YAMAHA 2006

FJR1300A(V)

SERVICE MANUAL

3P6-28197-E0

EAS20040

FJR1300A(V) 2006
SERVICE MANUAL

EAS20070
NOTICE

This manual was produced by the Yamaha Motor Company, Ltd. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

Yamaha Motor Company, Ltd. is continually striving to improve all of its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.

NOTE:

Designs and specifications are subject to change without notice.

EAS20080
IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following.

⚠ — The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠ WARNING — Failure to follow WARNING instructions could result in severe injury or death to the vehicle operator, a bystander or a person checking or repairing the vehicle.

CAUTION: — A CAUTION indicates special precautions that must be taken to avoid damage to the vehicle.

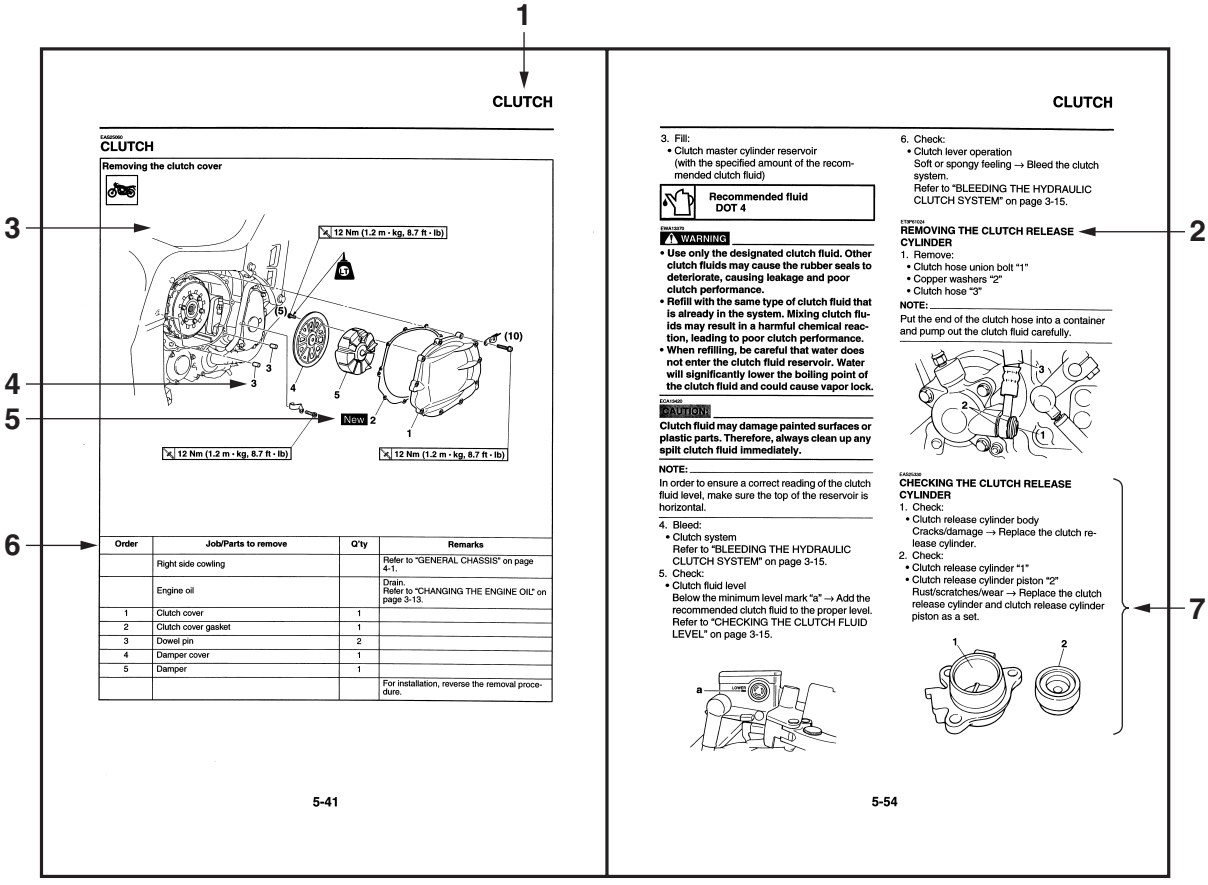
NOTE: — A NOTE provides key information to make procedures easier or clearer.

EAS20090

HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

- The manual is divided into chapters and each chapter is divided into sections. The current section title "1" is shown at the top of each page.
- Sub-section titles "2" appear in smaller print than the section title.
- To help identify parts and clarify procedure steps, there are exploded diagrams "3" at the start of each removal and disassembly section.
- Numbers "4" are given in the order of the jobs in the exploded diagram. A number indicates a disassembly step.
- Symbols "5" indicate parts to be lubricated or replaced.
  Refer to "SYMBOLS".
- A job instruction chart "6" accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.
- Jobs "7" requiring more information (such as special tools and technical data) are described sequentially.



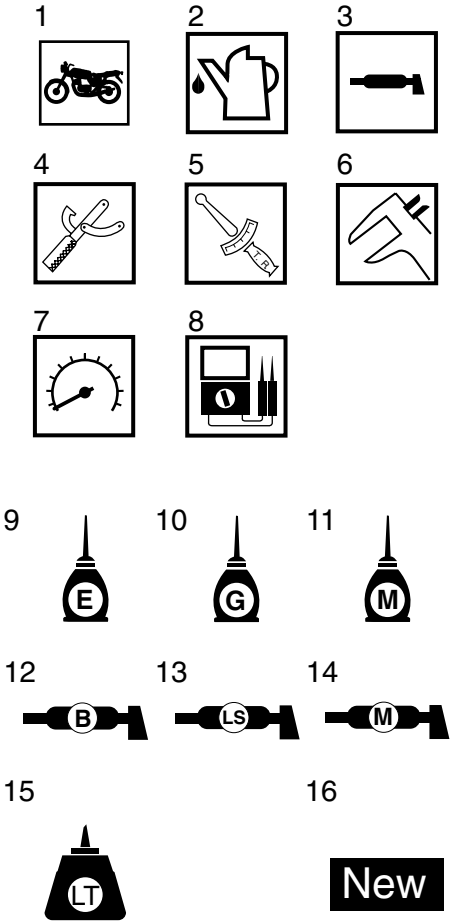
EAS20100

SYMBOLS

The following symbols are used in this manual for easier understanding.

NOTE:

The following symbols are not relevant to every vehicle.



1. Serviceable with engine mounted
2. Filling fluid
3. Lubricant
4. Special tool
5. Tightening torque
6. Wear limit, clearance
7. Engine speed
8. Electrical data
9. Engine oil
10. Gear oil
11. Molybdenum-disulfide oil
12. Wheel-bearing grease
13. Lithium-soap-based grease
14. Molybdenum-disulfide grease
15. Apply locking agent (LOCTITE®)
16. Replace the part

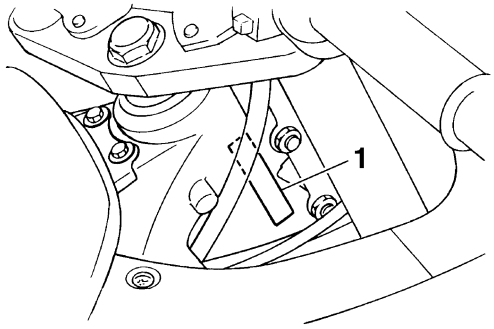
EAS20110

TABLE OF CONTENTS

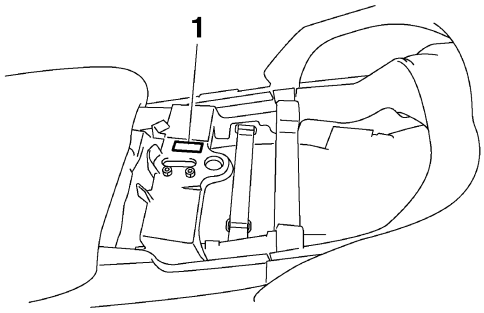
GENERAL INFORMATION

EAS20130
IDENTIFICATION

EAS20140
VEHICLE IDENTIFICATION NUMBER
The vehicle identification number “1” is stamped into the right side of the steering head pipe.



EAS20150
MODEL LABEL
The model label “1” is affixed to the frame. This information will be needed to order spare parts.



EAS20170
FEATURES

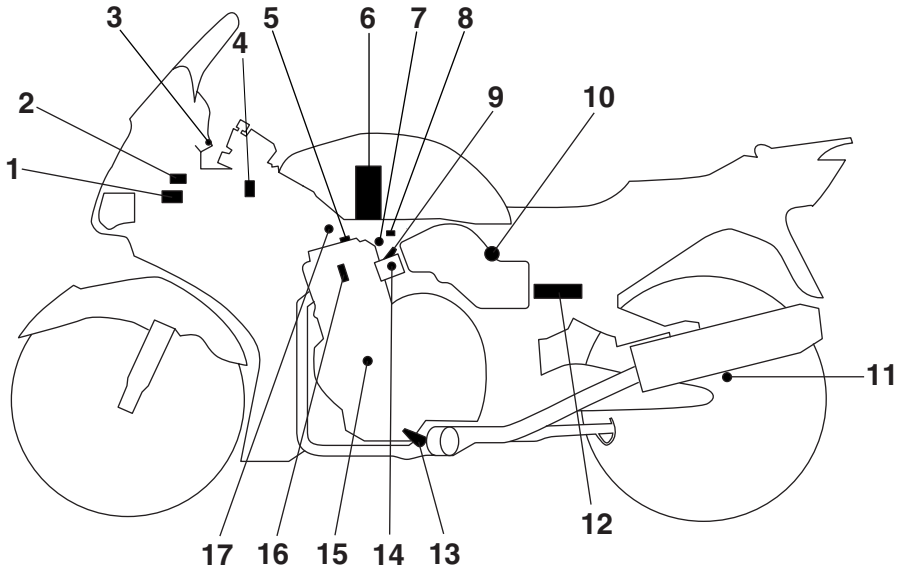
ET2C01025
OUTLINE OF THE FI SYSTEM

The main function of a fuel supply system is to provide fuel to the combustion chamber at the optimum air-fuel ratio in accordance with the engine operating conditions and the atmospheric temperature. In the conventional carburetor system, the air-fuel ratio of the mixture that is supplied to the combustion chamber is created by the volume of the intake air and the fuel that is metered by the jet used in the respective carburetor.

Despite the same volume of intake air, the fuel volume requirement varies by the engine operating conditions, such as acceleration, deceleration, or operating under a heavy load. Carburetors that meter the fuel through the use of jets have been provided with various auxiliary devices, so that an optimum air-fuel ratio can be achieved to accommodate the constant changes in the operating conditions of the engine.

As the requirements for the engine to deliver more performance and cleaner exhaust gases increase, it becomes necessary to control the air-fuel ratio in a more precise and finely tuned manner. To accommodate this need, this model has adopted an electronically controlled fuel injection (FI) system, in place of the conventional carburetor system. This system can achieve an optimum air-fuel ratio required by the engine at all times by using a microprocessor that regulates the fuel injection volume according to the engine operating conditions detected by various sensors.

The adoption of the FI system has resulted in a highly precise fuel supply, improved engine response, better fuel economy, and reduced exhaust emissions. Furthermore, the air induction system (AI system) has been placed under computer control together with the FI system in order to realize cleaner exhaust gases.



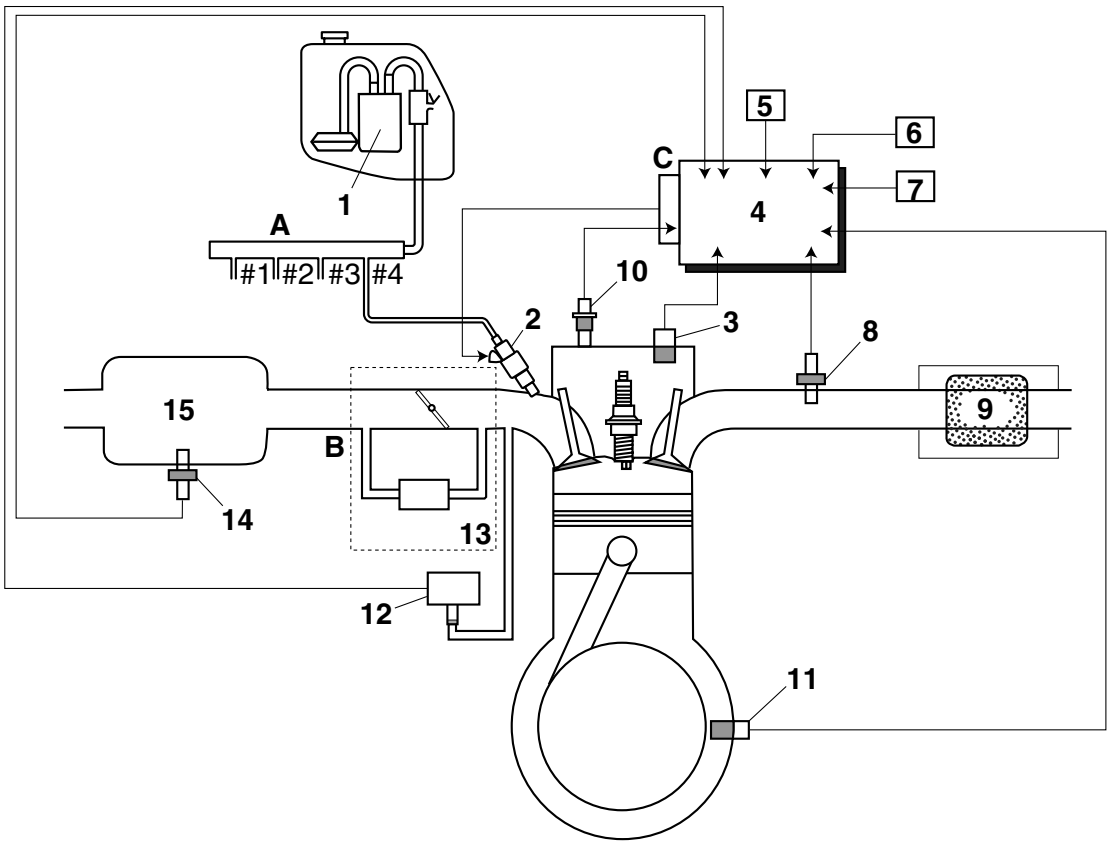
1. Relay unit (fuel pump relay)
2. Lean angle sensor
3. Engine trouble warning light
4. Ignition coil
5. Cylinder identification sensor
6. Fuel pump
7. Air induction system solenoid
8. Intake air pressure sensor
9. Injector
10. Intake air temperature sensor
11. Rear wheel sensor
12. ECU (engine control unit)
13. O_2 sensor
14. Throttle position sensor
15. Crankshaft position sensor
16. Spark plug
17. Coolant temperature sensor

ET3P61042

FI SYSTEM

The fuel pump delivers fuel to the fuel injector via the fuel filter. The pressure regulator maintains the fuel pressure that is applied to the fuel injector at only 324 kPa (3.24 kg/cm², 46.1 psi). Accordingly, when the energizing signal from the ECU energizes the fuel injector, the fuel passage opens, causing the fuel to be injected into the intake manifold only during the time the passage remains open. Therefore, the longer the length of time the fuel injector is energized (injection duration), the greater the volume of fuel that is supplied. Conversely, the shorter the length of time the fuel injector is energized (injection duration), the lesser the volume of fuel that is supplied.

The injection duration and the injection timing are controlled by the ECU. Signals that are input from the throttle position sensor, coolant temperature sensor, cylinder identification sensor, lean angle sensor, crankshaft position sensor, intake air pressure sensor, intake air temperature sensor, rear wheel sensor and O_2 sensor enable the ECU to determine the injection duration. The injection timing is determined through the signals from the crankshaft position sensor. As a result, the volume of fuel that is required by the engine can be supplied at all times in accordance with the driving conditions.



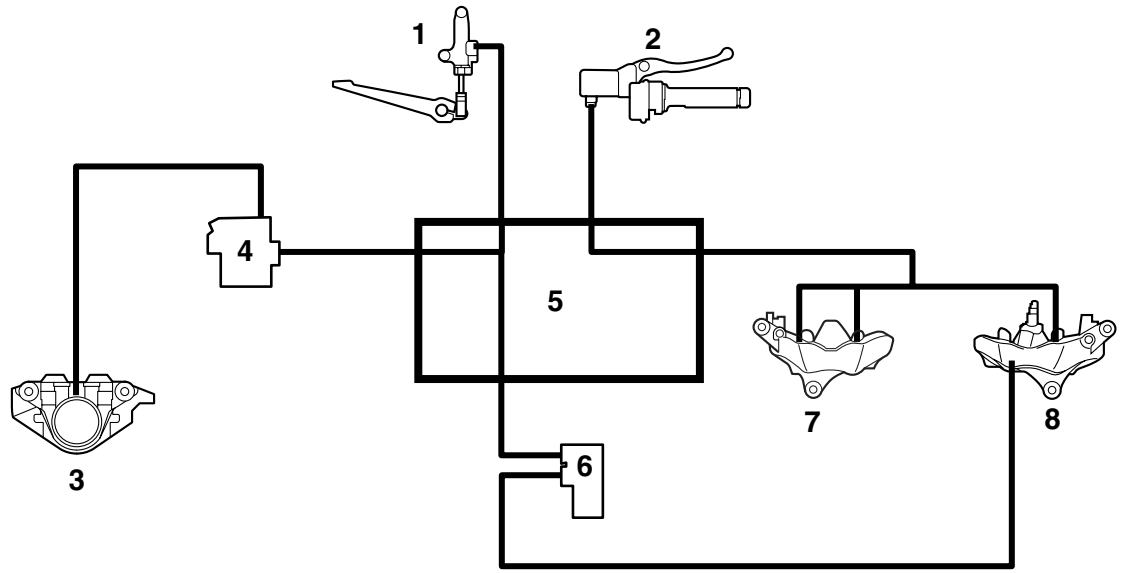
1. Fuel pump
2. Injector
3. Cylinder identification sensor
4. ECU (engine control unit)
5. Throttle position sensor
6. Rear wheel sensor
7. Lean angle sensor
8. O_2 sensor
9. Catalytic converter
10. Coolant temperature sensor
11. Crankshaft position sensor
12. Intake air pressure sensor
13. Throttle body
14. Intake air temperature sensor
15. Air filter case

A. Fuel system
B. Air system
C. Control system

ET3P61050
OUTLINE OF THE UNIFIED BRAKE SYSTEM

The Yamaha unified brake system is a system that operates one set of pistons in the front brakes together with the rear brake when the brake pedal is depressed. Compared to conventional brake systems, the ability to slow the vehicle using the simple operation of the brake pedal is improved.

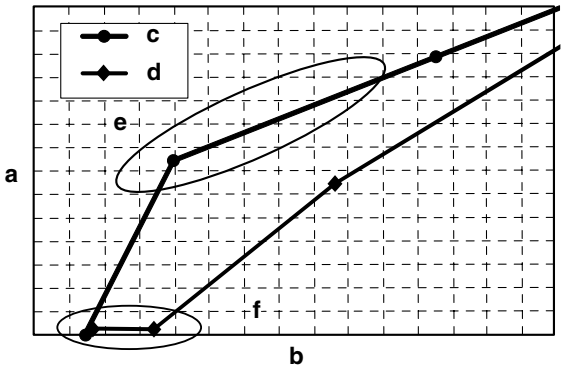
Unified brake system block diagram



1. Rear brake master cylinder
2. Front brake master cylinder
3. Rear brake caliper
4. Proportioning valve
5. Hydraulic unit
6. Metering valve
7. Left front brake caliper
8. Right front brake caliper

When the brake lever is squeezed, both sets of pistons in the left front brake caliper are operated, but only one set of pistons in the right front brake caliper is operated. When the brake pedal is depressed, the rear brake caliper and one set of pistons in the right front brake caliper are operated. The brake line from the rear brake master cylinder is split at the hydraulic unit to transmit brake fluid pressure to both the rear brake caliper and part of the right front brake caliper in the unified brake system. The brake fluid pressure transmitted to the rear brake caliper and part of the right front brake caliper is controlled by the proportioning valve and metering valve respectively. The operation of these two valves ensures that the braking feeling of conventional brakes is maintained when a small amount of force is applied to the brake pedal, such as when making U-turns, and prevents early locking of the rear wheel when a large amount of force is applied.

Brake pedal input force and braking force at each wheel



a. Brake force
b. Brake pedal force
c. Rear brake force
d. Front brake force (unified brake system)
e. Proportioning valve operation
f. Metering valve operation

Metering valve
This valve prevents the brake fluid pressure that is transmitted to the right front brake caliper from increasing until the pressure exceeds a set level. Only the rear brake caliper is operated when there is an extremely low amount of brake pedal input.

Proportioning valve
This valve reduces the increase in brake fluid pressure that is transmitted to the rear brake caliper when the pressure exceeds a set level. The increase in brake fluid pressure to the rear brake caliper is controlled when there is a high amount of brake pedal input.

EC3P61017

CAUTION:

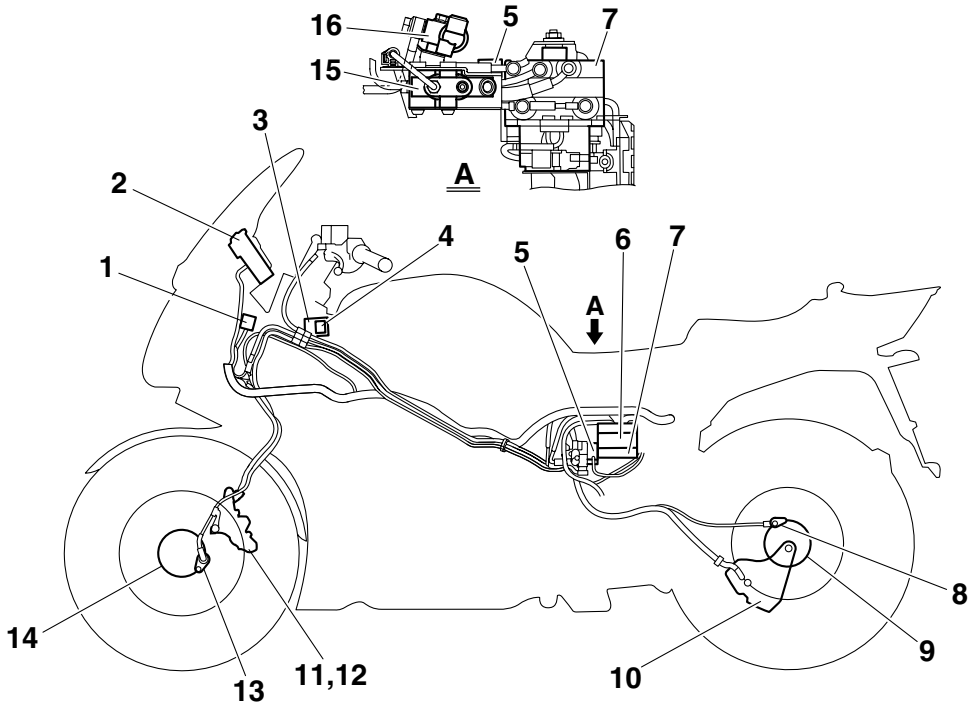
- **The unified brake system is a system to assist the brake operation. However, both the brake lever and the brake pedal must be operated for maximum braking effect.**
- **Because the balance between the right front brake caliper and the rear brake caliper in the unified brake system is determined mechanically, be sure to use the specified brake pads.**
- **Each set of brake pads should be checked individually and replaced if necessary.**

ET3P61019

OUTLINE OF THE ABS

1. The Yamaha ABS (anti-lock brake system) features an electronic control system, which acts on the front and rear brakes independently. However, one set of pistons in the right front brake caliper is operated together with the rear brake and this set of pistons is operated only if the force used to depress the brake pedal exceeds a preset level.
2. The ABS features a compact and lightweight design to help maintain the basic maneuverability of the vehicle.
3. The hydraulic unit, which is the main component of the ABS, is centrally located on the vehicle to increase mass centralization.

ABS layout



1. ABS test coupler
2. ABS warning light
3. ABS ECU fuse
4. ABS motor fuse
5. ABS motor relay
6. ABS ECU (electronic control unit)
7. Hydraulic unit (HU)
8. Rear wheel sensor
9. Rear wheel sensor rotor
10. Rear brake caliper
11. Left front brake caliper
12. Right front brake caliper (partially operated together with the rear brake)
13. Front wheel sensor
14. Front wheel sensor rotor
15. Proportioning valve
16. Metering valve

ABS

The operation of the Yamaha ABS brakes is the same as conventional brakes on other vehicles, with a brake lever for operating the front brake and a brake pedal for operating the rear brake. However, part of the front brake is operated together with rear brake.

When wheel lock is detected during emergency braking, hydraulic control is performed by the hydraulic system on the front and rear brakes independently.

Useful terms

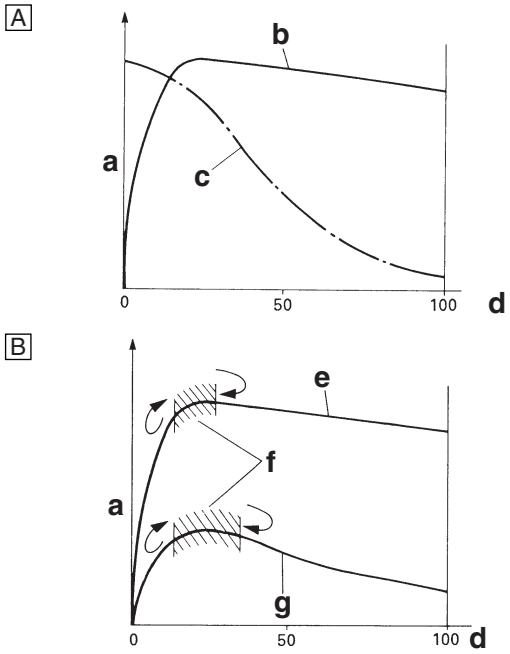
- Wheel speed:
  The rotation speed of the front and rear wheels.
- Chassis speed:
  The speed of the chassis.
  When the brakes are applied, wheel speed and chassis speed are reduced. However, the chassis travels forward by its inertia even though the wheel speed is reduced.
- Brake force:
  The force applied by braking to reduce the wheel speed.
- Wheel lock:
  A condition that occurs when the rotation of one or both of the wheels has stopped, but the vehicle continues to travel.
- Side force:
  The force on the tires which supports the vehicle when cornering.

• Slip ratio:
When the brakes are applied, slipping occurs between the tires and the road surface. This causes a difference between the wheel speed and the chassis speed.
Slip ratio is the value that shows the rate of wheel slippage and is defined by the following formula.

$$\text{Slip ratio} = \frac{\text{Chassis speed} - \text{Wheel speed}}{\text{Chassis speed}} \times 100\ (\%)$$

0%: There is no slipping between the wheel and the road surface. The chassis speed is equal to the wheel speed.
100%: The wheel speed is “0”, but the chassis is moving (i.e., wheel lock).

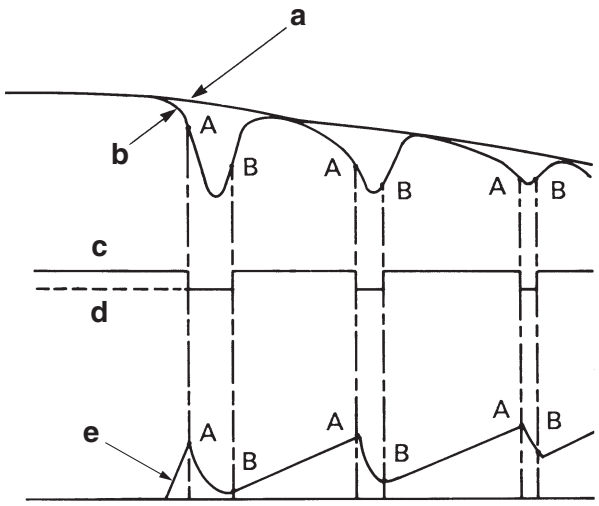
Brake force and vehicle stability
When the brake pressure is increased, wheel speed is reduced. Slipping occurs between the tire and the road surface and brake force is generated. The limit of this brake force is determined by the friction force between the tire and the road surface and is closely related to wheel slippage. Wheel slippage is represented by the slip ratio.
Side force is also closely related to wheel slippage. See figure A. If the brakes are applied while keeping the proper slip ratio, it is possible to obtain the maximum brake force without losing much side force. ABS allows full use of the tires’ capabilities even on slippery road surfaces or less slippery road surfaces. See figure B.



a. Friction force between the tire and road surface
b. Brake force
c. Side force
d. Slip ratio (%)
e. Less slippery road surface
f. Controlling zone
g. Slippery road surface

Wheel slip and hydraulic control
The ABS ECU calculates the wheel speed of each wheel according to the rotation signal received from the front and rear wheel sensors. In addition, the ABS ECU calculates the vehicle chassis speed and the rate of speed reduction based on the wheel speed values.

The difference between the chassis speed and the wheel speed calculated in the slip ratio formula is equal to the wheel slip. When the wheel speed is suddenly reduced, the wheel has a tendency to lock. When the wheel slip and the wheel speed reduction rate exceed the preset values, the ABS ECU determines that the wheel has a tendency to lock.
If the slip is large and the wheel has a tendency to lock (point A in the following figure), the ABS ECU reduces the brake fluid pressure in the brake caliper. The ABS ECU increases the pressure of the brake fluid in the brake caliper when the tendency to lock has diminished (point B in the following figure).



a. Chassis speed
b. Wheel speed
c. Pressurized
d. Depressurized
e. Brake force

ABS operation and vehicle control
If the ABS starts operating, there is a tendency of the wheel to lock, and the vehicle is approaching the limit of control. To make the rider aware of this condition, the ABS has been designed to generate a reaction-force pulsating action in the brake lever and brake pedal independently.

NOTE:

When the ABS is activated, a pulsating action may be felt at the brake lever or brake pedal, but this does not indicate a malfunction.

The higher the side force on a tire, the less traction there is available for braking. This is true whether the vehicle is equipped with ABS or not. Therefore, sudden braking while cornering is not recommended. Excessive side force, which ABS cannot prevent, could cause the tire to slip sideways.

EW3P61003

⚠ WARNING

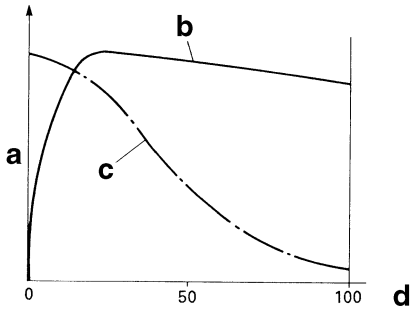
The braking of the vehicle, even in the worst case, is principally executed when the vehicle is advancing straight ahead. During a turn, sudden braking is liable to cause a loss of traction of the tires. Even in vehicles equipped with ABS, overturning of the vehicle cannot be prevented if it is braked suddenly.

The ABS functions to prevent the tendency of the wheel to lock by controlling the brake fluid pressure. However, if there is a tendency of the wheel to lock on a slippery road surface, due to engine braking, the ABS may not be able to prevent the wheel from locking.

EWA13870

⚠ WARNING

The ABS controls only the tendency of the wheel to lock caused by applying the brakes. The ABS cannot prevent wheel lock on slippery surfaces, such as ice, when it is caused by engine braking, even if the ABS is operating.

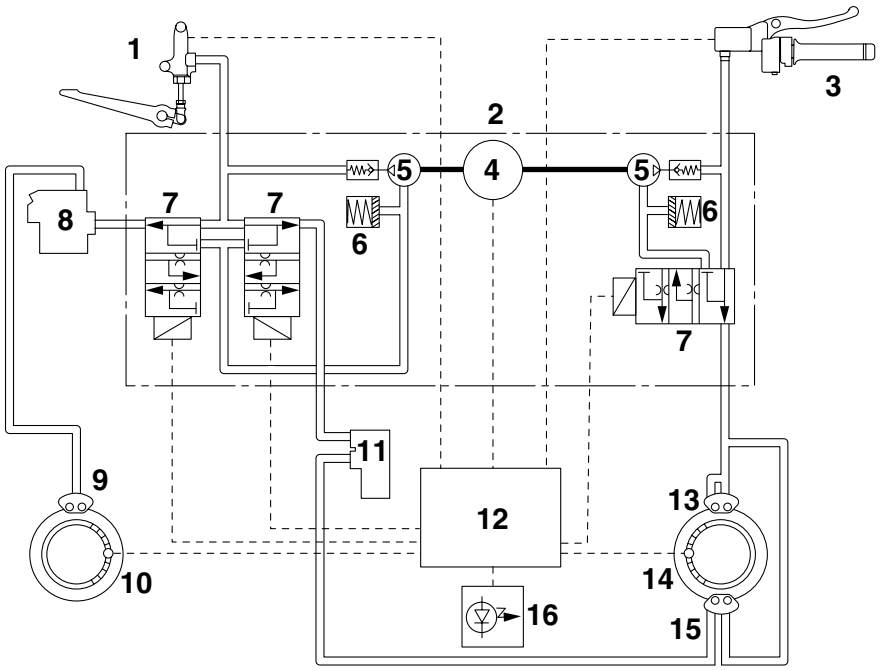


a. Friction force between the tire and road surface
b. Brake force
c. Side force
d. Slip ratio (%)

Electronic ABS features

The Yamaha ABS (anti-lock brake system) has been developed with the most advanced electronic technology.
The ABS control is processed with good response under various vehicle travel conditions.
The ABS also includes a highly developed self-diagnosis function. The ABS detects any problem condition and allows normal braking even if the ABS is not operating properly.
When this occurs, the ABS warning light on the meter assembly comes on.
The ABS stores the malfunction codes in the memory of the ABS ECU for easy problem identification and troubleshooting.

ABS block diagram

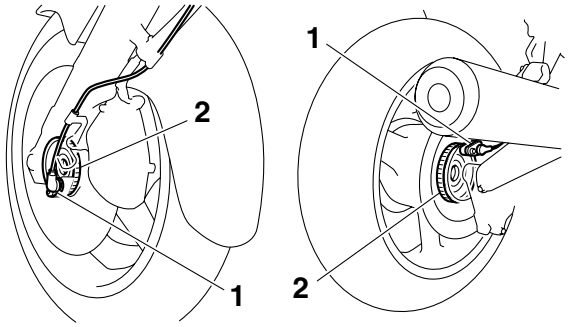


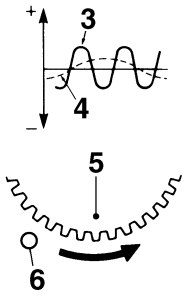
1. Rear brake master cylinder
2. Hydraulic unit
3. Front brake master cylinder
4. ABS motor
5. Hydraulic pump
6. Buffer chamber
7. Hydraulic control valve
8. Proportioning valve
9. Rear brake caliper
10. Rear wheel sensor
11. Metering valve
12. ABS ECU
13. Left front brake caliper
14. Front wheel sensor
15. Right front brake caliper
16. ABS warning light

ET3P61051
ABS COMPONENT FUNCTIONS

Wheel sensors and wheel sensor rotors

Wheel sensors “1” detect the wheel speed and transmit the rotation signal to the ABS ECU.
Each wheel sensor is composed of a permanent magnet and a coil. The wheel sensors are installed in the sensor housing for each wheel. Sensor rotors “2” are pressed in the inner side of the front and rear wheel hubs and rotate with the wheels. The wheel sensor rotors have 42 serrations inside and are installed close to the wheel sensors. As the distance changes between the top and bottom of the serrations with the rotation of the wheels, inductive electromotive force is generated in the wheel sensors. Wheel speed is detected based on the frequency of this alternating voltage.





3. At high speed
4. At low speed
5. Wheel sensor rotor
6. Wheel sensor

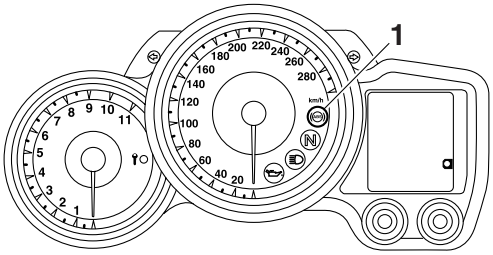
ABS warning light

The ABS warning light "1" comes on to warn the rider if a malfunction in the ABS occurs.
When the main switch is turned to "ON", the ABS warning light comes on for 2 seconds, then goes off, so that the rider can check if the ABS warning light is disconnected and check if the ABS is operating properly.

EC3P61009

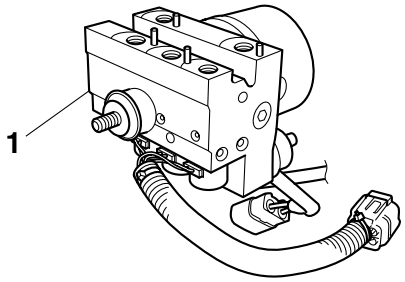
CAUTION:

If the rear wheel is raced with the vehicle on the centerstand, the ABS warning light may flash or come on. If this occurs, turn the main switch to "OFF", then back to "ON". The ABS operation is normal if the ABS warning light comes on for 2 seconds, then goes off.



Hydraulic unit

The hydraulic unit "1" is composed of three hydraulic control valves (each with a solenoid valve and flow control valve), two buffer chambers, two hydraulic pumps, and an ABS motor. The hydraulic unit adjusts the front and rear wheel brake fluid pressure to control the wheel speed according to signals transmitted from the ABS ECU.

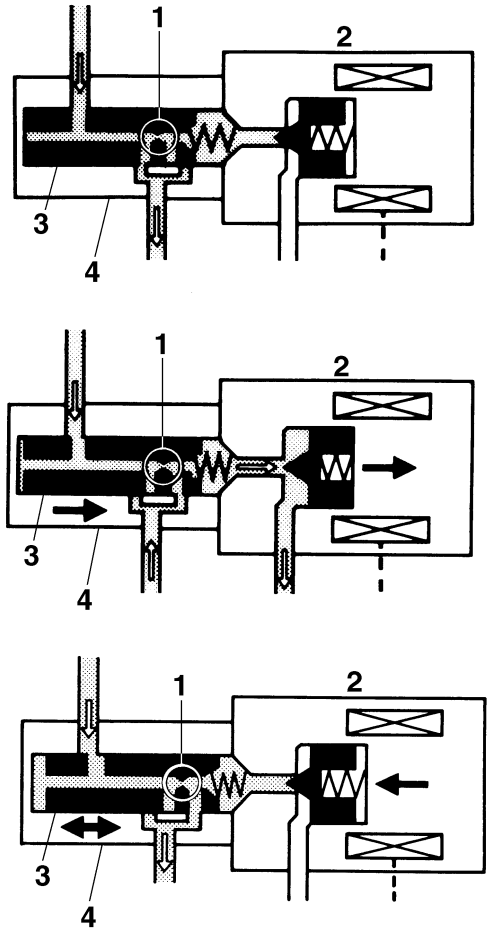


• Hydraulic control valve

The hydraulic control valve is composed of a flow control valve and solenoid valve.

When the ABS is activated, the flow control valve regulates the flow of brake fluid to the brake and the solenoid valve decreases and increases the brake fluid pressure.

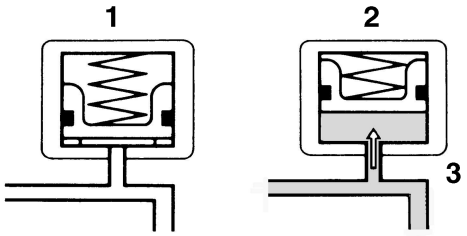
1. When the brakes are operated normally, the solenoid valve "2" is closed, the spool "3" of the flow control valve does not move, and the hydraulic line between the brake master cylinder and brake caliper is open.
2. When the ABS is activated, the solenoid valve "2" is opened by the power supplied from the ABS ECU signals to decrease the brake fluid pressure and the spool "3" of the flow control valve is moved toward the solenoid valve.
3. When the ABS ECU stops transmitting signals to decrease the brake fluid pressure, the solenoid valve "2" closes and the brake fluid is pressurized again. Pressurizing the brake fluid again, while the ABS is activated, limits the flow of the brake fluid with the movement of the flow control valve spool "3" and provides a gradual pressure increase.



1. Orifice
2. Solenoid valve
3. Spool
4. Flow control valve

• Buffer chamber

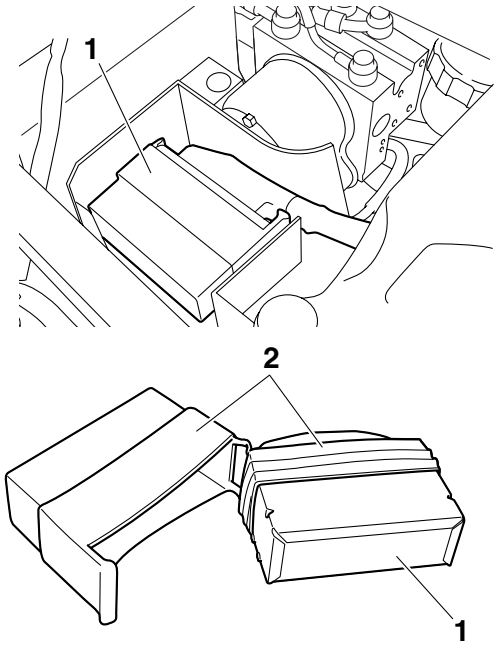
The buffer chamber accumulates the brake fluid that is depressurized while the ABS is operating.



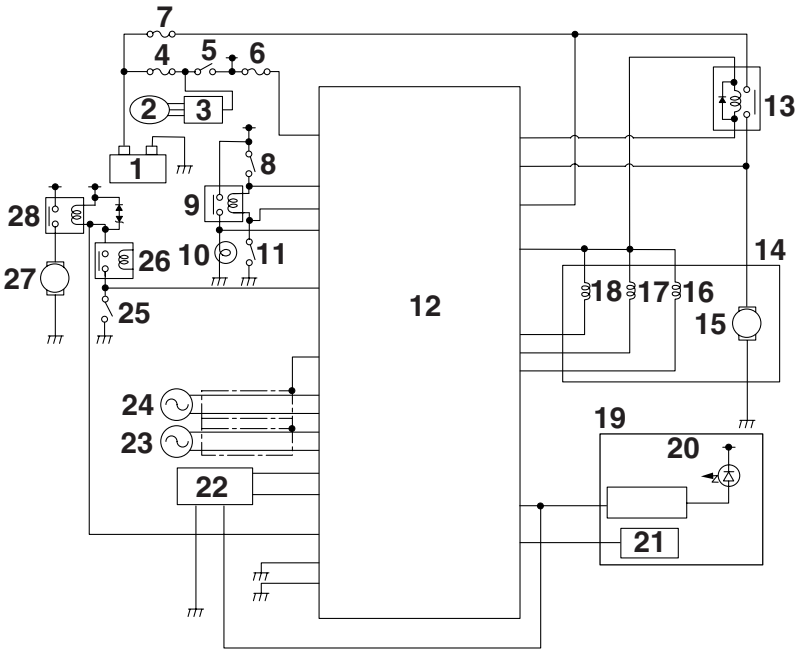
1. Buffer chamber (pressurized)
2. Buffer chamber (depressurized)
3. Raised piston

ABS ECU (electronic control unit)

The ABS ECU “1” controls the ABS and is installed under the storage compartment. To protect the ABS ECU from water damage, it is protected by a cover “2”.



As shown in the block following diagram, the ABS ECU receives wheel sensor signals from the front and rear wheels and also receives signals from other monitor circuits.



1. Battery
2. AC magneto
3. Rectifier/regulator
4. Main fuse
5. Main switch
6. ABS fuse
7. ABS motor fuse
8. Front brake light switch
9. Brake light relay
10. Tail/brake light
11. Rear brake light switch
12. ABS ECU
13. ABS motor relay
14. Hydraulic unit
15. ABS motor
16. Unified brake system solenoid
17. Rear brake solenoid
18. Front brake solenoid
19. Meter assembly
20. ABS warning light
21. Speedometer
22. ABS test coupler
23. Rear wheel sensor
24. Front wheel sensor
25. Start switch
26. Starting circuit cut-off relay
27. Starter motor
28. Starter relay

The necessary actions are confirmed using the monitor circuit and control signals are transmitted to the hydraulic unit and ABS motor relay.

ABS control operation

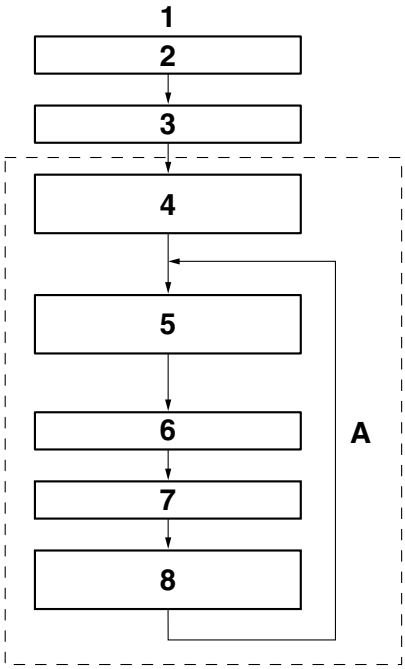
The ABS control operation performed in the ABS ECU is divided into the following two parts.

- Hydraulic control
- Self-diagnosis

These operations are performed once every 8/1000th of a second. When a malfunction is detected in the ABS, a malfunction code is stored in the memory of the ABS ECU for easy problem identification and troubleshooting.

NOTE:

Some types of malfunctions are not recorded in the memory of the ABS ECU (e.g., a drop in battery voltage).

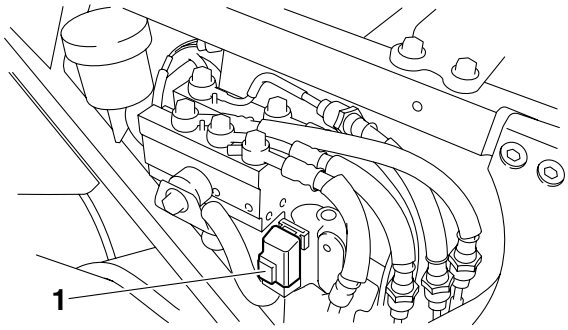


1. Software operation flow
2. Main switch “ON”
3. Initialize
4. Self-diagnosis (when static)
5. Self-diagnosis (when riding)
6. Receive signals
7. Control operation
8. Depressurize/pressurize

A. 8/1000th of a second

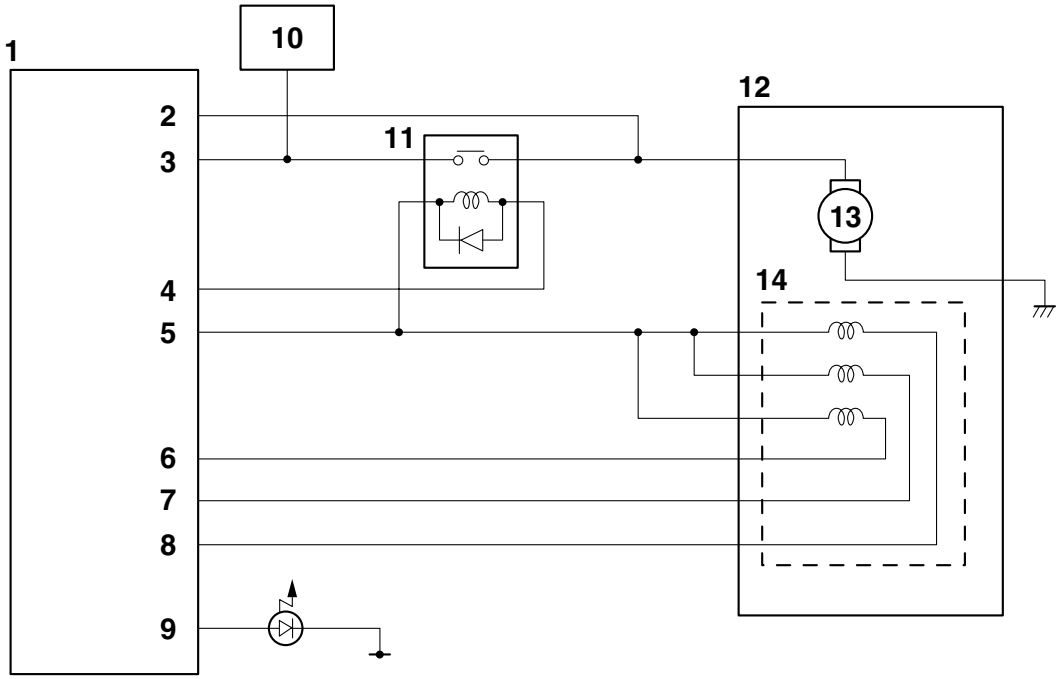
ABS motor relay

The ABS motor relay “1” controls the power supply of the hydraulic unit and is located beside the hydraulic unit.



Composition and operation

The ABS motor relay is activated by signals transmitted from the ABS ECU and the ABS motor operates when the ABS starts to reduce the hydraulic pressure of the brake fluid.



1. ABS ECU
2. Pump motor monitor
3. Power supply
4. Pump motor relay coil
5. Power supply
6. Front brake solenoid
7. Rear brake solenoid
8. Unified brake system solenoid
9. ABS warning light
10. Battery
11. ABS motor relay
12. Hydraulic unit
13. ABS motor
14. Solenoid valves

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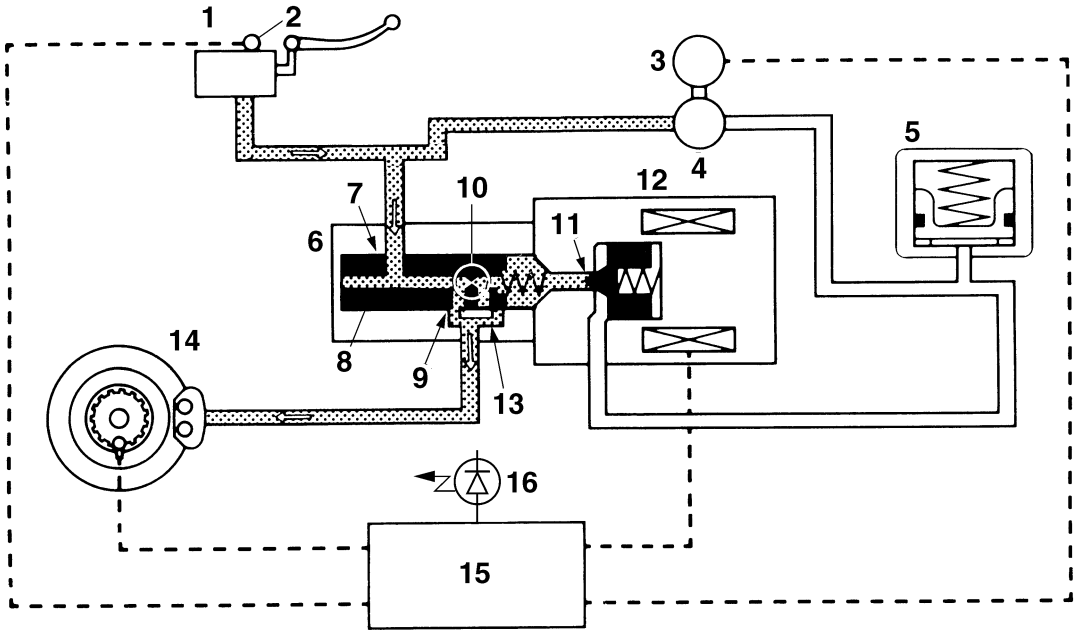
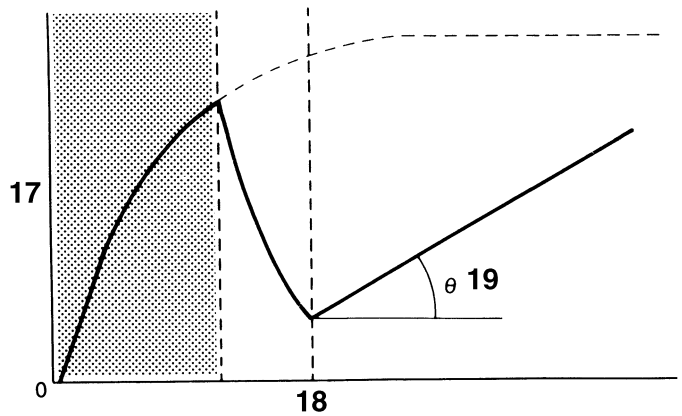
ABS OPERATION

The ABS hydraulic circuit consists of two systems: the front wheel, and rear wheel. The following describes the system for the front wheel only, excluding the unified brake system.

Normal braking (ABS not activated)
When the ABS is not activated, port D “11” of the solenoid valve is closed because a control signal has not been transmitted from the ABS ECU and port A “7” and port B “9” of the flow control valve are open. Therefore, when the brake lever is squeezed, the hydraulic pressure in the brake master cylinder increases and the brake fluid is sent to the brake caliper via port A and port B.
At this time, the inlet and outlet check valves of the hydraulic pump are closed, preventing the brake fluid from flowing through the pump. As a result, the brake master cylinder directly pressurizes the brake caliper during normal braking. When the brake lever is released, the brake fluid in the brake caliper returns to the brake master cylinder via port A and port B.

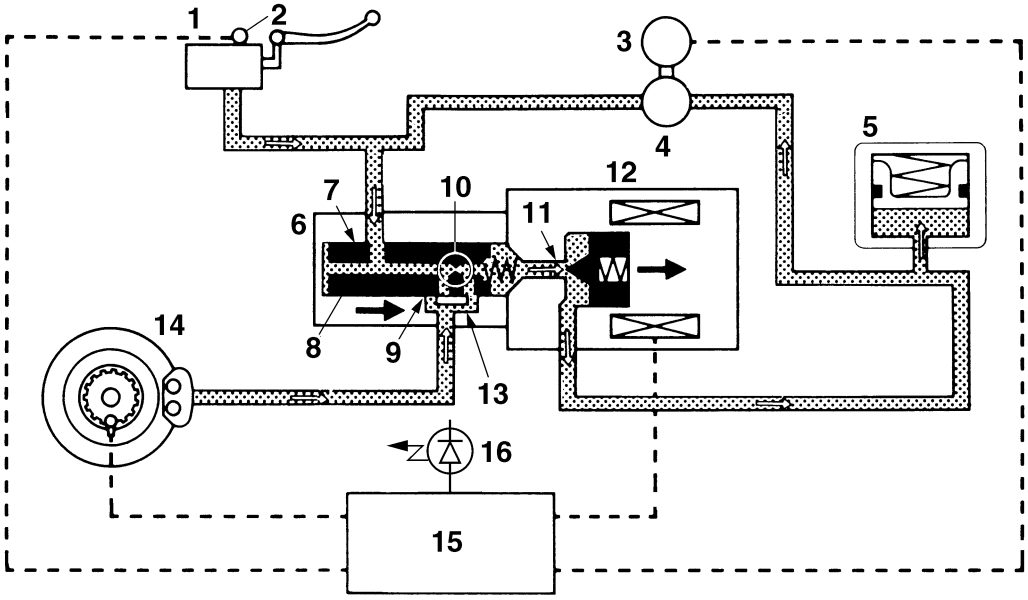


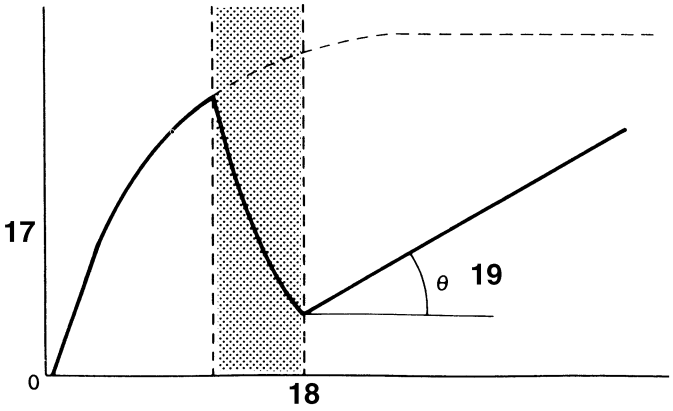


1. Brake master cylinder
2. Brake light switch
3. ABS motor
4. Hydraulic pump
5. Buffer chamber
6. Flow control valve
7. Port A
8. Spool
9. Port B
10. Orifice
11. Port D
12. Solenoid valve
13. Port C
14. Brake caliper
15. ABS ECU
16. ABS warning light
17. Brake fluid pressure
18. Time
19. Repressurizing

Emergency braking (ABS activated)

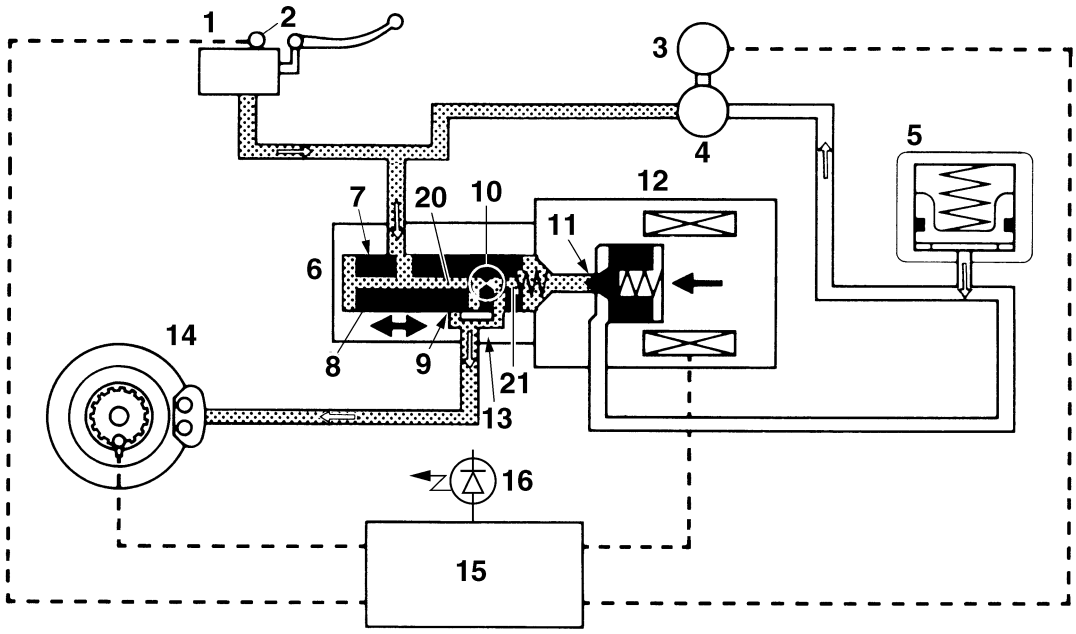
1. Depressurized state
   When the front wheel is about to lock, port D “11” of the solenoid valve is opened by the “depressurization” signal transmitted from the ABS ECU. When this occurs, the spool of the flow control valve compresses the return spring and closes port B “9”. Brake fluid that has entered through port A “7” is restricted by the orifice “10” and the brake fluid is sent to the brake caliper via port C “13” and to the buffer chamber via port D “11”. As a result, the hydraulic pressure in the brake caliper is reduced. The brake fluid stored in the buffer chamber is pumped back to the brake master cylinder by the hydraulic pump linked to the ABS motor.

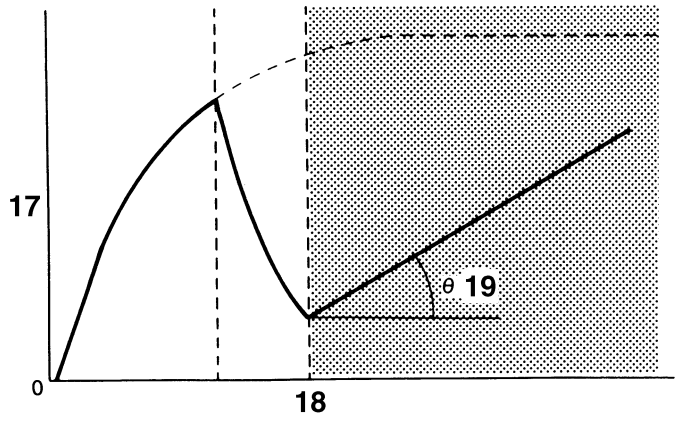




1. Brake master cylinder
2. Brake light switch
3. ABS motor
4. Hydraulic pump
5. Buffer chamber
6. Flow control valve
7. Port A
8. Spool
9. Port B
10. Orifice
11. Port D
12. Solenoid valve
13. Port C
14. Brake caliper
15. ABS ECU
16. ABS warning light
17. Brake fluid pressure
18. Time
19. Repressurizing

2. Pressurized state
   Port D “11” is closed by the “pressurization” signal transmitted from the ABS ECU. Before this occurs, the spool of the flow control valve has compressed the return spring and closed port B “9”. Brake fluid that has entered through port A “7” is further restricted by the orifice “10” and the brake fluid is sent to the brake caliper via port A “7” and port C “13”. At this time, the brake is pressurized at a constant rate regardless of the brake fluid pressure level since the restriction of port A “7” changes so that a constant pressure difference is maintained between chamber A “20” and chamber B “21” of the flow control valve.

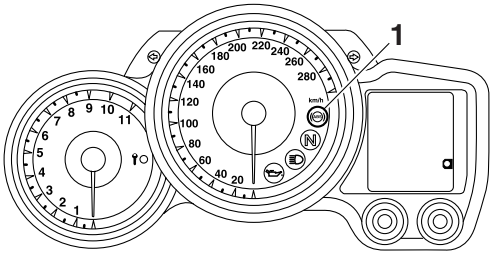




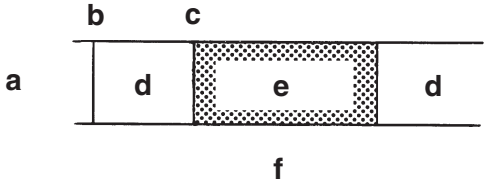
1. Brake master cylinder
2. Brake light switch
3. ABS motor
4. Hydraulic pump
5. Buffer chamber
6. Flow control valve
7. Port A
8. Spool
9. Port B
10. Orifice
11. Port D
12. Solenoid valve
13. Port C
14. Brake caliper
15. ABS ECU
16. ABS warning light
17. Brake fluid pressure
18. Time
19. Repressurizing
20. Chamber A
21. Chamber B

ET3P61053
ABS SELF-DIAGNOSIS FUNCTION

ABS warning light
The ABS warning light “1” comes on when a malfunction is detected by the ABS self-diagnosis. It is located in the meter assembly.

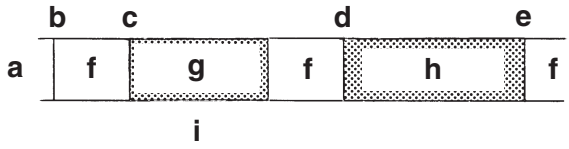


Instances when the ABS warning light comes on
1. The ABS warning light comes on when the main switch is turned to “ON”.
   The ABS warning light comes on for 2 seconds while the ABS is performing a self-diagnosis, then goes off if there are no problems.



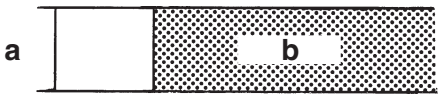
a. ABS warning light
b. Main switch “OFF”
c. Main switch “ON”
d. Goes off
e. Comes on for 2 seconds
f. ABS self-diagnosis

2. The ABS warning light comes on while the start switch is being pushed.
   When the engine is being started, the ABS warning light comes on while the start switch is being pushed. (Refer to “ELECTRIC STARTING SYSTEM” on page 8-9.)



a. ABS warning light
b. Main switch “OFF”
c. Main switch “ON”
d. Start switch “ON”
e. Start switch “OFF”
f. Goes off
g. Comes on for 2 seconds
h. Comes on while the start switch is being pushed
i. ABS self-diagnosis

3. The ABS warning light comes on while riding.
   If the ABS warning light comes on while riding, a malfunction has been detected in the ABS. The ABS hydraulic control will not be performed. The ABS will have recourse to manual braking if this occurs.

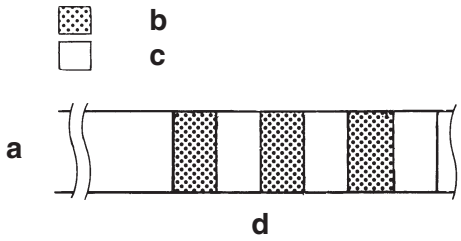


a. ABS warning light
b. Comes on

4. The ABS warning light flashes while riding.
   If the ABS warning light flashes while riding, there is no problem with the function of the ABS. However, the ABS ECU input has unstable factors. (For details, refer to "ABS TROUBLESHOOTING OUTLINE" on page 8-121.)

NOTE:

The ABS warning light comes on or flashes if the vehicle is ridden with the test coupler adapter connected to the ABS test coupler.



a. ABS warning light
b. Comes on
c. Goes off
d. Unstable ABS ECU input

5. The ABS warning light "1" flashes and a malfunction code "2" is indicated on the multi-function display when the test coupler adapter "3" is connected to the ABS test coupler "4" for troubleshooting the ABS.
   The ABS test coupler can be accessed by removing front cowling right inner panel 1.
   When the test coupler adapter is connected to the ABS test coupler, the ABS warning light starts flashing and the multi-function display indicates all the malfunction codes recorded in the ABS ECU.

	**Test coupler adapter** **90890-03149**

NOTE:

The ABS warning light comes on or flashes if the vehicle is ridden with the test coupler adapter connected to the ABS test coupler.