SUZUKI

GW250

SERVICE MANUAL

99500-32170-01E

FOREWORD

This manual contains an introductory description on the SUZUKI GW250 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.

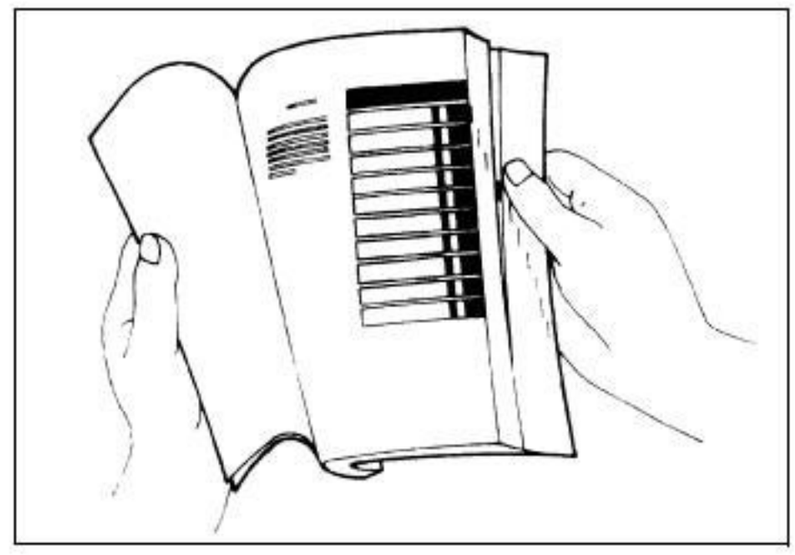
SUZUKI MOTOR CORPORATION

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.



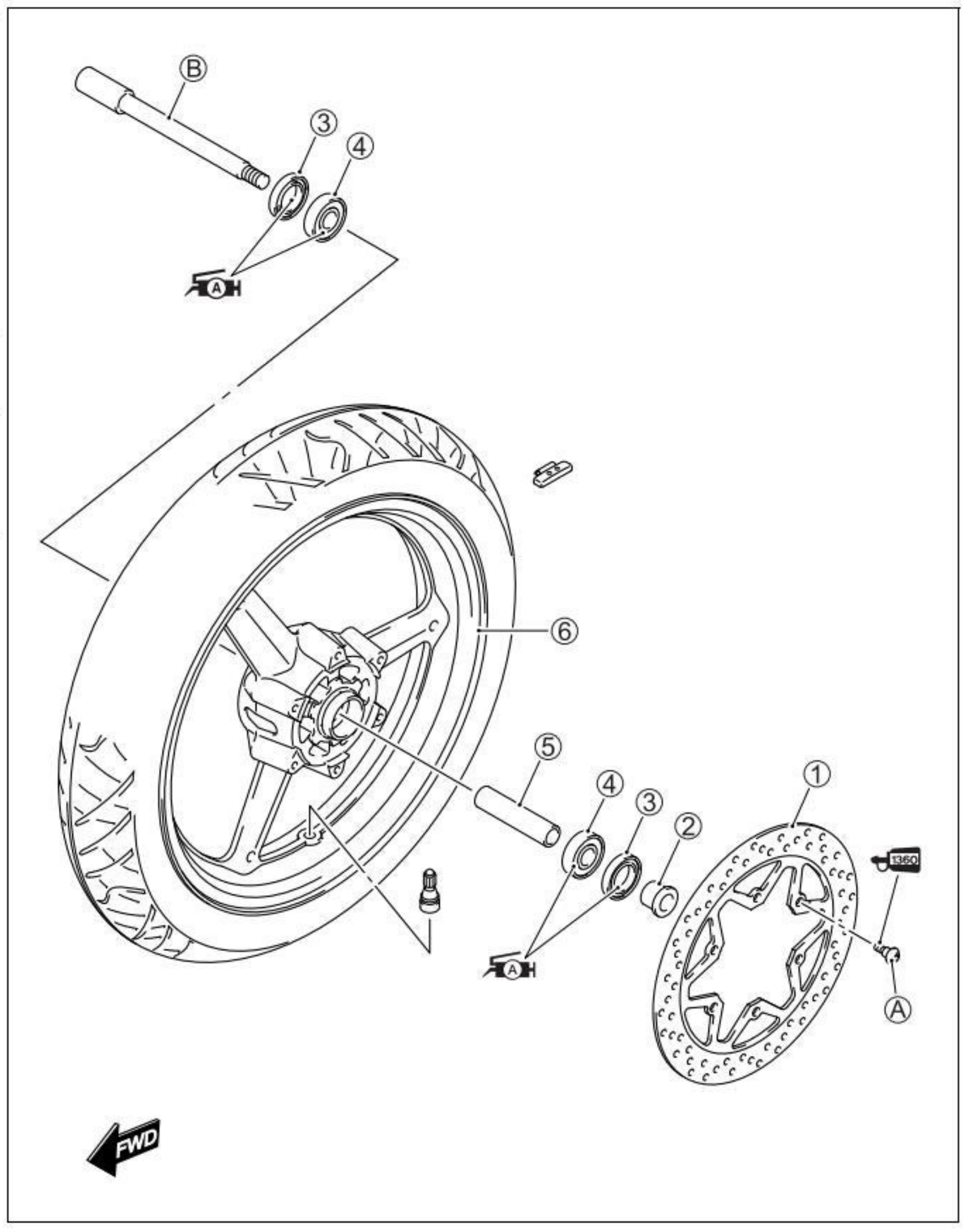
COMPONENT PARTS AND WORK TO BE DONE

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

①	Brake disc
②	Collar
③	Dust seal
④	Bearing
⑤	Spacer
⑥	Front wheel
Ⓐ	Front axle
Ⓑ	Brake disc bolt

ITEM	N·m	kgf-m	lbf-ft
Ⓐ	18	1.8	13.0
Ⓑ	65	6.5	47.0



SYMBOL MARKS AND MATERIALS

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

SYMBOL	DEFINITION	SYMBOL	DEFINITION
	Torque control required. Data beside it indicates specified torque.	LLC	Use SUZUKI SUPER LONG LIFE COOLANT (BLUE). 99000-99032-20X
			Use SUZUKI LONG LIFE COOLANT (GREEN) or equivalent. 99000-99032-12X
OIL	Apply oil. Use engine oil or transmission oil unless otherwise specified.	FORK	Use SUZUKI FORK OIL G10 or equivalent. 99000-99001-G10
M/O	Apply molybdenum oil solution. (Mixture of engine oil and SUZUKI MOLY PASTE in a ratio of 1:1)	BF	Apply or use brake fluid.
A	Apply SUZUKI SUPER GREASE “A” or equivalent. 99000-25010	V	Measure in voltage range.
S	Apply SUZUKI SILICONE GREASE or equivalent. 99000-25100	A	Measure in current range.
M	Apply SUZUKI MOLY PASTE or equivalent. 99000-25140	Ω	Measure in resistance range.
1207B	Apply SUZUKI BOND “1207B” or equivalent. 99000-31140		Measure in diode test range.
1303	Apply THREAD LOCK CEMENT SUPER “1303” or equivalent. 99000-32030		Measure in continuity test range.
1322	Apply THREAD LOCK CEMENT SUPER “1322” or equivalent. 99000-32110	TOOL	Use special tool.
1360	Apply THREAD LOCK CEMENT SUPER “1360” or equivalent. 99000-32130	DATA	Indication of service data.
1342	Apply THREAD LOCK CEMENT SUPER“1342” or equivalent. 99000-32050		

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
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)
CO	: Carbon Monoxide
CPU	: Central Processing Unit

D

DC	: Direct Current
DRL	: Daytime Running Light
DTC	: Diagnostic Trouble Code

E

ECM	: Engine Control Module Engine Control Unit (ECU) (FI Control Unit)
ECT Sensor	: Engine Coolant Temperature Sensor (ECTS), Water Temp. Sensor (WTS)

F

FI	: Fuel Injection, Fuel Injector
FP	: Fuel Pump
FPR	: Fuel Pressure Regulator
FP Relay	: Fuel Pump Relay
FWD	: Forward

G

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

H

HC	: Hydrocarbons
HO2 Sensor	: Heated Oxygen Sensor (HO2S)

I

IAP Sensor	: Intake Air Pressure Sensor (IAPS) (MAP Sensor)
IAT Sensor	: Intake Air Temperature Sensor (IATS)
IG	: Ignition
ISC Valve	: Idle Speed Control Valve (ISCV)

J

JASO	: Japanese Automobile Standards Organization

L

LCD	: Liquid Crystal Display
LED	: Light Emitting Diode (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

PAIR	: Pulsed Secondary Air Injection
PCM	: Power control module
PCV	: Positive Crankcase Ventilation (Crankcase Breather)

R

RH	: Right Hand
ROM	: Read Only Memory

S

SAE	: Society of Automotive Engineers
SDS	: Suzuki Diagnosis System

T

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

WIRE COLOR

B	: Black	Gr	: Gray	R	: Red
Bl	: Blue	Lbl	: Light blue	V	: Violet
Br	: Brown	Lg	: Light green	W	: White
Dg	: Dark green	O	: Orange	Y	: Yellow
G	: Green	P	: Pink		

B/Bl	: Black with Blue tracer	O/Bl	: Orange with Blue tracer
B/Br	: Black with Brown tracer	O/R	: Orange with Red tracer
B/G	: Black with Green tracer	O/W	: Orange with White tracer
B/R	: Black with Red tracer	O/Y	: Orange with Yellow tracer
B/W	: Black with White tracer	R/B	: Red with Black tracer
B/Y	: Black with Yellow tracer	R/Y	: Red with Yellow tracer
Bl/G	: Blue with Green tracer	W/B	: White with Black tracer
Bl/W	: Blue with White tracer	W/R	: White with Red tracer
Bl/Y	: Blue with Yellow tracer	Y/G	: Yellow with Green tracer
Br/Y	: Brown with Yellow tracer	Y/R	: Yellow with Red tracer
G/Y	: Green with Yellow tracer	Y/W	: Yellow with White tracer
O/B	: Orange with Black tracer		

GENERAL INFORMATION

CONTENTS

COUNTRY AND AREA CODES

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

CODE	COUNTRY or AREA	EFFECTIVE FRAME NO.
P-12	Indonesia	LC6GJ55B0C1 100001 –
P-21	E.U.	LC6DC111101 100001 –
P-24	Australia	LC6DC111201 100001 –
P-71	Mexico	LC6GJ55E D1 100001 –

WARNING/CAUTION/NOTICE/NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the symbol and the words WARNING, CAUTION, NOTICE 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.

NOTICE

Indicates a potential hazard that could result in motorcycle or equipment 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, CAUTIONS and NOTICES 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

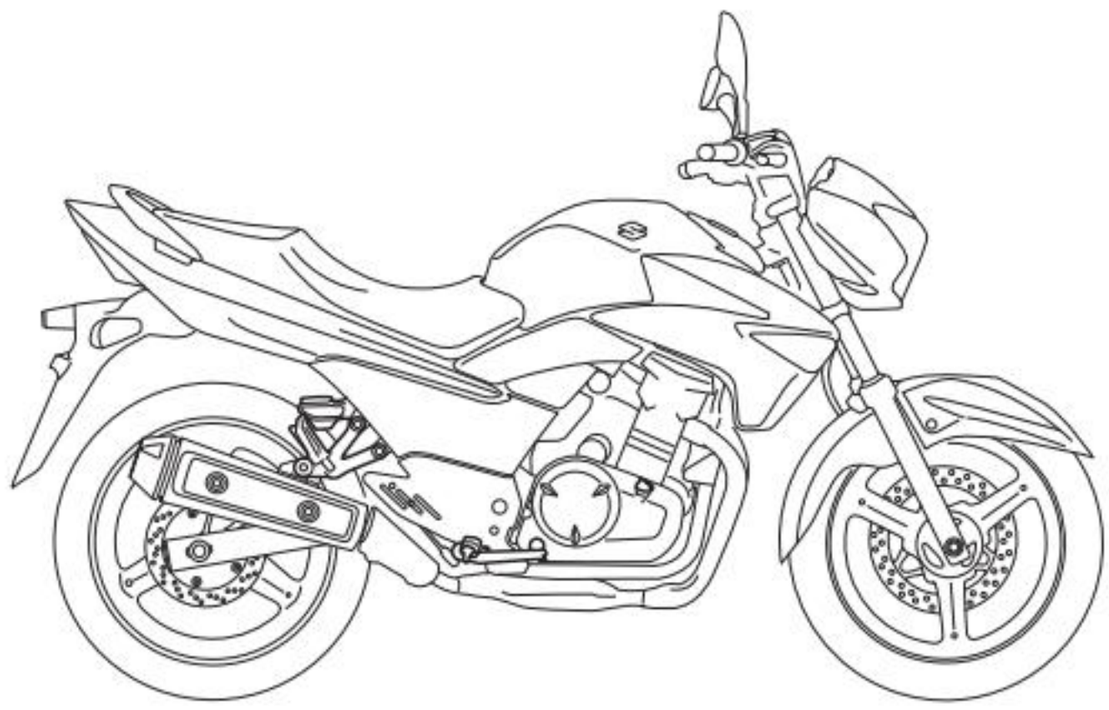
⚠ WARNING

- **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.**
- **To avoid getting burned, do not touch the engine, engine oil, radiator and exhaust system until they have cooled.**

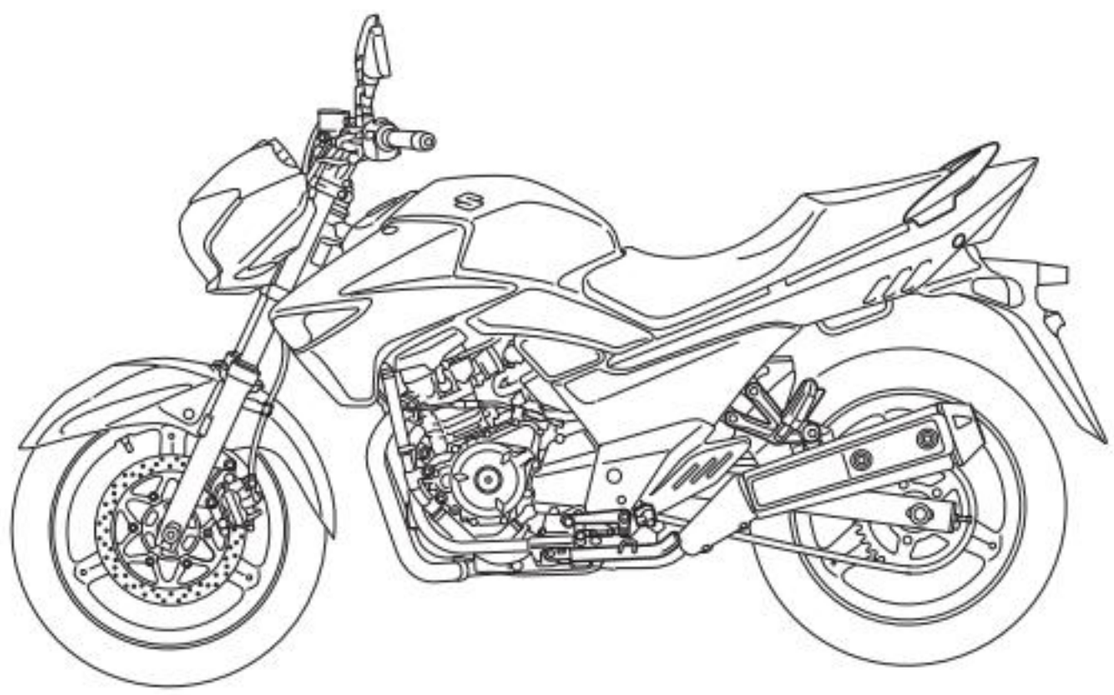
NOTICE

* Never use gasoline as a cleaning solvent.
* After servicing the fuel, oil, water, exhaust or brake systems, check all lines and fittings related to the system for leaks.
* 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 do not require use of battery power, disconnect the negative cable from the battery.
* When tightening the cylinder head or 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 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 Earth's natural resources, properly dispose of used motorcycle and parts.

SUZUKI GW250L3 ('13-MODEL)



RIGHT SIDE

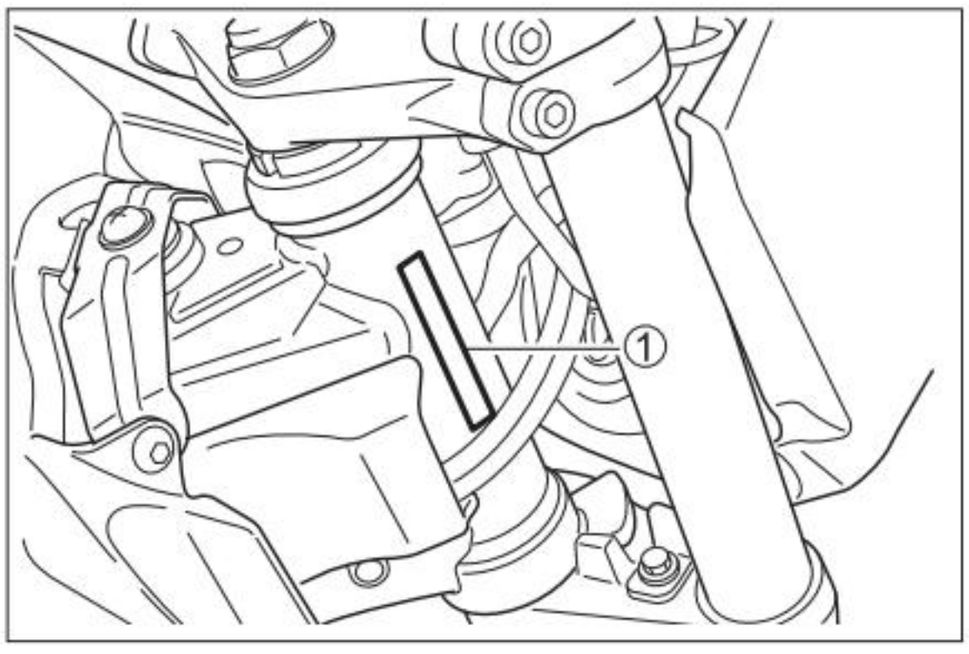


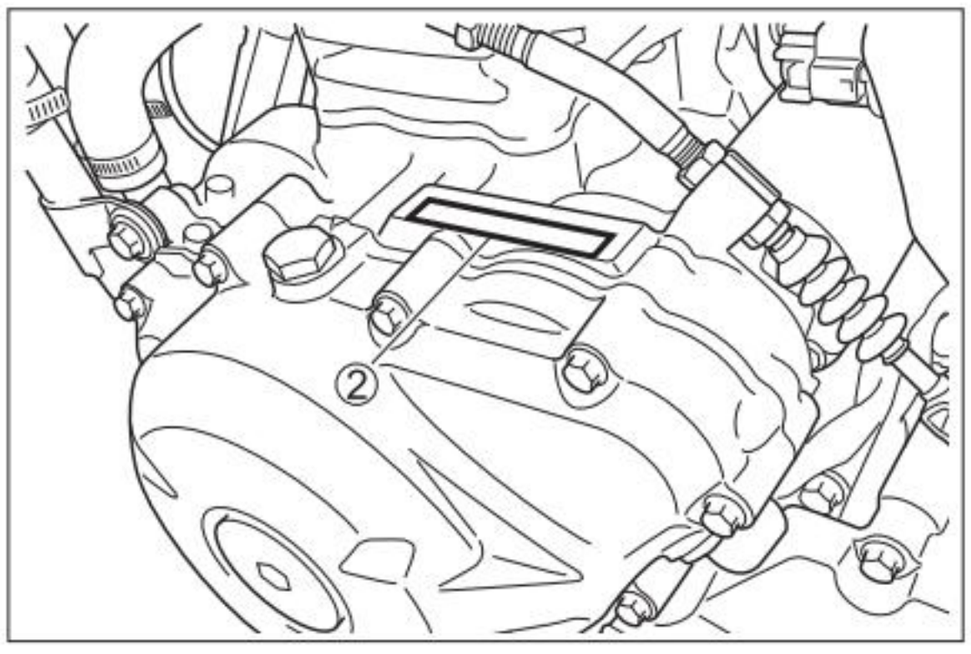
LEFT SIDE

NOTE:
Difference between illustration and actual motorcycle may exist depending 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, OIL AND ENGINE COOLANT RECOMMENDATION

FUEL

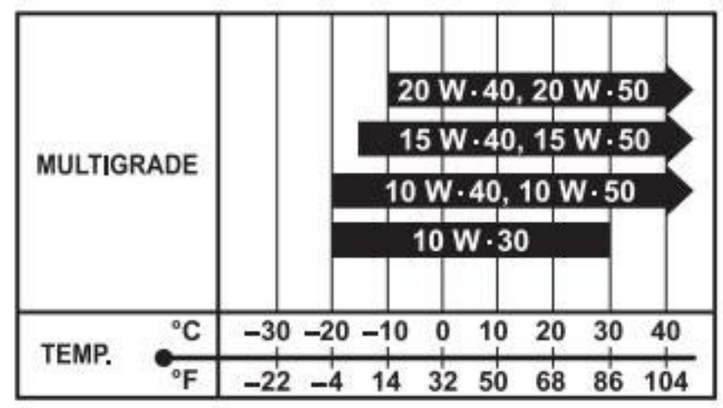
Gasoline used should be graded 91 octane (Research Method) or higher. Unleaded gasoline is recommended.

ENGINE OIL

Oil quality is a major contributor to your engine's performance and life. Always select good quality engine oil.
Use oil with an API (American Petroleum Institute) classification of SG or higher with a JASO classification of MA.

SAE	API	JASO
10W-40	SG or higher	MA

Suzuki recommends the use of SAE 10W-40 engine oil. If SAE 10W-40 engine oil is not available, select an alternative according to the right chart.



Suzuki does not recommend the use of "ENERGY CONSERVING" and "RESOURCE CONSERVING" oils.

Recommend

"Donut" without "ENERGY CONSERVING" nor "RESOURCE CONSERVING"

No recommend

"Donut" with "ENERGY CONSERVING"

No recommend

"Donut" with "RESOURCE CONSERVING"

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 SUZUKI FORK OIL G10 or equivalent.

ENGINE COOLANT RECOMMENDATION

RECOMMENDED ENGINE COOLANT

The factory filled engine coolant of this vehicle is SUZUKI super long life coolant (Blue). It is recommended to use this SUZUKI super long life coolant when replenishing or charging the engine coolant.
SUZUKI super long life coolant (Blue) as supply part is already diluted to the 50 percentage with deionized water. Use it as it is without diluting.
SUZUKI recommends to use following coolants in that order.
1) SUZUKI super long life coolant (Blue)
2) SUZUKI long life coolant (Green) or equivalent

ENGINE COOLANT

Use an anti-freeze/engine coolant compatible with an aluminum radiator.
There are two types of engine coolant: one used after diluting with distilled water and the other used as it is (without diluting). SUZUKI super long life coolant is the latter type and SUZUKI long life coolant is the former type.

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 performs 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.

LIQUID AMOUNT OF WATER/ENGINE COOLANT

Solution capacity (total): Approx. 1 350 ml (1.4/1.2 US/Imp qt)
For engine coolant mixture information, refer to cooling system section in page 7-2.

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 5 500 r/min
Up to 1 600 km (1 000 miles): Below 8 250 r/min
Over to 1 600 km (1 000 miles): Below 11 000 r/min

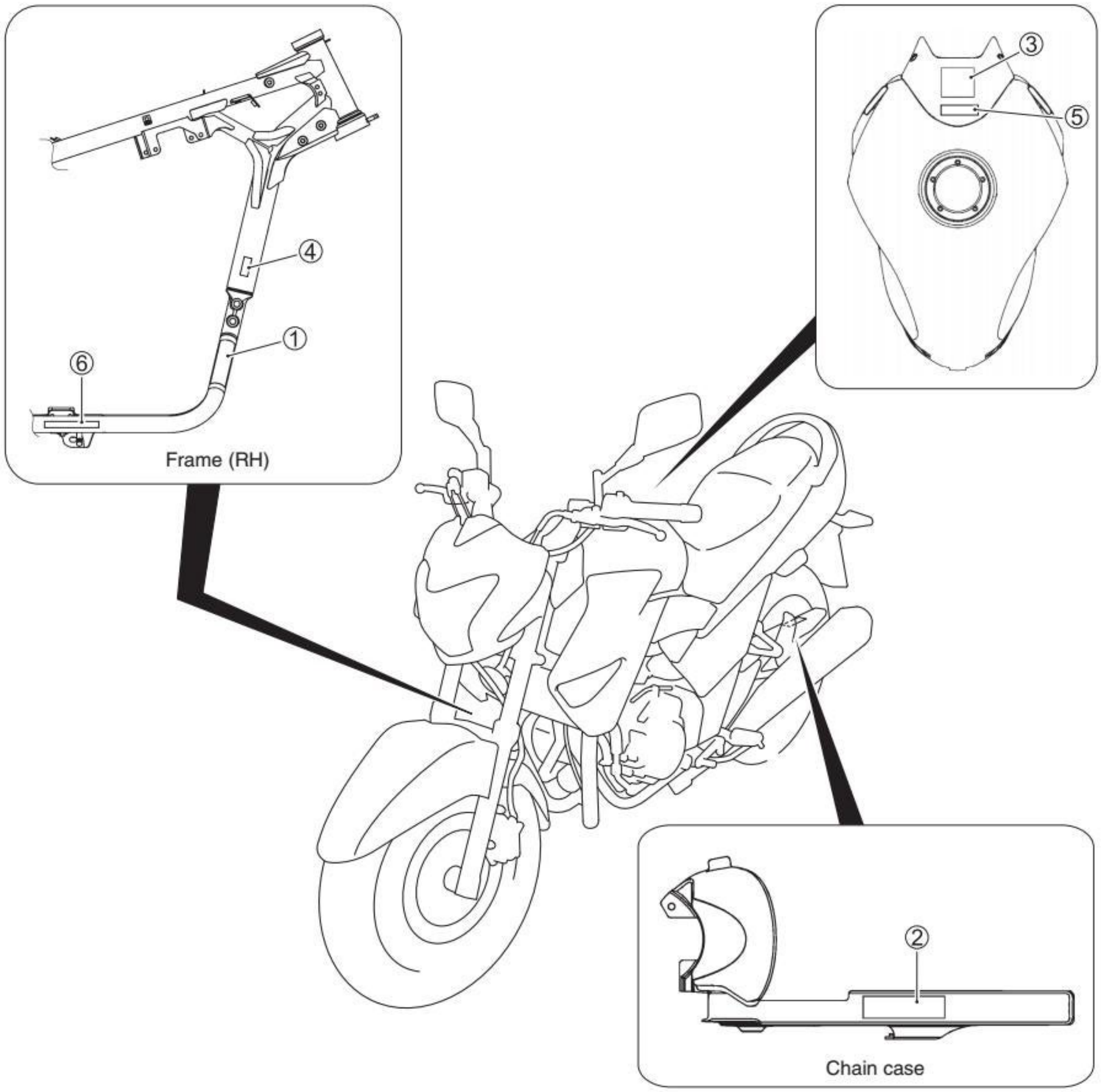
- Upon reaching an odometer reading of 1 600 km (1 000 miles) you can subject the motorcycle to full throttle operation.
  However, do not exceed 11 000 r/min at any time.

CYLINDER IDENTIFICATION

The two cylinders of this engine are identified as #1 and #2 cylinder, as counted from left to right (as viewed by the rider on the seat).

INFORMATION LABELS

NO.	LABEL or PLATE NAME
①	I.D. Plate (For-P21, 24, 71)
②	Tire information label
③	General warning label
④	Brake Approval Label (For-P21, 24)
⑤	Fuel limitation label (For-P12)
⑥	Noise label (For-P24)



SPECIFICATIONS

DIMENSIONS AND CURB MASS

Overall length	2 145 mm (84.4 in)
Overall width	760 mm (29.9 in)
Overall height	1 075 mm (42.3 in)
Wheelbase	1 430 mm (56.3 in)
Ground clearance	165 mm (6.4 in)
Seat height	780 mm (30.7 in)
Curb mass	183 kg (403 lbs)

ENGINE

Type	Four stroke, liquid-cooled, SOHC
Number of cylinders	2
Bore	53.5 mm (2.106 in)
Stroke	55.2 mm (2.173 in)
Displacement	248 cm^3 (15.1 cu. in)
Compression ratio	11.5 : 1
Fuel system	Fuel injection
Air cleaner	Non-woven fabric element
Starter system	Electric
Lubrication system	Wet sump
Idle speed	1 400 ± 100 r/min

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	6-speed constant mesh
Gearshift pattern	1-down, 5-up
Primary reduction ratio	3.238 (68/21)
Gear ratios, Low	2.417 (29/12)
2nd	1.529 (26/17)
3rd	1.182 (26/22)
4th	1.043 (24/23)
5th	0.909 (20/22)
Top	0.808 (21/26)
Final reduction ratio	3.286 (46/14)
Drive chain	DID520VF, 116 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Swingarm type, coil spring, oil damped
Front fork stroke	120 mm (4.7 in)
Rear wheel travel	125 mm (4.9 in)
Steering angle	40°
Caster	26°
Trail	105 mm (4.13 in)
Turning radius	2.5 m (8.2 ft)
Front brake	Disc brake
Rear brake	Disc brake
Front tire size	110/80-17 M/C 57H, tubeless
Rear tire size	140/70-17 M/C 66H, tubeless

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	10° CA B.T.D.C.at 1 400 r/min
Spark plug	NGK CR7E or DENSO U22ESR-N
Battery	12 V 36.0 kC (8 Ah)/10 HR
Generator	Three-phase A.C. generator
Main fuse	30 A
Fuse	10/10/10/15 A
Headlight	12 V 60/55 W
Position light	12 V 5 W × 2
Turn signal light	12 V 10 W
License plate light	12 V 5 W
Brake/Tail light	12 V 21/5 W
Combination meter light	LED
Neutral indicator light	LED
High beam indicator light	LED
Turn signal indicator light	LED
Oil pressure/Coolant temperature/Fuel injection warning light	LED
Engine rpm indicator light	LED

CAPACITIES

Fuel tank, including reserve	13.3 L (3.5/2.9 US/Imp gal)
Engine oil, oil change	2 100 ml (2.2/1.8 US/Imp qt)
with filter change	2 400 ml (2.5/2.1 US/Imp qt)
overhaul	2 400 ml (2.5/2.1 US/Imp qt)
Coolant	1 350 ml (1.4/1.2 US/Imp qt)

These specifications are subject to change without notice.

PERIODIC MAINTENANCE

CONTENTS

PERIODIC MAINTENANCE SCHEDULE

The chart below lists the recommended intervals for all the required periodic service work necessary to keep the motorcycle operating at peak performance and economy. Mileages are expressed in terms of kilometers, miles and time for your convenience.

NOTE:
More frequent servicing may be required on motorcycles that are used under severe conditions.

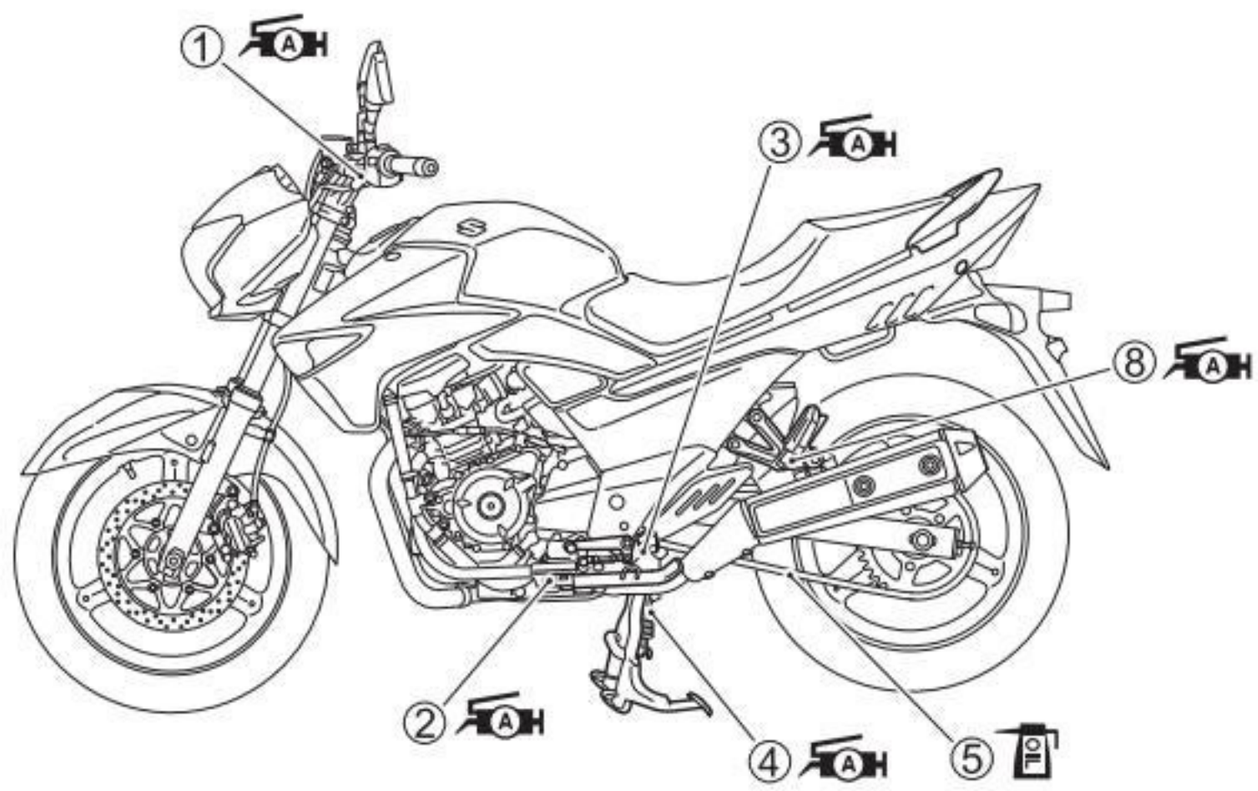
PERIODIC MAINTENANCE CHART

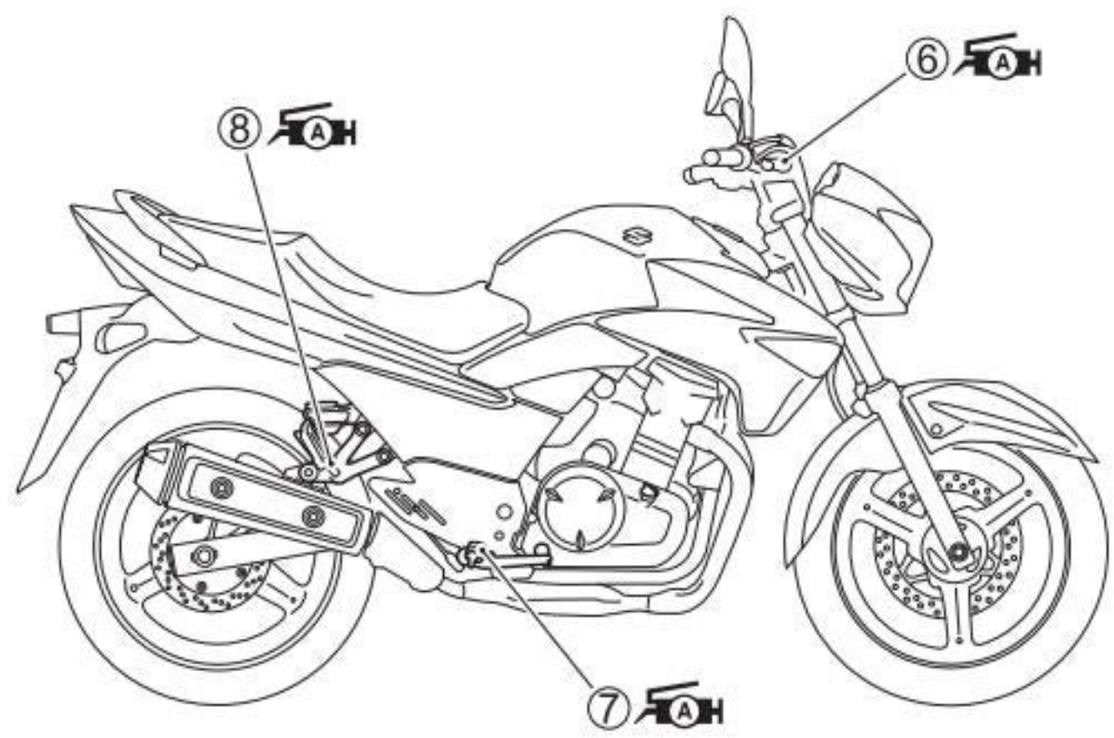
Item \ Interval		km	1 000	5 000	10 000	15 000
		miles	600	3 000	6 000	9 000
		months	3	15	30	45
Air cleaner element			—	I	I	R
Exhaust pipe bolts and muffler bolts			T	—	T	—
Valve clearance			I	I	I	I
Spark plugs			—	I	R	I
Fuel line			—	I	I	I
Engine oil			R	R	R	R
Engine oil filter			R	—	R	—
Throttle cable play			I	I	I	I
Idle speed			I	I	I	I
PAIR (air supply) system			—	I	—	I
Engine coolant	SUZUKI SUPER LONG LIFE COOLANT (Blue)		Replace every 16 000 km (9 600 miles) or 48 months.			
	SUZUKI LONG LIFE COOLANT (Green) or other than SUZUKI SUPER LONG LIFE COOLANT (Blue)		Replace every 8 000 km (5 000 miles) or 24 months.			
Radiator hoses			—	I	I	I
Clutch cable play			I	I	I	I
Drive chain			I	I	I	I
			Clean and lubricate every 1 000 km (600 miles).			
Brakes			I	I	I	I
Brake fluid			—	I	I	I
			Replace every 2 years.			
Brake hoses			—	I	I	I
			Replace every 4 years.			
Tires			—	I	I	I
Steering			I	—	I	—
Front forks			—	—	I	—
Rear suspension			—	—	I	—
Chassis bolts and nuts			T	T	T	T

NOTE:
I = Inspect and clean, adjust, replace or lubricate as necessary, R = Replace, T = Tighten

LUBRICATION POINTS

Proper lubrication is important for smooth operation and long life of each working part of the motorcycle. Major lubrication points are indicated below.





①	Clutch lever pivot	⑤	Drive chain
②	Side-stand pivot and spring hook	⑥	Brake lever pivot
③	Gearshift lever pivot and front footrest pivot	⑦	Brake pedal pivot and front footrest pivot
④	Center stand pivot and spring hook (For P12)	⑧	Pillion footrest

NOTE:

* *Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.*
* *Lubricate exposed parts which are subject to rust, with a rust preventative spray whenever the motorcycle has been operated under wet or rainy conditions.*

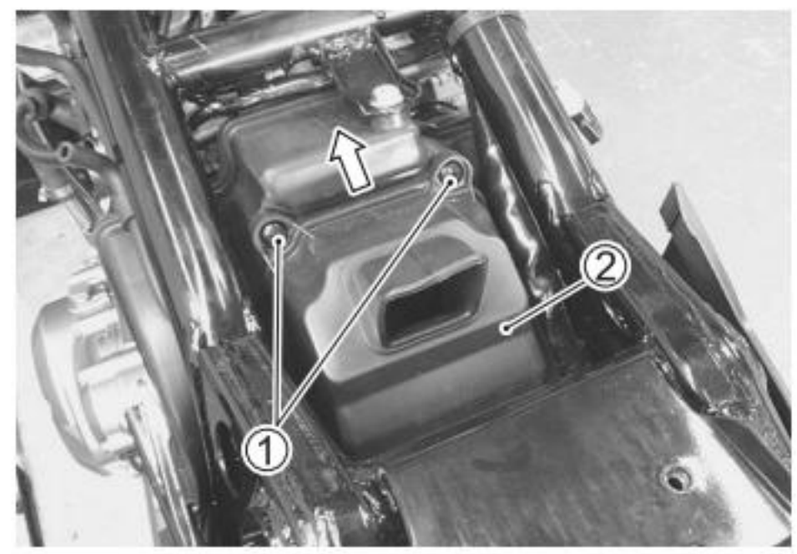
MAINTENANCE AND TUNE-UP PROCEDURES

This section describes the servicing procedures for each item of the Periodic Maintenance requirements.

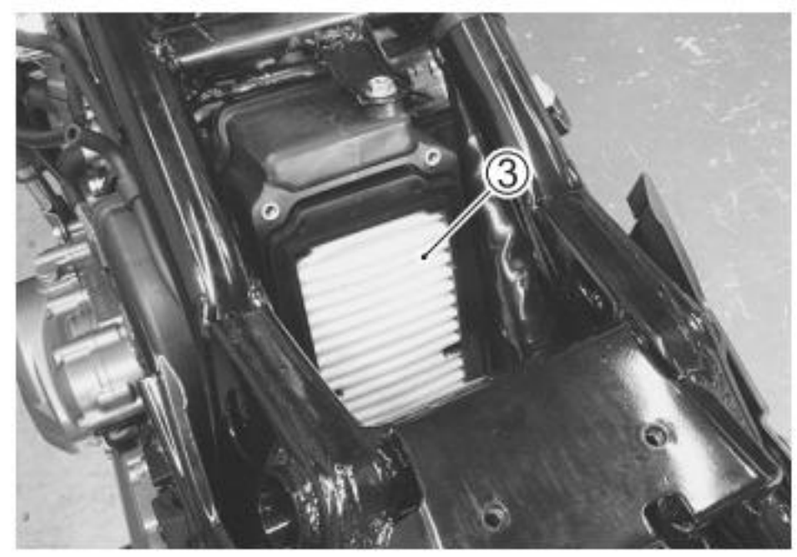
AIR CLEANER

Inspect every 5 000 km (3 000 miles, 15 months).
Replace every 15 000 km (9 000 miles, 45 months).

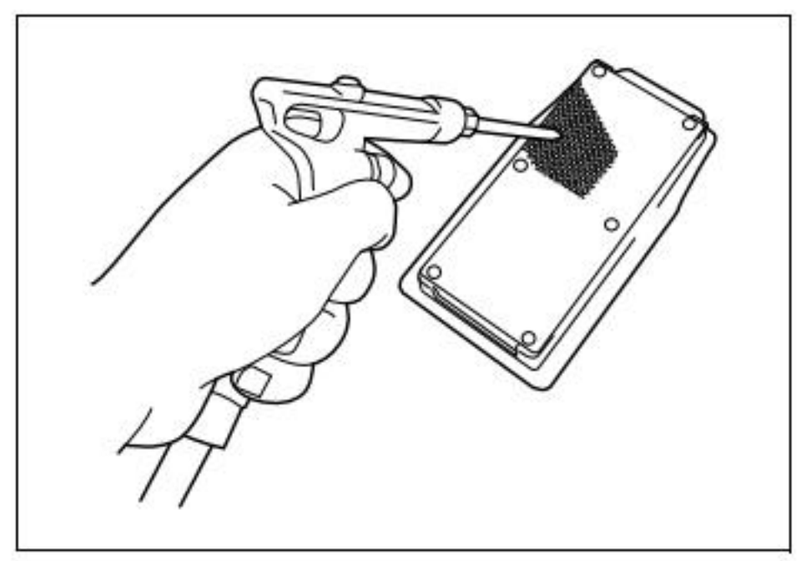
- Remove the fuel tank. (☞5-2)
- Remove the screws ① and slide the air cleaner cover ② upward.



- Remove the air cleaner element ③.



- Carefully use air hose to blow the dust from the cleaner element.



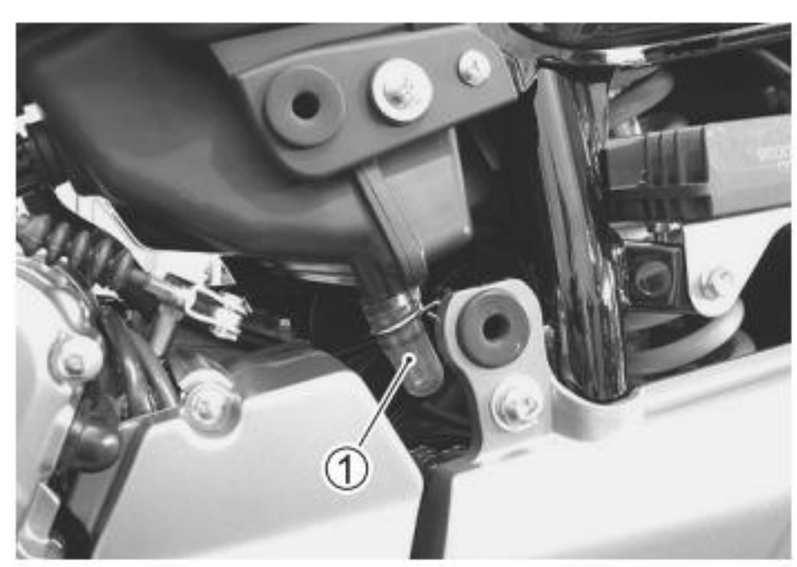
NOTE:
Always use air pressure on the throttle body side of the air cleaner element. If air pressure is used on the other side, dirt will be forced into the pores of the air cleaner element thus restricting air flow through the air cleaner element.

- Install the cleaned element or new air cleaner element in the reverse order of removal.

NOTE:
If driving under dusty conditions, clean the air cleaner element more frequently. Make sure that the air cleaner is in good condition at all times. The life of the engine depends largely on this component.

DRAIN PLUG

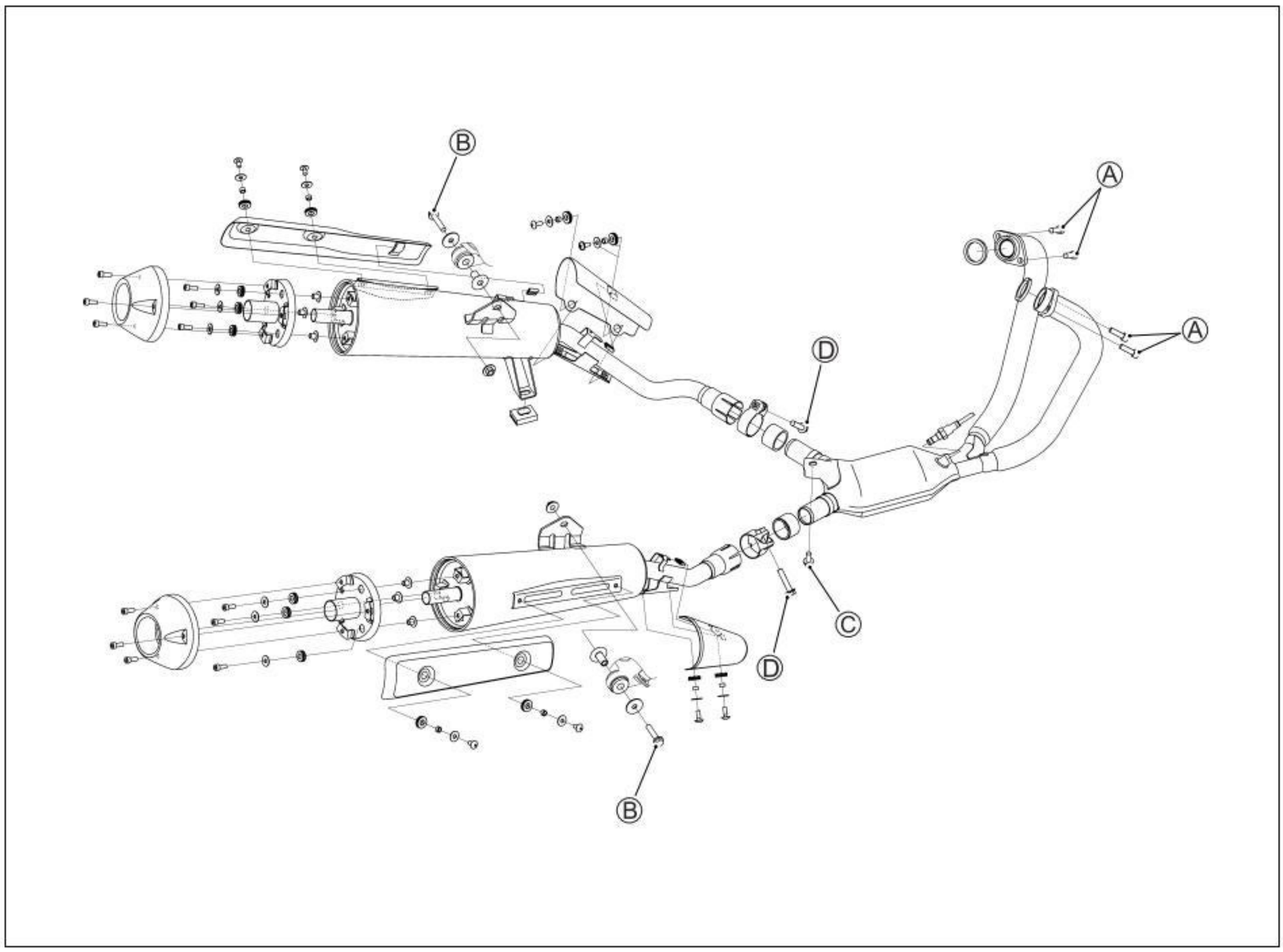
- Remove the left frame cover. (☞8-4)
- Drain water by removing the drain plug ①.



EXHAUST PIPE BOLTS AND MUFFLER BOLTS

Tighten initially at 1 000 km (600 miles, 3 months) and every 10 000 km (6 000 miles, 30 months) thereafter.

- Tighten the exhaust pipe bolts, muffler support bolts, muffler chamber support bolt and exhaust connecting bolts to the specified torque.



Ⓐ	Exhaust pipe bolt
Ⓑ	Muffler support bolt
Ⓒ	Muffler chamber support bolt
Ⓓ	Exhaust connecting bolt

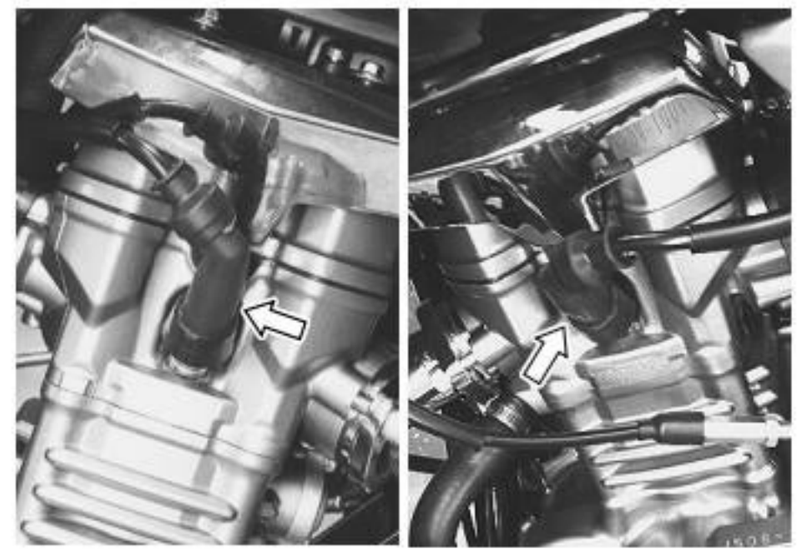
ITEM	N·m	kgf-m	lbf-ft
Ⓐ	23	2.3	16.5
Ⓑ	23	2.3	16.5
Ⓒ	23	2.3	16.5
Ⓓ	17	1.7	12.5

SPARK PLUGS

Inspect every 5 000 km (3 000 miles, 15 months).
Replace every 10 000 km (6 000 miles, 30 months).

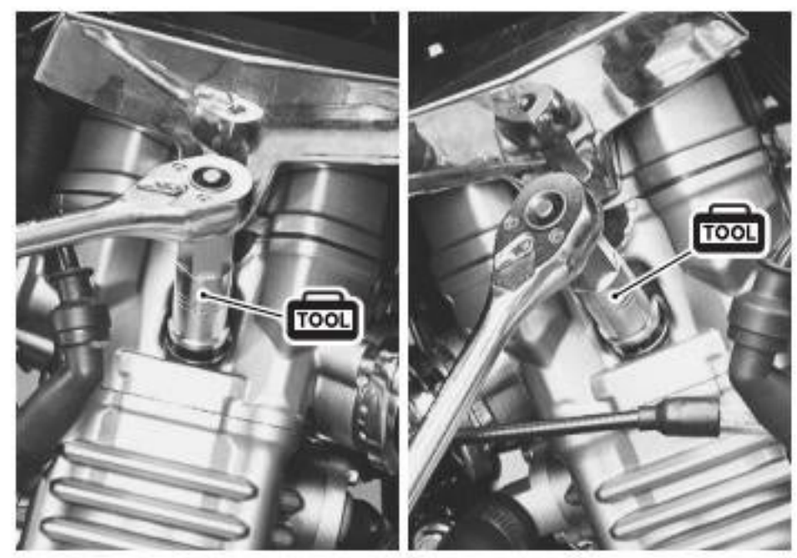
REMOVAL

- Disconnect the spark plug caps.



- Remove the spark plugs.

TOOL 09930-10121: Spark plug wrench set



HEAT RANGE

- Check spark plug heat range by observing electrode color. If the electrode of the spark plug is wet appearing or dark color, replace the spark plug with hotter type one. If it is white or glazed appearing, replace the spark plug with colder type one.

	Hot type	Standard	Cold type
NGK	CR6E	CR7E	CR8E
ND	U20ESR-N	U22ESR-N	U24ESR-N

CARBON DEPOSITS

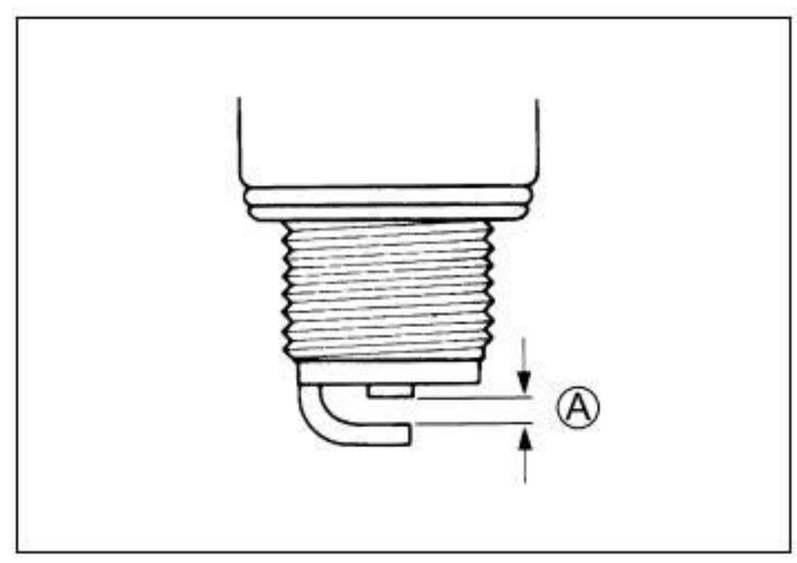
- Check carbon deposits on the spark plug.
- If carbon is deposited, remove it using a spark plug cleaner machine.

SPARK PLUG GAP

- Measure the spark plug gap Ⓐ with a thickness gauge.
- Adjust the spark plug gap if necessary.

DATA Spark plug gap:
Standard: 0.7 – 0.8 mm (0.028 – 0.031 in)

TOOL 09900-20803: Thickness gauge



ELECTRODE'S CONDITION

- Check the condition of the electrode.
- If it is extremely worn or burnt, replace the spark plug. Replace the spark plug if it has a broken insulator, damaged thread, etc.

NOTICE

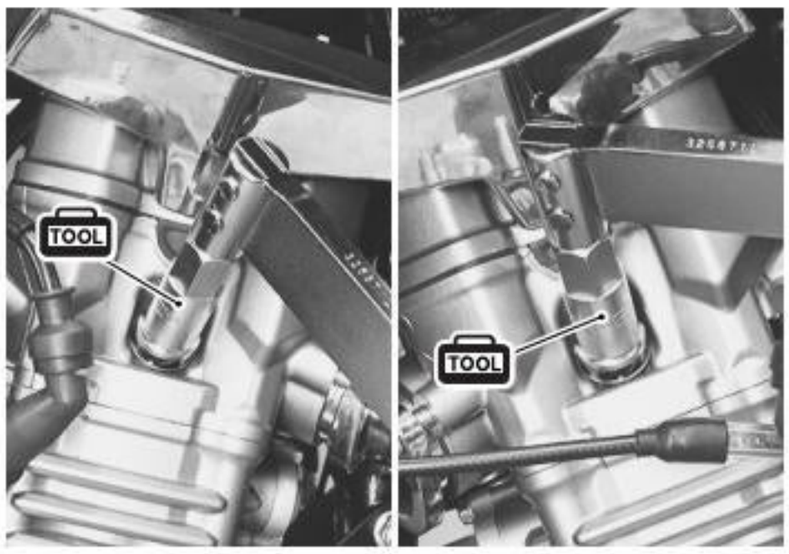
Confirm the thread size and reach when replacing the plug. If the reach is too short, carbon will be deposited on the screw portion of the plug hole and engine damage may result.

INSTALLATION

- Screw the spark plugs into the cylinder head with fingers, and then tighten them to the specified torque.

Spark plug: 11 N·m (1.1 kgf-m, 8.0 lbf-ft)

TOOL 09930-10121: Spark plug wrench set



NOTICE

Do not cross thread or over tighten the spark plug, or such an operation will damage the aluminum threads of the cylinder head.

- Connect the spark plug caps.