SUZUKI

# SV1000S

## SERVICE MANUAL

99500-39250-03E

## *IMPORTANT*

*All street-legal Suzuki motorcycles with engine displacement of 50 cc or greater are subject to Environmental Protection agency emission regulations. These regulations set specific standards for exhaust emission output levels as well as particular servicing requirements. This manual includes specific imformation required to properly inspect and service SV1000S in accordance with all EPA regulations. It is strongly recommended that the chapter on Emission Control, Periodic Servicing and FI SYSTEM be thoroughly reviewed before any type of service work is performed.*
*Further information concerning the EPA emission regulations and U.S. Suzuki's emission control program can be found in the U.S. SUZUKI EMISSION CONTROL PROGRAM MANUAL/SERVICE BULLETIN.*

# FOREWORD

*This manual contains an introductory description on the SUZUKI SV1000S and procedures for its inspection/service and overhaul of its main components.*
*Other information considered as generally known is not included.*
*Read the GENERAL INFORMATION section to familiarize yourself with the motorcycle and its maintenance. Use this section as well as other sections to use as a guide for proper inspection and service.*
*This manual will help you know the motorcycle better so that you can assure your customers of fast and reliable service.*

- *This manual has been prepared on the basis of the latest specifications at the time of publication. If modifications have been made since then, differences may exist between the content of this manual and the actual motorcycle.*
- *Illustrations in this manual are used to show the basic principles of operation and work procedures. They may not represent the actual motorcycle exactly in detail.*
- *This manual is written for persons who have enough knowledge, skills and tools, including special tools, for servicing SUZUKI motorcycles. If you do not have the proper knowledge and tools, ask your authorized SUZUKI motorcycle dealer to help you.*

**⚠ WARNING**

**Inexperienced mechanics or mechanics without the proper tools and equipment may not be able to properly perform the services described in this manual.**
**Improper repair may result in injury to the mechanic and may render the motorcycle unsafe for the rider and passenger.**

**SUZUKI MOTOR CORPORATION**

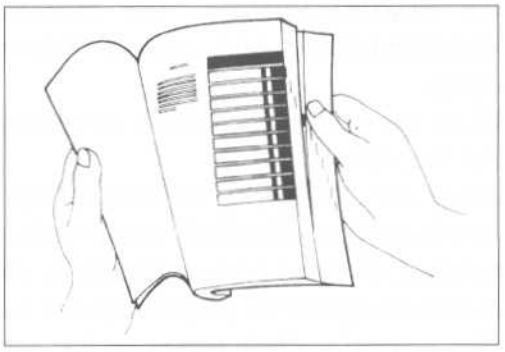


# GROUP INDEX

# HOW TO USE THIS MANUAL

## TO LOCATE WHAT YOU ARE LOOKING FOR:

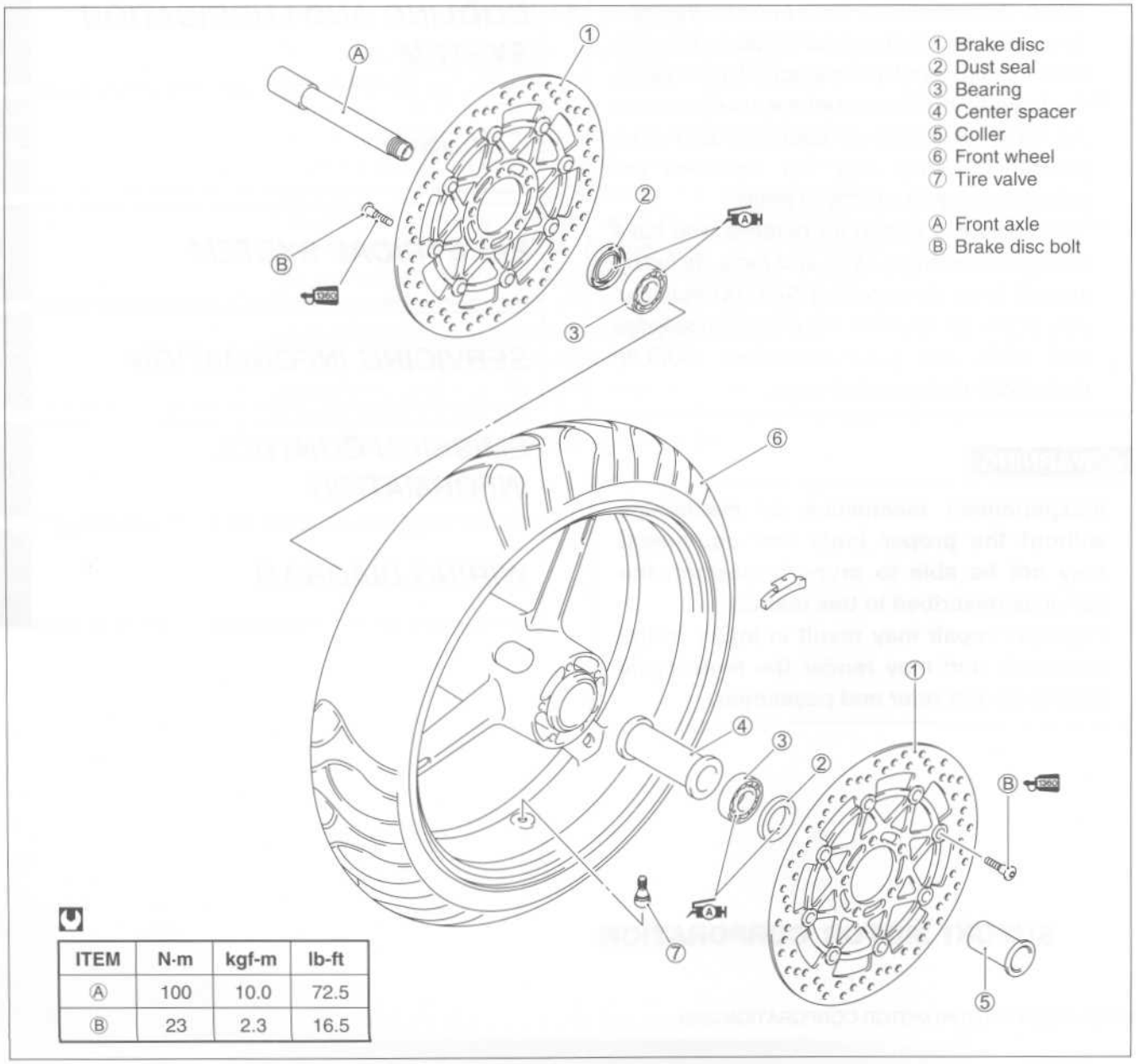
1. The text of this manual is divided into sections.
2. The section titles are listed in the GROUP INDEX.
3. Holding the manual as shown at the right will allow you to find the first page of the section easily.
4. The contents are listed on the first page of each section to help you find the item and page you need.



## COMPONENT PARTS AND WORK TO BE DONE

Under the name of each system or unit, is its exploded view. Work instructions and other service information such as the tightening torque, lubricating points and locking agent points, are provided.

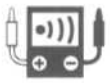
Example: Front wheel




| ITEM | N·m | kgf-m | lb-ft |
|---|---|---|---|
| Ⓐ | 100 | 10.0 | 72.5 |
| Ⓑ | 23 | 2.3 | 16.5 |

## SYMBOL

Listed in the table below are the symbols indicating instructions and other information necessary for servicing. The meaning of each symbol is also included in the table.

| SYMBOL | DEFINITION | SYMBOL | DEFINITION |
|---|---|---|---|
|  | Torque control required.<br>Data beside it indicates specified torque. |  | Use engine coolant. |
|  | Apply oil. Use engine oil unless otherwise specified. |  | Use fork oil.<br>99000-99044-L01 |
|  | Apply molybdenum oil solution.<br>(Mixture of engine oil and SUZUKI MOLY PASTE in a ratio of 1 : 1) |  | Apply or use brake fluid. |
|  | Apply SUZUKI SUPER GREASE "A".<br>99000-25030 |  | Measure in voltage range. |
|  | Apply SUZUKI MOLY PASTE.<br>99000-25140 |  | Measure in resistance range. |
|  | Apply SUZUKI SILICONE GREASE.<br>99000-25100 |  | Measure in current range. |
|  | Apply SUZUKI BOND "1207B".<br>99104-31140 |  | Measure in diode test range. |
|  | Apply THREAD LOCK SUPER "1303".<br>99000-32030 |  | Measure in continuity test range. |
|  | Apply THREAD LOCK "1342".<br>99000-32050 |  | Use special tool. |
|  | Apply THREAD LOCK SUPER "1360".<br>99000-32130 |  | Indication of service data. |

# ABBREVIATIONS USED IN THIS MANUAL

## A

| | |
|---|---|
| ABDC | : After Bottom Dead Center |
| AC | : Alternating Current |
| ACL | : Air Cleaner, Air Cleaner Box |
| API | : American Petroleum Institute |
| ATDC | : After Top Dead Center |
| ATM Pressure | : Atmospheric Pressure<br>Atmospheric Pressure Sensor (APS) |
| A/F | : Air Fuel Mixture |

## B

| | |
|---|---|
| BBDC | : Before Bottom Dead Center |
| BTDC | : Before Top Dead Center |
| B+ | : Battery Positive Voltage |

## C

| | |
|---|---|
| CKP Sensor | : Crankshaft Position Sensor (CKPS) |
| CKT | : Circuit |
| CLP Switch | : Clutch Lever Position Switch (Clutch Switch) |
| CMP Sensor | : Camshaft Position Sensor (CMPS) |
| CO | : Carbon Monoxide |
| CPU | : Central Processing Unit |

## D

| | |
|---|---|
| DC | : Direct Current |
| DMC | : Dealer Mode Coupler |
| DOHC | : Double Over Head Camshaft |
| DRL | : Daytime Running Light |

## E

| | |
|---|---|
| ECM | : Engine Control Module<br>Engine Control Unit (ECU)<br>(FI Control Unit) |
| ECT Sensor | : Engine Coolant Temperature Sensor (ECTS), Water Temp. Sensor (WTS) |
| EVAP | : Evaporative Emission |
| EVAP Canister | : Evaporative Emission Canister (Canister) |

## F

| | |
|---|---|
| FI | : Fuel Injection, Fuel Injector |
| FP | : Fuel Pump |
| FPR | : Fuel Pressure Regulator |
| FP Relay | : Fuel Pump Relay |

## G

| | |
|---|---|
| GEN | : Generator |
| GND | : Ground |
| GP Switch | : Gear Position Switch |

## H

| | |
|---|---|
| HC | : Hydrocarbons |

## I

| | |
|---|---|
| IAP Sensor | : Intake Air Pressure Sensor (IAPS) |
| IAT Sensor | : Intake Air Temperature Sensor (IATS) |
| IG | : Ignition |

## L

| | |
|---|---|
| LCD | : Liquid Crystal Display |
| LED | : Light Emitting Diode<br>(Malfunction Indicator Lamp) |
| LH | : Left Hand |

## M

| | |
|---|---|
| MAL-Code | : Malfunction Code (Diagnostic Code) |
| Max | : Maximum |
| MIL | : Malfunction Indicator Lamp (LED) |
| Min | : Minimum |

## N

| | |
|---|---|
| NOx | : Nitrogen Oxides |

## O

| | |
|---|---|
| OHC | : Over Head Camshaft |
| OPS | : Oil Pressure Switch |

## P

| | |
|---|---|
| PCV | : Positive Crankcase Ventilation (Crankcase Breather) |

## R

| | |
|---|---|
| RH | : Right Hand |
| ROM | : Read Only Memory |

## S

| | |
|---|---|
| SAE | : Society of Automotive Engineers |
| STC System | : Secondary Throttle Control System (STCS) |
| STP Sensor | : Secondary Throttle Position Sensor (STPS) |
| ST Valve | : Secondary Throttle Valve (STV) |
| STV Actuator | : Secondary Throttle Valve Actuator (STVA) |

## T

| | |
|---|---|
| TO Sensor | : Tip Over Sensor (TOS) |
| TP Sensor | : Throttle Position Sensor (TPS) |

## V

| | |
|---|---|
| VD | : Vacuum Damper |

# SAE-TO-FORMER SUZUKI TERM

This table lists SAE (Society of Automotive Engineers) J1930 terms and abbreviations which may be used in this manual in compliance with SAE recommendations, as well as their former SUZUKI names.

| SAE TERM | | FORMER SUZUKI TERM |
|---|---|---|
| FULL TERM | ABBREVIATION | |
| A | | |
| Air Cleaner | ACL | Air Cleaner, Air Cleaner Box |
| B | | |
| Barometric Pressure | BARO | Barometric Pressure, Atmospheric Pressure (APS, AP Sensor) |
| Battery Positive Voltage | B+ | Battery Voltage, +B |
| C | | |
| Camshaft Position Sensor | CMP Sensor | Camshaft Position Sensor (CMPS) |
| Crankshaft Position Sensor | CKP Sensor | Crankshaft Position Sensor (CKPS), Crank Angle |
| D | | |
| Data Link Connector | DLC | Dealer Mode Coupler |
| Diagnostic Test Mode | DTM | — |
| Diagnostic Trouble Code | DTC | Diagnostic Code, Malfunction Code |
| E | | |
| Electronic Ignition | EI | — |
| Engine Control Module | ECM | Engine Control Module (ECM)<br>FI Control Unit, Engine Control Unit (ECU) |
| Engine Coolant Level | ECL | Coolant Level |
| Engine Coolant Temperature | ECT | Coolant Temperature, Engine Coolant Temperature<br>Water Temperature |
| Engine Speed | RPM | Engine Speed (RPM) |
| Evaporative Emission | EVAP | Evaporative Emission |
| Evaporative Emission Canister | EVAP Canister | — (Canister) |
| Purge Valve | Purge Valve | Purge Valve (SP Valve) |
| F | | |
| Fan Control | FC | — |
| Fuel Level Sensor | — | Fuel Level Sensor, Fuel Level Gauge |
| Fuel Pump | FP | Fuel Pump (FP) |
| G | | |
| Generator | GEN | Generator |
| Ground | GND | Ground (GND, GRD) |

| SAE TERM | | FORMER SUZUKI TERM |
|---|---|---|
| FULL TERM | ABBREVIATION | |
| H | | |
| Heated Oxygen Sensor | HO2S | Heated Oxgen Sensor (HO2S), O2 Sensor |
| I | | |
| Idle Speed Control | ISC | — |
| Ignition Control | IC | Electronic Spark Advance (ESA) |
| Ignition Control Module | ICM | — |
| Intake Air Temperature | IAT | Intake Air Temperature (IAT), Air Temperature |
| M | | |
| Malfunction Indicator Lamp | MIL | LED Lamp<br>Malfunction Indicator Lamp (MIL) |
| Manifold Absolute Pressure | MAP | Intake Air Pressure, Intake Vacuum |
| Mass Air Flow | MAF | Air Flow |
| O | | |
| On-Board Diagnostic | OBD | Self-Diagnosis Function<br>Diagnostic |
| Open Loop | OL | — |
| P | | |
| Programmable Read Only Memory | PROM | — |
| Pulsed Secondary Air Injection | PAIR | Pulse Air Control (PAIR) |
| R | | |
| Random Access Memory | RAM | — |
| Read Only Memory | ROM | ROM |
| S | | |
| Secondary Air Injection | AIR | — |
| Secondary Throttle Control System | STCS | STC System (STCS) |
| Secondary Throttle Valve | STV | ST Valve (STV) |
| Secondary Throttle Valve Actuator | STVA | STV Actuator (STVA) |
| T | | |
| Throttle Body | TB | Throttle Body (TB) |
| Throttle Body Fuel Injection | TBI | Throttle Body Fuel Injection (TBI) |
| Throttle Position Sensor | TP Sensor | TP Sensor (TPS) |
| V | | |
| Voltage Regulator | VR | Voltage Regulator |
| Volume Air Flow | VAF | Air Flow |

# GENERAL INFORMATION

1

CONTENTS

## WARNING/CAUTION/NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the symbol and the words WARNING, CAUTION and NOTE have special meanings. Pay special attention to the messages highlighted by these signal words.

**⚠ WARNING**

**Indicates a potential hazard that could result in death or injury.**

**CAUTION**

**Indicates a potential hazard that could result in motorcycle damage.**

*NOTE:*
*Indicates special information to make maintenance easier or instructions clearer.*

Please note, however, that the warnings and cautions contained in this manual cannot possibly cover all potential hazards relating to the servicing, or lack of servicing, of the motorcycle. In addition to the WARNINGS and CAUTIONS stated, you must use good judgement and basic mechanical safety principles. If you are unsure about how to perform a particular service operation, ask a more experienced mechanic for advice.

## GENERAL PRECAUTIONS

**⚠ WARNING**

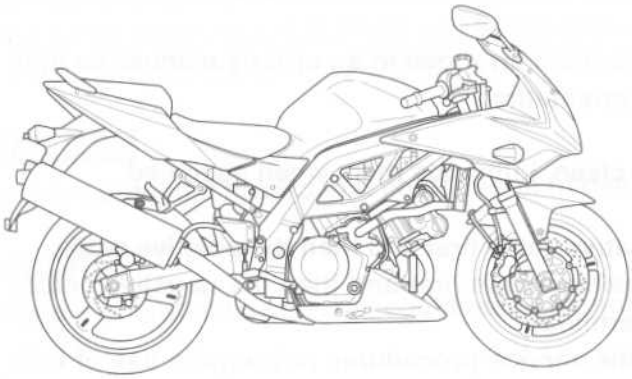
- **Proper service and repair procedures are important for the safety of the service mechanic and the safety and reliability of the motorcycle.**
- **When 2 or more persons work together, pay attention to the safety of each other.**
- **When it is necessary to run the engine indoors, make sure that exhaust gas is forced outdoors.**
- **When working with toxic or flammable materials, make sure that the area you work in is well-ventilated and that you follow all of the material manufacturer's instructions.**
- **Never use gasoline as a cleaning solvent.**
- **To avoid getting burned, do not touch the engine, engine oil, radiator and exhaust system until they have cooled.**
- **After servicing the fuel, oil, water, exhaust or brake systems, check all lines and fittings related to the system for leaks.**

**CAUTION**

* If parts replacement is necessary, replace the parts with Suzuki Genuine Parts or their equivalent.
* When removing parts that are to be reused, keep them arranged in an orderly manner so that they may be reinstalled in the proper order and orientation.
* Be sure to use special tools when instructed.
* Make sure that all parts used in reassembly are clean. Lubricate them when specified.
* Use the specified lubricant, bond or sealant.
* When removing the battery, disconnect the negative cable first and then the positive cable.
* When reconnecting the battery, connect the positive cable first and then the negative cable, and replace the terminal cover on the positive terminal.
* When performing service to electrical parts, if the service procedures not require use of battery power, disconnect the negative cable the battery.
* When tightening the cylinder head and case bolts and nuts, tighten the larger sizes first. Always tighten the bolts and nuts diagonally from the inside toward outside and to the specified tightening torque.
* Whenever you remove oil seals, gaskets, packing, O-rings, locking washers, self-locking nuts, cotter pins, circlips and certain other parts as specified, be sure to replace them with new ones. Also, before installing these new parts, be sure to remove any left over material from the mating surfaces.
* Never reuse a circiip. When installing a new circlip, take care not to expand the end gap larger than required to slip the circlip over the shaft. After installing a circlip, always ensure that it is completely seated in its groove and securely fitted.
* Use a torque wrench to tighten fasteners to the specified torque. Wipe off grease and oil if a thread is smeared with them.
* After reassembling, check parts for tightness and proper operation.

* To protect the environment, do not unlawfully dispose of used motor oil, engine coolant and other fluids: batteries and tires.
* To protect Earth's natural resources, properly dispose of used motorcycle and parts.

# SUZUKI SV1000SK3 ('03-MODEL)



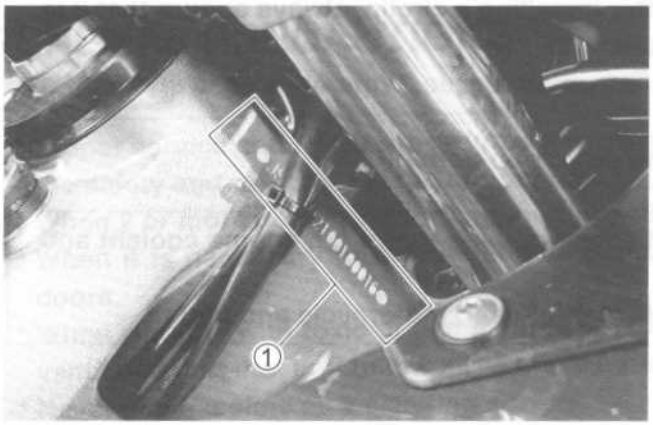
RIGHT SIDE

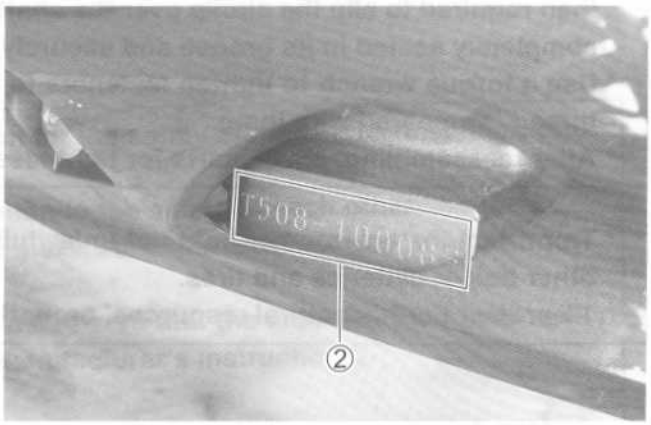
LEFT SIDE

* Difference between illustrations and actual motorcycles depends on the markets.

## SERIAL NUMBER LOCATION

The frame serial number or V.I.N. (Vehicle Identification Number) ① is stamped on the right side of the steering head pipe. The engine serial number ② is located on the right side of the crankcase. These numbers are required especially for registering the machine and ordering spare parts.




## FUEL, OIL AND ENGINE COOLANT RECOMMENDATION

### FUEL (FOR USA AND CANADA)

Use only unleaded gasoline of at least 87 pump octane (R/2 + M/2) or 91 octane or higher rated by the research method.

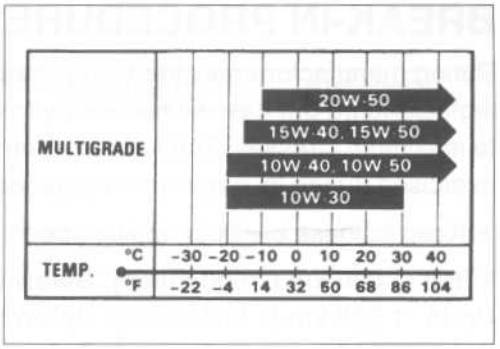
Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.

### FUEL (FOR OTHER COUNTRIES)

Gasoline used should be graded 91 octane (Research Method) or higher. Unleaded gasoline is recommended.

## ENGINE OIL

SUZUKI recommends the use of SUZUKI PERFORMANCE 4 MOTOR OIL or an oil which is rated SF or SG under the API (American Petroleum Institute) service classification. The recommended viscosity is SAE 10W-40. If an SAE 10W-40 oil is not available, select an altematice according to the right chart.




## BRAKE FLUID

**Specification and classification: DOT 4**

**⚠ WARNING**

**Since the brake system of this motorcycle is filled with a glycol-based brake fluid by the manufacturer, do not use or mix different types of fluid such as silicone-based and petroleum-based fluid for refilling the system, otherwise serious damage will result.**
**Do not use any brake fluid taken from old or used or unsealed containers.**
**Never re-use brake fluid left over from a previous servicing, which has been stored for a long period.**

## FRONT FORK OIL

Use fork oil L01 or an equivalent fork oil.

## ENGINE COOLANT

Use an anti-freeze/engine coolant compatible with an aluminum radiator, mixed with distilled water only.

## WATER FOR MIXING

Use distilled water only. Water other than distilled water can corrode and clog the aluminum radiator.

## ANTI-FREEZE/ENGINE COOLANT

The engine coolant perform as a corrosion and rust inhibitor as well as anti-freeze. Therefore, the engine coolant should be used at all times even though the atmospheric temperature in your area does not go down to freezing point.

Suzuki recommends the use of SUZUKI COOLANT anti-freeze/engine coolant. If this is not available, use an equivalent which is compatible with an aluminum radiator.

## LIQUID AMOUNT OF WATER/ENGINE COOLANT

**Solution capacity (total): 2 200 ml (2.3/1.9 US/Imp qt)**

For engine coolant mixture information, refer to cooling system section, page 5-3.

**CAUTION**

**Mixing of anti-freeze/engine coolant should be limited to 60%. Mixing beyond it would reduce its efficiency. If the anti-freeze/engine coolant mixing ratio is below 50%, rust inhabiting performance is greatly reduced. Be sure to mix it above 50% even though the atmospheric temperature does not go down to the freezing point.**

## BREAK-IN PROCEDURES

During manufacture only the best possible materials are used and all machined parts are finished to a very high standard but it is still necessary to allow the moving parts to "BREAK-IN" before subjecting the engine to maximum stresses. The future performance and reliability of the engine depends on the care and restraint exercised during its early life. The general rules are as follows:

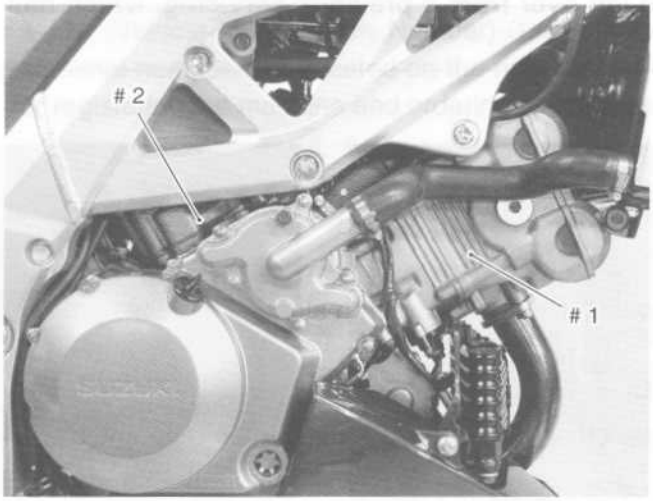
- Keep to these break-in engine speed limits:

**Initial 800 km ( 500 miles): Below 6 000 r/min**
**Up to 1 600 km (1 000 miles): Below 9 000 r/min**
**Over 1 600 km (1 000 miles): Below 12 500 r/min**

- Upon reaching an odometer reading of 1 600 km (1 000 miles) you can subject the motorcycle to full throttle operation. However, do not exceed 12 500 r/min at any time.

## CYLINDER IDENTIFICATION

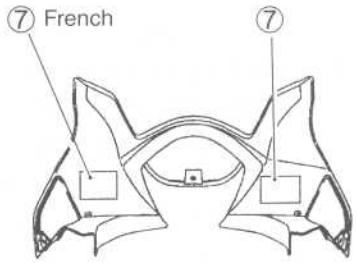
The two cylinders of this engine are identified as No. 1 and No. 2 cylinder, as counted from front to rear (as viewed by the rider on the seat).

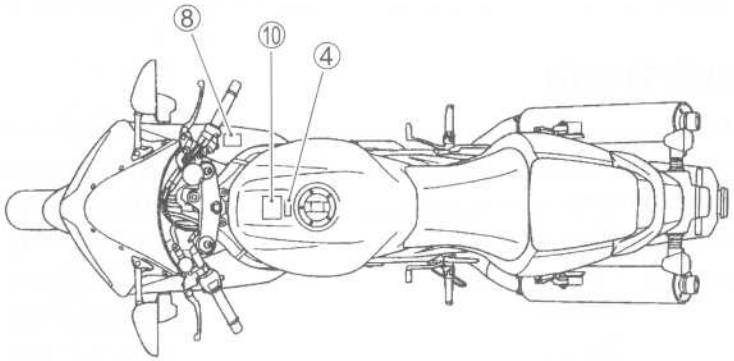


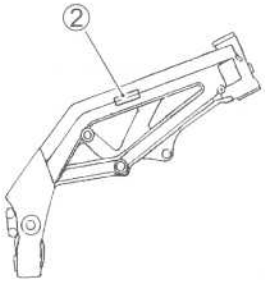
# INFORMATION LABELS

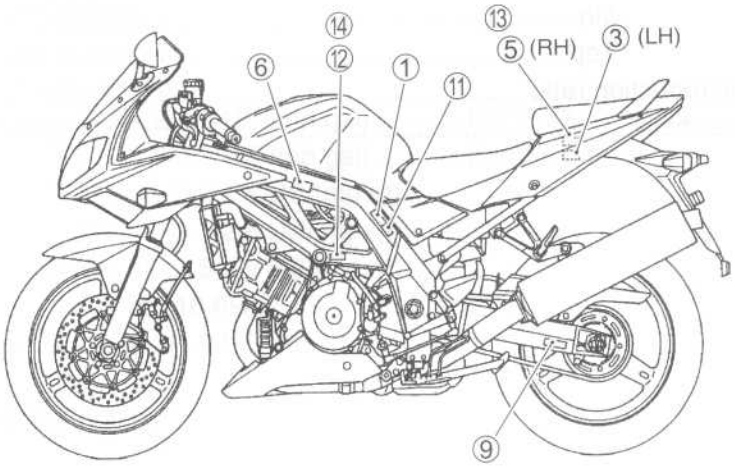
| | SV1000S | SV1000SD | SV1000SF |
|---|---|---|---|
| ① Noise label | A For E-03, 24, 33 | | |
| ② Information label | A For E-03, 28, 33 | | |
| ③ Vacuum hose routing label | A For E-33 | | |
| ④ Fuel caution label | A For E-02, 24 | | |
| ⑤ Manual caution label | A For E-03, 33 | | |
| ⑥ Frame caution label | A | A | A |
| ⑦ Warning screen label | A For E-28 (LH, RH)<br>Other (RH) | A | A |
| ⑧ Warning steering label | A | A | A |
| ⑨ Tire air pressure label | A | A | A |
| ⑩ Warning safety label | A | A | A |
| ⑪ ICES Canada label | A For E-28 | | |
| ⑫ ID plate | A For E-03, 28, 33 | A | A |
| ⑬ E19 ID label | | | A |
| ⑭ Safety plate | A For E-03, 28, 33 | | |

A: Attached



# SPECIFICATIONS

## DIMENSIONS AND DRY MASS

| | |
|---|---|
| Overall length | 2 130 mm (83.9 in) |
| Overall width | 745 mm (29.3 in) |
| Overall height | 1 170 mm (46.1 in) |
| Wheelbase | 1 430 mm (56.3 in) |
| Ground clearance | 150 mm ( 5.9 in) |
| Seat height | 810 mm (31.9 in) |
| Dry mass | 189 kg (416 lbs) |
| | 190 kg (418 lbs) .....E-33 |

## ENGINE

| | |
|---|---|
| Type | 4-stroke, liquid-cooled, DOHC, 90° degree V-twin |
| Number of cylinders | 2 |
| Bore | 98.0 mm (3.858 in) |
| Stroke | 66.0 mm (2.598 in) |
| Displacement | 996 $cm^3$ (60.8 cu. in) |
| Compression ratio | 11.3 : 1 |
| Fuel system | Fuel injection |
| Air cleaner | Non-woven fabric element |
| Starter system | Electric |
| Lubrication system | Wet sump |
| Idle speed | 1 200 ± 100 r/min |

## DRIVE TRAIN

| | |
|---|---|
| Clutch | Wet multi-plate type |
| Transmission | 6-speed constant mesh |
| Gearshift pattern | 1-down, 5-up |
| Primary reduction ratio | 1.838 (57/31) |
| Gear ratios, Low | 2.666 (32/12) |
| 2nd | 1.933 (29/15) |
| 3rd | 1.500 (27/18) |
| 4th | 1.227 (27/22) |
| 5th | 1.086 (25/23) |
| Top | 1.000 (24/24) |
| Final reduction ratio | 2.352 (40/17) |
| Drive chain | RK530 SMOZ1, 108 links |

## CHASSIS

| | |
|---|---|
| Front suspension | Telescopic, coil spring, oil damped |
| Rear suspension | Link type, coil spring, oil damped |
| Front suspension stroke | 120 mm (4.72 in) |
| Rear wheel travel | 129 mm (5.08 in) |
| Caster | 24.5° |
| Trail | 98 mm (3.9 in) |
| Steering angle | 30° (right & left) |
| Turning radius | 3.2 m (10.50 ft) |
| Front brake | Disc brake, twin |
| Rear brake | Disc brake |
| Front tire size | 120/70 ZR17M/C (58W), tubeless |
| Rear tire size | 180/55 ZR17M/C (73W), tubeless |

## ELECTRICAL

| | |
|---|---|
| Ignition type | Electronic ignition (Transistorized) |
| Ignition timing | 5° B. T. D. C at 1 200 r/min |
| Spark plug | NGK: CR8EK or DENSO: U24ETR |
| Battery | 12 V 43.2 kC (12 Ah)/10 HR |
| Generator | Three-phase A.C. Generator |
| Main fuse | 30 A |
| Fuse | 15/15/10/15/15/10 A |
| Headlight | 12 V 60/55 W × 2 |
| Position light | 12 V 5 W × 2 |
| License plate light | 12 V 5 W |
| Turn signal light | 12 V 21 W × 4 |
| Brake light/Taillight | LED |
| Speedometer/Tachometer light | LED |
| Fuel level indicator light | LED |
| Turn signal indicator light | LED |
| Neutral indicator light | LED |
| High beam indicator light | LED |
| Oil pressure/Coolant temperature/Fuel injection warning light | LED |

## CAPACITIES

| | | | |
|---|---|---|---|
| Fuel tank | | 16 L (4.2/3.5 US/Imp gal) | For E-33 |
| | | 17 L (4.5/3.7 US/Imp gal) | For the others |
| Engine oil, | oil change | 2 700 ml (2.9/2.4 US/Imp qt) | |
| | with filter change | 2 900 ml (3.1/2.6 US/Imp qt) | |
| | overhaul | 3 300 ml (3.5/2.9 US/Imp qt) | |
| Front fork oil (each leg) | | 494 ml (16.69/17.39 US/Imp oz) | |
| Coolant | | 2.2 L (2.3/1.9 US/Imp qt) | |

These specifications are subject to change without notice.

# COUNTRY AND AREA CODES

The following codes stand for the applicable country(-ies) and area(-s).

| CODE | COUNTRY or AREA |
|---|---|
| E-02 | U. K. |
| E-03 | U. S. A. (Except for California) |
| E-19 | EU |
| E-24 | Australia |
| E-28 | Canada |
| E-33 | California (U. S. A.) |