

SUZUKI

SV650

SERVICE MANUAL

FOREWORD

This manual contains an introductory description on the SUZUKI SV650 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.

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 information required to properly inspect and service SV650 in accordance with all EPA regulations. It is strongly recommended that the chapter on Emission Control, Periodic Servicing and Carburetion 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.

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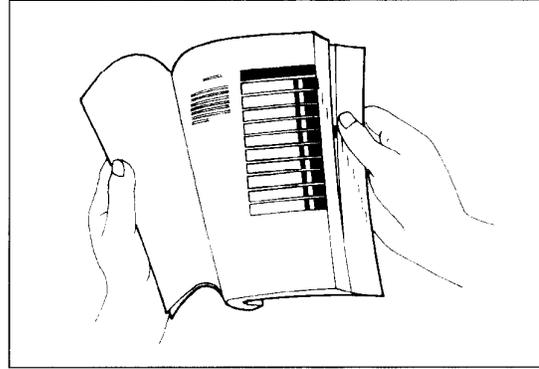
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SUZUKI MOTOR CORPORATION

Motorcycle Service Department

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 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

① Spacer
 ② Spacer
 ③ Brake disc (R)
 ④ Bearing
 ⑤ Spacer
 ⑥ Front wheel
 ⑦ Brake disc (L)
 ⑧ Speed sensor

A Front axle
 B Front axle pinch bolt
 C Brake disc bolt



ITEM	N·m	kgf·m	lb·ft
A	65	6.5	47.0
B	23	2.3	16.5
C	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. Data beside it indicates specified torque.		Use engine coolant.
	Apply oil. Use engine oil unless otherwise specified.		Use fork oil. 99000-99044-10G
	Apply molybdenum oil solution. (Mixture of engine oil and SUZUKI MOLY PASTE in a ratio of 1:1)		Apply or use brake fluid.
	Apply SUZUKI SUPER GREASE "A". 99000-25030		Measure in voltage range.
	Apply SUZUKI SILICONE GREASE. 99000-25100		Measure in current range.
	Apply SUZUKI MOLY PASTE. 99000-25140		Measure in diode test range.
	Apply SUZUKI BOND "1207B". 99104-31140		Measure in continuity test range.
	Apply THREAD LOCK SUPER "1303". 99000-32030		Use special tool.
	Apply THREAD LOCK "1342". 99000-32050		Indication of service data.
	Apply THREAD LOCK SUPER "1360". 99000-32130		

GENERAL INFORMATION

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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, engine coolant, 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.
- * 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 cover the positive terminal with the terminal cover.
- * When performing service to electrical parts, disconnect the battery negative cable unless the service procedure requires the battery power.
- * When tightening cylinder head and crankcase bolts and nuts, tighten the larger sizes first. Always tighten the bolts and nuts diagonally from the inside working out 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 circlip. 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 the earth's natural resources, properly dispose of used motorcycles and parts.

SUZUKI SV650X ('99-MODEL)

CAUTION



RIGHT SIDE

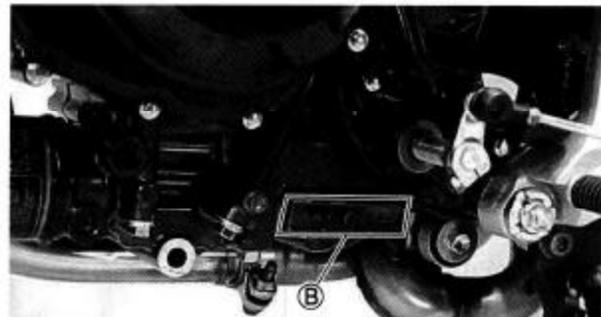


LEFT SIDE

* Difference between photograph and actual motorcycle 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 left side of the crankcase. These numbers



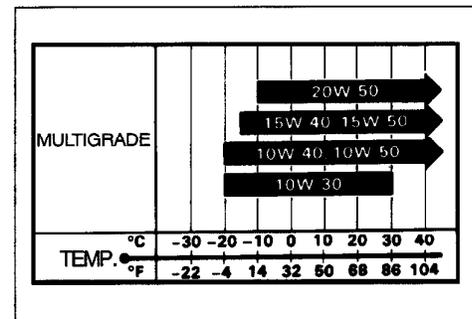
FUEL, OIL AND ENGINE COOLANT RECOMMENDATION

FUEL (For U.S.A. model)

1. Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) method or 91 octane or higher rated by the research method.
2. Suzuki recommends that customers use alcohol free, unleaded gasoline whenever possible.
3. Use of blended gasoline containing MTBE (Methyl Tertiary Butyl Ether) is permitted.
4. Use of blended gasoline/alcohol fuel is permitted, provided that the fuel contains not more than 10% ethanol. Gasoline/alcohol fuel may contain up to 5% methanol if appropriate cosolvents and corrosion inhibitors are present in it.
5. If the performance of the vehicle is unsatisfactory while using blended gasoline/alcohol fuel, you should switch to alcohol-free unleaded gasoline.
6. Failure to follow these guideline could possibly void applicable warranty coverage. Check with your fuel supplier to make sure that the fuel you intend to use meets the requirements listed above.

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 alternative according to the right chart.



BRAKE FLUID

Use DOT4 brake fluid.

▲ 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 SUZUKI FORK OIL G10 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 inhabit 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.

LIQUID AMOUNT OF WATER/ENGINE COOLANT

Solution capacity (total): 1 600 ml (1.7/1.4 US/Imp qt)

For engine coolant mixture information, refer to cooling system section. (☞ 5-2)

▲ 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 inhibiting 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 procedures:

Initial 800 km (500 miles): Below 5 000 r/min

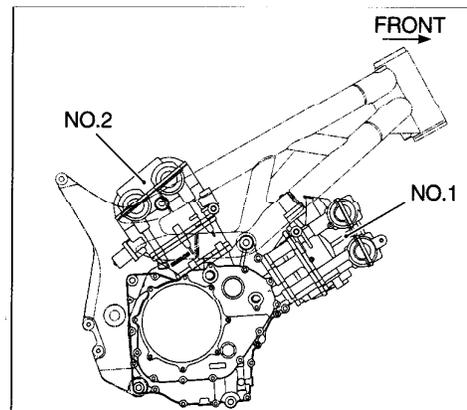
Up to 1 600 km (1 000 miles): Below 8 000 r/min

Over to 1 600 km (1 000 miles): Below 10 500 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 11 000 r/min at any time.

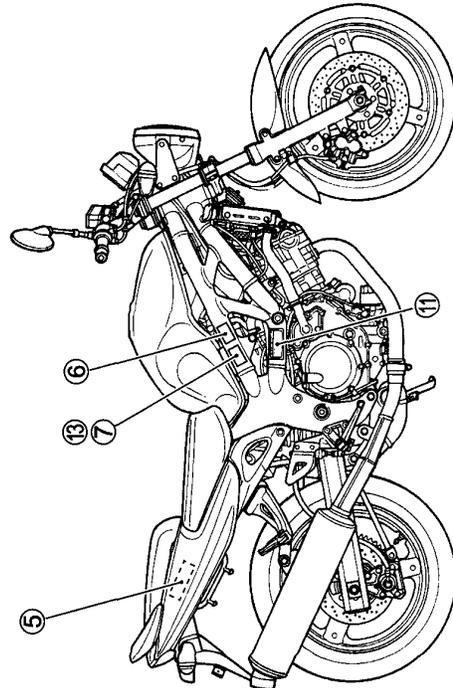
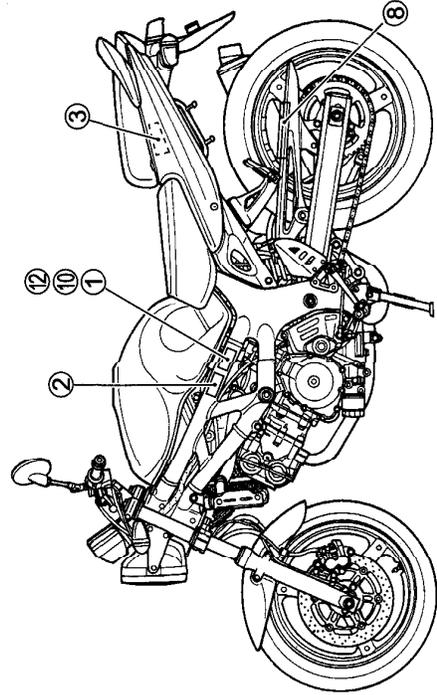
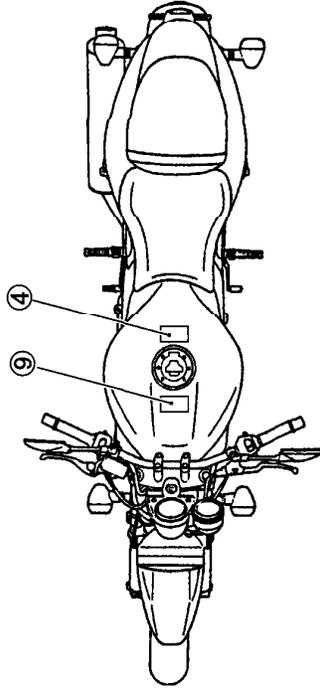
CYLINDER IDENTIFICATION

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



INFORMATION LABELS

① Noise label (For E-03, 24, 33, 34)
② Information label (For E-03, 28, 33)
③ Vacuum hose routing label (For E-33)
④ Fuel caution label (For E-02, 24)
⑤ Manual notice label (For E-03, 33)
⑥ Frame caution label (For E-03, 28, 33)
⑦ Frame caution label (Except for E-03, 28, 33)
⑧ Tire pressure label
⑨ Warning safety label
⑩ ICES Canada label (For E-28)
⑪ ID plate (Except for E-03, 28, 33)
⑫ ID plate (For E-18)
⑬ Safety plate (For E-03, 28, 33)



SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 070 mm (81.5 in)
Overall width	750 mm (29.5 in)
Overall height	1 060 mm (41.7 in)
Wheelbase	1 430 mm (56.3 in)
Ground clearance	140 mm (5.5 in)
Seat height.....	805 mm (31.7 in)
Dry mass	165 kg (363 lbs)

ENGINE

Type.....	Four-stroke, Liquid-cooled, DOHC, TSCC, 90-degree V-twin
Number of cylinders.....	2
Tapet clearance, IN	0.10 – 0.20 mm (0.004 – 0.008 in)
EX	0.20 – 0.30 mm (0.008 – 0.012 in)
Bore	81.0 mm (3.189 in)
Stroke	62.6 mm (2.465 in)
Piston displacement	645 cm ³ (39.4 cu. in)
Compression ratio.....	11.5 : 1
Carburetor	MIKUNI BDSR39 × 2
Air cleaner.....	Non-woven fabric element
Starter system.....	Electric starter
Lubrication system.....	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	6-speed constant, mesh
Gearshift pattern	1-down, 5-up
Primary reduction ratio	2.088 (71/34)
Gear ratios, Low	2.461 (32/13)
2nd.....	1.777 (32/18)
3rd	1.380 (29/21)
4th.....	1.125 (27/24)
5th.....	0.961 (25/26)
Top	0.851 (23/27)
Final reduction ratio.....	3.000 (45/15)
Drive chain	D.I.D 525 V8, 110 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type system, gas/oil damped, coil spring
Front fork stroke	130 mm (5.1 in)
Rear wheel travel	125 mm (4.9 in)
Steering angle	33° (right & left)
Caster	25°
Trail	100 mm (3.94 in)
Turning radius	2.9 m (9.5 ft)
Front brake	Disc brake, twin hydraulically operated
Rear brake	Disc brake, hydraulically operated
Front tire size	120/60 ZR17 (55 W), tubeless
Rear tire size	160/60 ZR17 (69 W), tubeless

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	5° B.T.D.C. at 1 300 r/min
Spark plug	NGK CR8E, DENSO U24ESR-N
Battery	12V 36.0 kC(10 Ah)/10HR
Generator	Three-phase A.C. Generator
Main fuse	30A
Fuse	15/15/15/10/10A
Headlight	12V 60/55W
Turn signal light	12V 21W
Brake light/Taillight	12V 21/5W × 2
License plate light	12V 5W
Speedometer light	12V 1.7W × 2
Neutral indicator light	12V 1.7W
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 1.7W
Oil pressure indicator light	12V 1.7W

CAPACITIES

Fuel tank, including reserve	16.0 L (4.2/3.5 US/Imp gal)
	15.0 L (4.0/3.3 US/Imp gal) Only for E-33
Engine oil, oil change	2 300 ml (2.4/2.0 US/Imp qt)
with filter change	2 400 ml (2.5/2.1 US/Imp qt)
overhaul	2 700 ml (2.9/2.4 US/Imp qt)
Coolant	1 600 ml (1.7/1.4 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	USA (Except for california)
E-04	France
E-17	Sweden, Finland (E-15), Norway (E-16)
E-18	Switzerland, Austria (E-39)
E-22	Germany
E-24	Australia
E-25	Netherlands
E-28	Canada
E-33	California (USA)
E-34	Italy, Belgium (E-21), Spain (E-53)