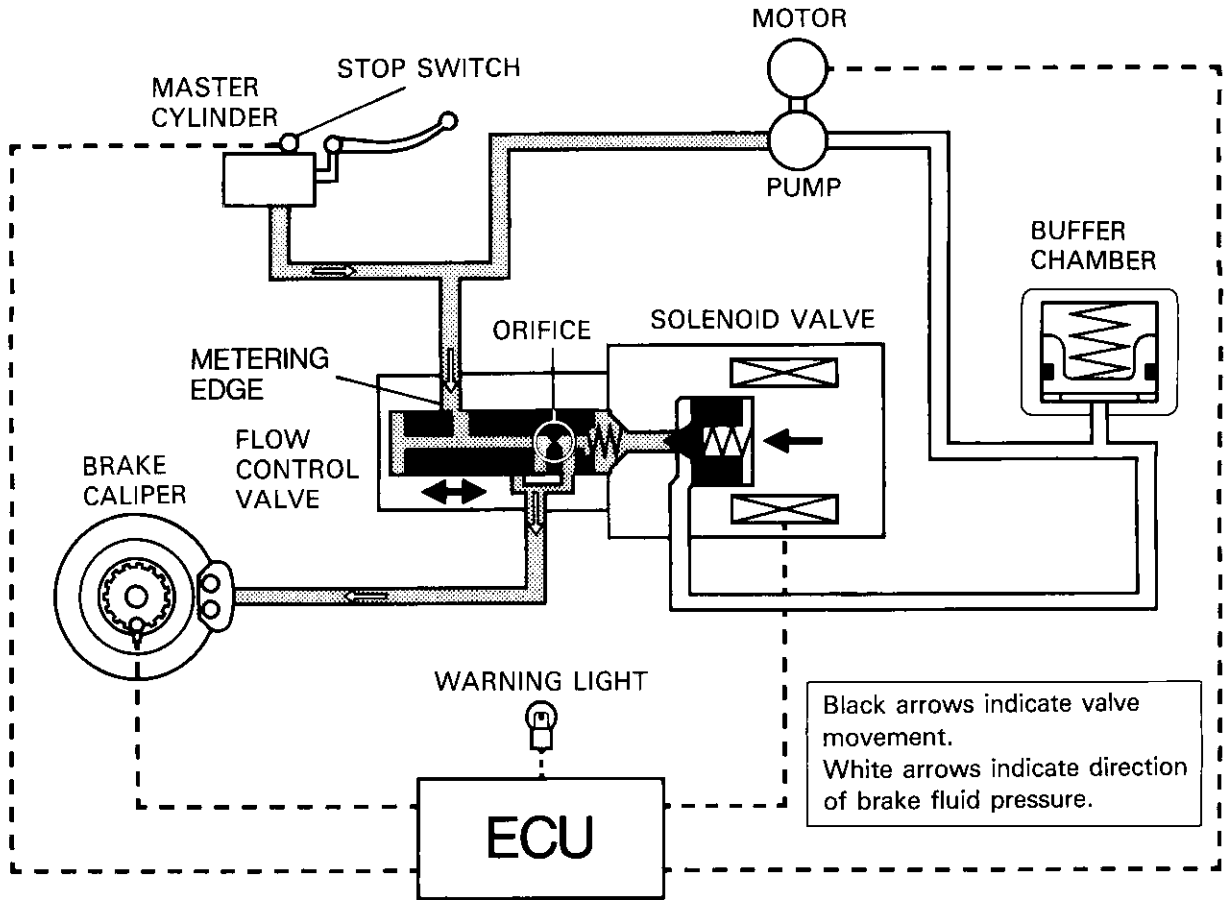
ABS IN OPERATION (PRESSURE IS REDUCED)



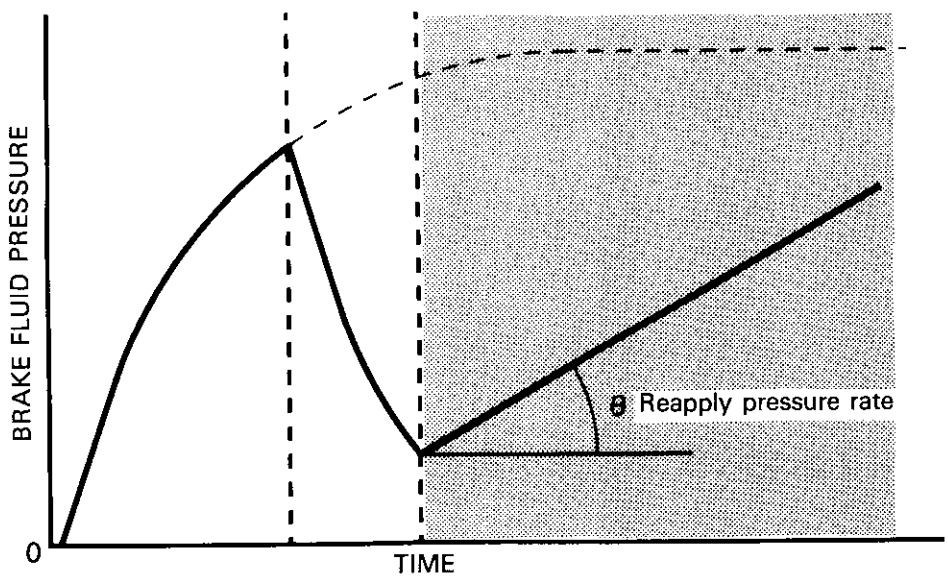
As the ABS is activated, the solenoid valve is opened releasing brake fluid pressure to the buffer chamber. The flow control valve moves due to the pressure difference before and after the orifice. Movement of the flow control valve cuts the passage to the caliper before the orifice. Farther movement opens the passage after the orifice allowing the caliper to depressurize.



ABS IN OPERATION (PRESSURE IS REAPPLIED)



The solenoid valve closes and the caliper is repressurized. Brake fluid pressure is controlled to a specified amount by the metering edge.



ABS TROUBLESHOOTING

[1] INTRODUCTION

The following gives a detailed explanation of the troubleshooting procedures of this system. Please read this information carefully for a good understanding of the system before correcting any fault.

The electronic control unit(ECU)of this system has a self-diagnosis function. If there is anything faulty found with the system, the warning light in the meter panel warns the operator of any such fault.

These troubleshooting instructions explain in detail how to look into the fault in connection with this warning light and then how to correct it. As for the other troubleshooting, perform it basically in conformity with the normal repairs on a machine.

(1-1) Indication of Fault by Means of ABS

The following situations may occur:

- Warning light stays on. →General fault / Fatal failure
- Warning light goes on and off when ignition is turned to "ON". →Not faulty
- Warning light comes on when pushing starter switch. →Not faulty
- Warning light flashes.

Faulty Brake switch	→Partially faulty
Rear wheel running idle while front wheel is stopped	→Not faulty
ABS jarred while traveling on an extremely bad road	→Not faulty

(1-2) Troubleshooting Points - Respect the self-diagnosed results.

(1) Utilize the self-diagnosing function to look into the fault.

(2) In case a fault is currently being encountered, use a circuit tester (Yamaha pocket tester P/N 90890-03112 or Kent Moore pocket tester P/N YU-03112) to diagnose the fault.

(3) When the ECU is put into the diagnosis mode and is displaying the history of past faults which were recorded, use a circuit tester or the warning light in the meter assembly to diagnose the fault.

Self-Diagnosis by ECU

ECU performs the statistical checking of the entire system when the ignition switch is turned on. Also while the motorcycle is running, the ECU is capable of checking such faults that cannot be detected on the motorcycle unless it is in operation. It is because of this that faults sometimes cannot be indicated at a workshop. However, those faults which have once been detected and indicated are all memorized. In this case, the memorized fault codes can be identified by putting the ECU into the diagnosis mode and using a circuit tester or the warning light in the meter.

(4) As there may be more than one kind of fault, take note of all indicated codes.

(1-3) Notes for Service - Differences from Ordinary Vehicles

(1) The component parts of the ABS are precision adjusted and are apt to be damaged by impacts or strains. Use care in handling the ABS.

(2) The ECU, HU, sensor, and relay box of the ABS cannot be disassembled. Even if one of them is found to be faulty, do not try to disassemble and repair it but replace it with a new one.

(3) Even after the fault has been corrected, the ABS keeps the history of all past faults. Be sure to erase all past faults before giving back the motorcycle to its owner. (Refer to C-6)

DIAGRAMS OF ABS SYSTEM

Arrangement of Parts	Page- 6
Routing of Brake Line	Page- 26
Layout of Couplers	Page- 26
Wiring of System	Page- 27

BASIC PROCEDURES FOR TROUBLESHOOTING

[A] Series: Checking of fault by use of ABS warning light

[B] Series: Further checking of fault
Self-diagnosed results are checked by the ECU using the warning light or a circuit tester.

[C] Series: Assuming causes and locations
Causes for the fault are looked into with the assumption of the locations involved and the circumstances under which such fault occurred.

[D] Series: Correction of fault
Correction steps and explanations which can be given to the customer.

TROUBLESHOOTING

[A] Series: Checking of fault by ABS warning light

Turn on the ignition switch (Engine should not be running).

(1) Warning light does not come on. **→B-1**

(2) Warning light remains on. **→B-2**

(3) Warning light keeps flashing **→B-3**

(4) Warning light remains on for about 1.4 seconds and then goes out. **→B-4**

[B] Series: Further checking of fault

B-1 Warning light does not come on

Are the other indicator lights working all right?

(1) Yes →C-1

(2) No →C-2

B-2 Warning light remains on

Check the ECU inside of the seat cowl. Is the coupler securely connected?

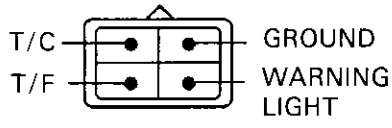
(1) Yes →B-5

(2) No →Insert the coupler securely until a click is heard.

B-3 Warning light keeps flashing

NOTE: Make sure the battery is properly charged before preceding with these steps.

Check the test coupler behind the right-hand side cover. Is the T/C terminal grounded?



(1) Yes →Unground the terminal and replace the blind cap.
NOTE: When the ABS Test Coupler Adapter is connected, the T/C terminal is grounded.

(2) No →C-3

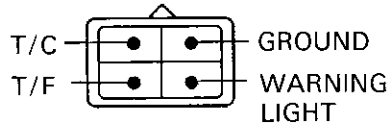
Arrangement and function of test coupler

T/C is a terminal which puts the ECU in a fault diagnosis mode by shorting it to ground.

T/F is a terminal which puts out a fault code(rise and fall of voltage) produced by the ECU which has been put in the fault diagnosis mode

The Warning Light terminal is a terminal for checking the warning light circuit.

To short the T/C terminal, connect the ABS Test Coupler Adapter (P/N 90890-03149) with the test coupler. Make sure beforehand that the battery is sufficiently charged.



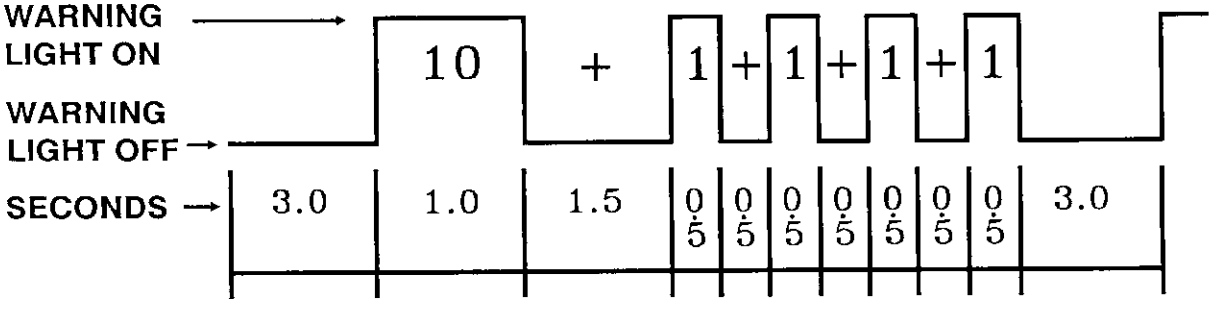
B-4 Checking past faults by means of ABS self-diagnosis (Past faults)

Remove the right hand side cover and locate the test coupler. Short the T/C terminal(Sb) to ground by connecting the ABS Test Coupler Adapter with the test coupler.

(1) Warning light keeps flashing at a regular interval of 0.5 seconds (for more than six seconds). →C-4

(2) Warning light keeps flashing in a pattern similar to the following. →C-5

This pattern is showing FAULT CODE 14



NOTE:
Read Section **B-3 Arrangement and Function of Test Coupler** before preceding with this section.

B-5 Checking faults by means of ABS self-diagnosis (Current faults)

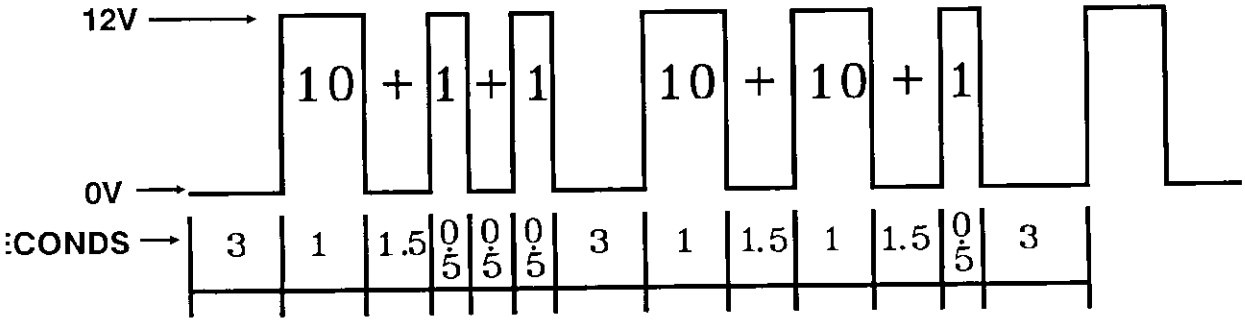
Remove the right hand side cover and locate the test coupler. Short the T/C terminal(Sb) to ground by connecting the ABS Test Coupler Adapter with the test coupler.

Adjust the range selector to 20V DC on the circuit tester. Then connect the negative pole with the T/F terminal(Lg) and the positive pole with the battery's positive terminal. Read the swinging of the needle indication.

This is an example of a "Pattern of 10's and 1's" as displayed by the circuit tester.

This pattern is showing FAULT CODE 12

This pattern is showing FAULT CODE 21



[C] Series: Assuming causes and locations

C-1 Only the warning light does not come on with the ignition switch on.

[1] Checking Visually

(1) Check the fuses (ECU and Warning Light).
(See page 26)

A fuse can be blown as when the harness is pinched. Correct such trouble and replace the blown fuse with a new one.

(2) Check ABS harness couplers

Check that the couplers for the ABS and main harnesses are securely connected. The harnesses have two couplers each. Check both.

(3) Check ECU connector.

Check that the ABS harness is securely connected with the ECU.

[2] Checking by Means of ABS Test Coupler Adapter

(1) Connect the test coupler with the ABS Test Coupler Adapter.

(2) Short the light terminal(W/R) of the ABS Test Coupler Adapter to ground (or to the battery's negative terminal).

- If the warning light comes on, there may be internal wire breakage in the ABS harness.
- If the warning light does not come on, there may be wire breakage in or disconnection of the warning light.

(3) Remove the ECU coupler and check the continuity of the W/R lead.
(W/R lead ECU side and W/R lead ABS Test Coupler Adapter side)

- If there is continuity, the ECU is faulty.
- If there is no continuity, there is something faulty with the warning light circuit in the ABS harness (wire breakage, etc.).

C-2 Neither the warning light nor the other indicators come on

The suspected cause lies in the motorcycle's power source system or in the connections.

[1] Check the power source system

(1) Is the battery connected correctly?
(2) Is the battery voltage correct?
(3) Is the main fuse blown? If it is, something faulty is suspected in the circuit. Correct the fault and replace the fuse.

[2] Check connectors

(1) Is the main fuse coupler connected properly?
(2) Are the main harness and front sub-harness connected properly?
(3) Is the main switch coupler connected properly?
(4) Is the meter coupler connected properly?

After completing the above checks, go back to **[A] SERIES** and check the ABS system again.

C-3 Warning light keeps flashing

Check the stop switches (front and rear) while the engine is not running.

Does the taillight come on when the front brake and rear brake are applied?

(1) The taillight only responds either to the front or to the rear brake.

→ A stop switch coupler is probably disconnected.

→ The stop switch for the non-responding brake is broken.

(2) The taillight responds neither to the front nor to the rear brake.

→Check the stop switch circuit (Br) on the power source side as it is likely that the wire is broken or the signal fuse is blown. (Refer to P27)

(3) The taillight stays on.

→The couplers for the ABS harness and main harness may be disconnected.

C-4 The light flashes at a regular interval of 0.5 seconds

This means that the ECU has no past faults recorded in it. If occasional flashing of the warning light occurs but the ECU has recorded no past faults, this may be considered to be due to faults or failures of other areas of the motorcycle which temporarily makes the light come on and off.

[1] The following causes can be considered.
(Give the appropriate explanation to the customer for his understanding.)

(1) ECU malfunctioning

This is because the ECU has judged that the system should stop functioning due to adverse effects of electric waves, static electricity, radioactivity, and so on.

Since no faults are indicated, there should be nothing wrong with the function of the system itself. Assure the customer that it can continue to be used as is.

(2) Drop in voltage

In order for the ABS to work properly, the voltage must be maintained above a certain level. Thus, if the power source voltage drops below 10V, the warning light comes on and the ABS stops functioning. When the voltage comes back to 10V or more, the system starts functioning again. However, the fact that the power source voltage went down to 10V or less is an indication that there may be something faulty with the generator or battery. Correct any such fault according to the normal procedure for correcting the power source system.

[2] The following may be cause for "flashing of warning light while running but later appearing normal", OR " flashing of the warning light but stopping when the ignition switch is turned off and then on again".

(1) The rear wheel is running idle when the front wheel is stopped. →The system is OK.
(i.e. while on a centerstand)

(2) The rear wheel is spinning. →The system is OK.

(3) The motorcycle is wheelying. →The system is OK.

(4) The motorcycle is running on a very bad road for hours continuously. → The system is OK.

(5) A stop switch is faulty or is improperly adjusted. →Check and correct it.

C-5 Diagnosis Through Fault Codes

The Fault Codes output by the ECU in Section B-4 or B-5 are used to determine what trouble exists. Use the following chart for this determination.

FAULT	CONTENTS OF DIAGNOSIS	FAULT CODE
Wheel speed sensor	Wire breakage / Short circuit of sensor or wire harness.	11 (Fr) 12 (Rr)
	Faulty sensor rotor	13 (Fr) 14 (Rr)
	Sensor disconnected	15(Fr/Rr)
Solenoid	Wire breakage / Short circuit of solenoid or wire harness.	21
Fail-safe relay	Wire breakage	31
	Short-circuit / Welding	32
Motor & Motor relay	Wire breakage / Motor sticking	33
	Short-circuit / Welding / Wire breakage	34
HU	Inability to reduce pressure	41
ECU	Internal fault	W/L stays on or 12V remains indicated

NOTES:

Fault Code 15 is very similar to Fault Codes 11 and 12 in that there is a disconnection of a sensor. Fault Code 15 is displayed when the ECU cannot determine which sensor is disconnected in the case of which the machine is not moving.

Fault Code 11 can be displayed if the rear wheel rotates for more than 20 seconds while the front wheel is stopped.
(i.e. while on centerstand)

If pulses are not being output when the ECU is in the diagnosis mode, trouble causing Fault Codes 11 or 12 may exist.

C-6 Erasing faults from ECU

Be sure to erase all faults from the ECU after the faults have been corrected. Even though the fault has been corrected, the ECU still keeps the history of all past faults.

ERASING PROCEDURE

1. Make sure ignition switch is at "OFF".
2. Short the T/C terminal of the ABS test coupler to ground. (ABS Test Coupler Adapter should be used to do this.)
3. Turn ignition switch ON.
4. Turn the "ENGINE STOP" switch to "OFF".
5 Push the "ENGINE START" button a total of 10 times within a 4 second period.
6. The warning light will remain on.
7. Unground the T/C terminal by removing the ABS Test Coupler Adapter.
8. Turn the ignition switch to "OFF".

This has erased all past faults in the ECU memory.

HU OPERATION TEST

PURPOSE:

To assure the HU and the hydraulic circuit pipes are correctly connected and assembled. (Test should be made after brake hose servicing or HU replacement)

TEST METHOD:

1. Make sure ignition switch is at "OFF".
2. Short the T/C terminal of the ABS test coupler to ground. (ABS Test Coupler Adapter should be used to do this.)
3. Apply both front and rear brakes.
4. Turn ignition switch to "ON".
5. If the assembly is correct,

FIRST: Hydraulic pressure release, called a "dump", should be felt at the brake lever and then an immediate reapplication of the brake lever will follow.

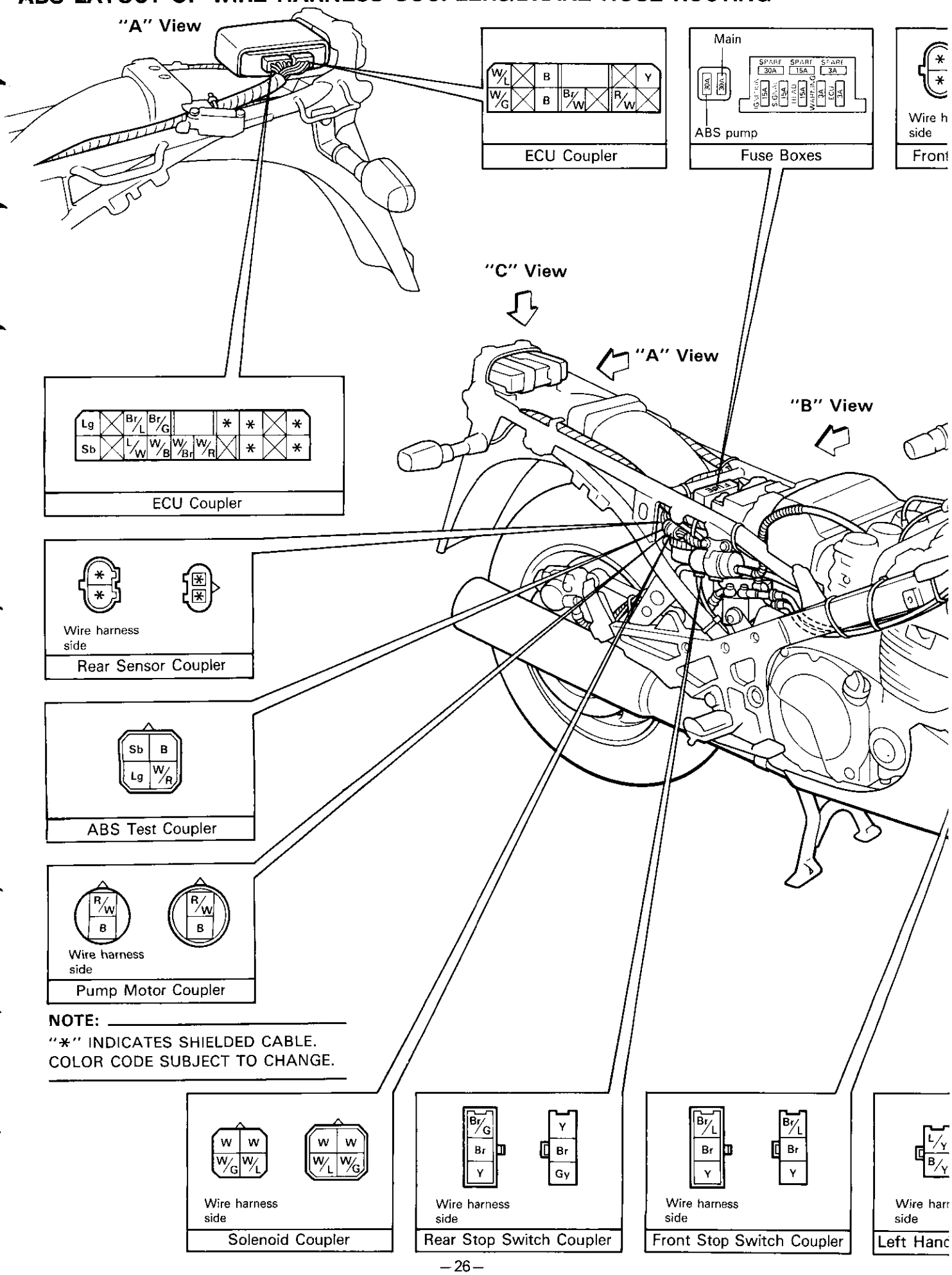
SECOND: 1.5 seconds later, the same phenomenon should be felt at the brake pedal.

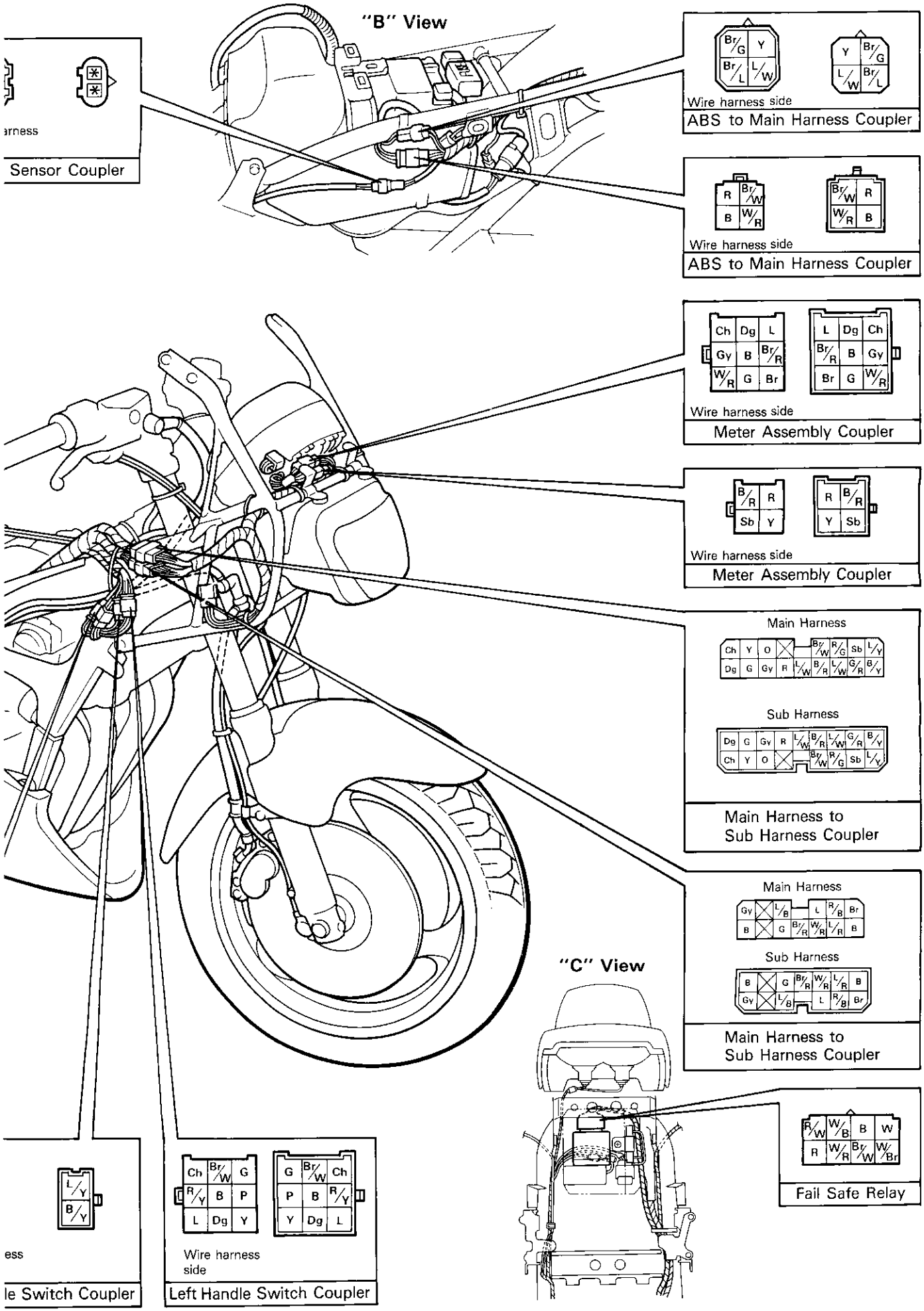
THIRD: 1.0 second later, the motor of the HU stops its rotation and both the brake lever and brake pedal will return to their normal operation.

NOTE:

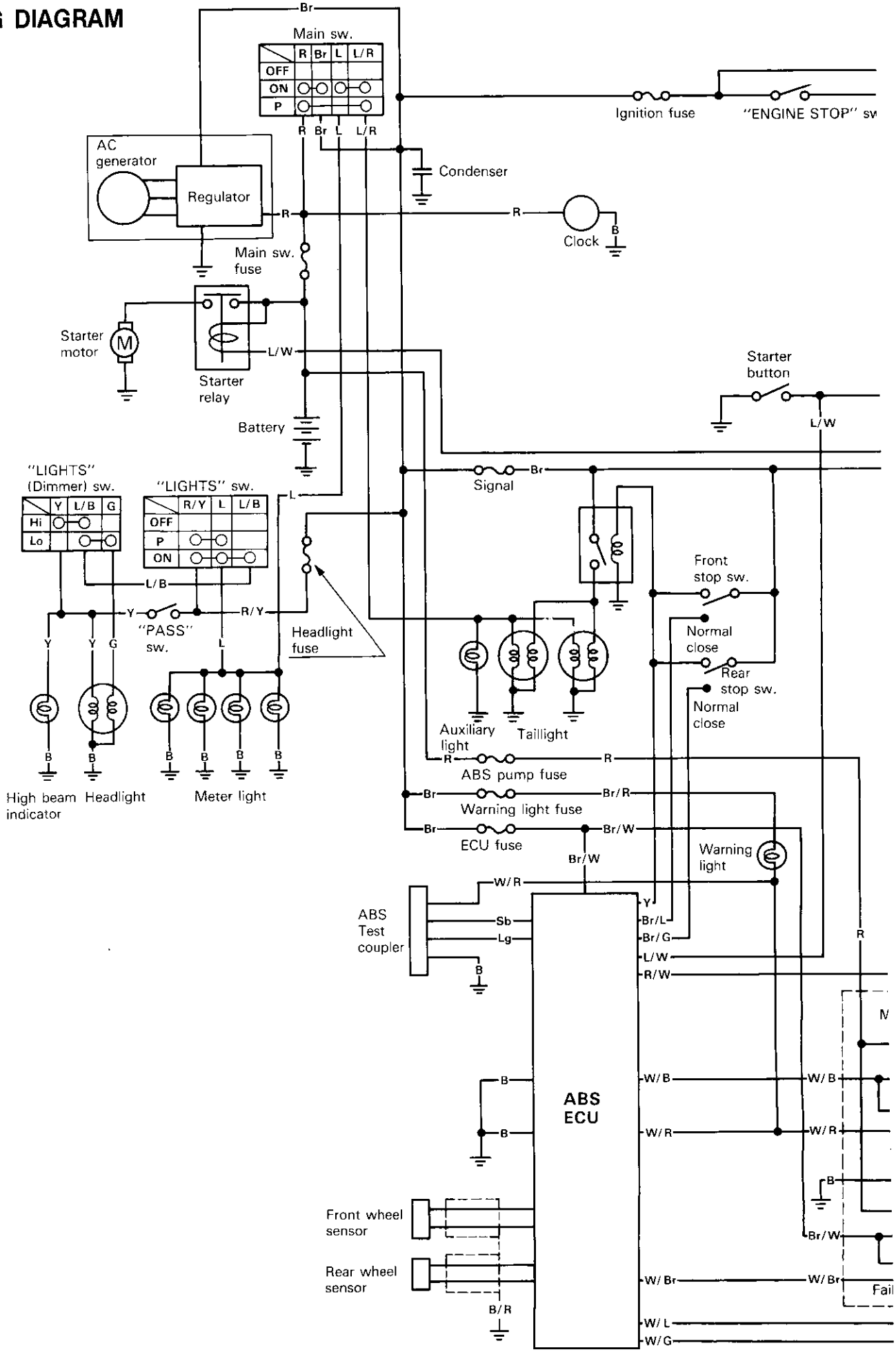
1. This test will not start if **BOTH** brake lever and brake pedal are not applied at the moment when the ignition switch is turned to "ON".
2. After this test is completed, unground the T/C terminal by removing the ABS Test Coupler Adapter.

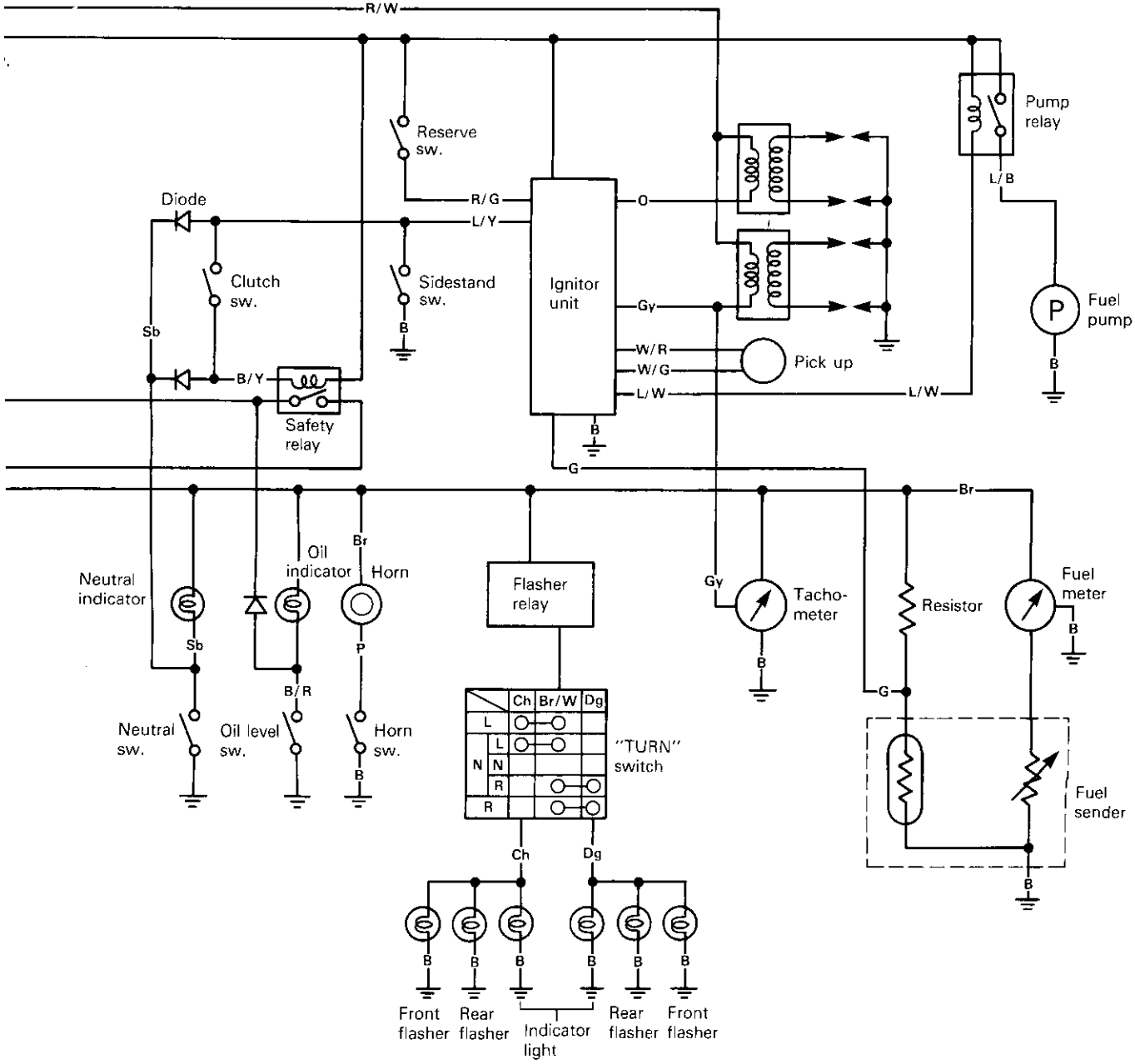
ABS LAYOUT OF WIRE HARNESS COUPLERS/BRAKE HOSE ROUTING

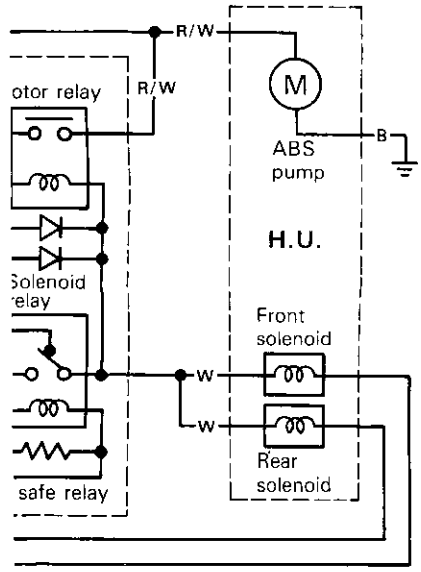



"B" View
"C" View
arness
Sensor Coupler
Wire harness side
ABS to Main Harness Coupler
Wire harness side
ABS to Main Harness Coupler
Wire harness side
Meter Assembly Coupler
Wire harness side
Meter Assembly Coupler
Main Harness
Sub Harness
Main Harness to Sub Harness Coupler
Main Harness
Sub Harness
Main Harness to Sub Harness Coupler
Fail Safe Relay
ess
le Switch Coupler
Wire harness side
Left Handle Switch Coupler

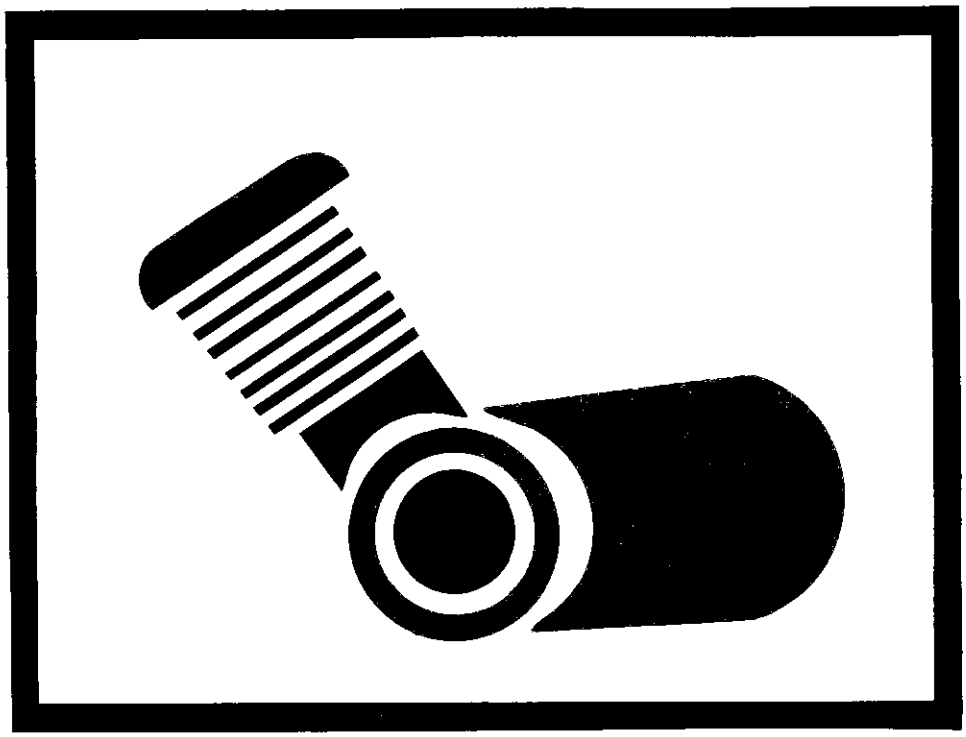
WIRING DIAGRAM




R/W
Reserve sw.
Diode
R/G
L/Y
Clutch sw.
Sidestand sw.
Ignitor unit
O
Gy
W/R
W/G
L/W
Pick up
Pump relay
L/B
Fuel pump
P
B
Sb
B/Y
Safety relay
G
Br
Neutral indicator
Oil indicator
Horn
Flasher relay
Gy
Tacho-meter
Resistor
Fuel meter
Sb
B/R
P
Neutral sw.
Oil level sw.
Horn sw.
Ch
Br/W
Dg
L
N
R
"TURN" switch
Fuel sender
Front flasher
Rear flasher
Indicator light
Rear flasher
Front flasher


R/W
otor relay
R/W
M
ABS pump
B
H.U.
Solenoid relay
Front solenoid
W
W
Rear solenoid
safe relay

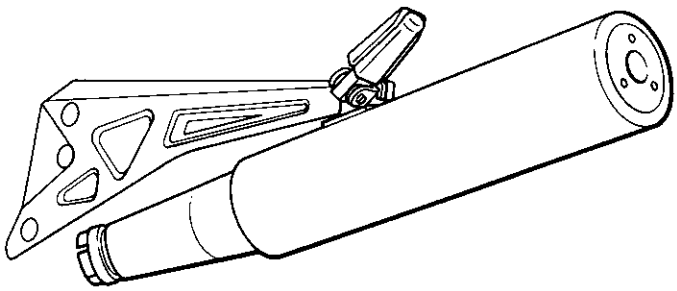
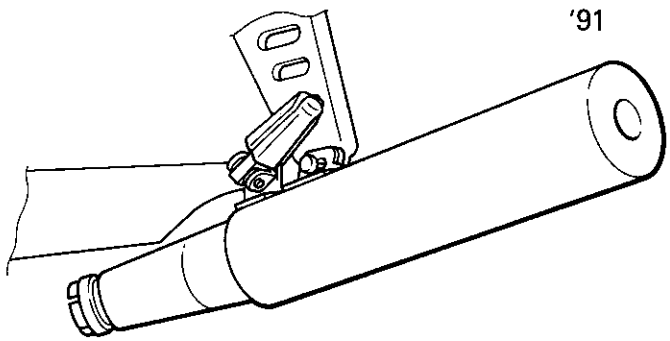
3. CHANGES BETWEEN '90 AND '91 MODEL

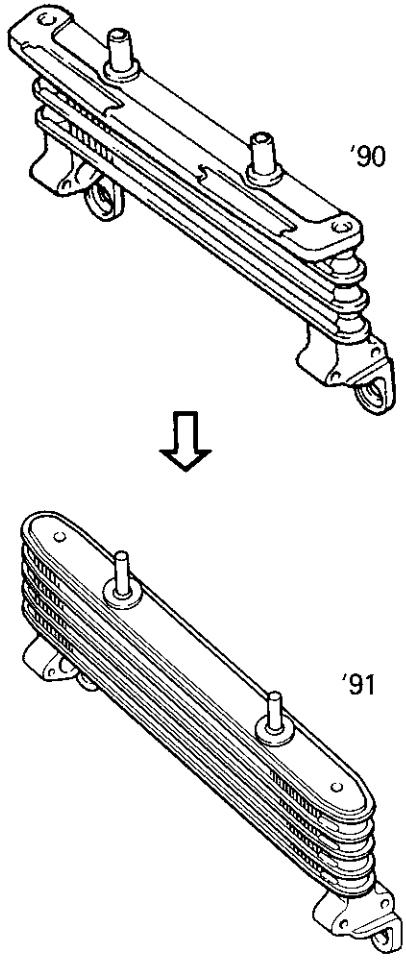


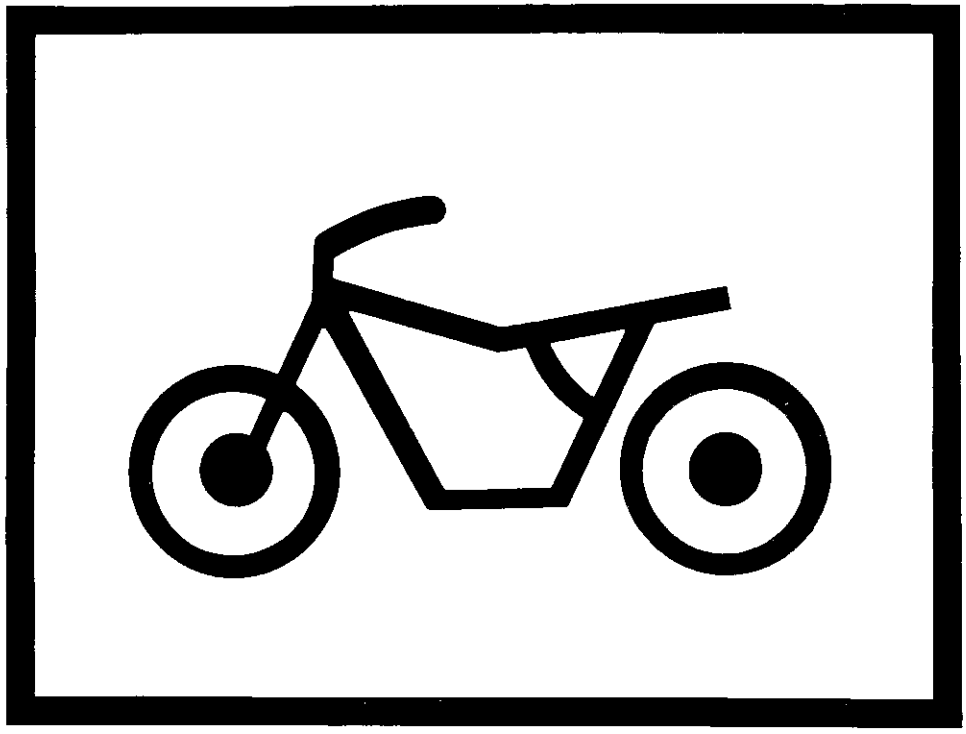
ENGINE

FJ1200/A
MUFFLER AND SILENCER 29

OIL COOLER 30

Change	Part No.	Interchange-ability
MUFFLER AND SILENCER •Defuser Color is changed from Black to White Chrome plated. Rear footrest bracket '90  Rear frame '91  The muffler is bolted to the frame rather than to the footrest bracket to reduce vibration in the footrest.	3CW-14710-02 ⇩ (EUR, CAN, AUS) 3XW-14710-10 (F) 3YY-14710-00 (L) 3YY-14720-00 (R) (CH) 4BS-14710-00 (L) 4BS-14720-00 (R) (U.S) 4AH-14710-00 (L) 4AH-14720-00 (R)	Not interchange-able 90 ⇕ XX ⇕ 91

Change	Part No.	Interchange-ability
OIL COOLER  A newly designed oil cooler is employed and its installation angle is changed to increase cooling ability.	36Y-13470-00 ⇩ 3XW-13470-00	Not interchange-able 90 ✕ OK 91



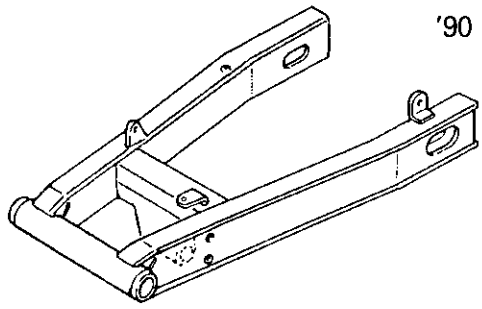
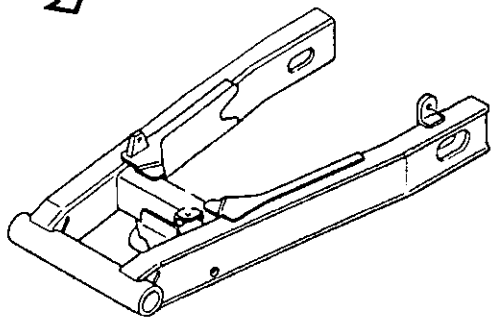
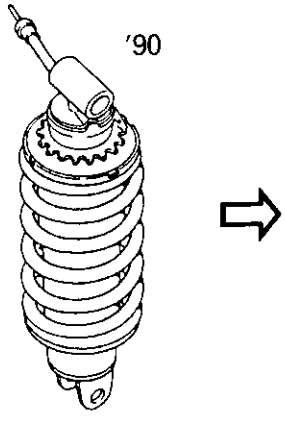
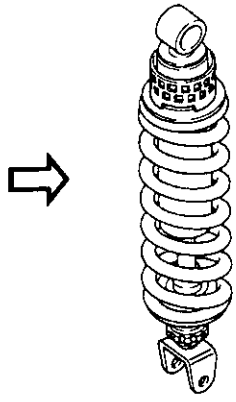
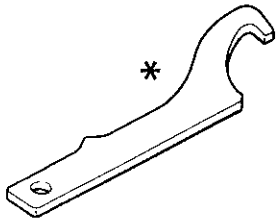
CHASSIS

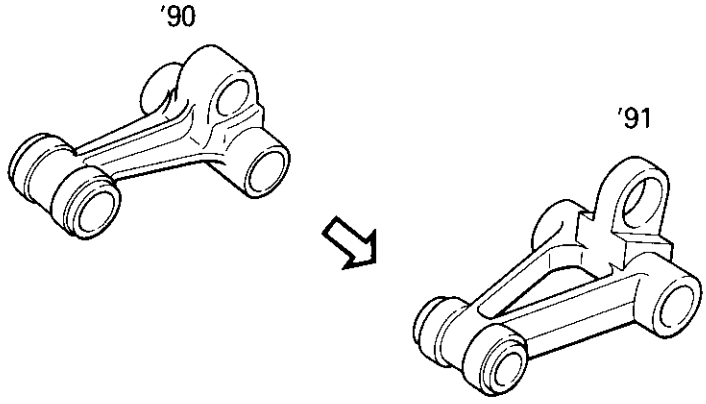
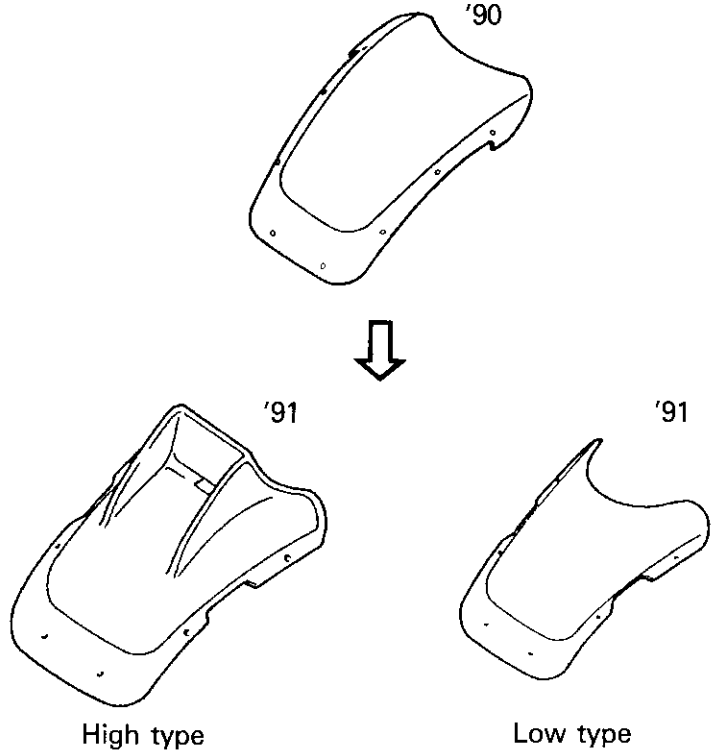
REAR ARM 33

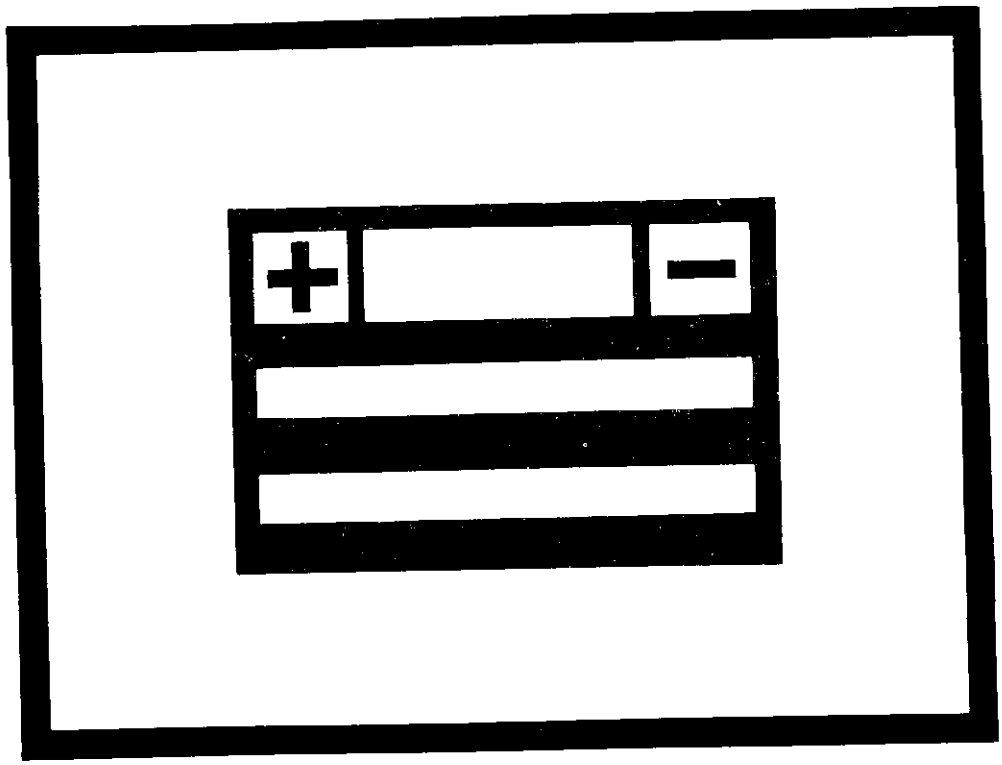
REAR SHOCK ABSORBER 33

ARM 1 34

WINDSCREEN 34

Change	Part No.	Interchangeability
REAR ARM  '90  '91  The material is changed from aluminum to steel to increase rigidity.	3CV-22110-00 ⇩ 3XW-22110-00	Not interchangeable 90 XX 91
REAR SHOCK ABSORBER  '90  '91  * **NOTE:** The adjuster is turned counterclockwise using the hook wrench (included in the owner's tool kit) to adjust spring preload. Remote control unit is discontinued and a De Carbon type rear suspension unit is employed.	3CV-22210-01 ⇩ 3XW-22210-00	Not interchangeable 90 XX 91

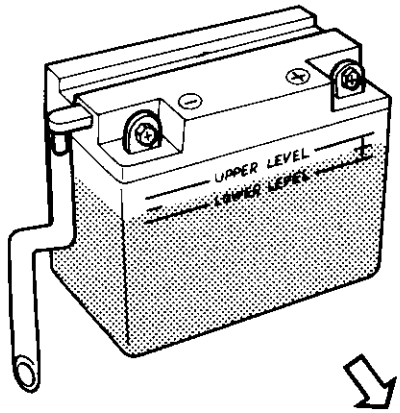
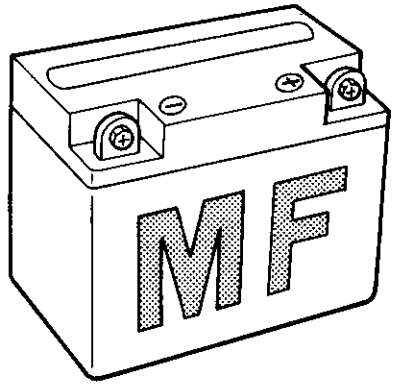
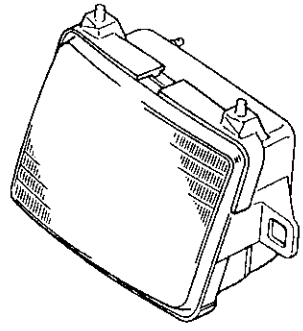
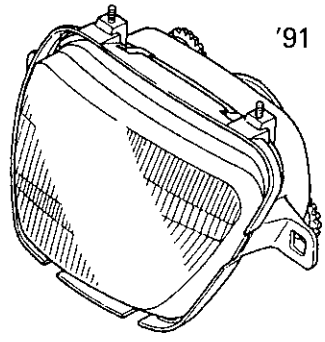
Change	Part No.	Interchange-ability
ARM 1  Rear suspension height and stroke is increased for rider comfortness. Lever ratio is also changed.	3CV-2217M-00 ⇩ 3XW-2217M-00	Not interchange-able 90 XX 91
WINDSCREEN  High type Low type Windscreen is provided in two types to correspond to demands of all riders.	3CV-28381-00 ⇩ 3XW-28381-00 HIGH TYPE 3YA-28381-01 LOW TYPE	B/D STD EUR, OCE STD USA, CAN (OPTION EUR)



ELECTRICAL

BATTERY 37

HEADLIGHT 37

Change	Part No.	Interchange-ability
BATTERY '90  '91 M.F. Battery  MF Battery is employed and is easy to maintain.	'90 YB14L 447-82110-82 ⇩ '91 MF, YTX14-BS (EUR) (3XW1, 3YA1, 3YY1, 3XW3, 3XW4, 4AH3) 3XW-82110-00 (U.S) (4AH1, 4AH2) 4AH-82110-00	Interchange-able 90 ✕ OK 91
NEWLY DESIGNED HEADLIGHT '90  ⇩ '91  Headlight is newly designed.	'90 36Y-84310-F0 ⇩ '91 3XW-84310-10 (3XW1) 3XW-84310-00 (3YA1)(3YA4) 3YY-84310-00 (3YY1) 4AH-84310-00 (4AH1, 2, 3) 4AY-84310-00 (4AY1)	Not interchange-able 90 ✕✕ 91

Model	Destination	Tire Manufacture		
		DUNLOP	BRIDGESTONE	PIRELLI
3XW1	BELGIUM			○
	DENMARK			○
	NETHERLANDS			○
	NORWAY			○
	ITALY			○
	PORTUGAL			○
	IRELAND			○
	ENGLAND			○
3YA1	AUSTRIA		○	
	FINLAND		○	
	WEST GERMANY		○	
	SWEDEN		○	
3YY1	FRANCE		○	
4AH1	U.S. 49 STATES	○		
4AH2	CALIFORNIA	○		
4AH3	CANADA	○		
4AY1	AUSTRALIA	○		
3XW4	SPAIN			○
	CANARY ISLAND			○
4BS1	SWITZERLAND			○
3XW3 (ABS)	—	○		

*This table shows OEM (Original Equipment Manufacturer) tires.

	Tire Manufacture	Size	Model
OEM	DUNLOP	Front: 120/70-V17-V250 Rear : 150/80-V16-V250	K275F K275
	BRIDGESTONE	Front: 120/70-V17-V250 Rear : 150/80-V16-V250	G549 G550
	PIRELLI	Front: 120/70-VB17 Rear : 150/80-VB16	MT09 MT08

YAMAHA MOTOR CO.,LTD.

IWATA, JAPAN