SUZUKI

GS500E

SERVICE MANUAL

99500-34069-01E

FOREWORD

The SUZUKI GS500E has been developed as a new generation motorcycle to the GS-models. It is packed with highly advanced design concepts including a New Twin Dome Combustion Chamber, a crankshaft couter-balancer, a fully transistorized ignition system and a link type rear suspension. Combined with precise control and easy handling the GS500E provides excellent performance and outstanding riding comfort.

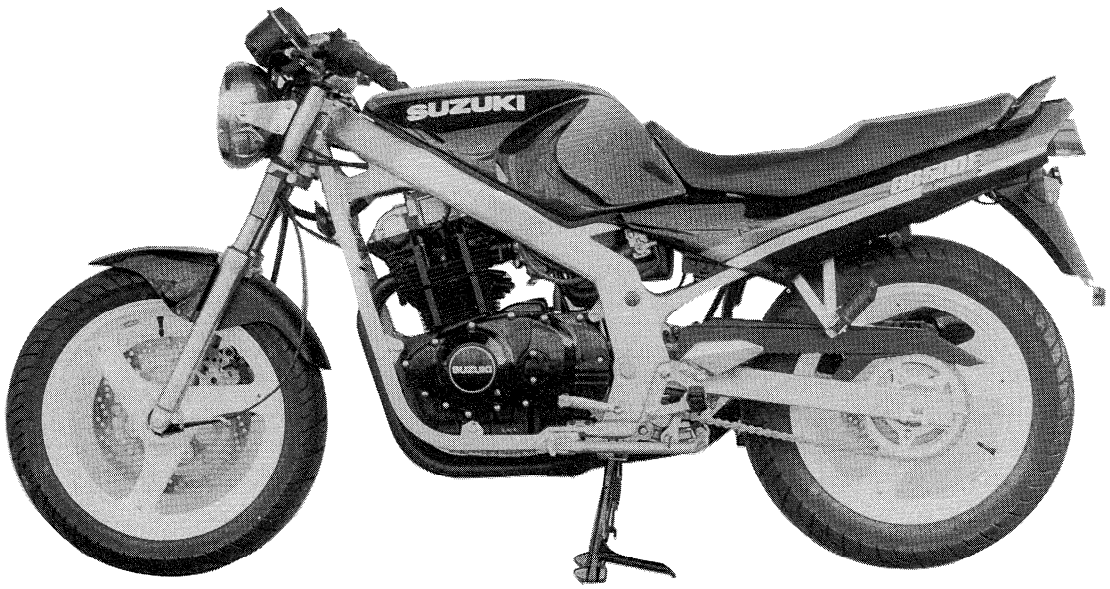
This service manual has been produced primarily for experienced mechanics whose job is to inspect, adjust, repair and service SUZUKI motorcycles. Apprentice mechanics and do-it-yourself mechanics, will also find this manual an extremely useful repair guide. This manual contains the most up-to-date information at the time of publication. The rights are reserved to update or make corrections to this manual at any time.

SUZUKI MOTOR CORPORATION
Motorcycle Service Department

GROUP INDEX

VIEW OF GS500E

RIGHT SIDE



LEFT SIDE

Difference between photographs and actual motorcycle depends on markets.

GENERAL INFORMATION

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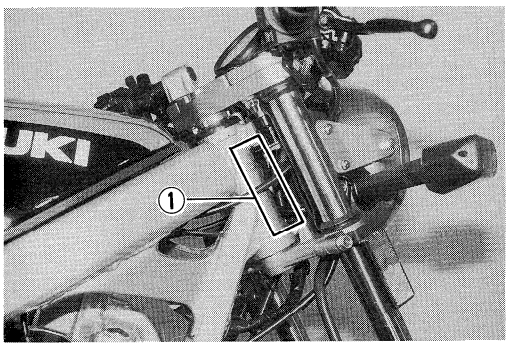
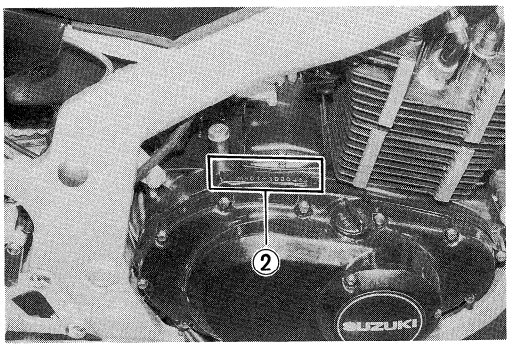
CONTENTS

SERIAL NUMBER LOCATIONS

The frame number or V. I. N. (Vehicle Identification Number) ① is stamped on the right side of 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 AND OIL RECOMMENDATIONS

FUEL (For U.S.A. model)

1. Use only unleaded or low-lead type gasoline of at least 85 — 95 pump octane ($\frac{R+M}{2}$)method or 89 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 it contains not more than 10% ethanol. Gasoline/alcohol fuel may contain up to 5% methanol if appropriate cosolvents and corrosion inhibitors are present.
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 be sure that the fuel you intend to use meets the requirements listed above.

FUEL (For Canadian model)

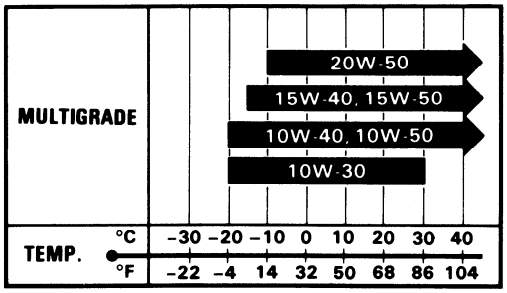
Use only unleaded or low-lead type gasoline of at least 85 — 95 pump octane ($\frac{R+M}{2}$)method or 89 octane or higher rated by the research method.

FUEL (For the other models)

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

ENGINE OIL (For U.S.A. model)

SUZUKI recommends the use of SUZUKI PERFORMANCE 4 MOTOR OIL or an oil which is rated SE or SF under the API (American Petroleum Institute) classification system. The viscosity rating is SAE 10W/40. If an SAE 10W/40 motor oil is not available, select an alternate according to the following chart.



ENGINE OIL (For the other models)

Be sure that the engine oil you use comes under API (American Petroleum Institute) classification of SE or SF 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 following chart.

FRONT FORK OIL

Use fork oil # 10.

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 the previous servicing and stored for a long period.**

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 5 000 r/min
Up to 1 600 km (1 000 miles) : Below 8 000 r/min
Over 1 600 km (1 000 miles) : Below 10 000 r/min

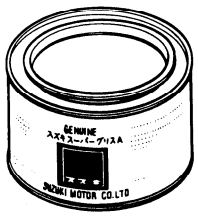
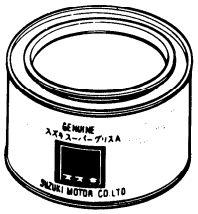
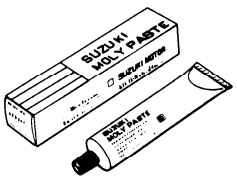
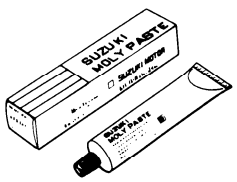
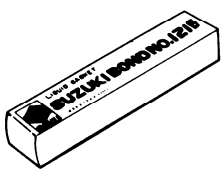
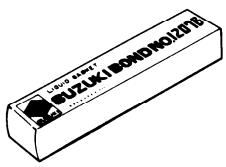
- Upon reaching an odometer reading of 1 600 km (1 000 miles) you can subject the motorcycle to full throttle operation.
  However, do not exceed red zone at any time.

CYLINDER IDENTIFICATION

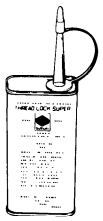
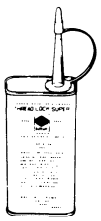
The two cylinders of this engine are identified as left-hand and right-hand, as viewed by the rider on the seat.

SPECIAL MATERIALS

The materials listed below are needed for maintenance work on the GS500E, and should be kept on hand for ready use. They supplement such standard materials as cleaning fluids, lubricants, emery cloth and the like. How to use them and where to use them are described in the text of this manual.

MATERIAL		PART	PAGE
For U.S.A. model	For other models		
 SUZUKI SUPER GREASE "A" 99000-25030	 SUZUKI SUPER GREASE "A" 99000-25010	• Driveshaft oil seal • Crankshaft oil seal • Oil filter • Starter motor oil seal • Wheel bearing • Steering stem bearing • Sprocket mounting drum bearing • Swingarm spacer and dust seal cover • Cushion lever bearing and dust seal • Cushion lever rod bearing and dust seal	3-43 3-53 2-10 5-11 6-4 6-33 6-21 6-34 6-48 6-48 6-48
 SUZUKI SILICONE GREASE 99000-25100	 SUZUKI SILICONE GREASE 99000-25100	• Brake caliper axle	6-7
 SUZUKI MOLY PASTE 99000-25140	 SUZUKI MOLY PASTE 99000-25140	• Valve stem • Conrod big end bearing • Countershaft and driveshaft • Crankshaft journal bearing • Camshaft journal • Starter motor armature end • Counter-balancer journal	3-25 3-35 3-43 3-48 3-56 5-11 3-48
 SUZUKI BOND NO. 1207B 99104-31140	 SUZUKI BOND NO. 1207B 99000-31140	• Crankcase mating surface • Oil pressure switch • Cam end cap and cylinder head cover	3-48 3-53 3-59
 THREAD LOCK SUPER "1303" 99000-32030	 THREAD LOCK SUPER "1303" 99000-32030	• Cam sprocket bolt • Cam chain guide bolt and screw • 2nd drive gear • Gearshift cam retainer screw	3-28 3-29 3-43 3-51

MATERIAL		PART	PAGE
For U.S.A. model	For other models		
 THREAD LOCK "1360" 99000-32130	 THREAD LOCK "1360" 99000-32130	• Disc plate mounting bolt	6-5 6-35
 THREAD LOCK "1342" 99000-32050	 THREAD LOCK "1342" 99000-32050	• Gearshift cam stopper bolt • Oil pump mounting screw • Countershaft bearing retainer screw • Gearshift fork shaft stopper screw • Generator stator mounting screw • Generator lead wire guide securing screw • Starter motor mounting bolt • Oil separator plate mounting screw • Starter motor housing screw • Front fork damper rod bolt	3-51 3-52 3-51 3-46 5-7 5-7 3-49 3-47 5-11 6-17
 THREAD LOCK SUPER "1303" 99000-32030	 THREAD LOCK SUPER "1305" 99000-32100	• Generator rotor mounting bolt • Starter clutch allen bolt	3-50 3-41
 SUZUKI BRAKE FLUID DOT3 & DOT4 99000-23110	 SUZUKI BRAKE FLUID DOT3 & DOT4 99000-23110	• Brakes	2-14
 SUZUKI FORK OIL # 10 99000-99044-10G	 SUZUKI FORK OIL # 10 99000-99044-10G		6-17

MATERIAL		PART	PAGE
For U.S.A. model	For other models		
 THREAD LOCK CEMENT 99000-32040	 THREAD LOCK CEMENT 99000-32040	• Carburetor set plate screw	4-11

PRECAUTIONS AND GENERAL INSTRUCTIONS

Observe the following items without fail when servicing, disassembling and reassembling motorcycles.

□ Do not run engine indoors with little or no ventilation

□ Be sure to replace packings, gaskets, circlips, O-rings and cotter pins with new ones.

CAUTION:
Never reuse a circlip. After a circlip has been removed from a shaft, it should be discarded and a new circlip must be installed.
When installing a new circlip, care must be taken not to expand the end gap larger than required to slip the circlip over the shaft.
After installing a circlip, always insure that it is completely seated in its groove and securely fitted.

□ Tighten cylinder head and case bolts and nuts beginning with larger diameter and ending with smaller diameter, and from inside to outside diagonally, to the specified tightening torque.

□ Use special tools where specified.

□ Use genuine parts and recommended oils.

□ When 2 or more persons work together, pay attention to the safety of each other.

□ After the reassembly, check parts for tightness and operation

□ Treat gasoline, which is extremely flammable and highly explosive, with greatest care. Never use gasoline as cleaning solvent.

Warning, Caution and Note are included in this manual occasionally, describing the following contents.

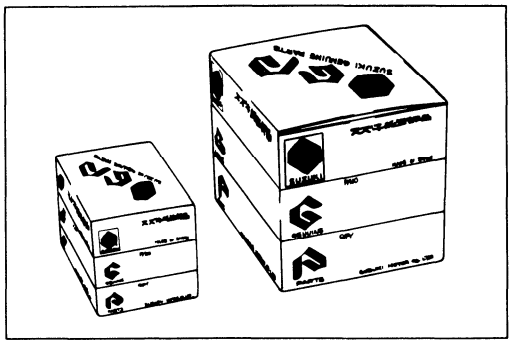
WARNING ..... The personal safety of the rider or bystanders may be involved. Disregarding this information could result in personal injury.
CAUTION ..... These instructions point out special service procedures or precautions that must be followed to avoid damaging the machine.
NOTE ..... This provides special information to make maintenance easier or important instructions clearer.

REPLACEMENT PARTS

When you replace any parts, use only genuine SUZUKI replacement parts, or their equivalent. Genuine SUZUKI parts are high quality parts which are designd and built specifically for SUZUKI vehicles.

CAUTION:

Use of replacement parts which are not equivalent in quality to genuine SUZUKI parts can lead to performance problems and damage.

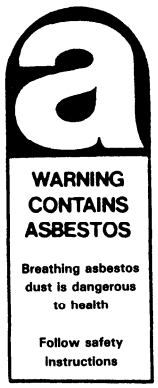


ASBESTOS INFORMATION

Note the following when handling a supply part with the above WARNING LABEL or any part in the parts list in this section which contains asbestos.

- Operate if possible out of doors in a well ventilated place.
- Preferably use hand tools or low speed tools equipped, if necessary, with an appropriate dust extractor facility. If high speed tools are used, they should always be so equipped.
- If possible, dampen before cutting or drilling.
- Dampen dust and place it in a properly closed receptacle and dispose of it safely.

Any domestic asbestos product to which the above does not apply, but which is likely to release fibres during use should be replaced by new one when worn.



1.	Breather cover gasket
2.	Clutch cover gasket
3.	Generator cover gasket
4.	Starter gear cover gasket
5.	Oil pan gasket
6.	Cam chain tension adjuster gasket

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 075 mm (81.7 in)
Overall width	725 mm (28.5 in)
Overall height	1 045 mm (41.1 in)
Wheelbase	1 410 mm (55.5 in)
Ground clearance	155 mm (6.1 in)
Seat height	790 mm (31.1 in)
Dry mass	169 kg (373 lbs)

ENGINE

Type	Four-stroke, air-cooled, DOHC, TDCC
Tappet clearance, IN & EX	0.03 – 0.08 mm (0.0018 – 0.0031 in)
Number of cylinders	2
Bore	74.0 mm (2.913 in)
Stroke	56.6 mm (2.228 in)
Piston displacement	487 cm^3 (29.7 cu, in)
Compression ratio	9.0 : 1
Carburetor	MIKUNI BST33SS, twin
Air cleaner	Polyester fiber element
Starter system	Electric starter motor
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	6-speed constant mesh
Gearshift pattern	1-down, 5-up
Primary reduction ratio	2.714 (76/28)
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	2.437 (39/16)
Drive chain	DID 520V6, 110 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type suspension, oil damped, spring preload 7-way adjustable
Front suspension stroke	120 mm (4.7 in)
Rear wheel travel	115 mm (4.5 in)
Caster	64° 30′
Trail	95 mm (3.7 in)
Steering angle	35°
Turning radius	2.7 m (8.9 ft)
Front brake	Disc
Rear brake	Disc
Front tire size	110/70 –17 54H, tubeless
Rear tire size	130/70 –17 62H, tubeless

ELECTRICAL

Ignition type	Fully Transistorized
Ignition timing	12° B.T.D.C. at 1 200 rpm and 40° B.T.D.C. at 4 000 rpm 5° B.T.D.C. at 1 200 rpm and 40° B.T.D.C. at 4 000 rpm ... California model only
Spark plug	NGK: DPR8EA-9 or ND: X24EPR-U9
Battery	12V 39.6 kC (11Ah)/10HR
Generator	Three-phase A.C. generator
Fuse	20A
Headlight	12V 60/55W
Parking light	12V 4W ... except for E-03, 28 and 33
Turn signal light	12V 21W
Tail/brake light	12V 5/21W
Speedometer light	12V 3.4W
Tachometer light	12V 3.4W
Neutral indicator light	12V 3.4W
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 3.4W
Oil pressure indicator light	12V 3.4W

CAPACITIES

Fuel tank, including reserve	17.0 L (4.5/3.7 US/Imp gal)
reserve	3.5 L (3.7/3.1 US/Imp qt)
Engine oil, oil change	2 600 ml (2.7/2.3 US/Imp qt)
with filter change	2 900 ml (3.1/2.6 US/Imp qt)
overhaul	3 200 ml (3.4/2.8 US/Imp qt)
Front fork oil	382 ml (12.9/13.5 US/Imp oz)

* These specifications are subject to change without notice.

COUNTRY OR AREA

The series of symbols on the left stand for the countries and areas on the right.

SYMBOL	COUNTRY or AREA
E-01	General
E-02	England
E-03	U.S.A.
E-04	France
E-15	Finland
E-16	Norway
E-17	Sweden
E-21	Belgium
E-22	W.Germany
E-24	Australia
E-25	Netherlands
E-28	Canada
E-33	California (U.S.A.)
E-34	Italy
E-39	Austria
E-53	Spain

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

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 to maintain proper emission levels. Mileages are expressed in terms of kilometer, miles and time for your convenience.

NOTE:
More frequent servicing may be performed on motorcycles that are used under severe conditions however, it is not necessary for ensuring emission level compliance.

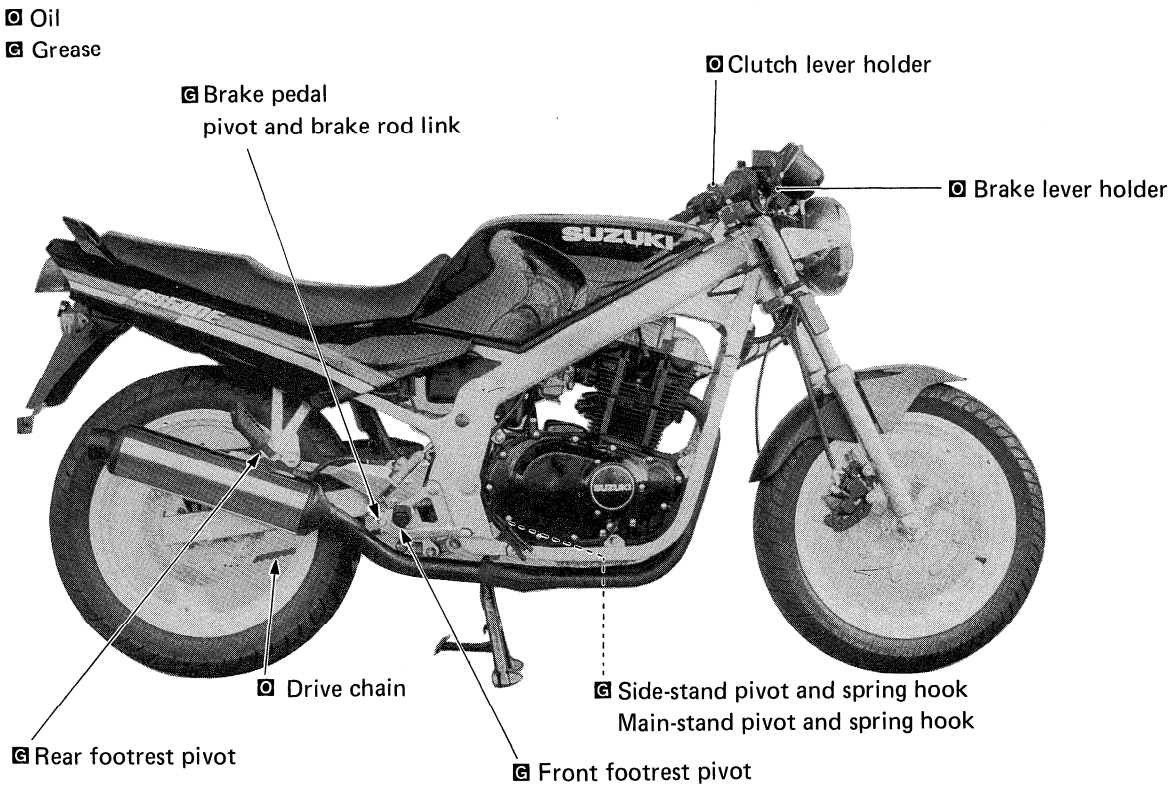
PERIODIC MAINTENANCE CHART

INTERVAL: **THIS INTERVAL SHOULD BE JUDGED BY ODOMETER READING OR MONTHS WHICHEVER COMES FIRST**	km	1 000	6 000	12 000	18 000	24 000
	miles	600	4 000	7 500	11 000	15 000
	months	2	12	24	36	48
Battery (Specific gravity of electrolyte)		—	I	I	I	I
Cylinder head nuts & exhaust pipe bolts		T	T	T	T	T
Air cleaner element		Clean every 3 000 km (2 000 miles) and replace every 12 000 km (7 500 miles)				
Tappet clearance		I	I	I	I	I
Spark plugs		—	I	R	I	R
Fuel line		I	I	I	I	I
(Vapor hose.....California model only)		Replace every four years				
Engine oil and filter		R	R	R	R	R
Carburetors (Idle rpm)		I	I	I	I	I
Clutch		I	I	I	I	I
Drive chain		I	I	I	I	I
		Clean and lubricate every 1 000 km (600 miles)				
Brake hoses		I	I	I	I	I
		Replace every four years				
Brake fluid		I	I	I	I	I
		Replace every two years				
Brakes		I	I	I	I	I
Tires		I	I	I	I	I
Steering		I	I	I	I	I
Front forks		I	—	I	—	I
Rear suspension		I	—	I	—	I
Chassis bolts and nuts		T	T	T	T	T

NOTE: T = Tighten, I = Inspect, R = Replace

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.



NOTE:

** Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.*

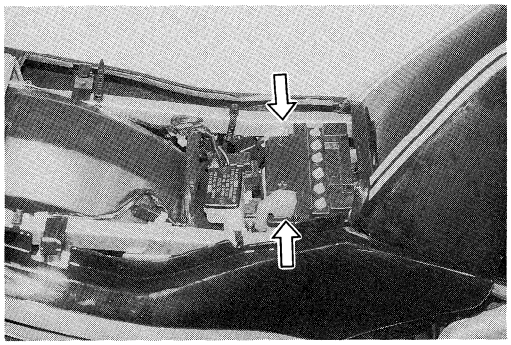
** Lubricate exposed parts which are subject to rust, with oil or grease.*

MAINTENANCE AND TUNE-UP PROCEDURES

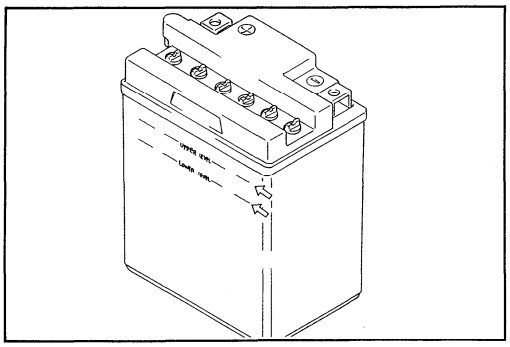
This section describes the servicing procedures for each item of the Periodic Maintenance requirements.

BATTERY

Inspect Every 6 000 km (4 000 miles, 12 months).



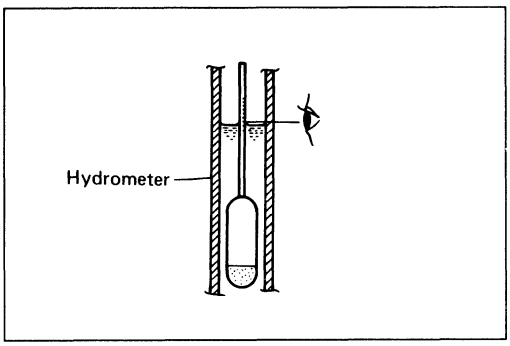
- Remove the seat.
- Remove the battery ⊖ and ⊕ lead wires from the battery terminals.
- Remove the battery from its frame.
- Check the electrolyte for level and specific gravity. Add distilled water, as necessary, to keep the surface of the electrolyte above the MIN. level line but not above the MAX. level line.
- For checking specific gravity, use a hydrometer to determine the charged condition.



09900-28403 : Hydrometer

Standard specific gravity : 1.28 at 20°C (68°F)

An S.G. reading of 1.22 (at 20°C) or under means that the battery needs recharging. Remove the battery from the machine and charge it with a battery charger.

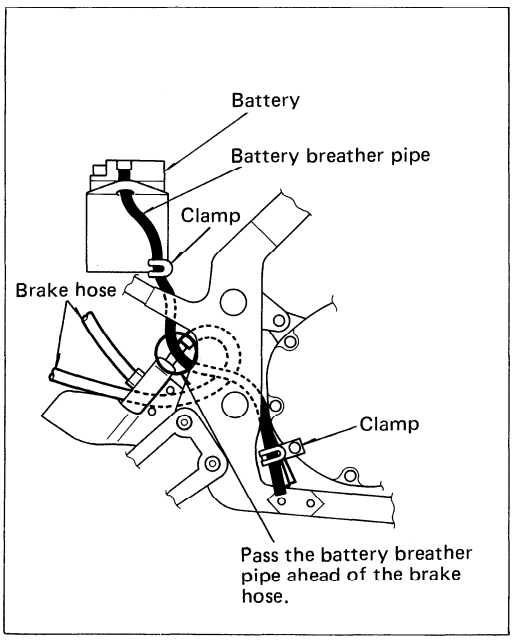


CAUTION:
Never charge a battery while still in the machine as damage may result to the battery or regulator/rectifier.

- Charge at a maximum of 1.2 amps.
- To install the battery, reverse the procedure described above.

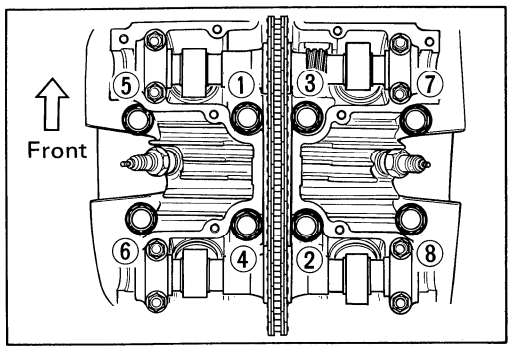
WARNING:
When installing the battery lead wires, fix the ⊕ lead first and ⊖ lead last.

- Make sure that the breather pipe is tightly secured and undamaged, and is routed as shown in the figure.



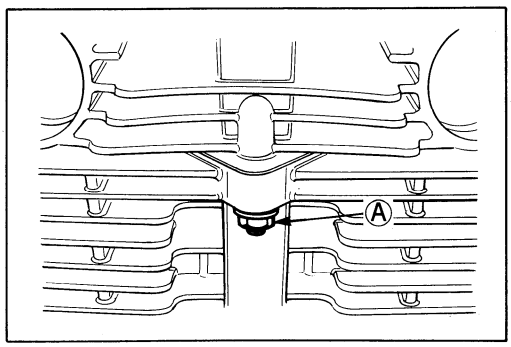
CYLINDER HEAD NUTS AND EXHAUST PIPE BOLTS

Tighten at Initially 1 000 km (600 miles, 2 months) and Every 6 000 km (4 000 miles, 12 months) thereafter.



CYLINDER HEAD

- Remove the seat.
- Remove the pillion rider grabber and frame covers. (Refer to page 3-4.)
- Remove the fuel tank. (Refer to page 3-4.)
- Remove the cylinder head cover. (Refer to page 3-10.)
- First loosen and retighten the nuts to the specified torque with a torque wrench sequentially in ascending numerical order with the engine cold.



Tightening torque
Cylinder head nut : 35 — 40 N·m (3.5 — 4.0 kg-m, 25.5 — 29.0 lb-ft)

- After firmly tightening the 8-nuts, tighten the nut (indicated as Ⓐ) to the torque value below:

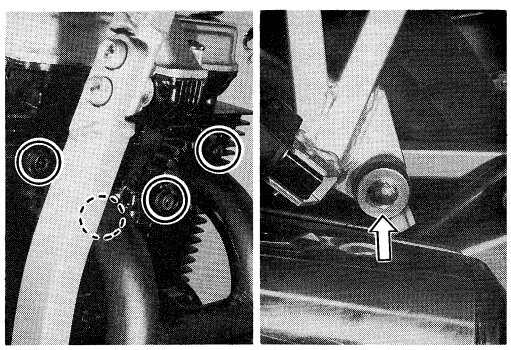
Tightening torque
Cylinder head nut Ⓐ: 7 — 11 N·m (0.7 — 1.1 kg-m, 5.0 — 8.0 lb-ft)

- When installing the cylinder head cover, apply SUZUKI Bond No. 1207B to the head cover groove and cam end caps. (Refer to page 3-59.)
- Tighten the head cover bolts to the specified torque.

Tightening torque : 13 — 15 N·m (1.3 — 1.5 kg-m, 9.5 — 11.0 lb-ft)

EXHAUST PIPE AND MUFFLER

- Tighten the exhaust pipe clamp bolts and muffler mounting bolt to the specified torque with a torque wrench.

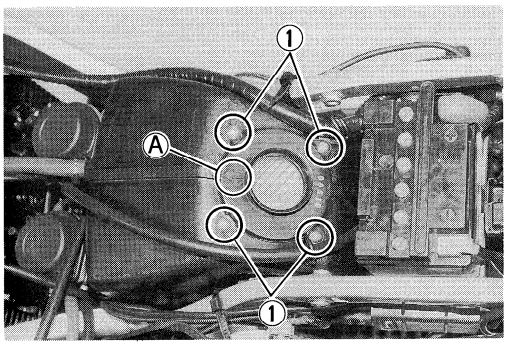


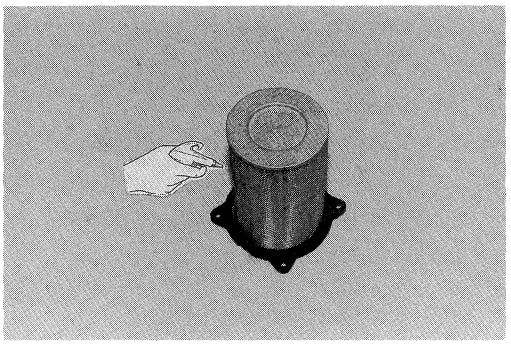
Tightening torque
Exhaust pipe bolt : 9 — 12 N·m (0.9 — 1.2 kg-m, 6.5 — 8.5 lb-ft)

Muffler mounting bolt : 18 — 28 N·m (1.8 — 2.8 kg-m, 13.0 — 20.0 lb-ft)

AIR CLEANER

Clean Every 3 000 km (2 000 miles) and Replace Every 12 000 km (7 500 miles).





- Remove the seat.
- Remove the pillion rider grabber and frame covers. (Refer to page 3-4.)
- Remove the fuel tank. (Refer to page 3-4.)
- Remove the air cleaner element by removing four screws ①.
- Carefully use air hose to blow the dust from the cleaner element outside.

CAUTION:
Always use air pressure on the outside of the cleaner element. If air pressure is used on the inside, dirt will be forced into the pores of the cleaner element thus restricting air flow through the cleaner element.

- Reinstall the cleaned or new cleaner element in the reverse order of removal.
- When installing the air cleaner element in the cleaner case, make sure that the arrow mark Ⓐ comes upward.

CAUTION:
If driving under dusty conditions, clean the air cleaner element more frequently. The surest way to accelerate engine wear is to use the engine without the element or to use a ruptured element. Make sure that the air cleaner is in good condition at all times. Life of the engine depends largely on this component!

TAPPET CLEARANCE

Inspect at Initially 1 000 km (600 miles, 2 months) and Every 6 000 km (4 000 miles, 12 months) thereafter.

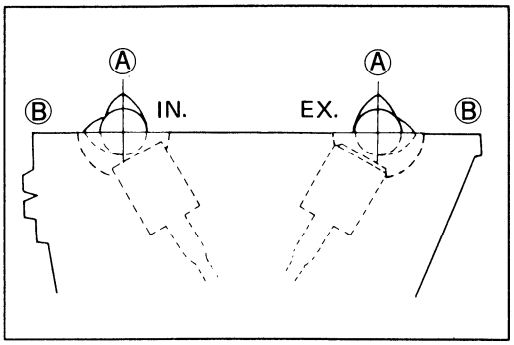
- Remove the seat.
- Remove the pillion rider grabber and frame covers. (Refer to page 3-4.)
- Remove the fuel tank. (Refer to page 3-4.)
- Remove the signal generator cover.
- Remove the cylinder head cover. (Refer to page 3-10.)

The tappet clearance specification is the same for both intake and exhaust valves.
Tappet clearance adjustment must be checked and adjusted, 1) at the time of periodic inspection, 2) when the valve mechanism is serviced, and 3) when the camshafts are disturbed by removing them for servicing.

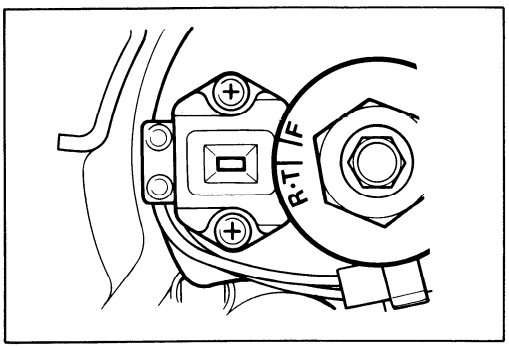
Tappet clearance (when cold) : IN. & EX. 0.03 – 0.08 mm (0.001 – 0.003 in)

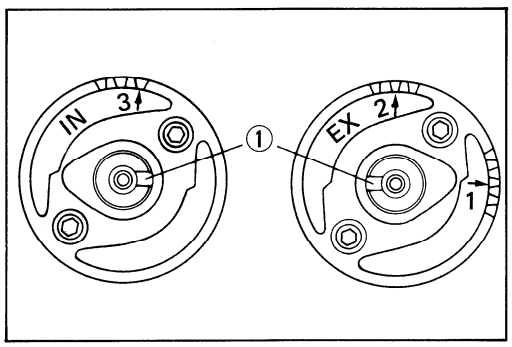
NOTE:

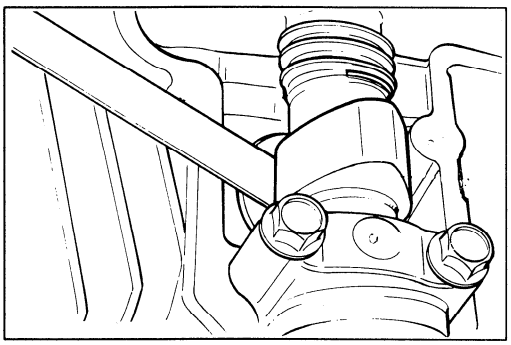
* *The cam must be at positions, Ⓐ or Ⓑ, in order to check the tappet clearance or to adjust tappet clearance. Clearance readings should not be taken with the cam in any other position than these two positions.*
* *The clearance specification is for COLD state.*
* *To turn the crankshaft for clearance checking, be sure to use a 19-mm wrench and to rotate in the normal running direction. All spark plugs should be removed.*



- Turn crankshaft to bring the "R" and "T" marks on the rotor to the center of left pick-up coil and also to bring the notches ① in the right ends of both camshafts (Ex and In) to the positions shown. In this condition, read the tappet clearance at the valves Ⓒ (In and Ex of right cylinder, and In of left cylinder).



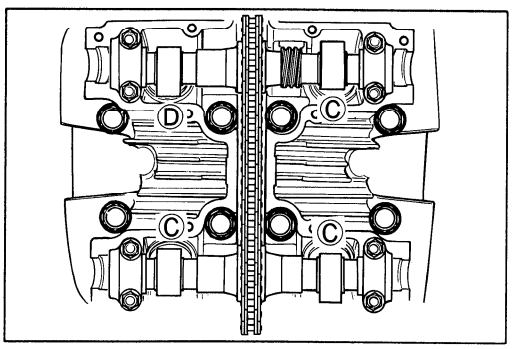




- Use thickness gauge between tappet and cam. If clearance is off the specification, bring it into the specified range with the special tool.

09900-20803 : Thickness gauge

- Turn the crankshaft 360° (one rotation) to bring the notches ① to the positions shown.
- Read the clearance at the remaining valve Ⓓ and adjust the clearance if necessary.

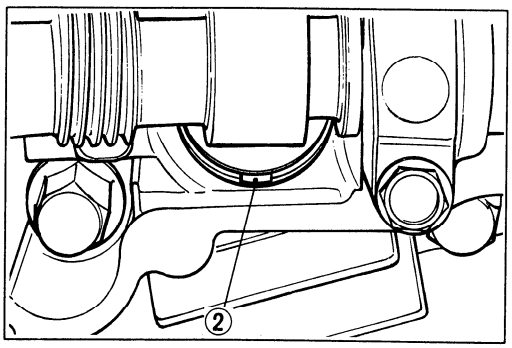


	Notch ① position	
Cam Position	Intake Camshaft	Exhaust Camshaft
Ⓒ	◒	◓
Ⓓ	◓	◒

TAPPET CLEARANCE ADJUSTMENT

The clearance is adjusted by replacing the existing tappet shim by a thicker or thinner shim.

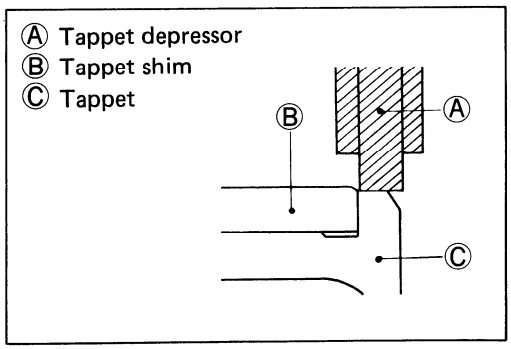
- Place a fingertip on the tappet, and turn it in place to bring notch ② to the position indicated.



- Push down the tappet by using the special tool.

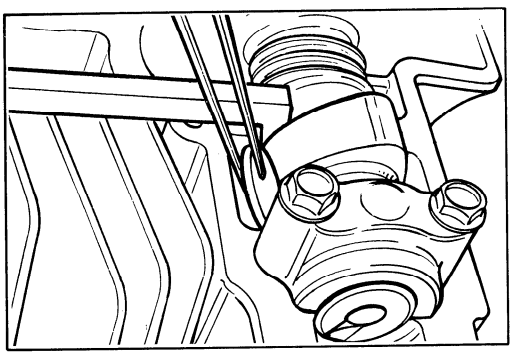
NOTE:
Make sure the tool exerts pressure on the tappet correctly, as shown.

09916-64510 : Tappet depressor

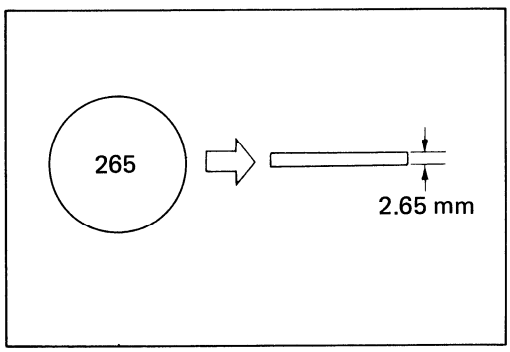


- Remove the tappet shim from the tappet.

09916-84510 : Tweezers



- Check the figures printed on the shim. These figures indicate the thickness of the shim, as illustrated.
- Select a replacement shim that will provide a clearance within the specified range (0.03 – 0.08 mm). For the purpose of this adjustment, a total of 20 sizes of tappet shim are available ranging from 2.15 to 3.10 mm in steps of 0.05 mm. Fit the selected shim to the tappet, with numbers toward tappet. Be sure to check shim size with micrometer to insure its size.



NOTE:
* *Before fitting the tappet shim to the tappet, be sure to apply engine oil to its top and bottom faces.*
* *When seating tappet shim, be sure to face figure printed surface to the tappet.*

- After replacing the tappet shim, rotate the engine so that the tappet is depressed fully. This will squeeze out oil trapped between the shim and the tappet that could cause an incorrect measurement, then check the clearance again to confirm that it is within the specified range.

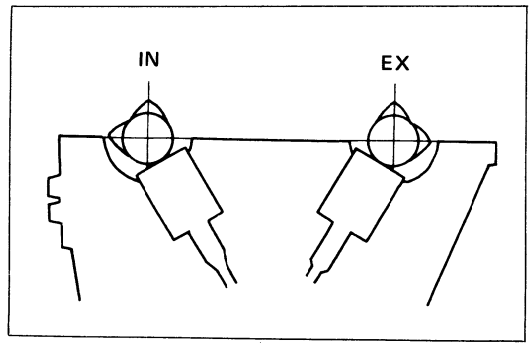
Tappet shim size chart

Thickness (mm)	Part No.
2.15	12892-45000-215
2.20	12892-45000-220
2.25	12892-45000-225
2.30	12892-45000-230
2.35	12892-45000-235
2.40	12892-45000-240
2.45	12892-45000-245
2.50	12892-45000-250
2.55	12892-45000-255
2.60	12892-45000-260
2.65	12892-45000-265
2.70	12892-45000-270
2.75	12892-45000-275
2.80	12892-45000-280
2.85	12892-45000-285
2.90	12892-45000-290
2.95	12892-45000-295
3.00	12892-45000-300
3.05	12892-45000-305
3.10	12892-45000-310

SHIM SELECTION CHART

PRESENT SHIM SIZE — mm

P/N SUFFIX-	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310
Tappet Clearance (mm)	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10
0.00~0.02		2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05
0.03~0.08	SPECIFIED CLEARANCE: NO ADJUSTMENT REQUIRED																			
0.09~0.13	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	
0.14~0.18	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10		
0.19~0.23	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10			
0.24~0.28	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10				
0.29~0.33	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10					
0.34~0.38	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10						
0.39~0.43	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10							
0.44~0.48	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10								
0.49~0.53	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10									
0.54~0.58	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10										
0.59~0.63	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10											
0.64~0.68	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10												
0.69~0.73	2.80	2.85	2.90	2.95	3.00	3.05	3.10													
0.74~0.78	2.85	2.90	2.95	3.00	3.05	3.10														
0.79~0.83	2.90	2.95	3.00	3.05	3.10															
0.84~0.88	2.95	3.00	3.05	3.10																
0.89~0.93	3.00	3.05	3.10																	
0.94~0.98	3.05	3.10																		
0.99~1.03	3.10																			



I. Measure the tappet clearance. "ENGINE is COLD"
II. Measure the existing shim size.
III. Match the clearance in vertical column with existing shim size in horizontal column.

EXAMPLE:
Tappet clearance — 0.55 mm
Existing shim size — 2.40 mm
Shim size to be used — 2.90 mm

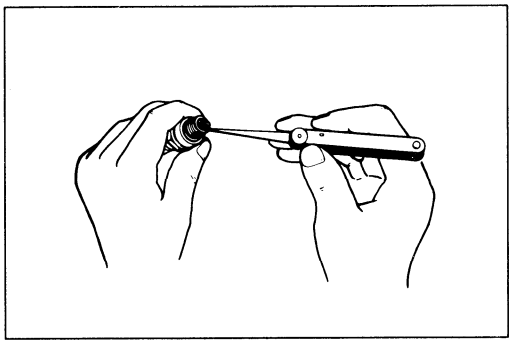
- When installing the cylinder head cover, apply SUZUKI Bond No. 1207B to the head cover groove and cam end caps. (Refer to page 3-59.)
- Tighten the cylinder head cover bolts to the specified torque.

Tightening torque : 13 — 15 N·m
(1.3 — 1.5 kg-m, 9.5 — 11.0 lb-ft)

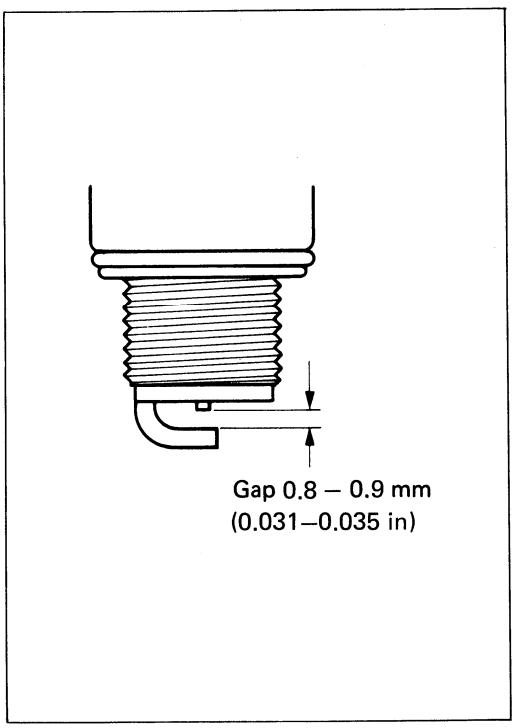
SPARK PLUGS

Inspect 6 000 km (4 000 miles, 12 months), 18 000 km (11 000 miles, 36 months) and Replace Every 12 000 km (7 500 miles, 24 months).

- Remove the spark plugs by using the spark plug wrench.



The spark plug gap is correctly adjusted to 0.8 — 0.9 mm (0.031 — 0.035 in) by using a thickness gauge. When carbon is deposited on the spark plug, remove the carbon with a spark plug cleaning machine or by carefully using a tool with a pointed end. If the electrodes are extremely worn or burnt, replace the plug. Also replace the plug if it has a broken insulator, damaged thread, etc.
NGK DPR8EA-9 or N.D. X24EPR-U9 should be used as the standard plug. However, the heat range of the plug should be selected to meet the requirements of speed, actual load, fuel, etc. If the plugs need to be replaced, it is recommended that ones having a heat range closest to the standard plug as shown below. Remove the plugs and inspect the insulators. Proper heat range would be indicated if all insulators were light brown in color. If they are apt to get wet (blackened by carbon), they should be replaced by a hot type and if baked white, by a cold type.



09930-10120 : Spark plug wrench set
09900-20803 : Thickness gauge

CAUTION:
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.

NOTE:
"R" type spark plug is installed for some specifications. "R" type spark plug has a resister located at the center electrode to prevent radio noise.

Recommended spark plug

	NGK	N.D.
Standard	DPR8EA-9	X24EPR-U9
Hot type	DPR7EA-9	X22EPR-U9
Cold type	DPR9EA-9	X27EPR-U9

FUEL LINE

Inspect at Initially 1 000 km (600 miles, 2 months) and Every 6 000 km (4 000 miles, 12 months). Replace Every four years.

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ENGINE OIL AND OIL FILTER

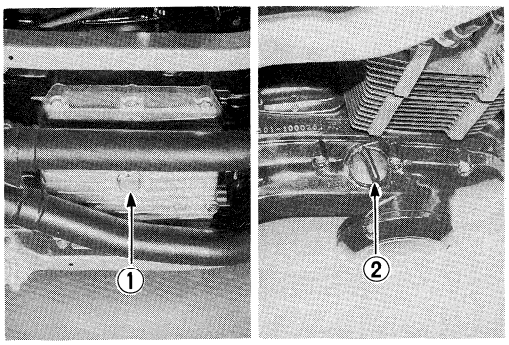
Replace at Initially 1 000 km (600 miles, 2 months) and Every 6 000 km (4 000 miles, 12 months) thereafter.

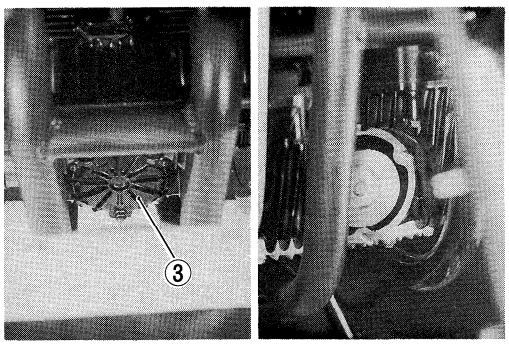
Oil should be changed while the engine is hot. Oil filter replacement at the above intervals should be done together with engine oil change.

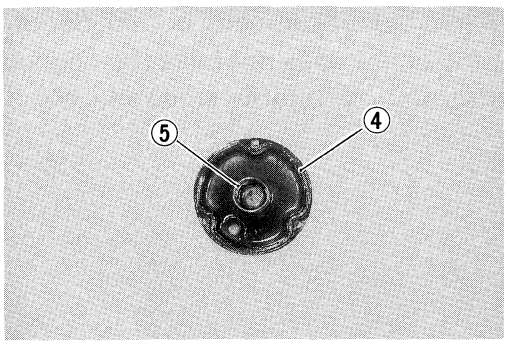
- Keep the motorcycle upright.
- Place an oil pan below the engine and drain oil by removing the drain plug ① and filler cap ②.
- Remove the oil filter cap ③ by removing the three nuts.
- Replace the oil filter with new one.

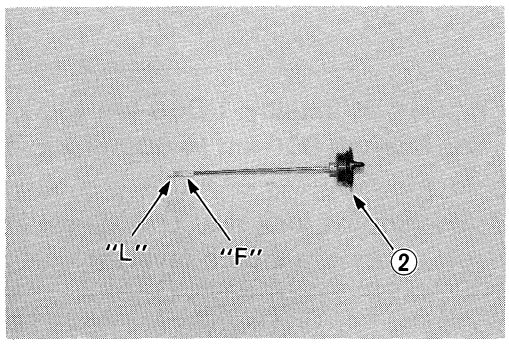
NOTE:
Be sure to take care of O-ring ④ to prevent any damage and be sure that filter spring ⑤ is properly in place.

- Apply grease lightly to the O-ring ④ of the oil filter cap ③ before installation.
- Fit the drain plug ① securely, and add fresh oil through the oil filler. The engine will hold about 2.9 L (3.1 US qt) of oil. Use an API classification of SE or SF oil with SAE 10 W/40 viscosity.
- Install the filler cap ②.
- Start up the engine and allow it to run for several seconds at idling speed.
- Turn off the engine and wait about one minute, then check the oil level by removing the filler cap ②. If the level is below mark "F", add oil to that level.









NECESSARY AMOUNT OF ENGINE OIL

Oil change	2.6 L (2.7 US qt)
Filter change	2.9 L (3.1 US qt)
Overhaul engine	3.2 L (3.4 US qt)

CARBURETORS

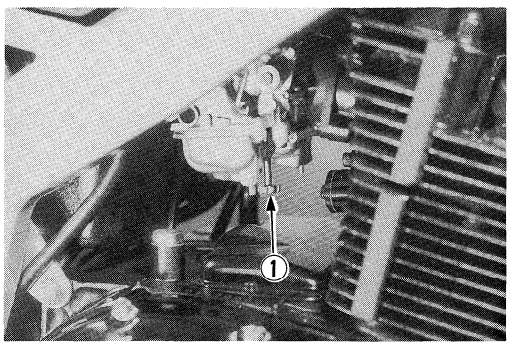
IDLE R/MIN. (Idling adjustment)

Inspect at Initially 1 000 km (600 miles, 2 months) and Every 6 000 km (4 000 miles, 12 months) thereafter.

NOTE:
Make this adjustment when the engine is hot.

- Connect a tachometer.
- Start up the engine and set its speed at anywhere between 1 000 and 1 300 r/min by turning throttle stop screw ①.

Engine idle speed : 1 200 ± 100 r/min

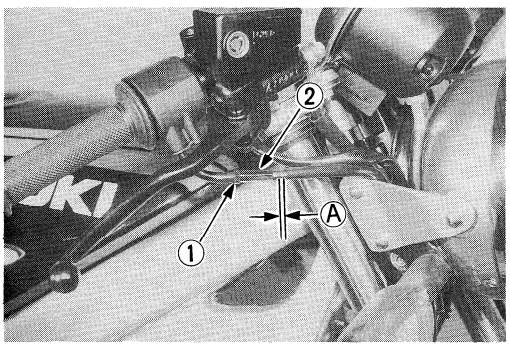


THROTTLE CABLE PLAY

There should be 0.5 — 1.0 mm (0.02 — 0.04 in) play Ⓐ on the throttle cable.
Adjust the throttle cable play in following procedures.

- Loosen the lock nut ① and turn the adjuster ② in or out until the specified play is obtained.
- Tighten the lock nut ① while holding the adjuster.

Throttle cable play Ⓐ : 0.5 — 1.0 mm (0.02 — 0.04 in)

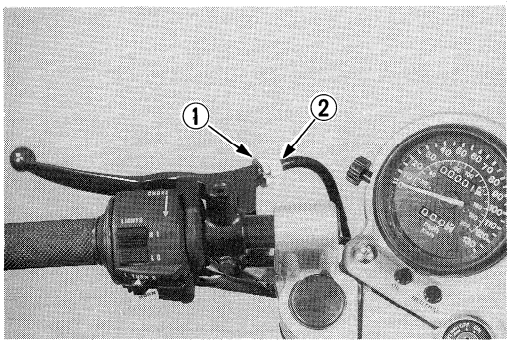


WARNING:
After the adjustment is completed, check that handlebar movement does not raise the engine idle speed and that the throttle grip returns smoothly and automatically.

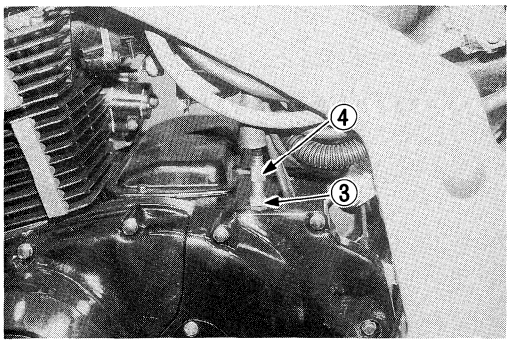
CLUTCH

Inspect at Initially 1 000 km (600 miles, 2 months) and Every 6 000 km (4 000 miles, 12 months) thereafter.

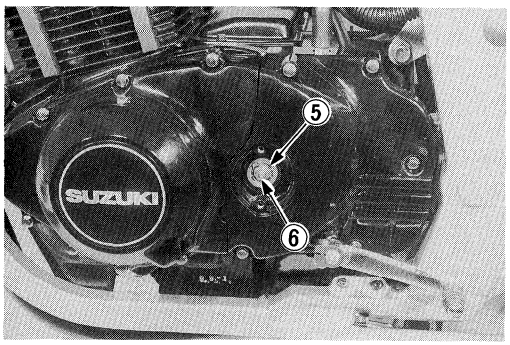
- Loosen the lock nut ① and turn in the adjuster ② all the way into the clutch lever holder.



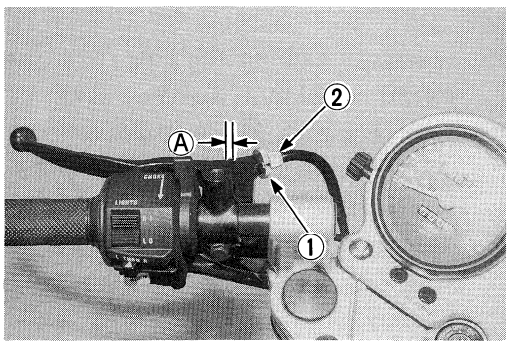
- Loosen the lock nut ③ and, if required, turn the adjuster ④ in place to introduce some play in the clutch lever.
- Remove the clutch release cover.



- Loosen the lock nut ⑤ and back the adjusting screw ⑥ out two or three rotations.
- Slowly turn the adjusting screw in until it begins to meet high resistance to turning.
  From this position, back it out 1/4 – 1/2 rotation and secure the lock nut ⑤.

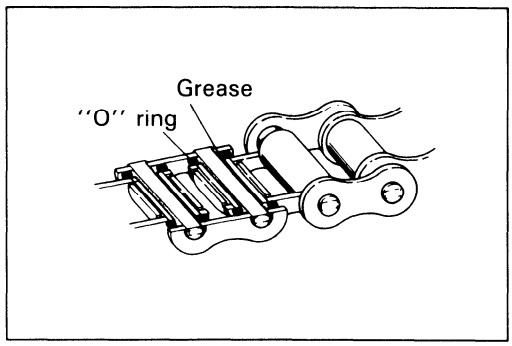


- Reset the adjuster ④ to provide a clutch lever play Ⓐ of 4 mm (0.16 in), and tighten the lock nut ③.
- Lock the adjuster ② using lock nut ①.



DRIVE CHAIN

Inspect at Initially 1 000 km (600 miles, 2 months) and Every 6 000 km (4 000 miles, 12 months) thereafter. Clean and Lubricate Every 1 000 km (600 miles).

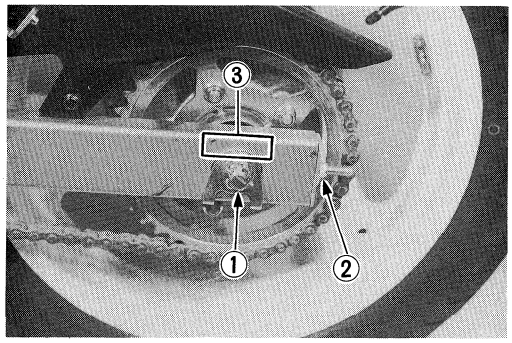


Visually check the drive chain for the listed below possible defects. (Support the motorcycle by center stand, and turn the rear wheel slowly by hand with the transmission shifted to Neutral.)

* Loose pins
* Damaged rollers
* Dry or rusted links
* Kinked or binding links
* Excessive wear
* Improper chain adjustment
* Missing O-ring seals

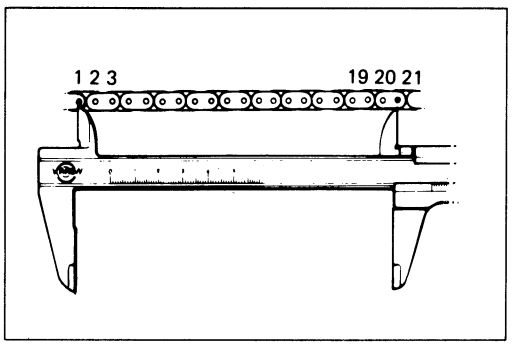
If any defects are found, the drive chain must be replaced.

CHECKING



- Remove the cotter pin. (For E-03, 28 and 33 models)
- Loosen the axle nut ①.
- Tension the drive chain fully by tightening the chain adjusting nuts ②, left and right.

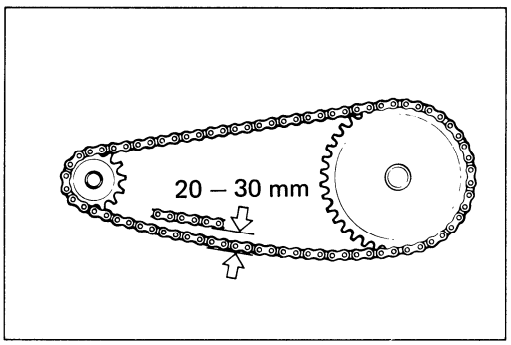
E-03 : U.S.A.
E-28 : Canada
E-33 : California (U.S.A.)



- Count out 21 pins (20 pitches) on the chain and measure the distance between the two points. If the distance exceeds following limit, the chain must be replaced.

Service Limit : 319.4 mm (12.57 in)

ADJUSTING



- Loosen or tighten the chain adjusting nuts ② until the chain has 20 – 30 mm (0.8 – 1.2 in) of slack at the middle between engine and rear sprockets. The mark ③ on both chain adjusters must be at the same position on the scale to ensure that the front and rear wheels are correctly aligned.
  Place on side stand for accurate adjustment.
- After adjusting the drive chain slack, tighten the axle nut ① securely.
- Tighten the chain adjusting nuts securely.

Tightening torque (Rear axle nut):
Normal nut with cotter pin
50 – 80 N·m
(5.0 – 8.0 kg-m, 36.0 – 58.0 lb-ft)
Self-lock nut
60 – 96 N·m
(6.0 – 9.6 kg-m, 43.5 – 69.5 lb-ft)

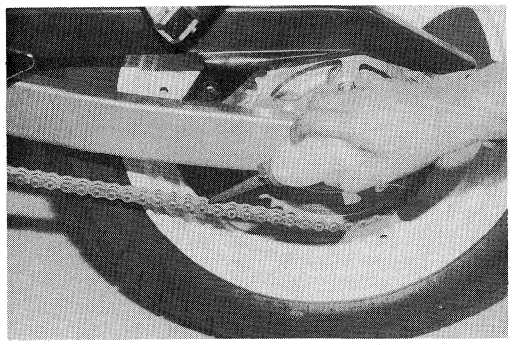
CLEANING AND LUBRICATING

- Wash the chain with kerosene. If the chain tends to rust faster, the intervals must be shortened.

CAUTION:

Do not use trichlene, gasoline or any similar fluids. These fluids have too great a dissolving power for this chain and, what is more important, can damage the "O" rings (or seals) confining the grease in the bush to pin clearance. Remember, high durability comes from the presence of grease in that clearance.

- After washing and drying the chain, oil it with a heavy-weight motor oil.

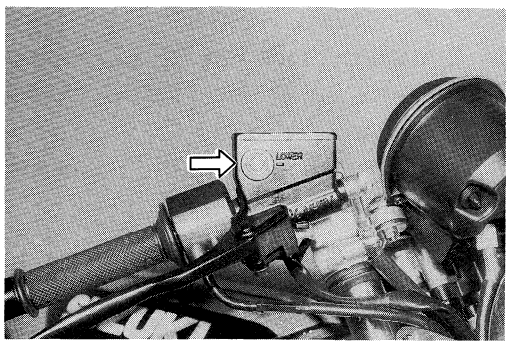


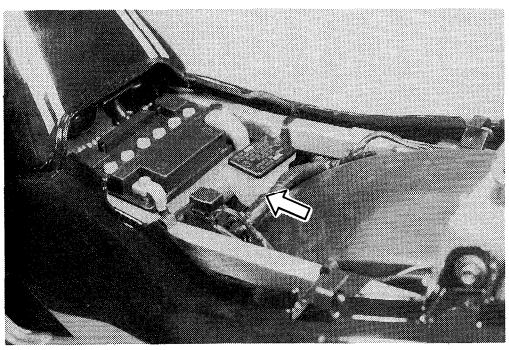
CAUTION:

* **Do not use any oil sold commercially as "drive chain oil". Such oil can damage the "O" rings (or seals).**
* **The standard drive chain is DAIDO D.I.D 520V6-110 links. SUZUKI recommends that the above-mentioned standard drive chain be used for the replacement.**

BRAKES

Inspect at Initially 1 000 km (600 miles, 2 months) and Every 6 000 km (4 000 miles, 12 months) thereafter.
Replace hoses Every four years.
Change fluid Every two years.





BRAKE FLUID LEVEL

- Keep the motorcycle upright and place the handlebars straight.
- Check the brake fluid level by observing the upper (Only for rear brake) and lower (Both front and rear brake) limit lines on the brake fluid reservoirs.

Specification and Classification : DOT4

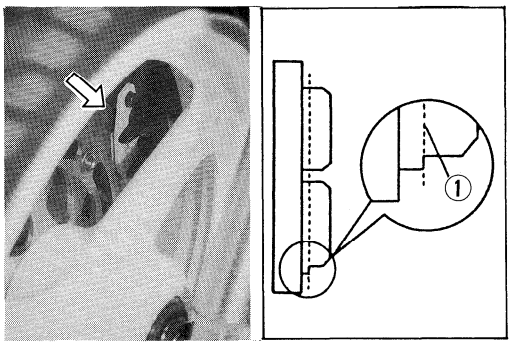
99000-23110 : SUZUKI BRAKE FLUID DOT 3 & DOT 4

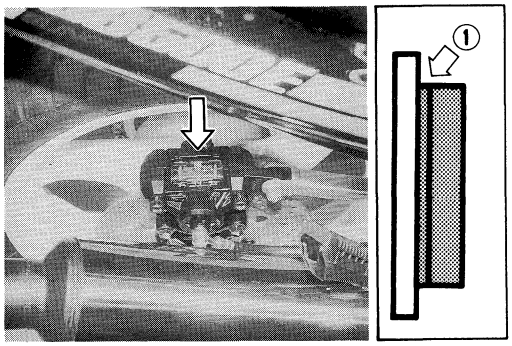
WARNING:
The brake system of this motorcycle is filled with a glycol-based brake fluid. Do not use or mix different types of fluid such as silicone-based and petroleum-based. Do not use any brake fluid taken from old, used or unsealed containers. Never re-use brake fluid left over from the last servicing or stored for long periods.

WARNING:
Brake fluid, if it leaks, will interfere with safe running and immediately discolor painted surfaces.
Check the brake hoses and hose joints for cracks and oil leakage before riding.

BRAKE PADS

The extent of brake pad wear can be checked by observing the limit line ① marked on the pad. When the wear exceeds the limit line, replace the pads with new ones. (Refer to pages 6-9 and 6-24.)

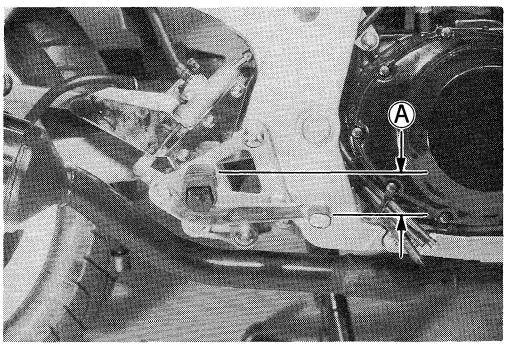


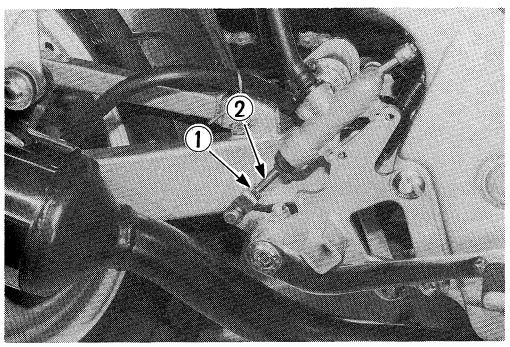


BRAKE PEDAL HEIGHT

- Loosen the lock nut ①, and rotate the push rod ② to locate brake pedal 47 mm (1.9 in) Ⓐ below the top face of the footrest.
- Retighten the lock nut ① to secure the push rod ② in the proper position.

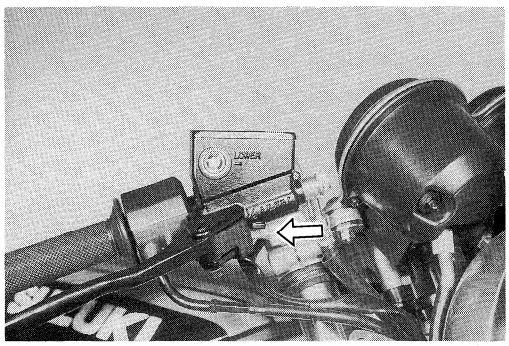
Brake pedal height Ⓐ : 47 mm (1.9 in)

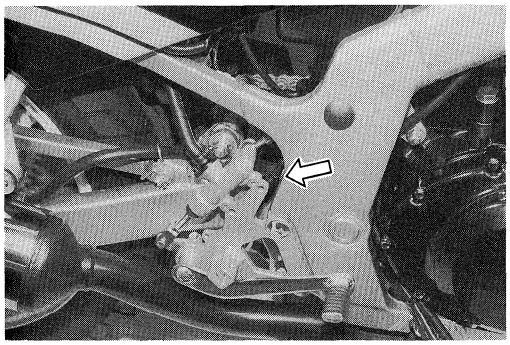




BRAKE LIGHT SWITCHES

Adjust both brake light switches, front and rear, so that the brake light will come on just before a pressure is felt when the brake lever is squeezed, or the brake pedal is depressed.

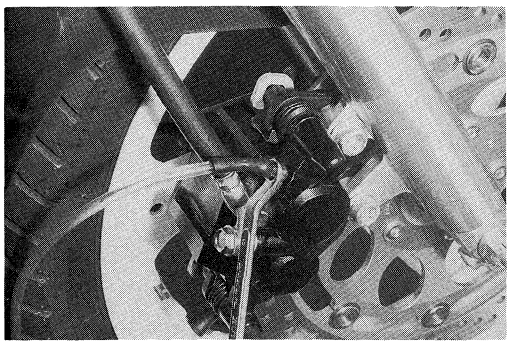




AIR BLEEDING FROM THE BRAKE FLUID CIRCUIT

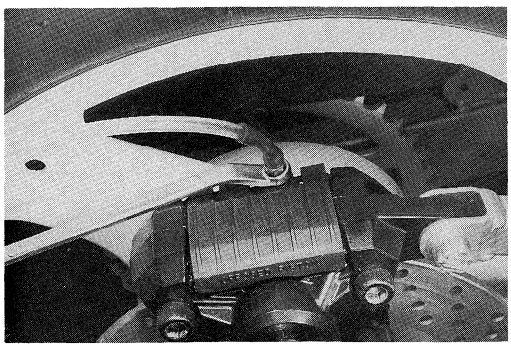
Air trapped in the fluid circuit acts like a cushion to absorb a large proportion of the pressure developed by the master cylinder and thus interferes with the full braking performance of the brake caliper. The presence of air is indicated by ''sponginess'' of the brake lever and also by lack of braking force. Considering the danger to which such trapped air exposes the machine and rider, it is essential that, after remounting the brake and restoring the brake system to the normal condition, the brake fluid circuit be purged of air in the following manner:

- Fill up the master cylinder reservoirs to the upper end of the inspection window, (for front brake) and ''UPPER'' line (for rear brake).
  Replace the reservoir cap to prevent entry of dirt.
- Attach a pipe to the caliper bleeder valve, and insert the free end of the pipe into a receptacle.



Tightening torque (Bleeder valve) :
6 — 9 N·m
(0.6 — 0.9 kg-m, 4.5 — 6.5 lb-ft)

- Squeeze and release the brake lever several times in rapid succession, and squeeze the lever fully without releasing it. Loosen the bleeder valve by turning it a quarter of a turn so that the brake fluid runs into the receptacle; this will remove the tension of the brake lever causing it to touch the handlebar grip. Then, close the valve, pump and squeeze the lever, and open the valve. Repeat this process until the fluid flowing into the receptacle no longer contains air bubbles.



NOTE:
Replenish the brake fluid reservoir as necessary while bleeding the brake system.
Make sure that there is always some fluid visible in the reservoir.

- Close the bleeder valve, and disconnect the pipe. Fill the reservoir to the upper end of the inspection window, (for front brake) and ''UPPER'' line (for rear brake).

CAUTION:
Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials etc.

The only difference between bleeding the front and rear brakes is that the rear master cylinder is actuated by a pedal.