

Service Manual

XF650 Freewind
(CCM 644 Engine)



FOREWORD

This manual contains an introductory description on SUZUKI XF650 and procedures for its inspection/service and overhaul of its main components.

Other information considered as generally known is not included.

Read GENERAL INFORMATION section to familiarize yourself with outline of the vehicle and MAINTENANCE and other sections to use as a guide for proper inspection and service.

This manual will help you know the vehicle better so that you can assure your customers of your optimum and quick service.

* This manual has been prepared on the basis of the latest specification at the time of publication.

If modification has been made since then, difference may exist between the content of this manual and the actual vehicle.

* Illustrations in this manual are used to show the basic principles of operation and work procedures.

They may not represent the actual vehicle exactly in detail.

* This manual is intended for those who have enough knowledge and skills for servicing SUZUKI vehicles. Without such knowledge and skills, you should not attempt servicing by relying on this manual only.

Instead, please contact your nearby authorized SUZUKI motorcycle dealer.

SUZUKI MOTOR CORPORATION

Overseas Service Department

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**XF650W/UW/X/UX
('98, '99-MODELS)**

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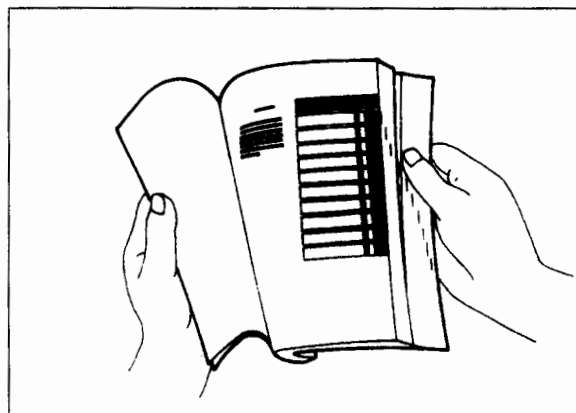
XF650K1 ('01-MODEL)

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HOW TO USE THIS MANUAL

TO LOCATE WHAT YOU ARE LOOKING FOR:

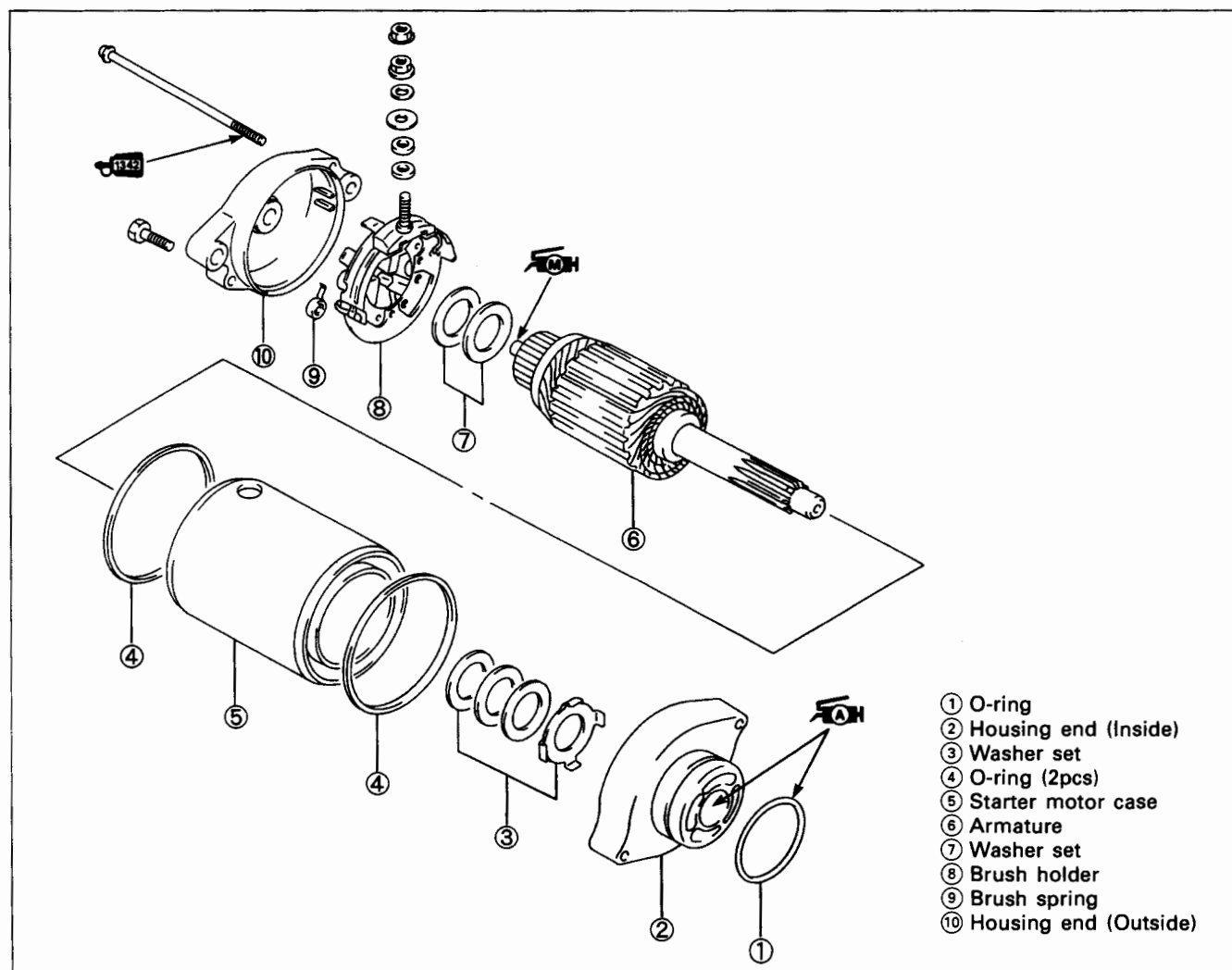
1. The text of this manual is divided into sections.
2. As the title of these sections are listed on the previous page as GROUP INDEX, select the section where what you are looking for belong.
3. Holding the manual as shown at the right will allow you to find the first page of the section easily.
4. On the first page of each section, its contents are listed. Find the item and page you need.



COMPONENT PARTS AND WORK TO BE DONE











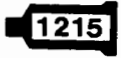




Under the name of each system or unit, its exploded view is provided with work instruction and other service information such as the tightening torque, lubricating points and locking agent points.

Example: Front wheel



SYMBOL

Listed in the table below are the symbols indicating instructions and other information necessary for servicing and meaning associated with them respectively.

SYMBOL	DEFINITION	SYMBOL	DEFINITION
	Torque control required. Data beside it indicates specified torque.		Apply THREAD LOCK SUPER "1303". (99000-32030)
	Apply oil. Use engine oil unless otherwise specified.		Use fork oil. (99000-99044-10G)
	Apply SUZUKI SUPER GREASE "A". (99000-25010)		Apply or use brake fluid.
	Apply SUZUKI SILICONE GREASE. (99000-25100)		Measure in voltage range.
	Apply SUZUKI MOLY PASTE. (99000-25140)		Measure in resistance range.
	Apply SUZUKI BOND "1215" (99000-31110)		Measure in current range.
	Apply THREAD LOCK "1342" (99000-32050)		Use special tool.
	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 vehicle 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

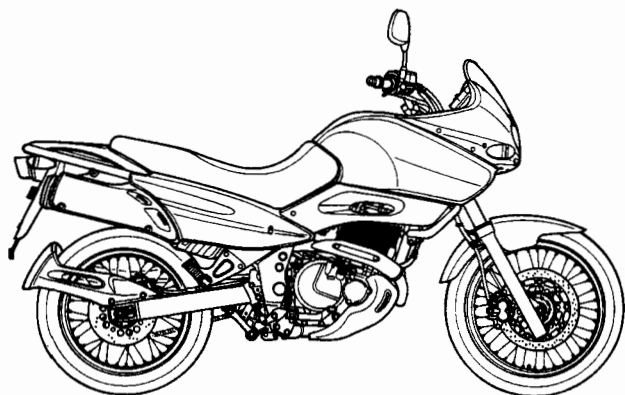
WARNING

- Proper service and repair procedures are important for the safety of the service mechanic and the safety and reliability of the vehicle.
- 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 or exhaust system during or for a while after engine operation.
- After servicing fuel, oil, exhaust or brake systems, check all lines and fittings related to the system for leaks.

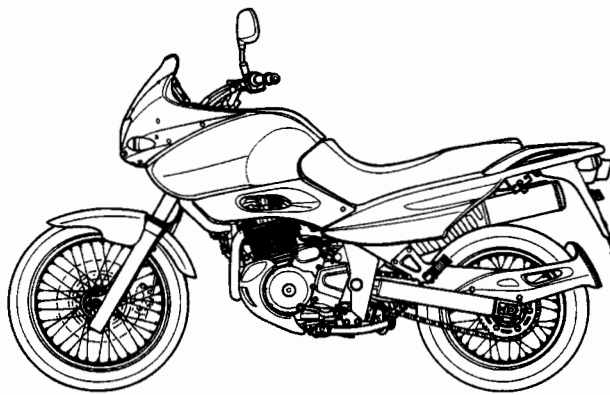
▲ CAUTION

- 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, and also lubricated when specified.
 - When use of a certain type of lubricant, bond, or sealant is specified, be sure to use the specified type.
 - 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.
 - Tighten cylinder head and case bolts and nuts, beginning with larger diameter and ending with smaller diameter, from inside to outside diagonally, to the specified tightening torque.
 - Whenever you remove oil seals, gaskets, packing, O-rings, locking washers, 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.
 - Do not use self-locking nuts a few times over.
 - Use a torque wrench to tighten fasteners to the torque values when specified. Wipe off grease or oil if a thread is smeared with them.
 - After reassembly, check parts for tightness and operation.
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- To protect environment, do not unlawfully dispose of used motor oil and other fluids: batteries, and tires.
 - To protect Earth's natural resources, properly dispose of used vehicles and parts.

SUZUKI XF650V ('97-MODEL)



RIGHT SIDE

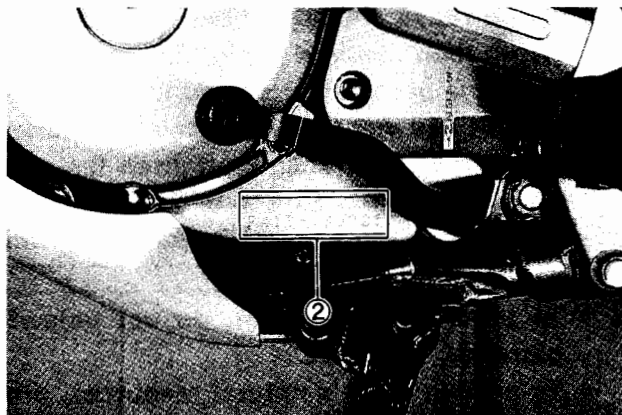
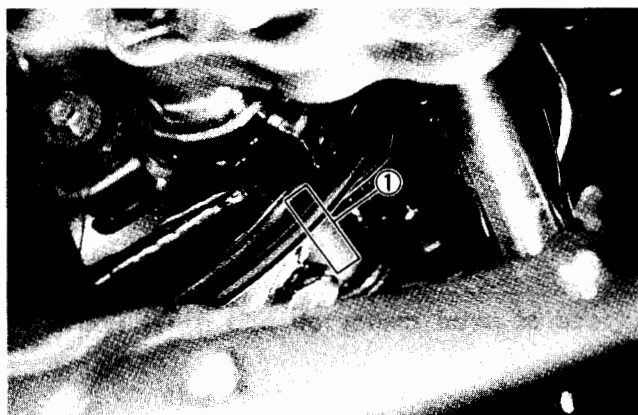


LEFT SIDE

*Difference between photographs 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 left side of the crankcase. These numbers are required especially for registering the machine and ordering spare parts.



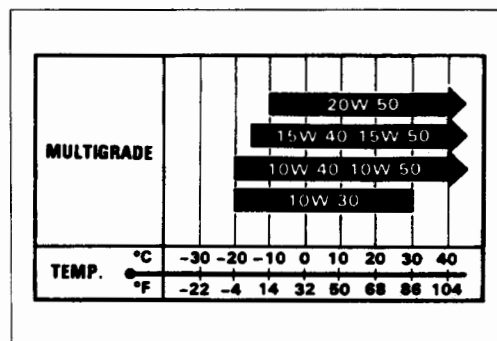
FUEL AND OIL RECOMMENDATION

FUEL

Gasoline used should be graded 85–95 octane (Research Method) or higher. An unleaded gasoline type is recommended.

ENGINE OIL

Make sure that the engine oil you use comes under API classification of SF or SG and that its viscosity rating is SAE 10W/40. If an SAE 10W/40 motor oil is not available, select an alternate 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 #15.

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:

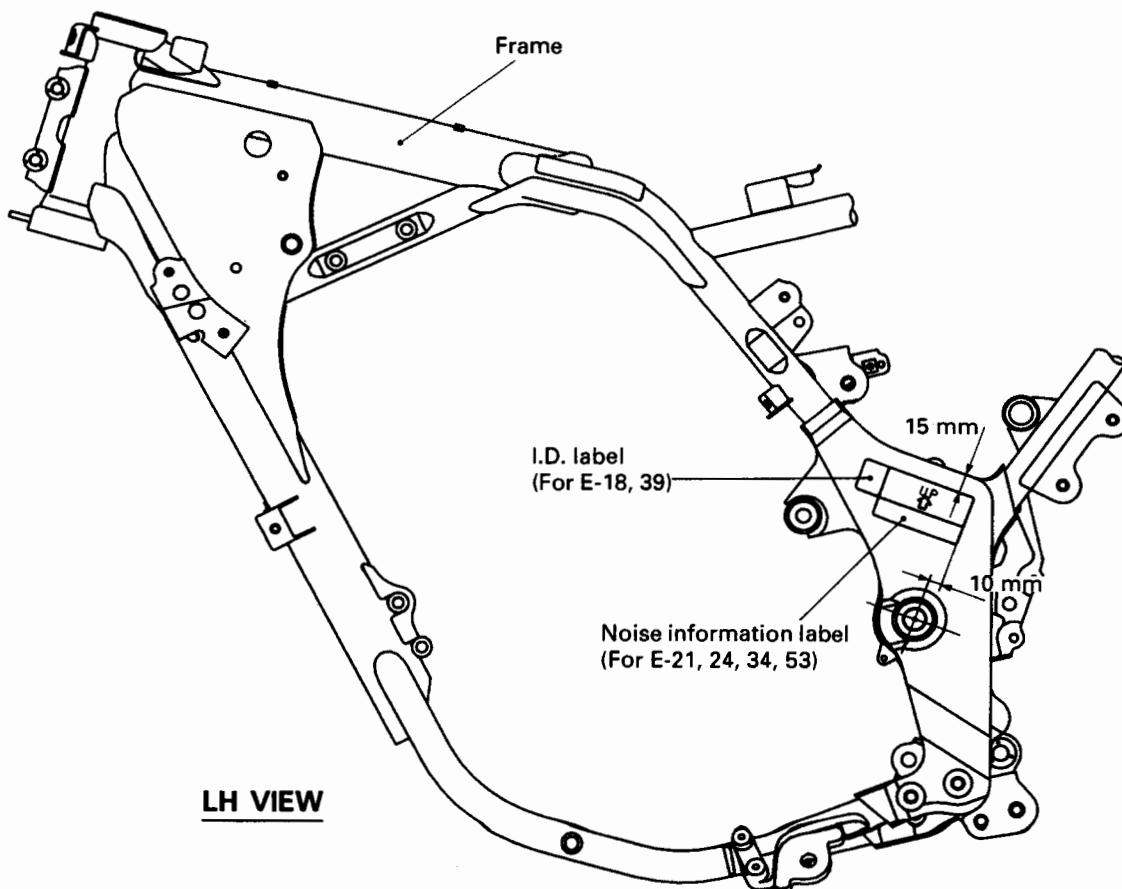
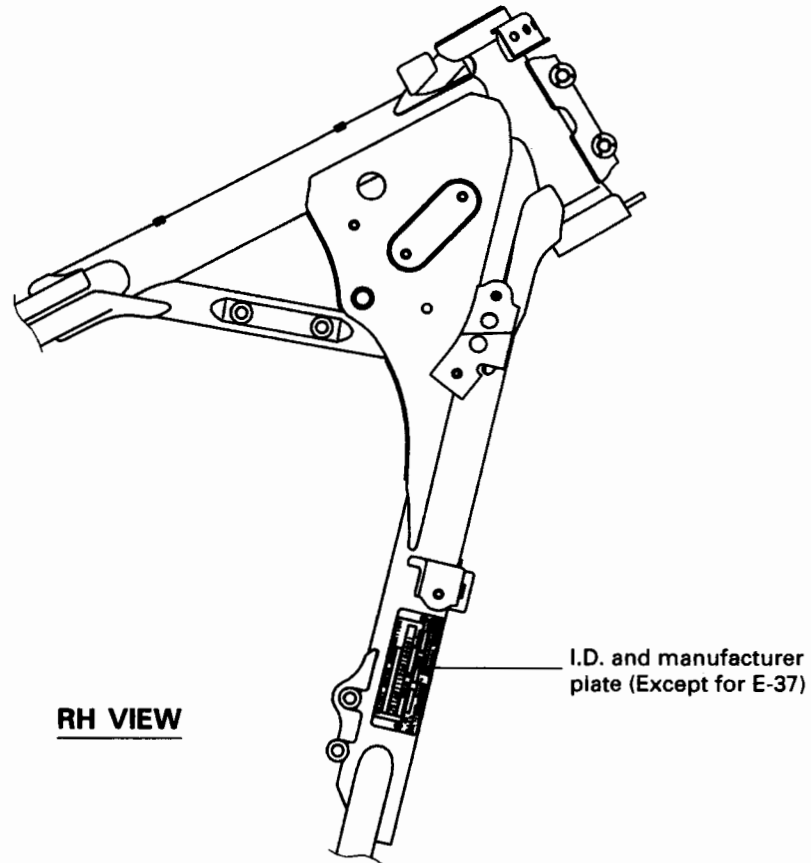
Initial 800 km (500 miles): Below 4 000 r/min

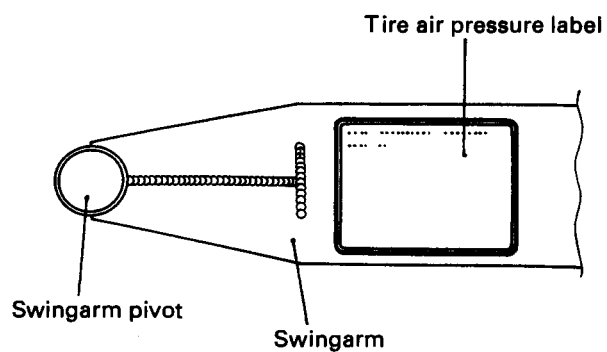
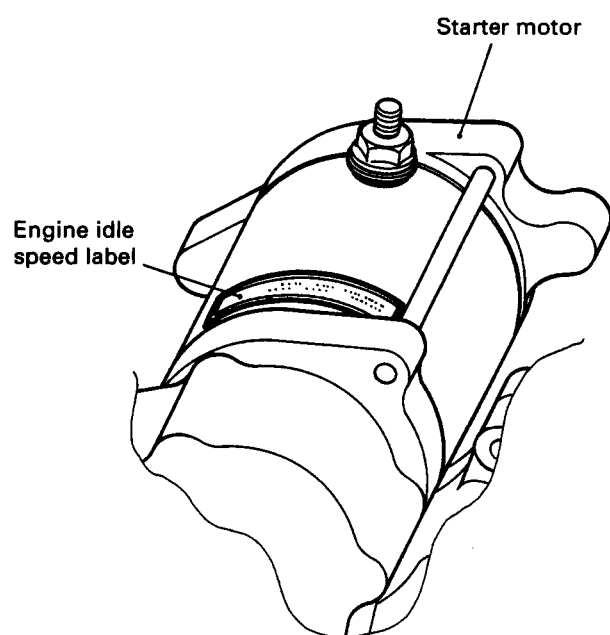
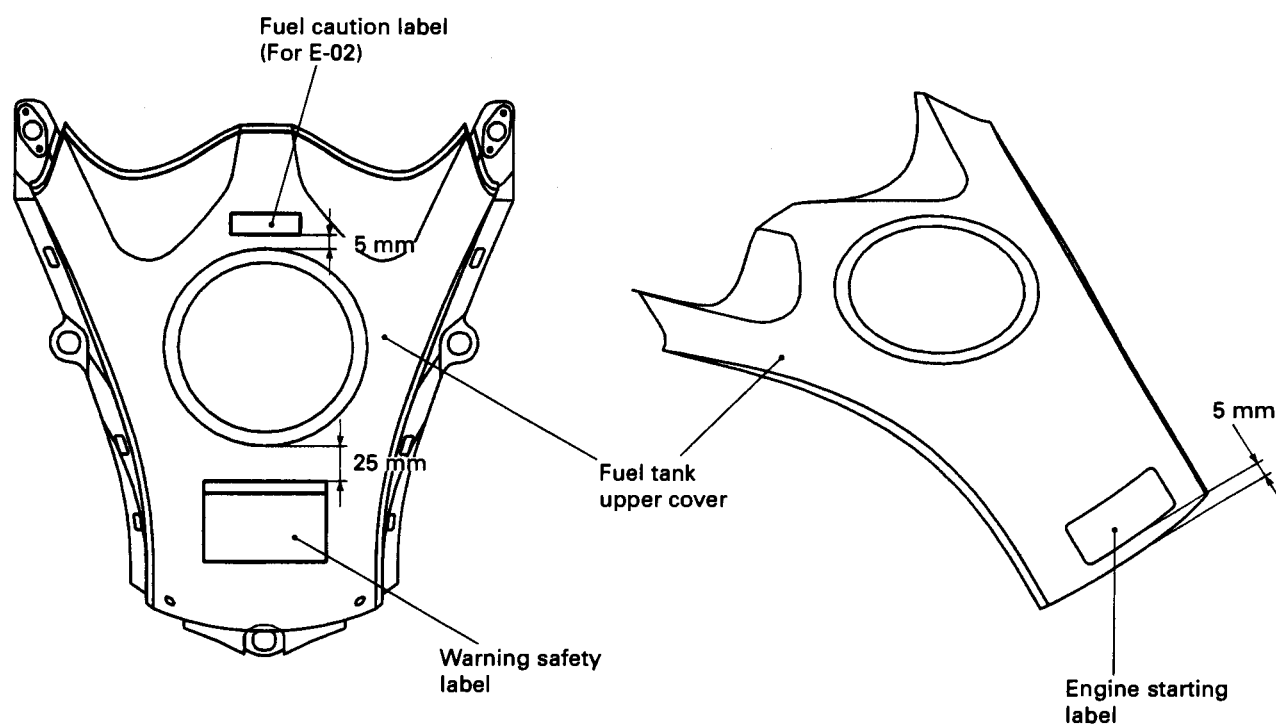
Up to 1 600 km (1 000 miles): Below 6 000 r/min

Over 1 600 km (1 000 miles): Below 8 000 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 8 000 r/min.
- Do not maintain constant engine speed for an extended time period during any portion of the break-in. Try to vary the throttle position.

INFORMATION LABELS





SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 205 mm (86.8 in)
	2 190 mm (86.2 in) Low seat conversion
Overall width	865 mm (34.1 in)
Overall height	1 230 mm (48.4 in)
	1 200 mm (47.2 in) Low seat conversion
Wheelbase	1 465 mm (57.7 in)
	1 455 mm (57.2 in) Low seat conversion
Ground clearance	200 mm (7.9 in)
	170 mm (6.7 in) Low seat conversion
Seat height	830 mm (32.7 in)
	800 mm (31.5 in) Low seat conversion
Dry mass	162 kg (357 lbs)

ENGINE

Type	Four-stroke, air-cooled, with SACS, OHC
Valve clearance (IN)	0.08–0.13 mm (0.003–0.005 in)
(EX)	0.17–0.22 mm (0.007–0.009 in)
Number of cylinders	1
Bore	100 mm (3.937 in)
Stroke	82 mm (3.228 in)
Piston displacement	644 cm ³ (39.3 cu. in)
Compression ratio	9.5 : 1
Carburetor	BSR32, twin
Air cleaner	Polyurethane foam element
Starter system	Electric
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	2.178 (61/28)
Gear ratios, Low	2.416 (29/12)
2nd	1.625 (26/16)
3rd	1.238 (26/21)
4th	1.000 (21/21)
Top	0.826 (19/23)
Final reduction ratio	2.866 (43/15)
Drive chain	DID525 V9, 110 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, gas/oil damped, spring preload fully adjustable, compression damping force adjustable
Front fork stroke	170 mm (6.7 in)
	140 mm (5.5 in) Low seat conversion
Rear wheel travel	167 mm (6.6 in)
	132 mm (5.2 in) Low seat conversion
Steering angle	43°
Caster	28°
Trail	105 mm (4.13 in)
Turning radius	2.4 m (7.9 ft)
Front brake	Disk brake
Rear brake	Disk brake
Front tire size	100/90-19 57H, tube type
Rear tire size	130/80 R17 65H, tube type

ELECTRICAL

Ignition type	Electronic ignition (CDI)
Ignition timing	10° B.T.D.C. at 1500 rpm
Spark plug	NGK CR10E or NIPPONDENSO U31ESR-N
Battery	12V 28.8 kC (8 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	30/15/15/10/15/10A
Headlight	12V 60/55W
Parking or city light	12V 5W except E24
Turn signal light	12V 21W
Tail/brake light	12V 5/21W
Speedometer light	12V 1.7W × 2
Turn signal indicator light	12V 1.7W × 2
Neutral indicator light	12V 1.7W
High beam indicator light	12V 1.7W

CAPACITIES

Fuel tank, including reserve	18.5 L (4.9/4.1 US/Imp gal)
reserve	4.5 L (1.2/1.0 US/Imp gal)
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	2 600 ml (2.7/2.3 US/Imp qt)
Front fork oil (each leg)	655 ml (22.1/23.1 US/Imp oz)
	699 ml (23.6/24.6 US/Imp oz) Low seat conversion

COUNTRY OR AREA

The series of symbols on the left stand for the countries or area on the right.

SYMBOL	COUNTRY or AREA
E-02	U.K.
E-04	France
E-15	Finland
E-16	Norway
E-17	Sweden
E-18	Switzerland
E-21	Belgium
E-22	Germany
E-24	Australia
E-25	Netherlands
E-26	Denmark
E-34	Italy
E-37	Brazil
E-39	Austria
E-53	Spain

(E-15, 16 and 26 countries are included in E-17.
E-21 and 53 countries are included in E-34.
E-39 country is included in E-18.)

PERIODIC MAINTENANCE

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