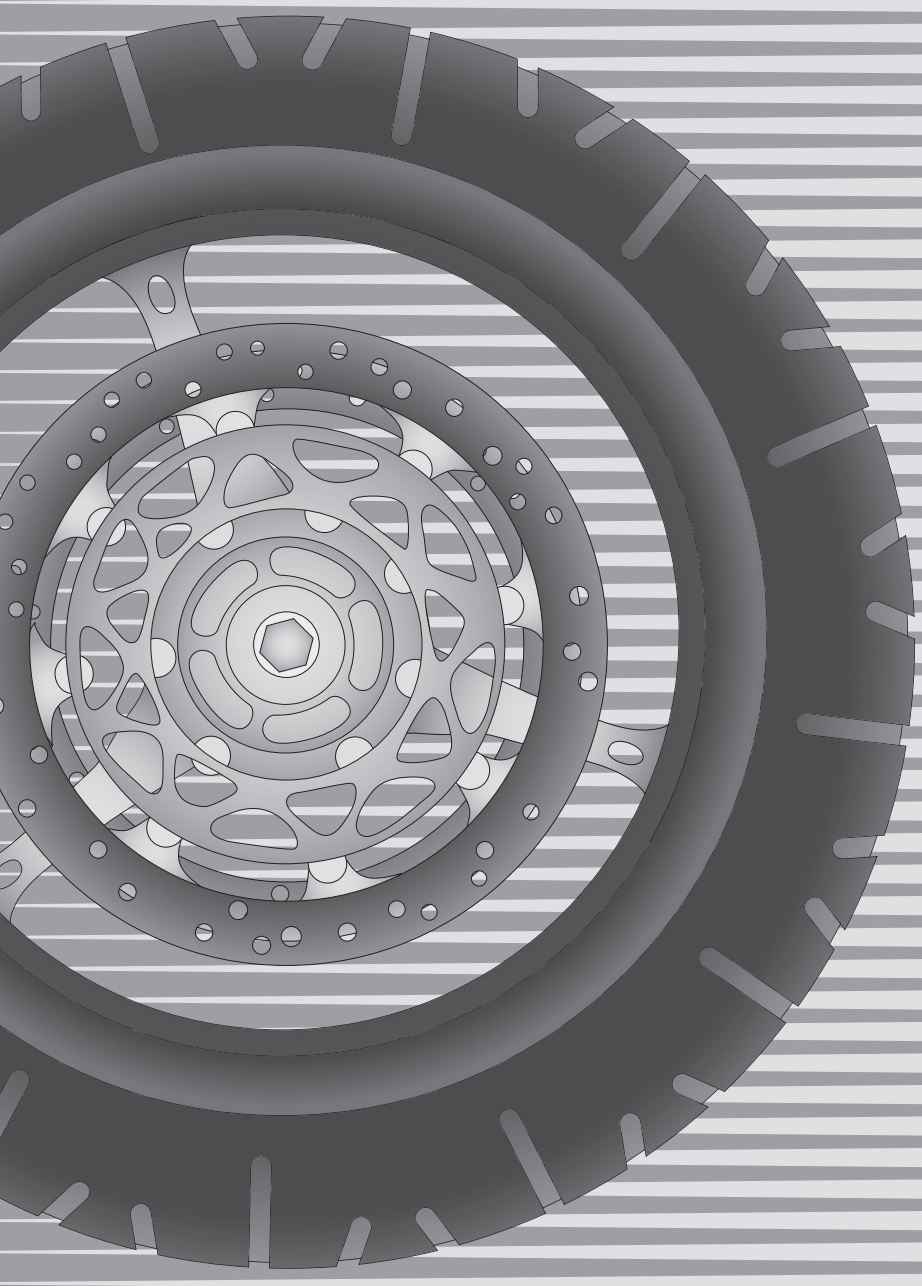
VS700/750/800

SUZUKI

Service Manual



99500-38063-03E

IMPORTANT

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

FOREWORD

The SUZUKI VS700GL has been developed as a new generation motorcycle. It is packed with highly advanced design concepts including a V-2 engine, a liquid cooling system, a new highly efficient combustion system (TSCC), a fully transistorized ignition system and a shaft drive mechanism. Combined with precise control and easy handling the VS700GL 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.

IMPORTANT

All street-legal Suzuki motorcycles with engine displacement of 50cc or greater are subject to Environmental Protection Agency emission regulations. These regulations set specific standards for exhaust emission output levels as well as particular servicing requirements. This manual includes specific information required to properly inspect and service the VS700GL in accordance with all EPA regulations. It is strongly recommended that the chapter on Emission Control, Periodic Servicing and Carburetion be thoroughly reviewed before any type of service work is performed.

Further information concerning the EPA emission regulations and U.S. Suzuki's emission control program can be found in the U.S. SUZUKI EMISSION CONTROL PROGRAM MANUAL/SERVICE BULLETIN.

SUZUKI MOTOR CORPORATION

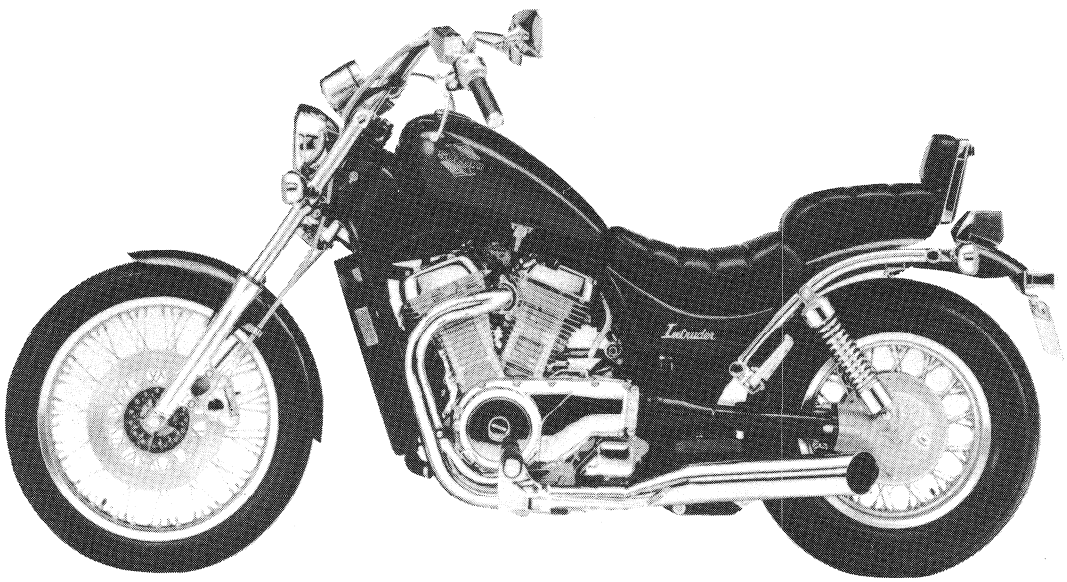
Motorcycle Service Department

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VIEW OF SUZUKI VS700GLF



VIEW OF SUZUKI VS700GLP



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GENERAL INFORMATION

1

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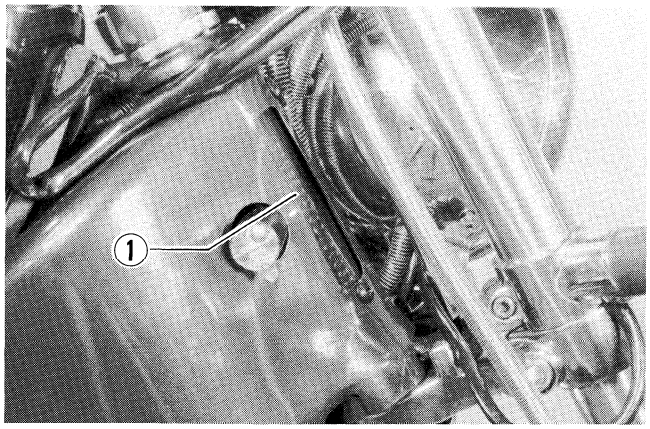
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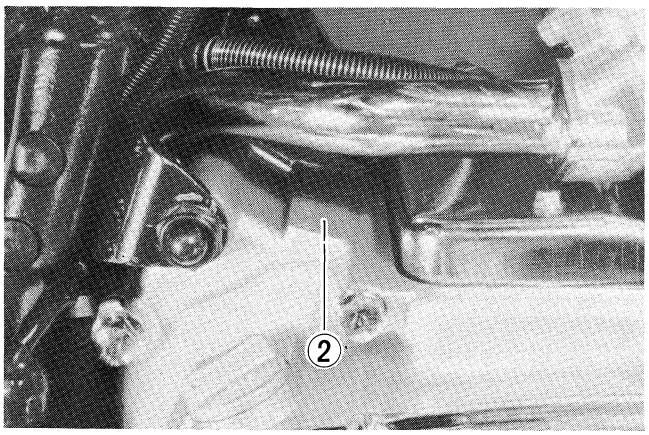
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SERIAL NUMBER LOCATIONS

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





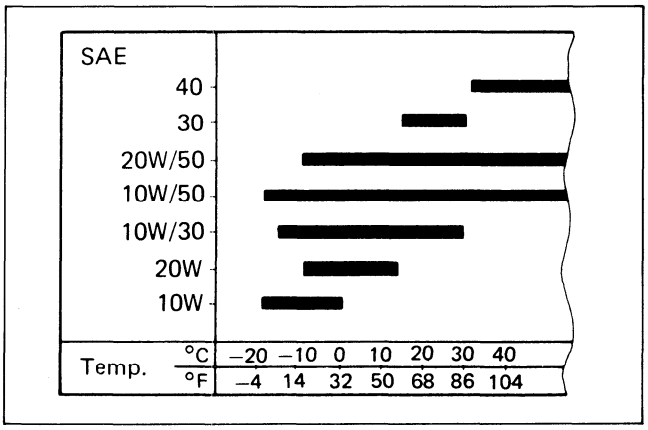
FUEL, OIL AND COOLANT RECOMMENDATIONS

FUEL

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.

ENGINE OIL

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.



GEAR OIL (FINAL DRIVE)

Use SAE 90 hypoid gear oil which is rated GL-5 under API classification system. If you operate the motorcycle where ambient temperature is below 0°C (32°F), use SAE 80 hypoid gear oil.

BRAKE FLUID

Specification and classification:	DOT3 or DOT4

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.**

FRONT FORK OIL

Use fork oil # 10.

COOLANT

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

WATER FOR MIXING

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

ANTI-FREEZE/COOLANT

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

SUZUKI recommends the use of SUZUKI GOLDEN CRUISER 1 200 anti-freeze/coolant. If this is not available, use an equivalent which is compatible with an aluminum radiator.

REQUIRED AMOUNT OF WATER/COOLANT

Solution capacity (total): 1 700 ml (1.8 US qt).
For coolant mixture information, refer to cooling system section, page 5-2.

CAUTION:
Mixing of anti-freeze/coolant should be limited to 60%. Mixing beyond it would reduce its efficiency. If the anti-freeze/coolant mixing ratio is below 50%, rust inhibiting performance is greatly reduced. Be sure to mix it above 50% even though the atmospheric temperature does not go down to freezing point.
Every new unit contains Bar's leak.

BREAKING-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.

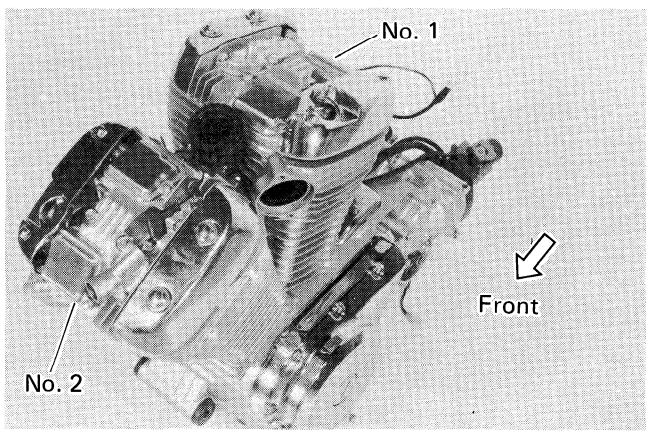
- Keep the these breaking-in engine speed limits:

Initial 800 km (500 mi)	Below 4 000 r/min
Up to 1 600 km (1 000 mi)	Below 6 000 r/min
Over 1 600 km (1 000 mi)	Below 9 500 r/min

- Upon reaching an odometer reading of 1 600 km (1 000 mi) you can subject the motorcycle to full throttle operation.
  However, do not exceed 9 500 r/min at any time.
- Do not maintain constant engine speed for an extended time period during any portion of the break-in. Try to vary the throttle position.

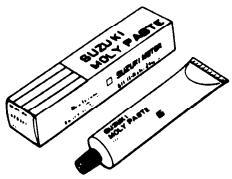
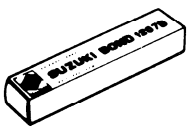
CYLINDER IDENTIFICATION

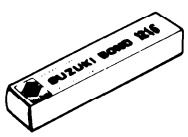
The two cylinders of this engine are identified as No. 1, and No. 2 cylinder, as counted from rear to front (as viewed by the rider on the seat).



SPECIAL MATERIALS

The materials listed below are needed for maintenance work on the VS700GL, 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	Part	Page
 SUZUKI SUPER GREASE "A" 99000-25030	• Brake cam shaft • Side stand • O-ring of oil jet • Secondary driven bearing stopper oil seal and O-ring • Final driven gear oil seal • Final driven bevel gear coupling • Armature bearing	2- 2 2- 2 3-25 4- 4 4-17 4-21 8-11	• Wheel bearing • Steering bearing and dust seal • Final driven gear spline • Swingarm bearing and dust seal	9- 4 9-22 9-28 9-36
 SUZUKI MOLY PASTE 99000-25140	• Valve stem • Conrod big end bearing • Countershaft • Drive shaft • Camshaft journal • Rocker arm and shaft • Starter motor housing end bushing • Brake rod link shaft • Clutch master cylinder push rod	3-41 3-48 3-56 3-57 3-74 3-76 8-11 9-32 9-40		
 SUZUKI BOND No. 1207B 99104-31140	• Oil pressure switch • Mating surface of right and left crankcase • Mating surface of secondary case • Mating surface between swingarm and final gearcase • Mating surface between final gear case and bearing case	3-25 3-60 3-64 4-22 9-34		
 THREAD LOCK SUPER "1303" 99000-32030	• Drive shaft bearing retainer bolt • Countershaft bearing retainer screw • Starter clutch bolt • Oil pump case screw • Oil pipe retainer bolt • Generator rotor bolt • Secondary driven gear housing bolt • Neutral stopper bolt	3-26 3-26 3-54 3-55 3-60 3-63 3-64 3-65	• Cam guide nut • Cam driven gear bolt • Cam sprocket bolt • Final drive gear nut • Final driven gear bearing retainer screw • Hub flange bolt • Final driven joint bolt	3-65 3-66 3-73 4-14 4-15 9- 5 9-28

Material	Part	Page	Part	Page
 THREAD LOCK "1342" 99000-32050	• Generator stator set screw • Generator lead wire guide screw • Oil sump filter screw • Final gear bearing case bolt • Starter motor housing bolt • Front fork damper rod bolt • Oil pump mounting bolt	3-53 3-53 3-61 4-21 8-11 9-16 3-66		
SUZUKI BAR's LEAK 99000-24240	• To prevent leakage of cooling solution from small hole.			
 THREAD LOCK SUPER "1360" 99000-32130	• Disc mounting bolt	9- 5		
 SUZUKI GOLDEN CRUISER 1200 99000-24120	• Coolant			
 SUZUKI BOND No. 1216 99104-31160	• Cylinder head cover	3-30 3-76		

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 ..... When personal safety of the rider is involved, disregard of the information could result in injury.

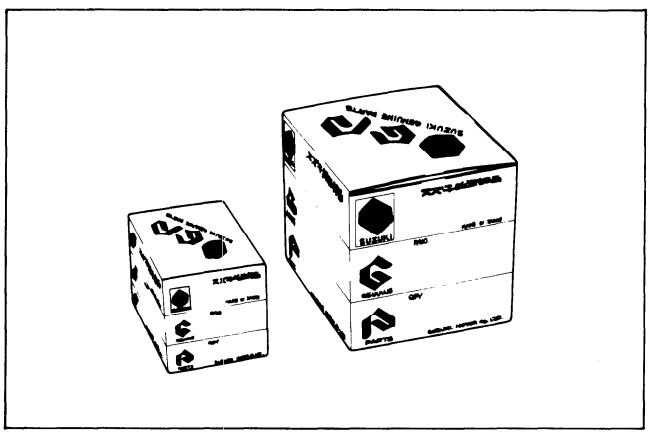
CAUTION ..... For the protection of the motorcycle, the instruction or rule must be strictly adhered to.

NOTE ..... Advice calculated to facilitate the use of the motorcycle is given under this heading.

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 designed 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.**



SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2225 mm (87.6 in)
Overall width	710 mm (28.0 in) ... GLF 750 mm (29.5 in) ... GLP
Overall height	1000 mm (43.3 in) ... GLF 1085 mm (46.7 in) ... GLP
Wheelbase	1545 mm (61.0 in)
Ground clearance	125 mm (4.9 in)
Dry mass	185 kg (408 lbs) .. E-03 GLF 186 kg (410 lbs) .. E-03 GLP E-33 GLF 187 kg (412 lbs) .. E-33 GLP

ENGINE

Type	Four-stroke, water-cooled, OHC, 45-degree V-twin
Number of cylinders	2
Bore	80.0 mm (3.2 in)
Stroke	69.6 mm (2.7 in)
Piston displacement	699 cm^3 (43 cu. in)
Compression ratio	10.0 : 1
Carburetor	MIKUNI BDS34SS .... front MIKUNI BS34SS ... rear
Air cleaner	Polyester fiber 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	1.690 (71/42)
Secondary reduction	1.133 (17/15)
Final reduction	3.090 (34/11)
Gear ratios, Low 2nd 3rd 4th Top	2.285 (32/14) 1.631 (31/19) 1.227 (27/22) 1.000 (25/25) 0.851 (23/27)

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Swinging arm, oil damped, spring pre-load 5-way adjustable
Steering angle	40° (right & left)
Caster	56° 45′
Trail	145 mm (5.6 in)
Turning radius	2.8 m (9.2 ft)
Front brake	Disc brake
Rear brake	Intrenal expanding
Front tire size	100/90 – 19 57H
Rear tire size	140/90 – 15 70H
Front fork stroke	130 mm (5.1 in)
Rear wheel travel	115 mm (4.5 in)

ELECTRICAL

Ignition type	Transistorized
Ignition timing	5° B.T.D.C. below 1650 r/min and 30° B.T.D.C. above 3500 r/min
Spark plug	N.G.K.: DP8EA-9 N.D.: X24EP-U9
Battery	12V 57.6 kC (16 Ah)/ 10HR
Generator	Three pase A.C. Generator
Fuse	10/10/10/10/10A

CAPACITIES

Fuel tank including reserve	12.0 L (3.2 US gal) ... E-03 11.0 L (3.9 US gal) ... E-33
reserve	3.0 L (3.4 US qt)
Engine oil	2.4 L (2.5 US qt)
Front fork oil	337 ml (11.4 US oz)
Final bevel gear oil	200 – 220 ml (6.8 – 7.4 US oz)
Coolant	1700 ml (1.8 US qt)

These specifications are subject to change without notice.

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

2

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PERIODIC MAINTENANCE SCHEDULE

IMPORTANT: The periodic maintenance intervals and service requirements have been established in accordance with EPA regulations. Following these instructions will ensure that the motorcycle will not exceed emission standards and it will also ensure the reliability and performance of the motorcycle.

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.

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.

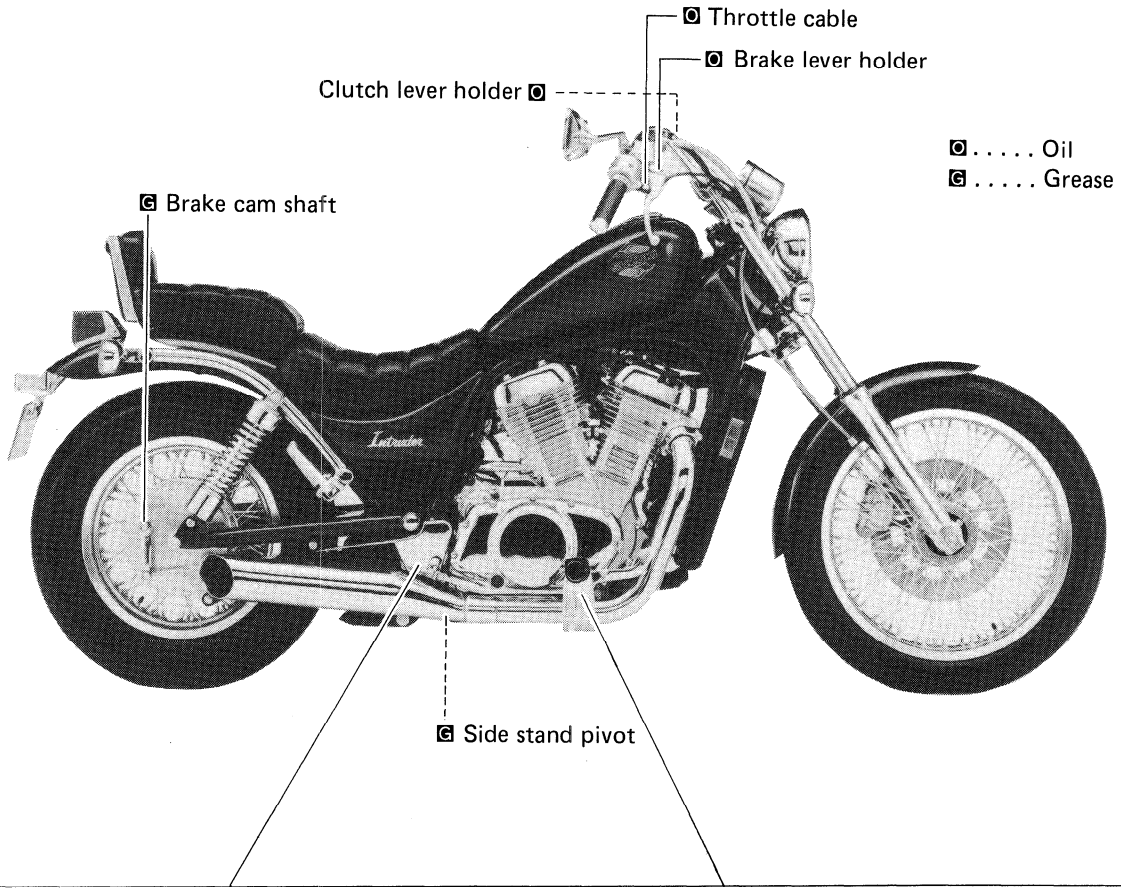
PERIODIC MAINTENANCE CHART

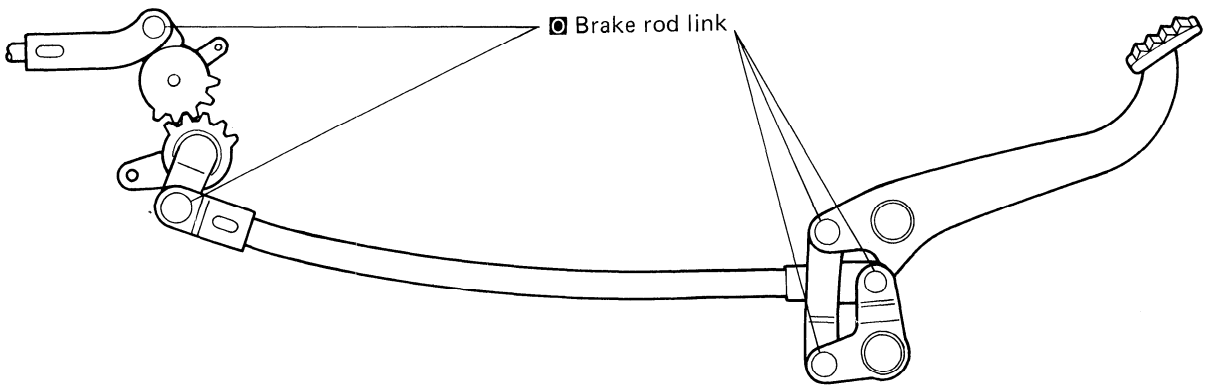
INTERVAL: THIS INTERVAL SHOULD BE JUDGED BY ODOMETER READING OR MONTHS WHICHEVER COMES FIRST						
	km	1 000	6 000	12 000	18 000	24 000
	mile	600	4 000	7 500	11 000	15 000
	months	2	12	24	36	48
Battery (Specific gravity of electrolyte)		–	I	I	I	I
Air cleaner element		Clean every 6 000 km (4 000 miles) and replace every 12 000 km (7 500 miles)				
Valve clearance		–	I	I	I	I
Spark plugs		–	C	R	C	R
Engine oil and oil filter		R	–	R	–	R
Carburetor		I	I	I	I	I
Fuel lines and vapor hoses		I	I	I	I	I
		Replace every four years				
Clutch hoses		I	–	I	–	I
		Replace every four years				
Clutch fluid		Change every two years				
Radiator hoses		I	–	I	–	I
		Replace every four years				
Coolant		Change every two years				
Final gear oil		R	–	I	–	I
Brake hoses		I	I	I	I	I
		Replace every four years				
Brake fluid		Change every two years				
Brakes		I	I	I	I	I
Tires		I	I	I	I	I
Steering stem		I	I	I	I	I
Front fork		–	–	I	–	I
Chassis bolts and nuts		T	T	T	T	T

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

LUBRICATION POINT

Proper lubrication is important for smooth operation and long life of each working part of the motorcycle and also for safe riding. It is a good practice to oil the machine after a long rough ride and after getting it wet in the rain or after washing it. Major oiling points are indicated below.





CAUTION:

Be careful not to apply too much grease to the brake cam shafts. If grease gets on the linings, brake slippage will results.

MAINTENANCE AND TUNE-UP PROCEDURES

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

BATTERY

Inspect Every 6 000 km (4 000 miles)

- Disconnect the battery ⊖ lead wire ①.

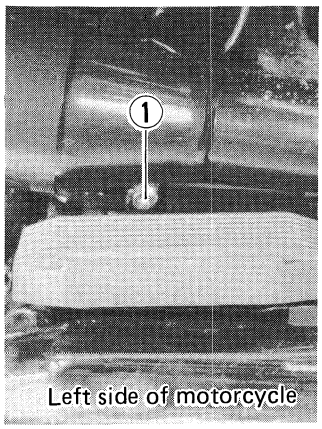
CAUTION:
After disconnecting the battery ⊖ lead wire, make sure to remove the battery ⊖ terminal bolt or tighten the bolt fully to the battery ⊖ terminal to prevent the contact of the ⊖ terminal bolt to the other parts, when removing and reinstalling the ⊕ terminal bolt.

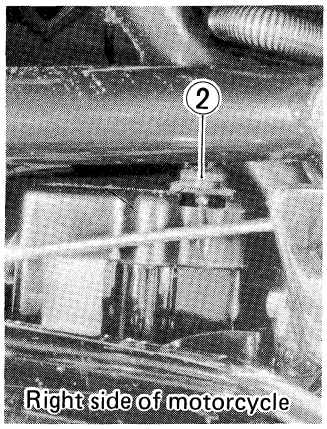
- Remove the battery terminal cover ② to right side.
- Disconnect the battery ⊕ lead wire ③.
- Remove the battery case bottom plate right and left bolts ④ and open the case bottom plate.
- Remove the battery.
- Check electrolyte for level and specific gravity. Add distilled water, as necessary to keep 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.

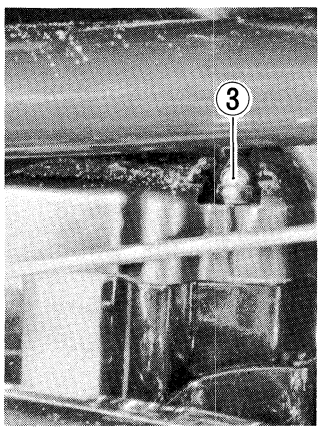
09900-28403	Hydrometer

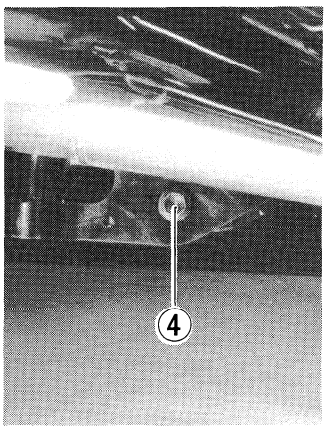
Standard specific gravity	1.28 at 20°C (68°F)

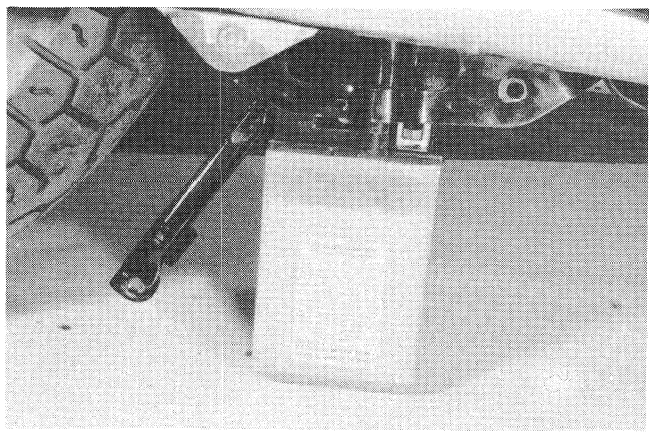
An S.G. reading of 1.22 (at 20°C) or under means that the battery needs recharging. Remove the battery from the machine and charge it with a battery charger.

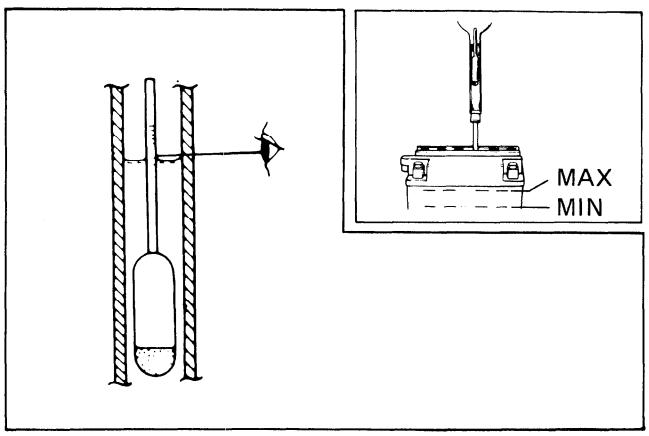












CAUTION:
* **Never charge a battery while still in the machine as damage may result to the battery or regulator/rectifier.**
* **Be careful not to bend, obstruct, or change the routing of the vent tube from the battery, make certain that the vent tube is attached to the battery vent fitting and that the opposite end is always open.**

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 correctly.

AIR CLEANER

Clean Every 6 000 km (4 000 miles) and Replace Every 12 000 km (7 500 miles)

- Remove the seat and fuel tank.

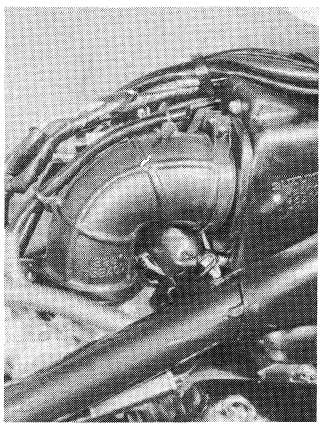
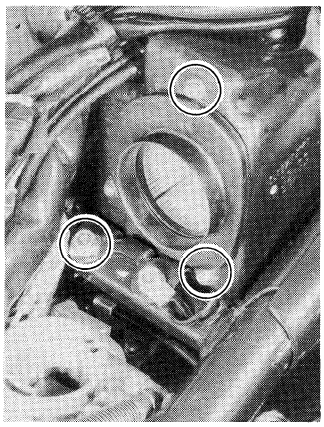
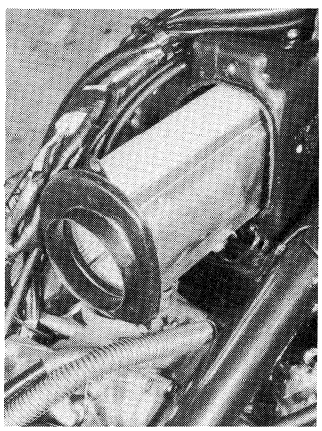
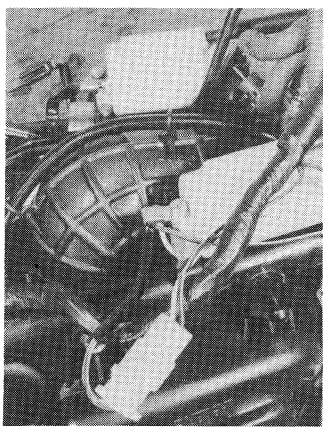
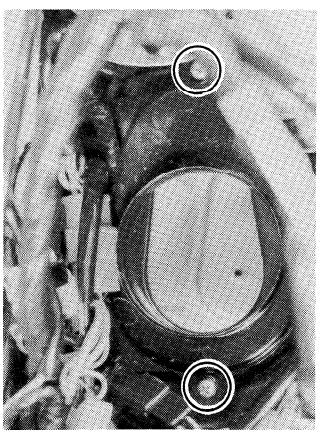
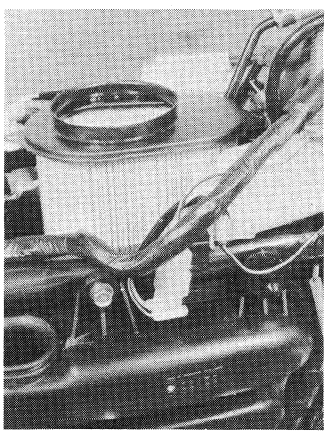
Front side air cleaner
- Remove joint hose then remove three screws.
- Take off the air cleaner element.

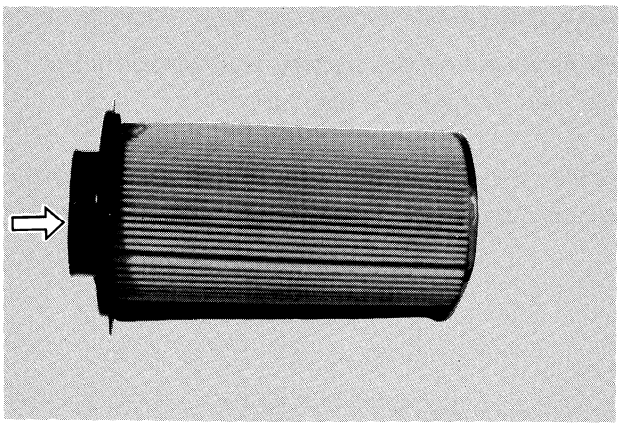
Rear side air cleaner
- Remove joint hose.
- Loosen right side ignition coil.
- Remove two screws then take off the air cleaner element.
- Carefully use an air hose to blow the dust from the cleaner element inside.

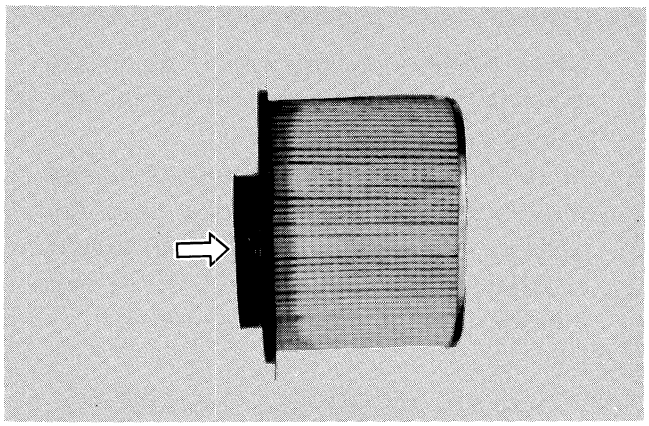
CAUTION:
Always use air pressure on the inside of the cleaner element. If air pressure is used on the outside, dirt will be forced into the pores of the cleaner element thus restricting air flow through the cleaner element.

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

CAUTION:
If driving under dusty conditions, clean the air cleaner element more frequently. The surest way to accelerate engine wear is to run 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 largley on this component!





VALVE CLEARANCE

Inspect Every 6 000 km (4 000 miles)

Excessive valve clearance results in valve noise and insufficient valve clearance results in valve damage and reduced power. At the distances indicated above, check and adjust the clearance to the specification.

Valve clearance specifications

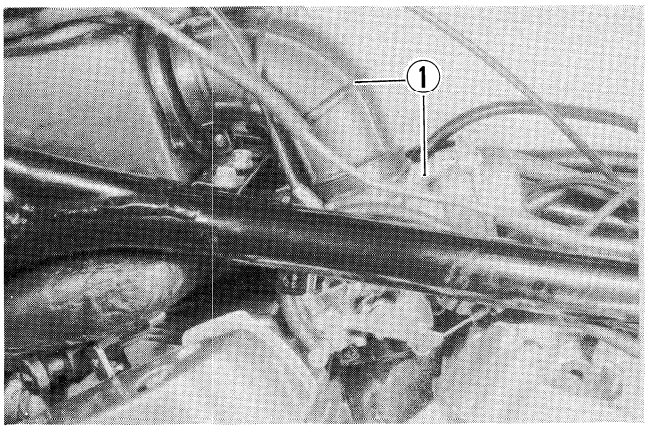
INTAKE AND EXHAUST	0.08 – 0.13 mm (0.003 – 0.005 in.)

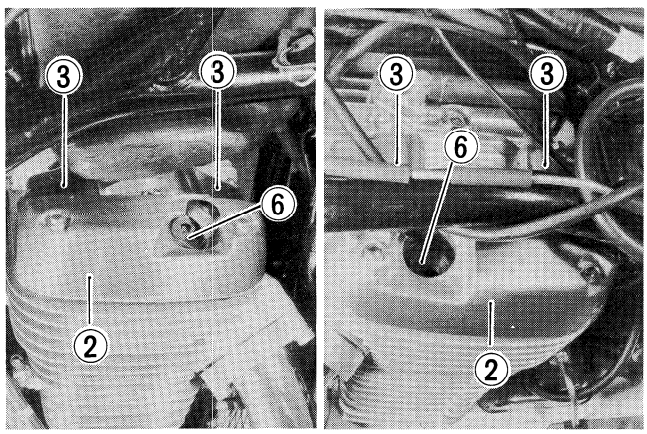
The procedure for adjusting the valve clearance is as follows:

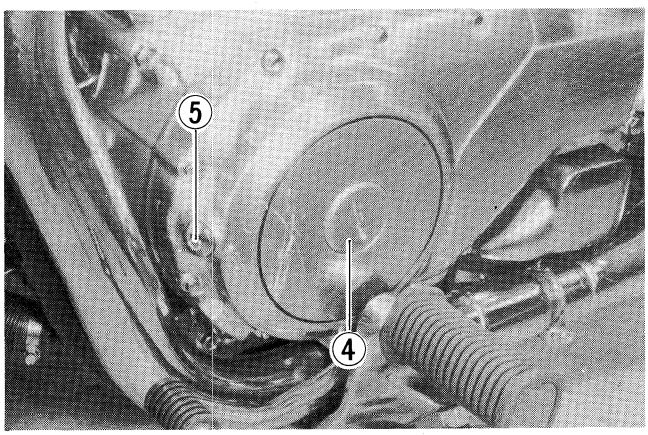
NOTE:
Valve clearance is to be checked when the engine is cold.
Both the intake and exhaust valves must be checked and adjusted when the piston is at Top–Dead–Center (TDC) of the compression stroke.

- Remove the seat and fuel tank.
- Remove the following parts.

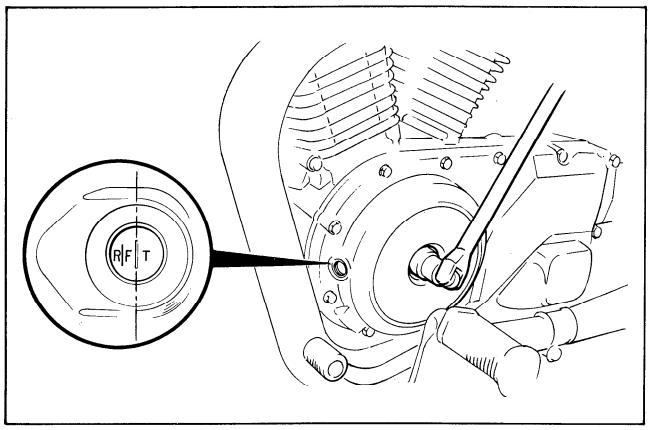
① Front side carburetor and outlet tube
② Cylinder head cover sidecovers
③ Valve inspection caps
④ Magneto cover plug
⑤ Timing inspection plug
⑥ Spark plugs







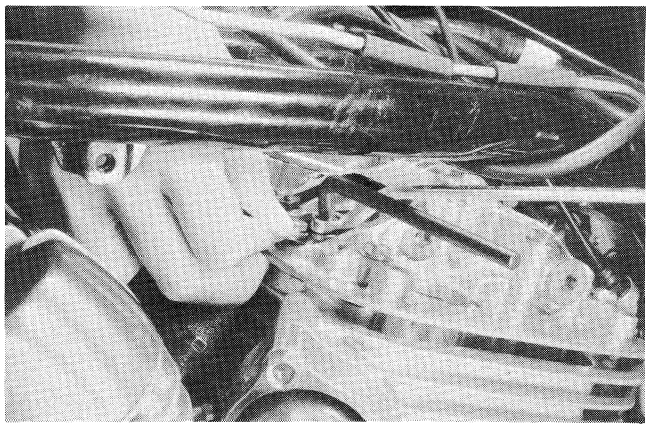
- Rotate the magneto rotor to set the piston at (T.D.C.) of the compression stroke. (Rotate the rotor until the "RT" line on the rotor is aligned with the center of hole on the magneto cover.)



Inspection of the rear side valve clearance.

- Insert the thickness gauge to the clearance between the valve stem end and the adjusting screw on the rocker arms.

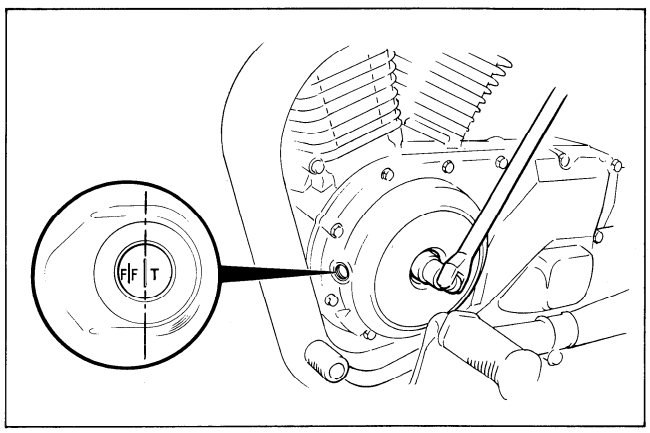
09900-20806	Thickness gauge



- If clearance is off the specification, bring it into the specified range by using the special tool.

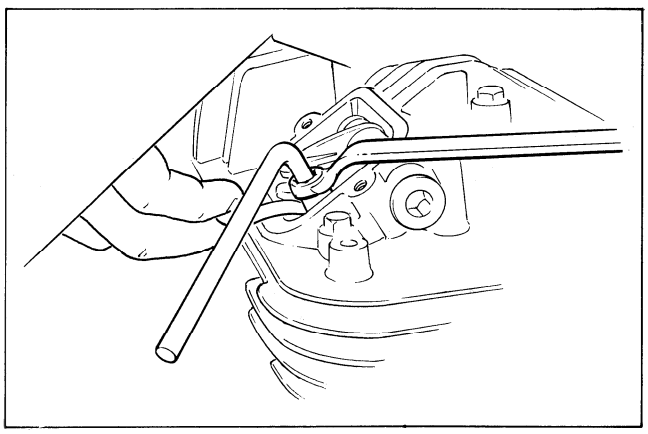
09917-10410	Valve adjust driver

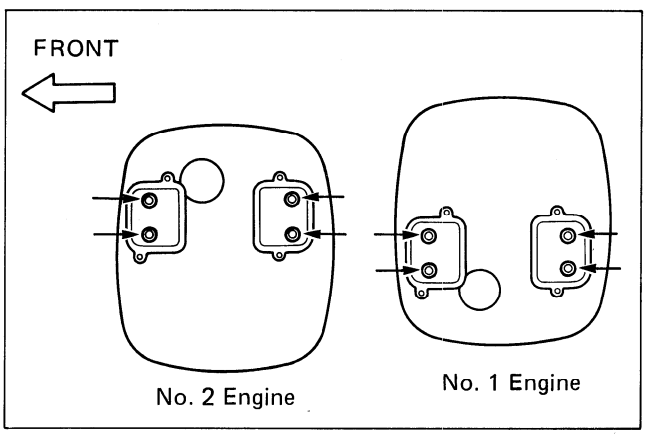
CAUTION:
Both of the valve clearances, right and left, should be the same.



- Rotate the magneto rotor 450 degrees and align the "FT" line on the rotor with the center of hole on the magneto cover.
- Inspect the front side valve clearance as the same manner above.

NOTE:
Use the thickness gauge from the arrow marks as shown in the illustration.





SPARK PLUG

Clean Initially at 6 000 km (4 000 miles) and Every 8 000 km (11 000 miles)
Replace Every 12 000 km (7 500 miles)

The plug gap is adjusted to 0.8 – 0.9 mm. The gap is correctly adjusted using a thickness gauge (special tool). When carbon is deposited on the spark plug, remove the carbon with a spark plug cleaning machine or carefully using tool with a pointed end. If electrodes are extremely worn or burnt, replace the plug. Also replace the plug if it has a broken insulator, damaged thread, etc.

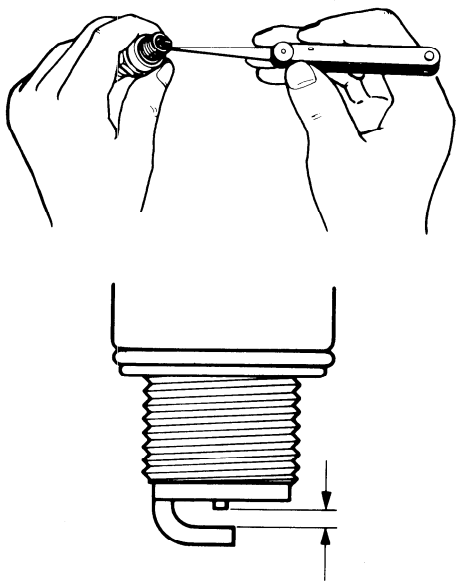
09930-10410	Socket wrench
09930-14530	Universal joint
09914-24510	T handle
09900-20804	Thickness gauge

NGK DP8EA-9 or NIPPON DENSO X24EP-U9 listed in the table 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 the standard plugs listed in the table be selected. Remove the plugs and inspect the insulators. Proper heat range would be indicated if all insulators were light brown in color. If they are blackened by carbon, they should be replaced by a hot type NGK DP7EA-9 or NIPPON DENSO X22EP-U9 and if braked white, by NGK DP9EA-9 or NIPPON DENSO X27EP-U9.

Plugs with high heat range number are used for high speed running. These plugs are designed to be sufficiently cooled to prevent overheating and are called cold type plugs.

NOTE:
To check the spark plugs, first make sure that the fuel tank contains unleaded gasoline, and after a test ride, if the plugs are either sooty with carbon or burnt white, replace them altogether.

NOTE:
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.



Gap 0.8 – 0.9 mm

NGK	NIPPON DENSO	REMARKS
DP7EA-9	X22EP-U9	Hot type
DP8EA-9	X24EP-U9	STANDARD
DP9EA-9	X27EP-U9	Cold type

ENGINE OIL AND OIL FILTER

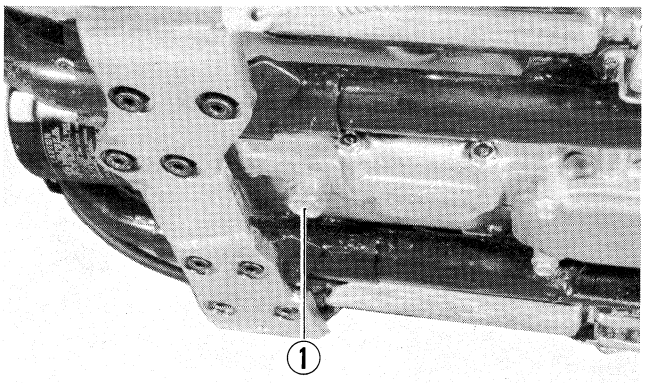
Replace Initially at 1 000 km (600 miles) and Every 12 000 km (7 500 miles).

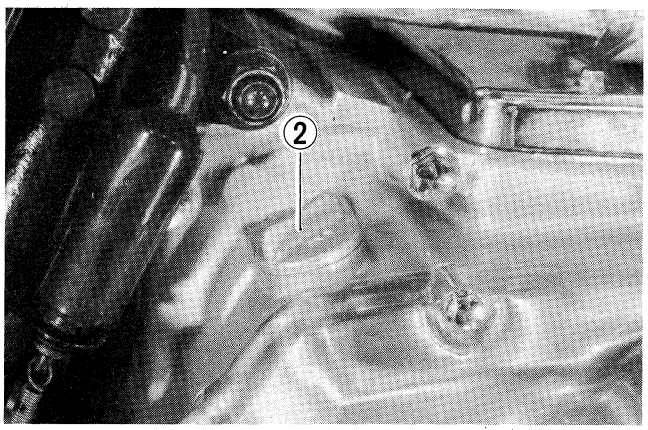
The oil should be changed while the engine is hot. Oil filter replacement at the above intervals should be done together with engine oil change.

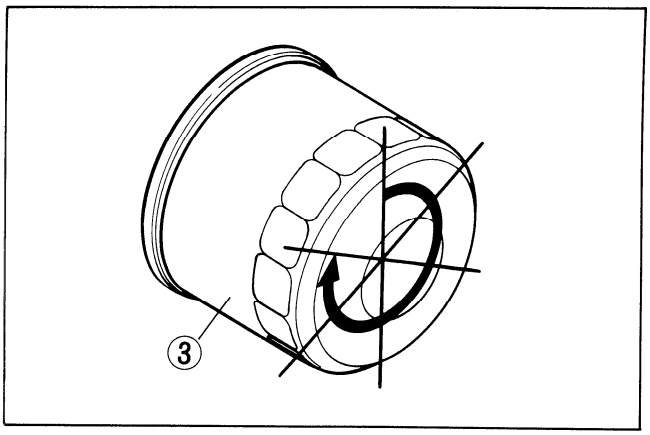
- Keep the motorcycle upright.
- Place an oil pan below the engine and drain the oil by removing the drain plug ① and filler cap ②.
- Remove the oil filter ③.
- Apply engine oil lightly to the gasket of the new filter before installation.
- Install the new filter turning it by hand until you feel the filter gasket contacts the mounting surface. Then tighten 5/6 turn using the oil filter wrench.

09915-47320	Oil filter wrench

- Fit drain plug ① securely, and install fresh oil through the filler. The engine will hold about 2.8 L (3.0 US qt) of oil.
  Use API classification of SE or SF oil with SAE 10W/40 viscosity.
- Start up the engine and allow it to run for several seconds at idling speed.
- Check for oil leakage around the oil filter.
- Turn off the engine and wait about one minute, then check the oil level through the inspection window ④. If the level is below Lower line, supply oil to upper line.

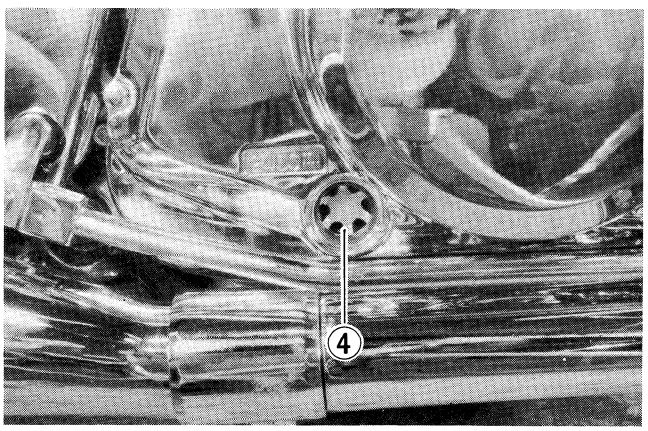






NECESSARY AMOUNT OF ENGINE OIL

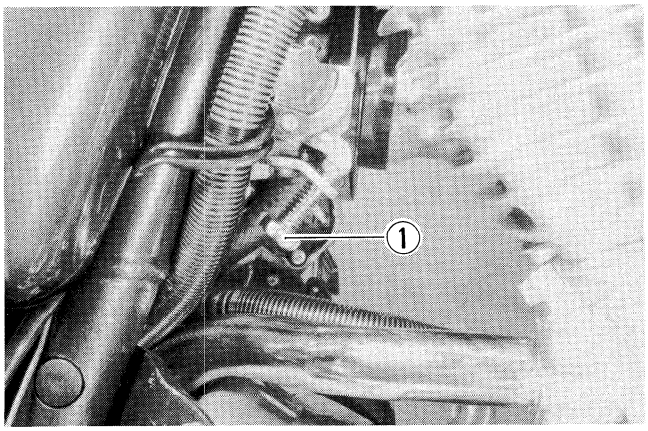
Oil change	2.4 L (2.5 US qt)
Filter change	2.8 L (3.0 US qt)
Overhaul engine	3.3 L (3.5 US qt)



CARBURETOR

Inspect Initially at 1 000 km (600 miles) and Every 6 000 km (4 000 miles)

NOTE:
Make this adjustment when the engine is hot.



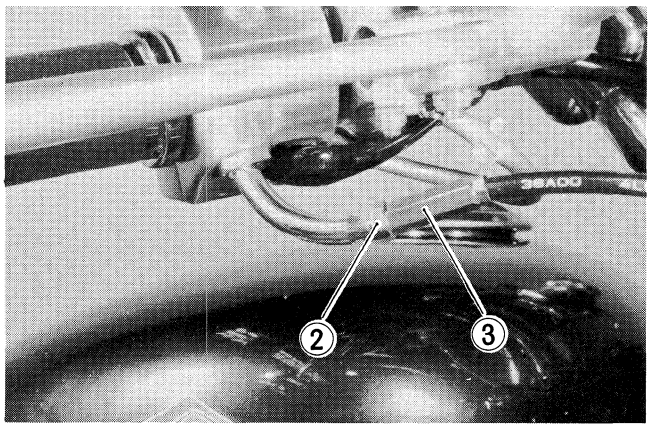
- Connect a tachometer.
- Start up the engine and set its speed at anywhere between 900 and 1 100 r/min by turning throttle stop screw ①.

Engine idle speed	1 000 ± 100 r/min

THROTTLE CABLE PLAY

- Loosen the lock nut ② and turn the adjuster ③ to adjust the cable play.

Throttle cable play	0.5 – 1.0 mm



FUEL AND VAPOR HOSE

Inspect Initially at 1 000 km (600 miles) and Every 6 000 km (4 000 miles)
Replace Every four years

CLUTCH

Inspect Initially at 1 000 km (600 miles) and Every 12 000 km (7 500 miles)
Change fluid Every two years
Replace hoses Every four years

CLUTCH FLUID LEVEL

- Keep the motorcycle upright and place the handlebars straight.
- Check the clutch fluid level in the reservoir.
- If the level is found to be lower than the lower mark, replenish with BRAKE FLUID that meets the following specification.

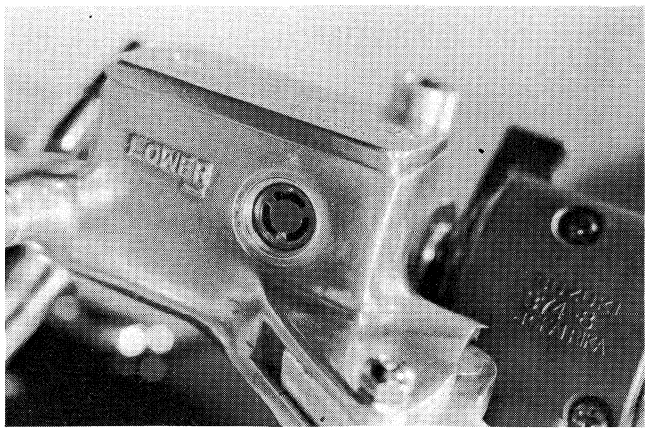
Specification and classification	DOT 3 or DOT 4

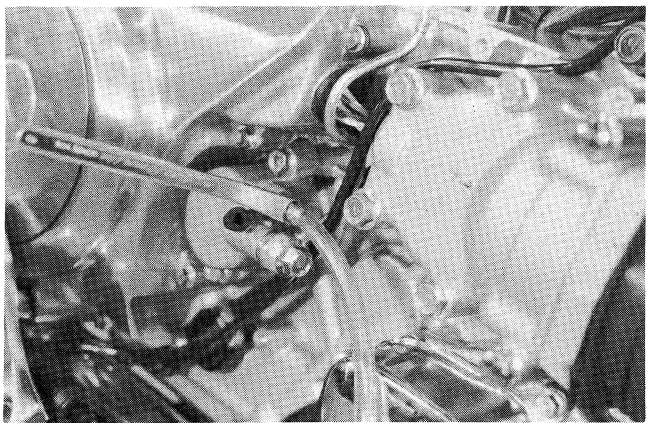
BLEEDING AIR FROM THE CLUTCH FLUID CIRCUIT

The clutch fluid circuit may be purged of air in the following manner.

- Fill up the master cylinder reservoir to the upper end of the inspection window. Replace the reservoir cap to prevent entry of dirt.
- Remove the secondary gear cover.
- Attach a pipe to the bleeder valve and insert the free end of the pipe into a receptacle.
- Squeeze and release the clutch 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 fluid runs into the receptacle; this will remove the tension of the clutch lever causing it to touch the handlebars 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.
- Close the bleeder valve, and disconnect the pipe. Fill the reservoir to the upper end of the inspection window.

Bleeder valve tightening torque	6 – 9 N·m (0.6 – 0.9 kg-m 4.5 – 6.5 lb-ft)





WARNING:
The clutch 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 the brake fluid left over from the last servicing and stored for long periods.

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

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

COOLING SYSTEM

Inspect Initially at 1 000 km (600 miles) and Every 12 000 km (7 500 miles)
Change coolant Every two years
Replace hoses Every four years

- Remove the radiator cap ① and drain plug ②.

WARNING:
Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.

WARNING:
Coolant may be harmful if swallowed or if it comes in contact with skin or eyes. If coolant gets into the eyes or in contact with the skin, it should be flushed thoroughly with plenty of water. If swallowed, induce vomitting and call physician immediately!

- Flush the radiator with fresh water if necessary.
- Tighten the drain plug ② securely and loosen the air bleeder ③.
- Install the specified coolant up to the radiator inlet hole and tighten the air bleeder ③.

NOTE:
For coolant information, refer to page 5-2.

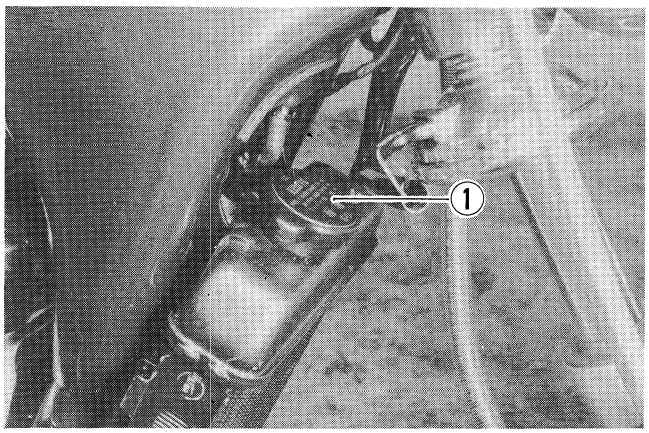
- Close the radiator cap ① securely.
- After warming up and cooling down the engine, install the specified coolant up to the radiator inlet hole.

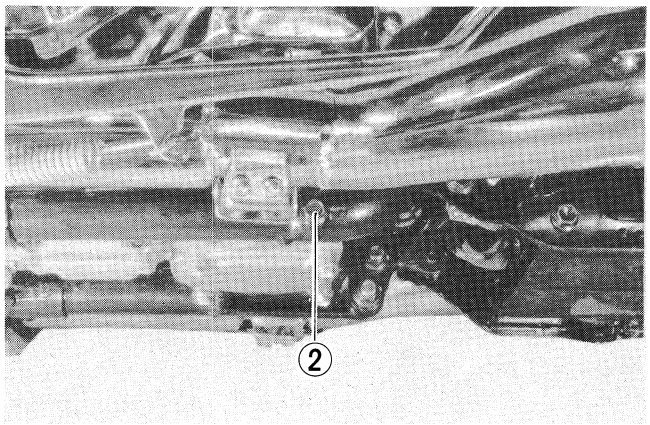
CAUTION:
Repeat above procedure several times and make sure that the radiator is filled with coolant up to the inlet hole.

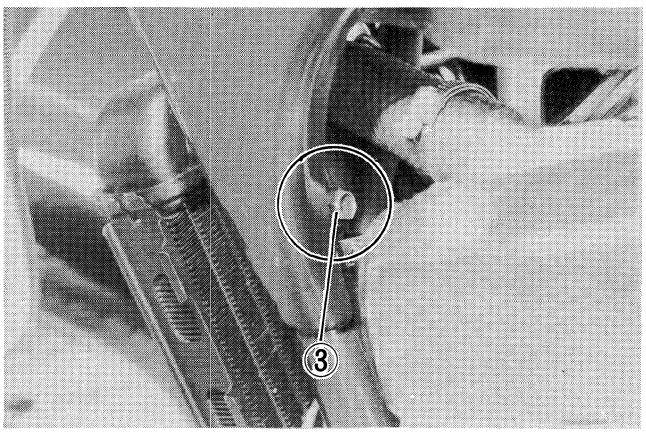
Coolant capacity	1 700 ml (1.8 US qt)

- Add 2 packs of anti-leakage material (Bar's leaks) in the coolant.

99000-24240	Bar's leak





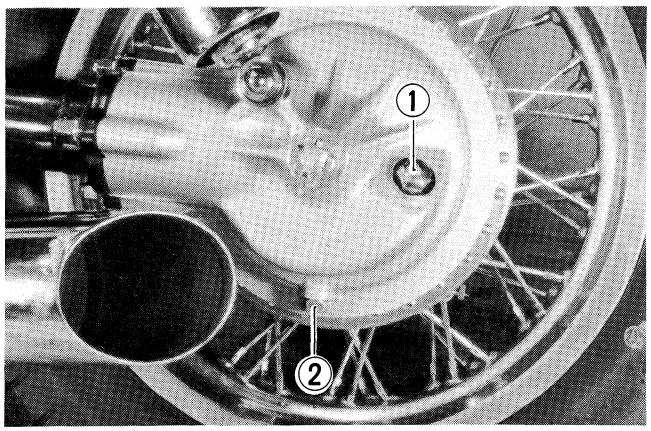


FINAL GEAR OIL

Replace Initially at 1 000 km (600 miles) and Inspect Every 12 000 km (7 500 miles)

To change the final gear oil, locate the motorcycle on level ground, keep it upright and carry out the following steps. Use SAE # 90 hypoid gear oil.

- Drain oil by removing filler cap ① and drain plug ②.
- Refit drain plug ② and pour the specified oil in through the filler hole until it runs out from the filler hole.
- Refit filler cap ①.



NOTE:
The amount of oil to be replaced is 200 – 220 ml (6.8 – 7.4 US oz).

BRAKES

Inspect Initially at 1 000 km (600 miles) and Every 6 000 km (4 000 miles)
Change fluid Every two years
Replace hoses Every four years

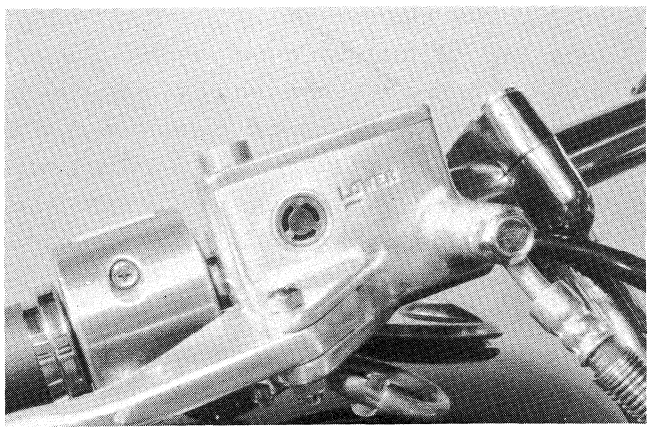
FRONT BRAKE

Brake fluid level

- Keep the motorcycle upright and place the handlebars straight.
- Check the brake fluid level in the reservoir.
- If the level is found to be lower than the lower mark, replenish with brake fluid that meets the following specification.

Specification and classification	DOT 3 or DOT 4

99000-23110	SUZUKI BRAKE FLUID DOT3 & DOT4

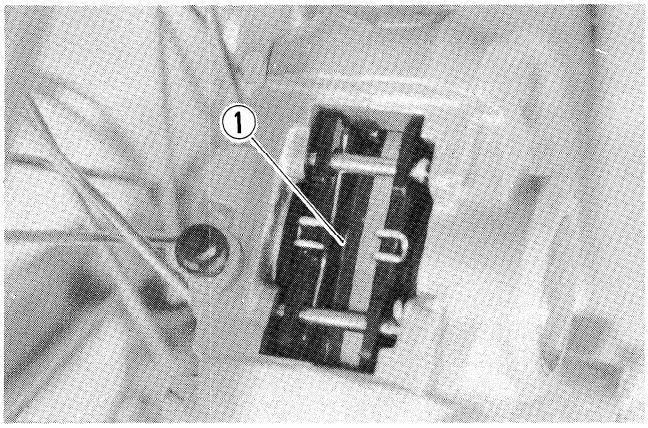


WARNING:
The brake system of this motorcycle is filled with a glycol-based brake fluid. Do not use or mix different types of fluid such as silicone-based and petroleum-based fluid for refilling the system, otherwise serious damage will be caused. Do not use any brake fluid taken from old or used or unsealed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

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

Brake pads

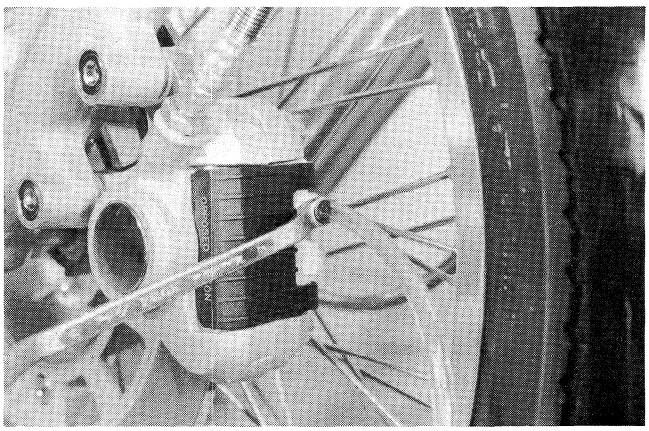
Wearing condition of brake pads can be checked by observing the limit line ① marked on the pad. When the wear exceeds the limit line, replace the pads with new ones. (Refer to page 9-6)

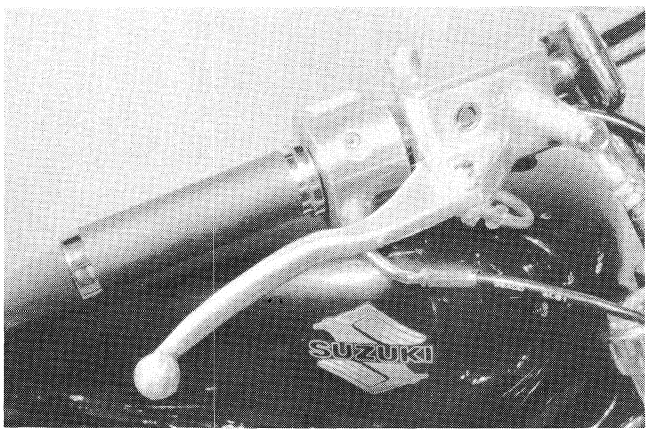


Bleeding air from the brake fluid circuit

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 caliper brake. 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 reservoir to the upper end of the inspection window. 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.
- 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 handlebars 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.
- Close the bleeder valve, and disconnect the pipe. Fill the reservoir to the upper of inspection window.





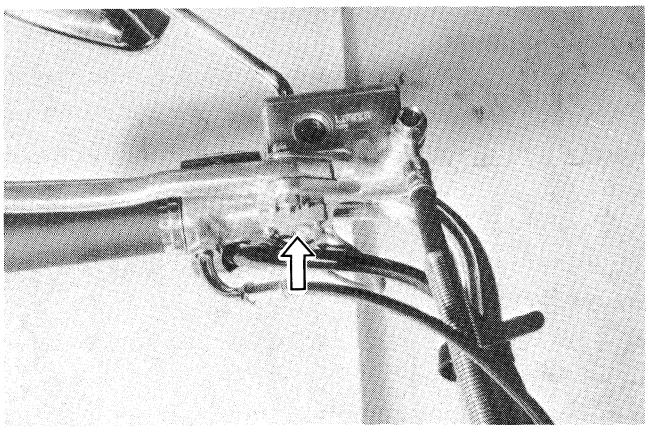
Bleeder valve tightening torque	6 – 9 N·m (0.6 – 0.9 kg-m / 4.5 – 6.5 lb-ft)

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.

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

Front brake light switch

> **CAUTION:**
> **Check to be sure that the brake light comes on when front brake lever is squeezed.**



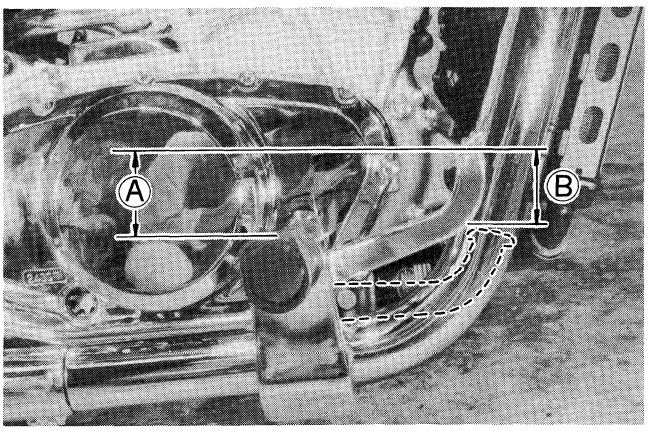
REAR BRAKE

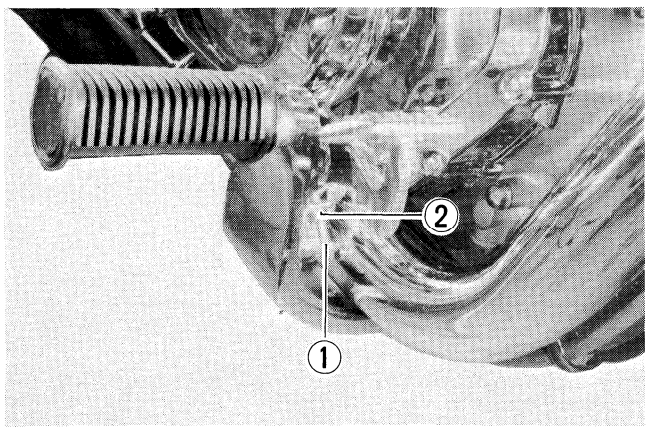
Brake pedal height and free travel

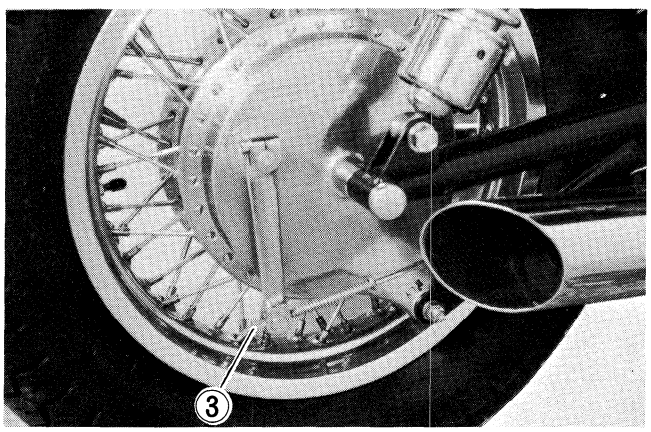
Bring the brake pedal to a position about 40 mm Ⓐ (1.6 in) above the footrest as shown in photo. This is effected by turning the adjusting bolt ①. Be sure to tighten the lock nut ② good and hard after setting the bolt.

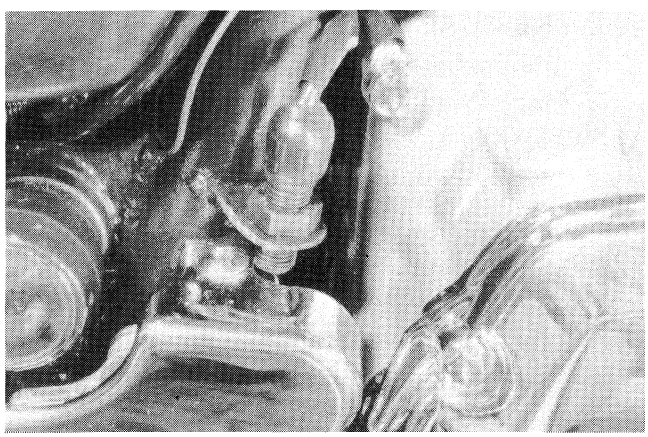
By repositioning the adjusting nut ③ on brake cable, set the pedal play to between 20 and 30 mm Ⓑ (0.8 – 1.2 in) as measured at pedal tip.

Brake pedal height Ⓐ	40 mm (1.6 in)
Brake pedal free travel Ⓑ	20 – 30 mm (0.8 – 1.2 in)









Brake light switch

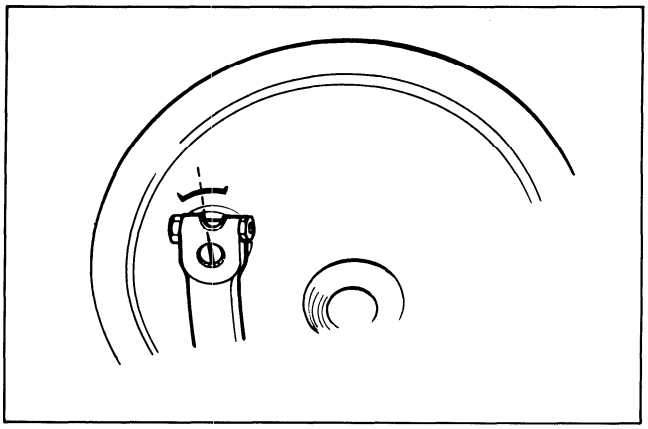
Check to be sure that rear brake light comes on when the pedal is depressed to take up the play. To adjust the brake light switch: raise or lower the switch so that the brake light will come on just before a pressure rise is felt when the brake pedal is depressed.

Brake shoe wear

This motorcycle is equipped with brake lining wear limit indicator on rear panel. At the condition of normal lining wear, the extension line of the index mark on the brake cam shaft should be within the range embossed on the brake panel with brake on.

To check wear of the brake lining, perform the following steps.

- First check if the brake system is properly adjusted.
- While operating the brake, check to see that the extension line of the index mark is within the range on the brake panel.
- If the index mark is beyond the range, the brake shoe assembly should be replaced with new ones. (Refer to page 9-26)

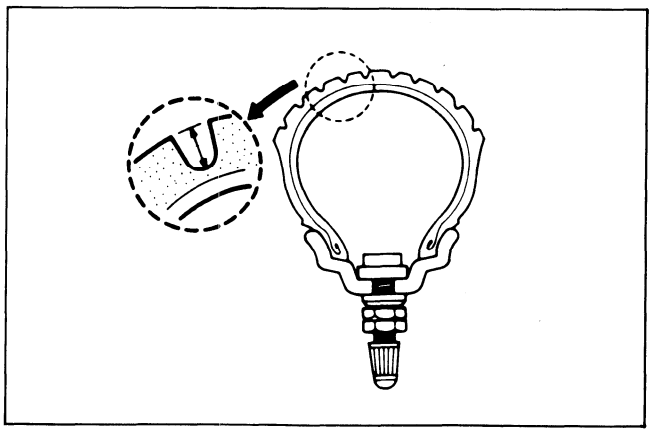


TIRES

Inspect Initially at 1 000 km (600 miles) and Every 6 000 km (4 000 miles)

TIRE TREAD CONDITION

Operating the motorcycle with excessively worn tires will decrease riding stability and consequently invite a dangerous situation. It is highly recommended to replace the tire when the remaining depth of tire tread reaches the following specifications.



Tire depth limit

FRONT	REAR
1.6 mm (0.06 in)	2.0 mm (0.08 in)

TIRE PRESSURE

If the tire pressure is too high or too low, steering will be adversely affected and tire wear increased. Therefore, maintain the correct tire pressure for good roadability or shorter tire life will result.

CAUTION:
The standard tire fitted on this motorcycle is 100/90-19 57H for front and 140/90-15 70H for rear. The use of a tire other than the standard may cause instability. It is highly recommended to use a SUZUKI Genuine Tire.

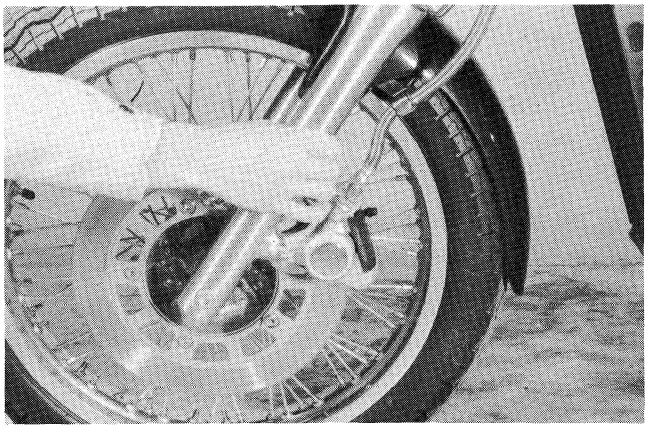
Cold inflation tire pressure is as follows.

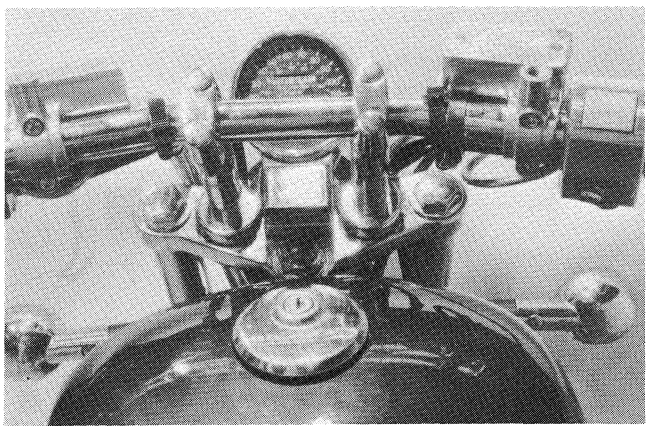
	FRONT			REAR		
	kPa	kg/cm^2	psi	kPa	kg/cm^2	psi
Solo riding	200	2.00	28	225	2.25	32
Dual riding	225	2.25	32	250	2.50	36

STEERING

Inspect Initially at 1 000 km (600 miles) and Every 6 000 km (4 000 miles)

Taper roller type bearings are applied on the steering system for better handling.
Steering should be adjusted properly for smooth manipulation of handlebars and safe running.
Too stiff steering prevents smooth manipulation of handlebars and too loose steering will cause poor stability.
Check that there is no play in the front fork assembly by supporting the machine so that the front wheel is off the ground, with wheel straight ahead, grasp lower fork tubes near the axle and pull forward. If play is found, perform steering bearing adjustment as described in page 9-21 of this manual.





FRONT FORK

Inspect Every 12 000 km (7 500 miles)

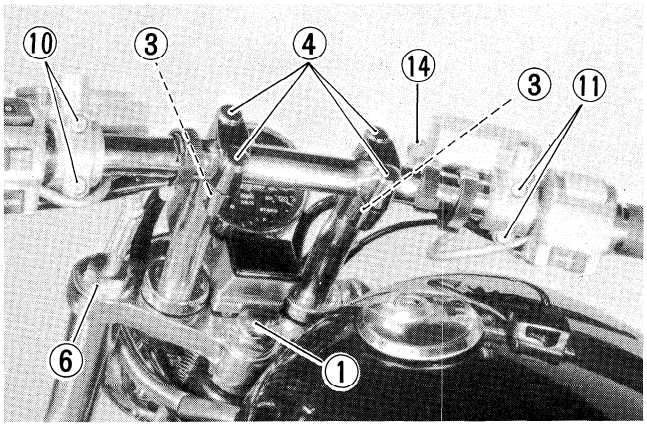
Inspect the front fork oil leakage, scoring and scratches on the outer surface of the inner tube and replace the defective parts, if necessary.
(Refer to page 9-16)

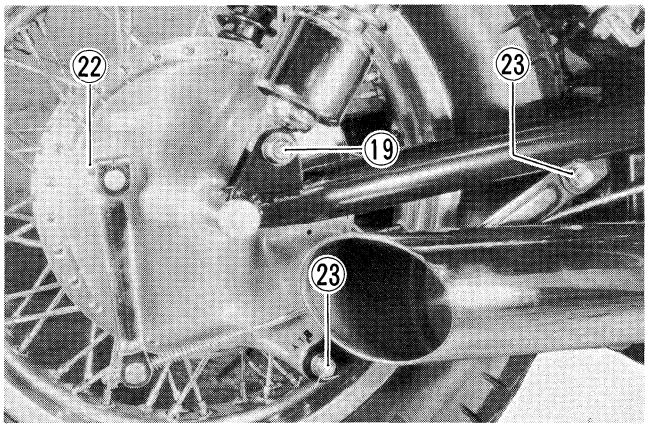
CHASSIS BOLTS AND NUTS

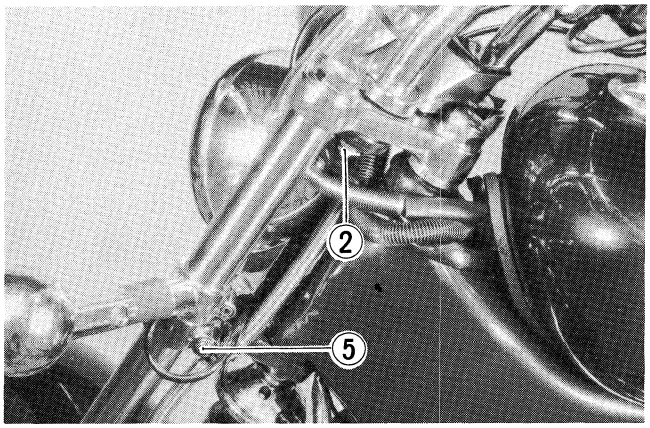
Tighten Initially at 1 000 km (600 miles) and Every 6 000 km (4 000 miles)

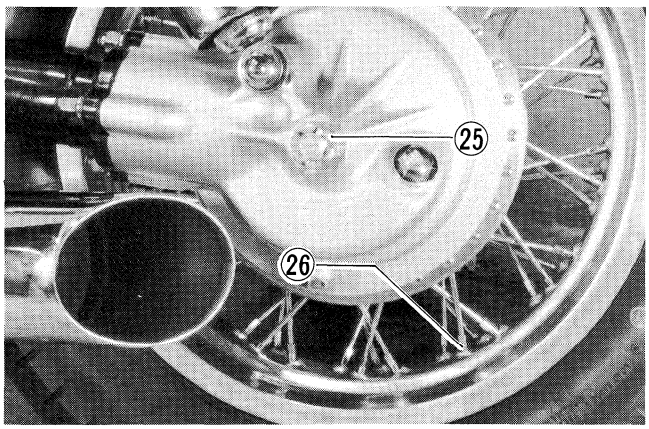
The nuts and bolts listed below are important safety parts. They must be retightened when necessary to the specified torque with a torque wrench. (Refer to page 2-18 for the location of the following nuts and bolts on the motorcycle.)

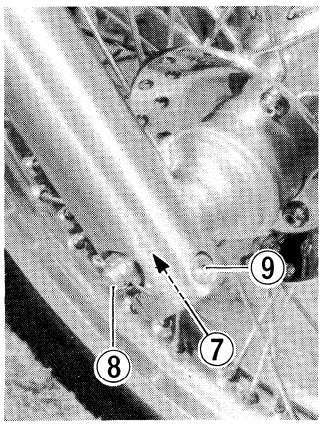
	Item	N·m	kg-m	lb-ft
①	Steering stem head nut	60 – 100	6.0 – 10.0	43.5 – 72.5
②	Handle bar holder nut	40 – 50	4.0 – 5.0	29.0 – 36.0
③	Handle bar holder mounting bolt	12 – 20	1.2 – 2.0	8.5 – 14.5
④	Handle bar mounting bolt	12 – 20	1.2 – 2.0	8.5 – 14.5
⑤	Front fork lower clamp bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
⑥	Front fork cap bolt	25 – 30	2.5 – 3.0	18.0 – 21.5
⑦	Front fork damper rod bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
⑧	Front axle nut	36 – 52	3.6 – 5.2	26.0 – 37.5
⑨	Front axle clamp bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
⑩	Clutch muster cylinder mounting bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
⑪	Front brake master cylinder mounting bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
⑫	Front caliper housing bolt	18 – 23	1.8 – 2.3	13.0 – 16.5
⑬	Front caliper mounting bolt	25 – 40	2.5 – 4.0	18.0 – 29.0
⑭	Brake hose union bolt	20 – 25	2.0 – 2.5	14.5 – 18.0
⑮	Air bleeder valve	6 – 9	0.6 – 0.9	4.5 – 6.5
⑯	Front disc bolt	18 – 23	1.8 – 2.3	13.0 – 16.5
⑰	Radiator mounting bolt (Upper side)	50 – 65	5.0 – 6.5	36.0 – 47.0
⑱	Rear shock absorber upper mounting nut	20 – 30	2.0 – 3.0	14.5 – 21.5
⑲	Rear shock absorber lower mounting nut	20 – 30	2.0 – 3.0	14.5 – 21.5
⑳	Footlest mounting bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
㉑	Oil filter	12 – 16	1.2 – 1.6	8.5 – 11.5
㉒	Rear brake cam lever bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
㉓	Rear torque link nut	10 – 15	1.0 – 1.5	7.0 – 11.0
㉔	Swingarm pivot nut	50 – 80	5.0 – 8.0	36.0 – 58.0
㉕	Rear axle nut	60 – 96	6.0 – 9.6	43.5 – 69.5
㉖	Spoke nipple	4 – 5	0.4 – 0.5	3.0 – 3.5

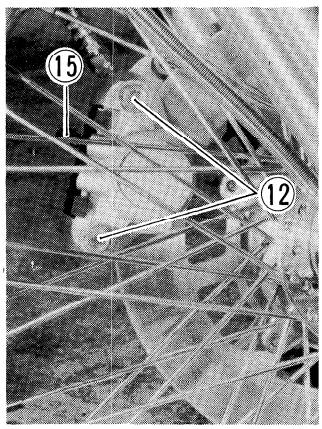

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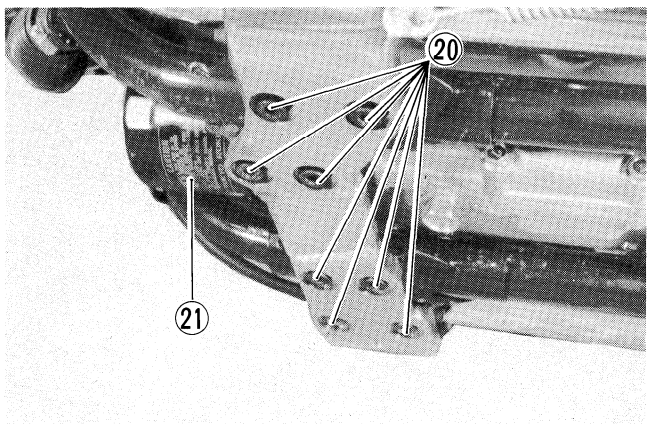

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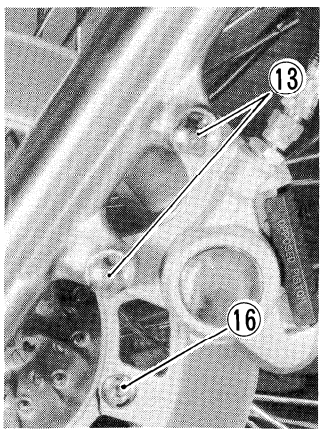

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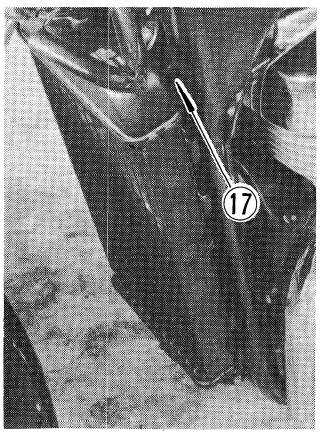

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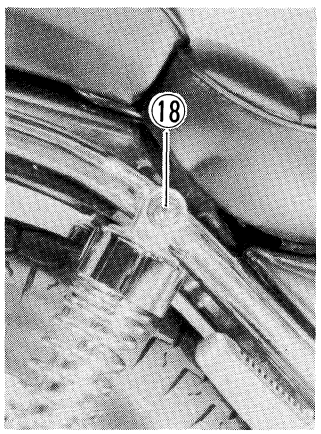

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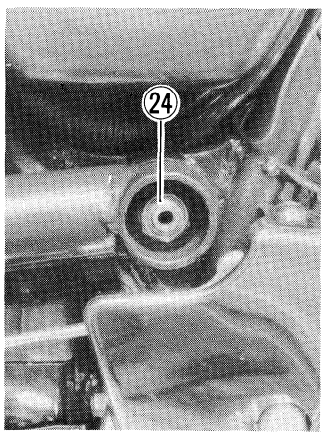

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18


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ENGINE

3

CONTENTS

COMPRESSION CHECK 3- 1
ENGINE COMPONENTS REMOVABLE WITH THE ENGINE IN PLACE 3- 2
ENGINE REMOVAL AND REINSTALLATION 3- 3
- ENGINE REMOVAL 3- 3
- ENGINE REINSTALLATION 3- 9

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ENGINE COMPONENTS INSPECTION AND SERVICING 3-30
- CYLINDER HEAD COVER 3-30
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- CONNECTING ROD 3-45
- CRANKSHAFT 3-49
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COMPRESSION CHECK

The compression of a cylinder is good indicator of its internal condition. The decision to overhaul the cylinders is often based on the results of a compression test. Periodic maintenance records kept at your dealership should include compression readings for each maintenance service.

COMPRESSION

Standard	Limit	Difference in cylinders
1 300 – 1 600 kPa (13 – 16 kg/cm^2) (184 – 227 psi)	1 100 kPa (11 kg/cm^2) (156 psi)	200 kPa (2 kg/cm^2) (28 psi)

Low compression pressure can indicate any of the following conditions:

* Excessively worn cylinder wall
* Worn-down piston or piston rings
* Piston rings stuck in the grooves
* Poor seating of valves
* Ruptured or otherwise defective cylinder head gasket
* Valve clearance out of adjustment
* Starter motor cranks too slowly

Overhaul the engine in the following cases:

* Compression pressure in one of the cylinders is less than 1 100 (11 kg/cm^2, 156 psi).
* Difference in compression pressure between two cylinders is more than 200 kPa (2 kg/cm^2, 28 psi).
* All compression pressure are below 1 300 kPa (13 kg/cm^2, 184 psi) (standard) even when they measure more than 1 100 kPa (11 kg/cm^2, 156 psi).

COMPRESSION TEST PROCEDURE

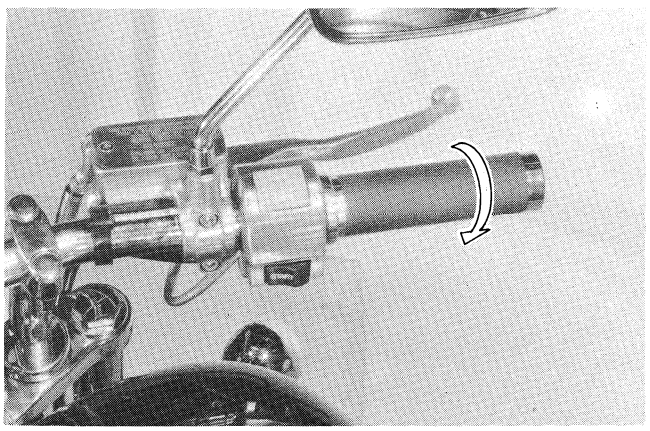
NOTE:

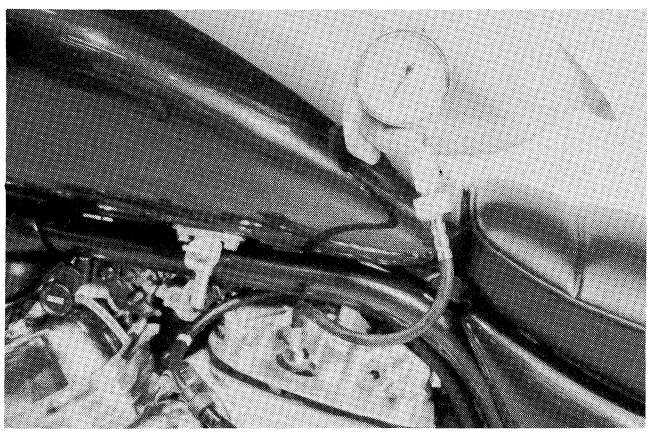
*** Before testing the compression of the engine, make sure that the cylinder head bolts and nuts are tightened to specified torque values.**

*** Warm up the engine before testing.**

- Remove the fuel tank. (Refer to page 3-4).
- Remove all the spark plugs.
- Remove the cylinder head side cover.
- Fit the compression gauge ① in one of the plug holes, while taking care that the connection is tight.
- Twist the throttle grip full open.
- Crank the engine a few seconds with the starter, and record the maximum gauge reading as the compression of the cylinder.
- Repeat this procedure with the other cylinder.

09915-64510	Compression gauge
09918-03810	Adapter





ENGINE COMPONENTS REMOVABLE WITH THE ENGINE IN PLACE

The parts listed below can be removed and reinstalled without removing the engine from the frame. Refer to the page listed in this section for removal and reinstallation instructions.

ENGINE LEFT SIDE

	See page
Secondary bevel gear case cover	3- 4
Secondary case	3-22
Gearshift lever	3- 8
Generator cover	3-20
Clutch cylinder	3- 5
Generator rotor	3-20
Neutral indicator switch body	3-21
Generator stator	3-53
Pick-up coil	3-53
Secondary bevel driven gear	3-22
Water pump case cover	3- 4
Water pump case	3- 5
Water pump assembly	5- 7
Thermostat	5- 4

ENGINE CENTER

	See page
Radiator	3- 5
Exhaust pipe and muffler	3- 6
Oil filter	3- 6
Carburetor	3- 7
Oil pan	3-19
Sump filter	3-19
Oil pressure switch	3-25
Starter motor assembly	3-20

ENGINE RIGHT SIDE

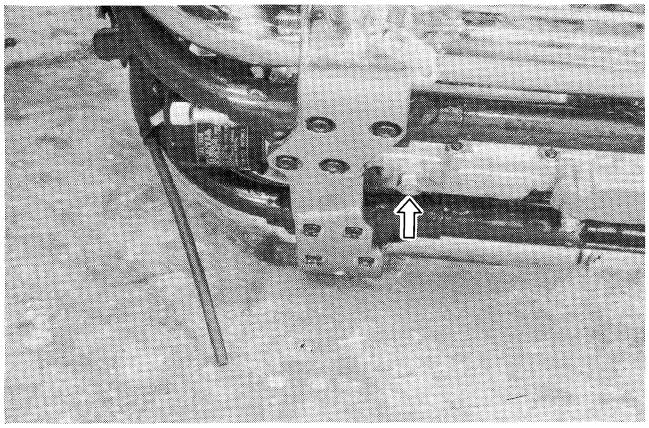
	See page
Clutch cover	3-15
Clutch pressure, drive and driven plates	3-15
Oil pump drive sprocket	3-16
Oil pump drive chain	3-17
Primary driven gear	3-17
Oil pump assembly	3-18
Gear shifting shaft	3-18

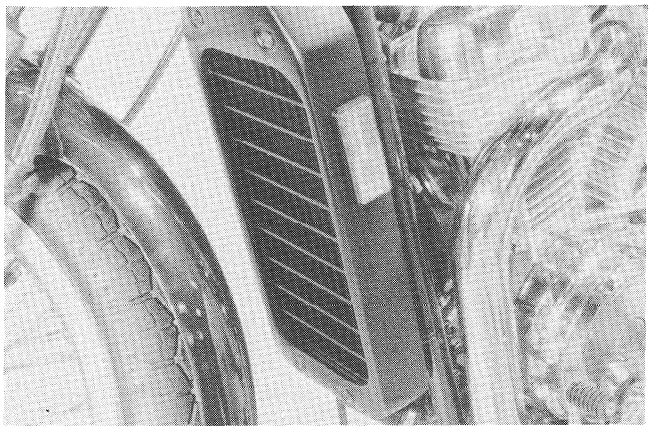
ENGINE REMOVAL AND REINSTALLATION

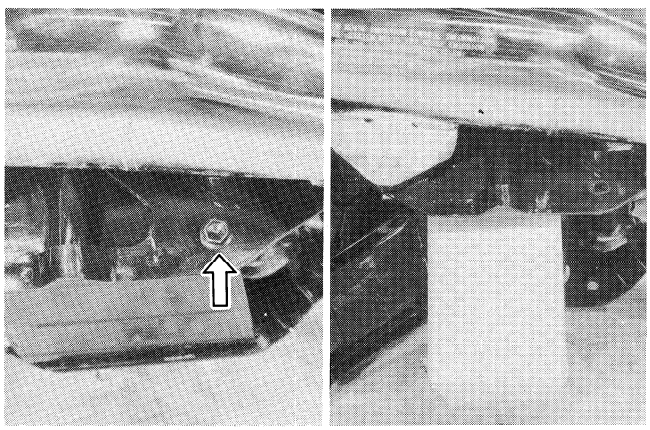
ENGINE REMOVAL

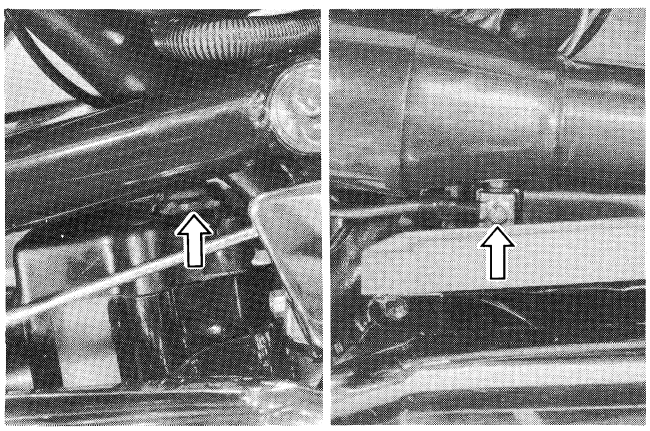
Before taking the engine out of the frame, wash the engine and drain engine oil and cooling solution etc. The procedure of engine removal is sequentially explained in the following steps, and engine installation is effected by reversing the removal procedure.

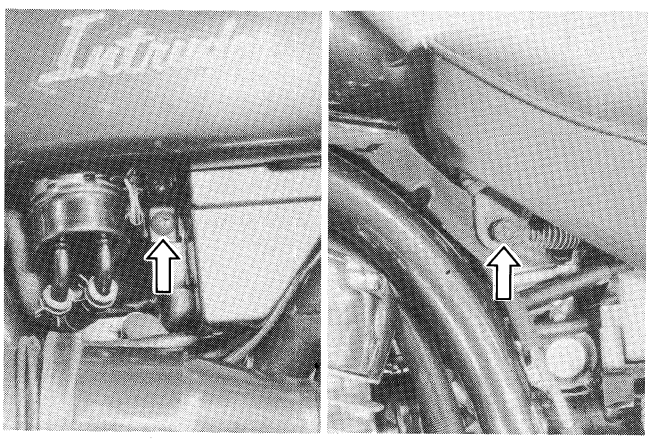
- Place an oil pan under the engine and remove the oil drain plug and filler plug to drain out engine oil.
- Remove the radiator cover, radiator cap and drain plug, and drain cooling solution completely.
- Remove the battery terminal cover.
- Disconnect the battery ⊖ and ⊕ lead wires from the battery terminals.
- Remove the battery case bottom plate bolts and open the case bottom plate.
- Remove the battery.
- Remove the seat and remove the right and left frame covers.
- Remove the high tension cord.

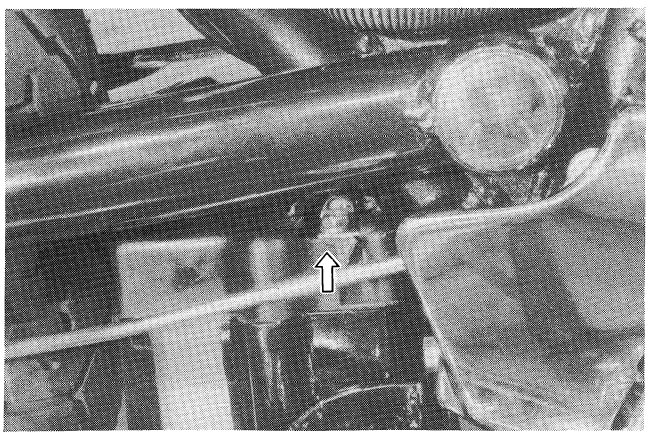








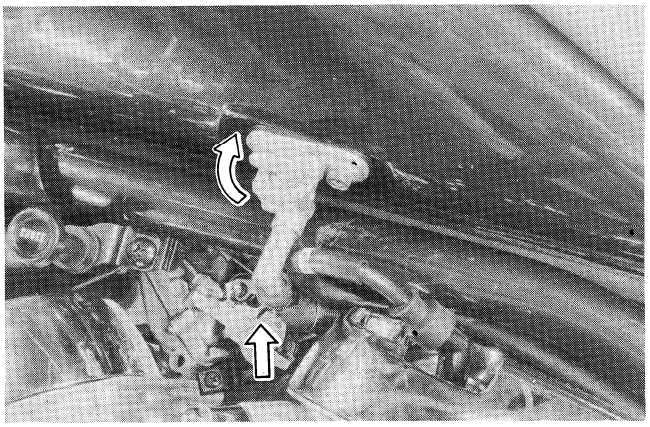


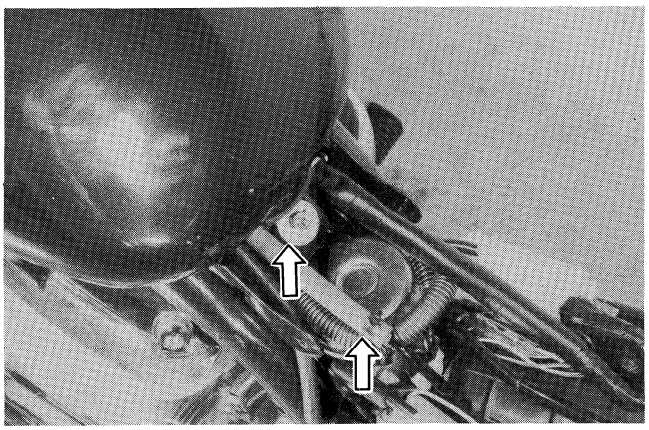


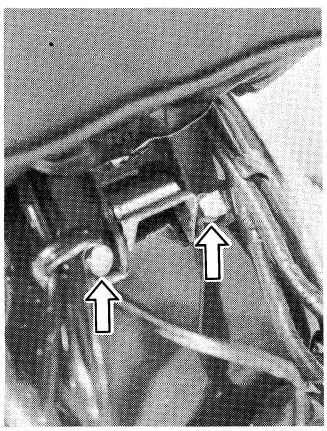
- Turn the fuel cock to "OFF" position and disconnect the fuel hose.
- Remove the fuel tank securing bolt.
- Remove the evaporating hose.
- Disconnect the following lead wire.

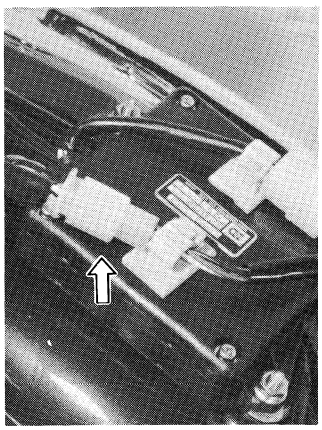
* Side stand
* Generator
* Pick up coil
* Neutral indicator switch
* Starter motor
* Ground
* Starter relay
* Temperature warning light

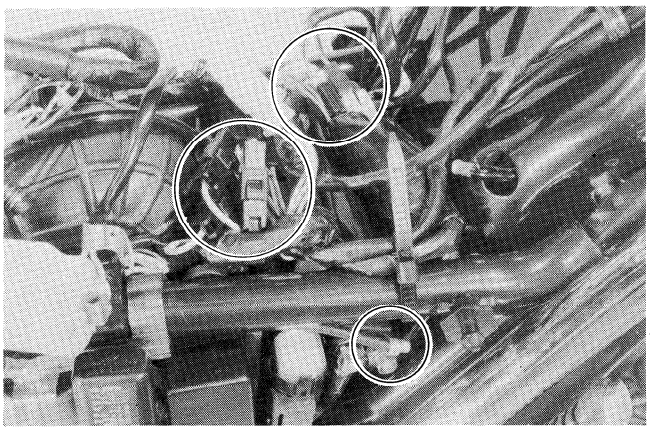
- Remove the secondary case cover.

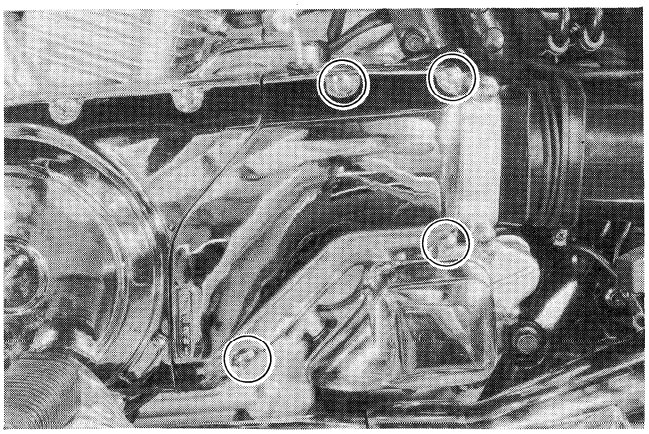


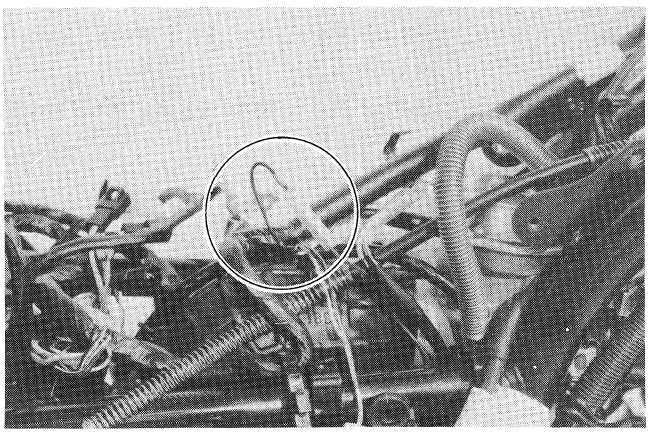




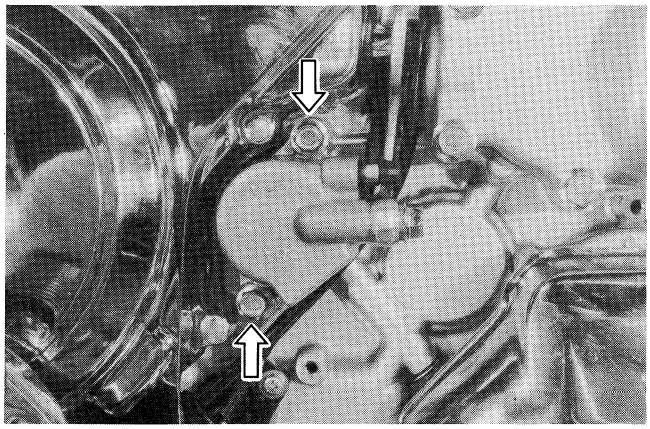


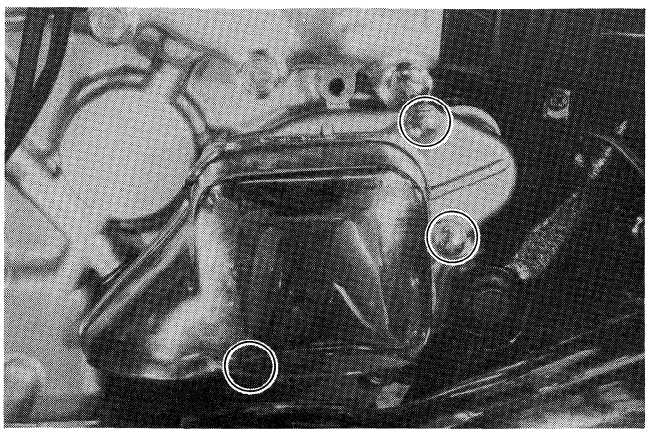


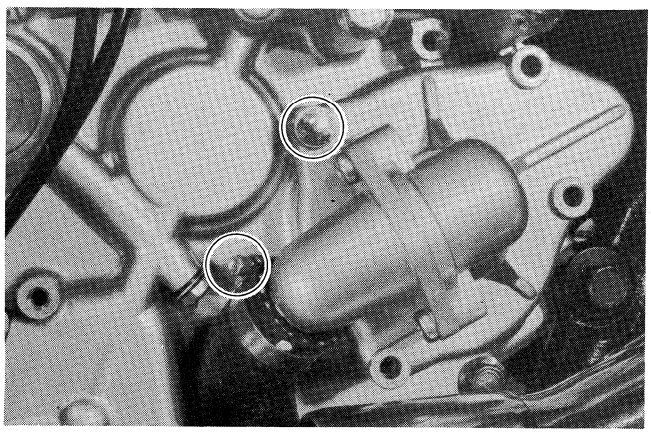


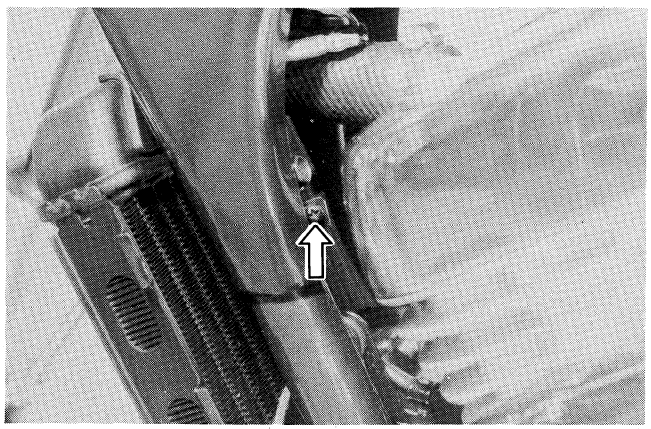


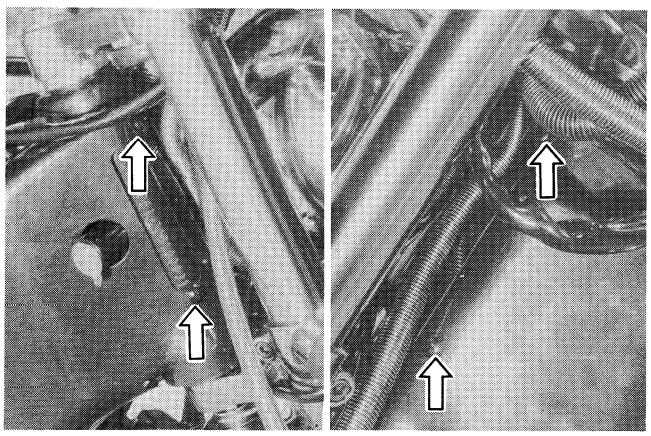
- Remove the clutch cylinder.
- Remove the water pump case cover.
- Loosen the water hose clamp screw.
- Remove the water pump case.
- Remove the frame head cover.



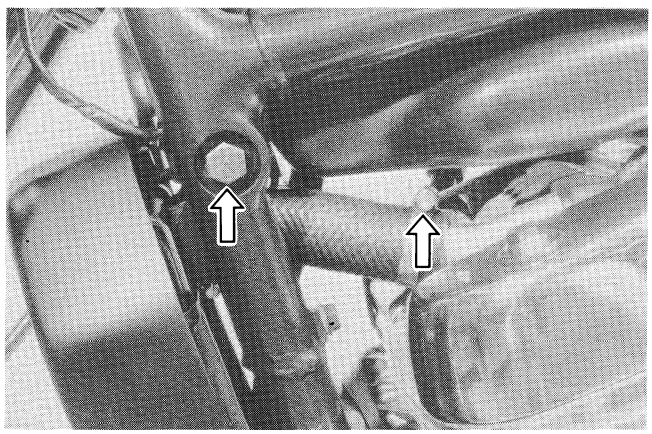


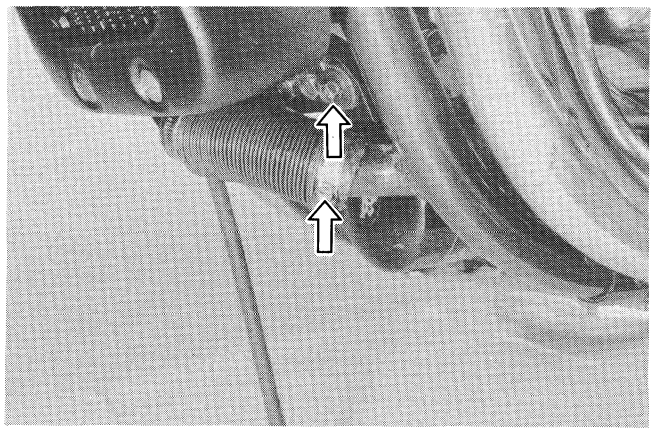


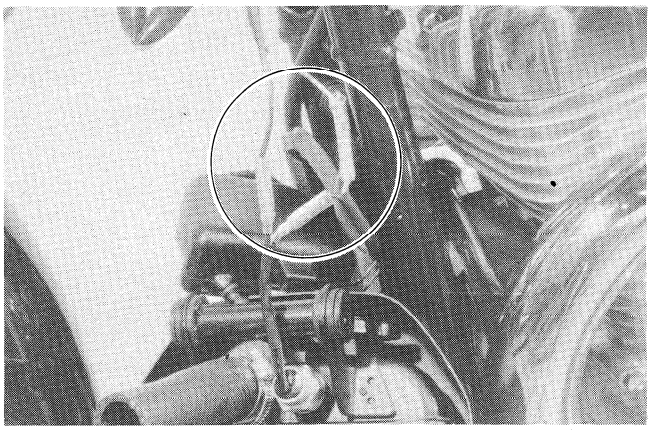




- Disconnect radiator hose by loosening clamp screws.
- Remove the radiator by loosening the mounting bolts.
- Disconnect the lead wire.

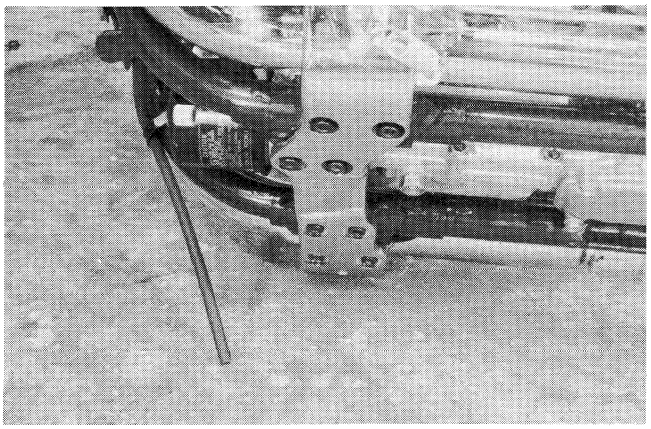




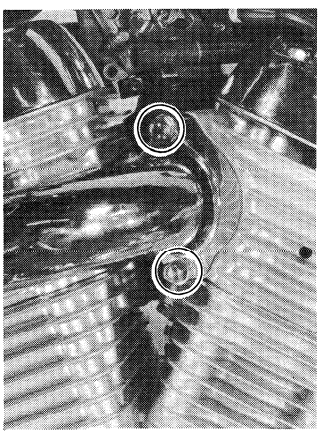


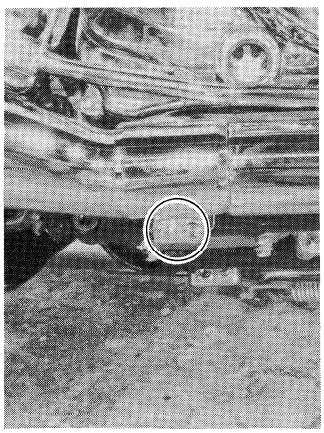
- Remove the oil filter by using the special tool.

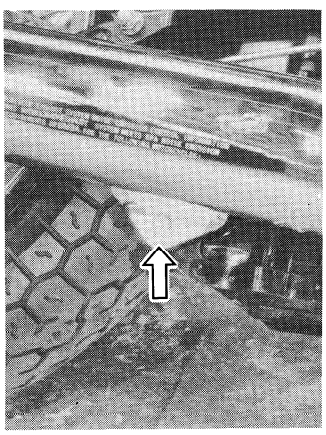
09915-47320	Oil filter wrench

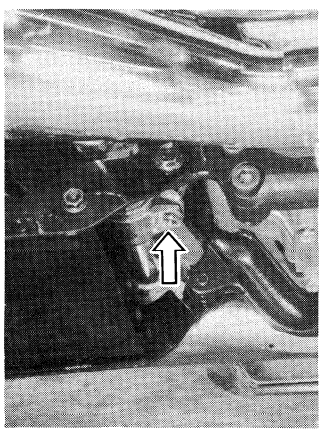


- Remove the muffler.

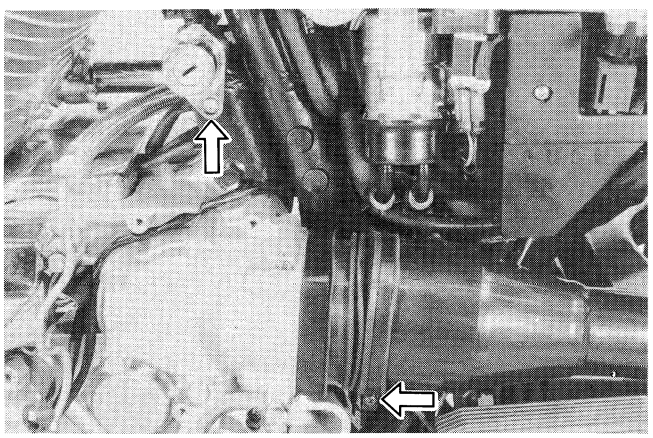




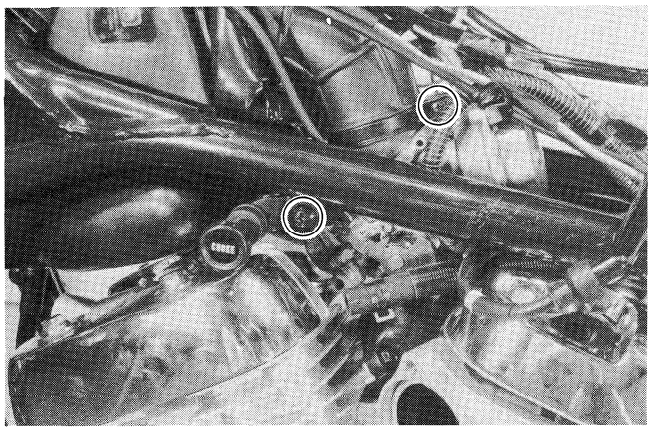


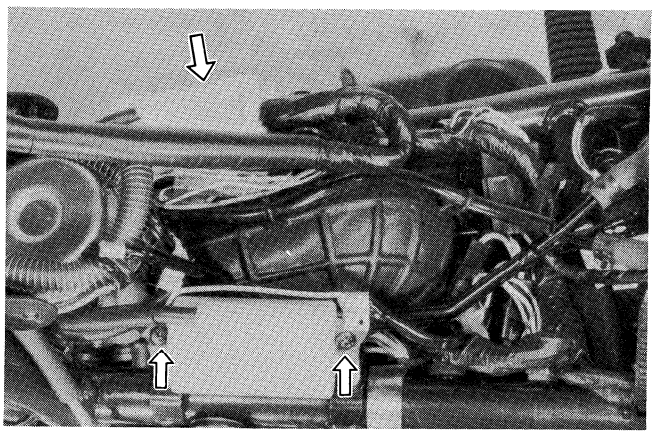


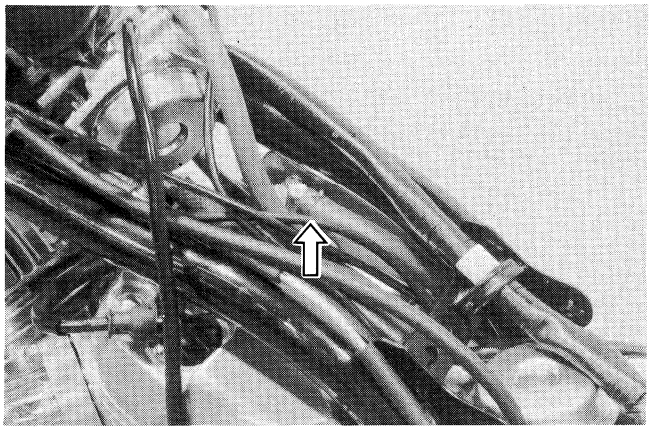
- Remove the swing arm cover, boot and ignition switch.



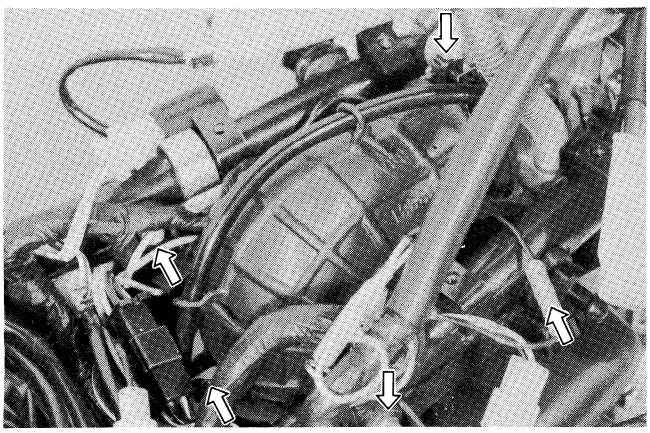
- Remove the choke cable bracket.
- Remove the front carburetor with outlet hose by loosening the clamp screws and clamp.
- Remove the breather pipe.
- Remove the ignition coil.

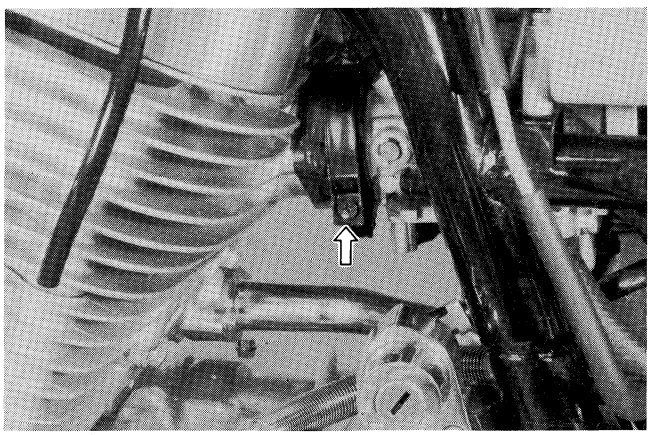




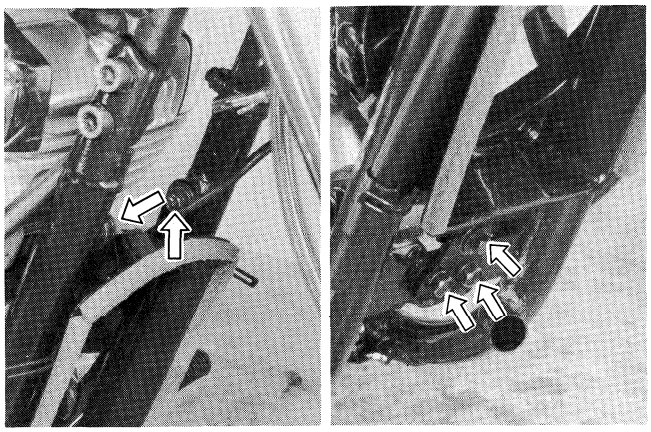


- Loosen the rear air cleaner retaining bolts.
- Remove the rear carburetor with outlet hose by loosening the clamp screws.



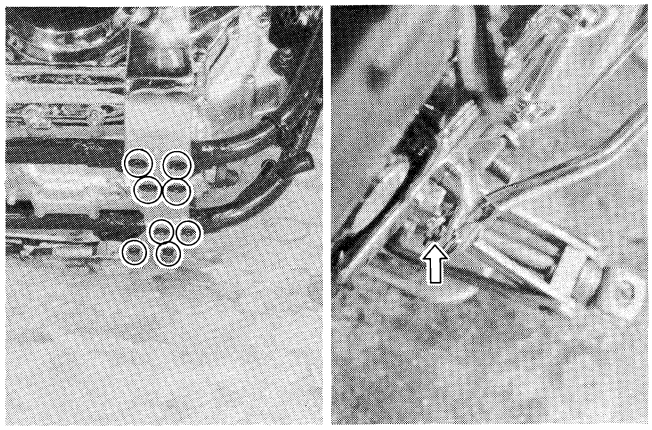


- Remove the radiator fan mounting bolts.

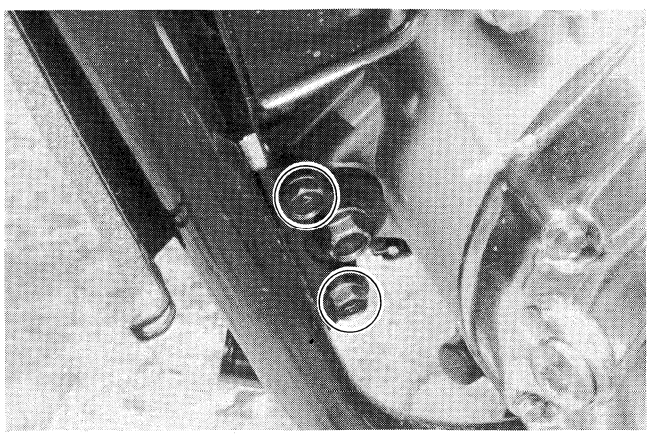


- Use a jack and wooden block, and hold the engine assembly.

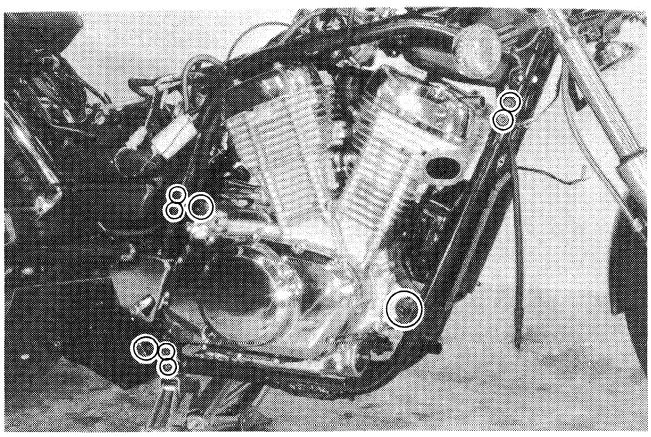
CAUTION:
When holding the engine with jack, place a piece of wood on the jack or oil pan may be damaged.



- Remove the footrest.
- Disconnect the rear brake rod.
- Remove the gearshift lever.
- Remove the engine mounting bolt, bracket bolts and right frame down tube securing bolts.



- Remove the engine mounting bolts and bracket bolts.
- Dismount the engine by pulling slightly forward and to right side.

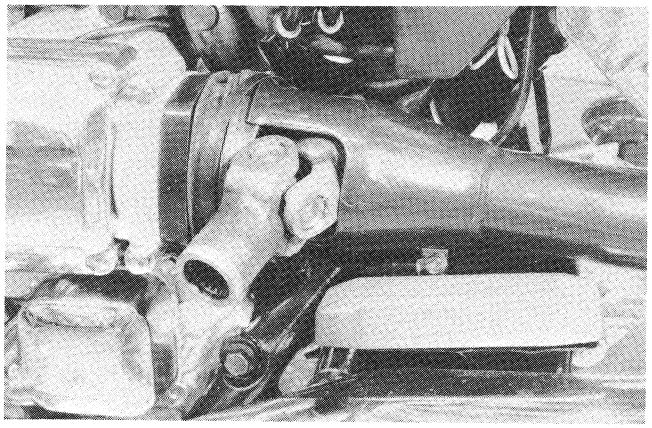


ENGINE REINSTALLATION

Reinstall the engine in the reverse order of engine removal.

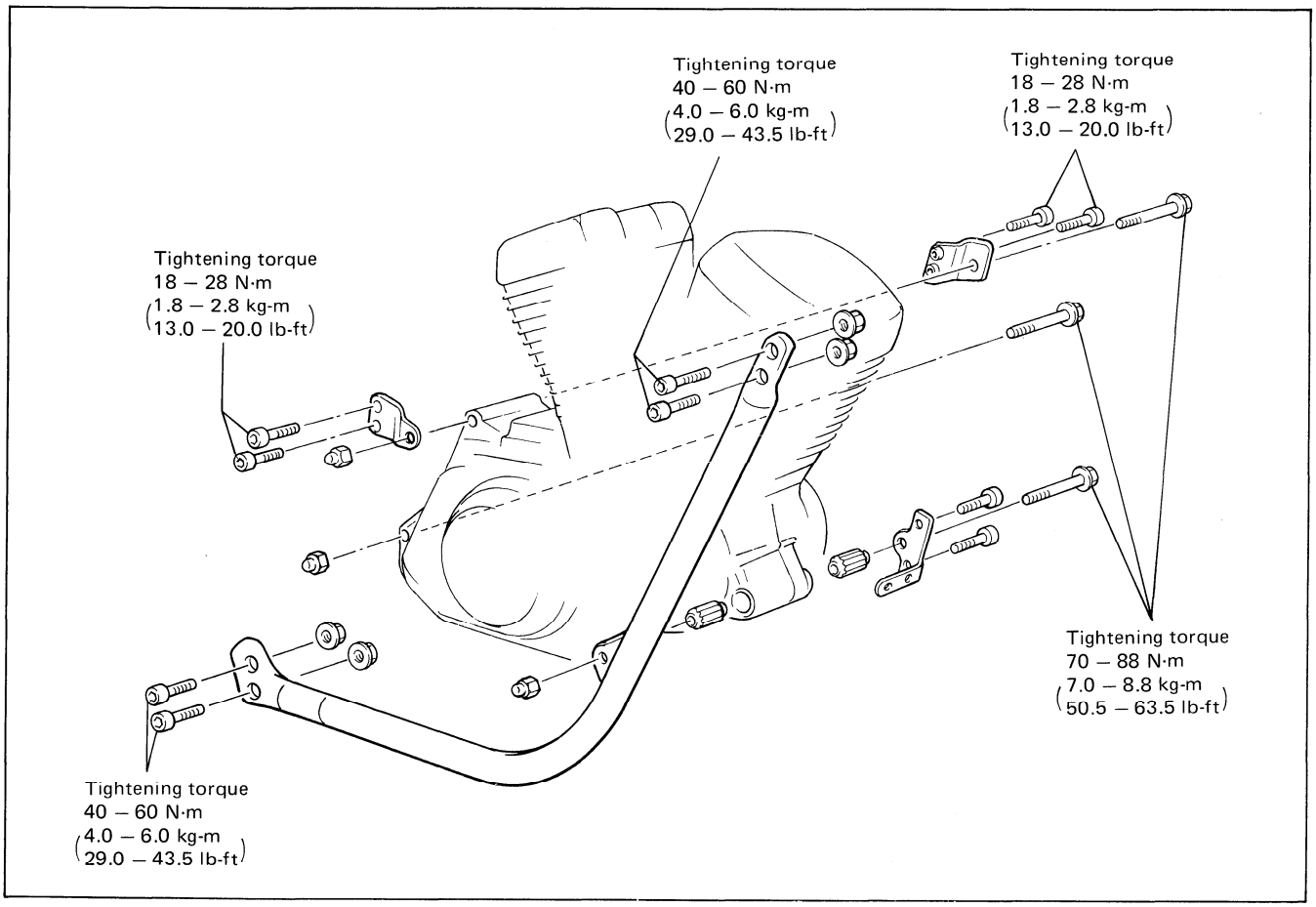
- Engage the engine to the drive shaft.

> **NOTE:**
> **If engagement of engine and drive shaft is difficult, remove the rear wheel and final gear case box (Refer to page 9-24 and 9-31).**



- Place the engine in the proper position and install the right down tube to the frame.
- After inserting the engine mounting bolts, tighten the engine mounting bracket bolts and engine mounting bolts.
  Insert the all upper long bolts from left side.
  Install the brackets, bolts and nuts properly as shown in the following illustration.

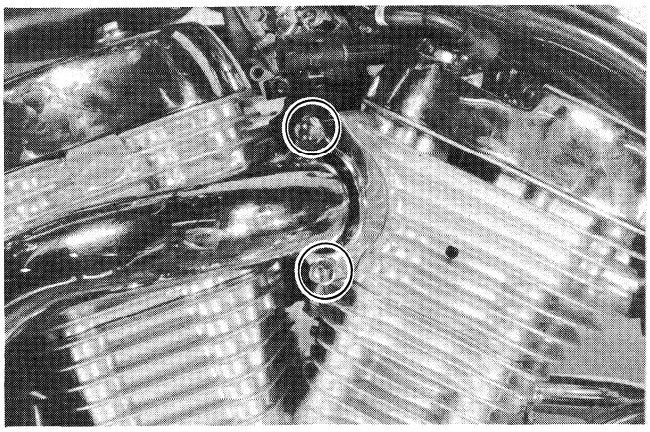
> **CAUTION:**
> **The engine mounting nuts are self-lock nuts. Once the nut has been removed, it is no longer of any use. Be sure to use new nuts and tighten them to the specified torque.**



- Install the exhaust pipes and mufflers properly. When securing exhaust pipe clamp bolts, make sure that clamps are positioned properly.

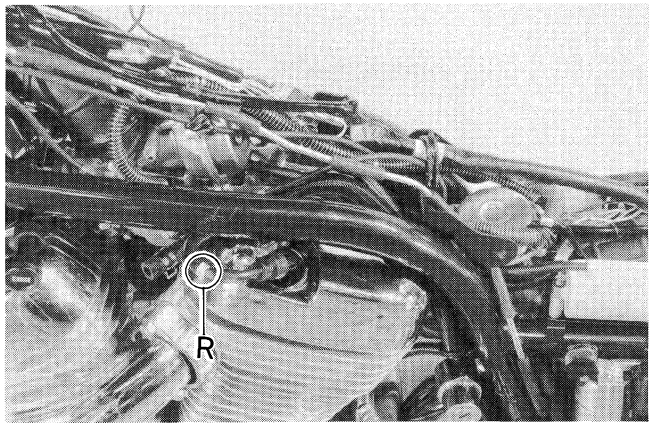
Tightening torque

Exhaust pipe clamp bolt	20 – 25 N·m (2.0 – 2.5 kg-m 14.5 – 18.0 lb-ft)
Muffler mounting bolt	27 – 43 N·m (2.7 – 4.3 kg-m 19.5 – 31.0 lb-ft)

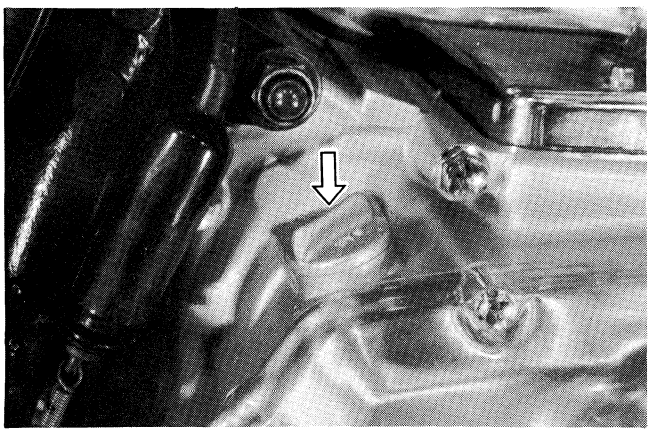


- Replace the plug caps on the spark plugs so that their code markings correspond to the cylinder position from the rear.

Ⓕ Front (No. 2) cylinder
Ⓡ Rear (No. 1) cylinder



- Install 3.3 L (3.5 US qt.) (when overhauling engine) of engine oil SAE 10W/40 under API classification SE or SF into the engine. Several minutes after starting and stopping the engine, check that the oil level remains between the marks of oil inspection window.
- After remounting the engine, route wiring harness, hoses and cables properly by referring to the sections, wire routing and cable routing, and adjust the following items to the specification.

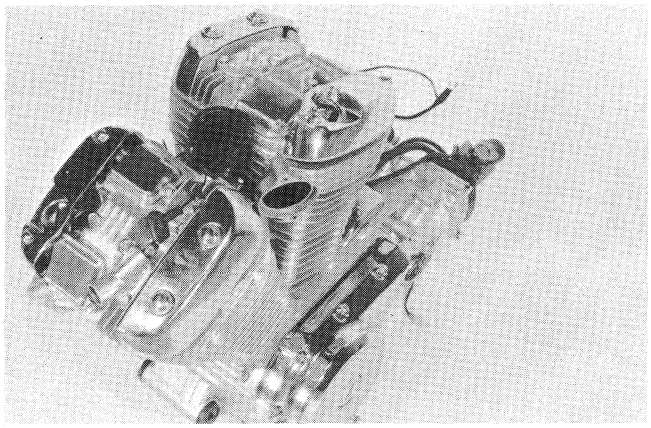


Page

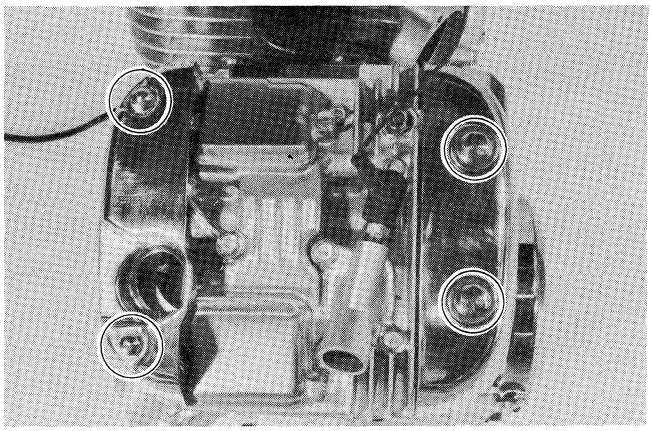
* Brake light switch 2-14
* Clutch air bleeding 2-10
* Throttle cable 2- 9
* Balancing carburetor 6-21
* Idling adjustment 2- 9
* Filling cooling solution 2-11

ENGINE DISASSEMBLY

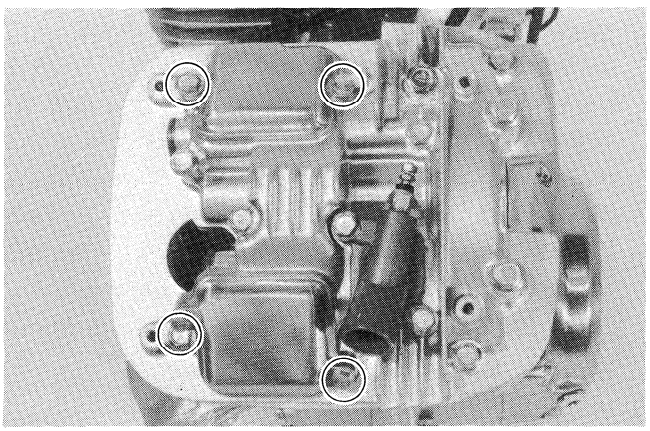
CAUTION:
Be sure to identify each removed part such as intake pipe, camshaft, piston, conrod etc. as to its location and lay the parts out in groups so that each will be restored to the original location during assembly.



- Remove the cylinder head cover side cover.

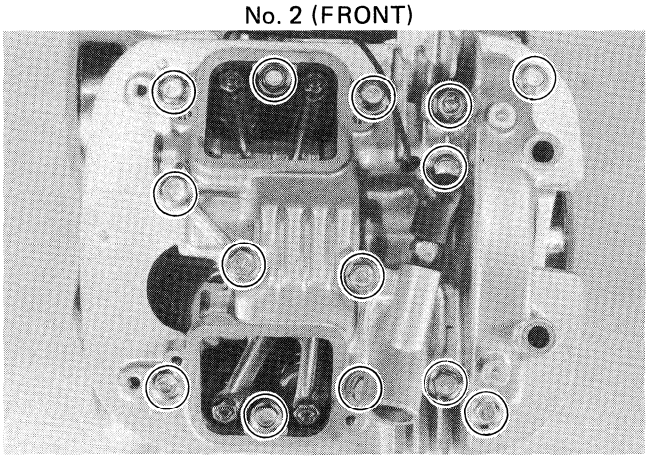


- Remove the inspection caps.

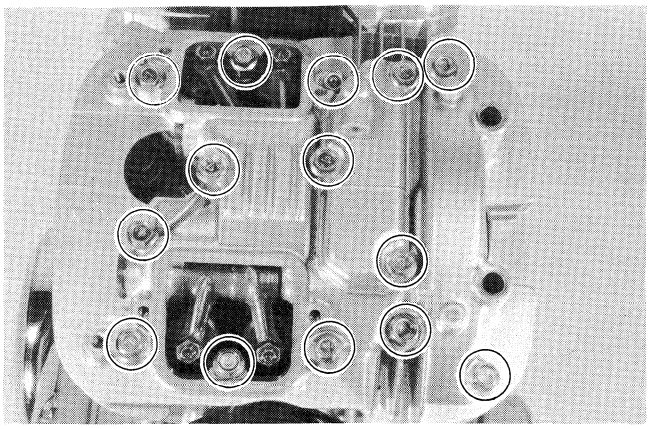


No. 2 (FRONT)

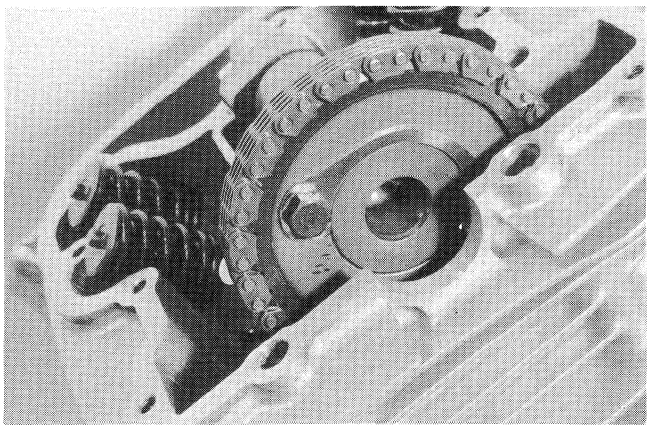
- Remove the cylinder head cover.



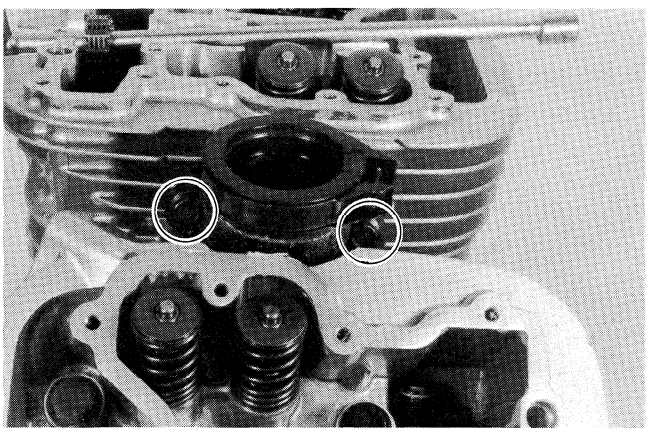
No. 1 (REAR)



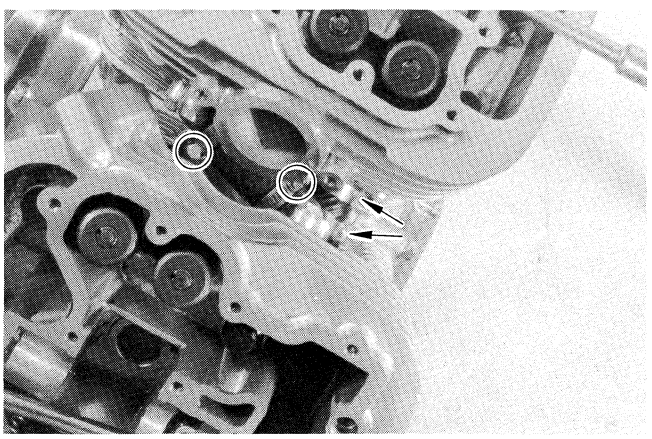
- Bend the lock washer.
- Remove the cam sprocket by loosening the securing bolts, and then remove the shaft.



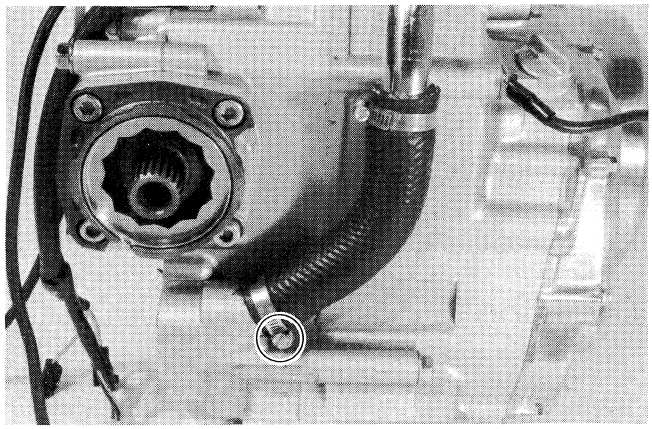
- Remove the front intake pipe.

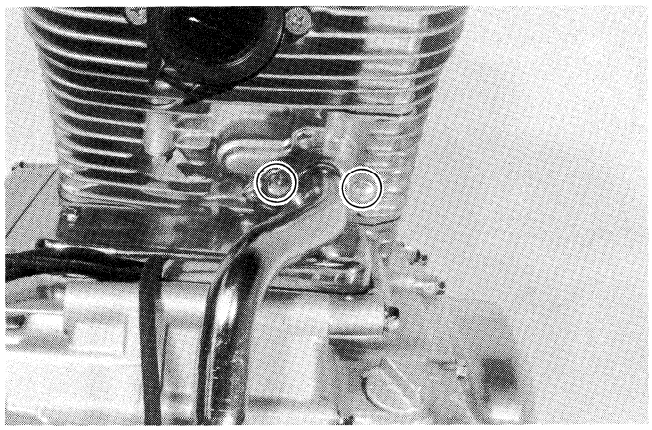


- Loosen the water hose clamp screw.

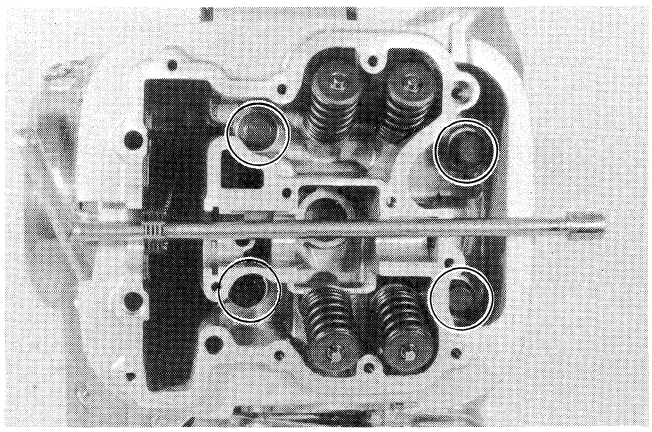


- Remove the water pipe bolts and loosen the water hose clamp screw.



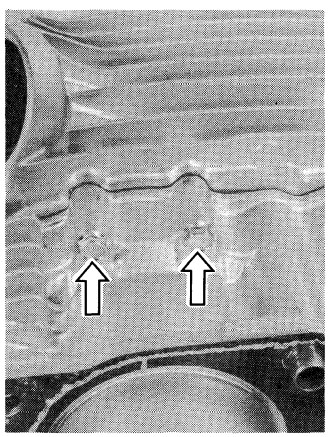


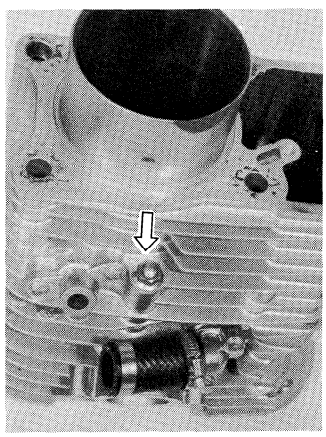
- Loosen the cylinder head bolts.
- Remove No. 1 and No. 2 cylinder head and cylinder.



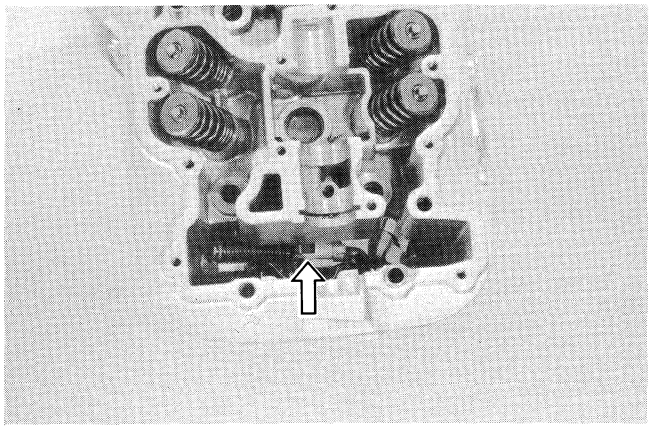
Separate the cylinder and cylinder head as following procedure.

- Loosen the cylinder head nuts and bolts.

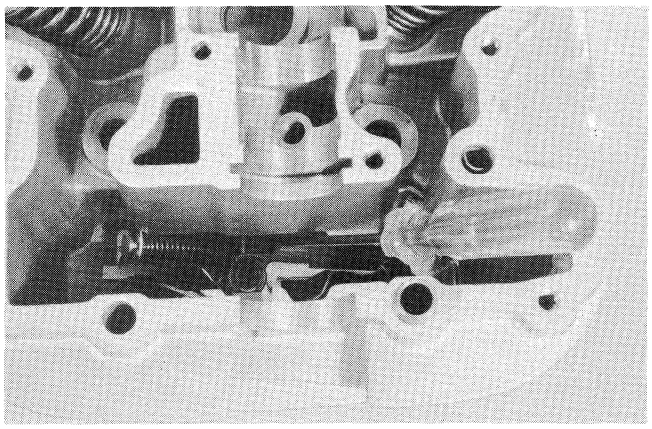




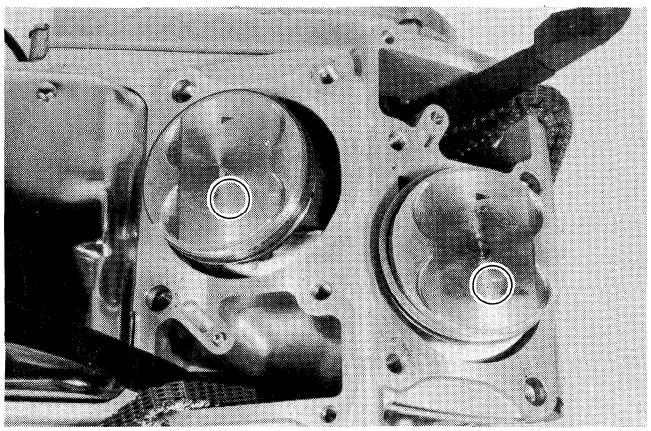
- After releasing the ratchet, push the chain tensioner rod.



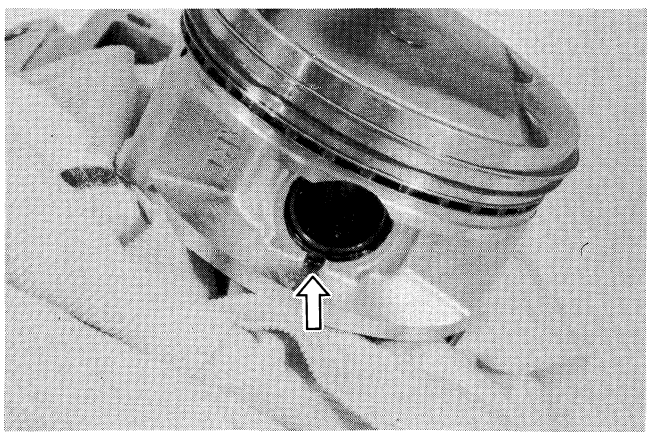
- Insert an adequate lock plate between ratchet and chain tensioner body.



- Check the "F" and "R" piston mark.

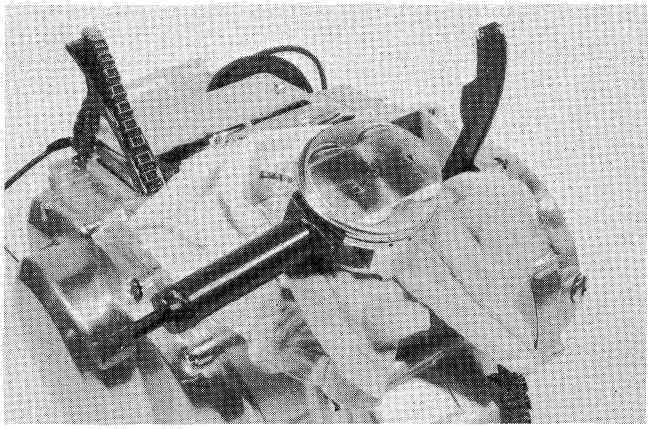


- Place a clean rag over the cylinder base to prevent piston pin circlip from dropping into crankcase, and then remove the piston pin circlip with long nose pliers.

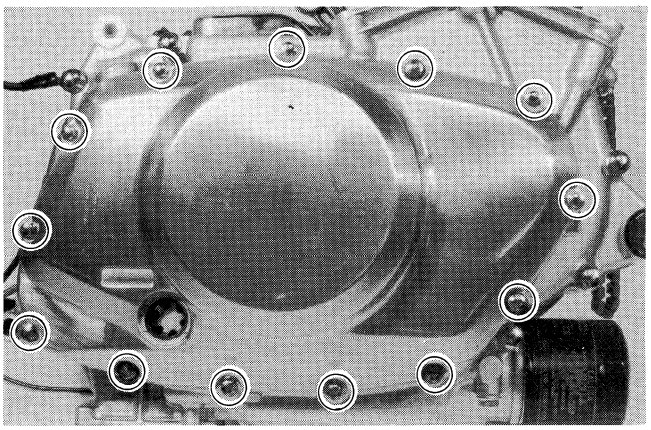


- Remove piston pin.

09910-34510	Piston pin puller
09910-33210	Attachment

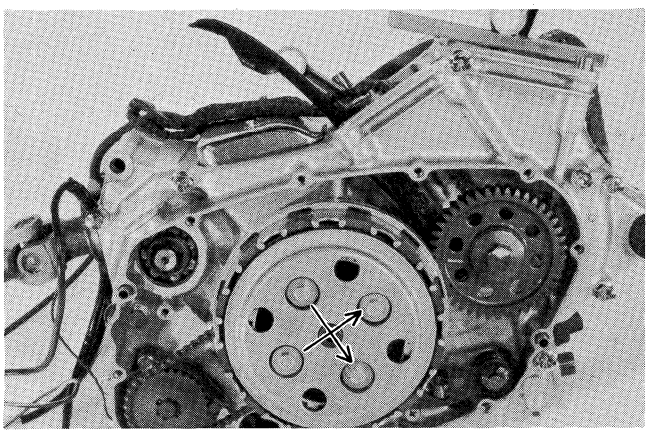


- Remove the clutch cover and gasket.

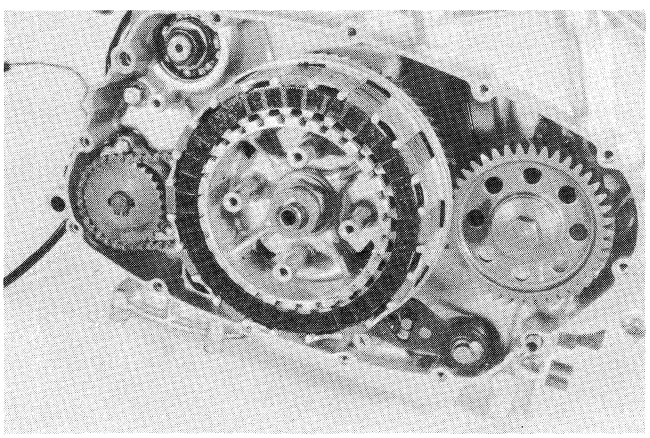


- By holding the con-rod with special tool, remove the clutch spring mounting bolts in a criss-cross manner.
- Remove the clutch springs and pressure plate.

09910-20115	Con-rod holder

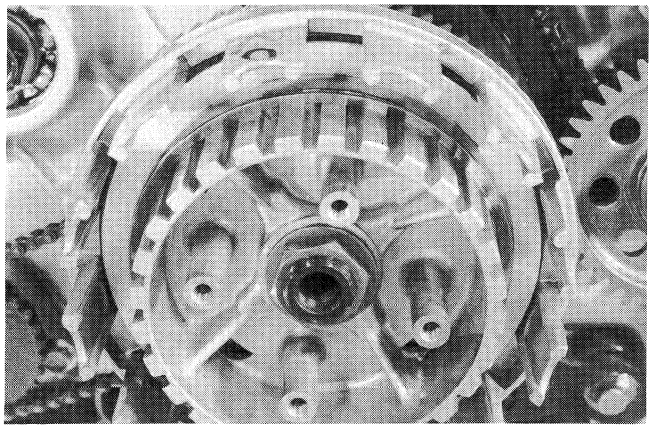


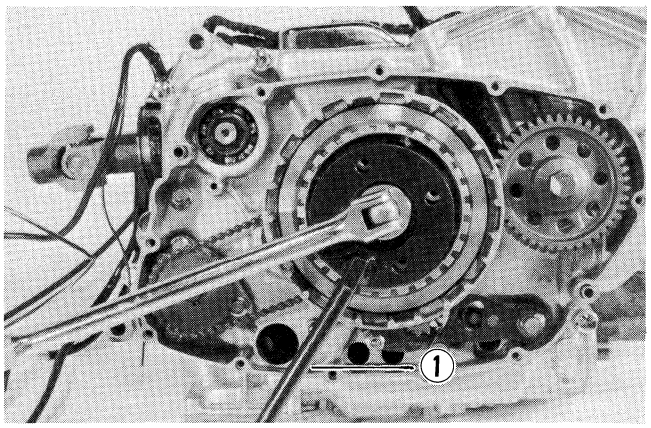
- Remove the clutch push piece, thrust washer, bearing, push rod, clutch drive end driven plates.



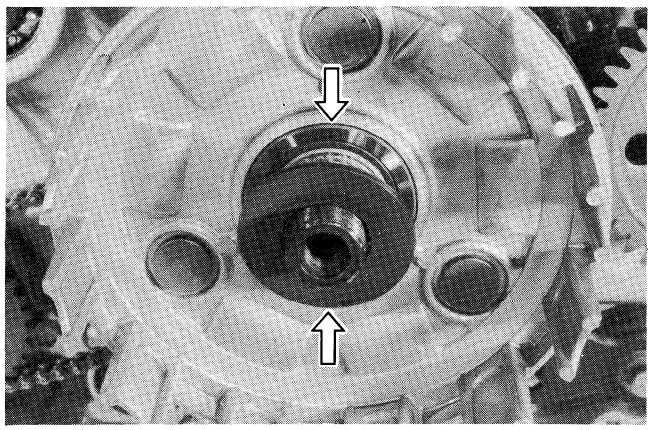
- Firmly secure clutch sleeve hub to remove mounting nut with clutch sleeve hub holder ①.

09920-53722	Clutch sleeve hub holder

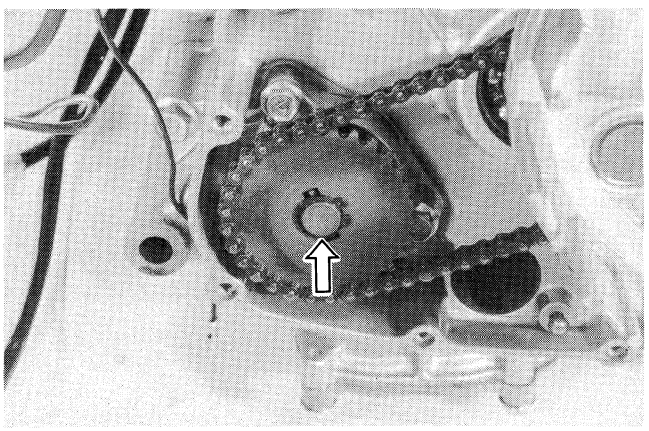




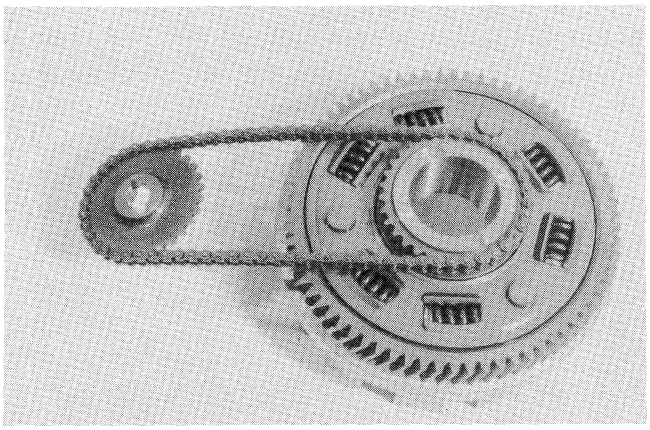
- Remove washer, clutch hub, the remaining plates, wave washer and seat.
- Remove the spacer and bearing.



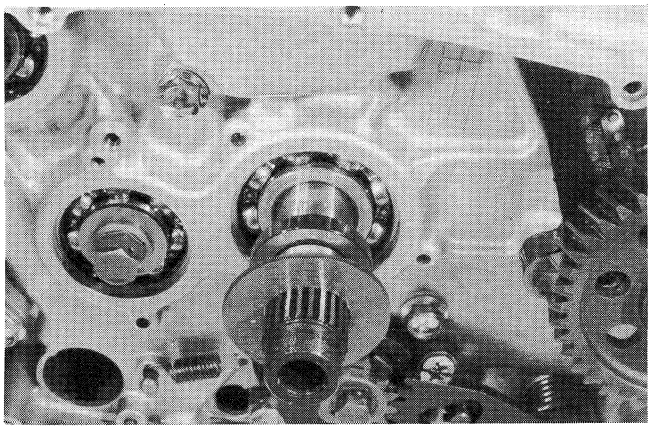
- Remove the oil pump driven gear and pin by removing the circlip.



- Detach the oil pump drive chain.
- Remove the primary driven gear assembly.
- Remove the oil pump drive chain.
- Remove the spacer and bearing.



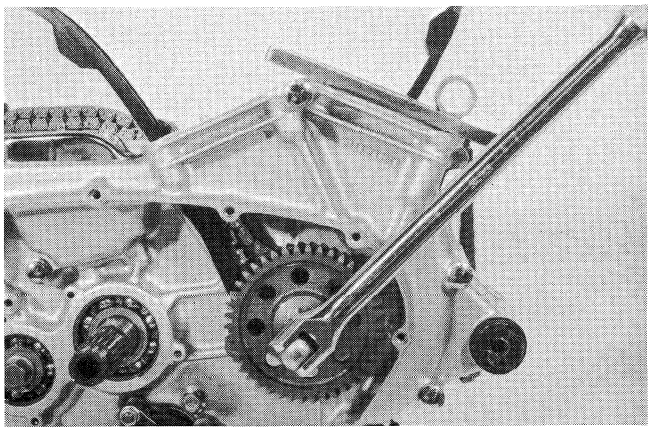
- Remove the thrust washer and spacer.



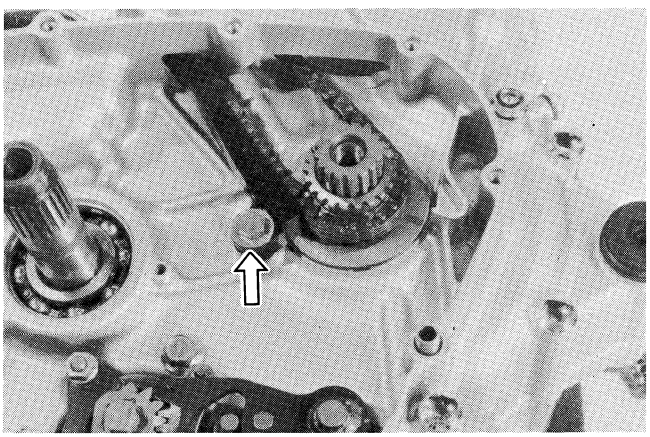
- Remove the primary drive gear bolt by using the special tool and remove the primary drive gear.

09910-20116	Con-rod holder

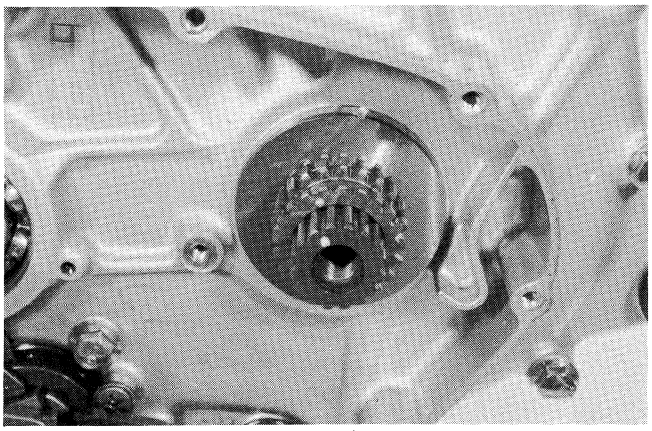
CAUTION:
This bolt has left-hand thread. Turning it counter-clockwise it may cause damage.



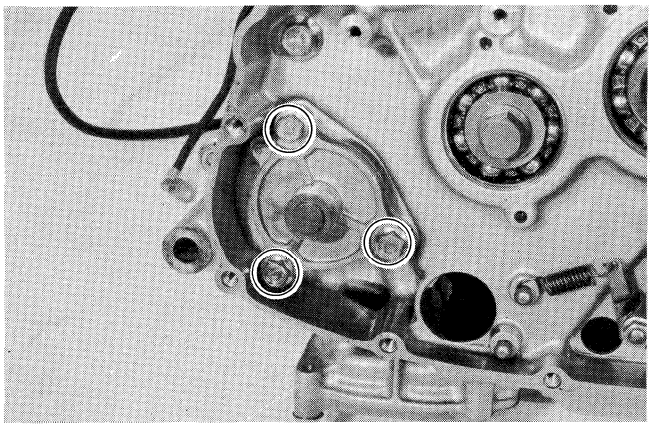
- Remove the chain guide and chain.



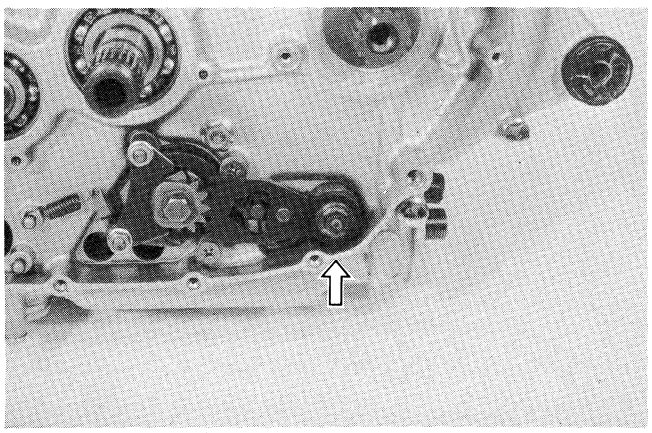
- Remove the cam sprocket drive gear and thrust washer.



- Remove the oil pump by removing the securing bolts.



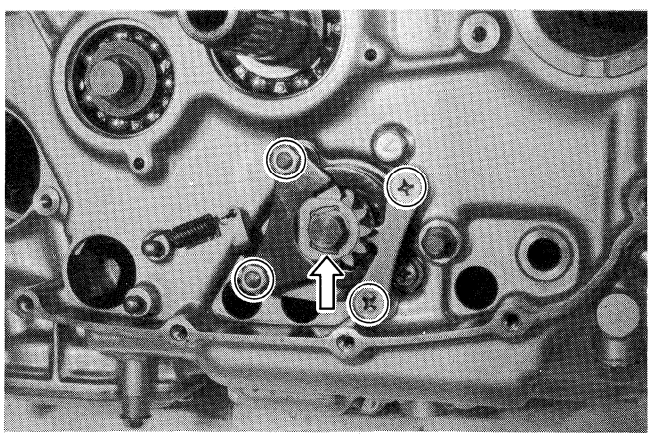
- Remove the gearshift shaft.



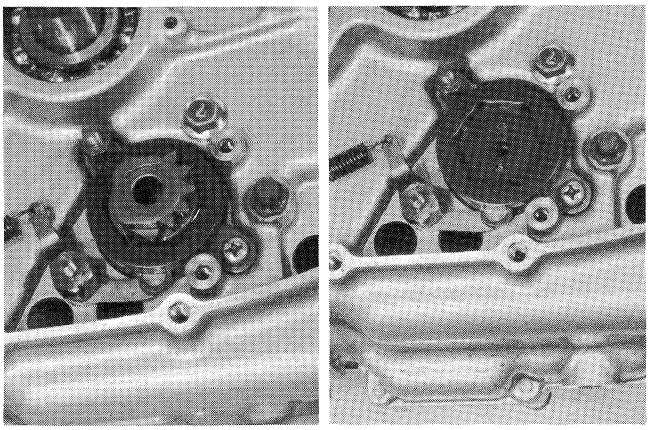
- Remove gearshift cam guide nuts and pawl screws.

09900-09003	Impact driver set

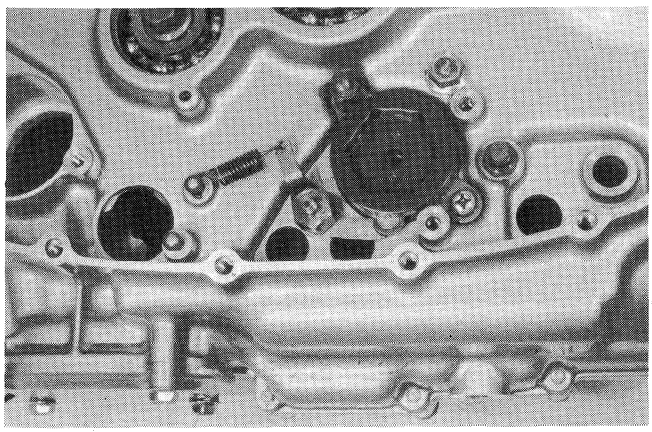
- Gearshift cam gear retaining bolt.



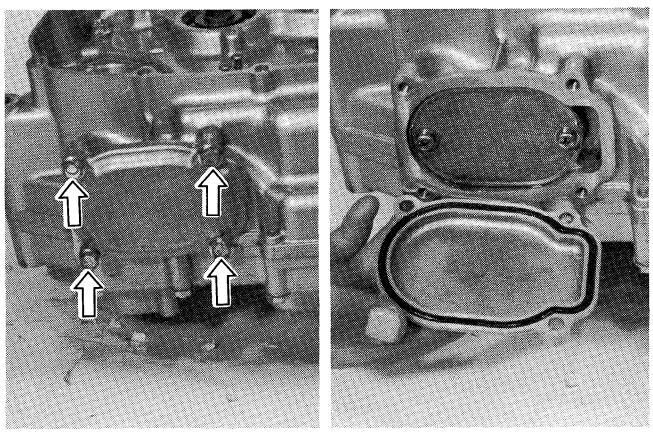
- Remove the gearshift cam gear and plate.



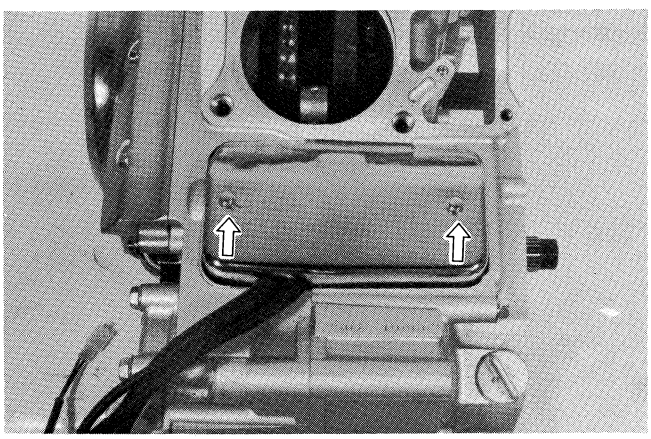
- Remove the neutral stopped bolt, spring, neutral stopper and thrust washer.
- Remove the cam spacer.



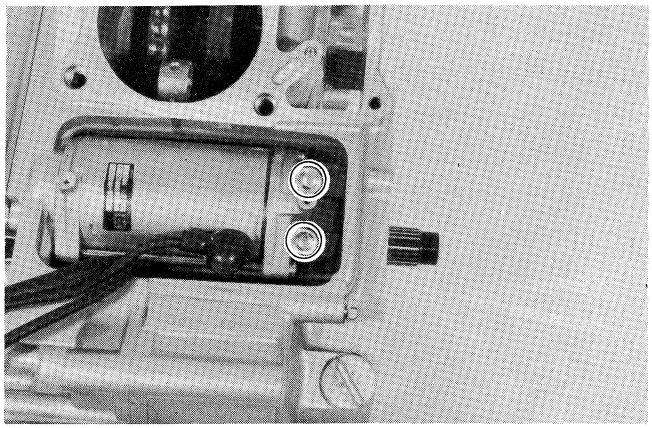
- Remove the oil pan and oil sump filter.



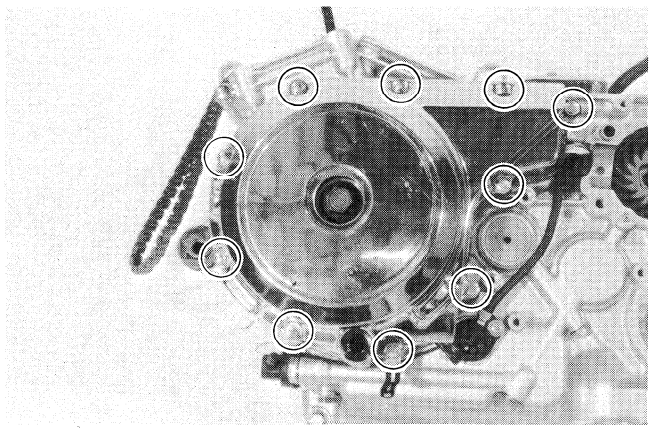
- Remove the starter motor cover.



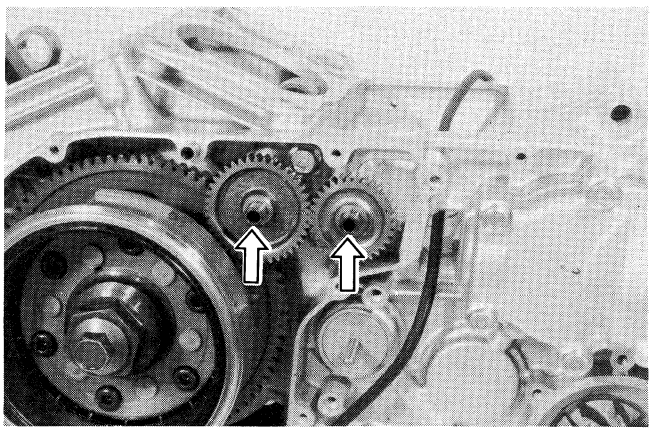
- Remove the starter motor by loosening the securing bolts.



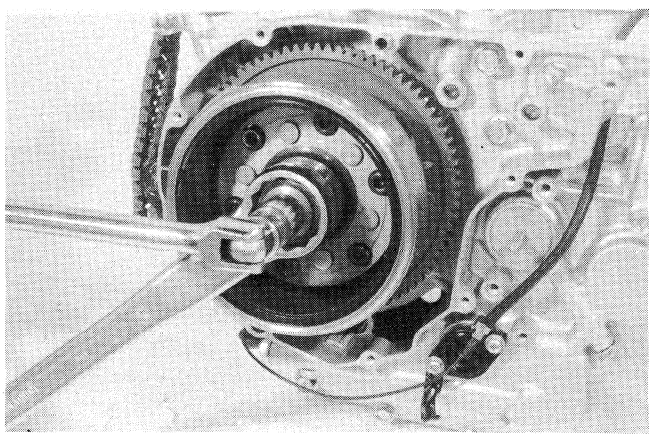
- Remove the generator cover.



- Remove the starter motor driven and idle gears.

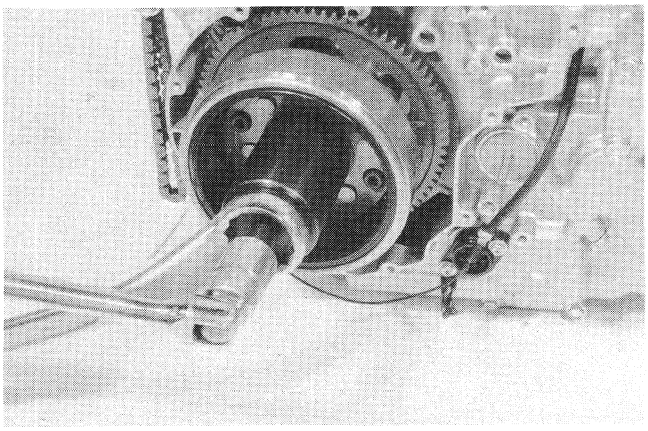


- Loosen and remove the rotor securing bolt.

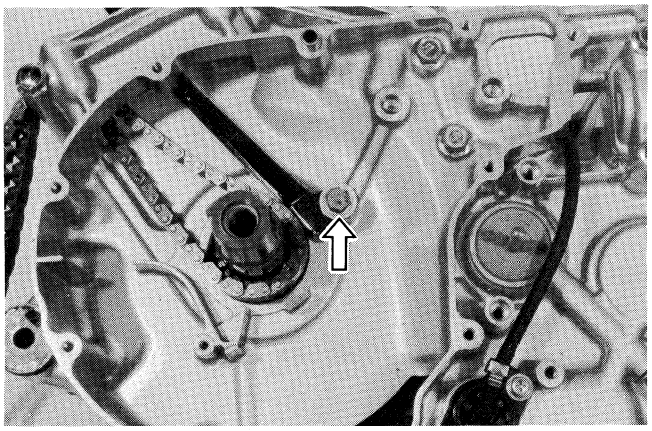


- Remove rotor by using the special tool while remaining the rotor bolt.

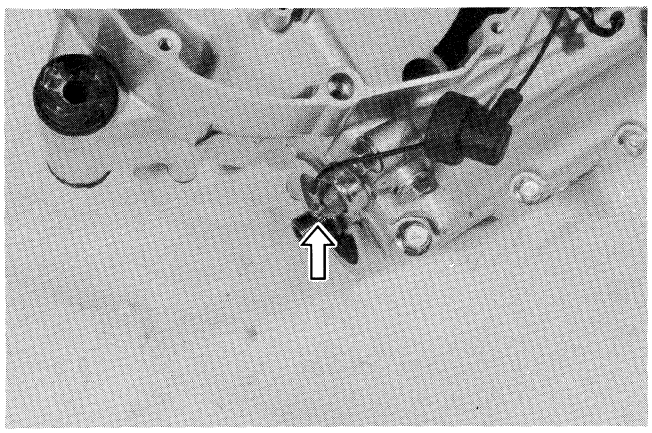
09930-30720	Rotor remover

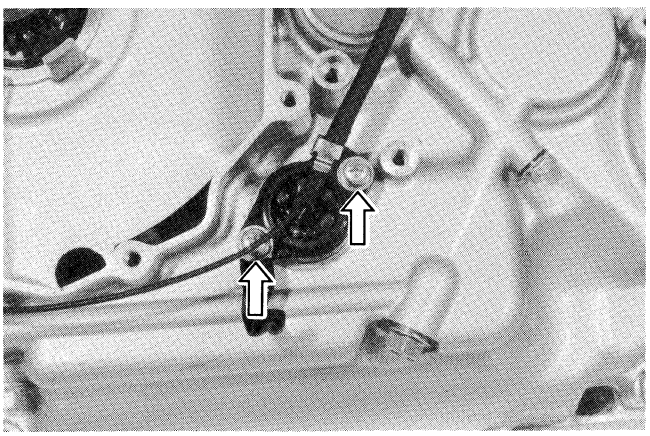


- Remove the cam chain guide.



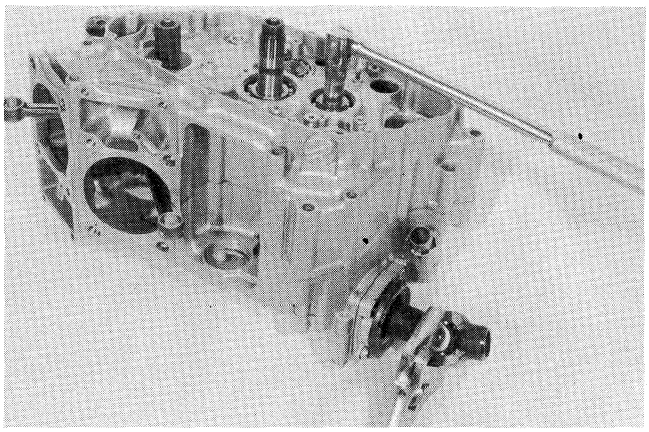
- Remove the neutral switch assembly and oil pressure switch lead wire.



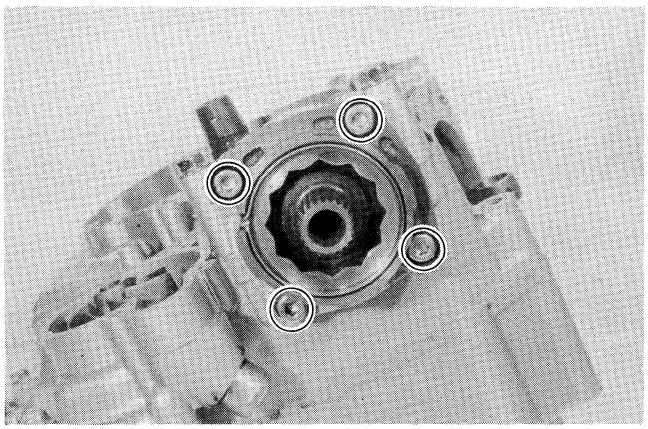


- Install the universal joint on the secondary driven gear.
- While holding the universal joint, remove the secondary drive gear nut and drive shaft bolt.

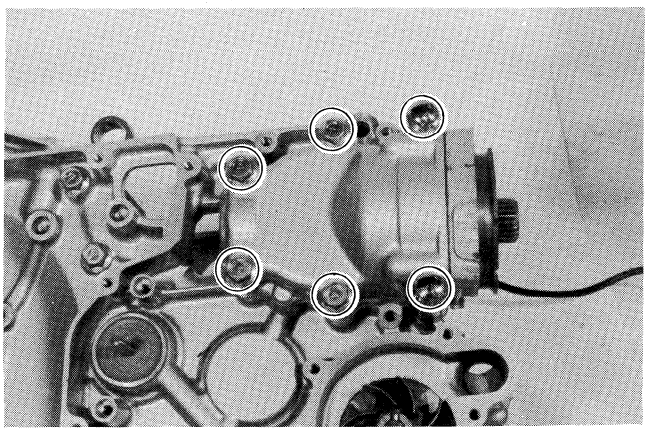
CAUTION:
Drive shaft bolt has left-hand thread.



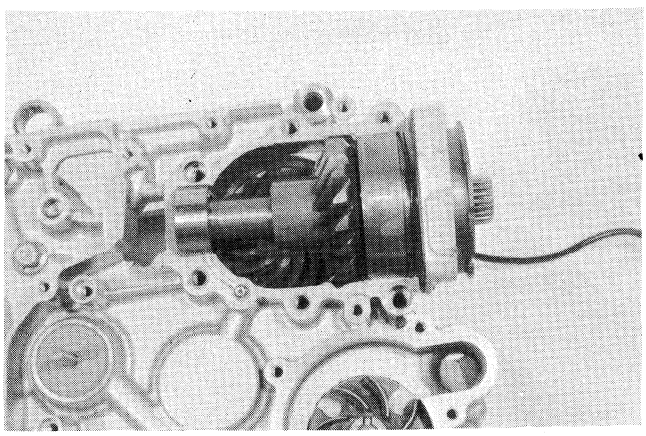
- Loosen and remove the secondary driven gear housing bolts and secondary case bolts.



- Remove the secondary case.

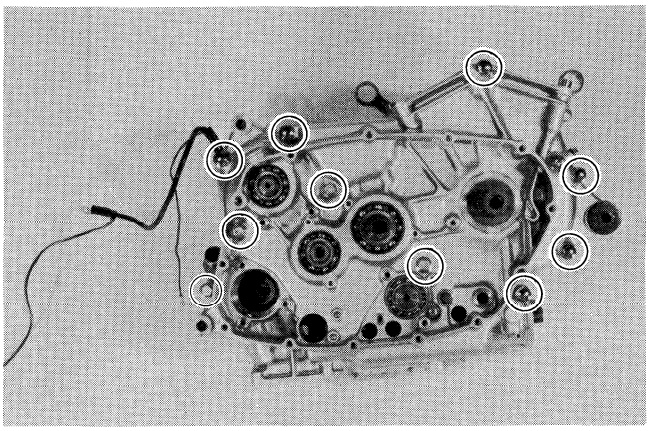


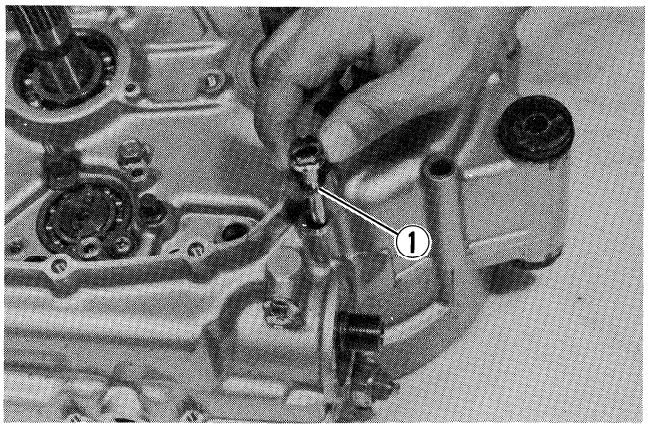
- Remove secondary bevel driven gear assembly and bearing.

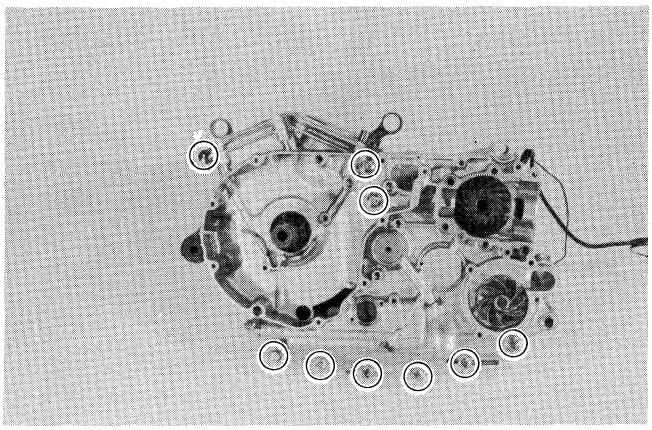


- Remove the crankcase securing bolts.

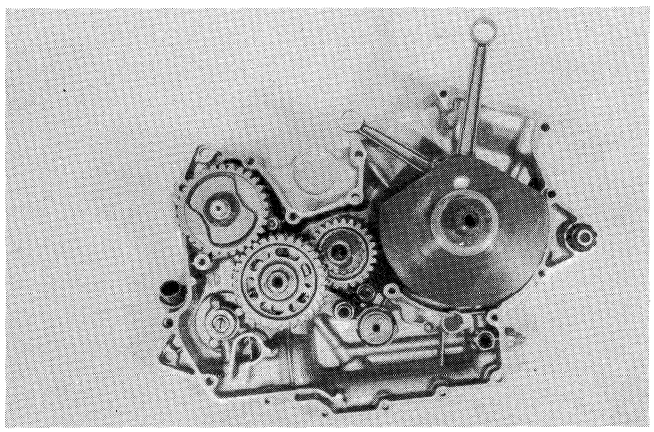
NOTE:
Do not forget the gasket ①.



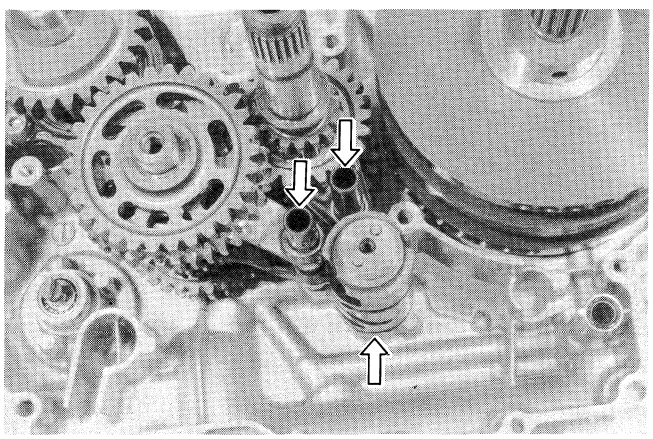




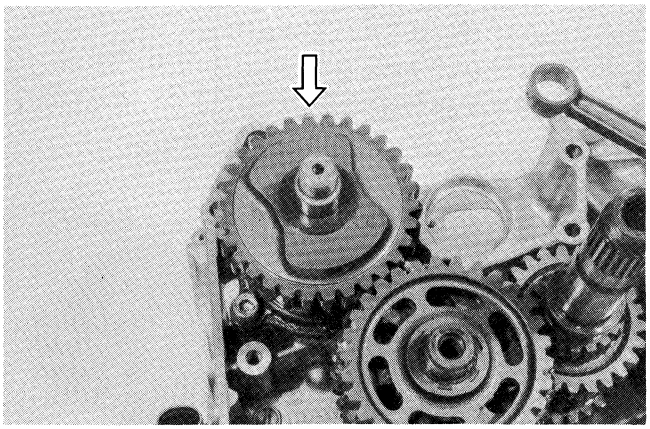
- Separate the right and left crankcase.



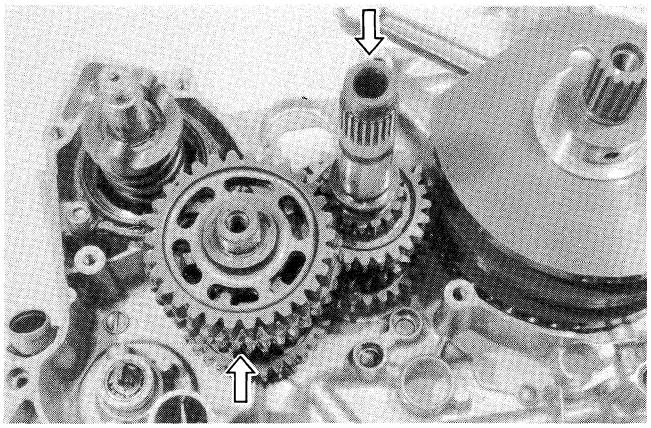
- Remove the gear shift cam, shift fork and shift fork shaft.



- Remove the secondary reduction gear.

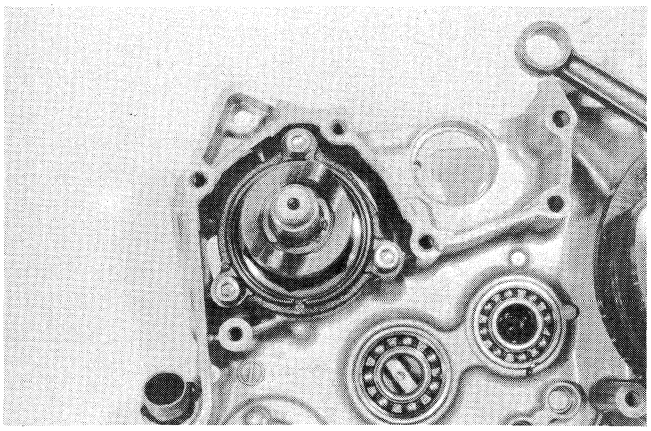


- Remove the counter shaft, drive gears, drive shaft and driven gears.

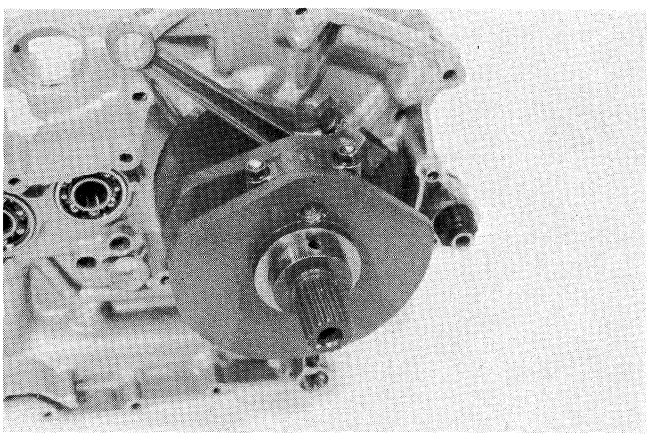


- Loosen the secondary bevel drive gear bolts and remove the secondary bevel drive gear.

WARNING:
Never hit the secondary bevel gear. Secondary bevel gear circlip could come off.



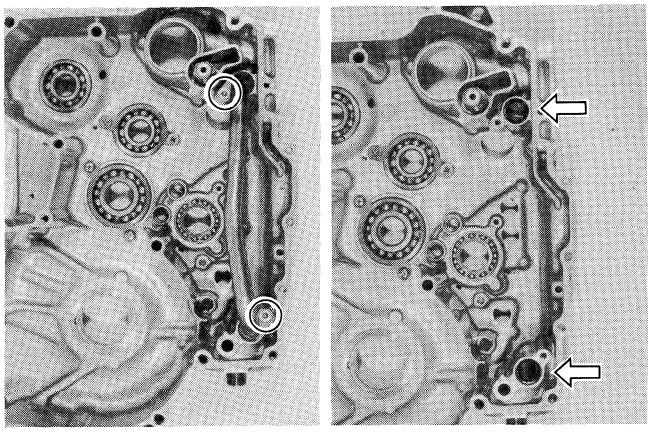
- Remove the crankshaft.



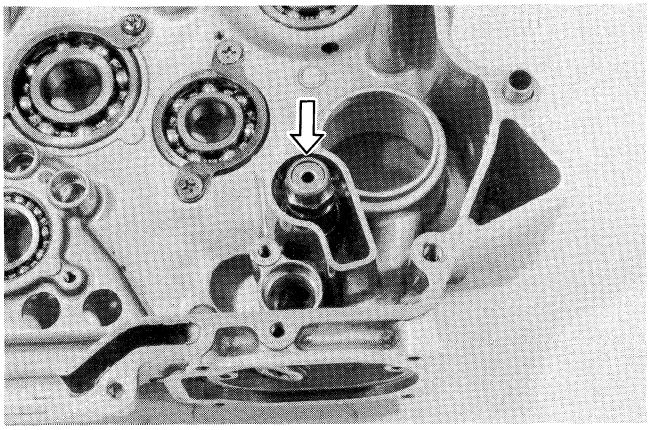
LUBRICATION RELATED PARTS

- Remove the oil pipe.
- Remove the O-ring.

NOTE:
When reinstalling the oil pipe, use a new O-ring.



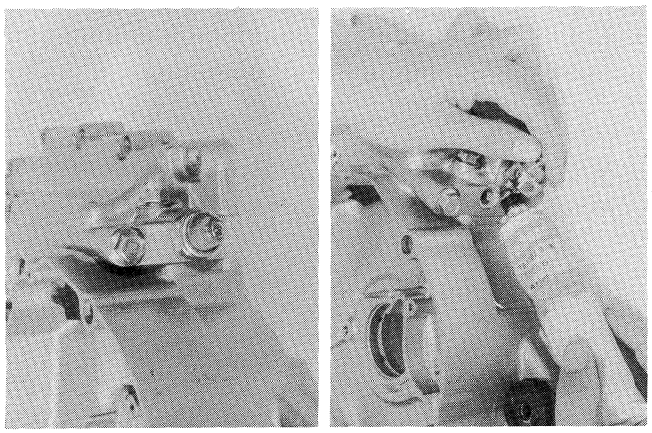
- Remove the pressure regulator.



- Remove the oil pressure switch.

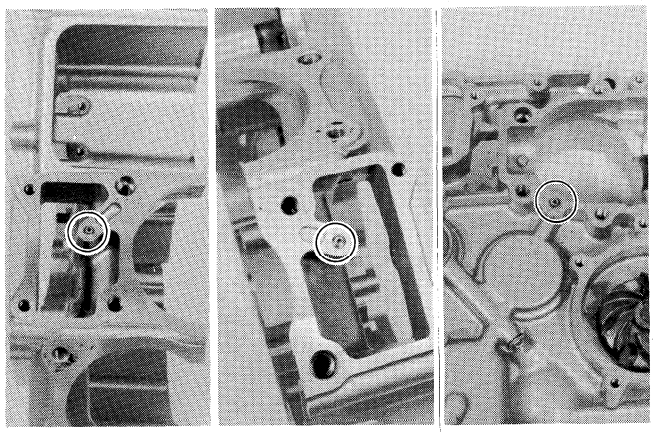
NOTE:
When reinstalling the oil pressure switch, apply the SUZUKI Bond No. 1207B to thread part.

99104-31140	SUZUKI Bond No. 1207B



When installing the oil jet, apply the motor oil to the oil jet hole or crank case and SUZUKI Super grease "A" to the O-ring of oil jet.

99000-25030	SUZUKI Super grease "A"

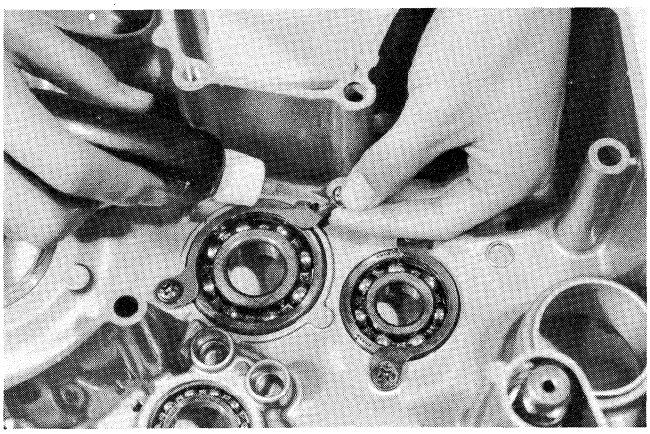


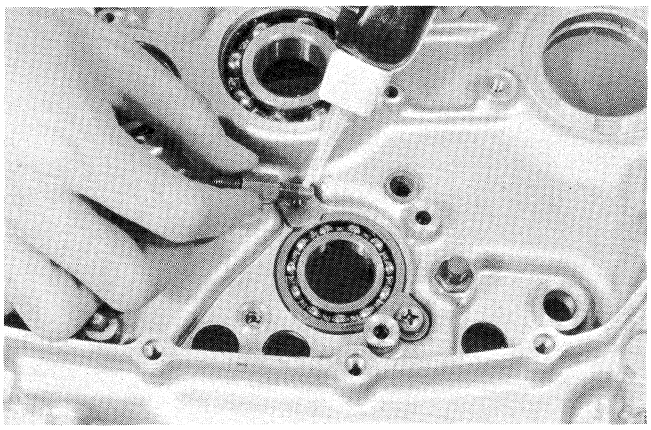
BEARING AND OIL SEAL (EXCEPT FOR CRANKSHAFT)

- Remove the bearing retainer screw and/or bolt.

NOTE:
When reinstalling the bearing, apply thread lock "1303" to bearing retainer bolts or screws.

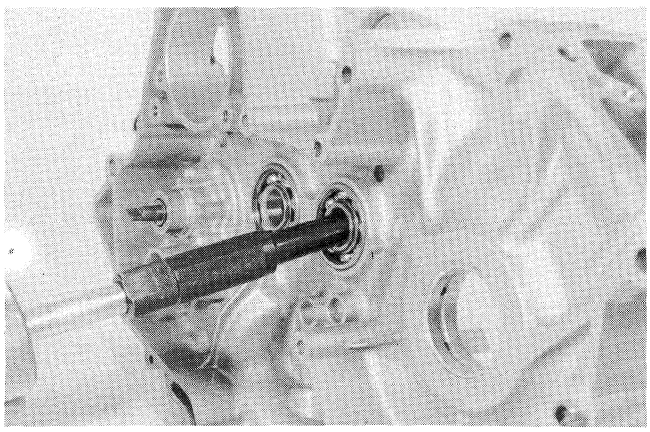
99000-32030	Thread lock super "1303"

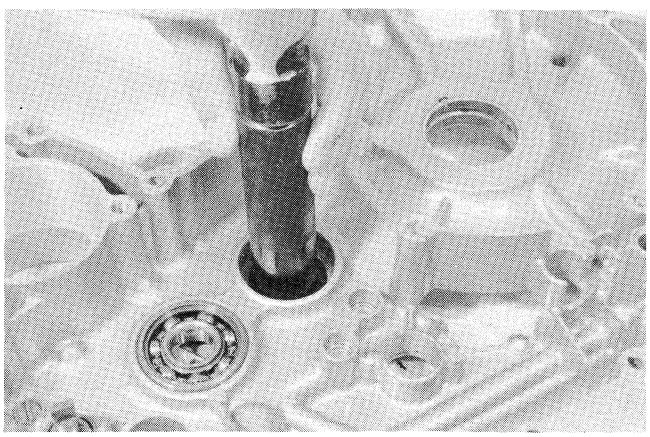




- Remove the bearing and oil seal by using the special tool.

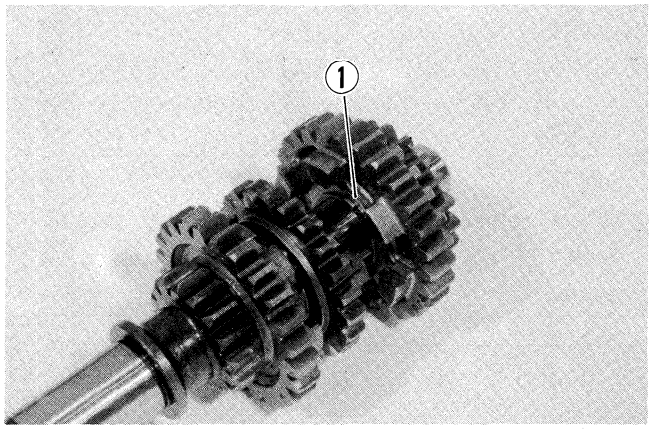
09914-79610	Bearing remover
09923-73210	Bearing remover
09930-30102	Sliding shaft

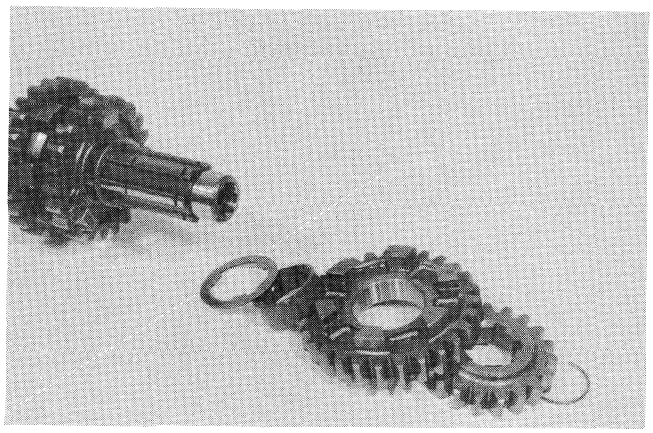


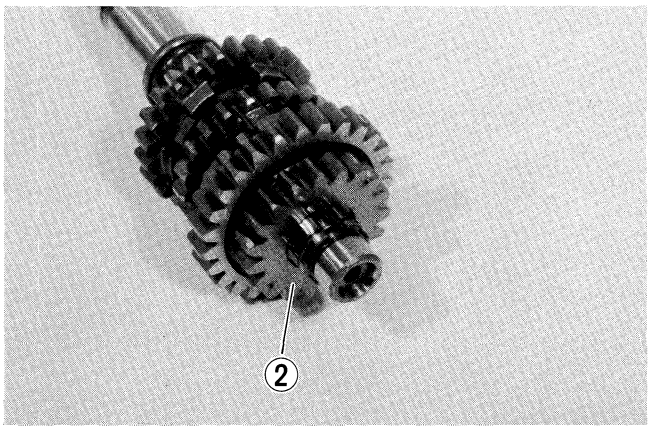


DRIVE GEAR

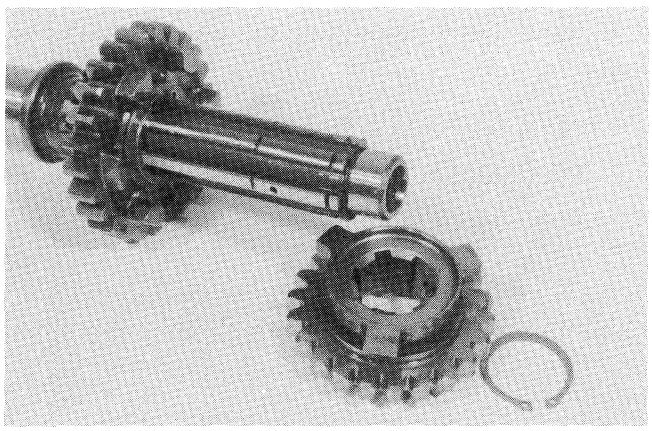
- After sliding the circlip ① to 3rd drive gear, remove the ring ②.
- Take off the 2nd drive gear, top drive gear, bush and thrust washer.



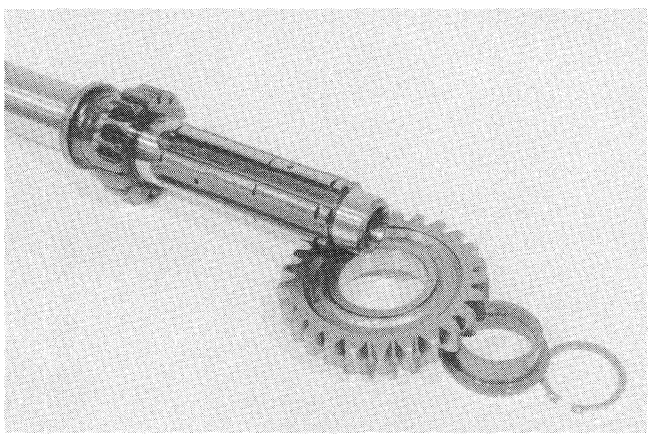




- Remove the circlip and take off the 3rd drive gear.

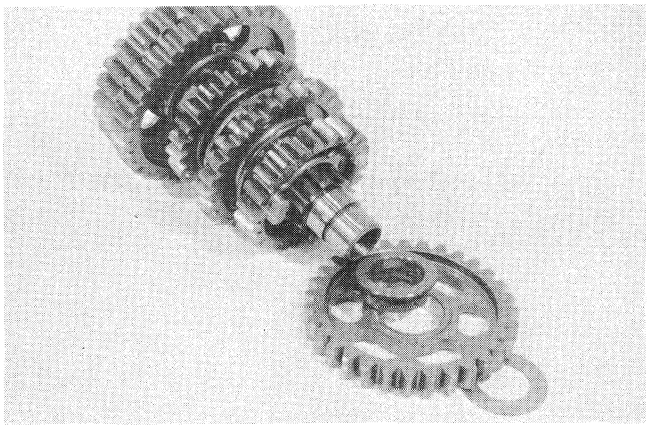


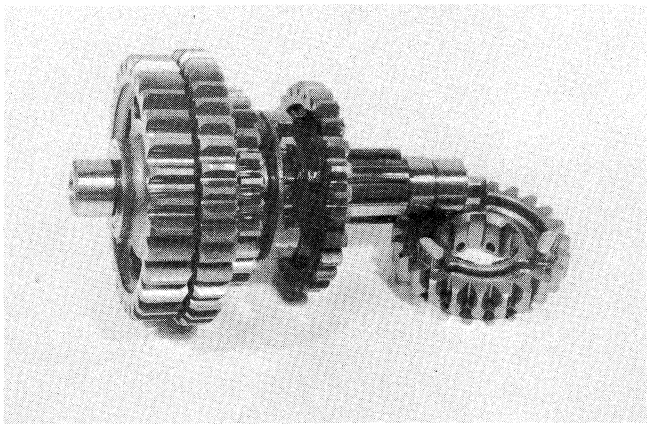
- Remove the circlip, and next remove the 4th drive gear and bush.



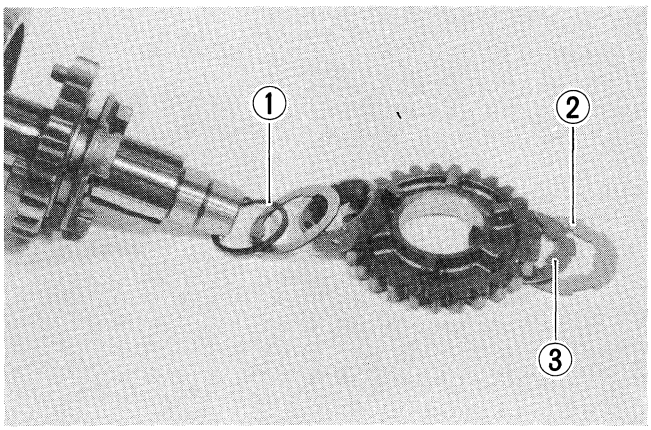
DRIVEN GEAR

- Remove the thrust washer, 2nd driven gear, bush and top driven gear.

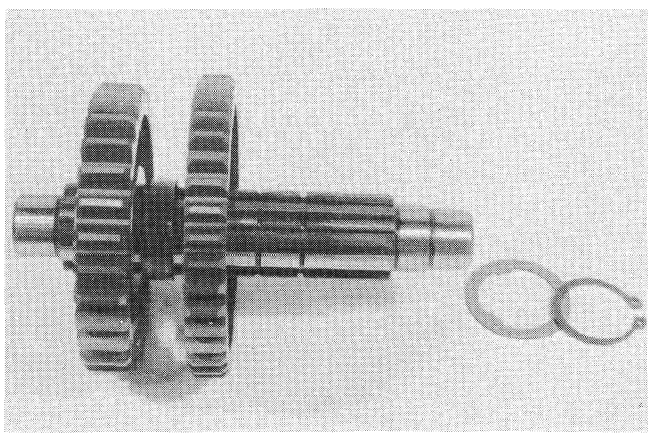




- After sliding the circlip ①, remove the lock washer ②, ③, and then remove the 3rd driven gear, bush, thrust washer, circlip ① and 4th driven gear.



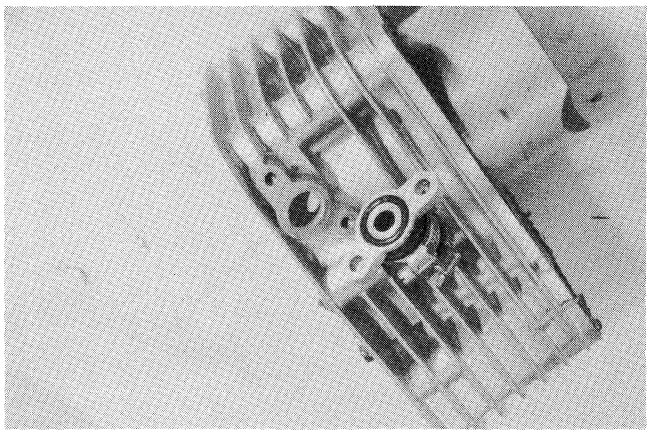
- Remove the circlip, and then remove the 1st driven gear, drive reduction gear, bush and thrust washer.

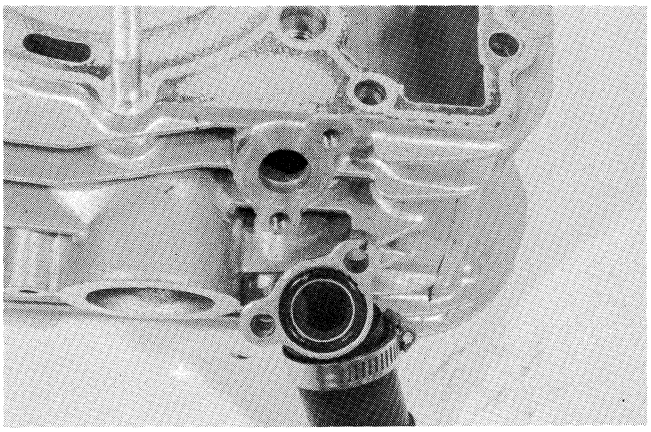


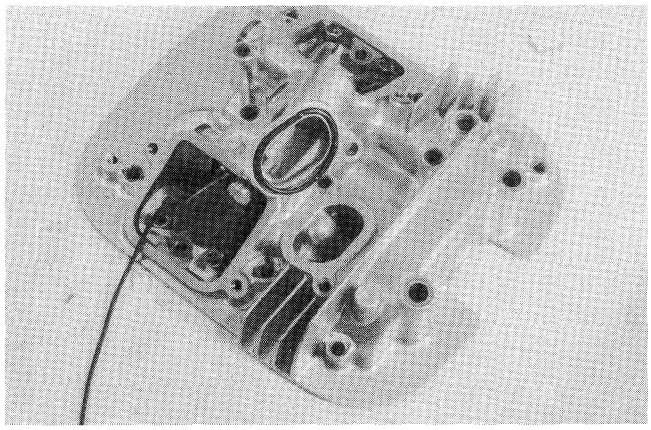
COOLING SYSTEM RELATION PART

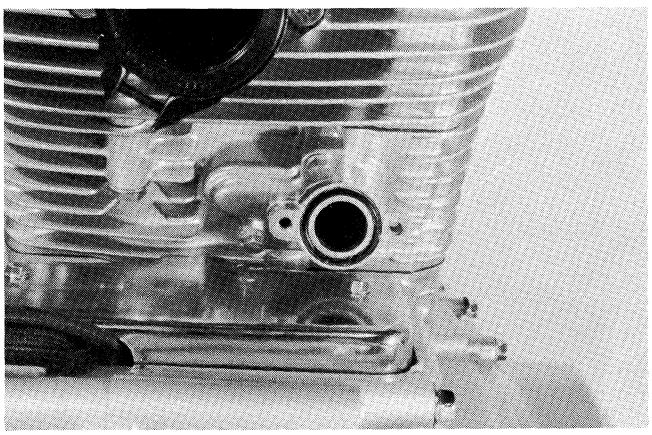
- Remove the bolt.

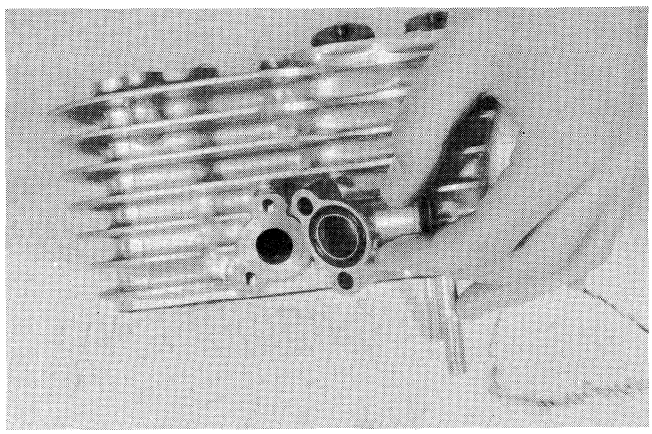
NOTE:
When reinstalling the cover, check that the O-ring is installed.

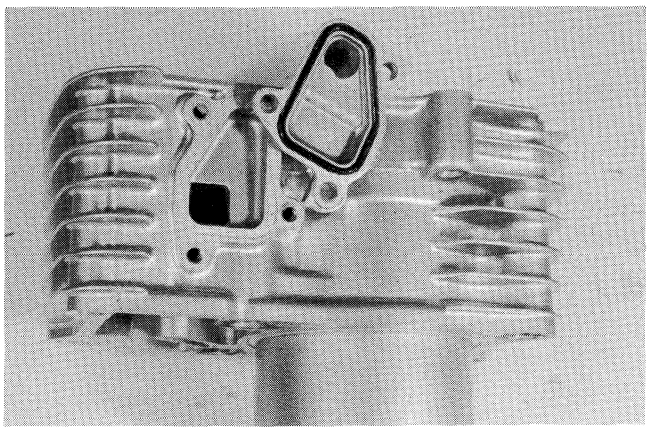


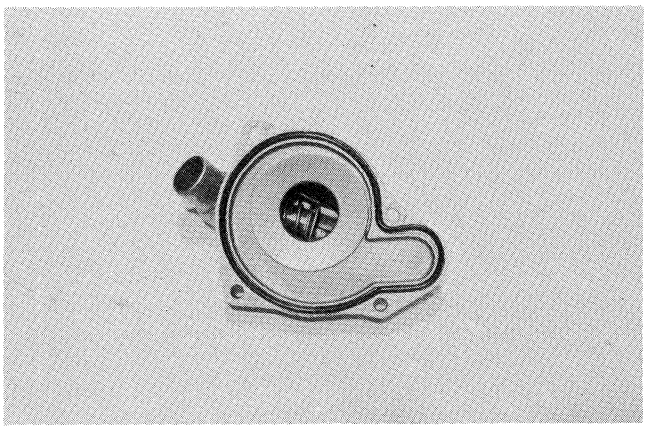










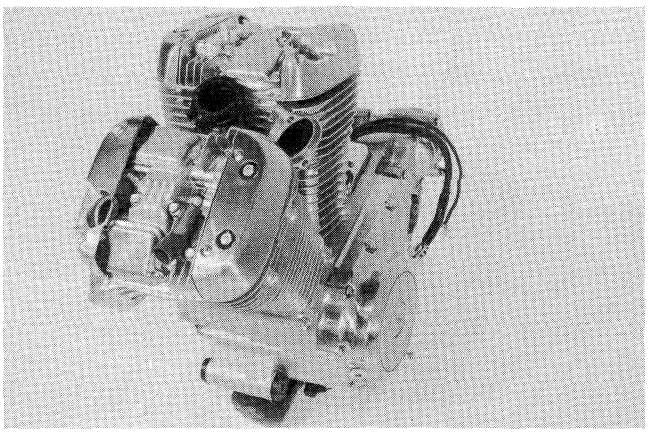


ENGINE COMPONENTS INSPECTION AND SERVICING

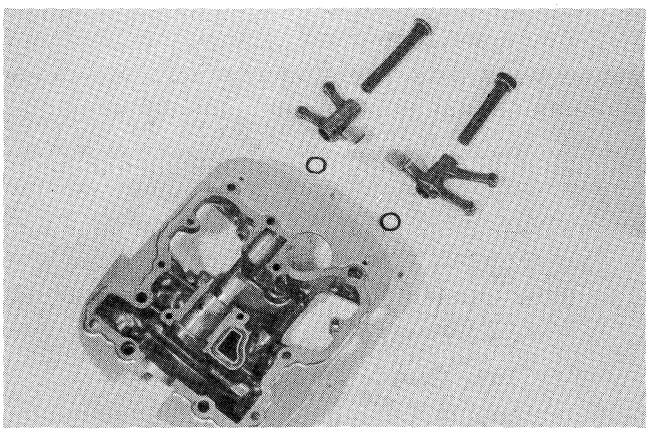
CYLINDER HEAD COVER

DISASSEMBLY

CAUTION:
Be sure to identify each removed part as to its location, and lay the parts out in groups designated as "No. 1 cylinder", "No. 2 cylinder", "Exhaust", "Inlet", so that each will be restored to the original location during assembly.

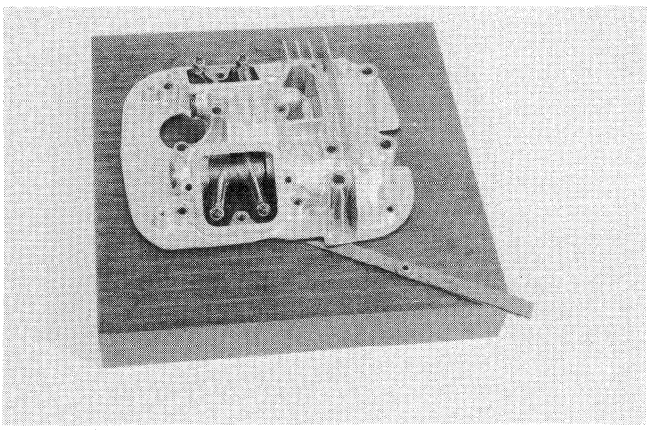


- Loosen the rocker arm shafts and pull out the rocker arm shafts.



CYLINDER HEAD COVER DISTORTION

After removing sealant (SUZUKI BOND No. 1216) from the fitting surface of the cylinder head cover, place the cylinder head cover on a surface plate and check for distortion with a thickness gauge. Check points are shown in Fig.

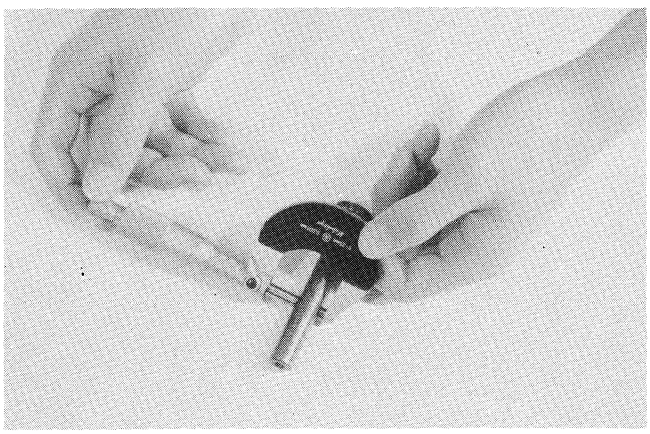


Service Limit	0.05 mm (0.002 in)

If the distortion exceeds the limit, replace the cylinder head set.

ROCKER ARM SHAFT O.D.

Measure diameter of rocker arm shaft.



09900-20205	Micrometer (0 – 25 mm)

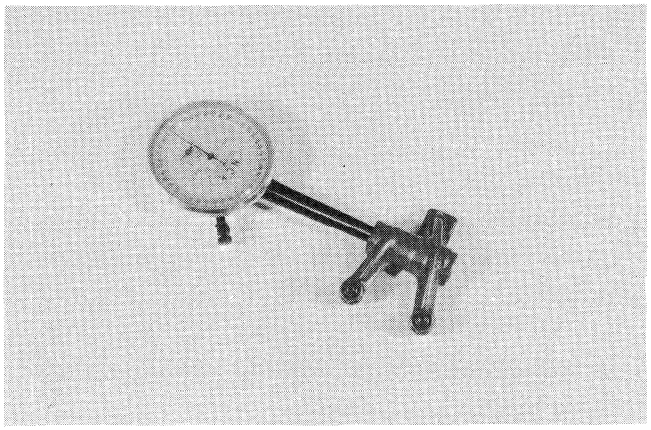
Standard	11.966 – 11.984 mm (0.4711 – 0.4718 in)

ROCKER ARM I.D.

When checking the valve rocker arm, the inside diameter of the valve rocker arm and wear of the camshaft contacting surface should be checked.

09900-20605	Dial calipers

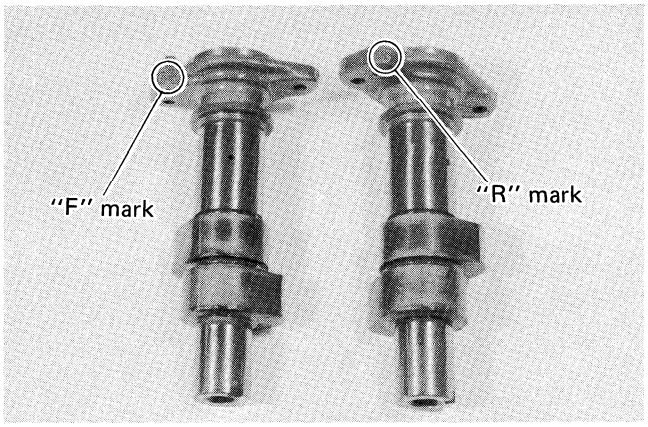
Standard	12.000 – 12.018 mm (0.4725 – 0.4732 in)

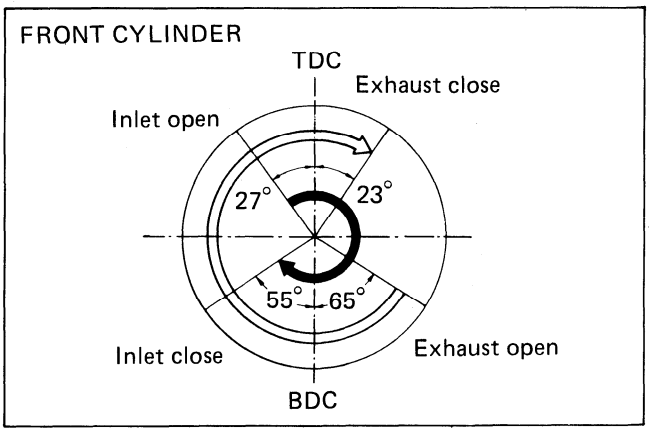


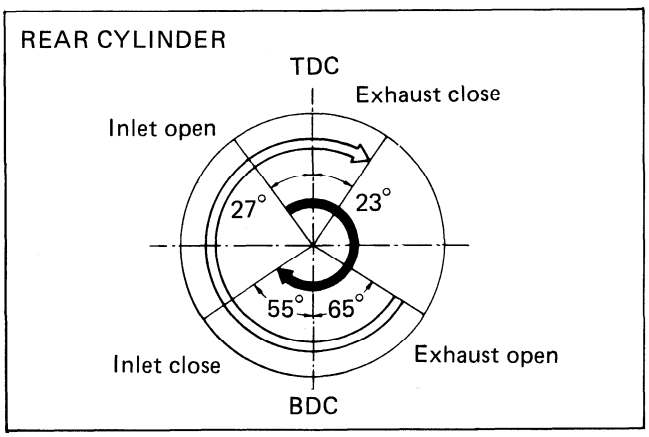
CAMSHAFT

The camshafts should be checked for wear of cams and journals if the engine has been giving abnormal noise or vibration or lack of power output. Any of these conditions may be caused by cam or camshafts journal worn down to the service limit.

- The camshaft can be distinguished by the punched-letters, "F" and "R", on the camshaft.
  "F" : Front (No. 2) camshaft
  "R" : Rear (No. 1) camshaft



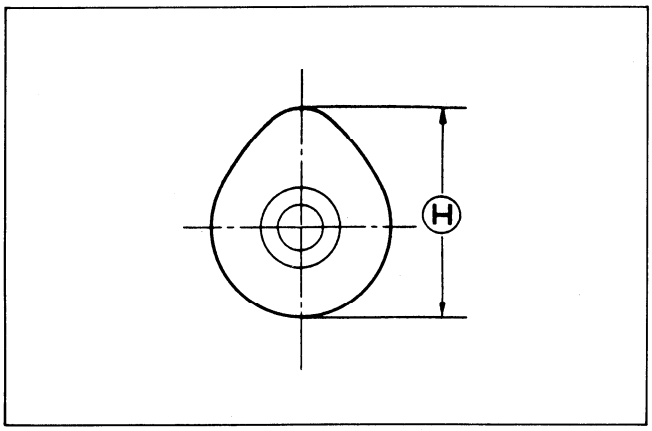




CAMSHAFT CAM WEAR

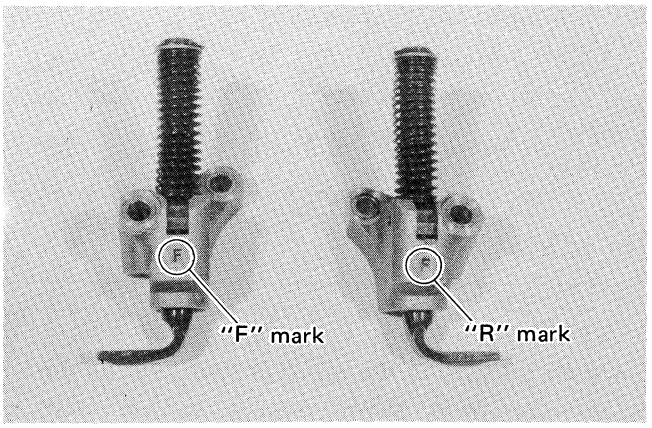
Worn-down cams are often the cause of mistimed valve operation resulting in reduced output power. The limit of cam wear is specified for both intake and exhaust cams in terms of cam height Ⓗ, which is to be measured with a micrometer. Replace camshafts if found worn down to the limit.

09900-20202	Micrometer (25 – 50 mm)



Cam height

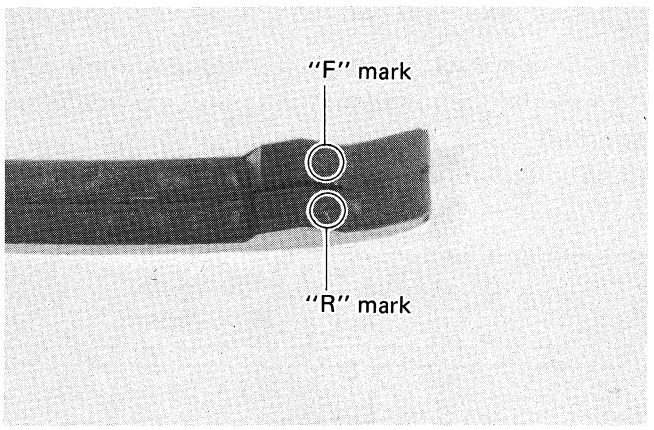
Height Ⓗ	Service Limit
Intake cam	35.625 mm (1.4026 in)
Exhaust cam	36.619 mm (1.4417 in)



CAM CHAIN TENSIONER

For driving the camshafts, two cam chain tensioners are used on the respective cam drive chains. Unlock the ratchet mechanism, and move the push rod in place to see if it slides smoothly. If any stickiness is noted or ratchet mechanism is faulty, replace the chain tensioner assembly with a new one.

The cam chain tensioner can be distinguished by the punched-letters, "F" and "R", on the camshaft.
Ⓕ Front (No. 2) cam chain tensioner
Ⓡ Rear (No. 1) cam chain tensioner



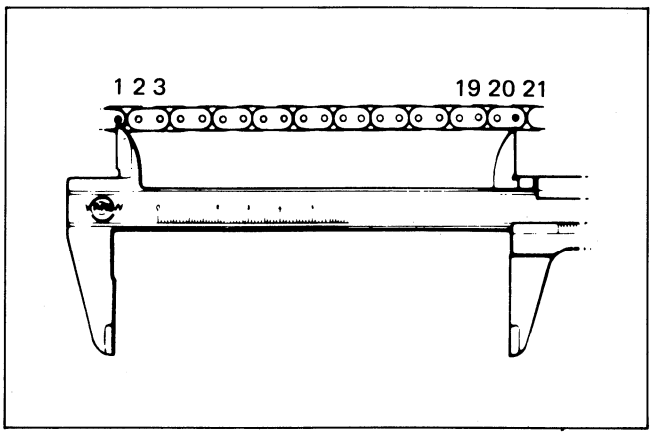
CAM CHAIN GUIDE

Two kinds of cam chain guide are used on the respective cam drive chains.
Ⓕ Front (No. 2) cam chain guide
Ⓡ Rear (No. 1) cam chain guide

CAM CHAIN 20-PITCH LENGTH

Pull the chain tight to remove any slack, then using vernier calipers, measure the 20-pitch length of cam chain. If it measures more than limit, replace the cam chain.

Service Limit	128.9 mm (5.07 in)



CAMSHAFT JOURNAL WEAR

Determine whether each journal is worn down to the limit or not by measuring camshaft journal oil clearance with the camshaft installed. Use plastigauge to read the clearance, which is specified as follows:

Camshaft journal oil clearance

Service Limit	0.15 mm (0.006 in)

Cylinder head cover tightening torque

Length	N·m	kg-m	lb-ft
140mm 243mm	21 – 25	2.1 – 2.5	15.0 – 18.0
The others	9 – 11	0.9 – 1.1	6.5 – 8.0

09900-22301	Plastigauge

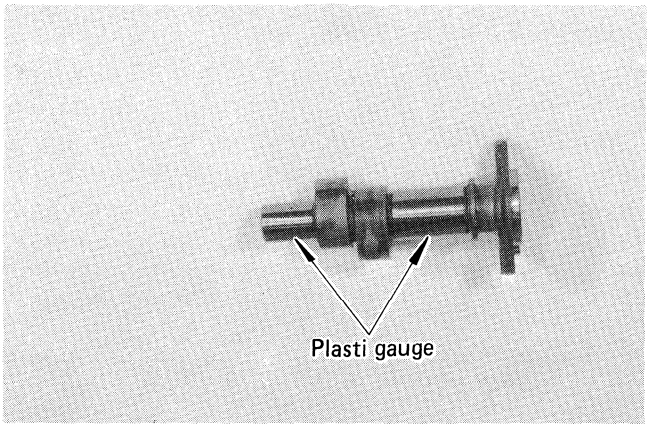
NOTE:
When measuring the oil clearance, coating the cylinder head cover mating surface with SUZUKI BOND No. 1216 is not necessary.

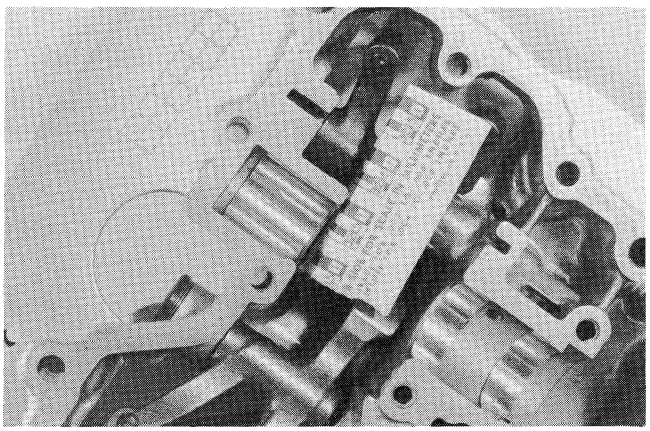
If the camshaft journal oil clearance measured exceeds the limit, measure the outside diameter of camshaft.

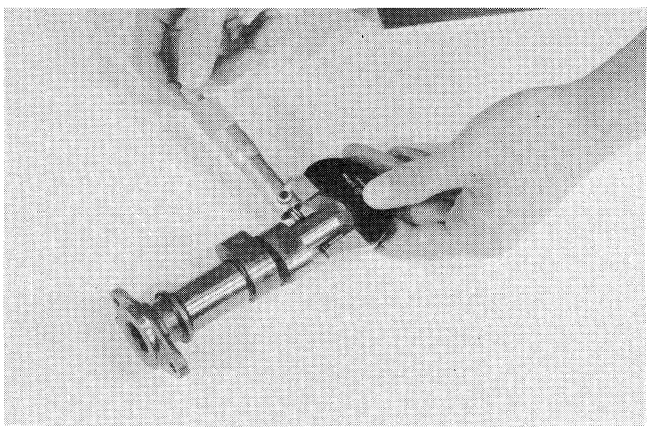
Replace either the cylinder head set or the cam shaft.

09900-20205	Micrometer (0 – 25 mm)

Camshaft journal O.D.	24.959 – 24.980 mm (0.9826 – 0.9835 in)
	19.959 – 19.980 mm (0.7857 – 0.7866 in)





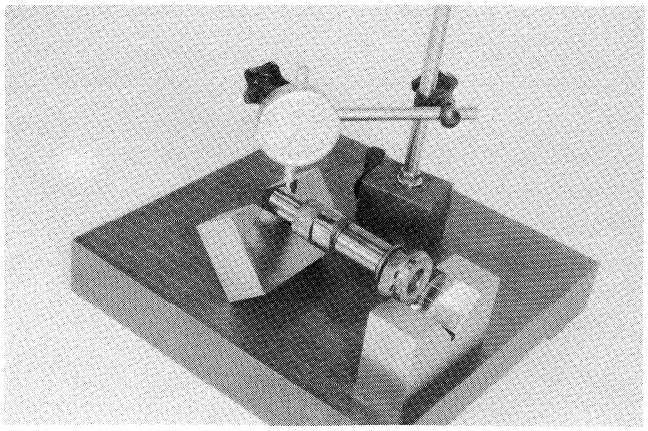


CAMSHAFT RUNOUT

Measure the runout with a dial gauge. Replace the camshaft if the runout exceeds the limit.

09900-20606	Dial gauge (1/100 mm)
09900-21304	V – block (100 mm)

Service Limit	0.1 mm (0.004 in)

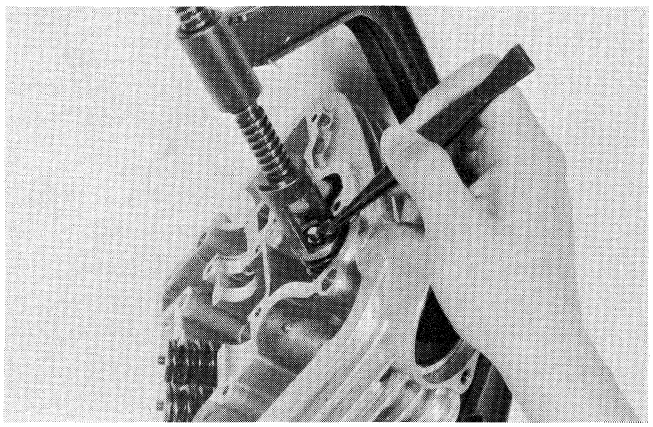


CYLINDER HEAD

DISASSEMBLY

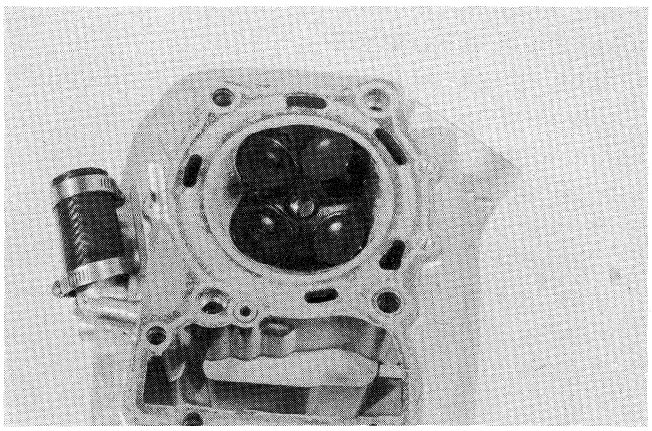
- Using special tools, compress valve springs and take off two cotter halves ① from valve stem.

09916-14510	Valve lifter
09916-14910	Valve lifter attachment
09916-84510	Tweezers



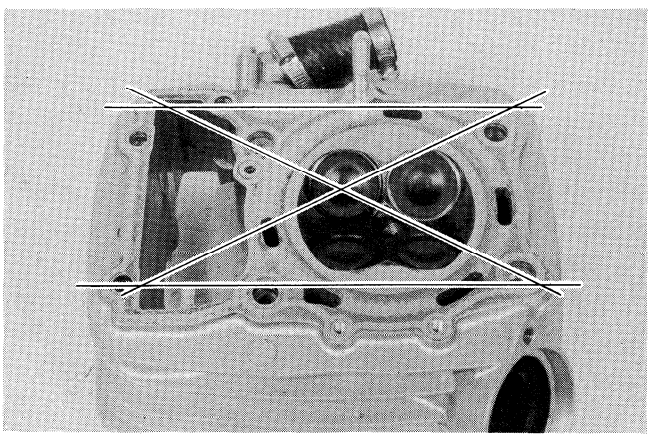
- Take out the spring retainer, inner and outer springs.
- From the other side, pull out the valve.

NOTE:
Removal of valves completes ordinary disassembling work. If valve guides have to be removed for replacement after inspecting related parts, carry out the steps shown in valve guide servicing.



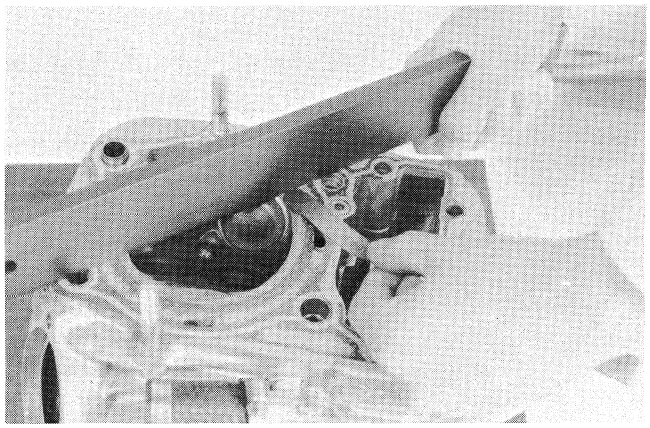
CYLINDER HEAD DISTORTION

- Decarbonize the combustion chambers.
- Check the gasketed surface of the cylinder head for distortion with a straightedge and thickness gauge, taking a clearance reading at several places indicated. If the largest reading at any position of the straightedge exceeds the limit, replace the cylinder head.



09900-20803	Thickness gauge

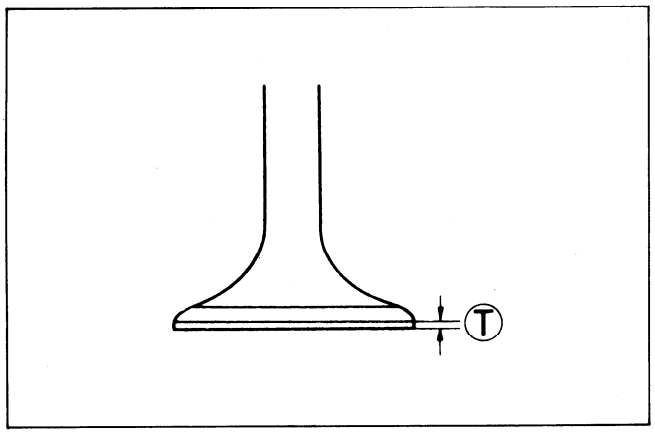
Service Limit	0.05 mm (0.002 in)



VALVE FACE WEAR

- Visually inspect each valve for wear of its seating face. Replace any valve with an abnormally worn face.
- The thickness Ⓣ decreases as the wear of the face advances. Measure the thickness and, if the thickness is found to have been reduced to the limit, replace it.

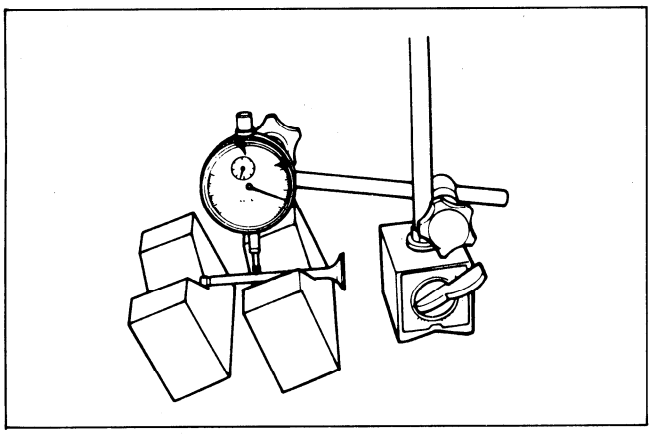
Service Limit	0.5 mm (0.02 in)



VALVE STEM RUNOUT

- Support the valve with "V" blocks, as shown, and check its runout with a dial gauge.
  The valve must be replaced if the runout exceeds the limit.

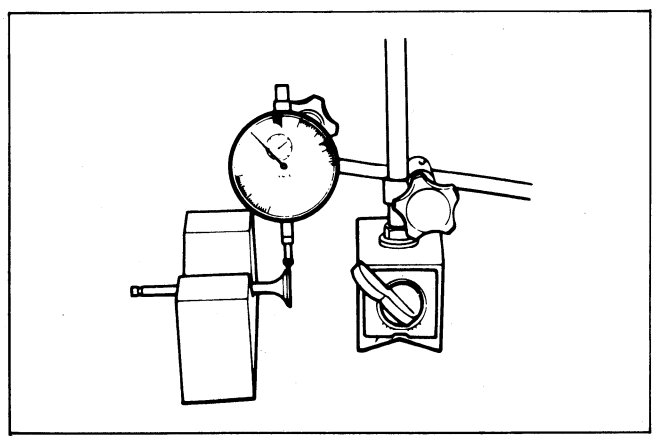
Service Limit	0.05 mm (0.002 in)



VALVE HEAD RADIAL RUNOUT

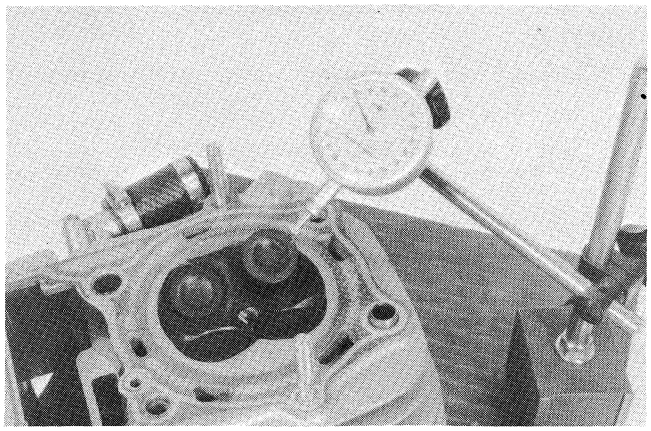
- Place the dial gauge at right angles to the valve head face, and measure the valve head radial runout.
  If it measures more than limit, replace the valve.

Service Limit	0.03 mm (0.001 in)



VALVE GUIDE–VALVE STEM CLEARANCE

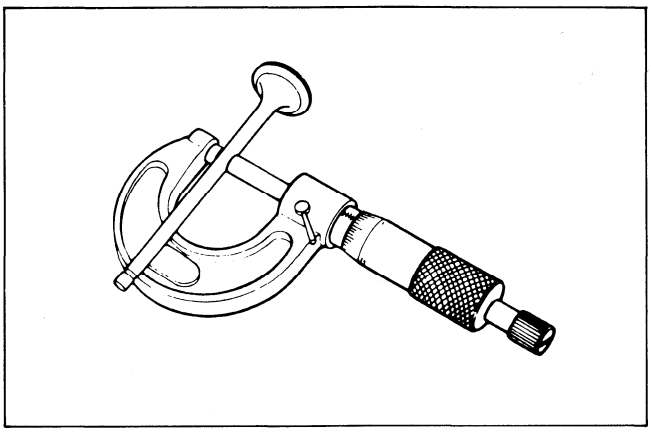
Measure the clearance in two directions "X" and "Y", perpendicular to each other, by rigging up the dial gauge as shown. If the clearance measured exceeds the limit, specified below, then determine whether the valve or the guide should be replaced to reduce the clearance to the standard range:



Valve	Service Limit
Intake valves	0.35 mm (0.014 in)
Exhaust valves	0.35 mm (0.014 in)

VALVE STEM WEAR

If the valve stem is worn down to the limit, as measured with a micrometer, where the clearance is found to be in excess of the limit indicated replace the valve, if the stem is within the limit, then replace the guide. After replacing valve or guide, be sure to recheck the clearance.

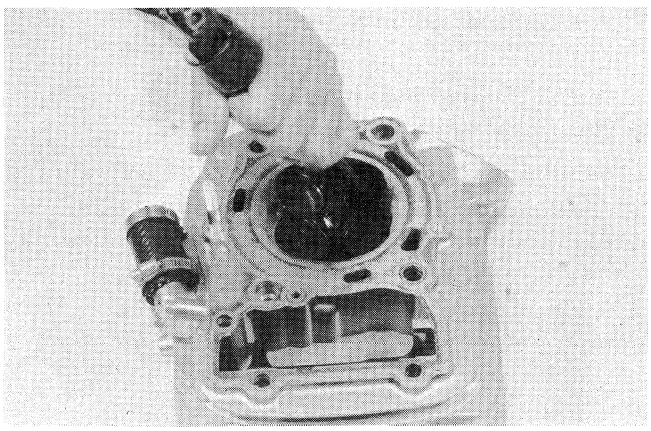


09900-20205	Micrometer (0 – 25 mm)

Valve	Standard
Intake valves	5.465 – 5.480 mm (0.2152 – 0.2157 in)
Exhaust valves	5.450 – 5.465 mm (0.2146 – 0.2152 in)

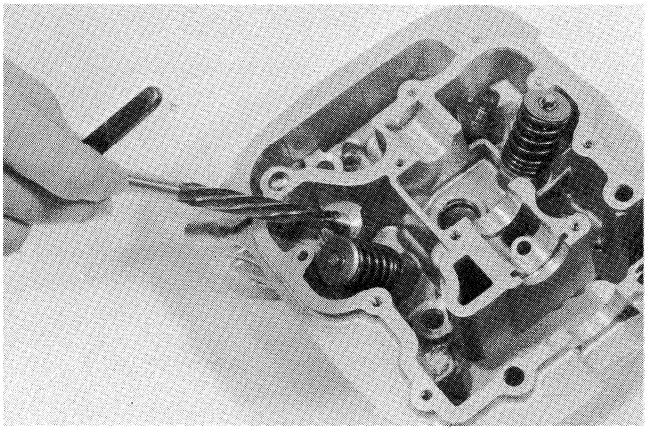
VALVE GUIDE SERVICING

- Using valve guide remover ①, drive the valve guide out toward intake or exhaust rocker arm side.



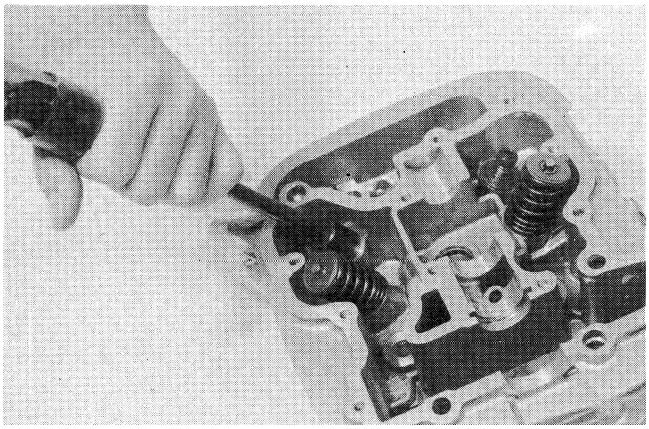
09916-44910	Valve guide remover

NOTE:
* **Discard the removed valve guide subassemblies.**
* **Only oversized valve guide is available.**



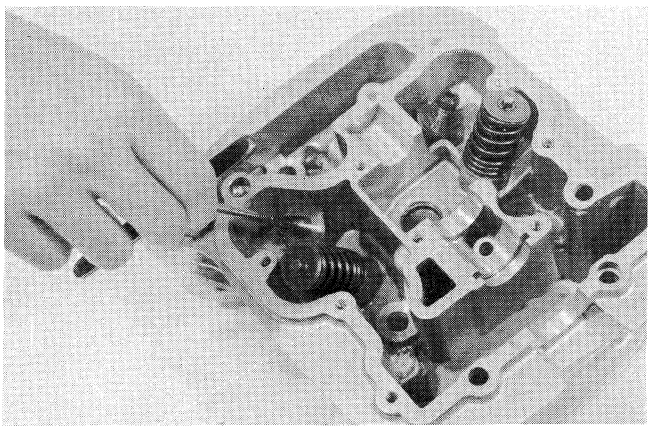
- Re-finish the valve guide holes in cylinder head with a 10.8 mm reamer.

09916-34580	Valve guide hole reamer
09916-34541	Reamer handle



- Remember that both valve guides for intake and exhaust and both oil seals are identical in shape.

11115-38A00	Valve guide
09289-05003	Valve guide oil seal



- Oil the stem hole of each valve guide and drive the guide into the guide hole with the valve guide remover and attachment.

09916-44910	Valve guide remover
09916-44920	Valve guide installer attachment

CAUTION:
Failure to oil the valve guide hole before driving the new guide into place many result in a damaged guide or head.

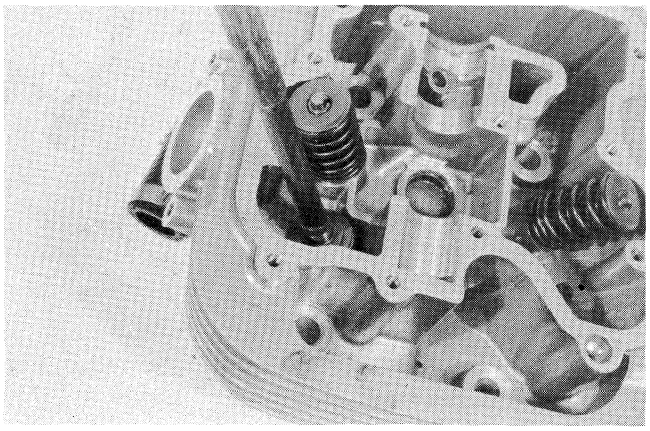
- Install valve spring lower seats.
- After fitting all valve guides, refinish their guiding bores with a 5.5 mm reamer. Be sure to clean and oil the guide after reaming.

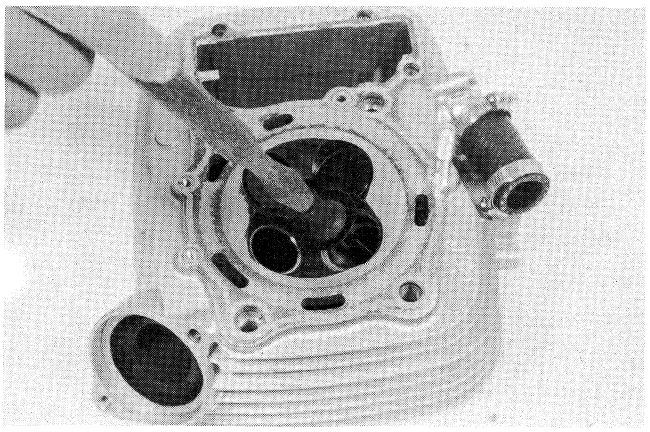
09916-34550	Valve guide reamer
09916-34541	Reamer handle

- Oil each oil seal, and drive them into position with the valve guide remover.

09916-44910	Valve guide remover

NOTE:
Do not use the oil seals removed in disassembly: use new seals.



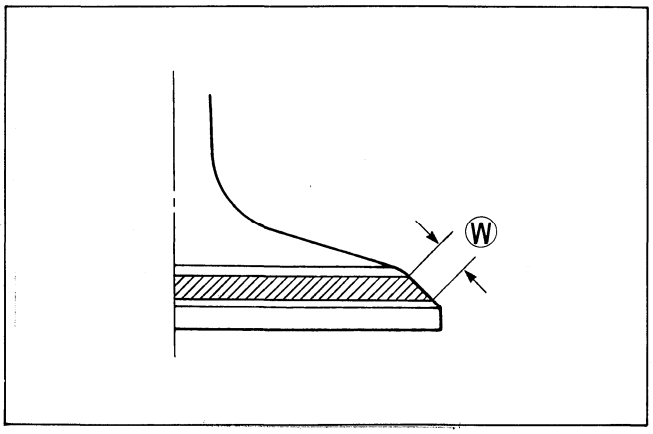


VALVE SEAT WIDTH

- Coat the valve seat with Prussian blue uniformly. Fit the valve and tap the coated seat with the valve face in a rotating manner, in order to obtain a clear impression of the seating contact. In this operation, use the valve lapper to hold the valve head.
- The ring-like dye impression left on the valve face must be continuous – without any break – and, in addition to this requirement, the width of the dye ring, which is the visualized seat "width", must be within the following specification:

Valve seat width .

Seat width	Standard
Ⓦ	0.9 – 1.1 mm (0.035 – 0.043 in)



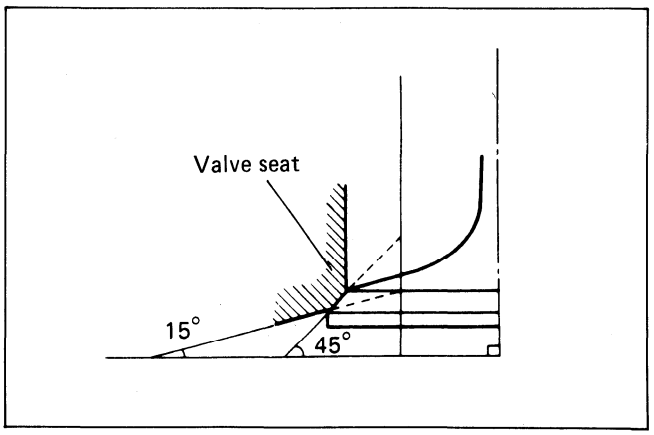
If either requirement is not met, correct the seat by servicing it as follows:

VALVE SEAT SERVICING

The valve seats for both the intake and exhaust valves are machined to two different angles. The seat contact surface is cut 45° and the area above the contact surface (closest to the combustion chamber) is cut to 15°.

Parts list of valve seat servicing tools

Valve seat cutter head	N–116 (15° x 45° cutter) for both IN. and EX. (45°) and for EX. (15°)
	N-212 and Blade (N635) for IN. 15°
Solid pilot	N–140–5.5
Adapter	N–503–1
T-handle	N–503



NOTE:
The valve seat contact area must be inspected after each cut.

- Insert the solid pilot ① with a slight rotation. Seat the pilot snugly. Install the 45° cutter, attachment and T handle.
- Using the 45° cutter, descale and cleanup the seat with one or two turns.
- Inspect the seat by the previously described seat width measurement procedure. If the seat is pitted or burned, additional seat conditioning with the 45° cutter is required.

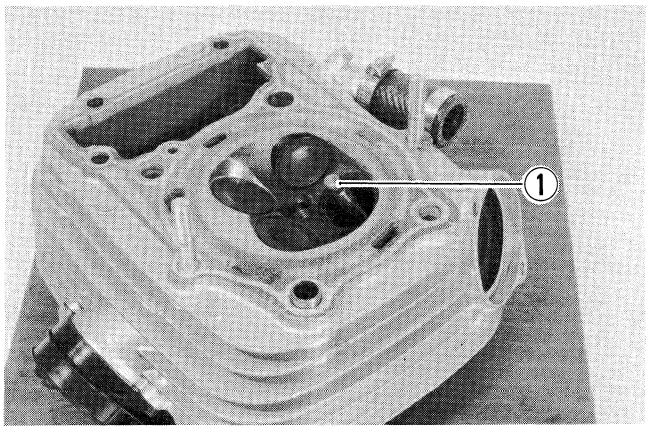
NOTE:
Cut only the minimum amount necessary from the seat to prevent the possibility of the valve stem becoming too close to the cam for correct valve clearance adjustment.

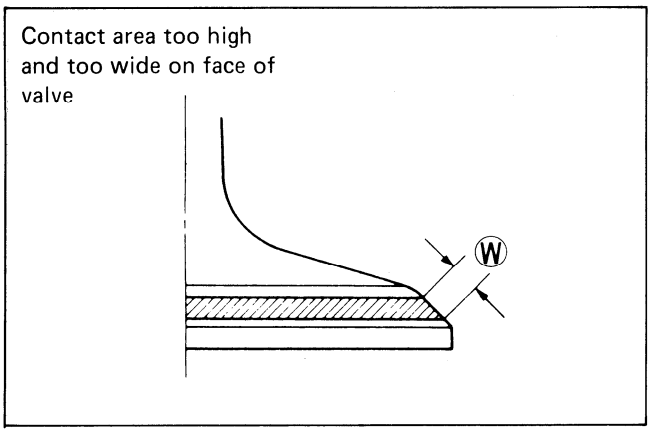
If the contact area is too high on the valve, or if it is too wide, use a 15° cutter to lower and narrow the contact area.

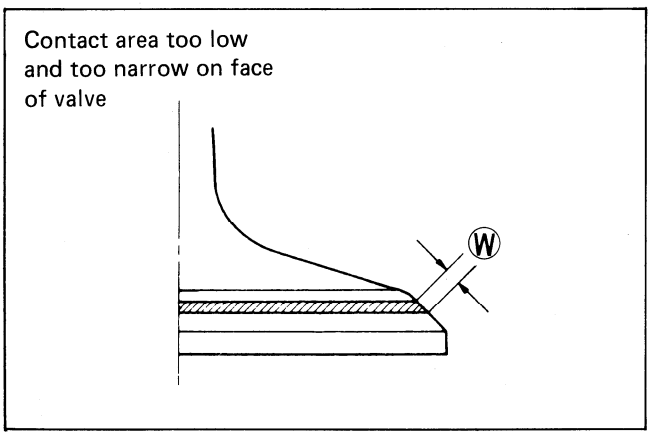
If the contact area is too low or too narrow, use the 45° cutter to raise and widen the contact area.

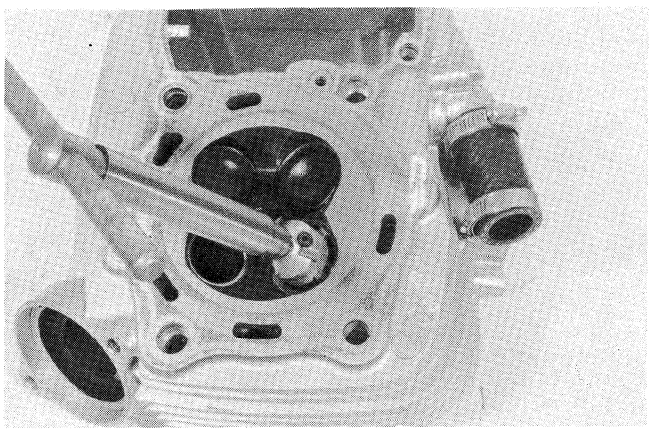
- After the desired seat position and width is achieved, use the 45° cutter very lightly to clean up any burrs caused by the previous cutting operations. DO NOT use lapping compound after the final cut is made. The finished valve seat should have a velvety smooth finish and not a highly polished or shiny finish. This will provide a soft surface for the final seating of the valve which will occur during the first few seconds of engine operation.
- Clean and assemble the head and valve components. Fill the intake and exhaust ports with gasoline to check for leaks. If any leaks occur, inspect the valve seat and face for burrs or other things that could prevent the valve from sealing.

NOTE:
Always use extreme caution when handling gasoline.



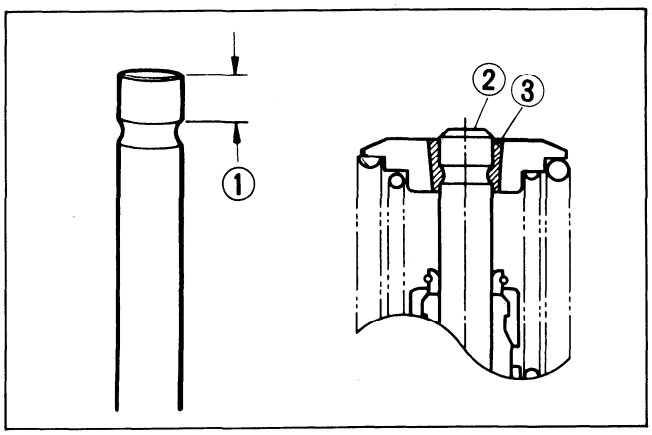






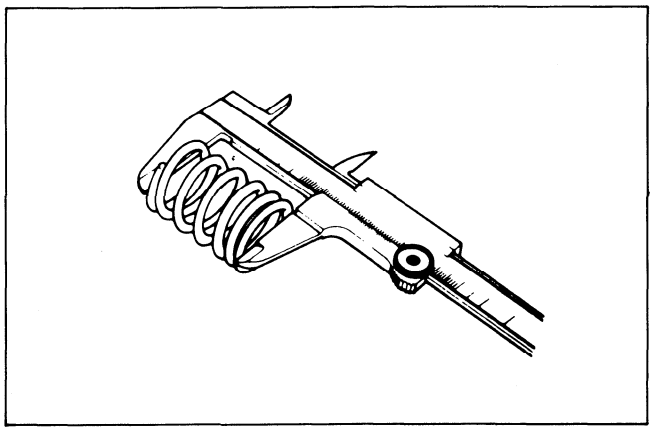
VALVE STEM END CONDITION

Inspect the valve stem end face for pitting and wear. If pitting or wear of the stem end face are present, the valve stem end may be resurfaced, providing that the length ① will not be reduced to less than 4.0 mm (0.15 in). If this length becomes less than 4.0 mm (0.15 in), the valve must be replaced. After installing a valve whose stem end has been ground off as above, check to ensure that the face ② of the valve stem end is above the cotters ③.



VALVE SPRINGS (REFER TO SERVICE DATA)

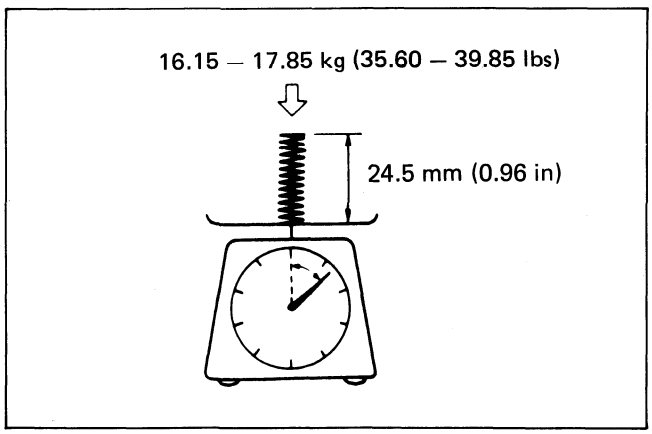
- The force of the two coil springs keeps the valve seat tight. Weakened springs result in reduced engine power output, and often account for the chattering noise coming from the valve mechanism.
- Check the springs for strength by measuring their free lengths and also the force required to compress them. If the limit indicated is exceeded by the free length reading or if the measured force does not fall within the range specified, replace with a SUZUKI spring.



CAUTION:
Replace both of the valve springs, inner and outer, at a time, if any one of these is found to be beyond the limit.

Valve spring free length limit **Unit: mm (in)**

INNER	OUTER
32.5 (1.28)	36.0 (1.42)

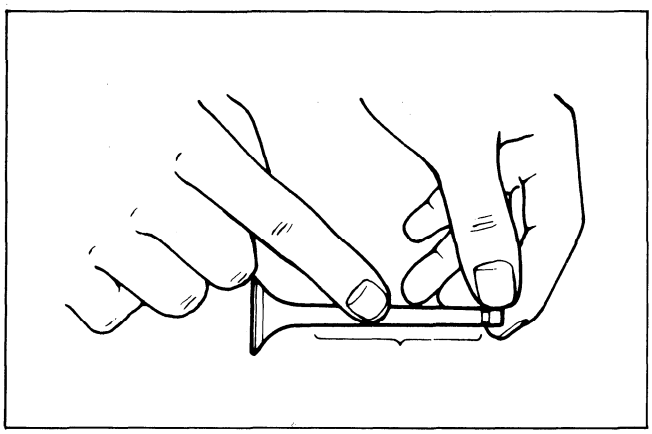


Valve spring tension

Spring	Standard
INNER	6.51 – 7.49 kg/24.5 mm (14.35 – 16.51 lbs/0.96 in)
OUTER	12.09 – 13.91 kg/36.0 mm (26.65 – 30.67 lbs/1.42 in)

REASSEMBLY

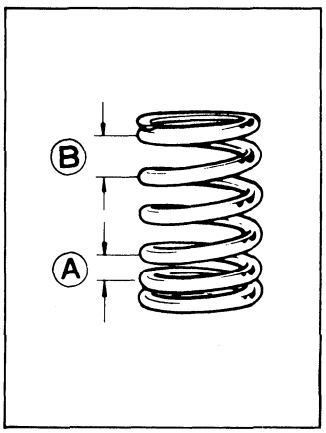
- Insert the valves, with their stems coated with high quality molybdenum disulfide lubricant (SUZUKI MOLY PASTE) all round and along the full stem length without any break.

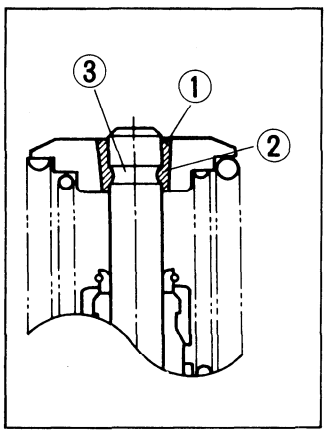


CAUTION:
When inserting each valve, take care not to damage the lip of the stem seal.

99000-25140	SUZUKI Moly Paste

- Install the valve springs with the small pitch portion Ⓐ down.
  Ⓑ : Large-pitch portion.
- Put on the spring retainer and, using the valve lifter, press down the spring, fit the two cotter halves to the stem end, and release the lifter to allow the cotter ① to wedge in between seat and stem. Be sure that the rounded lip ② of the cotter fits snugly into the groove ③ in the stem end.



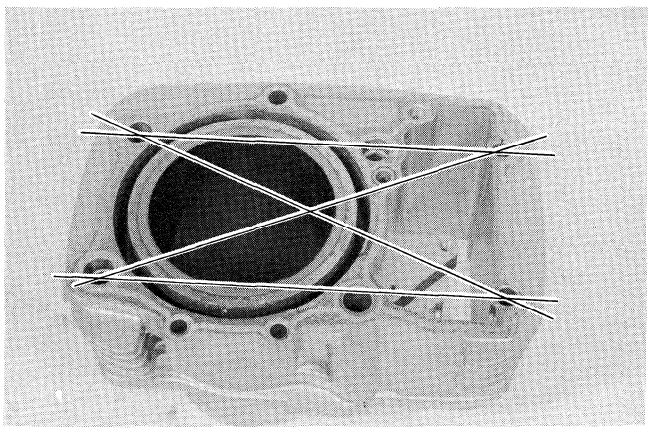


CAUTION:
Be sure to restore each spring, valve and spring retainer to their original positions.

CYLINDER

DISTORTION

Check the gasketed surface of the cylinder for distortion with a straightedge and thickness gauge, taking a clearance reading at several places indicated. If the largest reading at any position of the straightedge exceeds the limit, replace the cylinder.

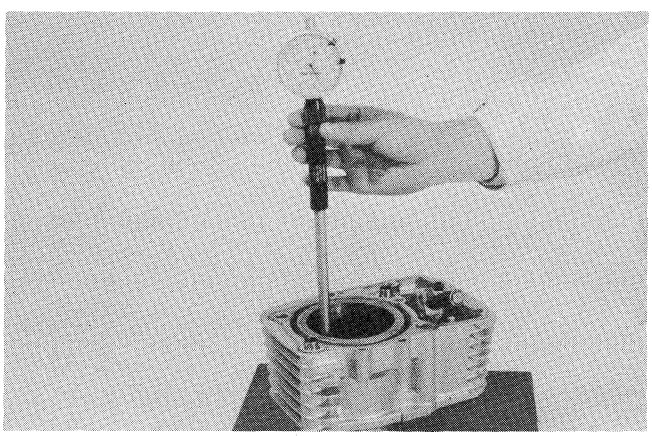


Cylinder distortion

Service Limit	

CYLINDER BORE

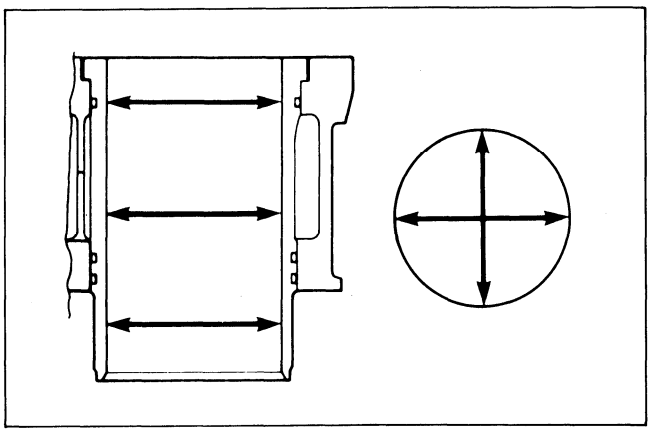
Measure the cylinder bore diameter at six places. If any one of the measurements exceeds the limit, overhaul the cylinder and replace the piston with an oversize, or replace the cylinder. Once the reboring is done on any one cylinder which measurements is beyond the limit, the remaining cylinders must be also rebored accordingly. Otherwise the imbalance might causes excess vibration.



Cylinder bore

Service Limit	80.080 mm (3.1527 in)

09900-20508	Cylinder gauge set

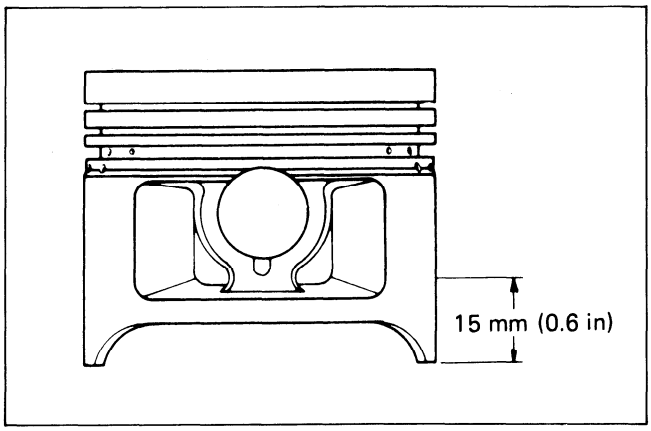


PISTON

DIAMETER

Using a micrometer, measure the piston outside diameter at the place shown in Fig. If the measurement is less than the limit, replace the piston.

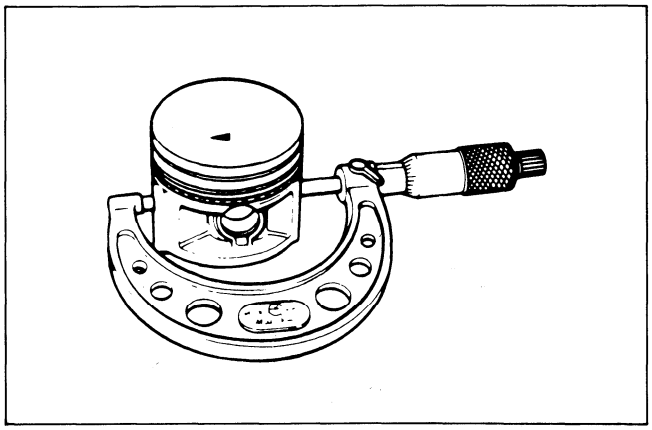
Piston oversize	0.5, 1.0 mm
Service Limit	79.880 mm (3.1449 in)
09900-20204	Micrometer (50 – 75 mm)



PISTON-CYLINDER CLEARANCE

As a result of the above measurement, if the piston clearance exceeds the following limit, overhaul the cylinder and use an oversize piston, or replace both cylinder and piston.

Service Limit	0.120 mm (0.0047 in)



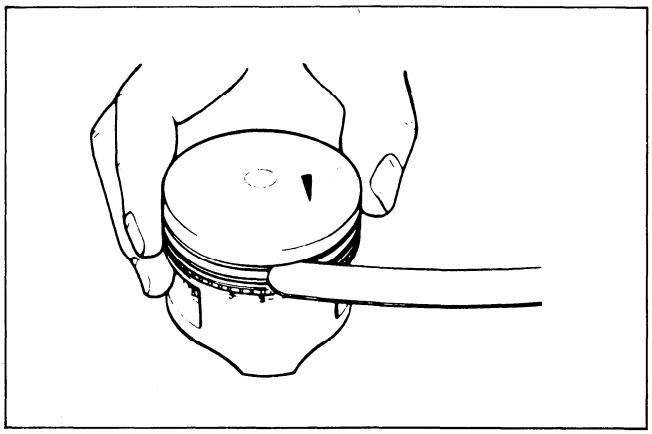
PISTON RING-GROOVE CLEARANCE

Using a thickness gauge, measure the side clearances of the 1st and 2nd rings. If any one of the clearances exceeds the limit, replace both piston and piston rings.

09900-20803	Thickness gauge

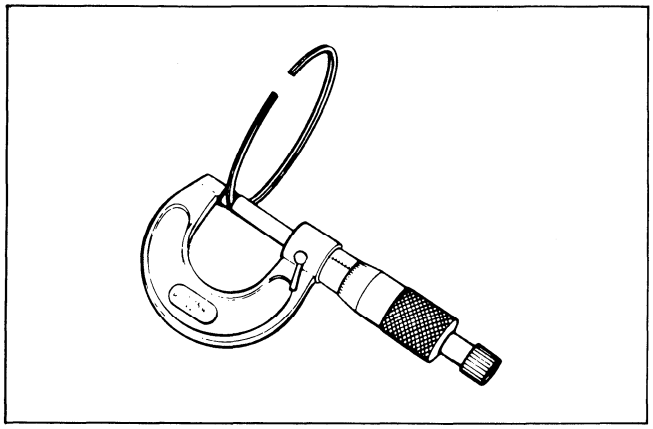
Piston ring–groove clearance

Piston ring	Service Limit
1st	0.18 mm (0.007 in)
2nd	0.15 mm (0.006 in)



Piston ring groove width

Piston ring	Standard
1st	1.01 – 1.03 mm (0.0398 – 0.0406 in)
2nd	1.21 – 1.23 mm (0.0476 – 0.0484 in)
Oil	2.51 – 2.53 mm (0.0988 – 0.0996 in)



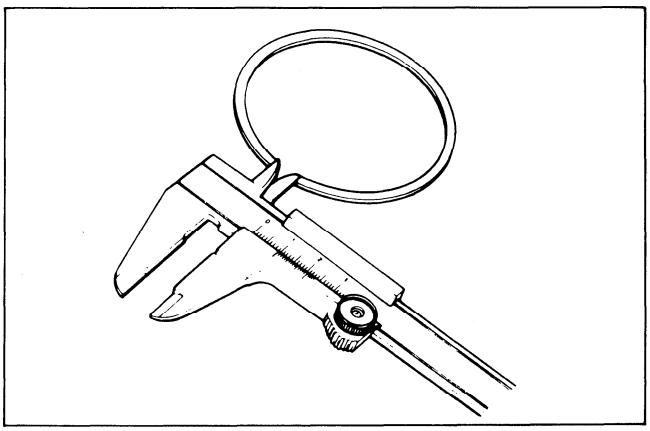
Piston ring thickness

Piston ring	Standard
1st	0.975 – 0.990 mm (0.0384 – 0.0390 in)
2nd	1.170 – 1.190 mm (0.0461 – 0.0469 in)

PISTON RING

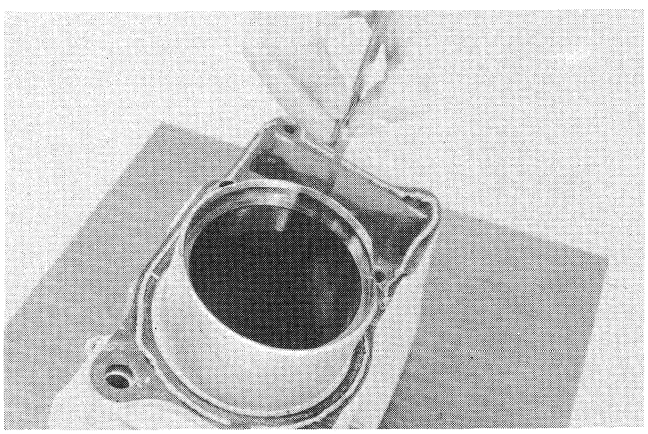
FREE END GAP AND END GAP

Before installing piston rings, measure the free end gap of each ring using vernier calipers. Next, fit the ring in the cylinder, and measure each ring end gap using a thickness gauge.
If any ring has an excess end gap, replace the ring.



Piston ring free end gap

Piston ring		Service Limit
1st	N	8.4 mm (0.33 in)
2nd	N	8.4 mm (0.33 in)



Piston ring end gap

Piston ring	Service Limit
1st & 2nd	0.70 mm (0.028 in)

09900-20803	Thickness gauge

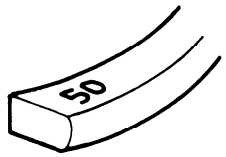
- **Oversize piston rings**
  The following two types of oversize piston rings are used. They bear the following identification numbers.

SIZE	1st	2nd
0.5 mm O.S.	50	50
1.0 mm O.S.	100	100

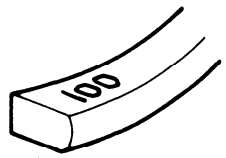
- **Oversize oil rings**
  The following two types of oversize oil rings are available as optional parts. They bear the following identification marks.

SIZE	COLOR
STD	NIL
0.5 mm O.S.	Painted Red
1.0 mm O.S.	Painted Yellow

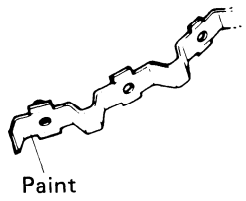
- **Oversize side rail**
  Just measure outside diameter to identify its size.



0.5 mm O.S.



1.0 mm O.S.



Oil ring spacer

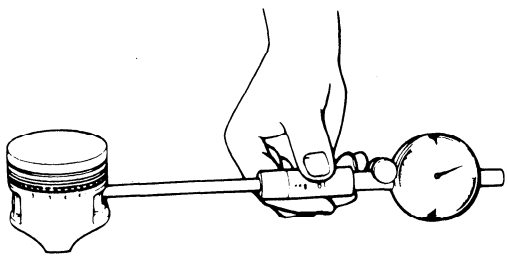
Paint

PISTON PIN AND PIN BORE

Using a small bore gauge, measure the piston pin bore inside diameter, and using a micrometer, measure the piston pin outside diameter. If the reading exceeds the following limit, replace both piston and piston pin.

Piston pin bore I.D.

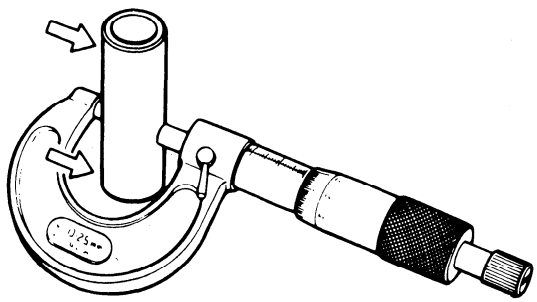
Service Limit	20.030 mm (0.7886 in)



Using a micrometer, measure the piston pin outside diameter at three positions.

Piston pin O.D.

Service Limit	19.988 mm (0.7869 in)
09900-20205	Micrometer (0 – 25 mm)



CONNECTING ROD

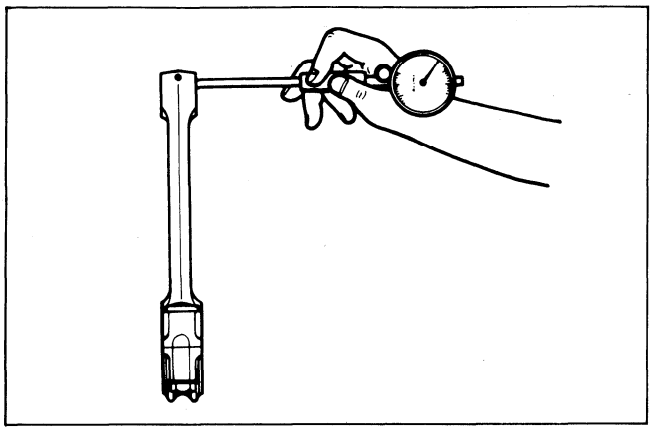
CONNECTING ROD SMALL END BORE I.D.

Using a small bore gauge, measure the connecting rod small end inside diameter.

Connecting rod small end bore I.D.

Service Limit	20.030 mm (0.7885 in)

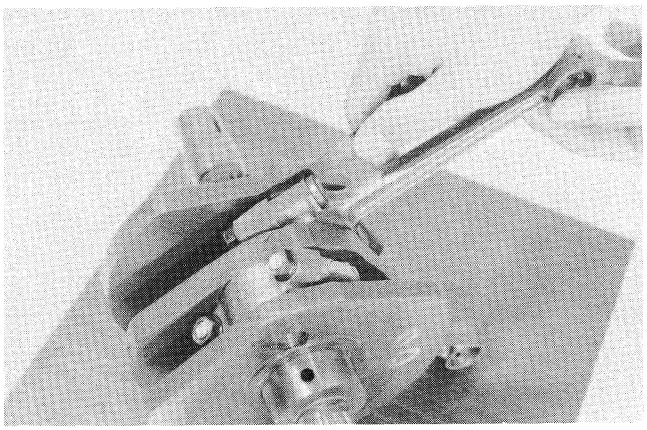
- If the connecting rod small end bore inside diameter exceeds the above mentioned limit, replace connecting rod.



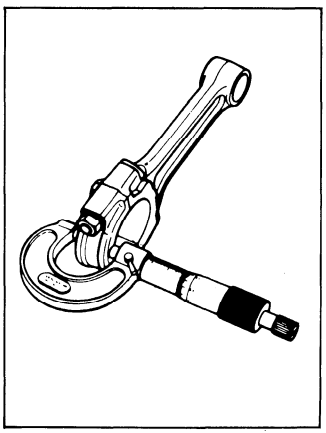
CONNECTING ROD BIG END THRUST CLEARANCE

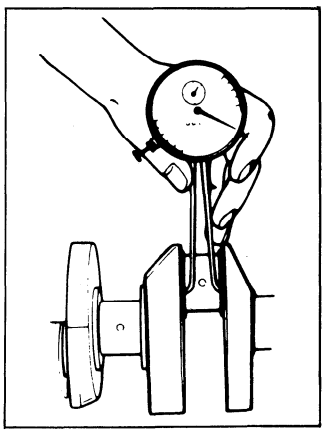
Check the connecting rod thrust clearance by using thickness gauge. If the clearance exceeds the limit, replace connecting rod or crankshaft.

Service Limit	0.30 mm (0.012 in)



	Standard
Big end width	21.95 – 22.00 mm (0.864 – 0.866 in)
Crank pin width	22.10 – 22.15 mm (0.870 – 0.872 in)





CONNECTING ROD-CRANK PIN BEARING SELECTION

- Loosen bearing cap nuts and tap the bolt end lightly with plastic hammer to remove bearing cap.

CAUTION:
Be sure to install the bearing cap to the original position when reassembling.

- Remove rods and mark them to identify the cylinder position.
- Inspect bearing surfaces for any sign of fusion, pitting, burn or flaws. If any, replace them with a specified set of bearings.

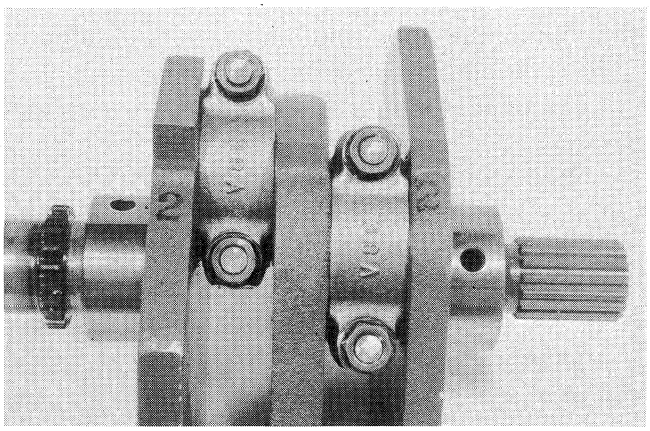
NOTE:
Never try to remove or loosen the connecting rod big end stud, otherwise, it will displace the stud and will not fit the bearing cap properly.

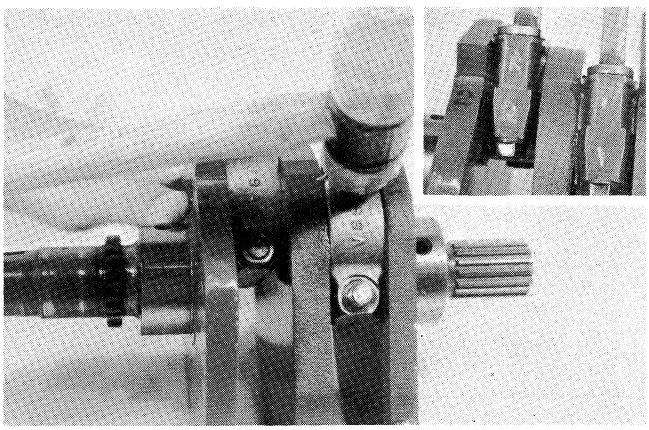
- Place plastigauge axially on the crank pin, avoiding the oil hole and at the TDC or BDC as shown.
- Tighten the bearing cap with two-step torque values.

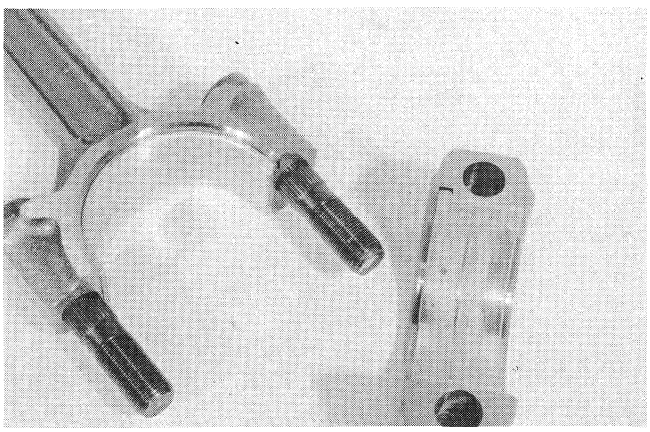
NOTE:
When fitting bearing cap to crank pin, be sure to discriminate between its two ends, I.D. code side and the other.
I.D. code always faces intake valve side.

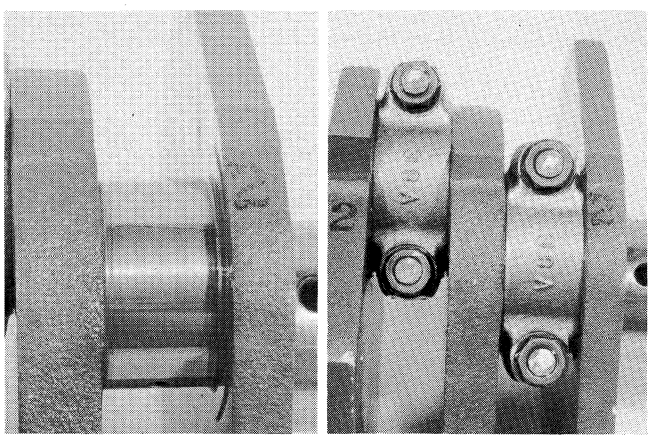
Initial tightening torque	22 – 28 N·m (2.2 – 2.8 kg-m 16.0 – 20.0 lb-ft)
Final tightening torque	49 – 53 N·m (4.9 – 5.3 kg-m 35.5 – 38.5 lb-ft)

NOTE:
Never rotate crankshaft or connecting rod when a piece of Plastigauge is in the clearance.





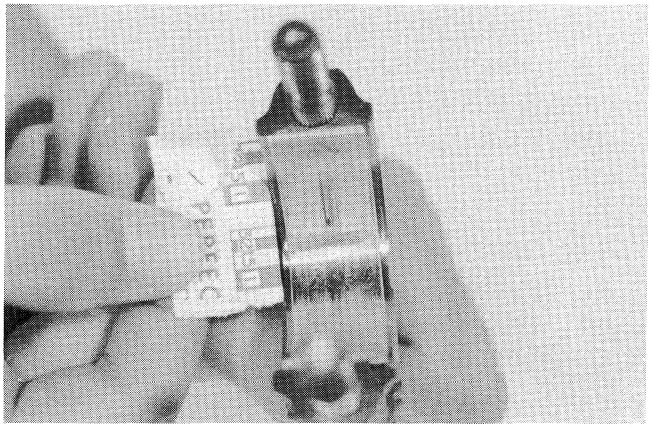


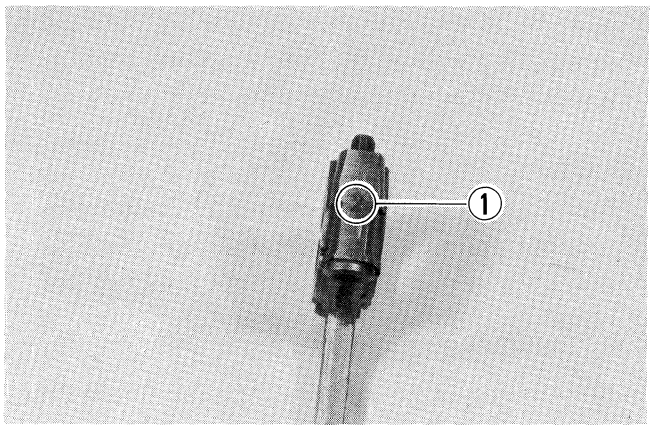


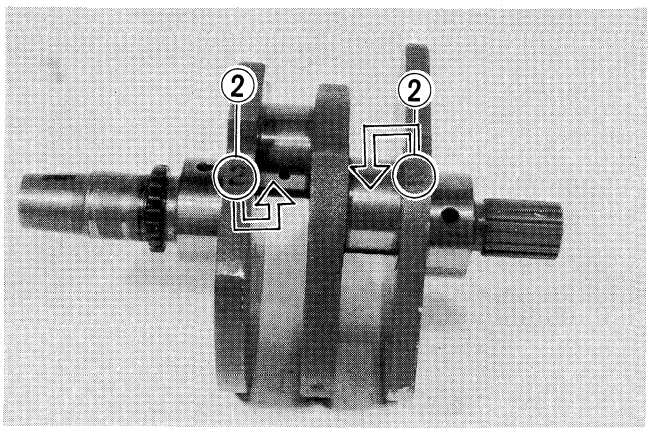
- Remove the caps and measure the width of compressed plastigauge with envelope scale. This measurement should be taken at the widest part.

Service Limit	0.080 mm (0.0031 in)

- If oil clearance exceeds the service limit, select the specified bearings from the following table.
- Check the corresponding conrod I.D. code number ①, "1", "2" or "3".
- Check the corresponding crank pin O.D. code number ②, "1", "2" or "3".
- The crank pin O.D. code number is on the left crank web.







Bearing selection table

		Crank pin O.D. code		
	Code	1	2	3
Con-rod I.D. code	1	Green	Black	Brown
	2	Black	Brown	Yellow
	3	Brown	Yellow	Blue

Oil clearance

Standard	0.024 – 0.042 mm (0.0009 – 0.0017 in)

Connecting rod I.D. specification

Code	I.D. specification
1	44.000 – 44.006 mm (1.7323 – 1.7325 in)
2	44.006 – 44.012 mm (1.7325 – 1.7328 in)
3	44.012 – 44.018 mm (1.7328 – 1.7330 in)

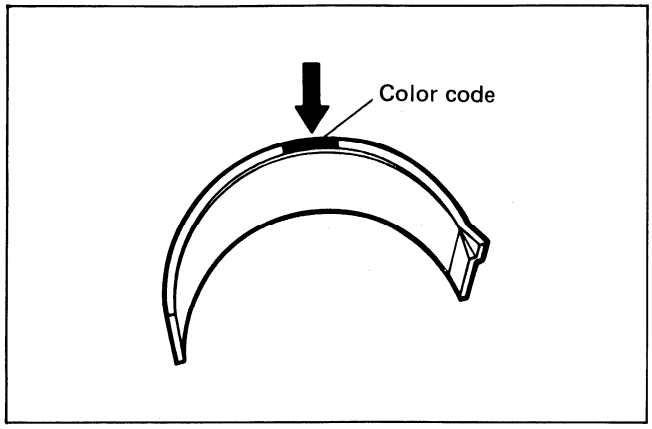
Crank pin O.D. specification

Code	O.D. Specification
1	40.994 – 41.000 mm (1.6139 – 1.6142 in)
2	40.988 – 40.994 mm (1.6137 – 1.6139 in)
3	40.982 – 40.988 mm (1.6135 – 1.6137 in)

CAUTION:
Bearing should always be replaced as a set.

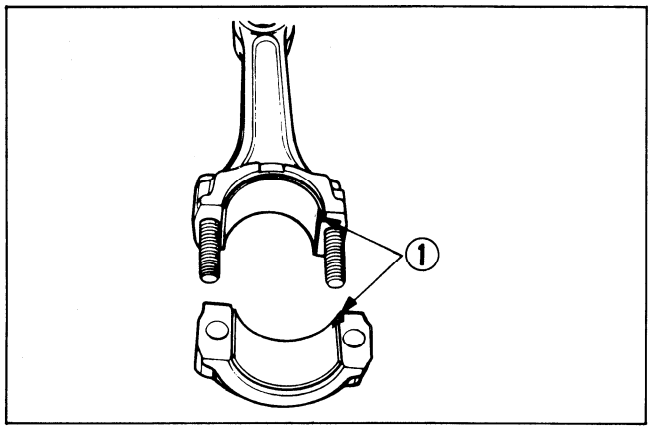
Bearing thickness

Color (Part No.)	Thickness
Green	1.485 – 1.488 mm (0.0585 – 0.0586 in)
Black	1.488 – 1.491 mm (0.0586 – 0.0587 in)
Brown	1.491 – 1.494 mm (0.0587 – 0.0588 in)
Yellow	1.494 – 1.497 mm (0.0588 – 0.0589 in)
Blue	1.497 – 1.500 mm (0.0589 – 0.0590 in)



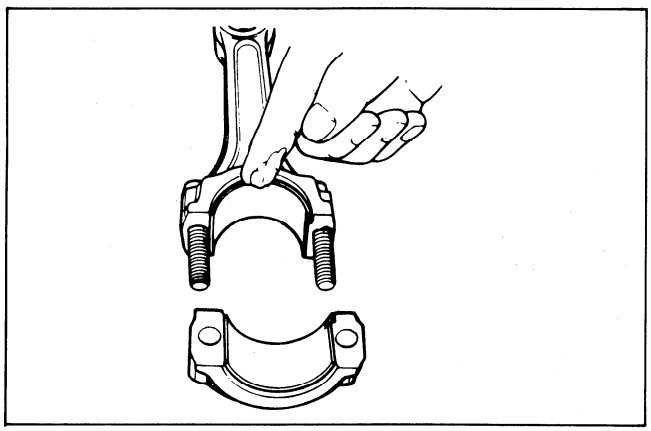
BEARING ASSEMBLY

- When fitting the bearing to the bearing cap and connecting rod, be sure to fix the stopper part ① first and press the other end.



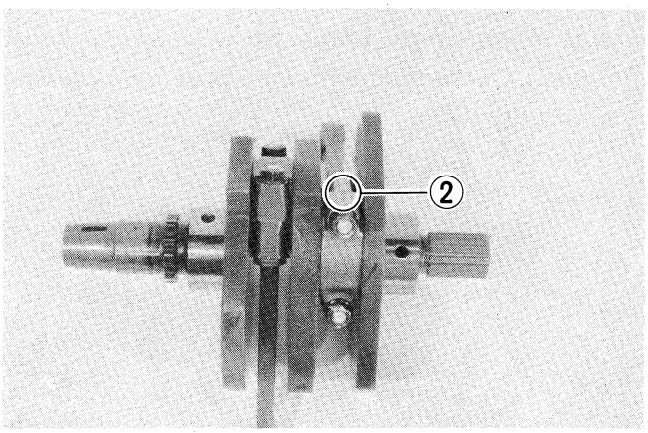
- Apply engine oil or SUZUKI Moly Paste to the crank pin and bearing surface.

99000-25140	SUZUKI Moly Paste



- When mounting connecting rod on the crank shaft, make sure that I.D. code ② of the connecting rod faces as shown in the figure.
- Tighten the connecting rod fitting nuts with specified torque after applying engine oil to the nut thread.

	Initial	Final
Tightening torque	22 – 28 N·m (2.2 – 2.8 kg-m / 16.0 – 20.0 lb-ft)	51 – 55 N·m (5.1 – 5.5 kg-m / 37.0 – 40.0 lb-ft)

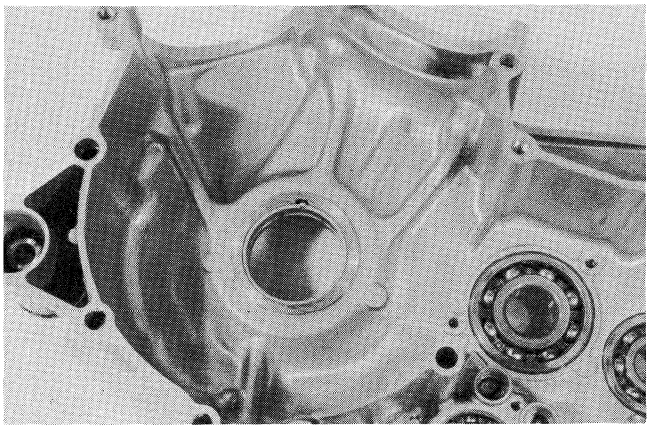


- Check the connecting rod for smooth turning.

CRANKSHAFT

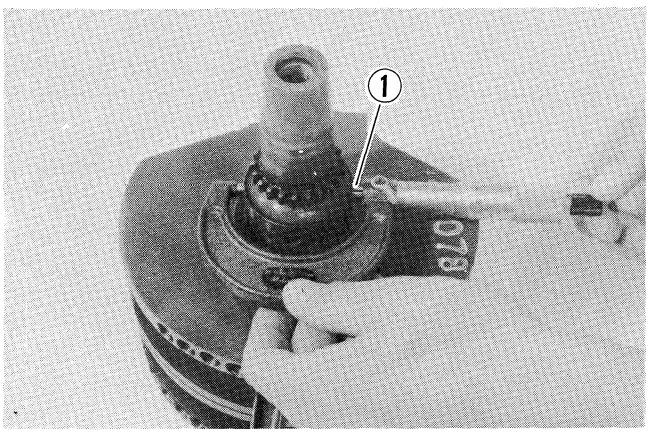
CRANKCASE-CRANKSHAFT BEARING SELECTION

- Inspect the crankshaft and crankshaft bearing for any damage.



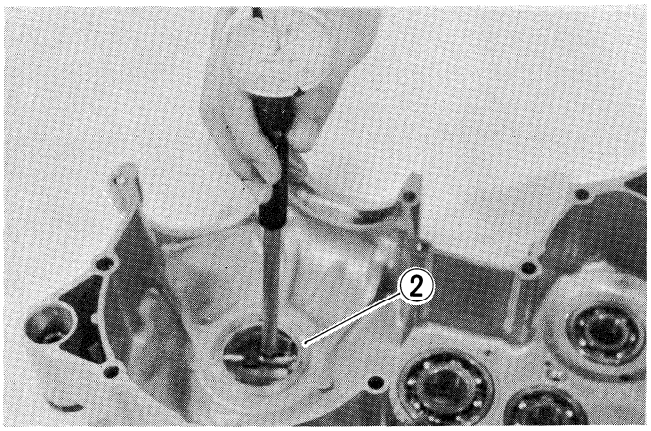
- Measure the crankshaft O.D. ① by special tool.

09900-20202	Micrometer

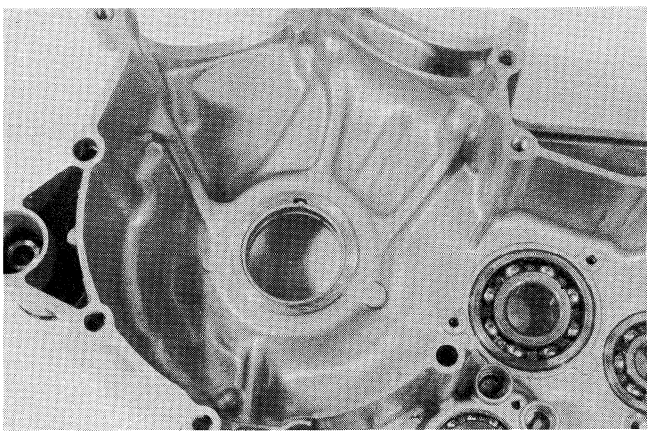


- Measure the crankshaft bearing I.D. ② by special tool.

09900-20508	Cylinder gauge set

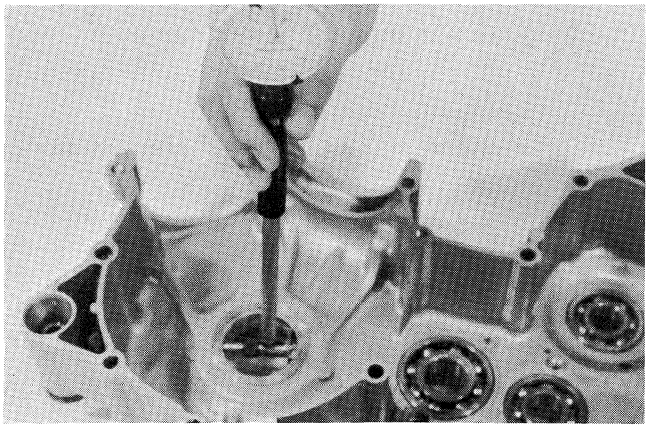


- If the width at the widest part exceeds the limit, replace the bearing with new ones by following procedure.



- Remove the crankshaft bearing with taking care not to damage the crankcase bearing hold.
- Inspect the bearing hole of crankcase for any sign of pitting or flaw.
  If any, repair it with emery paper.
- Install the bearing on the crankcase by hydraulic press.
- Honing the bearing with specified value.

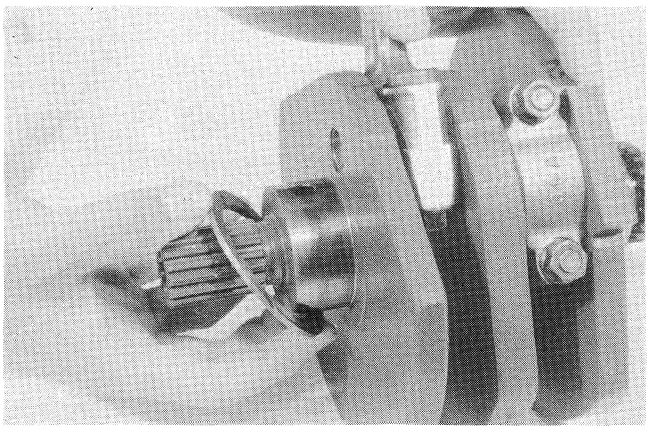
Crankshaft bearing I.D.	48.000 – 48.015 mm (1.8898 – 1.8904 in)



CRANKSHAFT THRUST CLEARANCE

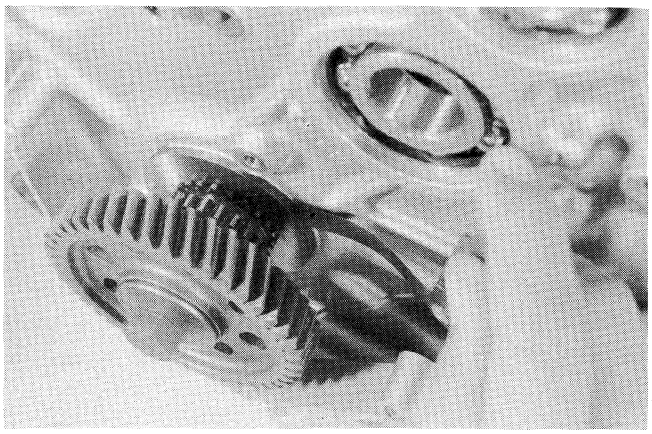
Install the crankshaft in the right crankcase half after installing the thrust shim on the crankshaft. Place the thrust shim, cam chain drive sprocket, and primary drive gear on the right end of the crankshaft and tighten them to the specified torque. Use a thickness gauge to measure the thrust clearance between right crankcase and thrust shim.

Tightening torque	80 – 110 N·m (8.0 – 11.0 kg-m, 58.0 – 79.5 lb-ft)



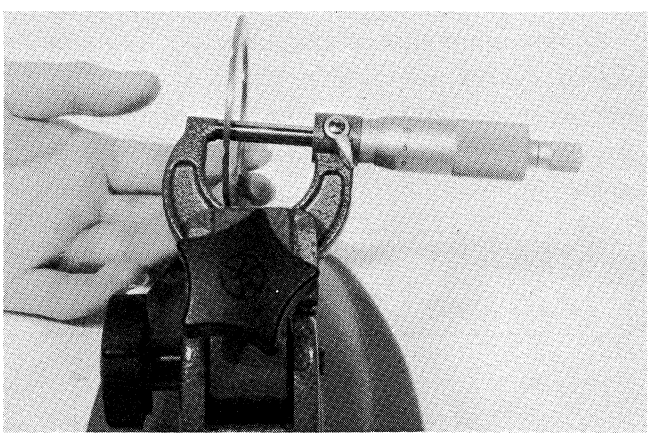
Thrust clearance

Standard	0.040 – 0.120 mm (0.0016 – 0.0047 in)



If the thrust clearance exceeds the standard range, adjust the thrust clearance by the following procedures.

- Remove the thrust washer, and measure its thickness with a micrometer.
- Change the other thick thrust washer.
- Perform the thrust clearance measurement listed above once again.



Checking to make sure it is within standard

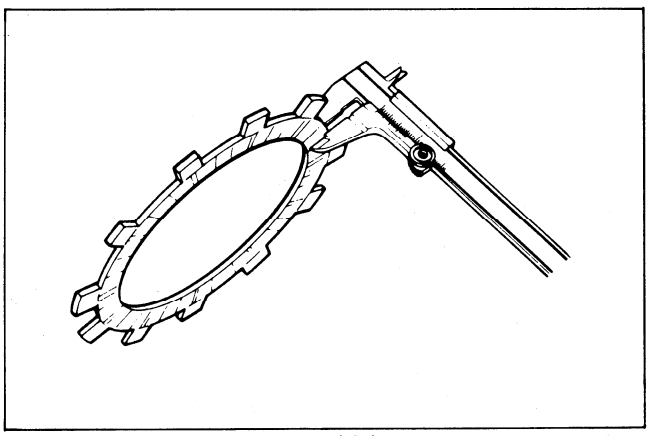
Unit: mm (in)

Part number	Thrust washer thickness
09160-48001	1.925 – 1.950 (0.0758 – 0.0768)
09160-48002	1.950 – 1.975 (0.0768 – 0.0778)
09160-48003	1.975 – 2.000 (0.0778 – 0.0787)
09160-48004	2.000 – 2.025 (0.0787 – 0.0797)
09160-48005	2.025 – 2.050 (0.0797 – 0.0807)
09160-48006	2.050 – 2.075 (0.0807 – 0.0817)
09160-48007	2.075 – 2.100 (0.0817 – 0.0827)
09160-48008	2.100 – 2.125 (0.0827 – 0.0837)
09160-48009	2.125 – 2.150 (0.0837 – 0.0847)
09160-48010	2.150 – 2.175 (0.0847 – 0.0856)

CLUTCH

CLUTCH DRIVE PLATES AND DRIVEN PLATES

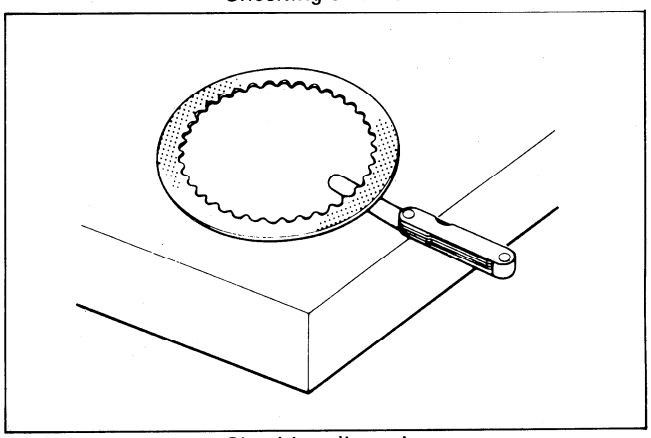
Clutch plates in service remain in oily condition as they were lubricated with oil. Because of this condition, both drive and driven plates are subject to little wearing action and therefore last much longer. Their life depends largely on the quality of oil used in the clutch and also on the way the clutch is operated.



Checking thickness

These plates are expendable: they are meant to be replaced when found worn down or distorted to the respective limit: use a caliper to check thickness and a thickness gauge and surface plate to check distortion.

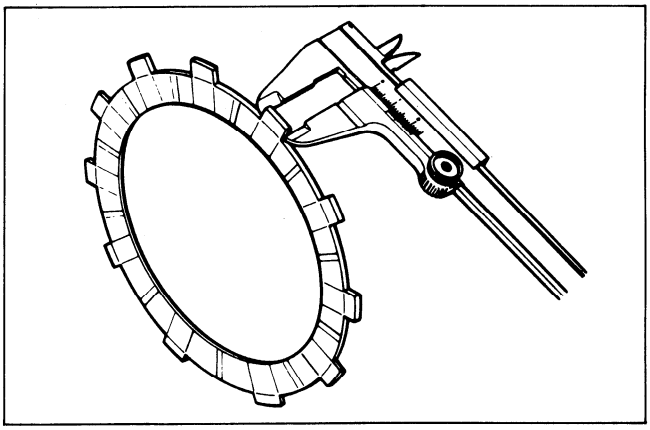
09900-20101	Vernier calipers
09900-20803	Thickness gauge



Checking distortion

Unit: mm (in)

Service Limit	Drive plate		Driven plate
	No. 1	No. 2	
Thickness	2.62 (0.103)	3.15 (0.124)	–
Distortion	–	–	0.1 (0.004)
Claw width	15.0 (0.59)	15.0 (0.59)	–



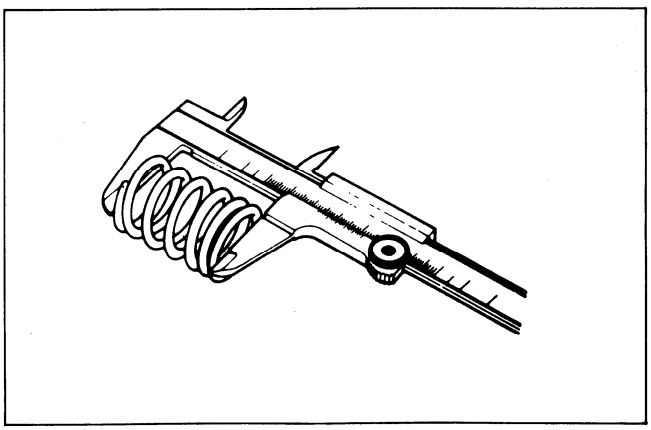
Checking claw width

CLUTCH SPRING FREE LENGTH

Measure the free length of each coil spring with vernier calipers, and compare the elastic strength of each with the specified limit. Replace all the springs if any spring is not within the limit.

Clutch spring free length

Service Limit	34.0 mm (1.34 in)

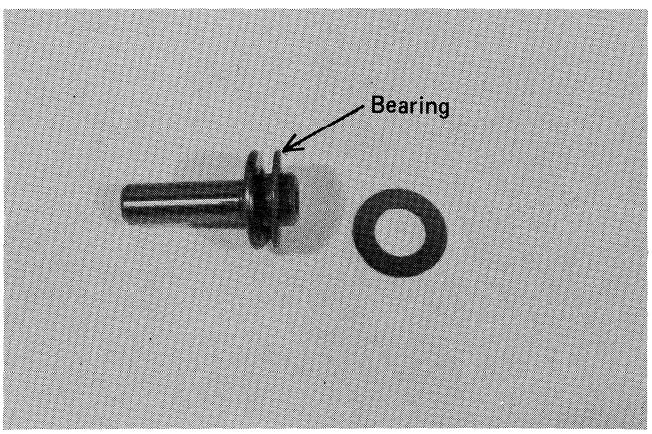


CLUTCH BEARINGS

Inspect clutch push piece bearing for any abnormality, particularly cracks, upon removal from the clutch, to decide whether it can be reused or should be replaced.

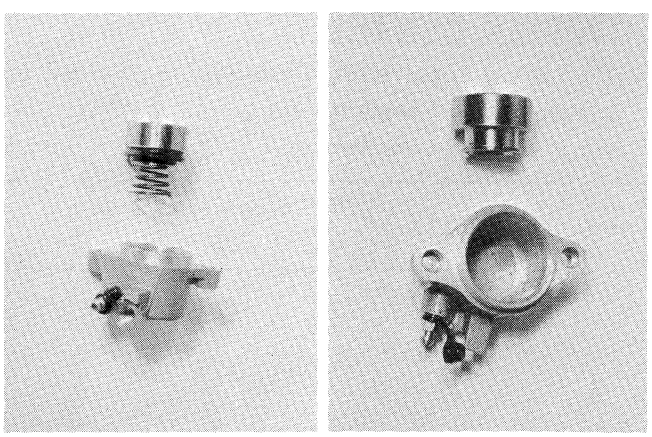
Smooth engagement and disengagement of the clutch depends much on the condition of this bearing.

NOTE:
Thrust washer is located between the pressure plate and thrust bearing.



CLUTCH CYLINDER

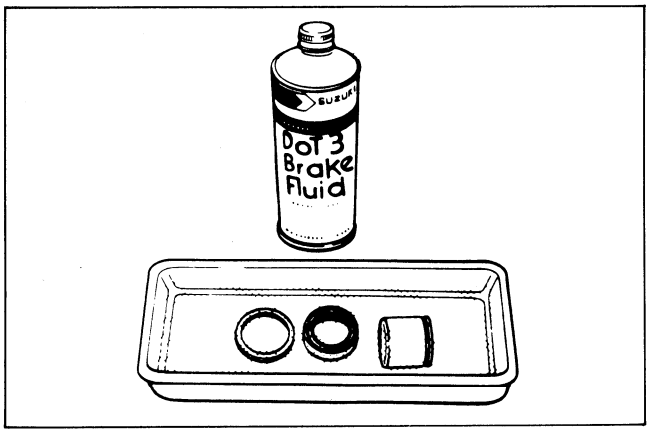
- Remove the piston, oil seal and spring.
- Inspect the clutch cylinder bore wall for nicks, scratches or other damage.
- Inspect the each rubber parts for damage and wear.
- Inspect the piston surface for any scratches or other damage.



REASSEMBLY

Reassemble the clutch cylinder in the reverse order of disassembly and by taking the following steps:

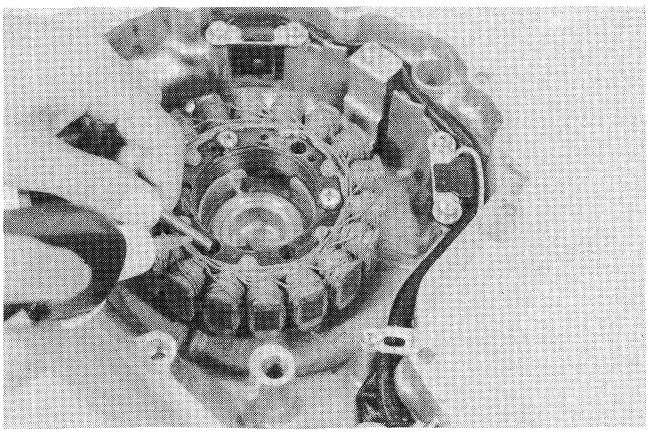
CAUTION:
Wash the clutch cylinder components with fresh brake fluid before reassembly.
Never use cleaning solvent or gasoline to wash them.
Apply brake fluid to the cylinder bore and piston to be inserted into the bore.



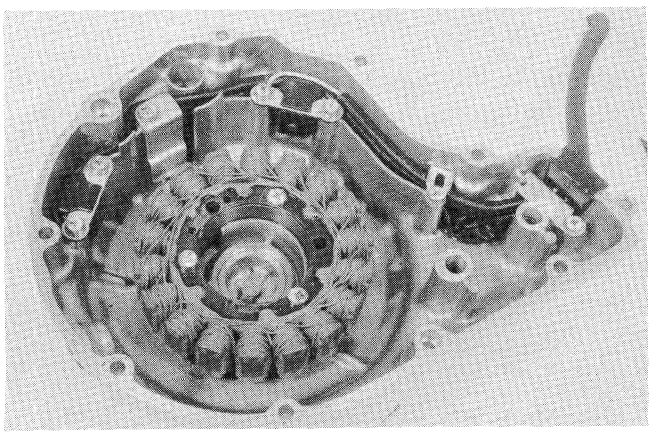
GENERATOR AND SIGNAL GENERATOR

- Apply THREAD LOCK "1342" (99000-32050) to the stator set screws and its lead wire guide screws.

NOTE:
Wipe off oil or grease on screw completely, and then apply the screw lock.



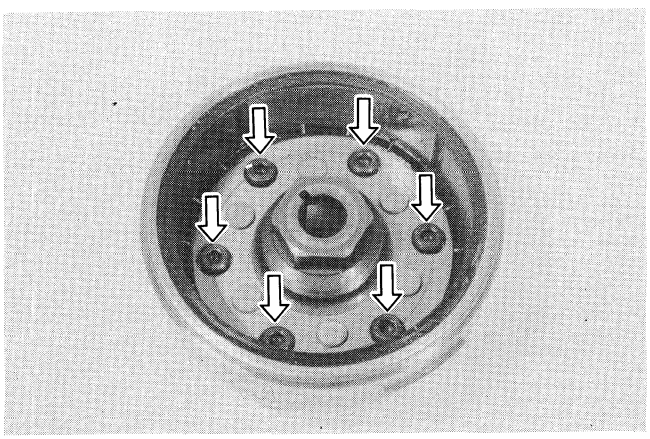
- Mount the lead wire clamp as shown in the photo.

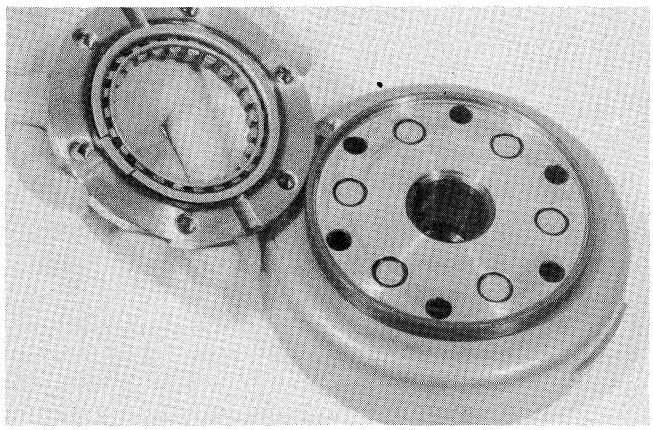


STARTER CLUTCH

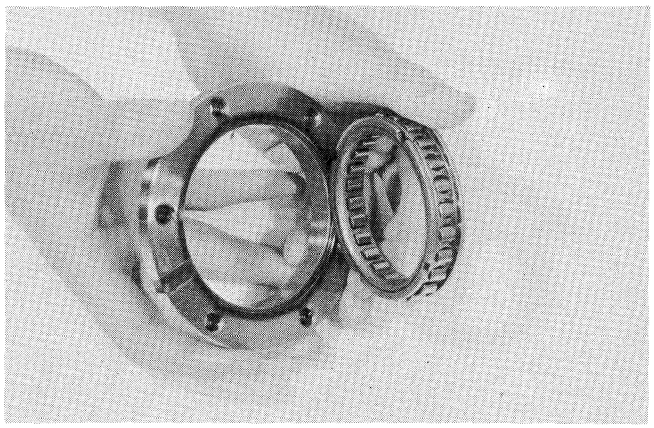
- Clamp the rotor with a vise taking care not to damage it and separate starter clutch from the rotor using the special tool.

09914-25811	"T" type hexagon wrench (6 mm)





- When fit the one way clutch to bracket, position flange side of one way clutch to rotor side.

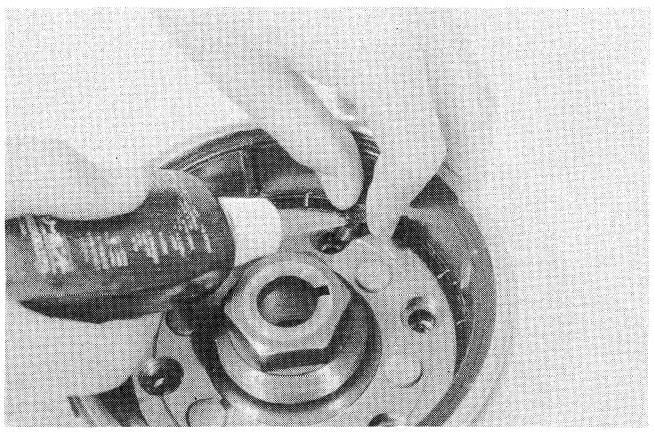


- Apply Thread lock super "1303" to allen bolts. Tighten them with specified torque while holding the rotor with a vice.

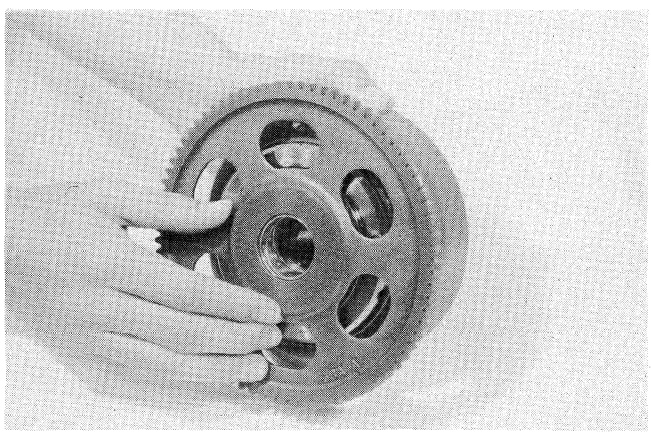
99000-32030	Thread lock super "1303"

09914-25811	T-type hexagon wrench

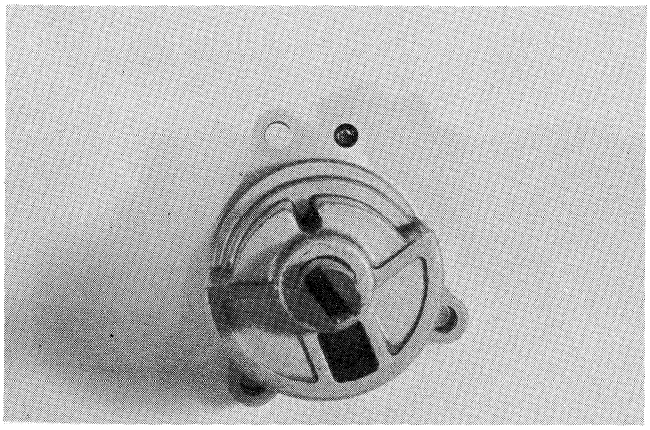
Tightening torque	23 – 28 N·m (2.3 – 2.8 kg-m 16.5 – 20.0 lb-ft)



- Check the operation of starter clutch.



OIL PUMP

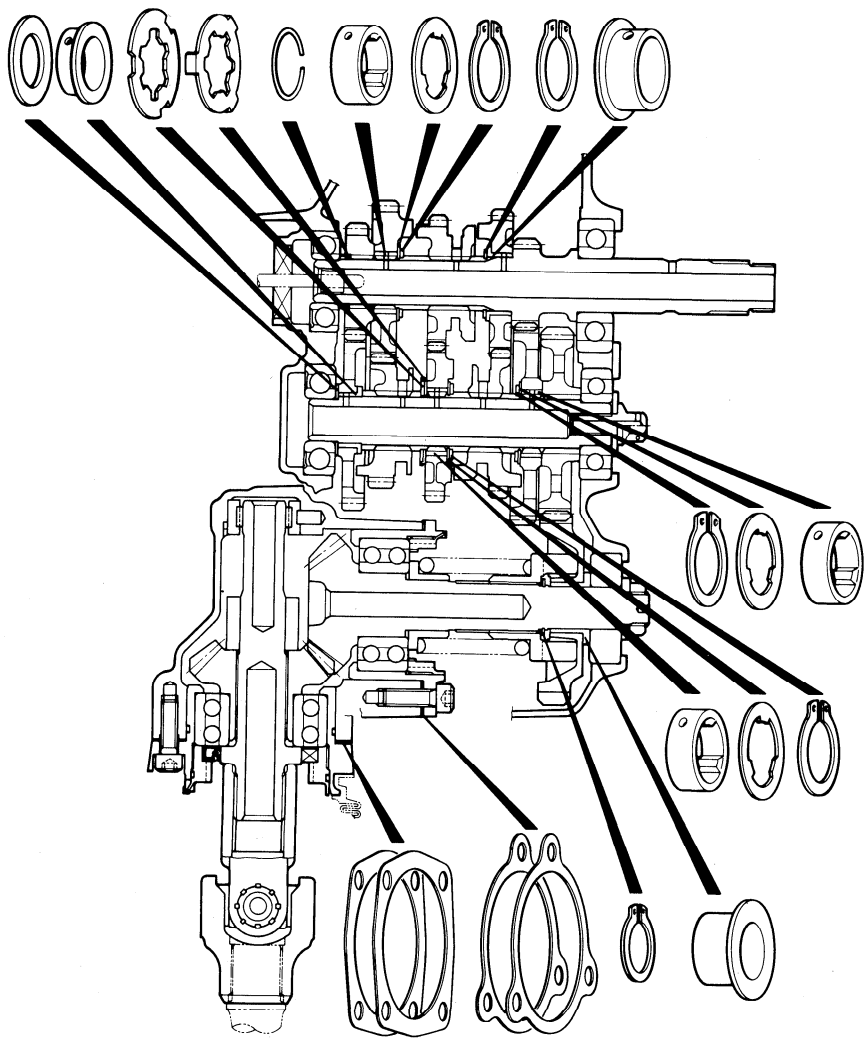


WARNING:
Oil pump case securing screw is applied with Thread lock super "1303". If attempt is made to overhaul the oil pump assembly, the screw may be damaged. As a replacement, only the oil pump unit is available.

99000-32030	Thread lock super "1303"

TRANSMISSION

TRANSMISSION GEARS AND RELATED PARTS

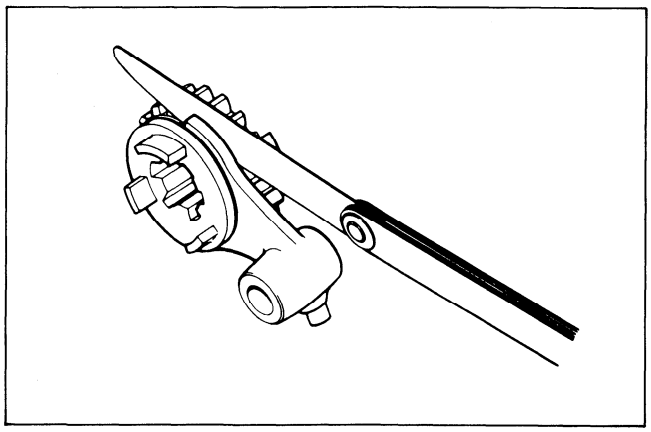


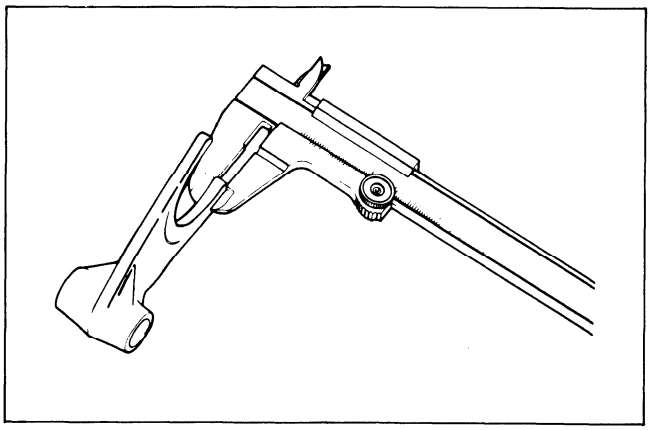
GEAR-SHIFTING FORK CLEARANCE

Using a thickness gauge, check the shifting fork clearance in the groove of its gear.

This clearance for each of the three shifting forks plays an important role in the smoothness and positiveness of shifting action. Each fork has its prongs fitted into the annular groove provided in its gear. In operation, there is sliding contact between fork and gear and, when a shifting action is initiated, the fork pushes the gear axially. Too much a clearance is, therefore, liable to cause the meshed gears to slip apart.

If the clearance checked is noted to exceed the limit specified, replace the fork or its gear, or both.





09900-20803	Thickness gauge
09900-20101	Vernier calipers

Shift fork – groove clearance

		Service Limit
No. 1	For top and 4th driven gear	0.5 mm (0.020 in)
No. 2	For 3rd driven gear	

Shift forks groove width Unit: mm (in)

	No. 1	No. 2
Standard	5.50 – 5.60 (0.217 – 0.220)	4.50 – 4.60 (0.177 – 0.181)

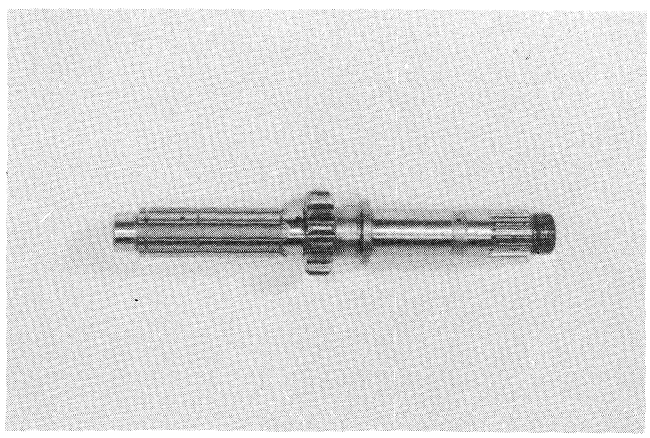
Shift fork thickness Unit: mm (in)

	No. 1	No. 2
Standard	5.30 – 5.40 (0.209 – 0.213)	4.30 – 4.40 (0.169 – 0.173)

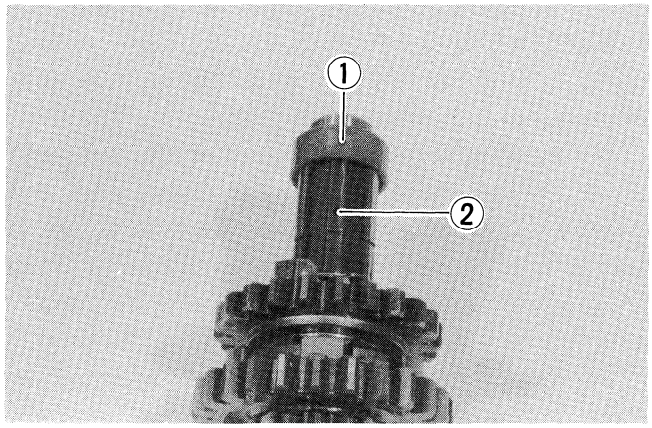
COUNTERSHAFT REASSEMBLY

- Before installing gears, apply lightly moly paste to the countershaft.

99000-25140	SUZUKI Moly paste



- Install the gears, bushings, washers and circlips in the order of the illustration on page 3-55.
- When installing the top drive gear bushing, align the oil hole ① of the bushing with the hole ② of the countershaft.

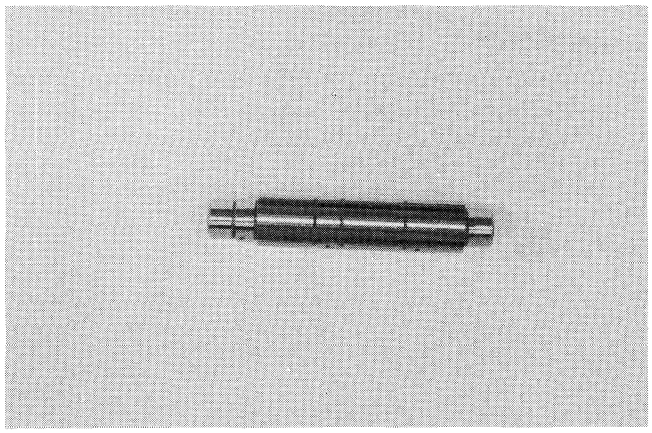


DRIVESHAFT REASSEMBLY

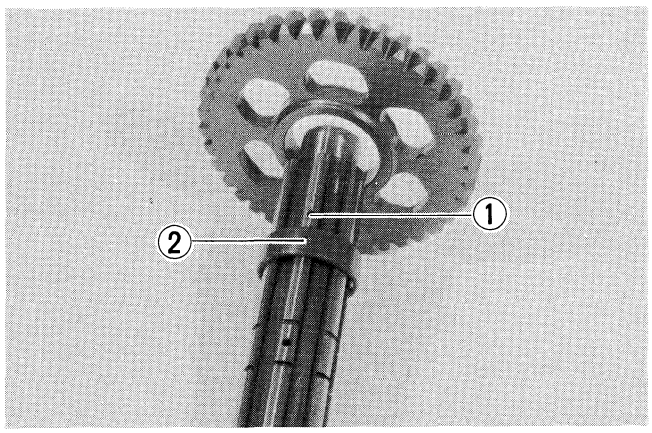
Reassemble the drive shaft gears in the reverse order of disassembly and also carry out the following steps.

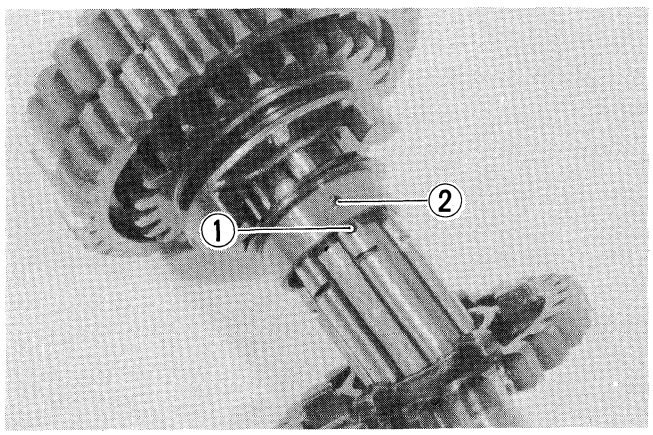
- Before installing gears, coat lightly moly paste to the drive shaft.

99000-25140	SUZUKI Moly paste

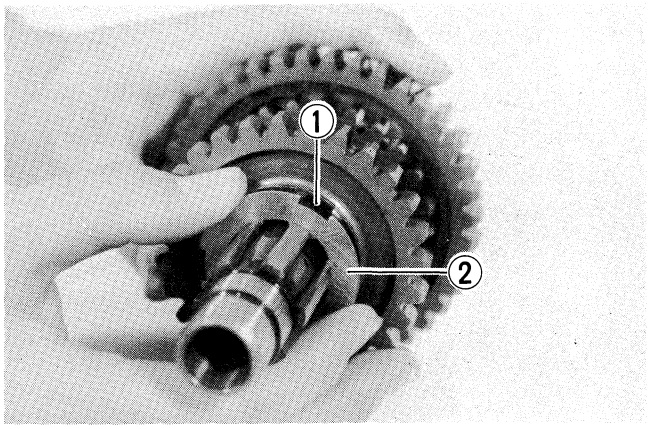


- When installing the low and 3rd driven gear bushing, align the oil hole ① of the drive shaft with the bushing oil hole ②.

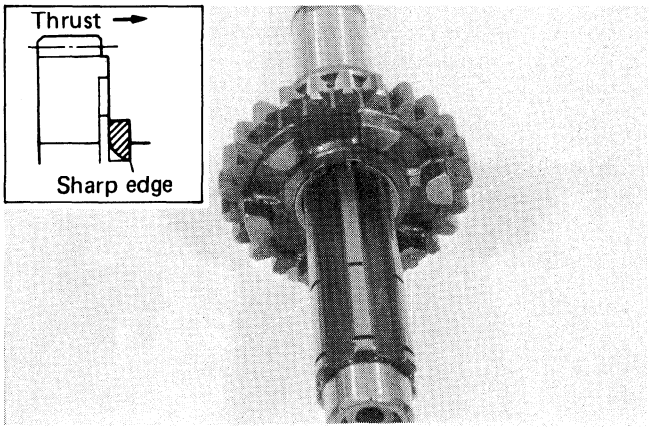




- When mounting the 3rd driven gear on the drive shaft, insert lock washer No. 2 ① into the drive shaft, and turn and fit it into the groove.
- Then, fit the lock washer No. 1 ② in the lock washer No. 2.



- When mounting circlip, pay attention to the direction of the circlip. Fit it to the side where the thrust is as shown in the figure with the rounded side against the gear surface.



NOTE:
Always use new circlip.

CAUTION:
Never reuse a circlip after a circlip has been removed from a shaft. A used circlip 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.

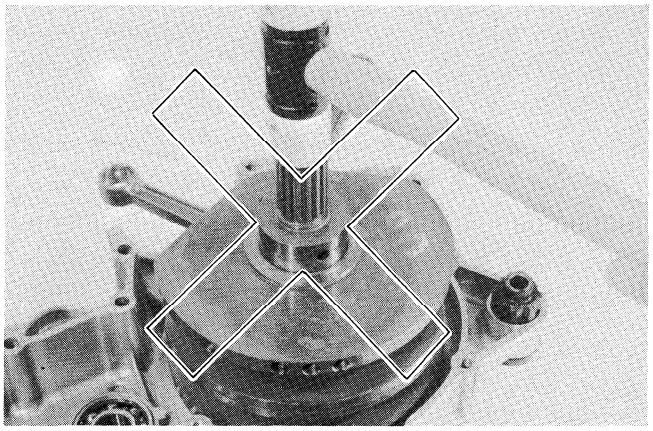
ENGINE REASSEMBLY

This engine is reassembled by carrying out the steps of disassembly in the reverse order, but there are a number of steps which demand special descriptions or precautionary measures.

NOTE:
Apply engine oil to each running and sliding part before reassembling.

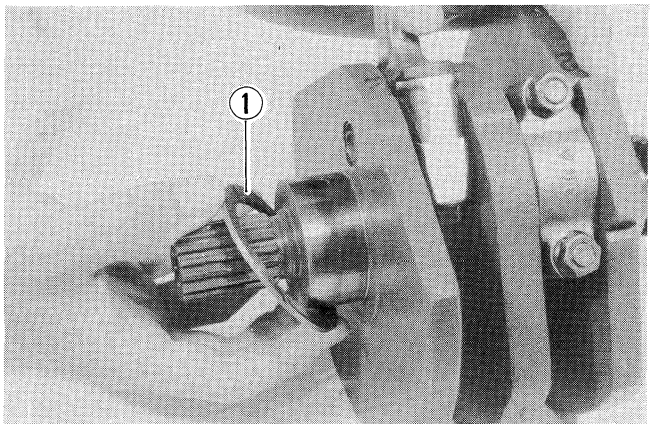
Install the crankshaft to crankcase.

CAUTION:
Never fit the crankshaft into the crankcase by striking it with a plastic hammer.
It is easy to install the crankshaft to left crankcase.



- Install the thrust washer on the crankshaft.

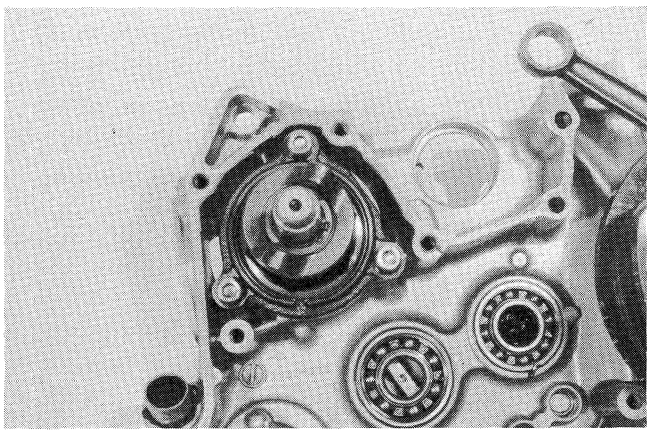
NOTE:
Chamfer side of thrust washer ① is installed to crankshaft web side.



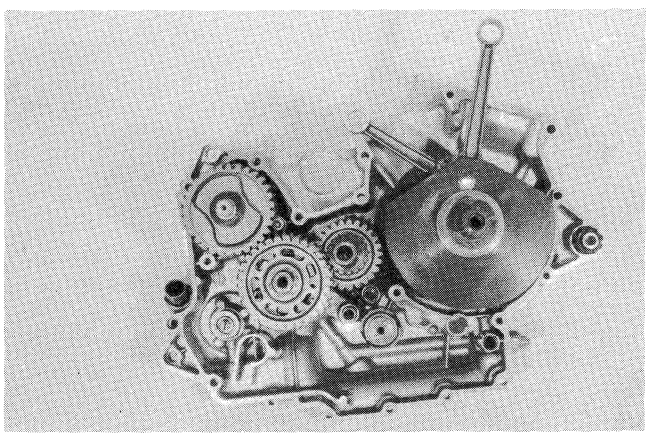
- Install the secondary bevel drive gear assembly. Tighten the secondary bevel drive gear housing bolt to specified torque.

WARNING:
Never hit the secondary bevel gear. Maybe, secondary bevel gear circlip will be detached.

Tightening torque	18 – 28 N·m (1.8 – 2.8 kg-m 13.0 – 20.0 lb-ft)

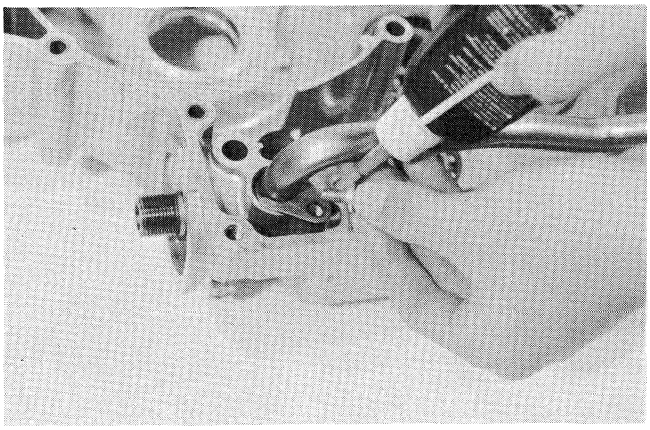


- Install the countershaft drive gears, drive shaft, driven gears and reduction driven gear.
- Install the gear shift forks, shift fork shafts and gear shift cam.
- Install a new O-ring.
- Before installing the oil pipe, apply motor oil to end of oil pipe.



- Tighten the oil pipe bolt with specified torque after applying thread lock super "1303" to securing bolt.

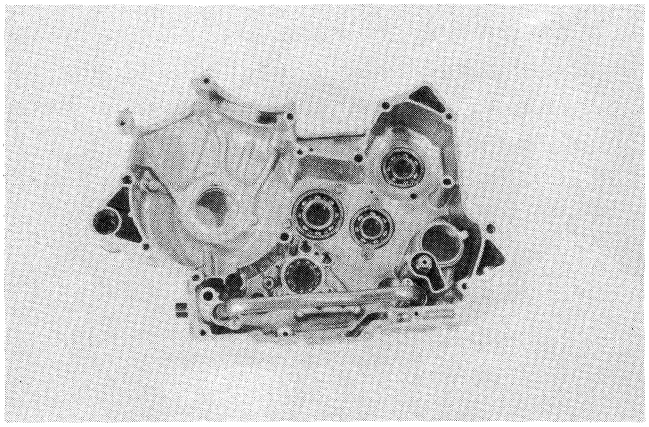
Tightening torque	8 – 12 N·m (0.8 – 1.2 kg-m / 6.0 – 8.5 lb-ft)
99000-32030	Thread lock super "1303"



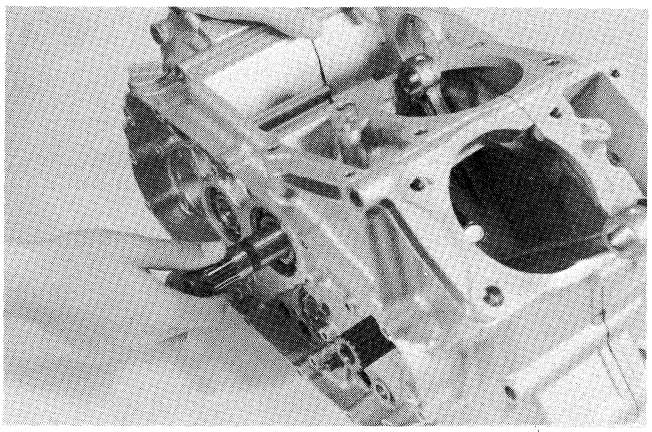
- Clean the mating surfaces of the crankcases before fitting the right and left ones.
- Apply SUZUKI Bond No. 1207B to the mating surface of the right crankcase.

99104-31140	SUZUKI Bond No. 1207B

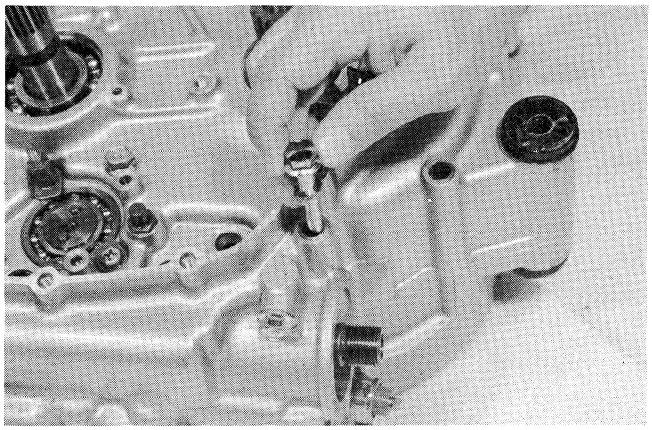
NOTE:
Use of SUZUKI Bond No. 1207B is as follows:
* **Make surfaces free from moisture, oil, dust and other foreign materials.**
* **Spread on surfaces thinly to form an even layer, and assemble the crankcases within few minutes.**
* **Take extreme care not to apply any bond No. 1207B to the oil hole, oil groove and bearing.**
* **Apply to distorted surfaces as it forms a comparatively thick film.**



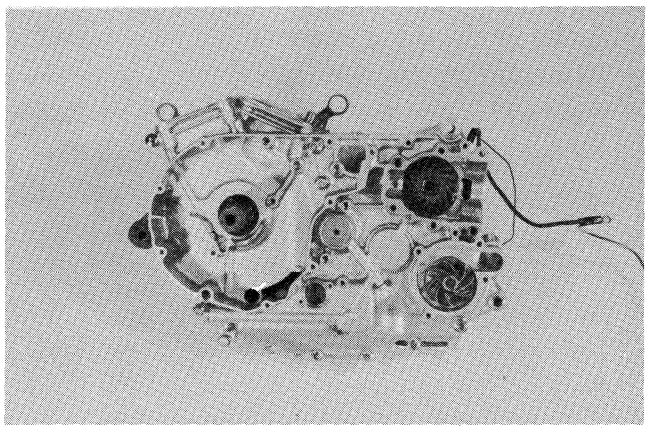
- Check that gears move smoothly.



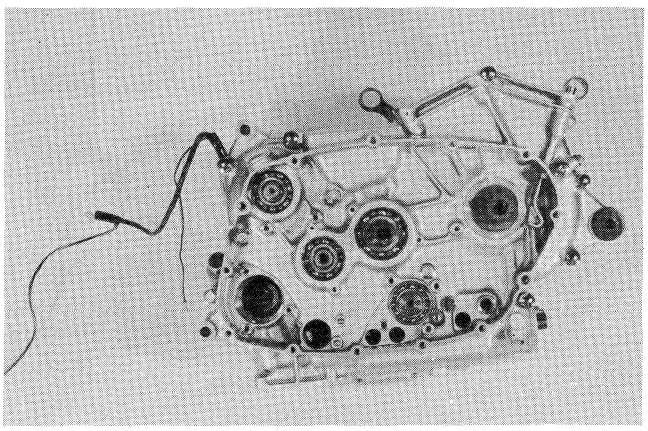
- Place the gasket as shown in figure.



- When securing the right and left crankcases, tighten each bolt a little at a time to equalize the pressure. Tighten all the securing bolts to the specified torque values.

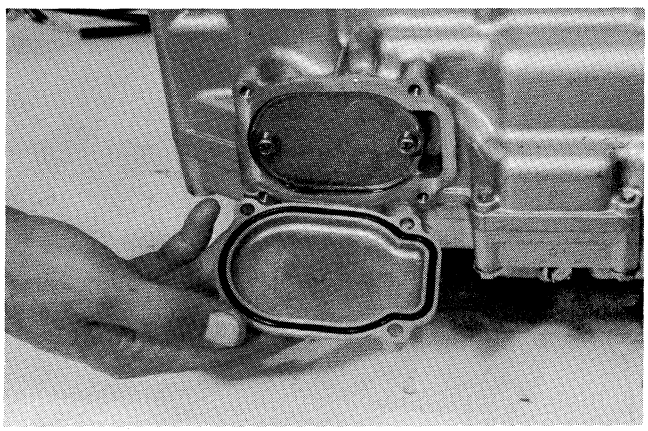


Tightening torque		6 mm bolt	8 mm bolt
Initial	N·m		12 – 18
	kg-m		1.2 – 1.8
	lb-ft		8.5 – 13.0
Final	N·m	9 – 13	20 – 24
	kg-m	0.9 – 1.3	2.0 – 2.4
	lb-ft	6.5 – 9.5	14.5 – 17.5



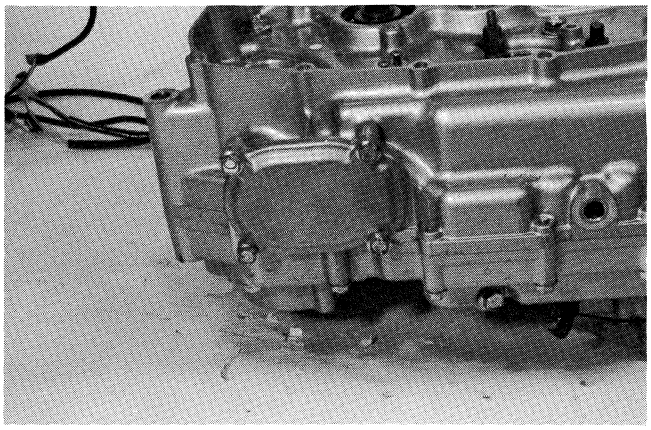
- Install the oil sump filter in the proper direction.
- Apply thread lock "1342" to the three screws.

99000-32050	Thread Lock "1342"

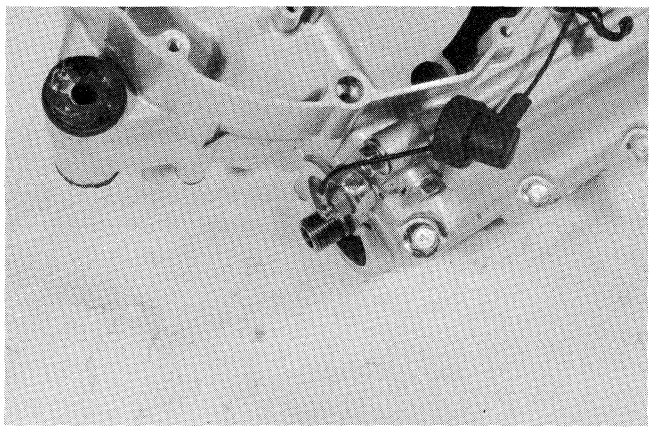


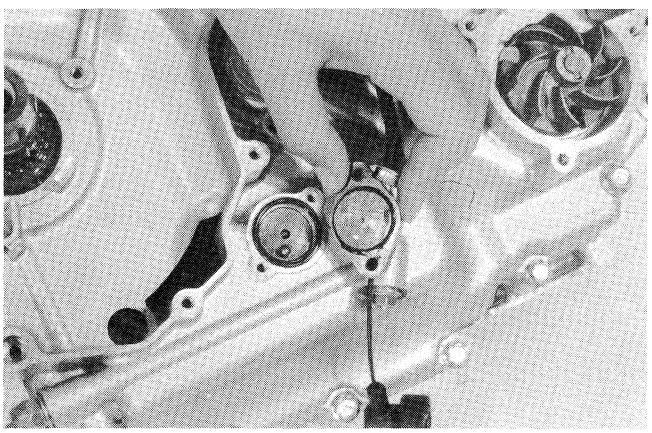
- Place a new O-ring and tighten the oil pan bolts to the specified torque.

Tightening torque	9 – 13 N·m (0.9 – 1.3 kg-m 6.5 – 9.5 lb-ft)



- Connect the oil pressure lead wire and install the neutral switch.

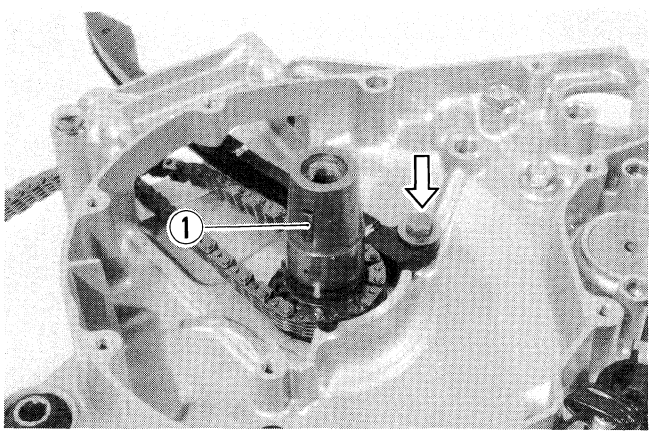




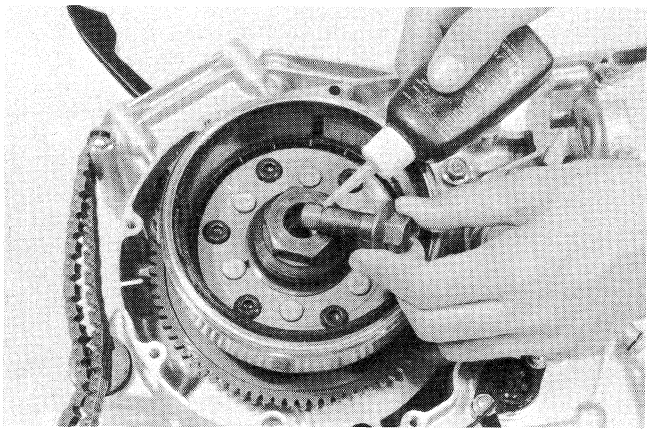
- Tighten the bolt to specified torque.

Tightening torque	8 – 12 N·m (0.8 – 1.2 kg-m 6.0 – 8.5 lb-ft)

- Align the key groove with the key ①.

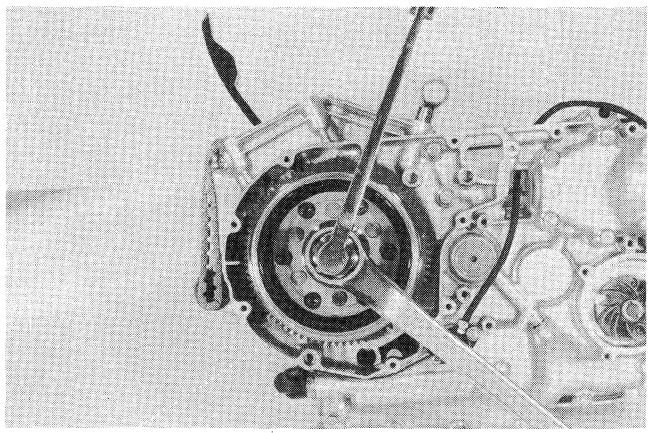


- Degrease the tapered portion of the rotor and also the crankshaft. Use nonflammable cleaning solvent to wipe off the oily or greasy matter to make these surfaces completely dry.
- Install the rotor to the crankshaft.
- Mount the rotor, secure the rotor by apply the Thread lock super "1303" to the bolt and tightening the center bolt to the specified torque value.



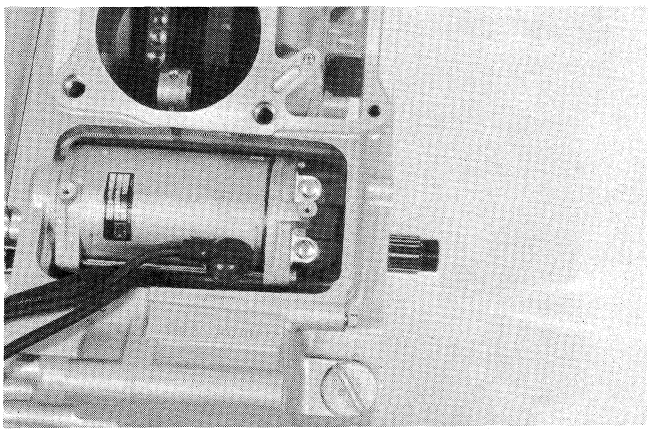
Tightening torque	140 – 160 N·m (14.0 – 16.0 kg-m 101.5 – 115.5 lb-ft)

99000-32030	Thread lock super "1303"



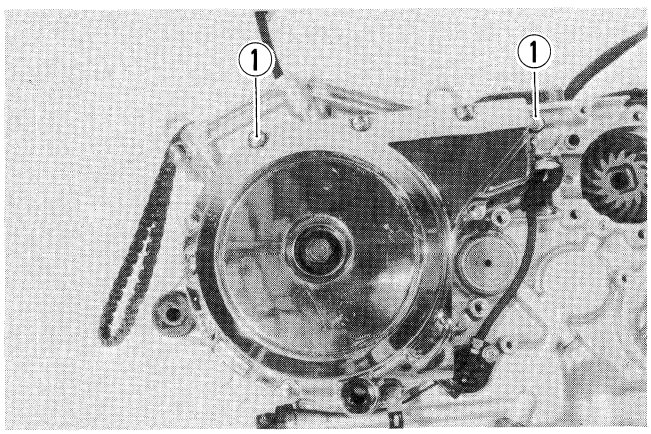
- Mount the starter motor to the crankcase and route the starter motor lead wire properly.

NOTE:
Pass the generator lead wire through the crank case hole before installing the starter motor.



- Install the generator cover.

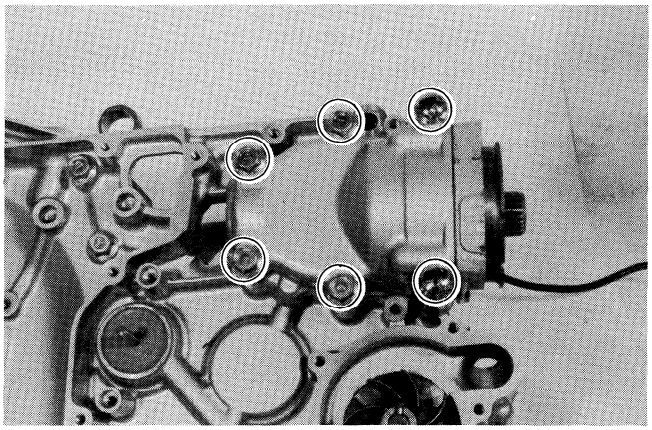
NOTE:
Do not forget the gasket ①.



- Place the secondary driven gear assembly.
- Apply SUZUKI Bond No. 1207B to secondary case mating surface, and then tighten the secondary case bolts to specified torque.

99104-31140	SUZUKI Bond No. 1207B

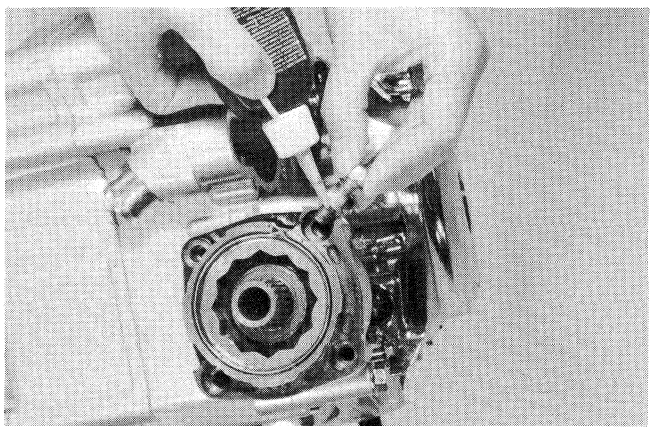
		Initial	Final
Tightening torque	N·m	12 – 18	20 – 24
	kg-m	1.2 – 1.8	2.0 – 2.4
	lb-ft	8.5 – 13.0	14.5 – 17.5



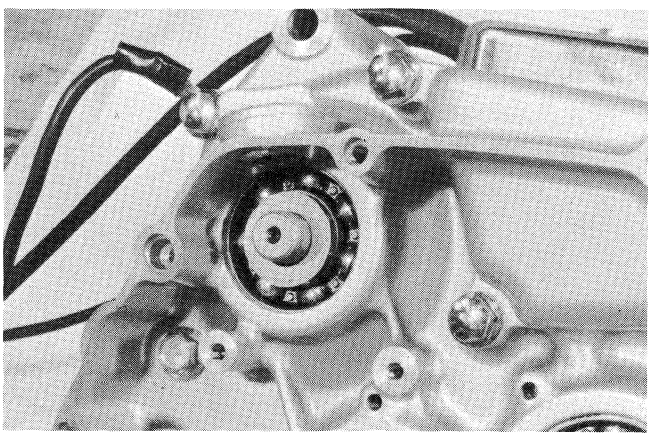
- Apply thread lock super "1303" to the secondary driven gear housing bolts.
- Tighten the bolts to specified torque.

99000-32030	Thread lock super "1303"

Tightening torque	18 – 28 N·m (1.8 – 2.8 kg-m 13.0 – 20.0 lb-ft)



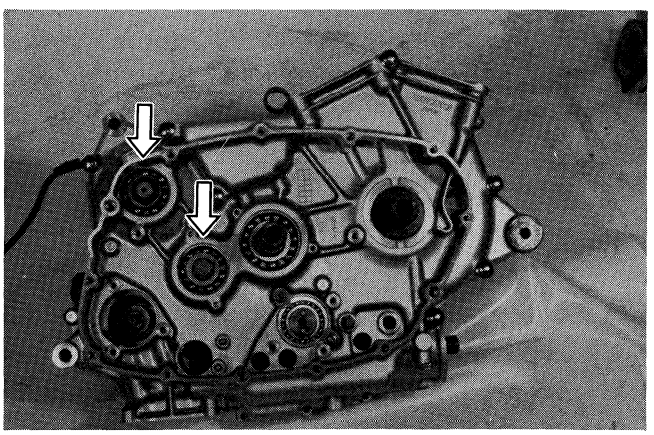
NOTE:
Do not forget the washer.



- Tighten the secondary drive gear nut and drive shaft bolt to specified torque.

Tightening torque

Secondary drive gear nut	80 – 110 N·m (8.0 – 11.0 kg-m 58.0 – 79.5 lb-ft)
Drive shaft bolt	60 – 70 kg-m (6.0 – 7.0 kg-m 43.5 – 50.5 lb-ft)

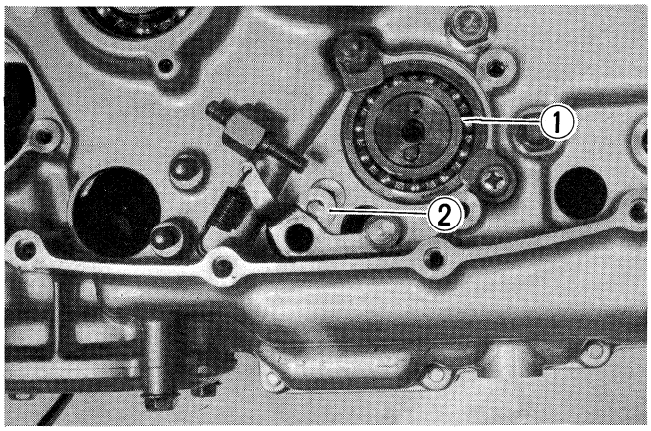


CAUTION:
Drive shaft bolt has left-hand thread.

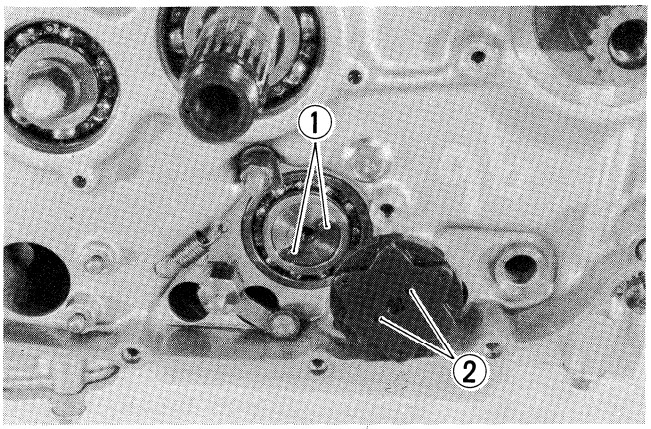
- Install the washer ① on the cam.
- Install the neutral stopper on the crankcase after applying the thread lock super "1303" to neutral stopper bolt.

NOTE:
Do not forget the washer ②.

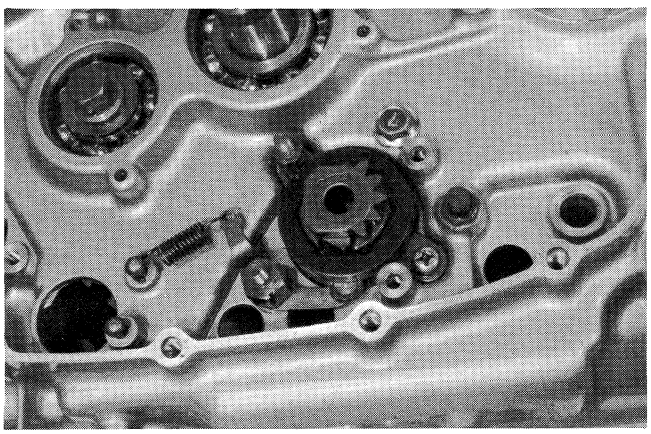
99000-32030	Thread lock super "1303"



- Check the neutral position.
- Install the gearshift cam stopper after aligning the cam shaft pins ① with gearshift cam stopper holes ②.

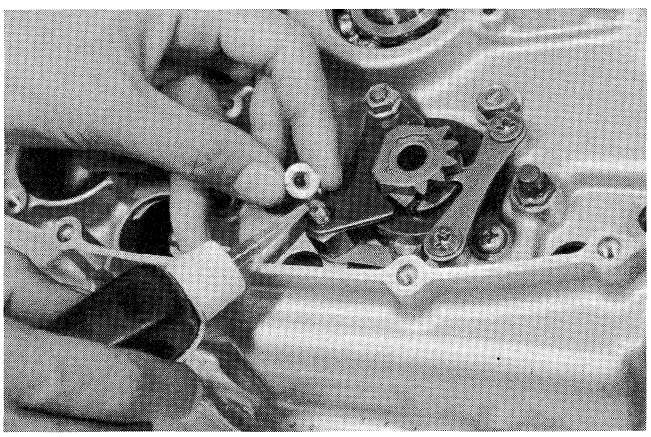


- The shape of each gear shifting pawl is different.
- Mount the one with the narrower width on the gear shifting cam side.
- Mount the cam driven gear on the gearshift cam.



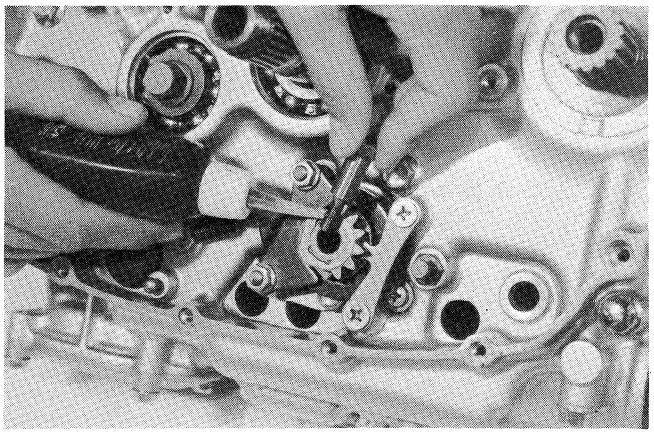
- Apply Thread lock super "1303" to the 2 screws and 2 nuts when installing the pawl lifter, and cam guide.

99000-32030	Thread lock super "1303"

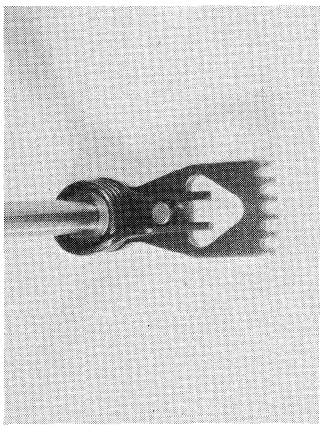


- Install the cam driven gear after applying the thread lock super "1303" to the bolt.

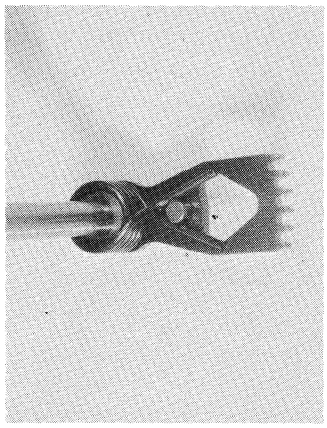
99000-32030	Thread lock super "1303"



- Install the gearshift shaft return spring properly.

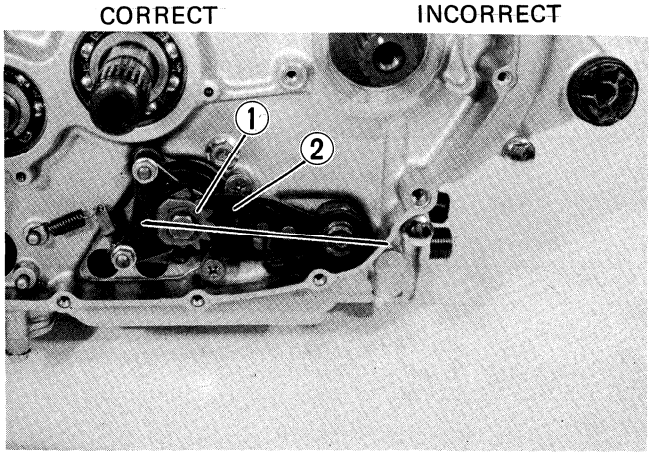


CORRECT



INCORRECT

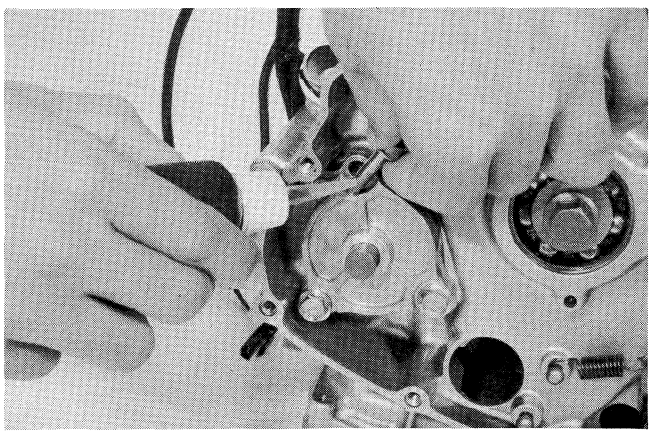
- Install the gearshift shaft in the crankcase. Align the gearshift cam driven gear ① meshes with the shifting gear ② mounted on the gearshift shaft. Be sure to mesh gears ① and ② with their center lines coinciding with each other or the mechanism will shift poorly or will not shift at all.



- Install a new O-ring to the oil pump. Install the oil pump to the crankcase after applying the thread lock "1342" to the mounting bolts.

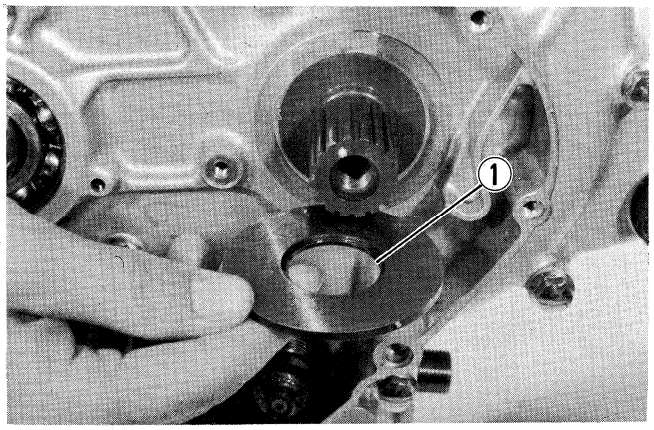
Oil pump bolt tightening torque	7 – 9 N·m (0.7 – 0.9 kg-m 5.0 – 6.5 lb-ft)

99000-32050	Thread lock "1342"

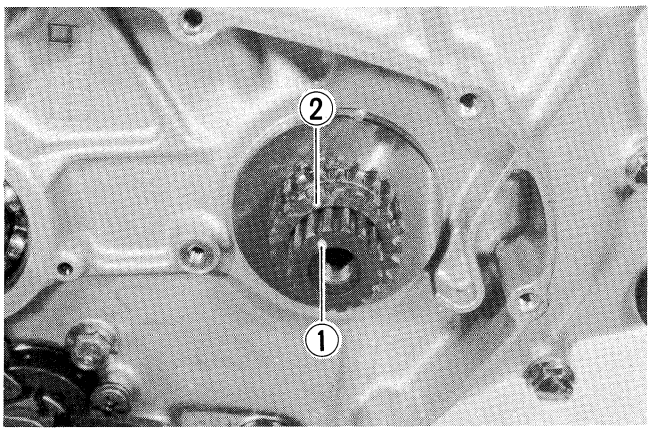


- Install the thrust shim on the crankshaft.

NOTE:
Chamfer side of thrust shim ① is installed to crankcase side.



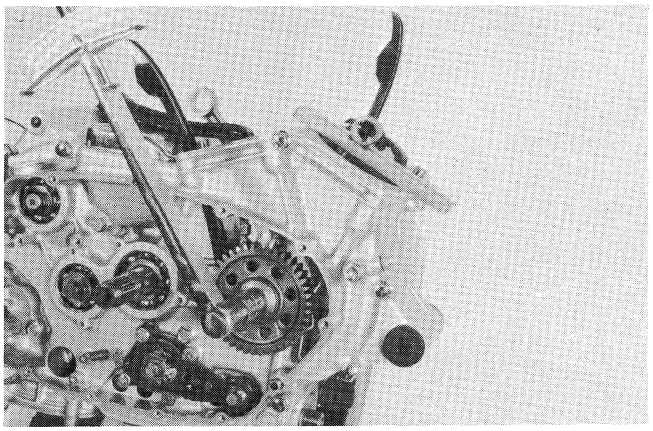
- After aligning the punch mark ① of crankshaft with punch mark ② of cam chain drive gear, install the cam chain drive gear.



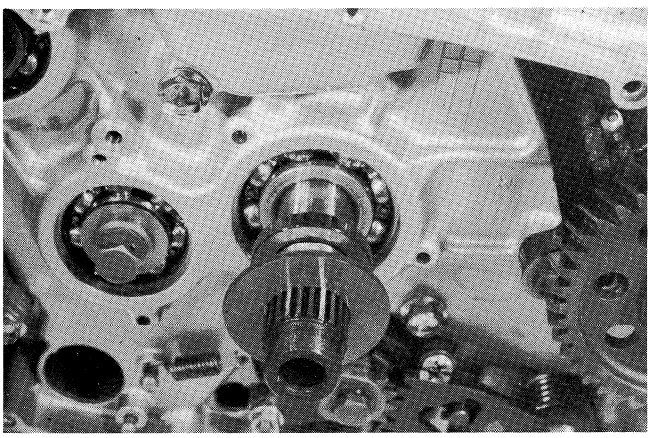
- Tighten the primary drive gear bolt with specified torque.

Tightening torque	80 – 110 N·m 8.0 – 11.0 kg-m 58.0 – 79.5 lb-ft

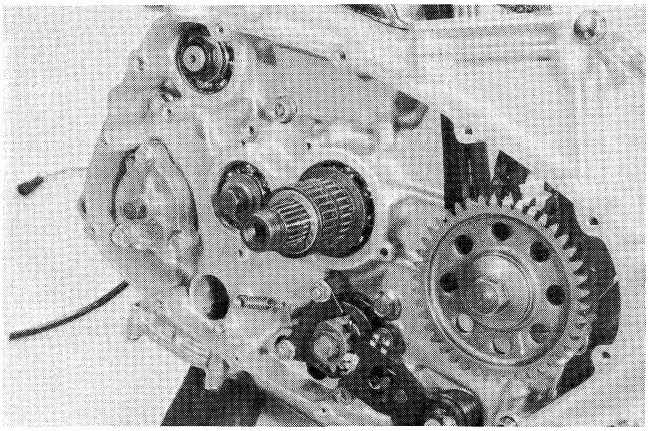
NOTE:
Primary drive gear has left hand thread.



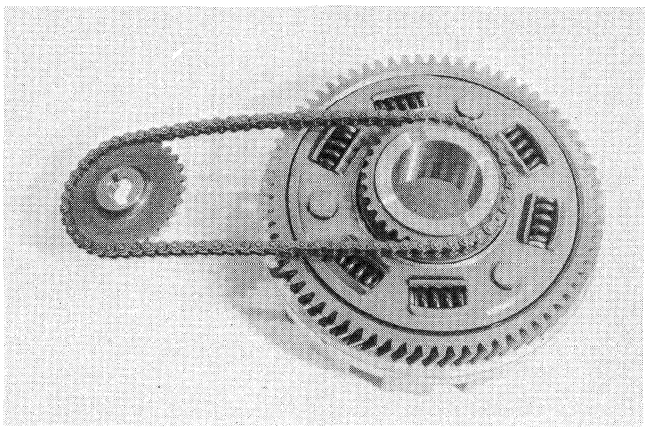
- Install the spacer and washer.



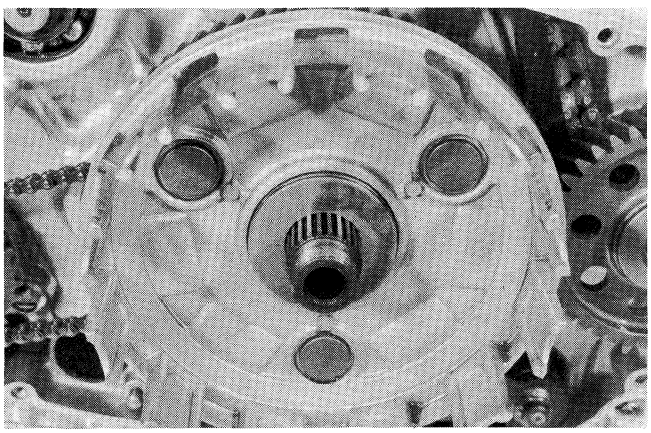
- Apply engine oil to the primary driven gear bearing and spacer, and assemble primary driven gear and chain to the countershaft.



- Install the oil pump driven gear and chain.



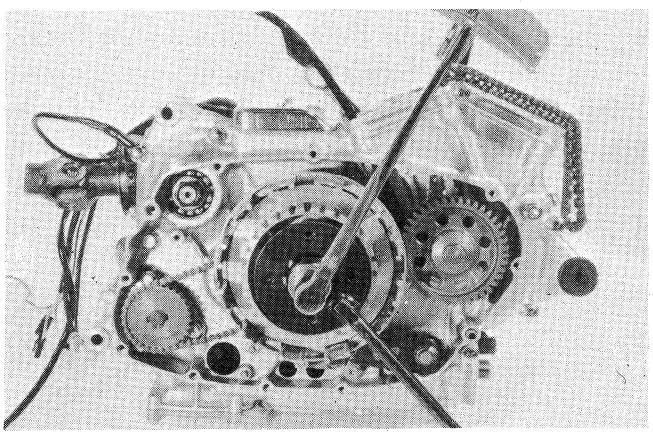
- Install the thrust washer on the countershaft.



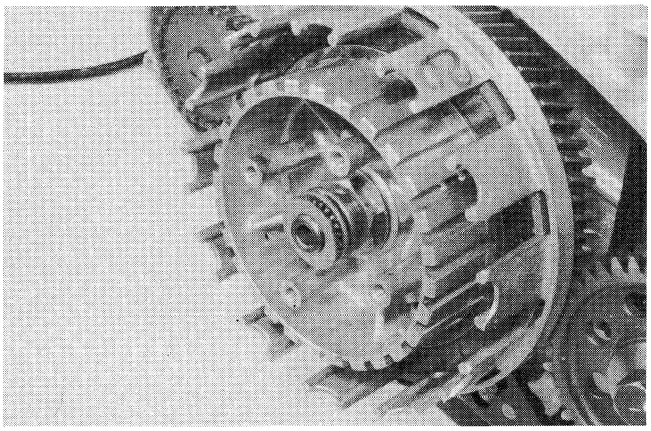
- After tightening the clutch sleeve hub nut, be sure to lock the nut by firmly bending the tongue of the washer. Tightening torque for the nut is specified.

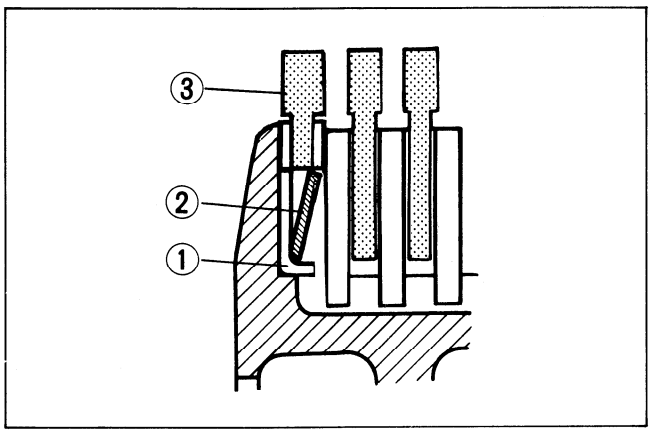
Clutch sleeve hub nut tightening torque	50 – 70 N·m (5.0 – 7.0 kg-m 36.0 – 50.5 lb-ft)

09920-53722	Clutch sleeve hub holder

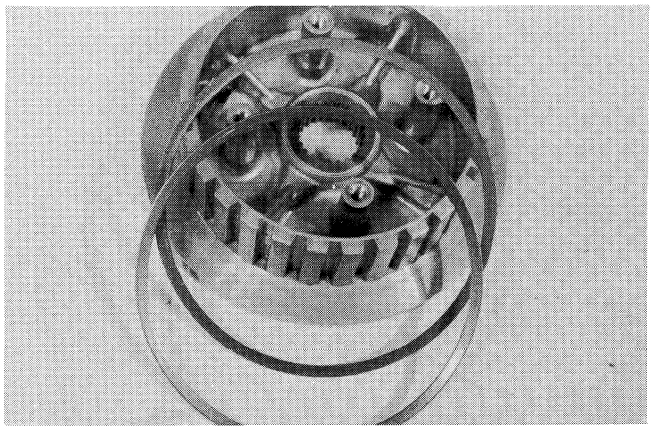


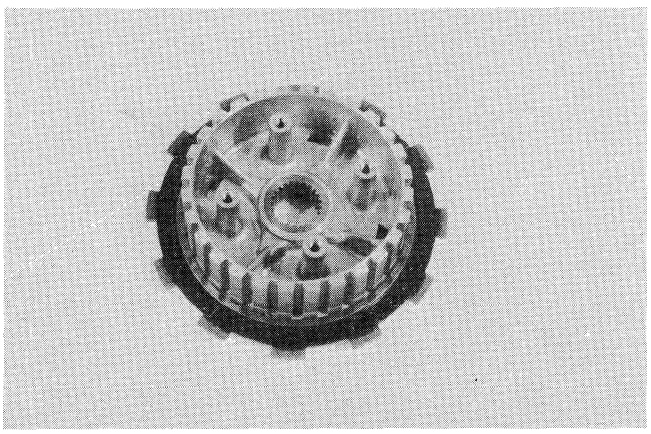
- Install clutch push rods into the countershaft so that the short push rod touches clutch push piece.
- Install the clutch push piece, bearing and washer in that order.
- Apply engine oil to the bearing.
- Install the wave washer seat ①, wave washer ② and drive plate No. 2 ③ (thicker cork plate as shown in the figure.)



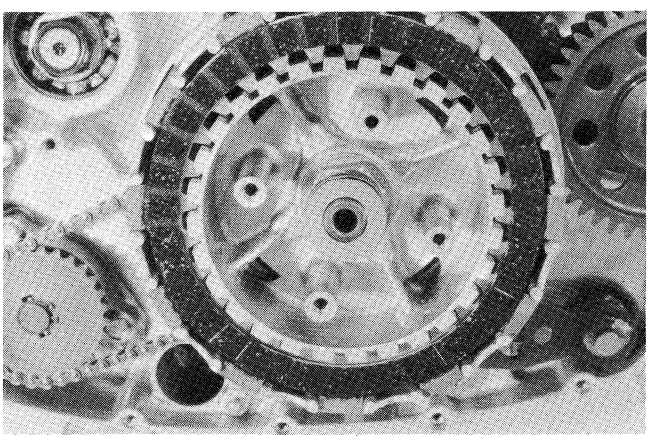


① Wave washer seat
② Wave washer
③ Drive plate No. 2

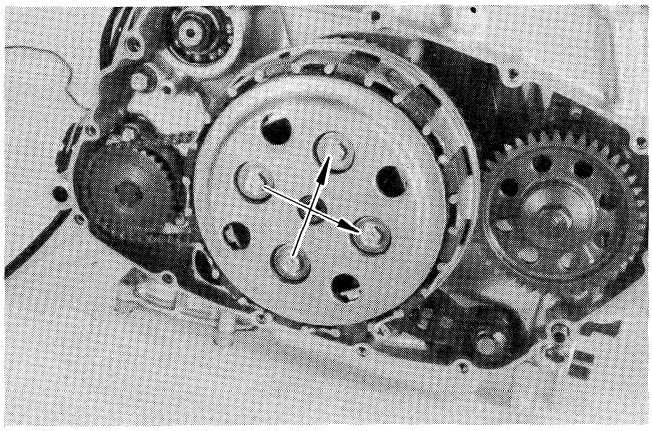




- Insert clutch drive plate and driven plate one by one into sleeve hub in the prescribed order, drive plate No. 2 first. Insert clutch push piece, bearing and thrust washer into pressure plate, making sure that the thrust washer is between the bearing and pressure plate. Then fit pressure plate into sleeve hub.



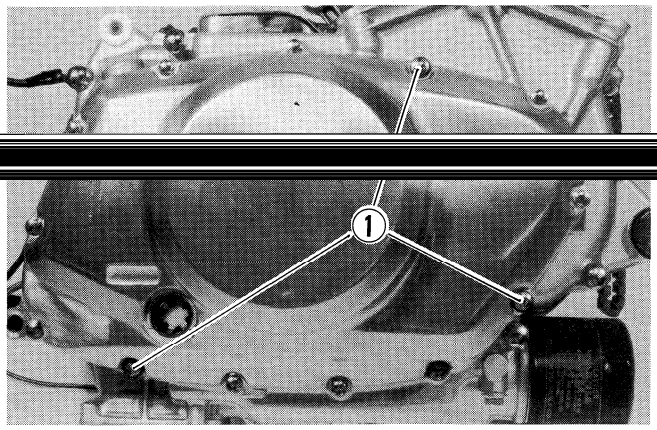
- Tighten clutch spring bolts in the order shown in the photo.



NOTE:
Tighten the clutch spring set bolts in the manner indicated, tightening them by degrees until they attain a uniform tightness.

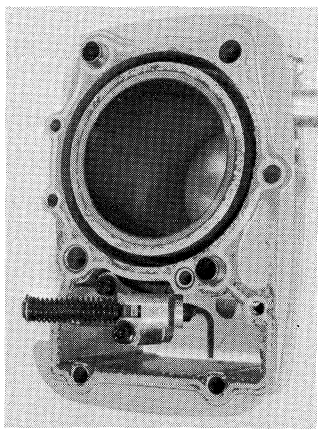
Clutch spring bolt tightening torque	11 – 13 N·m (1.1 – 1.3 kg-m) (8.0 – 9.5 lb-ft)

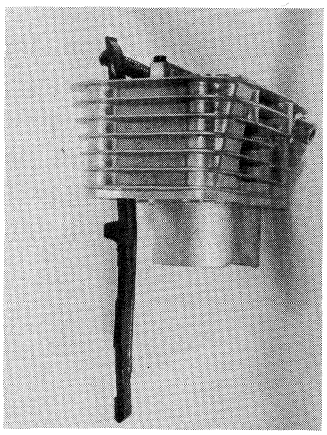
- Replace clutch cover gasket with a new one to prevent oil leakage.
- Install the clutch cover.



NOTE:
Do not forget a set bolt gaskets ①.

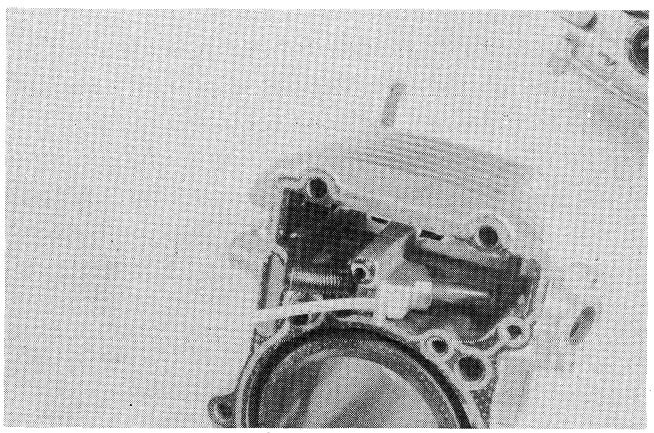
- Install the chain tensioner (Front and Rear) and chain guide on the cylinder.





- Compress the chain tensioner spring by releasing ratchet. Insert the special tool between ratchet and tensioner body.

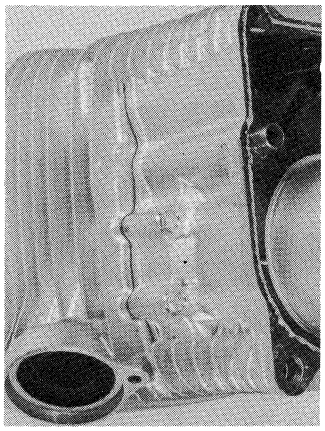
09918-53810	Tensioner locking tool

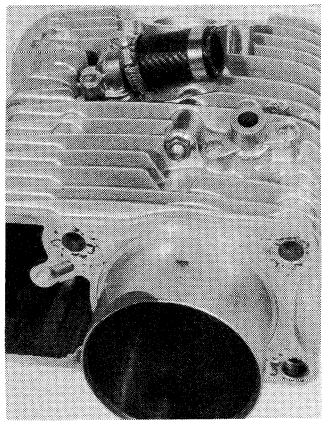


- Fit the cylinder head and cylinder and tighten the cylinder head nuts and bolts to specified torque.

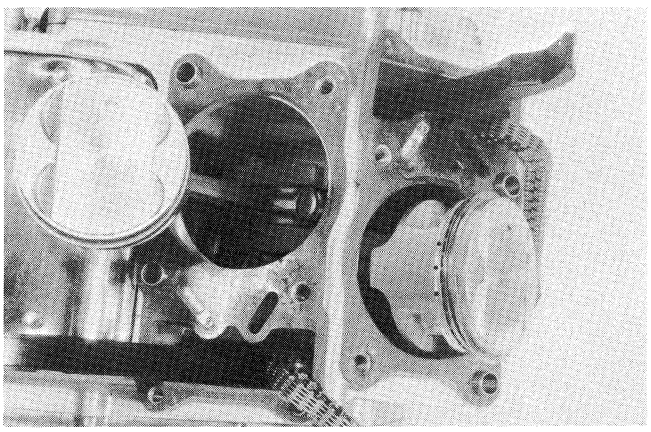
Tightening torque

Cylinder head nuts	8 – 12 N·m (0.8 – 1.2 kg-m 6.0 – 8.5 lb-ft)
Cylinder head bolts	9 – 11 N·m (0.9 – 1.1 kg-m 6.5 – 8.0 lb-ft)

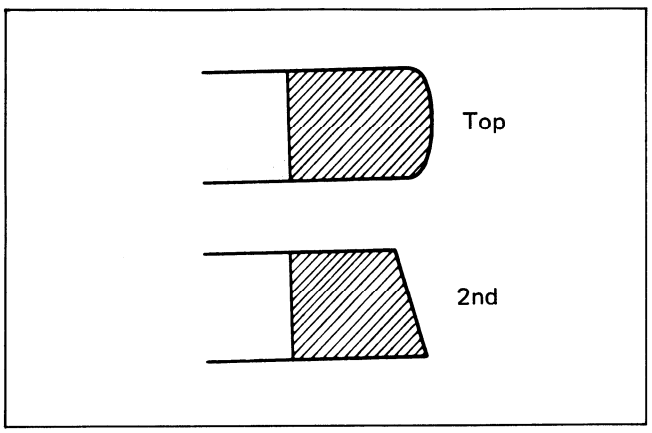




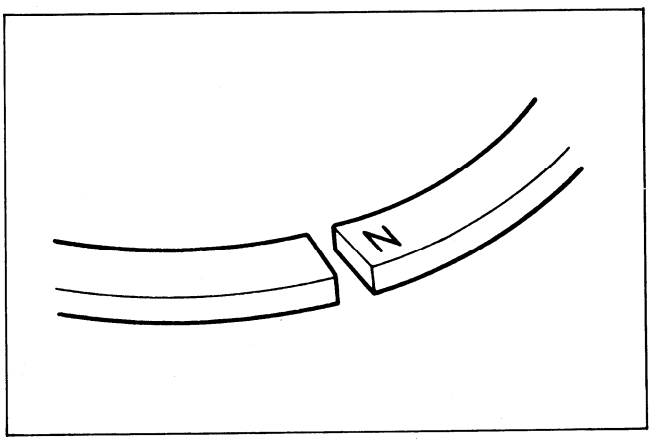
- Apply engine oil to the piston ring and piston surface.
- The piston is in correct position when its triangle (on the top) points exhaust valve side.



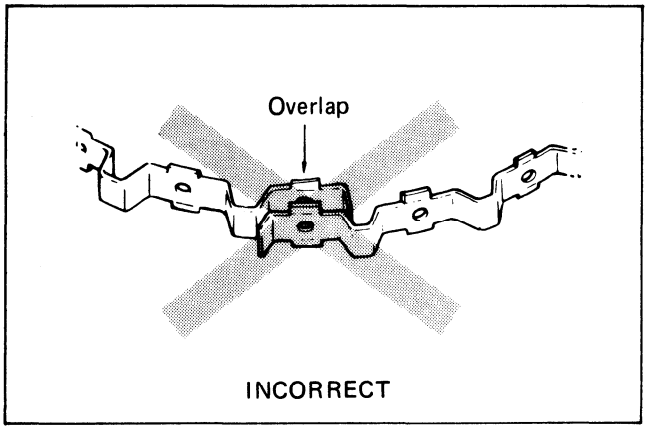
- Mount the piston ring in the order of oil ring, 2nd ring and top ring.
- Top ring and 2nd (middle) ring differ in the shape of ring face, and the face of top ring is chrome-plated whereas that of 2nd ring is not. The color of 2nd ring appears darker than that of the top one.

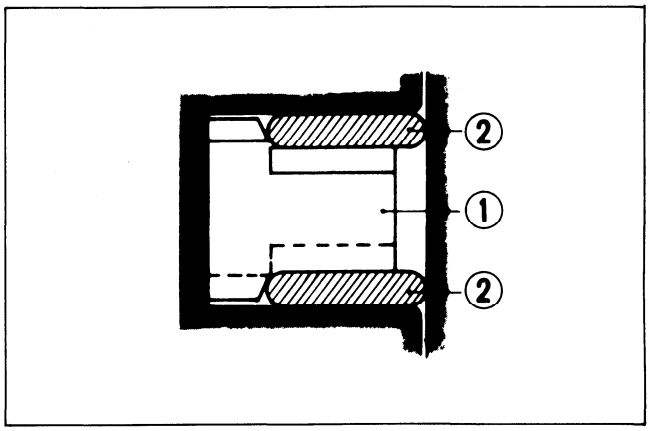


- Top and 2nd (middle) rings have letter "N" marked on the side. Be sure to bring the marked side to top when fitting them to the piston.
- The first member to go into the ring groove is spacer ①. After placing spacer, fit the two side rails ②. Side designations, top and bottom, are not applied to the spacer and side rails: you can position each either way.

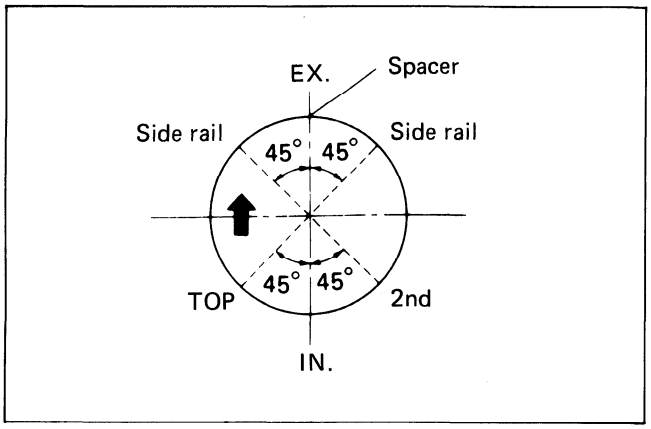


CAUTION:
When mounting the spacer, be careful not to allow its two ends to overlap in the groove.

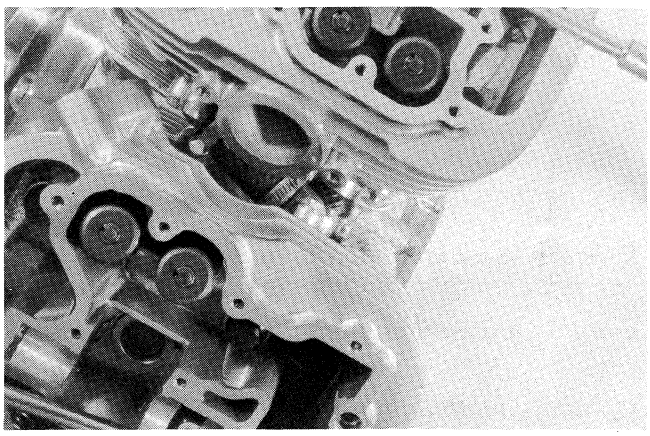




- Position the gaps of the three rings as shown. Before inserting each piston into the cylinder, check that the gaps are so located.

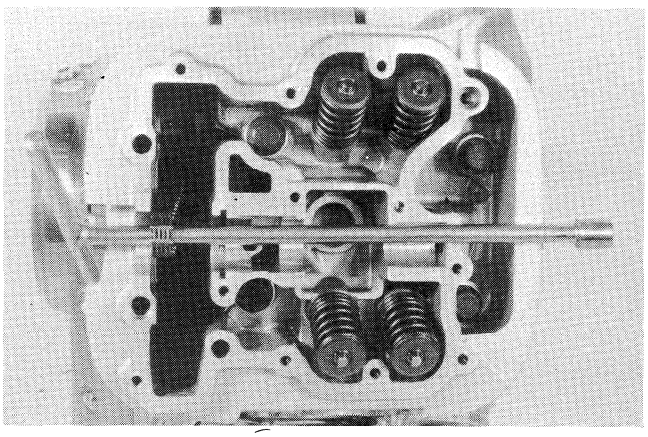


- Install the front and rear cylinder and cylinder head.
- Connect the radiator hose and screw the radiator hose clamp screws.



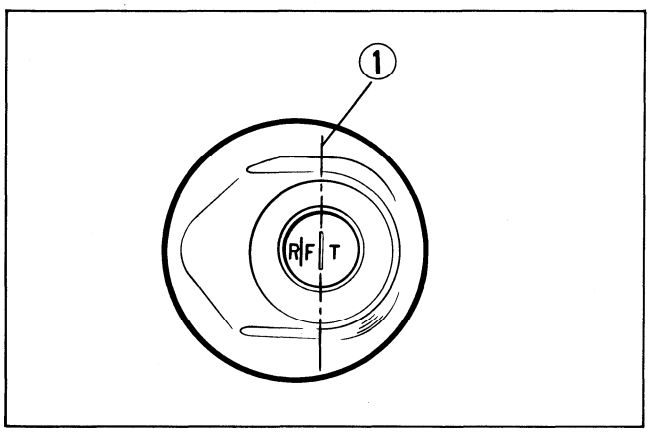
- Tighten the cylinder head bolts to the specified torque.

	Tightening torque
Cylinder head bolts	35 – 40 N·m (3.5 – 4.0 kg-m 25.5 – 29.0 lb-ft)



CAMSHAFT TIMING

Before installing camshaft, make sure that index line ① (T.D.C. of No. 1 engine.) on the rotor become the center of generator rotor cover hole.



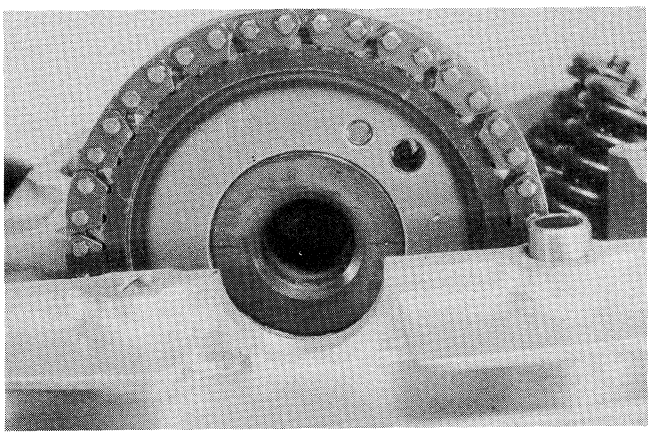
NOTE:
If work is done without drawing the camshaft drive chain upward, the chain will be caught between crankcase and cam chain drive sprocket.

NOTE:
Apply grease on the cam sprocket locating pin and install the pin into the camshaft.

No. 1 (REAR) ENGINE

- Engage the chain on the cam sprocket with the locating pin hole at the one o'clock position.

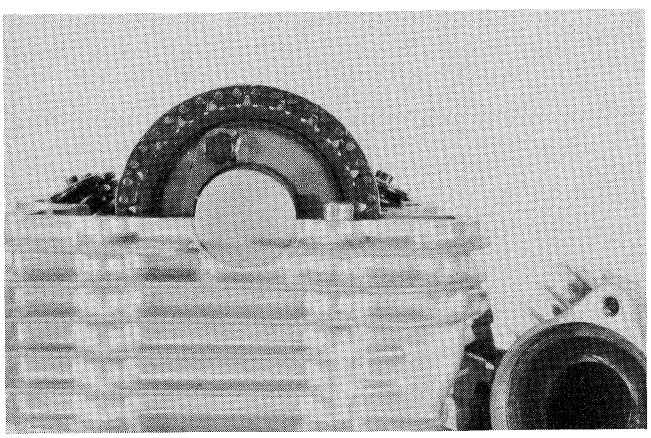
NOTE:
Do not rotate magneto rotor while doing this. When the sprocket is not positioned correctly, turn the sprocket. When installing the camshaft into the cam sprocket, pay attention not to dislodge the locating pin or it may fall into the crankcase.



- Align the marks on the camshaft so it is parallel with the surface of the cylinder head.

NOTE:
Arrow mark is located to forward.

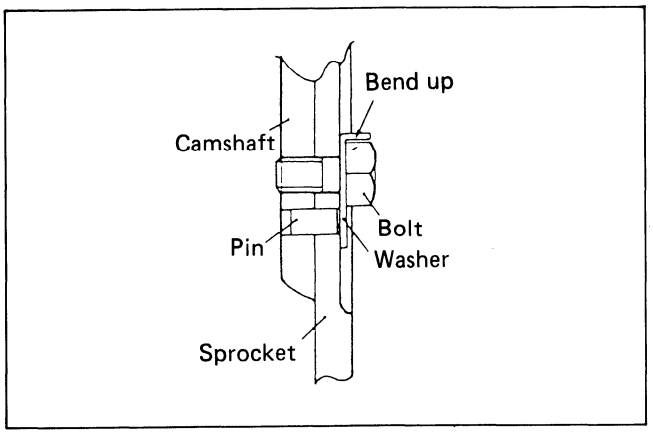
- Fit lock washer so that it is covering the locating pin.
- Apply Thread lock super "1303" to the bolts and tighten the cam sprocket.



Tightening torque	14 – 16 N·m (1.4 – 1.6 kg-m 10.0 – 11.5 lb-ft)

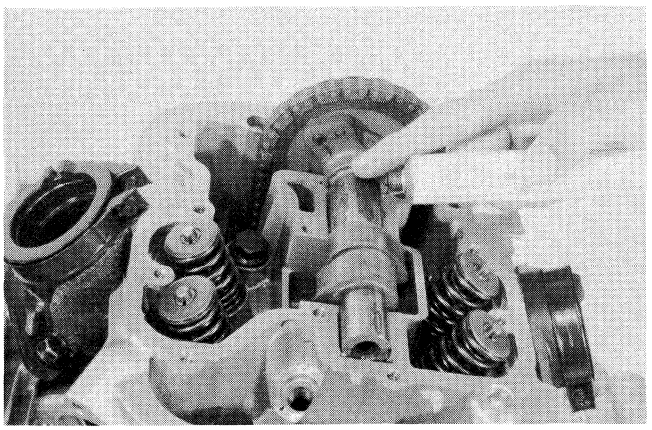
99000-32030	Thread lock super "1303"

- Bend up the washer tongue positively to lock the bolts.



- Apply SUZUKI MOLY PASTE to the camshaft journals.

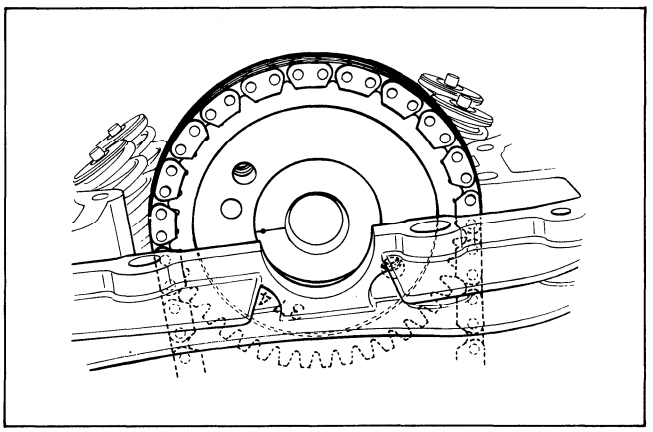
99000-25140	SUZUKI MOLY PASTE



No. 2 (FRONT) ENGINE

- At this position, engage the chain on the cam sprocket with the locating pin hole at the nine half o'clock position.

NOTE:
Do not rotate magneto rotor while doing this. When the sprocket is not positioned correctly, turn the sprocket. When installing the camshaft, pay attention not to dislodge the locating pin or it may fall into the crankcase.

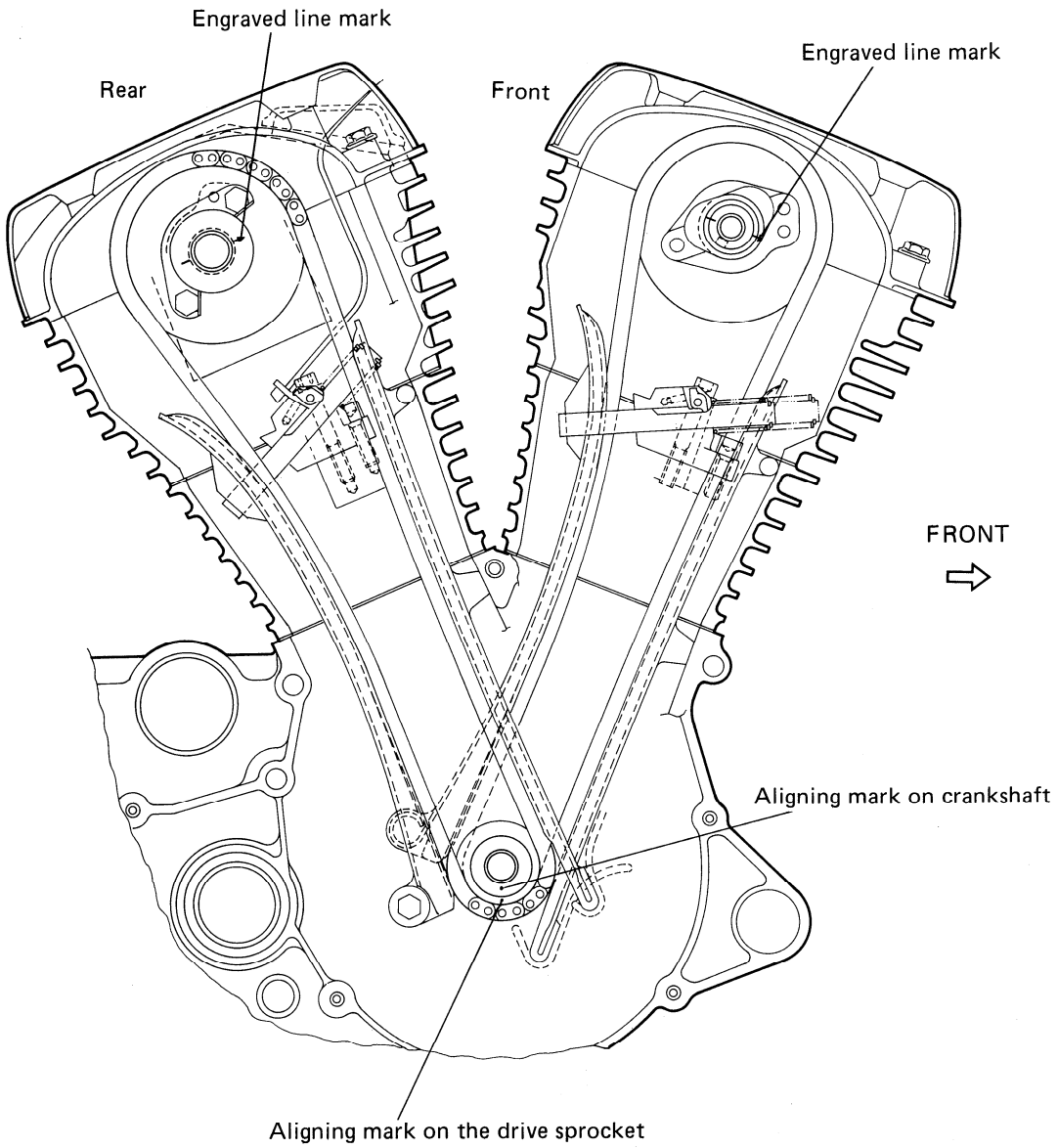


- Other procedure is same manner of No. 1 (REAR) engine.

CAM SHAFT TIMING

- Turn the crankshaft so that the No. 1 (REAR) engine position is positioned at T.D.C.

CAMSHAFT TIMING
Turn the crankshaft so that the rear engine is positioned at T.D.C.

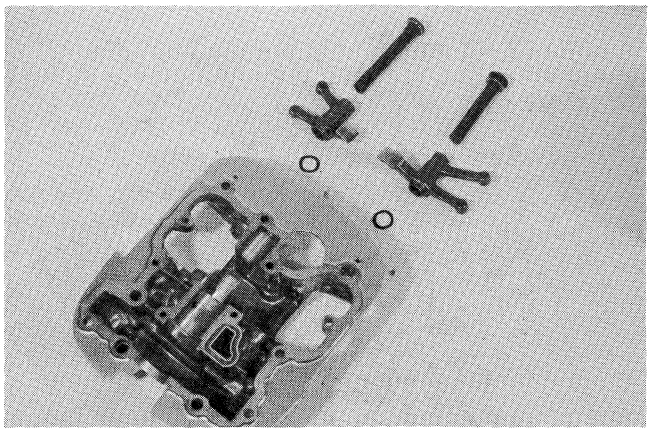


VALVE ROCKER ARM AND SHAFT

- Apply SUZUKI MOLY PASTE to the rocker arms and shafts.
- After inserting the shafts, tighten the set bolts.

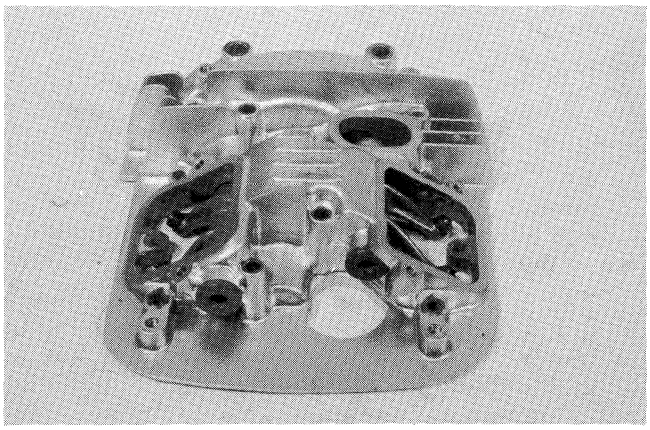
NOTE:
Use a conically recessed top bolt as the set bolts.

CAUTION:
*** Do not forget the wave washer.**
*** Use a new gasket on the set bolts to prevent oil leakage.**

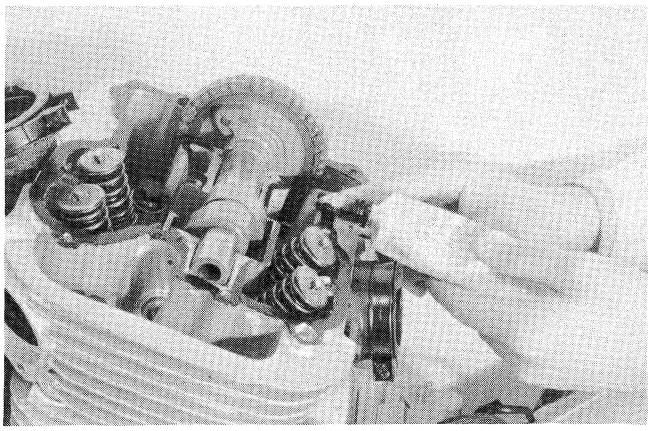


- Thoroughly wipe off oil from the mating surfaces of cylinder head and cover.
- Fit the two dowel pins to the cylinder head side.
- Uniformaly apply SUZUKI Bond No. 1216 to the cylinder head surface.

99104-31160	SUZUKI Bond No. 1216

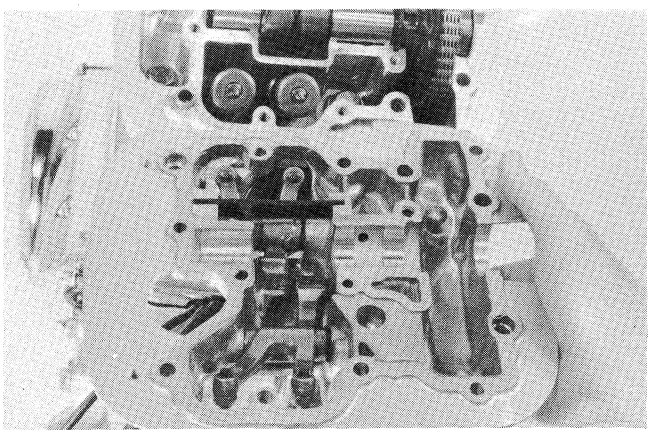


NOTE:
Do not apply SUZUKI Bond No. 1216 to the camshaft end cap.



NOTE:
When tightening the cylinder head cover bolts, position must be at top dead center on compression stroke.

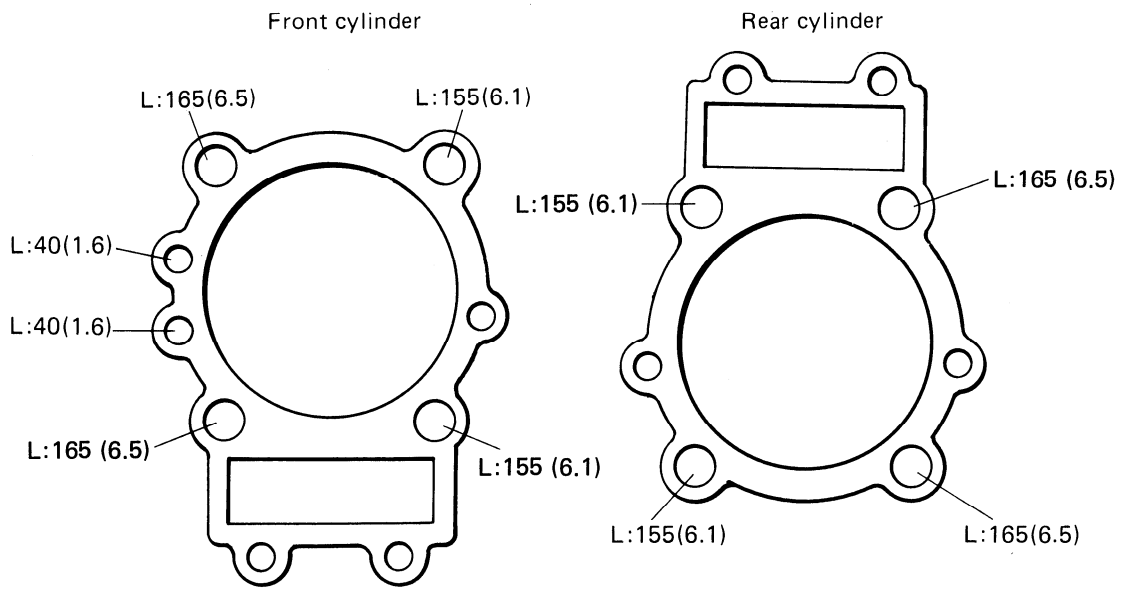
NOTE:
Do not forget the plate on front cylinder head cover.



- Lightly tighten the cylinder head cover bolts diagonally and then, if everything is satisfactory, tighten securely with a torque wrench to the specified torque.

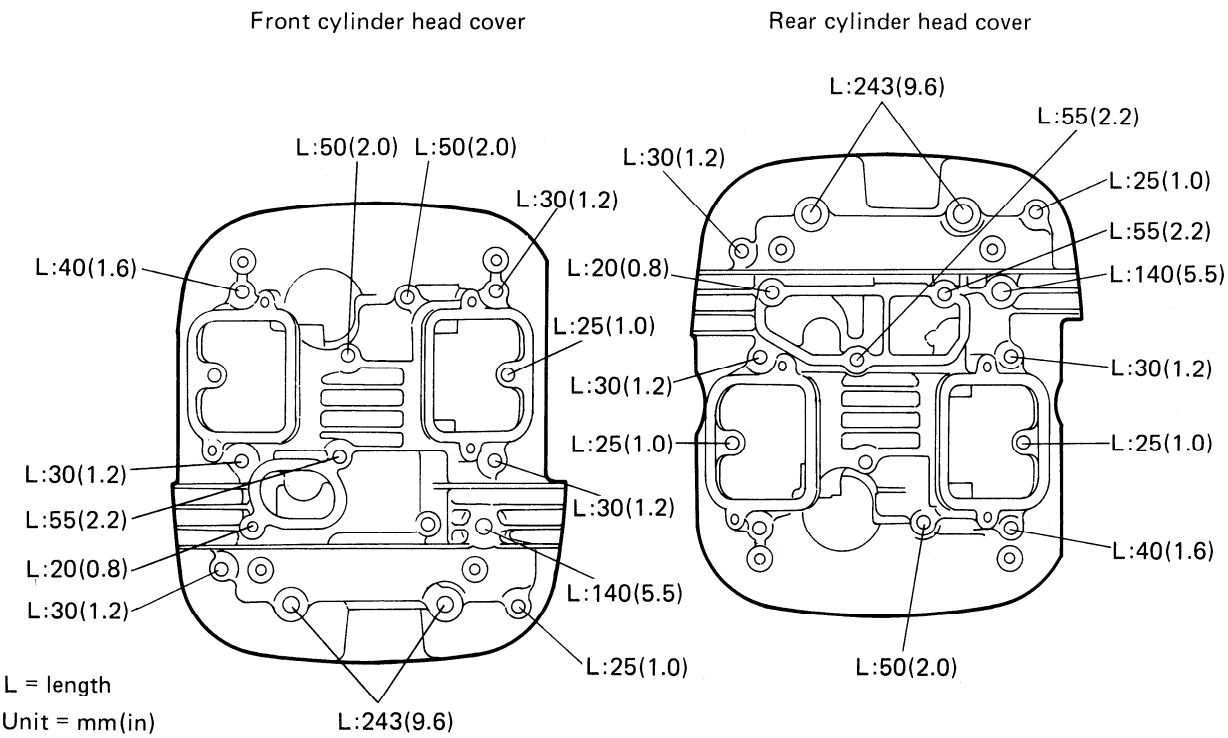
	6 mm	8 mm
Tightening torque	9 – 11 N·m (0.9 – 1.1 kg-m) (6.5 – 8.0 lb-ft)	21 – 25 N·m (2.1 – 2.5 kg-m) (15.0 – 18.0 lb-ft)

CYLINDER HEAD BOLT



L = length
Unit= mm(in)

CYLINDER HEAD COVER BOLT



L = length
Unit = mm(in)

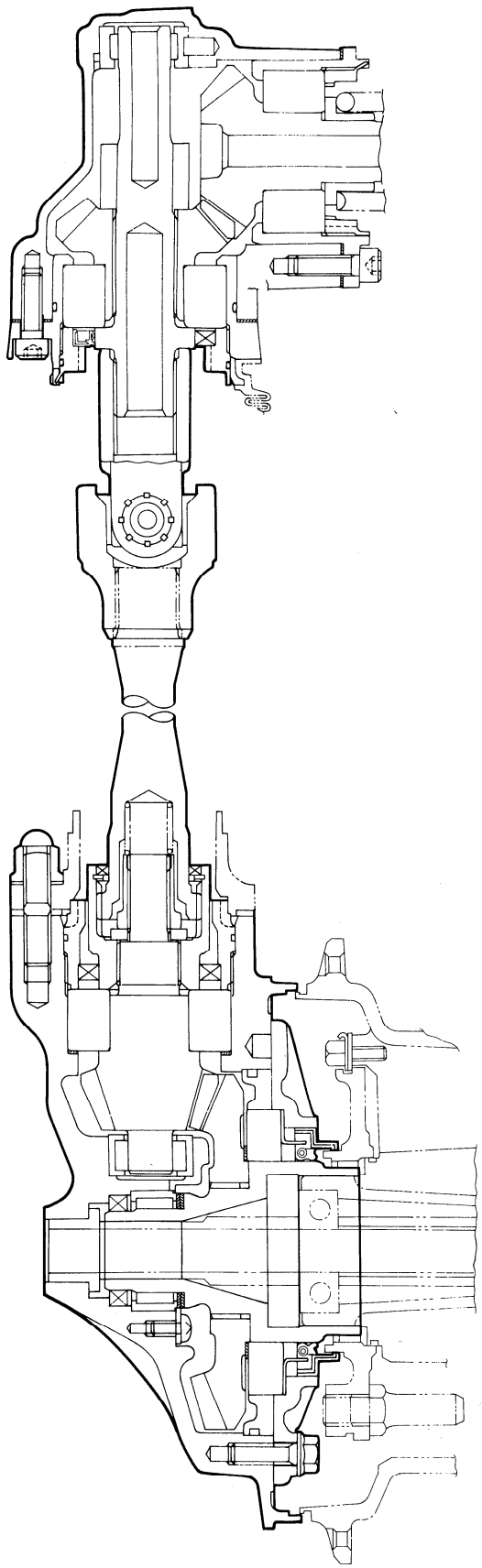
SHAFT DRIVE

4

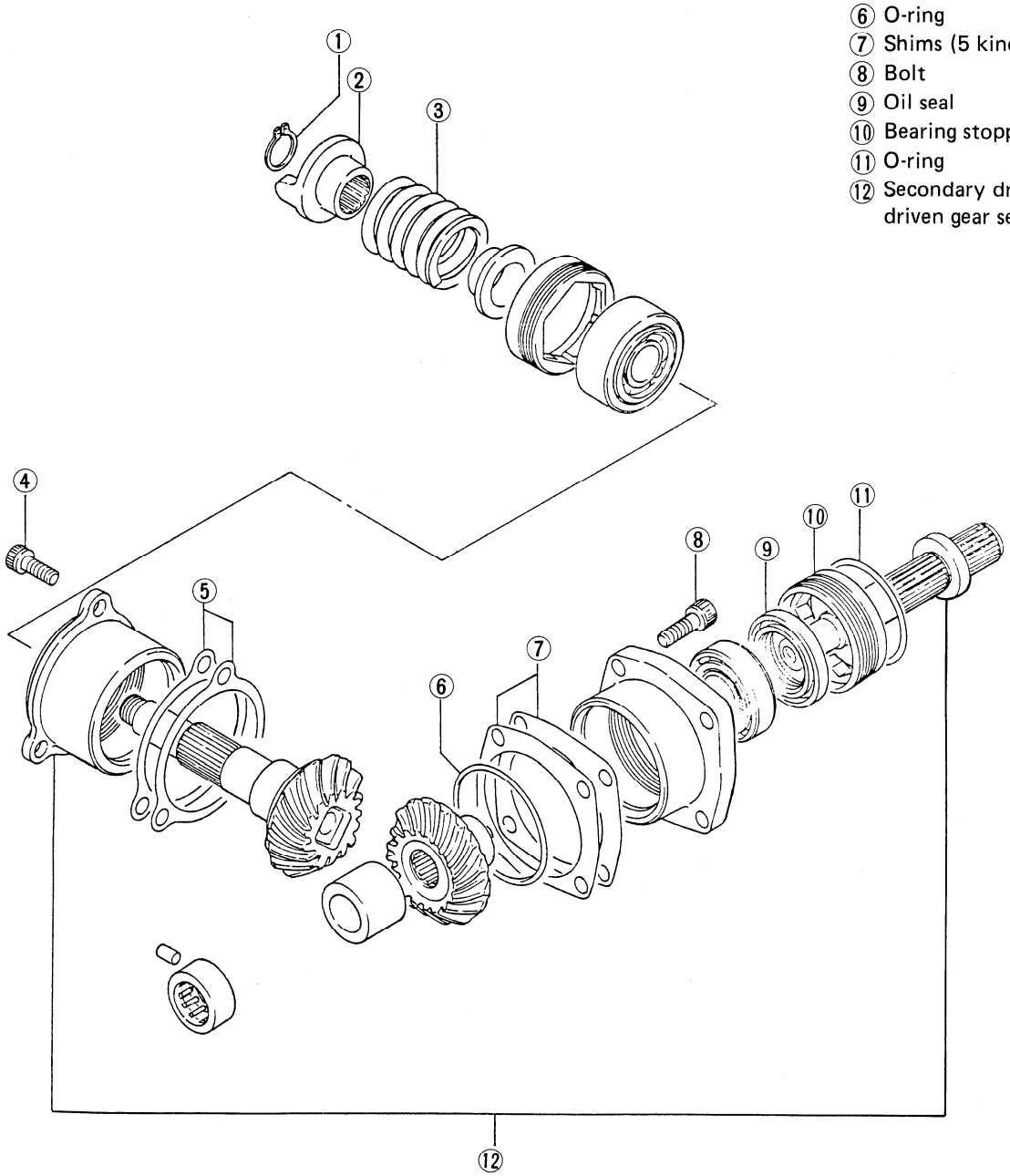
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SHAFT DRIVE



SECONDARY BEVEL GEARS CONSTRUCTION



Tightening torque

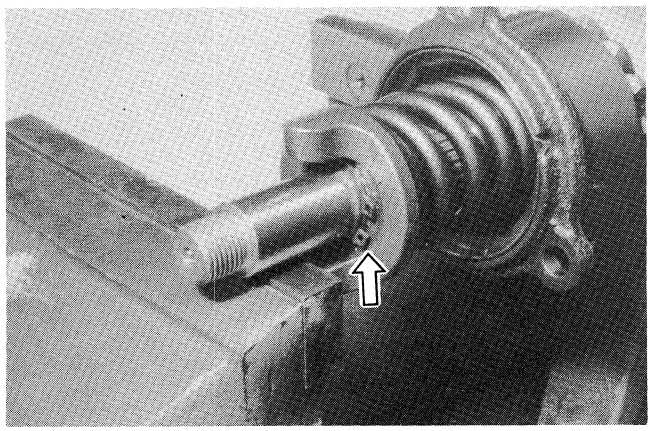
	N·m	kg-m	lb-ft
④	18 – 28	1.8 – 2.8	13.0 – 20.0
⑧	18 – 28	1.8 – 2.8	13.0 – 20.0
⑩	90 – 120	9.0 – 12.0	65.0 – 87.0

REMOVAL AND DISASSEMBLY

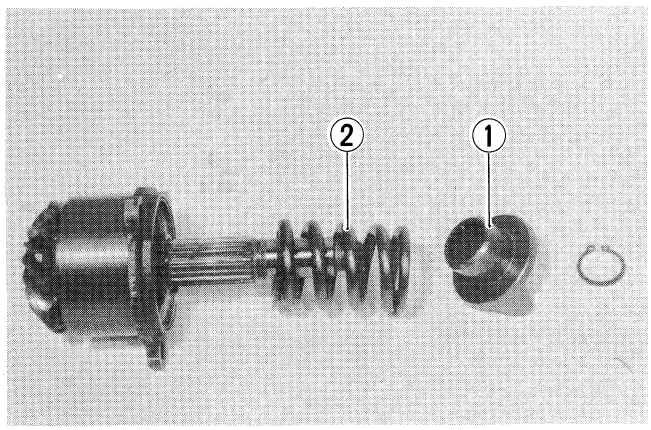
SECONDARY DRIVE BEVEL GEAR

- Remove the engine (See page 3-4).
- Remove the secondary drive bevel gear assembly (See page 3-24).
- Compress the damper spring with a vice, and remove the circlip by using the special tool.

09900-06107	Snap ring pliers



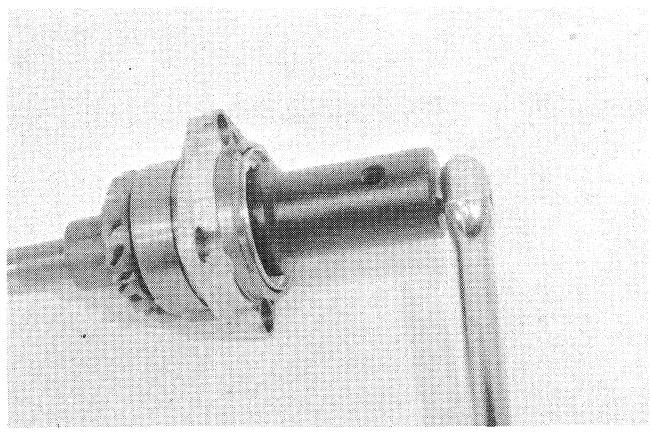
- Remove the cam dog ① and damper spring ②.



SECONDARY DRIVEN BEVEL GEAR

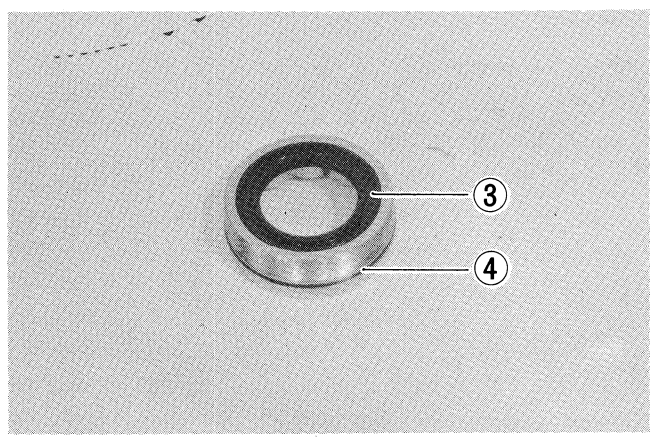
- Remove the secondary driven bevel gear assembly (See page 3-22).
- Remove the bearing stopper by using the special tool.

09921-21820	Bearing retainer wrench



- Remove the oil seal ③ and O-ring ④.

CAUTION:
The removed oil seal and O-ring should be replaced with new ones.



INSPECTION

Inspect the removed parts for the following abnormalities.

* Drive and driven bevel gears damage or wear
* Improper tooth contact
* Abnormal noise of bearings
* Bearing damage or wear.

REASSEMBLY

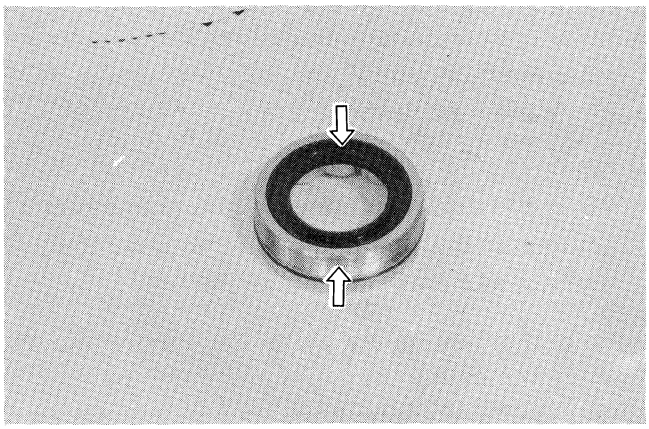
Reassemble the secondary bevel gears in the reverse order of disassembly and also carry out the following steps:

NOTE:
Before reassembly, thoroughly clean all parts in cleaning solvent.

- Apply grease to the lip of oil seal and O-ring.

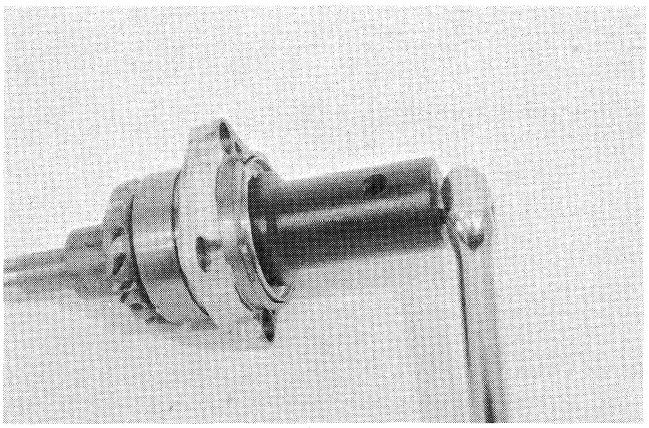
99000-25030	SUZUKI Super grease "A"

CAUTION:
Always use a new oil seal and O-ring.



- Tighten the bearing stopper to the specification.

Tightening torque	90 – 120 N·m (9.0 – 12.0 kg-m 65.0 – 87.0 lb-ft)



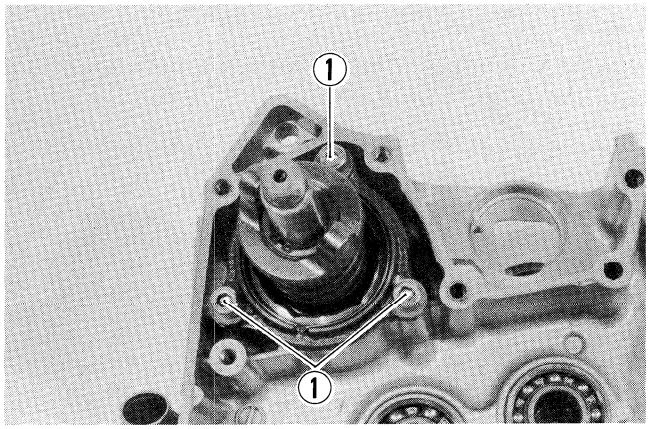
CAUTION:
When replacing the secondary drive or driven bevel gear, replace the secondary driven or drive bevel gear also, as they must be replaced together.

SECONDARY GEARS SHIM ADJUSTMENT

BACKLASH

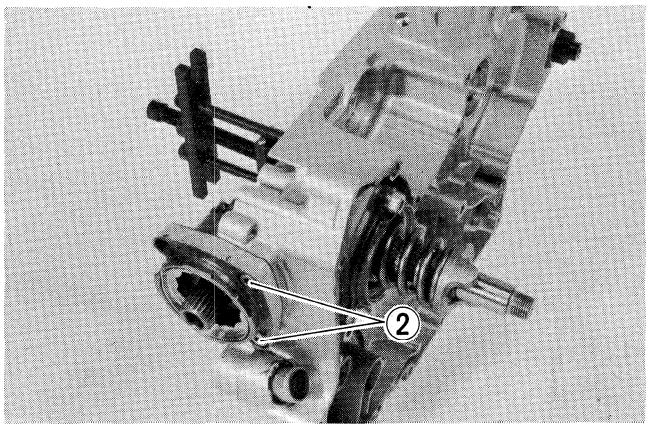
- Install the secondary drive bevel gear assembly with removed shims, and tighten the three bolts ① to the specification.

Tightening torque	18 – 28 N·m (1.8 – 2.8 kg-m 13.0 – 20.0 lb-ft)



- Install the secondary driven bevel gear assembly with removed shims, and tighten the two bolts ② to the specification.

NOTE:
Do not install the O-ring on the driven gear housing at this point. O-ring is installed after backlash and tooth contact are correct.



- Hold the bearing by using the special tool or secondary case.

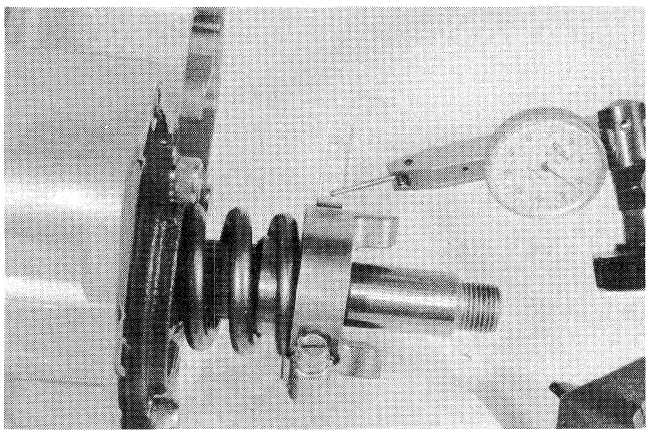
09921-21810	Bearing holder

Tightening torque	18 – 28 N·m (1.8 – 2.8 kg-m 13.0 – 20.0 lb-ft)

- Install the backlash measuring tool on the drive bevel gear cam dog, and set-up a dial gauge as shown in photo.

09924-34510	Backlash measuring tool (27 – 50 mm)

Secondary gear backlash	0.05 – 0.32 mm (0.002 – 0.013 in)



- Adjust the dial gauge so that it touches the backlash measuring tool arm at the mark; hold the driven bevel gear securely, and turn the driven bevel gear in each direction, reading the total backlash on the dial gauge.
- If the backlash is not within specification, the shims must be changed and the backlash should be re-checked until correct.
  Refer to the right chart for appropriate changes.

Backlash	Shim adjustment
Under 0.05 mm (0.002 in)	Increase shim thickness
0.05 – 0.32 mm (0.002 – 0.013 in)	Correct
Over 0.32 mm (0.013 in)	Decrease shim thickness

NOTE:
When changing the shims, measure the thickness of old shims. Using the thickness of the old shims as a guide, adjust the backlash by referring to the right chart.

List of shims Ⓐ (Refer to page 4-7)

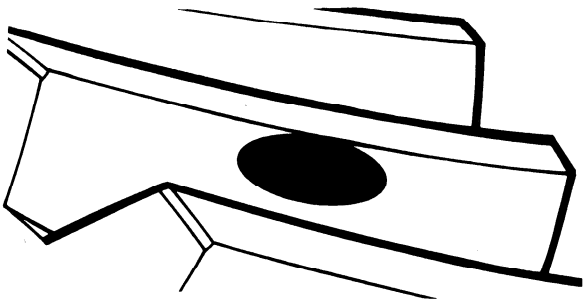
Part No.	Shim thickness
24945 - 05A00 - 0A0	0.30 mm
24945 - 05A00 - 0B0	0.35 mm
24945 - 05A00 - 0C0	0.40 mm
24945 - 05A00 - 0D0	0.50 mm
24945 - 05A00 - 0E0	0.60 mm

TOOTH CONTACT

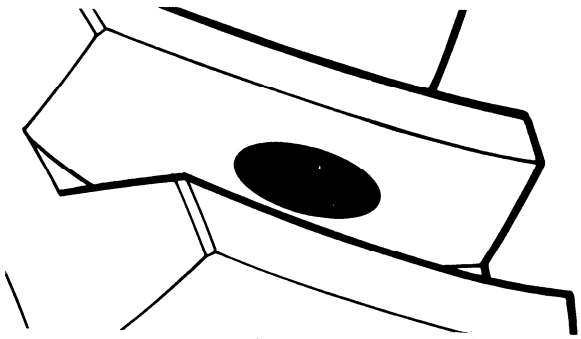
- After bringing the backlash within specification by changing the secondary driven bevel gear shims, it will be necessary to check tooth contact.
- Remove the drive bevel gear assembly from the crankcase.
- Clean and degrease the secondary drive bevel gear teeth, and apply a coating of machinist's layout dye or paste to several teeth.
- Reinstall the secondary drive bevel gear assembly, with correct shim, onto the secondary gear housing.
- Rotate the secondary driven bevel gear several turns in both directions.
- Remove the secondary drive bevel gear from the crankcase, and observe the tooth contact pattern made in the dye or paste.
- Compare the tooth contact pattern to the examples as shown in ①, ② and ③.
- If tooth contact is found to be correct, go the Final Assembly (See page 3-59).
- If tooth contact is found to be incorrect, the shims of the secondary drive bevel gear and secondary driven bevel gear must be changed, tooth contact should be re-checked until correct.

CAUTION:
After the tooth contact adjustment is made, the backlash must be re-checked, as it may change. Refer to the backlash checking sub-section, and readjust until both backlash and tooth contact are correct.

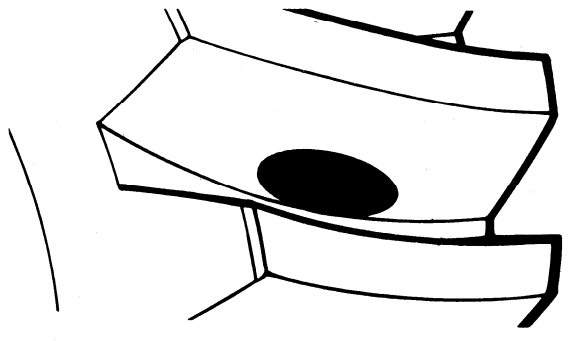
① INCORRECT (Contact at tooth top)



② CORRECT



③ INCORRECT (Contact at tooth root)



Tooth contact	Shim adjustment
Contact at tooth top ①	Decrease thickness of shims Ⓐ or Ⓑ
Contact at tooth root ③	Increase thickness of shims Ⓐ or Ⓑ

List of shim Ⓐ

Part No.	Shim thickness
24945 - 05A00 - 0A0	0.30 mm
24945 - 05A00 - 0B0	0.35 mm
24945 - 05A00 - 0C0	0.40 mm
24945 - 05A00 - 0D0	0.50 mm
24945 - 05A00 - 0E0	0.60 mm

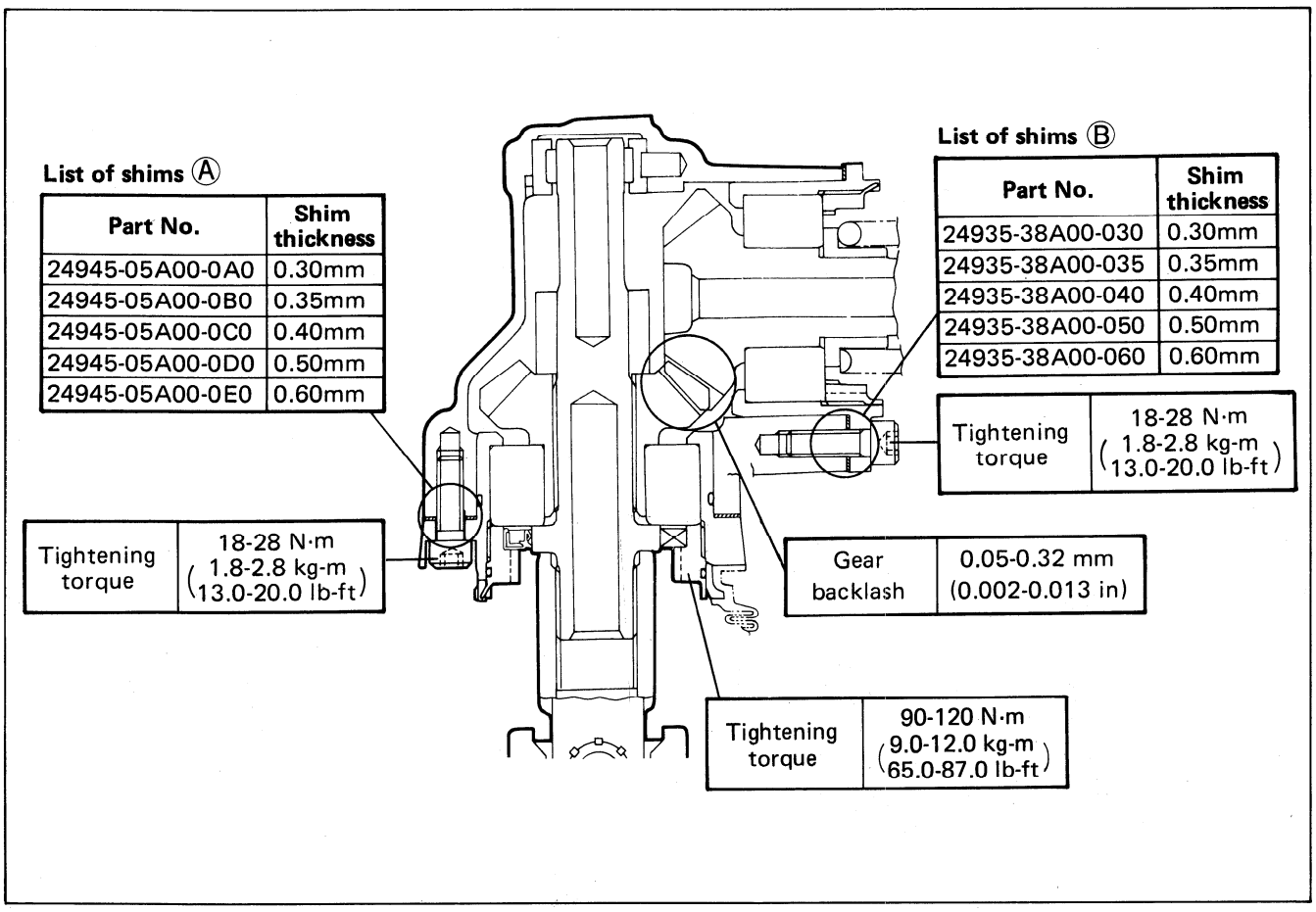
List of shims Ⓑ

Part No.	Shim thickness
24935 - 38A00 - 030	0.30 mm
24935 - 38A00 - 035	0.35 mm
24935 - 38A00 - 040	0.40 mm
24935 - 38A00 - 050	0.50 mm
24935 - 38A00 - 060	0.60 mm

FINAL ASSEMBLY AND REMOUNTING

- See page 3-59 and 3-64.

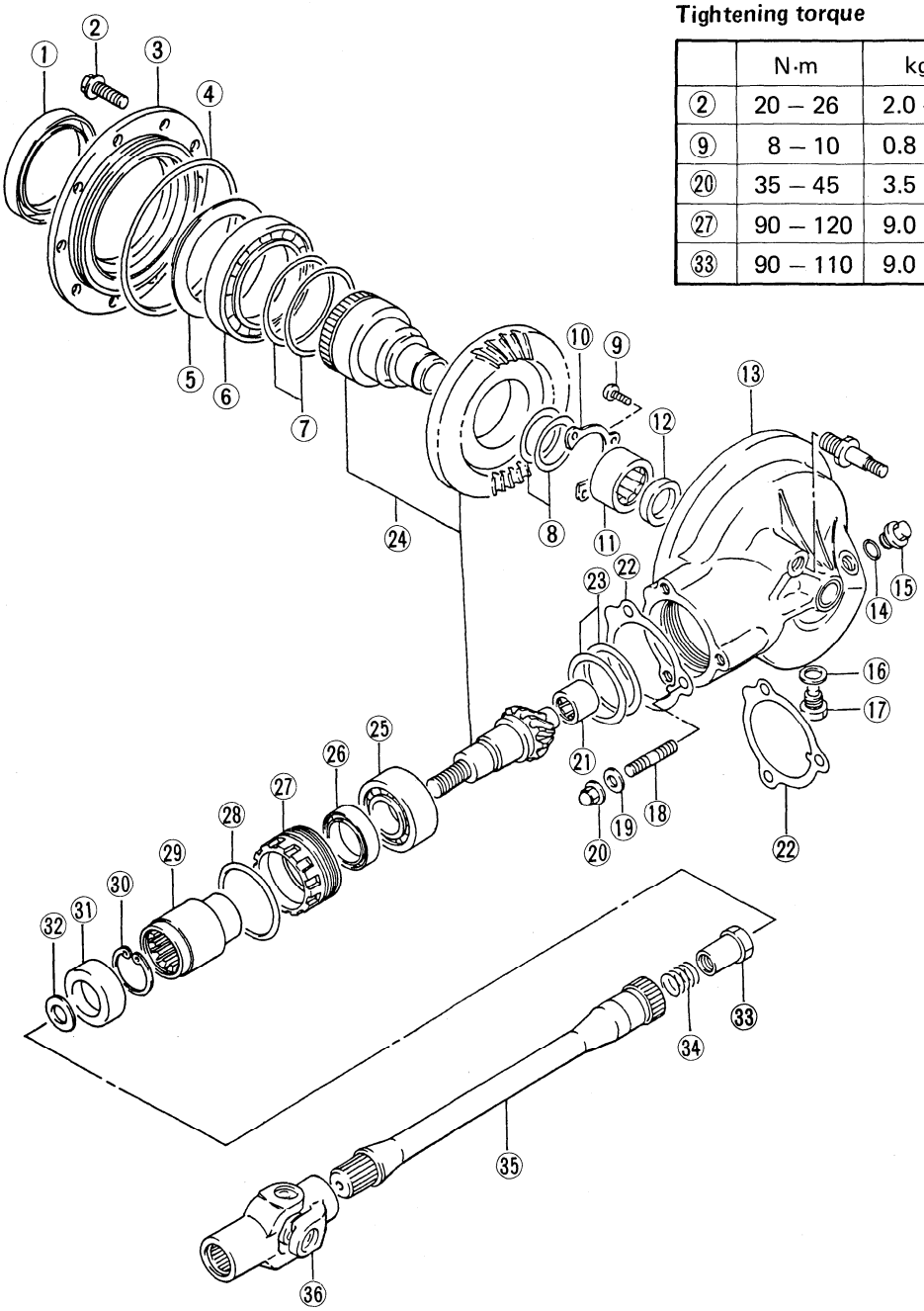
REASSEMBLY INFORMATION



FINAL BEVEL GEARS CONSTRUCTION

Tightening torque

	N·m	kg-m	lb-ft
②	20 – 26	2.0 – 2.6	14.5 – 19.0
⑨	8 – 10	0.8 – 1.0	6.0 – 7.0
⑳	35 – 45	3.5 – 4.5	25.5 – 32.5
㉗	90 – 120	9.0 – 12.0	65.0 – 87.0
㉝	90 – 110	9.0 – 11.0	65.0 – 79.5



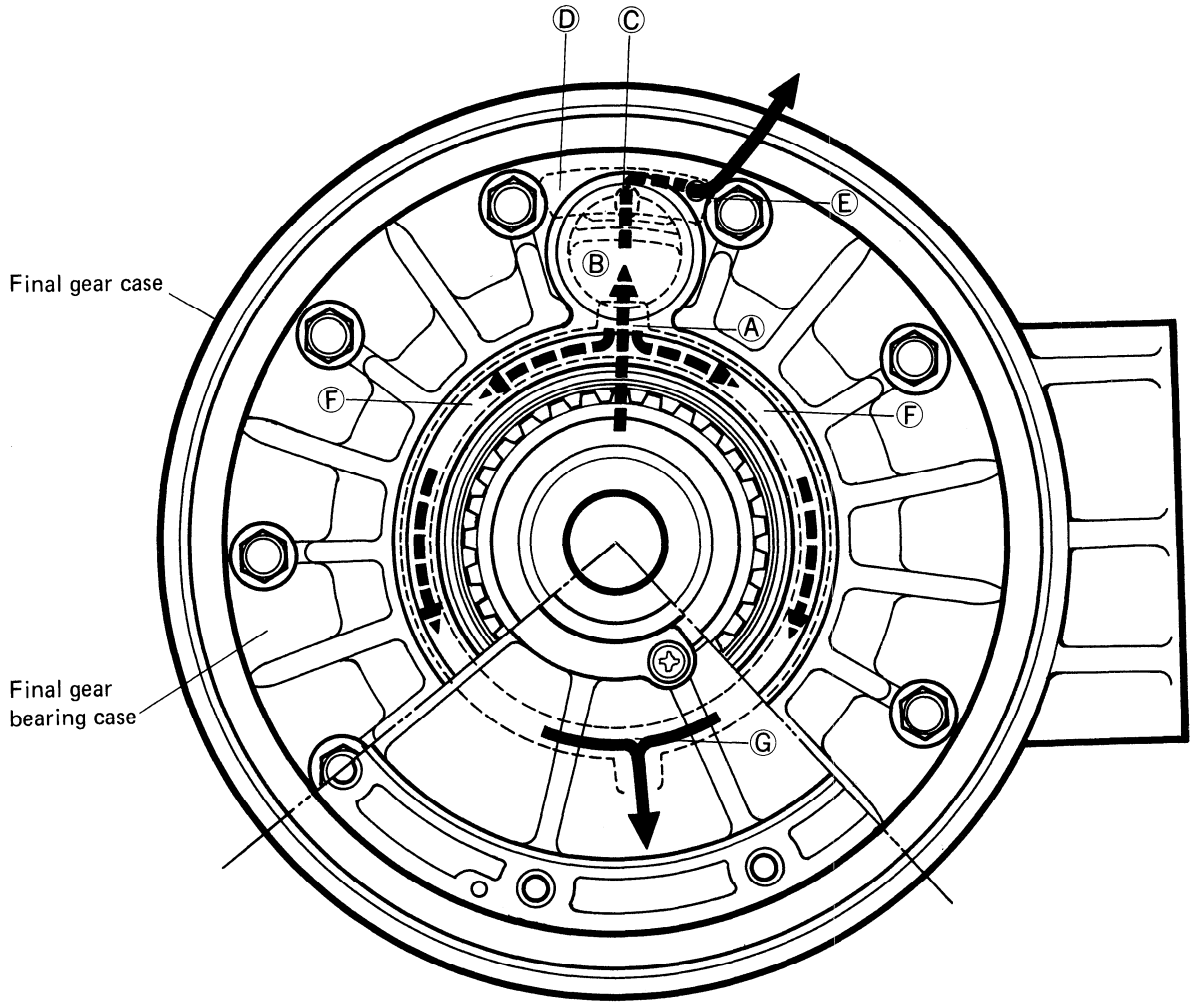
① Oil seal
② Bolts
③ Final gear bearing case
④ O-ring
⑤ Bearing plate
⑥ Bearing
⑦ Shims (4 kinds)
⑧ Shims (5 kinds)
⑨ Screws
⑩ Bearing retainer plate
⑪ Needle bearing
⑫ Oil seal
⑬ Final gear case
⑭ O-ring
⑮ Oil filler plug
⑯ Gasket
⑰ Oil drain plug
⑱ Stud bolts
⑲ Lock washer
⑳ Nuts
㉑ Pilot bearing
㉒ Bearing stopper plate (2 kinds)
㉓ Shims (5 kinds)
㉔ Final bevel gear set
㉕ Bearing
㉖ Oil seal
㉗ Bearing stopper
㉘ O-ring
㉙ Final drive coupling
㉚ Circlip
㉛ Oil seal
㉜ Washer
㉝ Nut
㉞ Spring
㉟ Propeller shaft
㊱ Propeller shaft coupling

FINAL GEAR CASE BREATHER CIRCUIT

AIR AND GEAR OIL FLOW IN FINAL GEAR CASE BREATHER CIRCUIT

BREATHER CIRCUIT

Final gear case breather circuit (passage) consists of the final gear case and final gear bearing case. Air/oil mixed gas, flows through the following routes.



AIR PASSAGE

When the air pressure in the final gear case becomes higher than atmospheric pressure, both air and oil flow in the following passages.

- Air flows from hole Ⓐ to chamber Ⓑ and passes through the hole Ⓒ and chamber Ⓓ to the atmosphere through the breather hole Ⓔ .

OIL PASSAGE

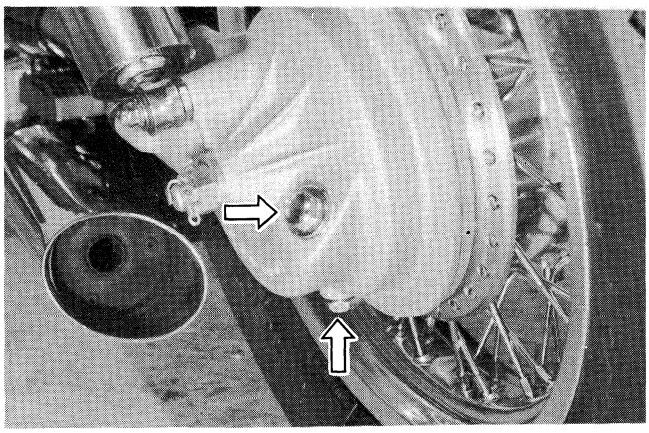
When the final gear case pressure rises abruptly or when the gear case oil level changes during cornering, the gear oil may sometime flow out into the air passage.

- In this case, the gear oil which has traveled into hole Ⓐ goes into chamber Ⓑ, where the oil is separated from the air.
- The air flows through the hole Ⓒ and chamber Ⓓ, and goes out through the breather hole Ⓔ.
- The gear oil, however, flows through the passage Ⓕ and returns to the gear case from gear oil return port Ⓖ.

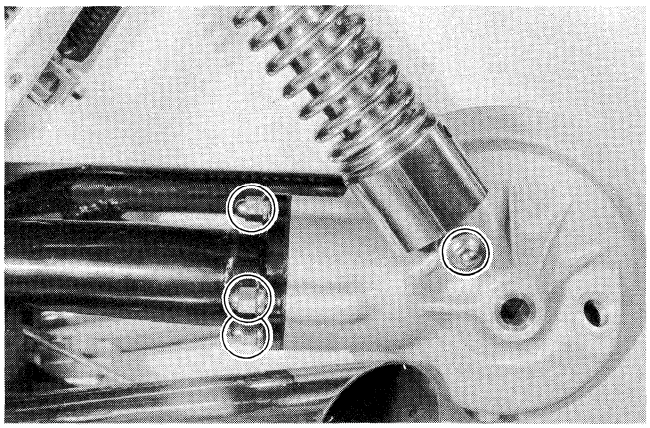
REMOVAL AND DISASSEMBLY

FINAL GEAR CASE

- Remove the rear wheel (See page 9-23).
- Place an oil pan under the final gear case and remove the drain plug to drain out gear oil.



- Remove the final gear case from the swingarm by removing the three nuts and shock absorber mounting nut.



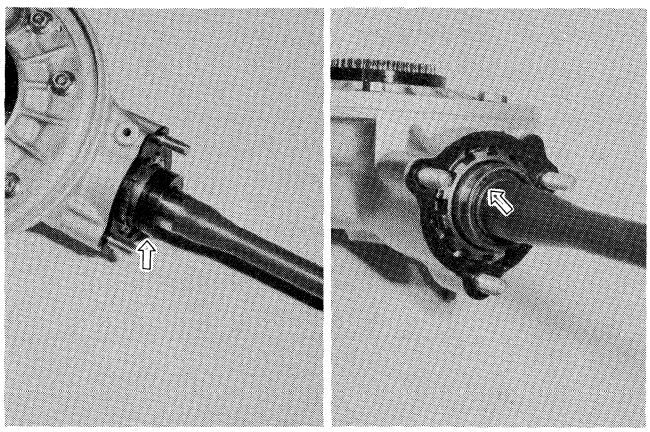
PROPELLER SHAFT

- Remove the oil seal.

CAUTION:
The removed oil seal should be replaced with a new one.

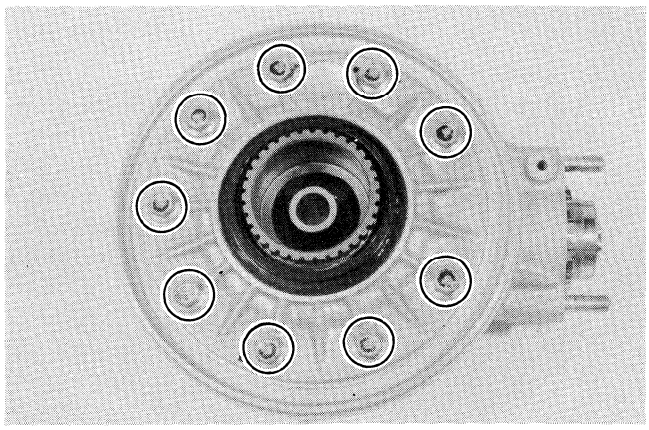
- Remove the circlip by using the special tool and take off the propeller shaft and spring.

09900-06108	Snap ring pliers

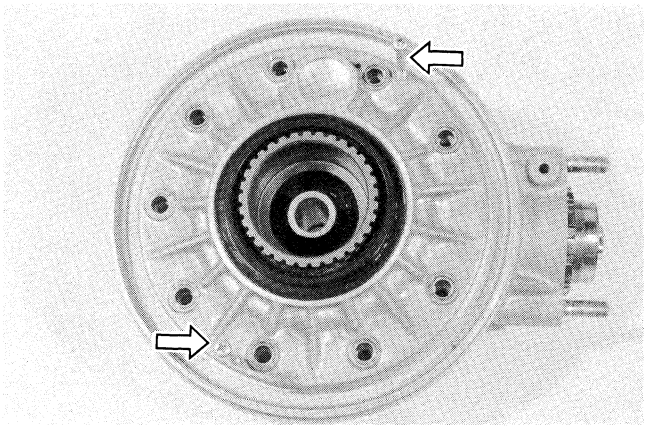


DRIVEN BEVEL GEAR

- Remove the final gear bearing case bolts.



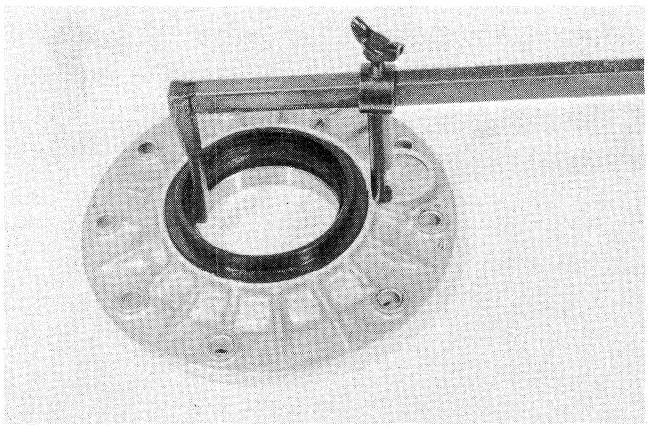
- To remove the final gear bearing case from the final gear case, use two 5 mm screws.



- Remove the oil seal from the final gear bearing case by using the special tool.

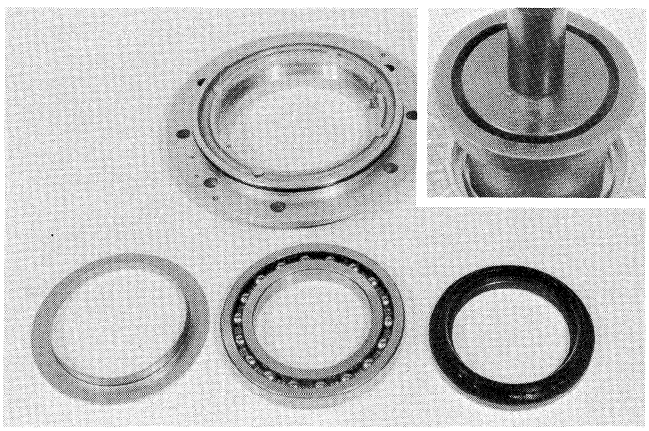
09913-50121	Oil seal remover

CAUTION:
The removed oil seal should be replaced with a new one.

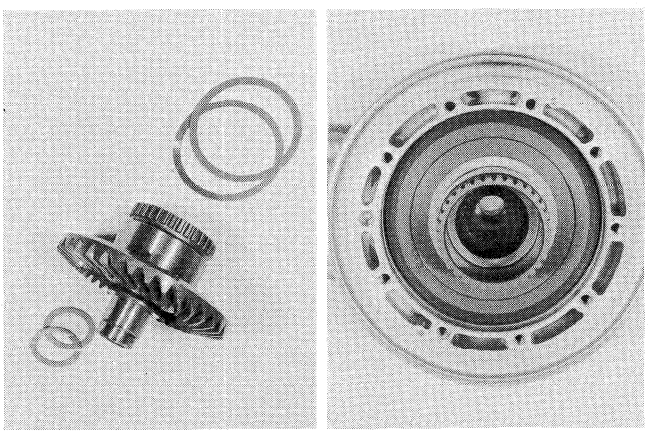


- Remove the bearing plate with the bearing by using the special tools.

09924-74570	Final driven gear bearing installer and remover
09924-74510	Handle
09924-74520	Oil seal installer and remover



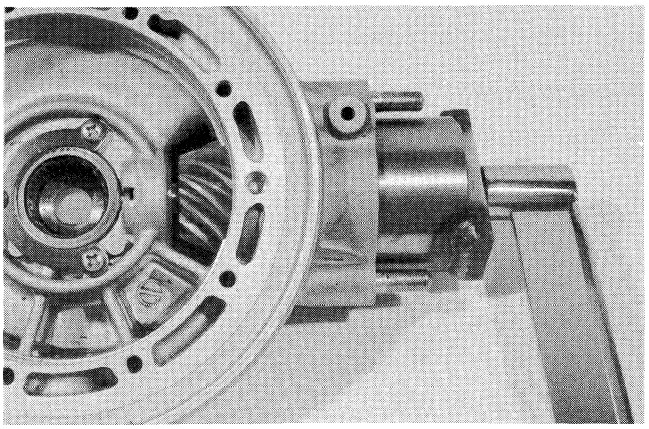
- Remove the final driven bevel gear from the final gear case.
- Remove the shims which are located at both sides of final driven bevel gear.



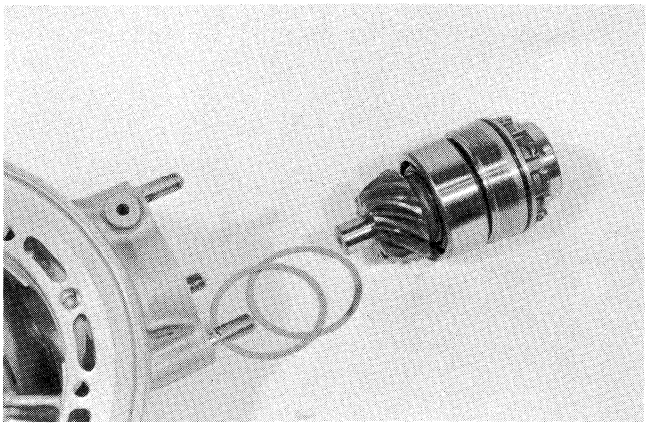
DRIVE BEVEL GEAR

- Loosen the bearing stopper by using the special tool.

09924-62410	Final drive gear bearing holder wrench

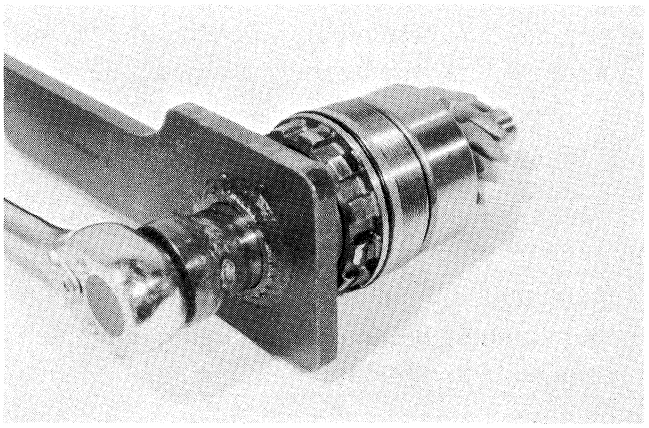


- Take off the drive bevel gear assembly and shims.



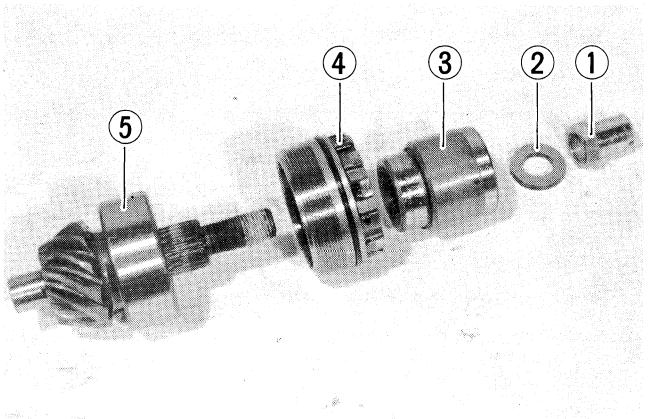
- Remove the drive bevel gear nut by using the special tools and take off the coupling and bearing stopper.

09924-62420	22 mm long socket
09924-64510	Final drive gear coupling holder



① Nut
② Washer
③ Coupling
④ Bearing stopper

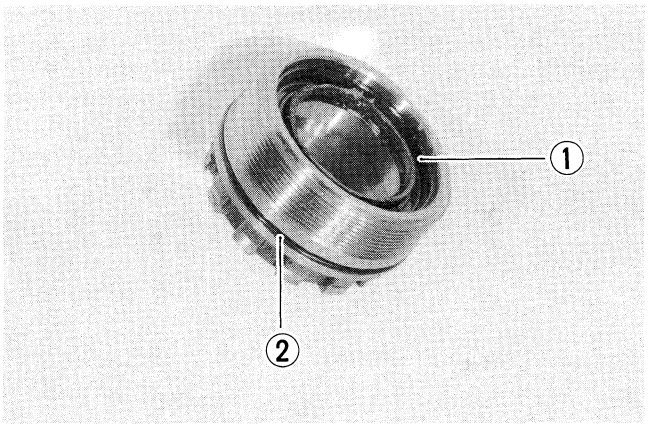
- Remove the bearing ⑤ from the drive bevel gear.



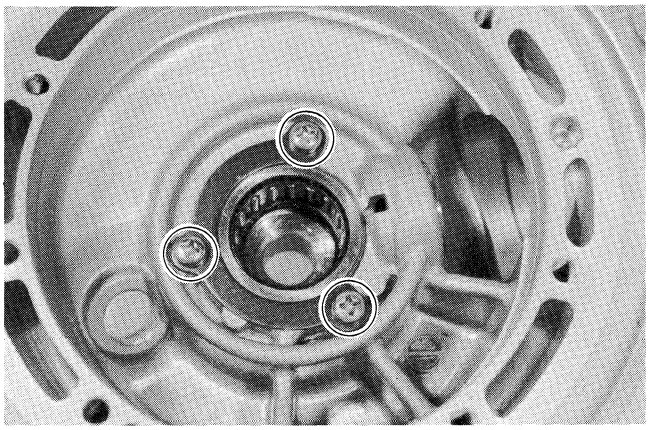
NOTE:
The removed bearing ⑤ should be replaced with a new one.

- Remove the oil seal ① and O-ring ②.

CAUTION:
The removed oil seal and O-ring should be replaced with new ones.



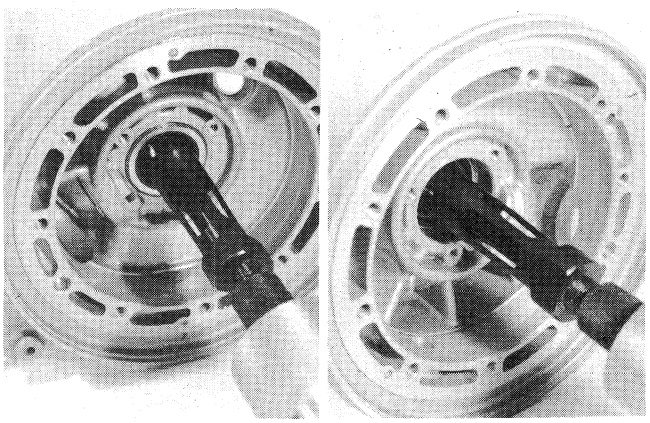
- Remove the bearing retainer by removing the three screws.



- Remove the needle roller bearing and oil seal from the final case by using the special tools.

09941-64510	Bearing and oil seal remover
09930-30102	Sliding shaft

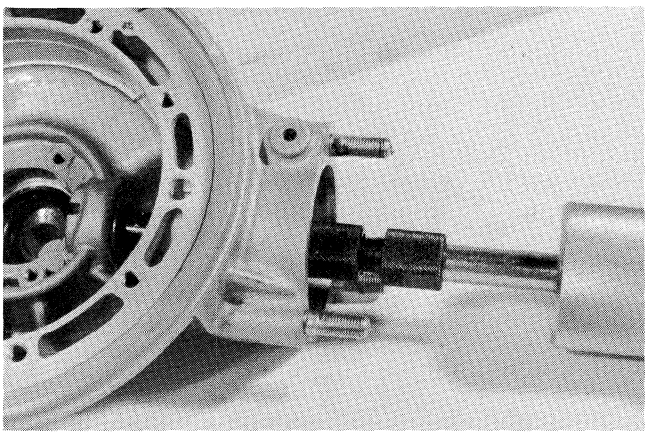
CAUTION:
The removed bearing and oil seal should be replaced with new ones.



- Remove the needle roller bearing of drive bevel gear side by using the special tools.

09930-30102	Sliding shaft
09923-73210	Bearing remover

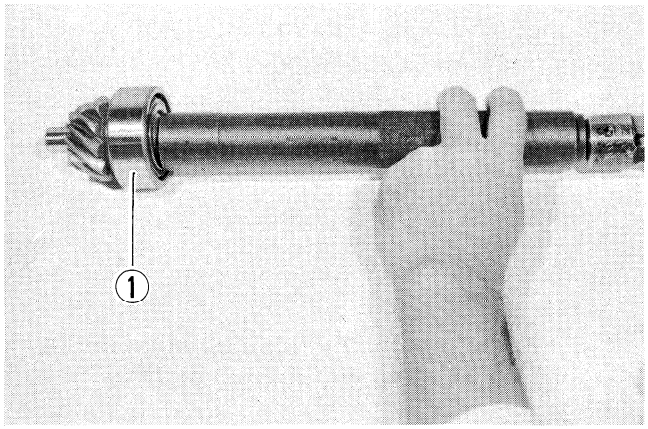
CAUTION:
The removed bearing should be replaced with a new one.



INSPECTION

Inspect the removed parts for the following abnormalities.

* Drive and driven bevel gear damage or wear
* Improper tooth contact
* Abnormal noise of bearings
* Bearing damage or wear



REASSEMBLY

Reassemble the final bevel gears in the reverse order of disassembly, and also carry out the following steps:

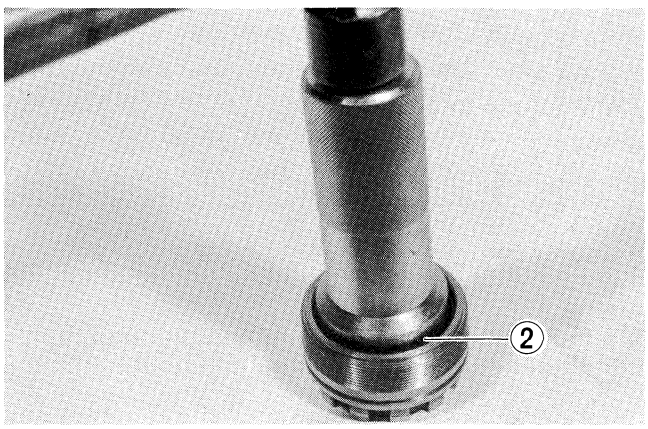
NOTE:
Before reassembly, thoroughly clean all parts in cleaning solvent.

DRIVE BEVEL GEAR

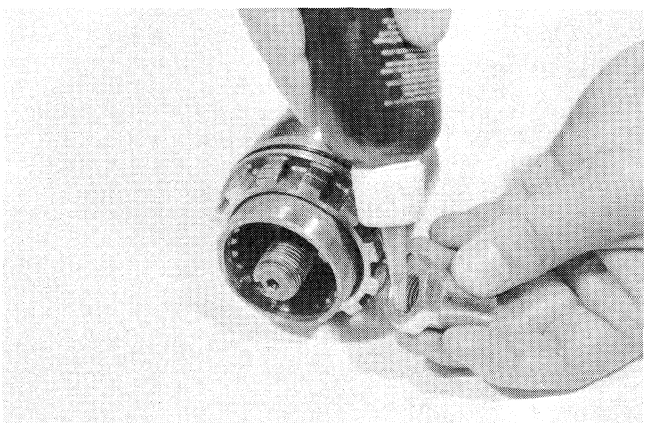
- Install the bearing ① to the drive bevel gear by using the special tool.

09941-74910	Bearing installer

CAUTION:
When replacing the drive bevel gear, replace the driven bevel gear also, as they must be replaced together.



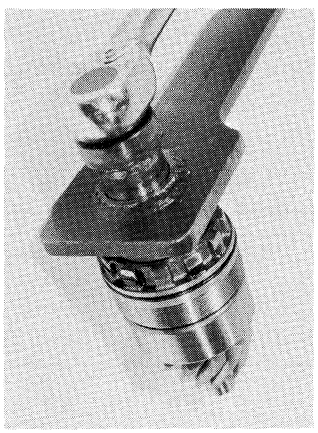
- Install the oil seal ② to the bearing stopper.
- Apply Thread lock super "1303" to the nut and tighten the specified torque by using the special tools.

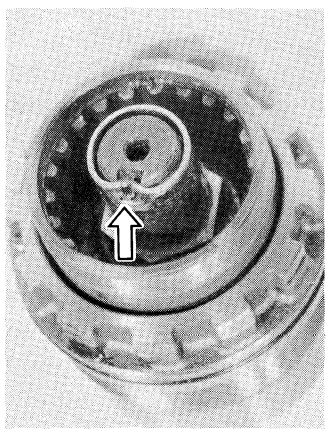


99000-32030	Thread lock super "1303"

09924-62420	22 mm long socket
09924-64510	Final drive gear coupling holder

Tightening torque	90 – 110 N·m (9.0 – 11.0 kg-m 65.0 – 79.5 lb-ft)





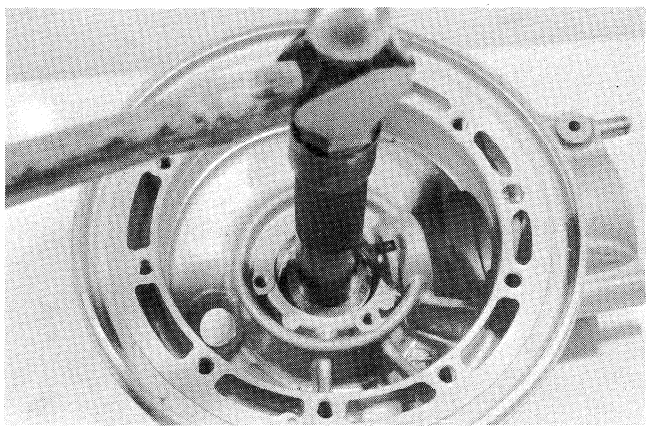
- Bend the collar of the nut over into the notch in the drive bevel gear shaft.

FINAL GEAR CASE AND BEARING CASE

- Install the oil seal into the final gear case by using the special tools.

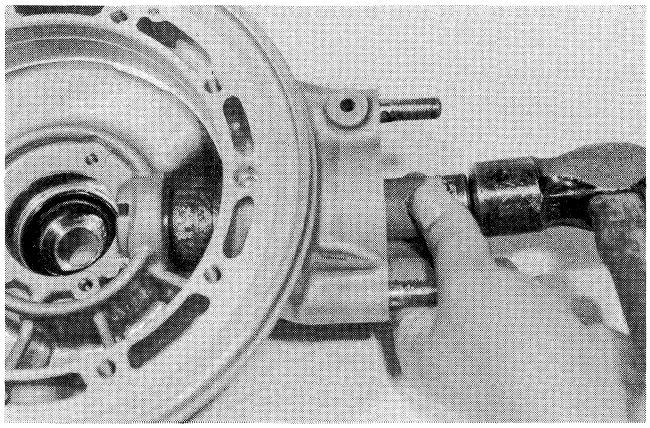
09924-74550	Bearing installer
09924-74510	Handle

NOTE:
The oil seal is correctly installed when the lip and spring is on the driven bevel gear side.



- Install the needle roller bearing for the final drive bevel gear into the final gear case by using the special tool.

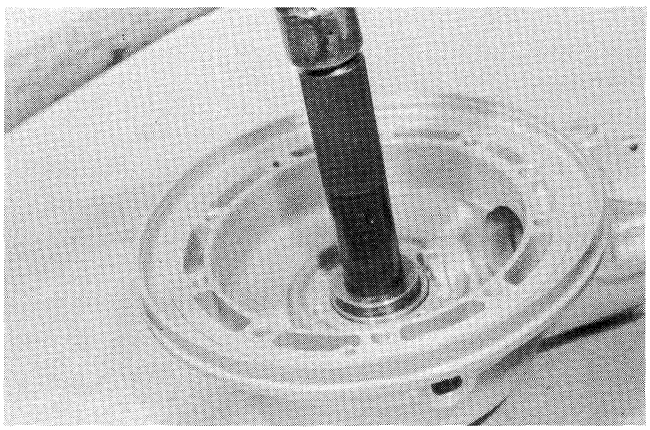
09913-75820	Bearing installer



- Install the needle roller bearing by using the special tools.

09924-74510	Handle
09924-74550	Bearing installer

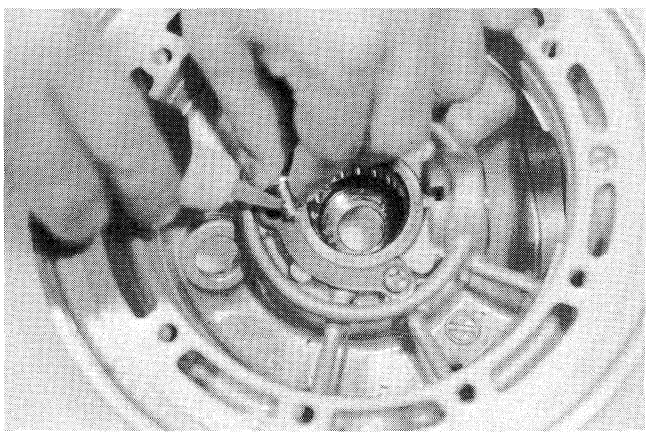
NOTE:
The bearing case has a stamped mark on its one end, which must face inside.



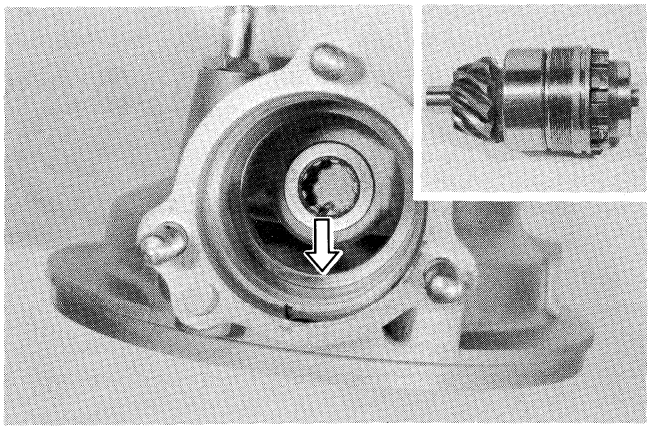
- Install the bearing retainer plate. Use Thread lock super "1303" on the screws, and tighten to specification.

99000-32030	Thread lock super "1303"

Tightening torque	8 – 10 N·m (0.8 – 1.0 kg-m 6.0 – 7.0 lb-ft)

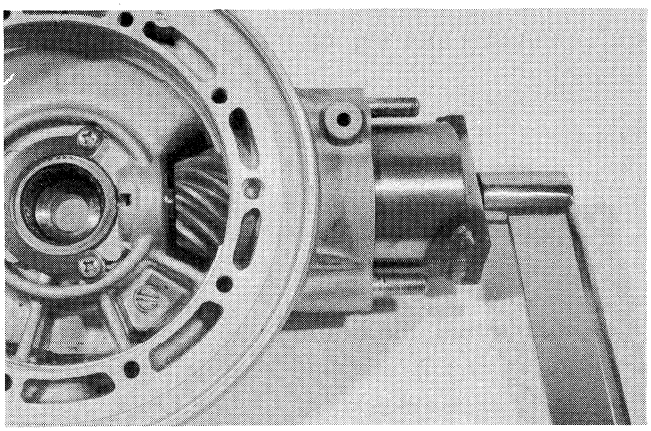


- Install the removed shims and drive bevel gear assembly to the final case.



NOTE:
Do not install the O-ring at this point. O-ring is installed after backlash and tooth contact are correct.

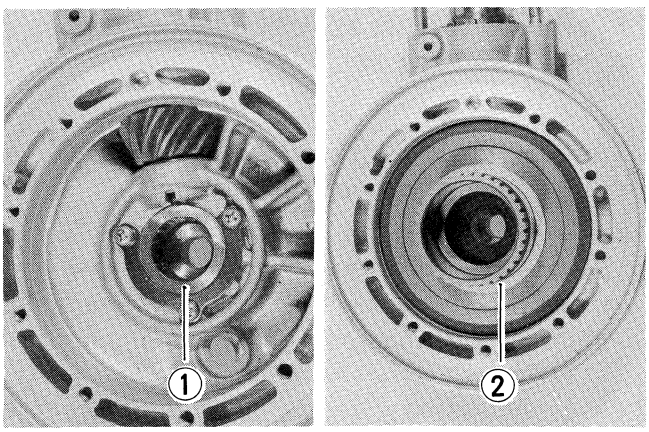
- Tighten the bearing stopper to the specification by using the special tool.



09924-62410	Final drive gear bearing holder wrench

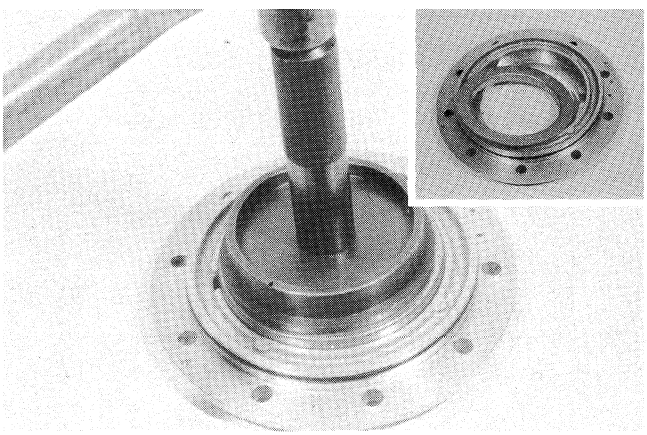
Tightening torque	90 – 120 N·m (9.0 – 12.0 kg-m 65.0 – 87.0 lb-ft)

- Install the driven bevel gear shims, ① and ②, removed during disassembly on the needle bearing and driven bevel gear.



CAUTION:
When replacing the driven bevel gear, replace the drive bevel gear also, as they must be replaced together.

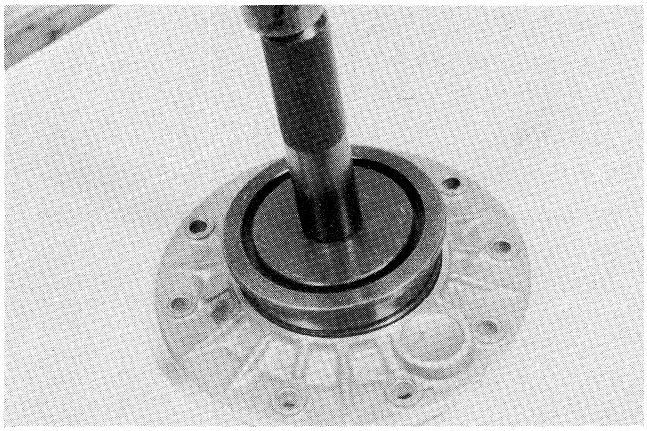
- After installing the bearing plate into the final gear bearing case, install the bearing by using the special tools.



09924-74510	Handle
09924-74520	Bearing installer

- Install a new oil seal into the final gear bearing case by using the special tools.

09924-74510	Handle
09924-74520	Bearing installer

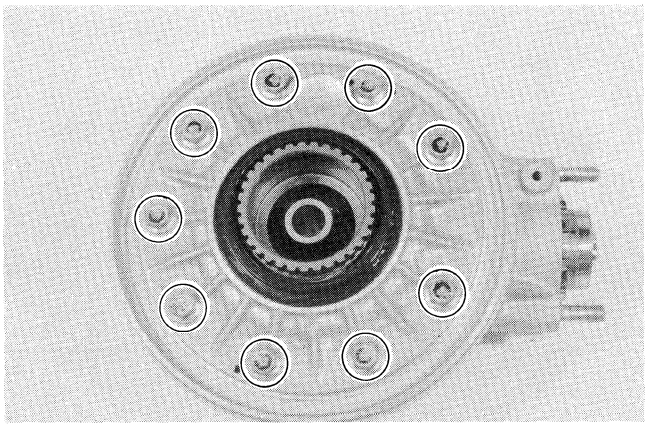


- Apply SUZUKI Super grease "A" to the lip of oil seal.

99000-25030	SUZUKI Super grease "A"

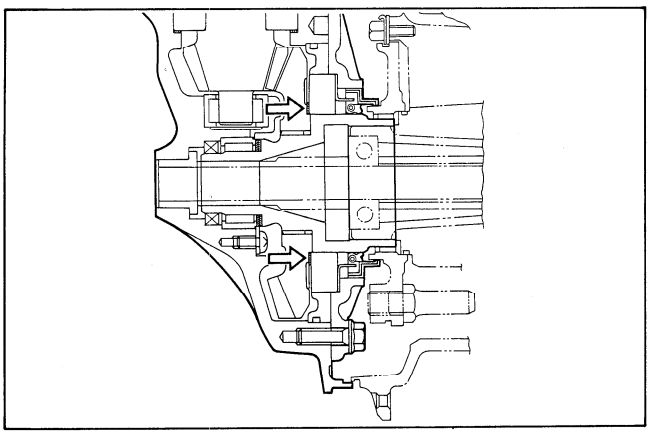
- Tighten the bearing case bolts to the specification.

Tightening torque	20 – 26 N·m (2.0 – 2.6 kg-m 14.5 – 19.0 lb-ft)



NOTE:
Do not install the bearing case O-ring at this point. O-ring is installed after backlash and tooth contact are correct.

"FINAL GEAR SHIM ADJUSTMENT" is necessary (See pages 4-17 to 4-20).



FINAL GEAR SHIM ADJUSTMENT

FINAL GEAR BEARING CASE SHIM CLEARANCE

- Measure the clearance between the shims and bearing. If it is not within the specification, the shims must be changed.

Final gear bearing case shim clearance	0.10 mm (0.004 in)

List of shims Ⓐ (Refer to page 4-23)

Part No.	Shim thickness
27327-34200	0.35 mm
27327-34210	0.40 mm
27327-34220	0.50 mm
27327-34230	0.60 mm

BACKLASH

- Install the backlash measuring tool on the drive bevel gear coupling, and set-up a dial gauge as shown in Fig.

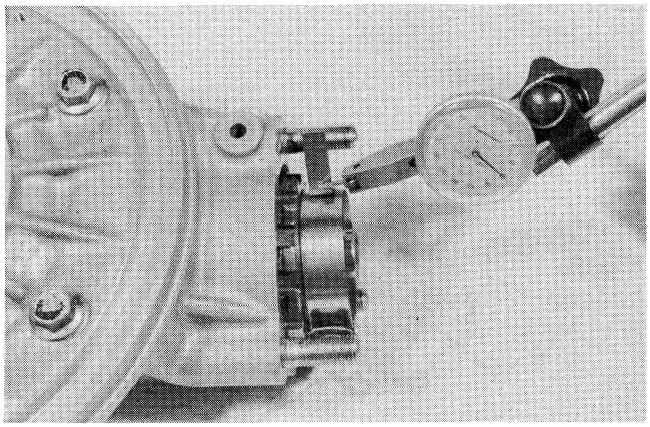
09924-34510	Backlash measuring tool (27 – 50 mm)

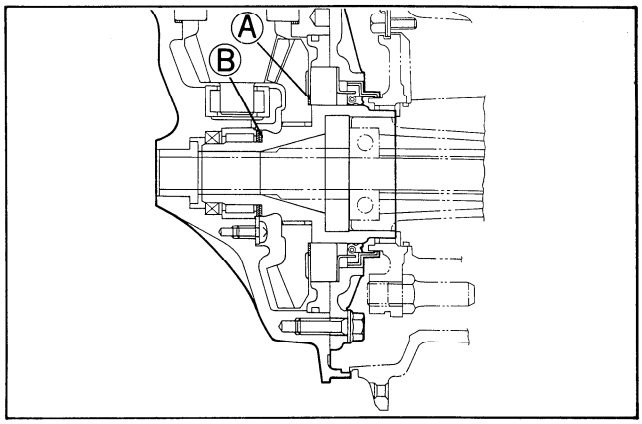
Final gear backlash	0.03 – 0.64 mm (0.001 – 0.025 in)

- Adjust the dial gauge so that it touches the backlash measuring tool arm at the mark; hold the final driven bevel gear securely, and turn the final drive bevel gear coupling slightly in each direction, reading the total backlash on the dial gauge.

NOTE:
If the backlash is not within specification, adjust the shim thickness as follows:

- Remove shims from final gear bearing case and final gear case, and measure total thickness.
- In order not to change the clearance between final driven bevel gear and bearing, the total thickness of the shims installed after a change is made must equal the original total thickness of shims.
- If backlash is too large:
  a) Install a thinner shim pack Ⓑ between final driven bevel gear and final gear case.
  b) Increase thickness of shims Ⓐ between final driven bevel gear and bearing by an amount equal to decrease above.
- If backlash is too small:
  a) Install a thicker shim pack Ⓑ between final driven bevel gear and final gear case.
  b) Decrease thickness of shims Ⓐ between final driven gear and bearing by an amount equal to increase above.





List of shims Ⓑ (Refer to page 4-23)

Part No.	Shim thickness
27326-34201	1.05 mm
27326-34211	1.10 mm
27326-34221	1.20 mm
27326-34231	1.25 mm
27326-34241	1.35 mm
27326-34201-140	1.40 mm
27326-34201-145	1.45 mm
27326-34201-150	1.50 mm

List of shims Ⓐ (Refer to page 4-23)

Part No.	Shim thickness
27327-34200	0.35 mm
27327-34210	0.40 mm
27327-34220	0.50 mm
27327-34230	0.60 mm

EXAMPLE:

Ⓑ Final gear to case shims;

1.35 mm + 1.05 mm = 2.40 mm

Ⓐ Final gear to bearing shims;

0.50 mm + 0.40 mm = 0.90 mm

Original total measurement = 3.30 mm

Backlash too large:

Ⓑ Final gear to case shims;

1.25 mm + 1.10 mm = 2.35 mm

Ⓐ Final gear to bearing shims;

0.60 mm + 0.35 mm = 0.95 mm

Total thickness = 3.30 mm

Backlash too small:

Ⓑ Final gear to case shims,

1.35 mm + 1.10 mm = 2.45 mm

Ⓐ Final gear to bearing shims;

0.50 mm + 0.35 mm = 0.85 mm

Total thickness = 3.30 mm

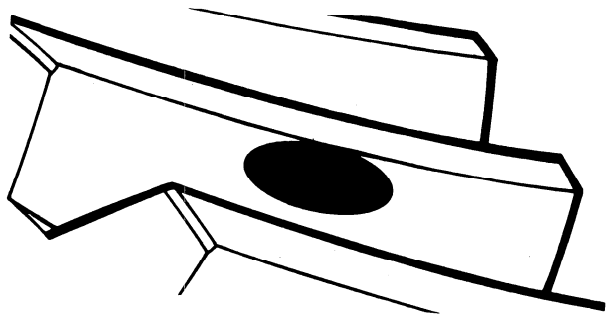
TOOTH CONTACT

- After backlash adjustment is carried out, the tooth contact must be checked.
- Remove the 9 bolts from the final gear bearing case, and remove the case, using the two 5 mm screws (see page 4-11). Do not misplace the shims. Remove the final driven bevel gear.
- Clean and de-grease several teeth on the final driven bevel gear. Coat these teeth with machinist's dye or paste, preferably of a light color.
- Re-install the final driven bevel gear with shims in place, positioning the coated teeth so that they are centered on the final drive bevel gear.
- Re-install the final gear bearing case and bolts, and tighten to specification.

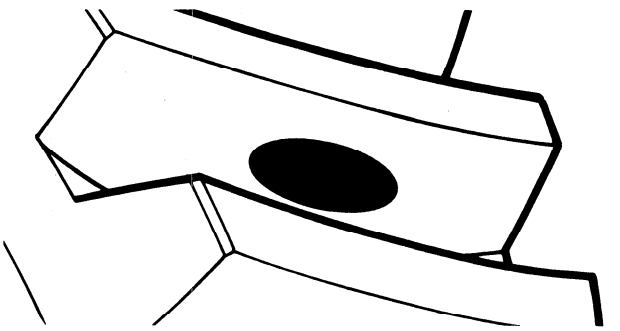
Final gear bearing case bolt tightening torque	20 – 26 N·m (2.0 – 2.6 kg-m, 14.5 – 19.0 lb-ft)

- Using a socket and handle on the final drive bevel gear coupling nut, rotate the final drive bevel gear several turns in each direction, while loading the final driven bevel gear. This will provide a contact pattern on the coated teeth of the driven bevel gear.
- Remove the final gear bearing case and final driven bevel gear, and inspect the coated teeth of the driven bevel gear. The contact patch should be as shown at right:
- If the tooth contact pattern is correct, as shown in ②, go to the Final Assembly sub-section.

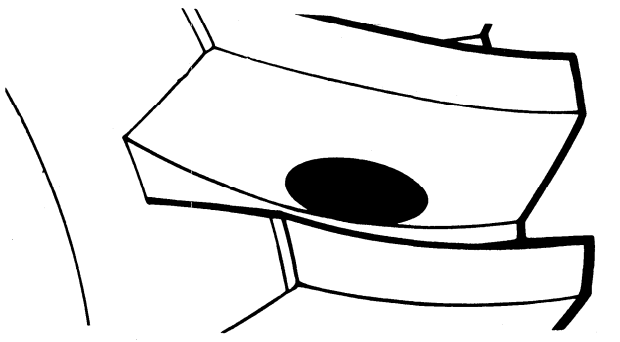
① INCORRECT (Contact at tooth top)



② CORRECT



③ INCORRECT (Contact at tooth root)

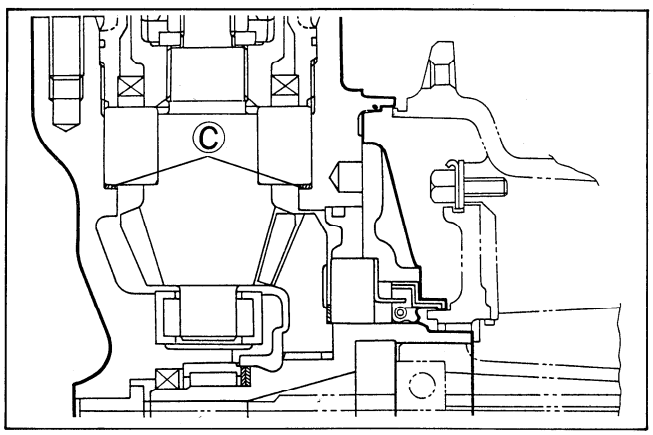


- If the tooth contact pattern is incorrect, as shown in ①, a thinner shim is needed between the final drive bevel gear bearing and final gear case.
- If the tooth contact pattern is incorrect, as shown in ③, a thicker shim is needed between the final drive bevel gear bearing and final gear case.
- If the tooth contact pattern is incorrect for either reason, the appropriate shim must be installed, and the tooth contact pattern re-checked by repeating the tooth coating procedure above.

NOTE:
If it is necessary to adjust the shim thickness between final drive bevel gear bearing and final gear case, the final gear backlash may change, and should be re-checked according to the procedure outlined under the Backlash Measurement sub-section. Both adjustments may be needed until both backlash and tooth contact are correct.

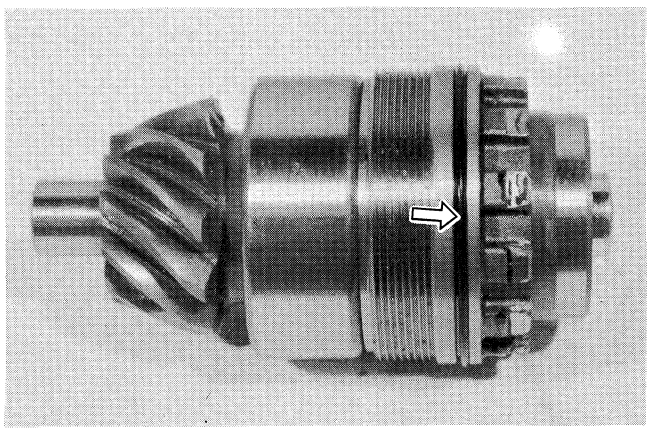
FINAL ASSEMBLY AND REMOUNTING

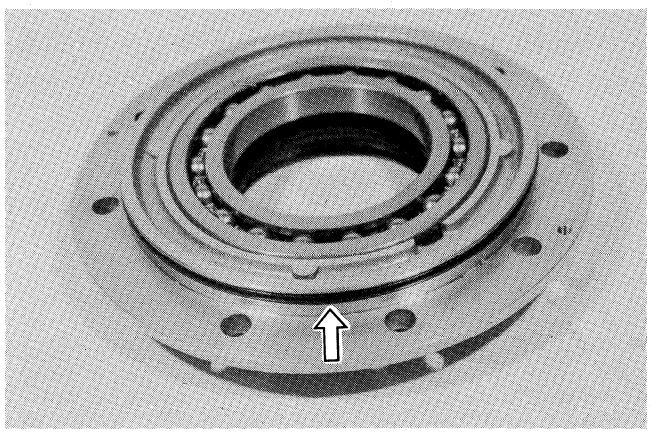
- After adjusting the backlash, tooth contact and clearance between the bearing case and the bearing, remove the final gear bearing case and final drive bevel gear assembly from the final gear case.
- Clean off any machinist's dye or paste from the gear teeth, and lubricate the teeth with Hypoid gear oil.
- Install new O-rings to the final gear bearing case and final drive bevel gear bearing stopper. Coat the O-rings with grease.
- Install the final drive bevel gear assembly into the final gear case.



List of shims Ⓒ (Refer to page 4-23)

Part No.	Shim thickness
27445 - 38A00 - 030	0.30 mm
27445 - 38A00 - 035	0.35 mm
27445 - 38A00 - 040	0.40 mm
27445 - 38A00 - 050	0.50 mm
27445 - 38A00 - 060	0.60 mm

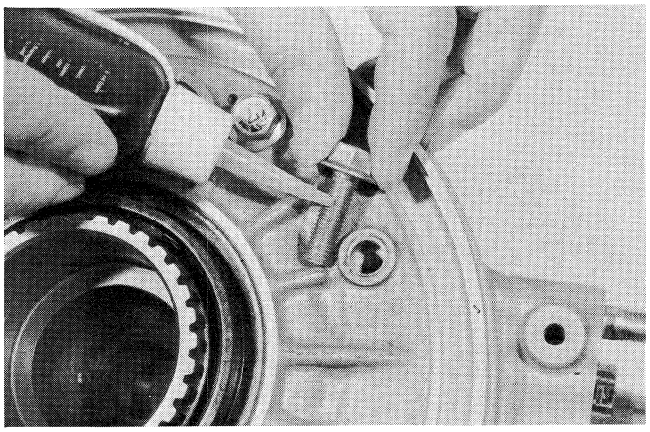




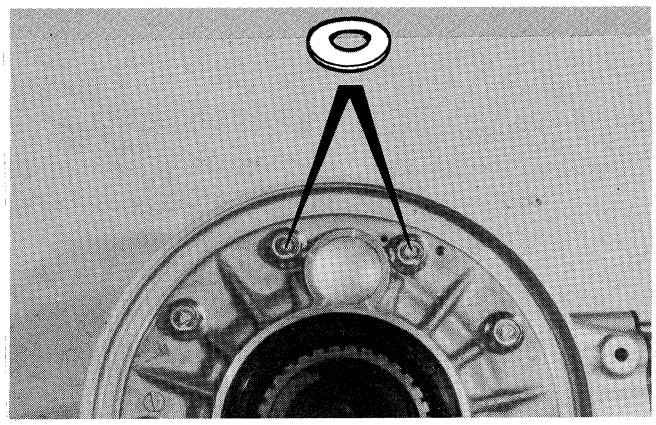
- Install the final gear bearing case to the final gear case and apply a small quantity of Thread Lock "1342" to the 9 bolts and tighten them to the specified torque.

99000-32050	Thread Lock "1342"

Tightening torque	20 – 26 N·m (2.0 – 2.6 kg-m 14.5 – 19.0 lb-ft)

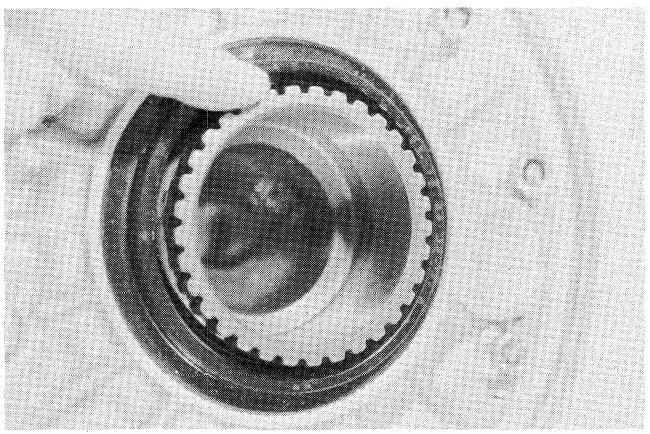


- Install the new gaskets to the correct position as shown in photo.

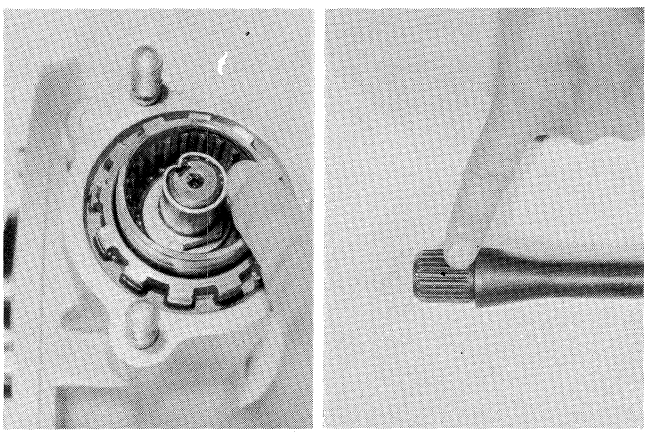


- Apply SUZUKI Super grease "A" to the final driven bevel gear coupling.

99000-25030	SUZUKI Super grease "A"

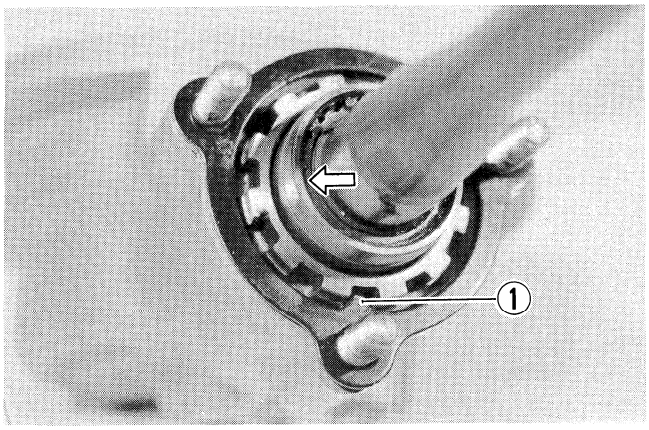


- Apply Lithium Base Molybdenum grease (NLGI # 2) to the propeller shaft splines and universal joint coupling.



- Install the spring, propeller shaft and circlip.
- Install the bearing stopper plate.

CAUTION:
When installing the plate, fit the protrution ① of plate to the bearing stopper groove.

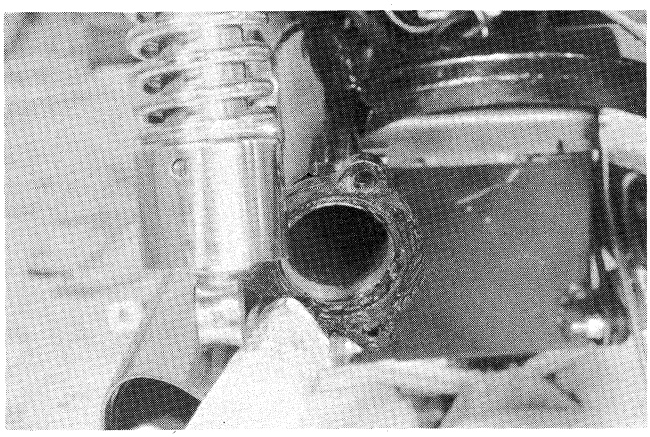


NOTE:
There are two kind of plate.

- Install the new oil seal.

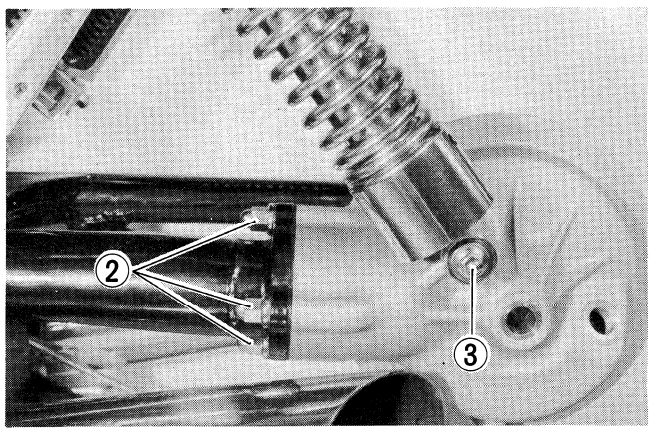
- Apply SUZUKI Bond No. 1207B to the mating surface of swingarm and final gear case.

99104-31140	SUZUKI Bond No. 1207B



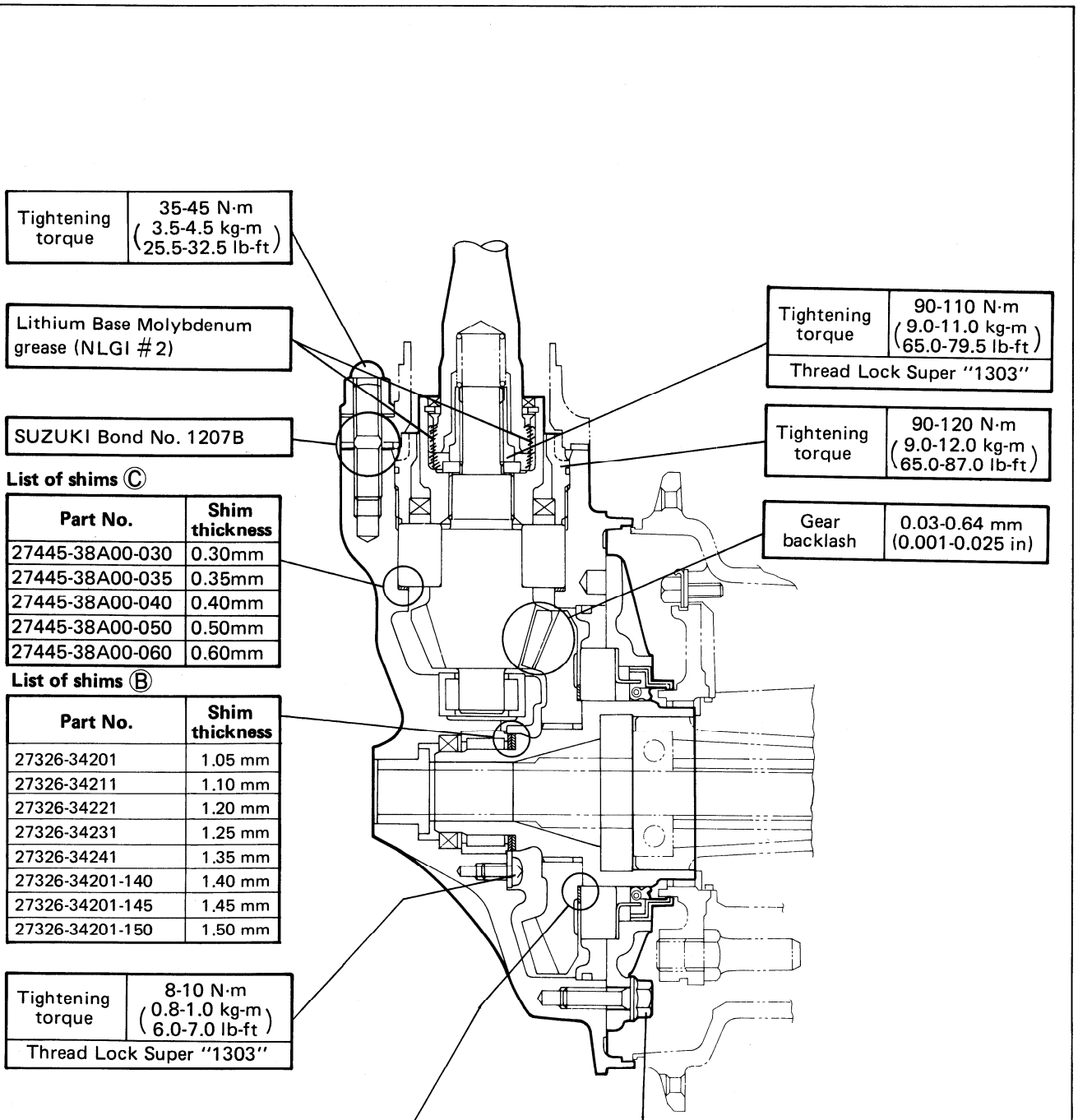
- Tighten the three nuts ② and shock absorber mounting nut ③ to the specified torque.

Tightening torque	②	35 – 45 N·m (3.5 – 4.5 kg-m 25.5 – 32.5 lb-ft)
	③	20 – 30 N·m (2.0 – 3.0 kg-m 14.5 – 21.5 lb-ft)



NOTE:
After remounting the final gear case, the following service is necessary.
*** Fill the final gear case with Hypoid gear oil.**
Specified capacity: 200 – 220 ml
(6.8 – 7.4 US oz)

REASSEMBLY INFORMATION



COOLING SYSTEM

CONTENTS

COOLING SYSTEM 5- 1
COOLING SOLUTION 5- 2
RADIATOR AND WATER HOSES 5- 3
THERMOSTAT 5- 4
WATER PUMP 5- 6
THERMO-SWITCH 5-10
ENGINE THERMO-SWITCH 5-10
FAN MOTOR 5-11

COOLING SYSTEM

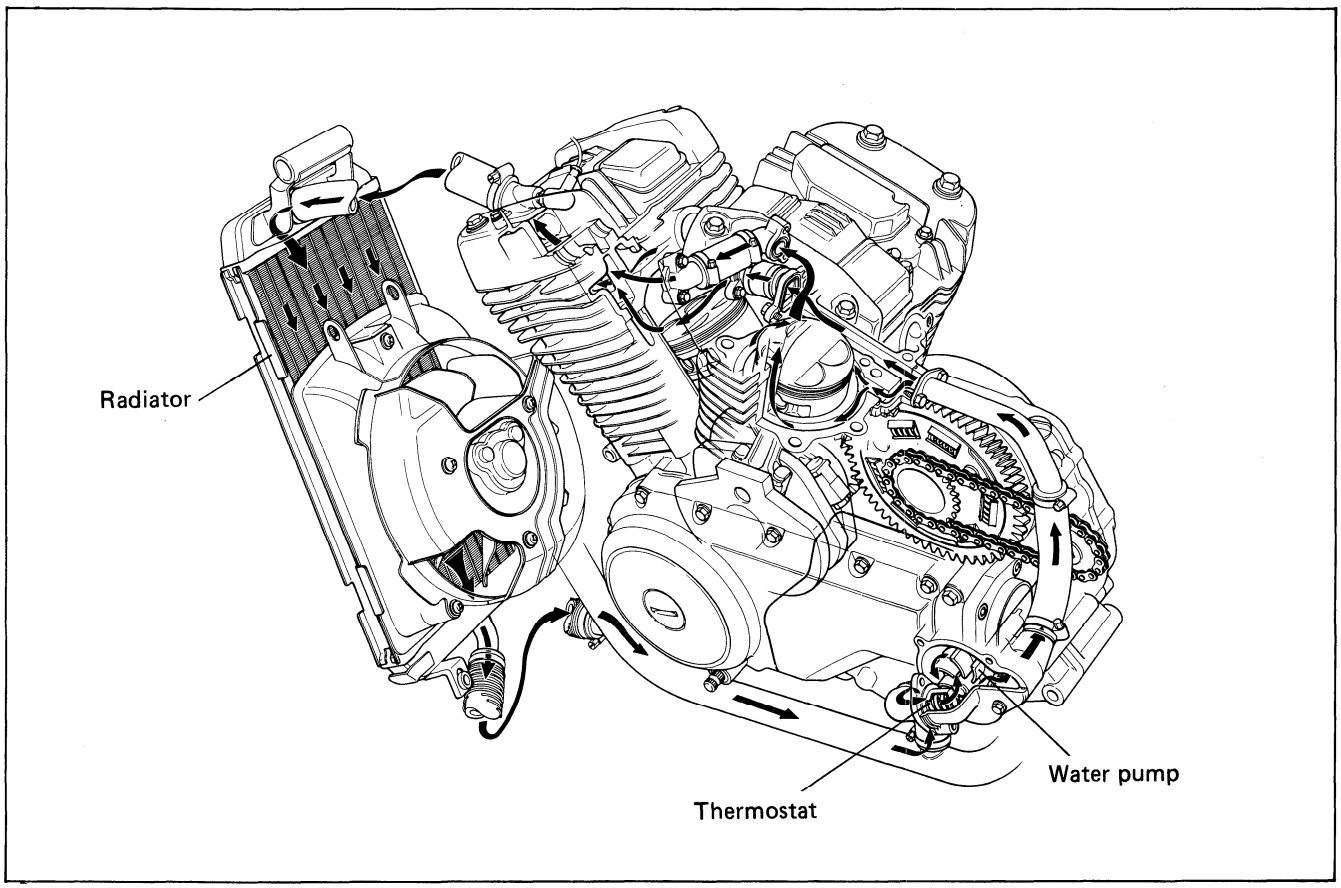
DESCRIPTION

The engine is cooled by coolant set in forced recirculation through jackets formed in the cylinder and head, and through the radiator. For the water pump, a high-capacity centrifugal pump is used. The radiator is a tube-and-fin type made of aluminum material, which is characterized by lightness in weight and good head dissipation.

The thermostat is of wax pellet type, complete with a valve as the means of temperature-dependent control over the flow of coolant through the radiator. The valve is actuated by the temperature-sensitive wax contained in the pellet.

Referring to the following illustration, the thermostat is in the closed condition, so that water recirculates through the route comprising pump, engine, by-pass holes of the thermostat and radiator in the regulated condition.

As the coolant temperature rises to 75°C and the termostat valve unseats, the normal coolant flow is established. At about 90°C of coolant temperature, the thermostat becomes completely open and most of heat is released to the atmosphere through the radiator core.



COOLING SOLUTION

At the time of manufacture, the cooling system is filled with a 50 : 50 solution of distilled water and anti-freeze/summer coolant. This 50 : 50 mixture will provide excellent heat protection, and will protect the cooling system from freezing at temperatures above –31°C (–24°F).
If the motorcycle is to be exposed to temperatures below –31°C (–24°F), this mixing ratio should be increased up to 55% or 60% according to the Fig. 2.

NOTE:
Also included in the cooling solution at the time of manufacture is bar's leak material to help ensure protection against coolant leakage.

NOTE:
The characteristics of different anti-freezes vary. Read the label to know the protection you will have.

CAUTION:
Do not put in more than 60% anti-freeze or less than 50%. Do not mix different brands of anti-freeze.

ANTI-LEAKAGE MATERIAL

The anti-freeze is characterized by very high values of permeability and leakage accident of the cooling system is highly likely. The anti-leakage substance is used to prevent such a possible leakage and every new motorcycle is serviced with "Bar's Leaks". The same material or its equivalent should be filled in the radiator when cooling water is changed. "Bar's Leaks" is available as one of spare parts in solid form. A suitable amount for use is 1/4 pack per model and in the case of a liquid anti-leakage material available in the market, 20 – 30 ml (cc) (0.68 – 1.01 US oz) should be used.

99000-24240	Bar's Leaks

CAUTION:
Anti-leakage material should not be added except the time of the renewal of cooling water.

50%	Water	850 ml (1.80 US pt)
	Coolant	850 ml (1.80 US pt)

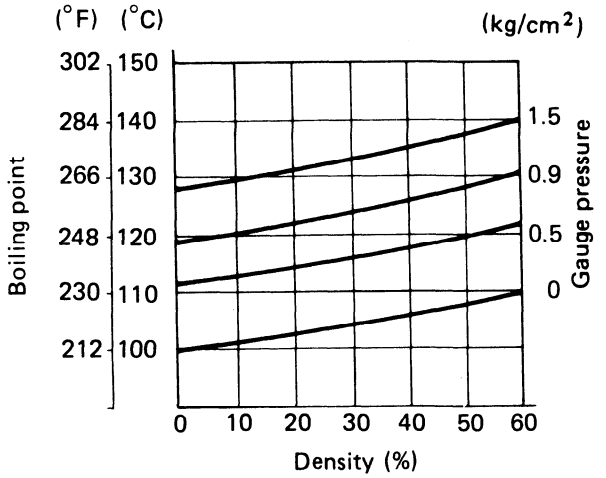


Fig. 1 Coolant density-boiling point curve.

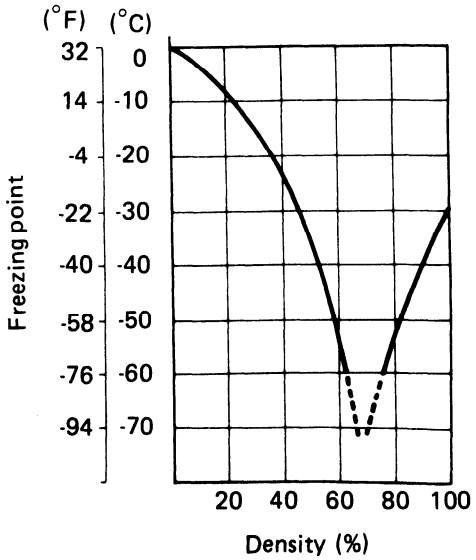
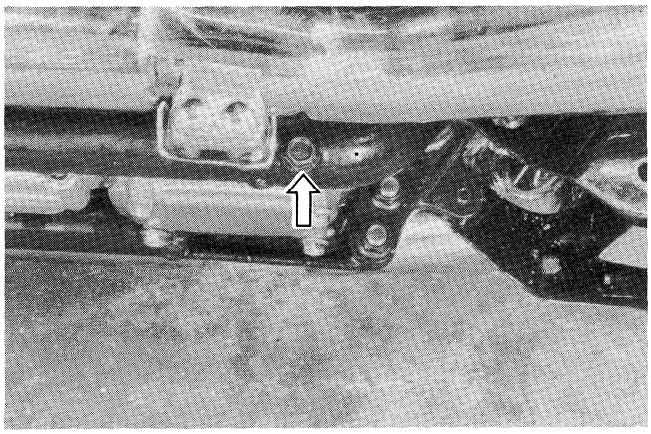


Fig. 2 Coolant density-freezing point curve.

RADIATOR AND WATER HOSES

REMOVAL

- Drain the coolant by removing drain plug ①.
- Remove the radiator hoses, radiator, harness and reservoir tank. (See page 3-4)



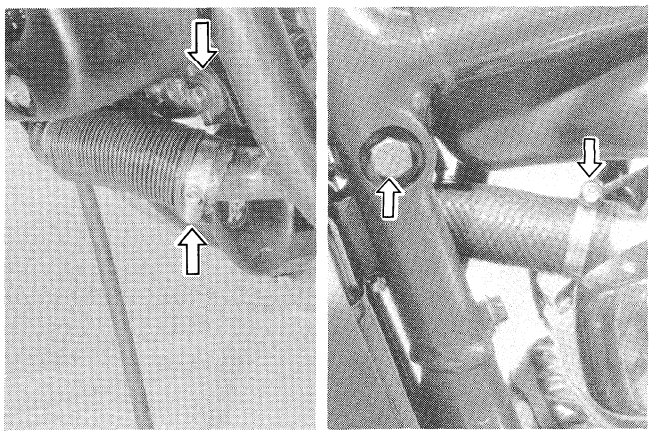
INSPECTION

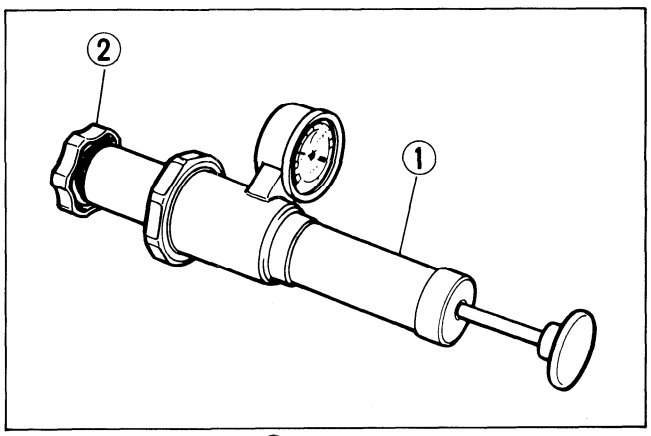
Before removing the radiator and draining coolant, inspect the following two items.

1. Test the cooling system for tightness by using the radiator tester as follows:
   Remove the radiator cap, and connect the tester to the filler. Give a pressure of about 1 kg/cm² (14.2 psi, 100 kPa) and see if the system holds this pressure for 10 seconds. If the pressure should fall during this 10-second interval, it means that there is a leaking point in the system. In such a case, inspect the entire system and replace the leaking component or part.
2. Test the radiator cap for relieving pressure by using the radiator tester in the following manner: Fit the cap to the tester, as shown, and build up pressure slowly by operating the tester. Make sure that the pressure build-up stops at 0.90 ± 0.15 kg/cm² and that, with the tester held standstill, the cap is capable of that pressure for at least 10 seconds. Replace the cap if it is found not to satisfy either of these two requirements.

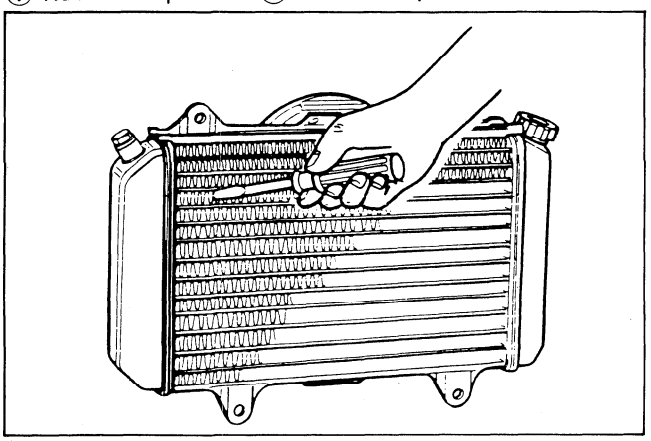
Radiator cap valve release pressure	90 ± 15 kPa (0.90 ± 0.15 kg/cm²) (12.8 ± 2.1 psi)

3. Road dirt or trash stuck to the fins must be removed. Use of compressed air is recommended for this cleaning. Fins bent down or dented can be repaired by straightening them with the blade of a small screwdriver.
4. Any water hose found in a cracked condition or flattened must be replaced.



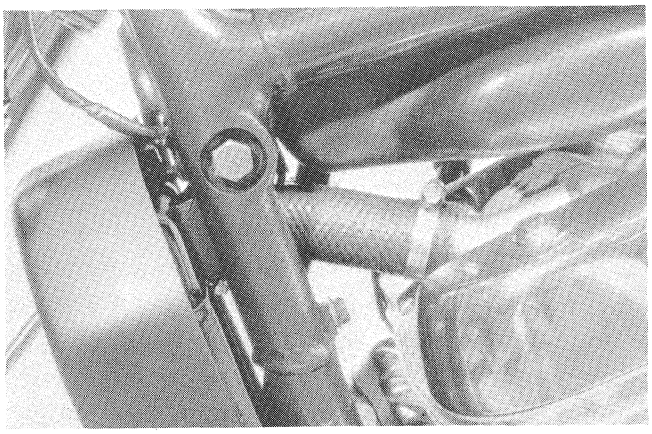


① Radiator cap tester ② Radiator cap



RADIATOR HOSE

Inspect for leakage from the radiator hose connecting (joint) section and from the radiator hose itself and for kinks in the radiator hose.
If any leakages from the radiator hose are detected, the radiator hose should be replaced.
Any leakages from the connecting (joint) section should be corrected by proper tightening.



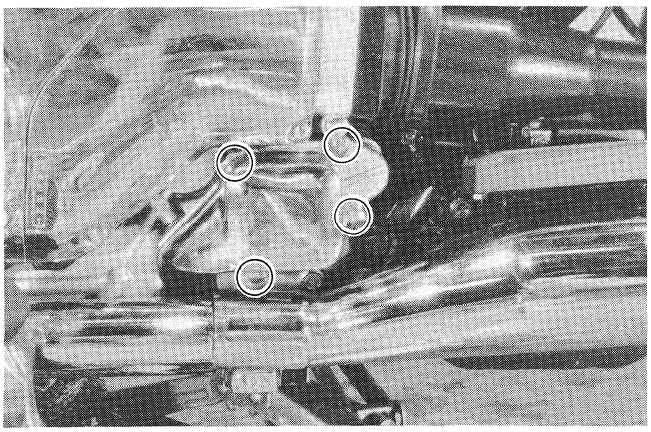
INSTALLATION

The radiator is to be installed in the reverse order of the removal procedure. After installing the radiator, be sure to add coolant: refer to page 2-11 for refilling information.

THERMOSTAT

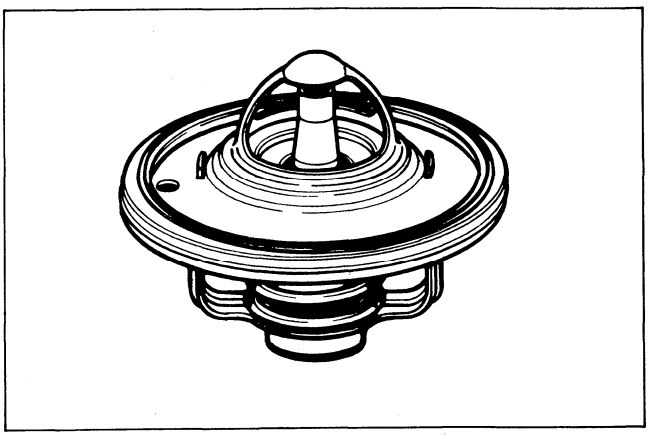
REMOVAL

- Drain the coolant.
- Remove the water pump cover, case and disconnect the radiator hose.
- Remove the water pump case.



INSPECTION

Inspect the thermostat pellet for signs of cracking.

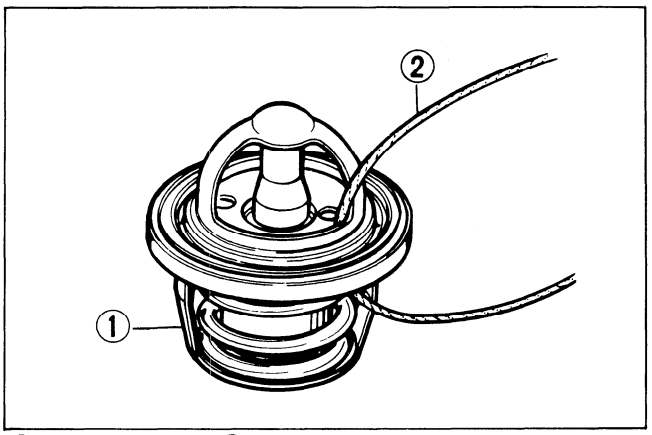


Test the thermostat at the bench for control action, in the following manner.

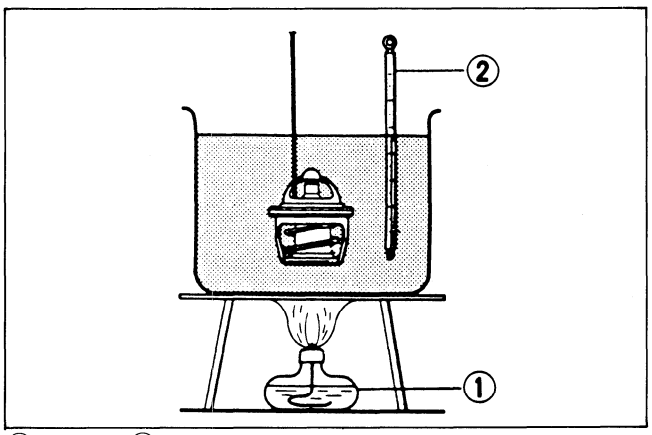
- Pass a fine thread between valve and seat, as shown in the illustration.
- Immerse the thermostat in the water contained in the pan, as shown in the illustration. Note that the immersed thermostat is in suspension. Heat the water by placing the pan on a stove and observe the rising temperature on the thermometer.
- Read the thermometer just when the thermostat drops to the bottom of the pan. This reading, which is the temperature level at which the thermostat valve begins to open, should be anywhere between 73.5° (164.3°F) and 76.5°C (169.7°F).

Thermostat valve opening temperature	75.0 ± 1.5°C (167 ± 2.7°F)

- Keep on heating the water to raise its temperature to and beyond 90°C (194°F).



① Thermostat ② Fine thread

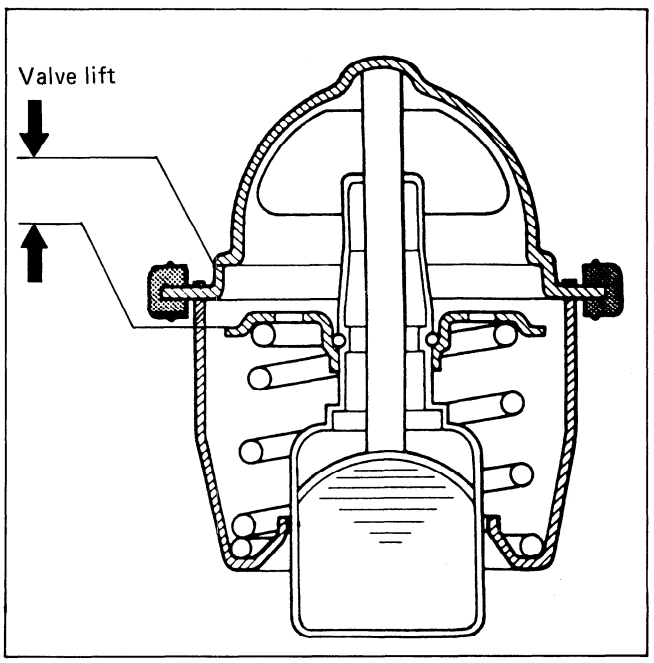


① Stove ② Thermometer

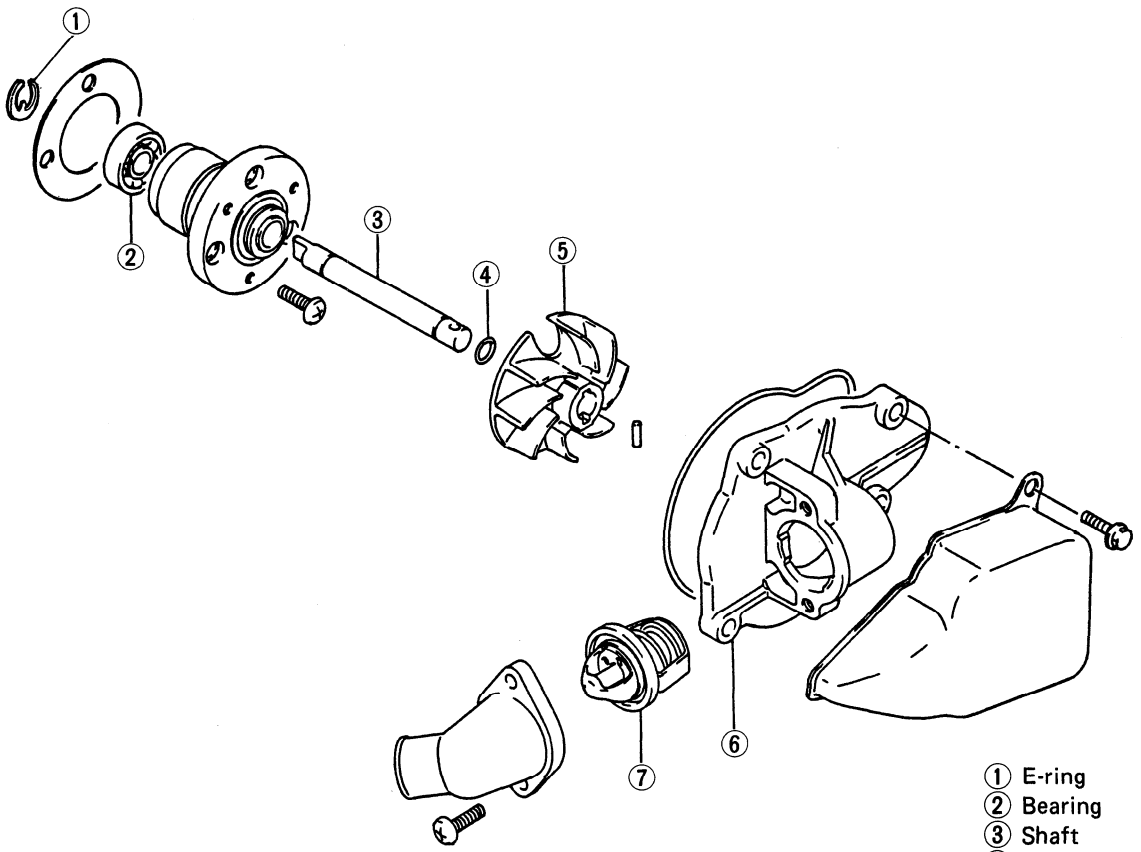
- Just when the water reaches 90°C (194°F), the thermostat valve should have lifted by at least 6.0 mm (0.24 in).

Thermostat valve lift	Over 6.0 mm at 90°C (0.24 in at 194°F)

- A thermostat failing to satisfy either of the two requirements (start-to-open temperature and valve lift) must be replaced.

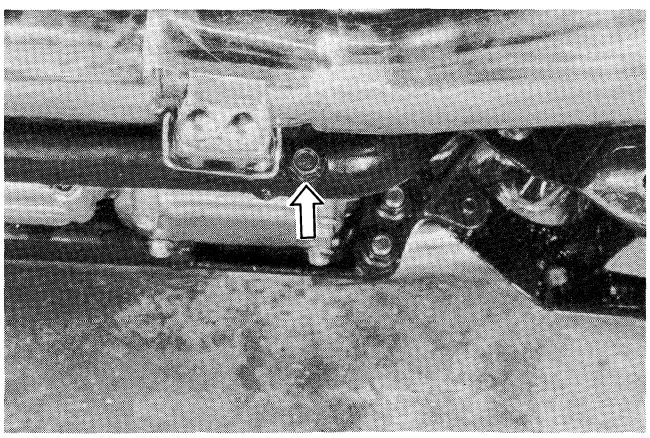


WATER PUMP

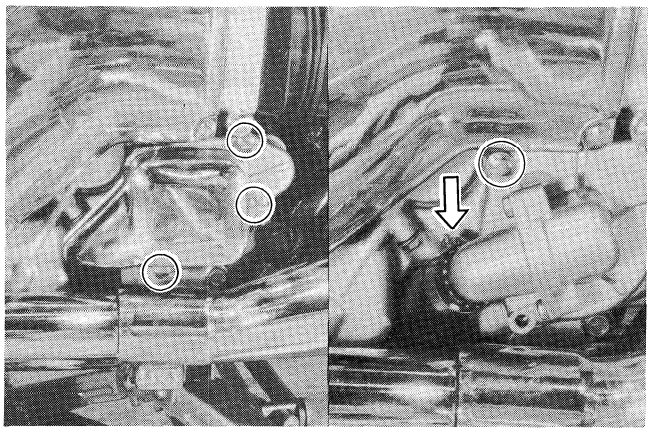


REMOVAL

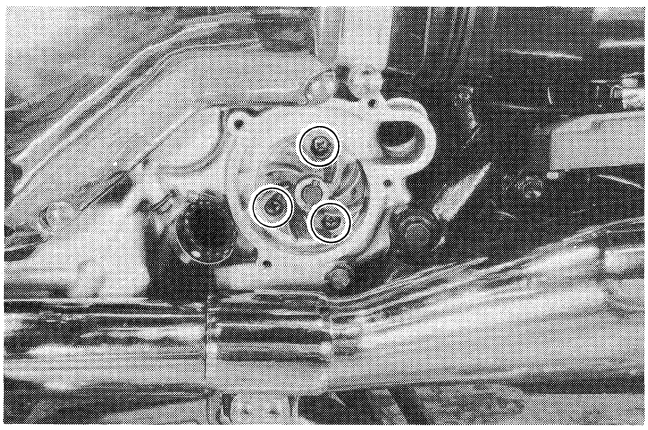
- Drain the engine oil and coolant.



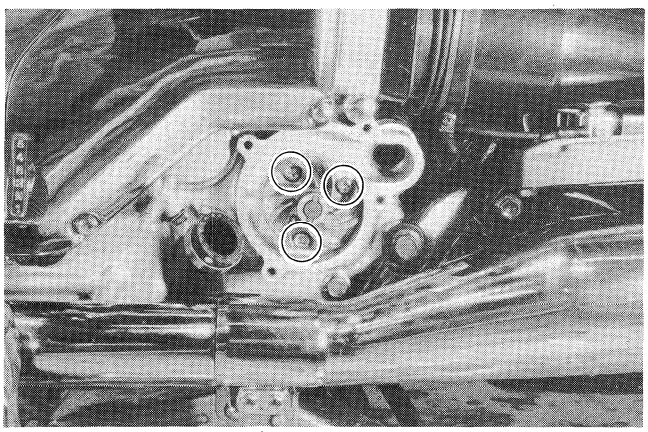
- Remove the water pump cover and case.
- Loosen the water hose clamp screw.



- Loosen the three screws for securing water pump assembly.

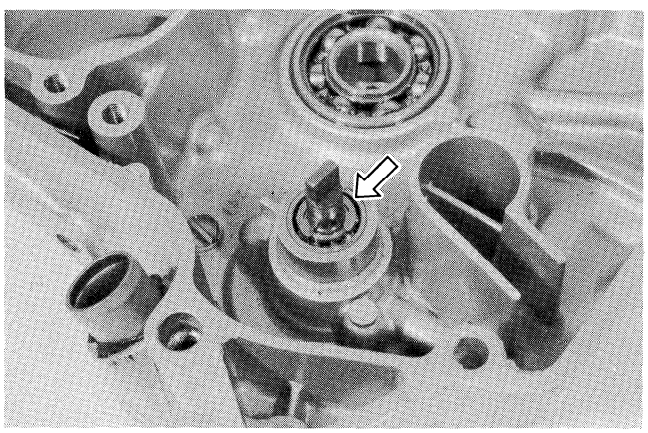


- Drive out the water pump assembly to left side by using removed screws.

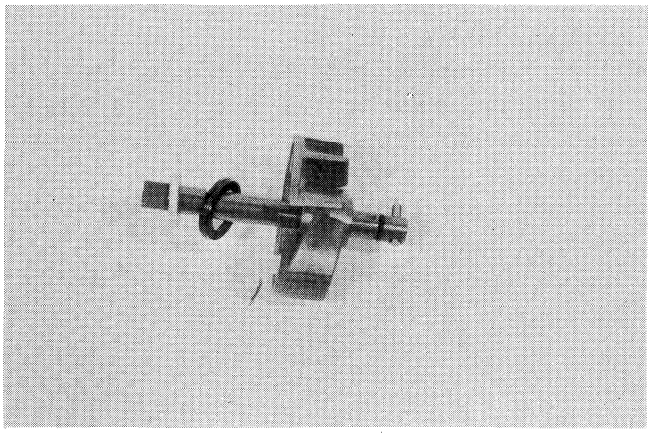


DISASSEMBLY

- Remove the E-ring.

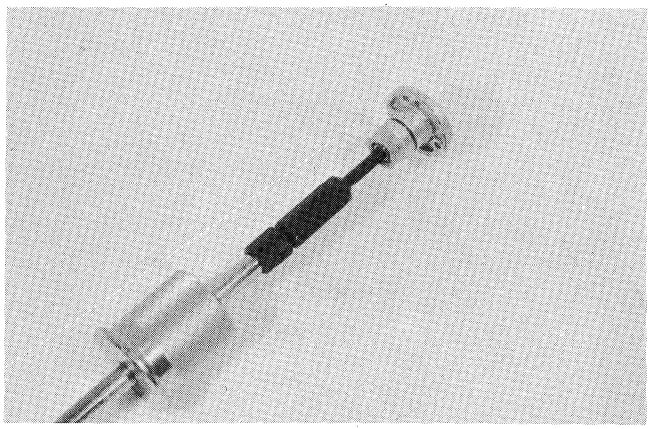


- Push the impeller shaft.
- Remove the impeller and impeller shaft.



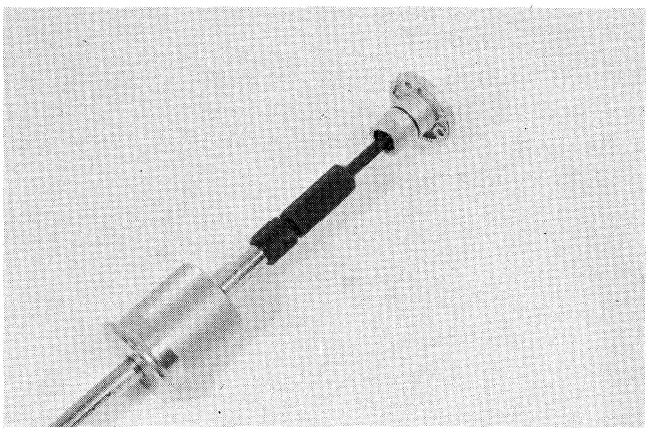
- Remove the water pump bearing by using the special tools.

09930-30102	Sliding shaft
09921-20200	Bearing remover

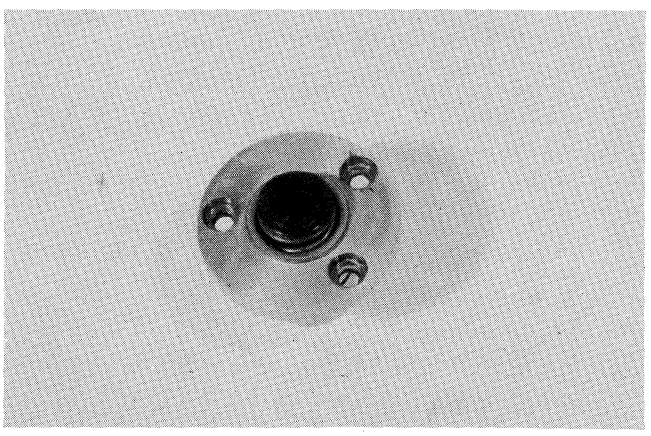


- Remove the oil seal by using the special tool.

09930-30102	Sliding shaft
09921-20200	Bearing remover

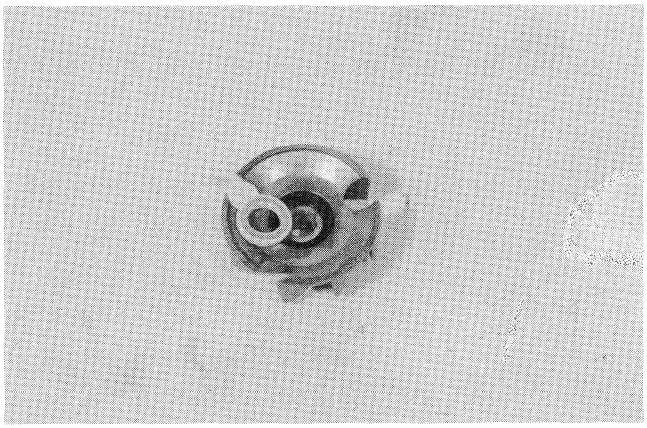


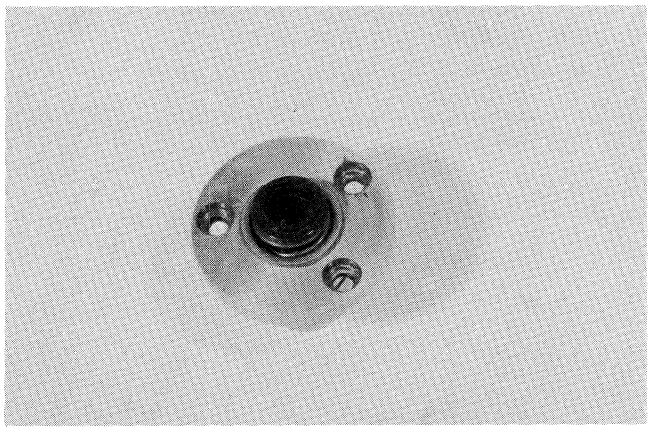
- Drive out the mechanical seal.



INSPECTION

- Turn the impeller and check the bearing play. If abnormal noise occures or any sign of stickiness is noted, replace the bearing with a new one.
- Visually inspect the mechanical seal, seal washer and oil seal. If any sign of water leakage is noted, replace the oil seal or mechanical seal.

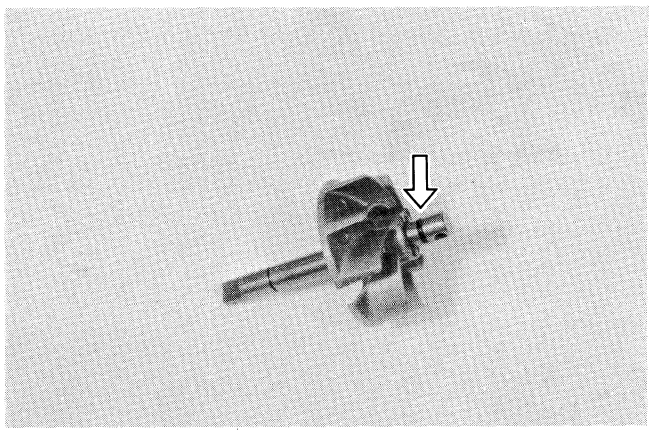




REASSEMBLY

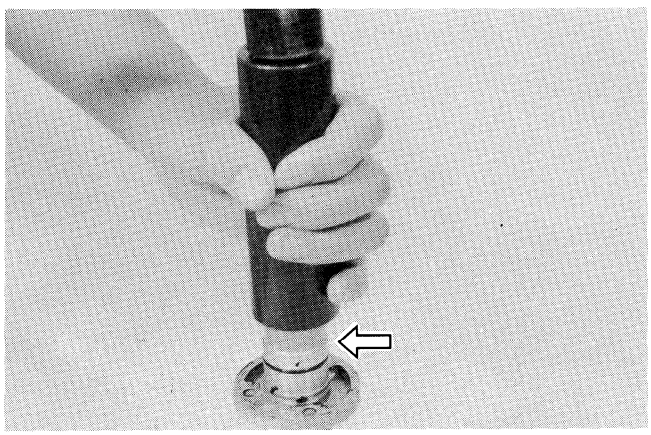
Reassemble and remount the water pump in the reverse order of disassembly and removal.

- Replace O-rings with new ones when reassembling the water pump.



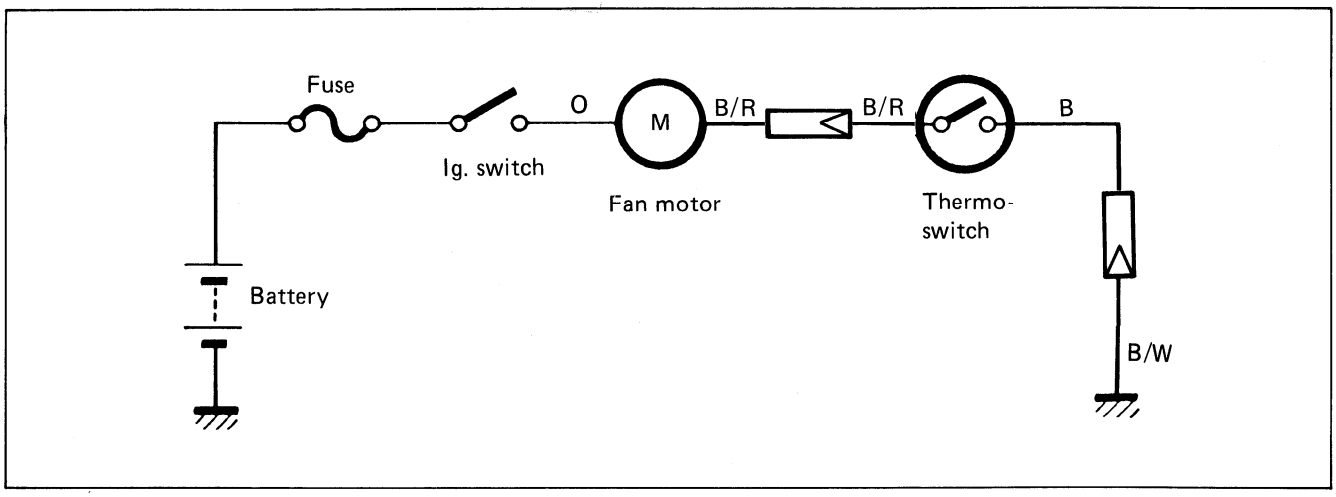
- Install the bearing by bearing installer.

NOTE:
Do not forget the O-ring.



THERMO-SWITCH

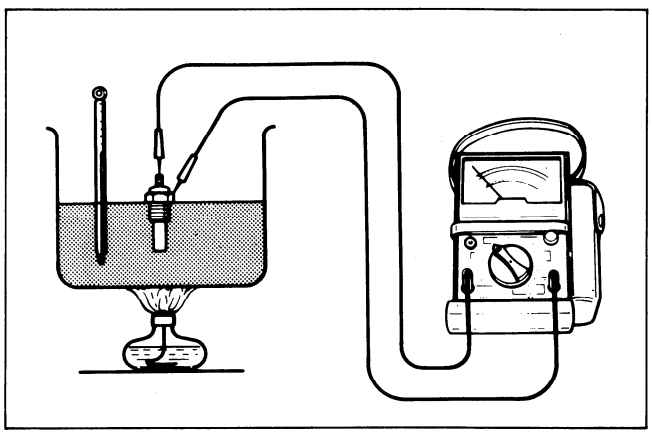
The cooling fan, being located behind the radiator, is secured to the frame by three bolts. The fan drive motor is automatically controlled by the thermo-switch. This switch remains open when the temperature of coolant is low, but it closes at about 110°C of rising water temperature to set the fan in motion.



INSPECTION

ENGINE THERMO-SWITCH

- Remove the engine thermo-switch from the radiator.
- The thermo-switch must be checked for its temperature-initiated closing action at the specification value of 110°C (230°F) by testing it at the bench as shown in the figure. Connect the switch to a circuit tester and raise the temperature of the oil in the pan, and read the column thermometer when the switch closes.



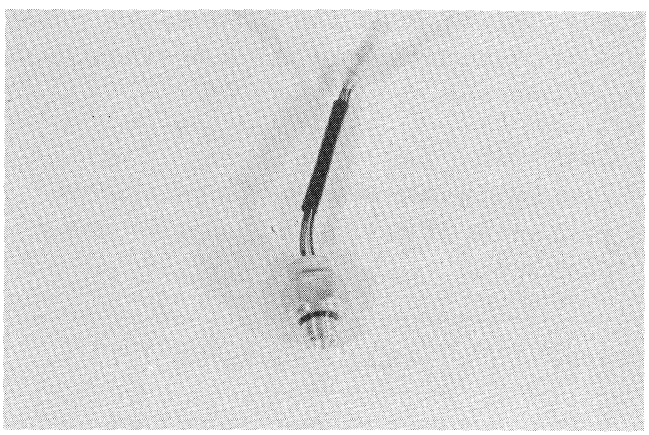
Thermo-switch specification

OFF → ON	Approx. 110°C (230°F)
ON → OFF	Approx. 104°C (219°F)

NOTE:
Do not forget the O-ring.

Thermo-switch tightening torque	10 – 15 N·m (1.0 – 1.5 kg-m) (7.0 – 11.0 lb-ft)

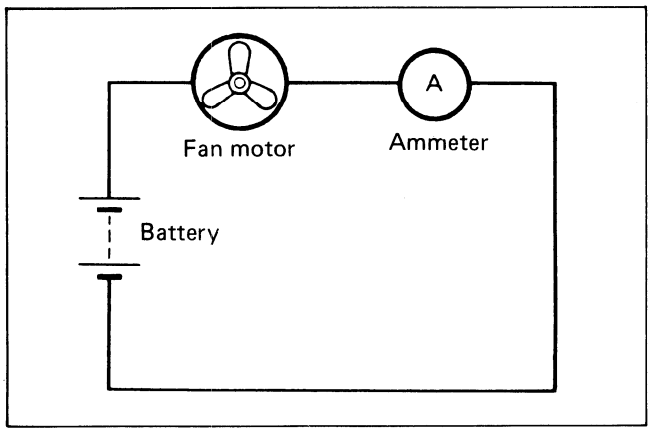
CAUTION:
Take special care when handling the thermo-switch. It may cause damage if thermo-switch gets a sharp impact.



FAN MOTOR

Test the cooling fan drive motor for load current with a voltmeter and an ammeter connected as shown in the illustration. The voltmeter is for making sure that the battery applies 12 volts to the motor. With the motor with electric motor fan running at full speed, the ammeter should be indicating not more than 5 amperes.

If the fan motor does not turn, replace the motor assembly with a new one.



COOLANT TEMPERATURE GAUGE

REMOVAL

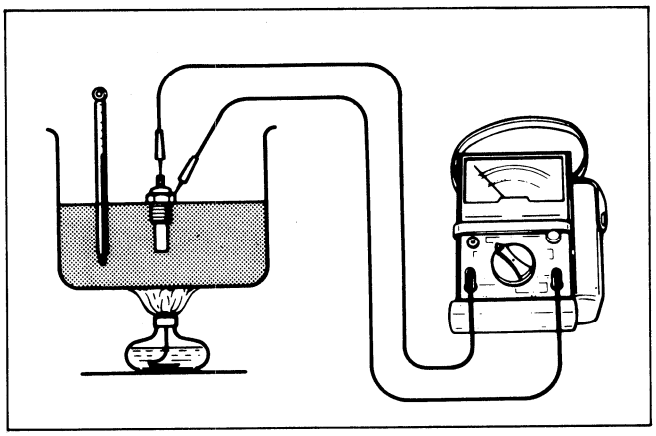
- Remove the fuel tank.
- Disconnect the coolant temperature gauge lead wire.
- Remove the coolant temperature gauge.

INSPECTION

Test the temperature gauge at the bench to see if its ohmic value changes, as specified, with temperature. The test is to be run as follows: Connect the temperature gauge to the ohmmeter and place it in the water contained in a pan, which is placed on a stove, heat the water to raise its temperature slowly, reading the thermometer placed in the pan and also the ohmmeter. A temperature gauge whose ohmic value does not change in the proportion indicated in the table must be replaced.

If the resistance noted to show infinity or too much difference in resistance value, temperature gauge must be replaced.

For inspecting the water temperature meter, refer to page 7-14.



Temperature gauge specification

Water temp. (°C)	Standard resistance (Ω)
50	Approx. 156
80	Approx. 53
100	Approx. 28

REASSEMBLY

Apply SUZUKI Bond No. 1216 to the thread portion of the temperature gauge and install it to the cylinder head.

CAUTION:
Take special care when handling the temperature gauge. It may cause damage if it gets a sharp impact.

99104-31160	SUZUKI Bond No. 1216

Tightening torque	12—15 N·m (1.2—1.5 kg-m, 8.5—11.0 lb-ft)

FUEL AND LUBRICATION SYSTEM

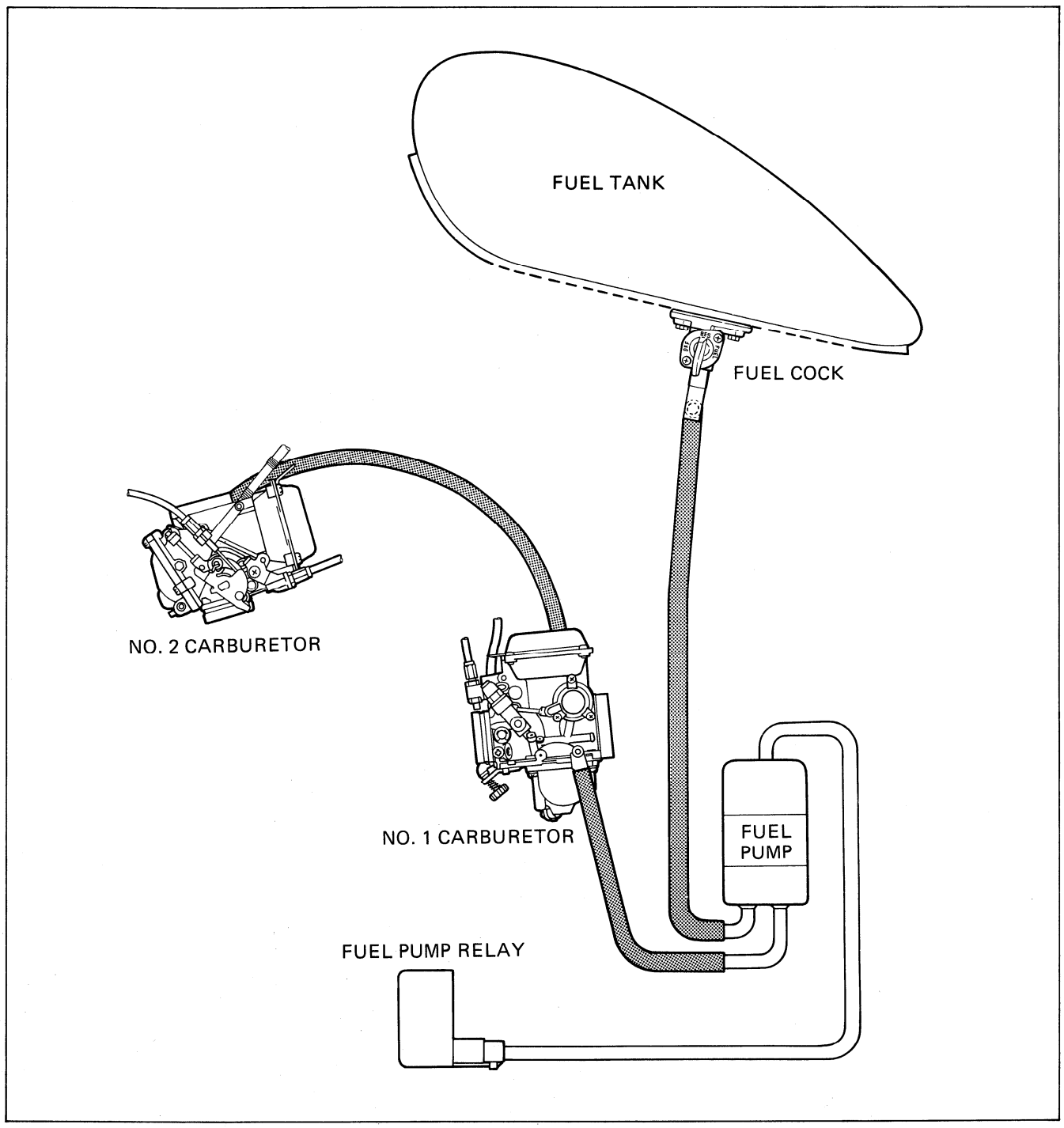
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FUEL SYSTEM

As shown in the following figure, the fuel system is composed of the fuel tank, the fuel cock, the fuel pump. the fuel pump relay and the carburetors. The fuel pump relay operates according to ON – OFF of the primary current flowing to the ignition coil on the No. 1 (rear) cylinder. The fuel pump is controled by the fuel pump relay, and electromagnetic force is used to deliver fuel to the carburetor.
The fuel sent under pressure by the fuel pump flows into the float chamber when the float of the carburetor has dropped and the needle valve is open. When the needle valve closes, the pressure of the fuel in the hose connecting the carburetor and the fuel pump increases, and when the set pressure is reached, the operation of the fuel pump is stopped by the fuel pressure to prevent excessive supply.



DESCRIPTION

Starting Engine:

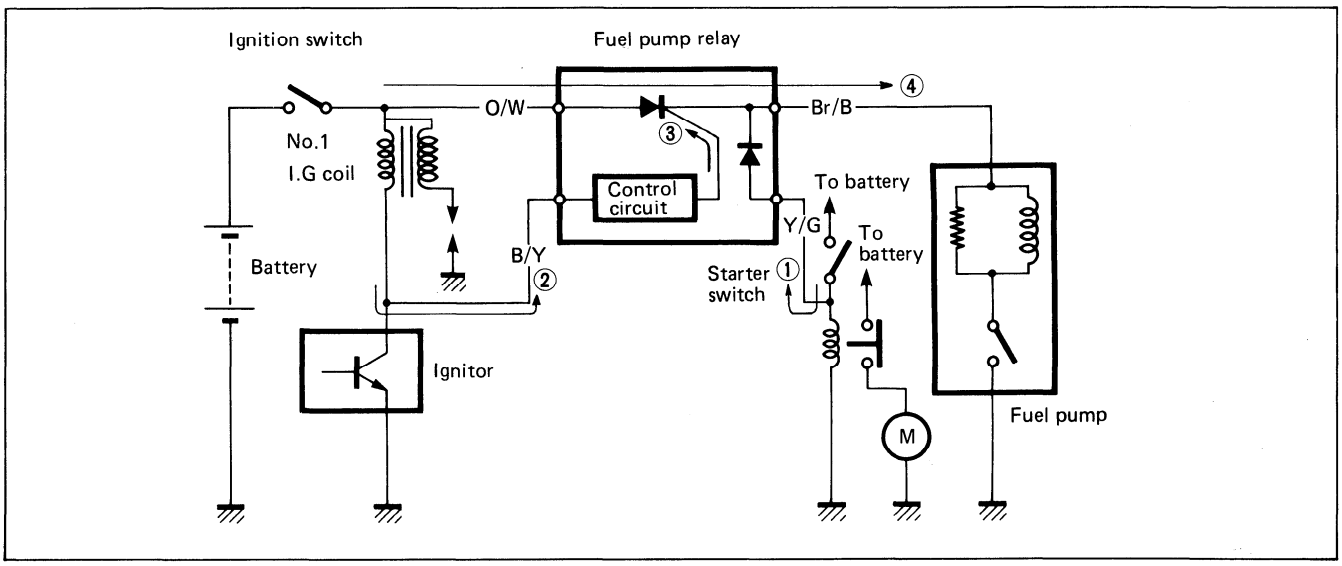
In order to supplement fuel supply when starting the engine, by turning the starter switch ON, current ① is sent directly from the battery and passes through the fuel pump relay, thus, operating the fuel pump.

After start:

The current ② generated at coil 1 flows to the fuel pump relay's control circuit.

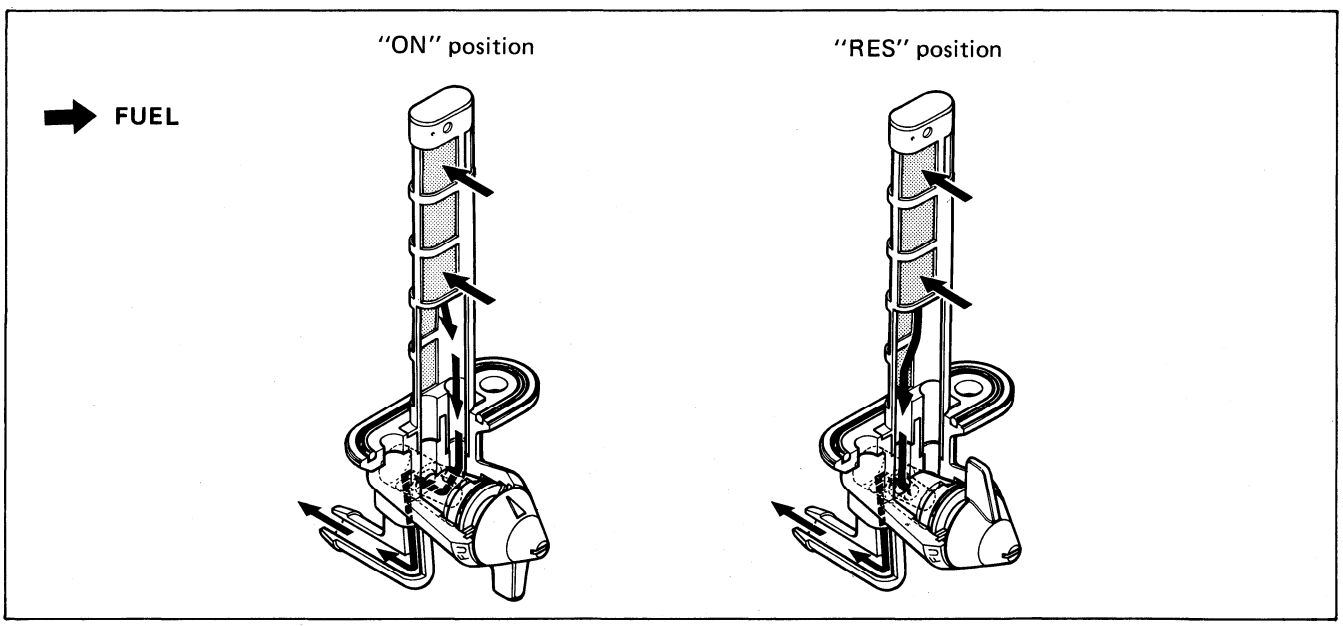
The control circuit receives this current ② and send signal ③ to the SCR, turning it ON. When the SCR turns ON, current ④ is sent from the battery through the fuel pump relay, thus operating the fuel pump.

For safety purposes the fuel pump stops automatically when the engine stop producing ignition spark and the signal from the ignition coil is not sent.



FUEL COCK

A valve is provided at the top of the fuel cock lever and can switch over to "OFF", "ON" and "RES". With the valve "ON" (normal), the main passage opens. With the valve "OFF", both holes close.

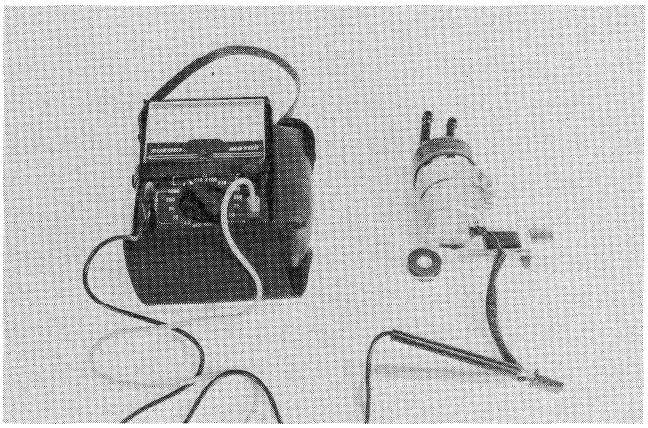


FUEL PUMP

Measure the resistance between the fuel pump lead wires. If the resistance noted to show infinity or too low a resistance value, it must be replaced.

09900-25002	Pocket tester

S.T.D. resistance	1 – 2 Ω



Place the fuel pump and battery as shown in the following figure. Measure the amount of kerosene discharged and conduct a test on the fuel pump.

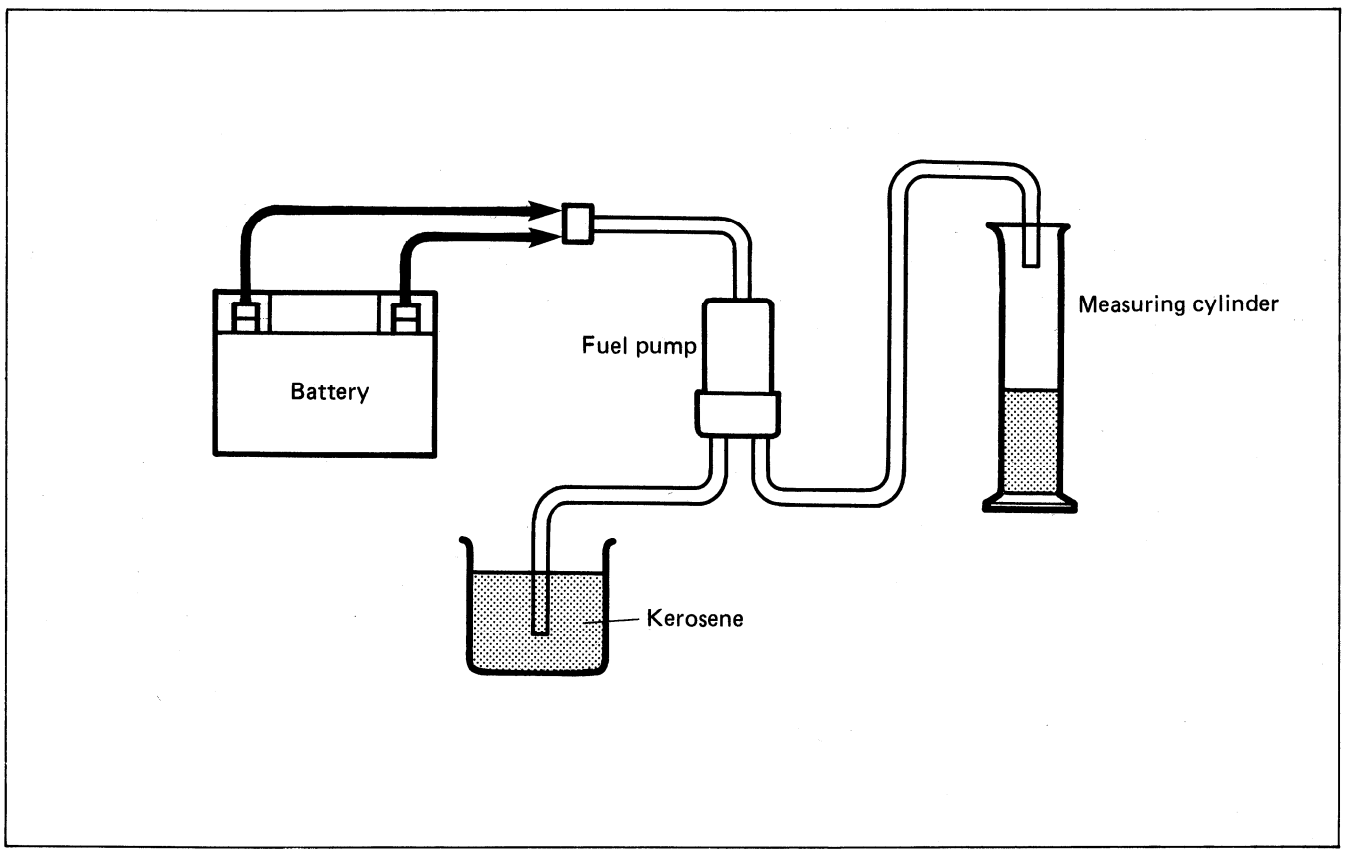
WARNING:
Do not use gasoline, which is extremely flammable and explosive.

NOTE:
*** The battery must be fully charged.**
*** Upon completion of the test, all the kerosene should be removed from the parts.**

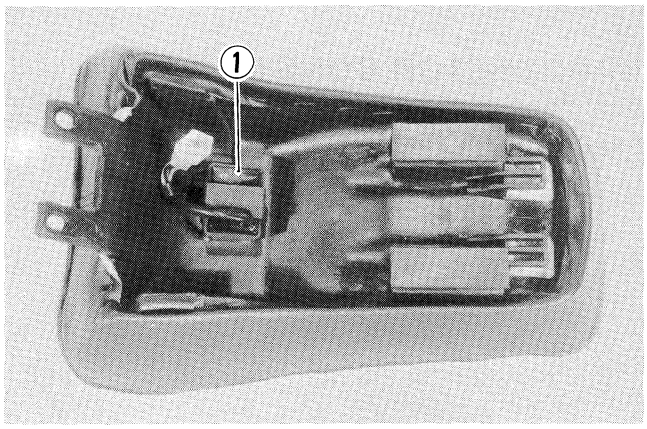
- Attach fuel pump harness B/Br to the battery ⊕ terminal and B/W to the battery ⊖ terminal.
- Measure the discharge amount from the fuel pump for 1 minute using a measuring cylinder.

Discharge amount	Over 600 ml (1.27 U.S. pt.)

If the discharge amount is less than the specification, it means that the fuel pump is defective. Replace the fuel pump with a new unit.



FUEL PUMP RELAY

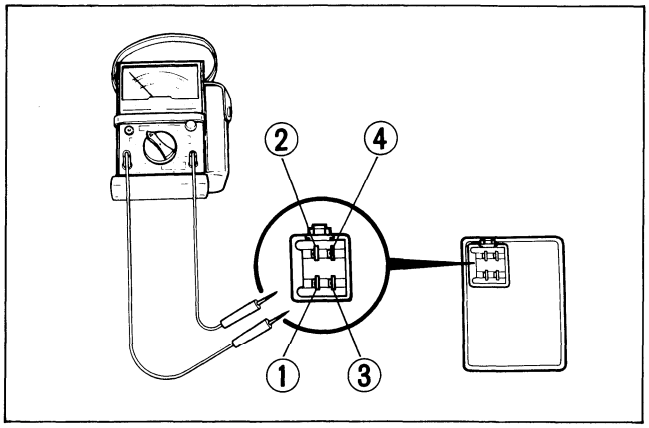


- Remove the rear seat and take out the fuel pump relay ①.
- Using the SUZUKI pocket tester (x kΩ range), measure the resistance between the lead wires in the following table.
- If the resistance checked is incorrect, replace the fuel pump relay.

09900-25002	Pocket tester

Unit: kΩ

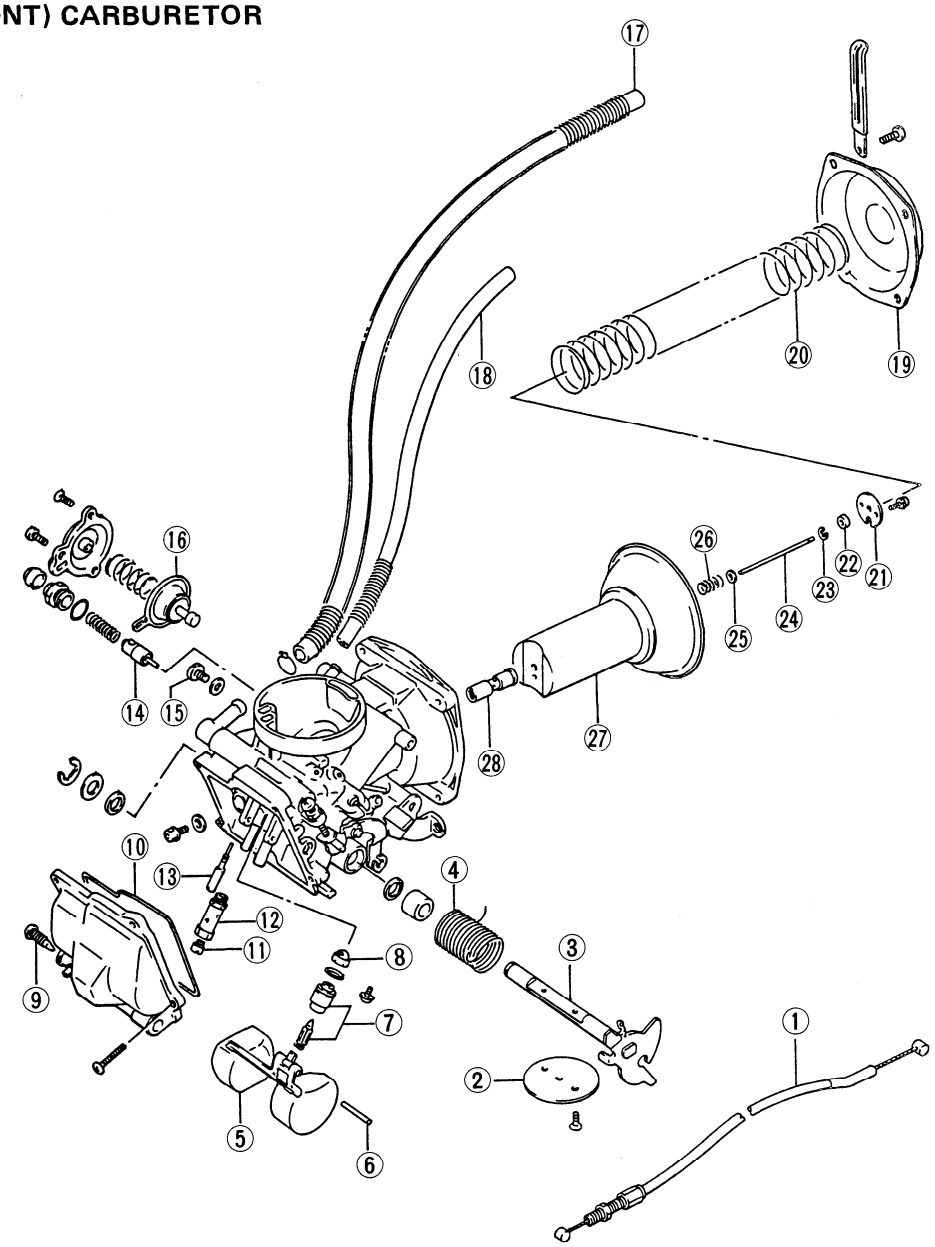
		⊕ Probe of tester to:			
		①	②	③	④
⊖ Probe of tester to:	①		∞	∞	∞
	②	∞		∞	∞
	③	0.5–10	20–100		∞
	④	2–20	20–100	0.5–10	



CARBURETOR

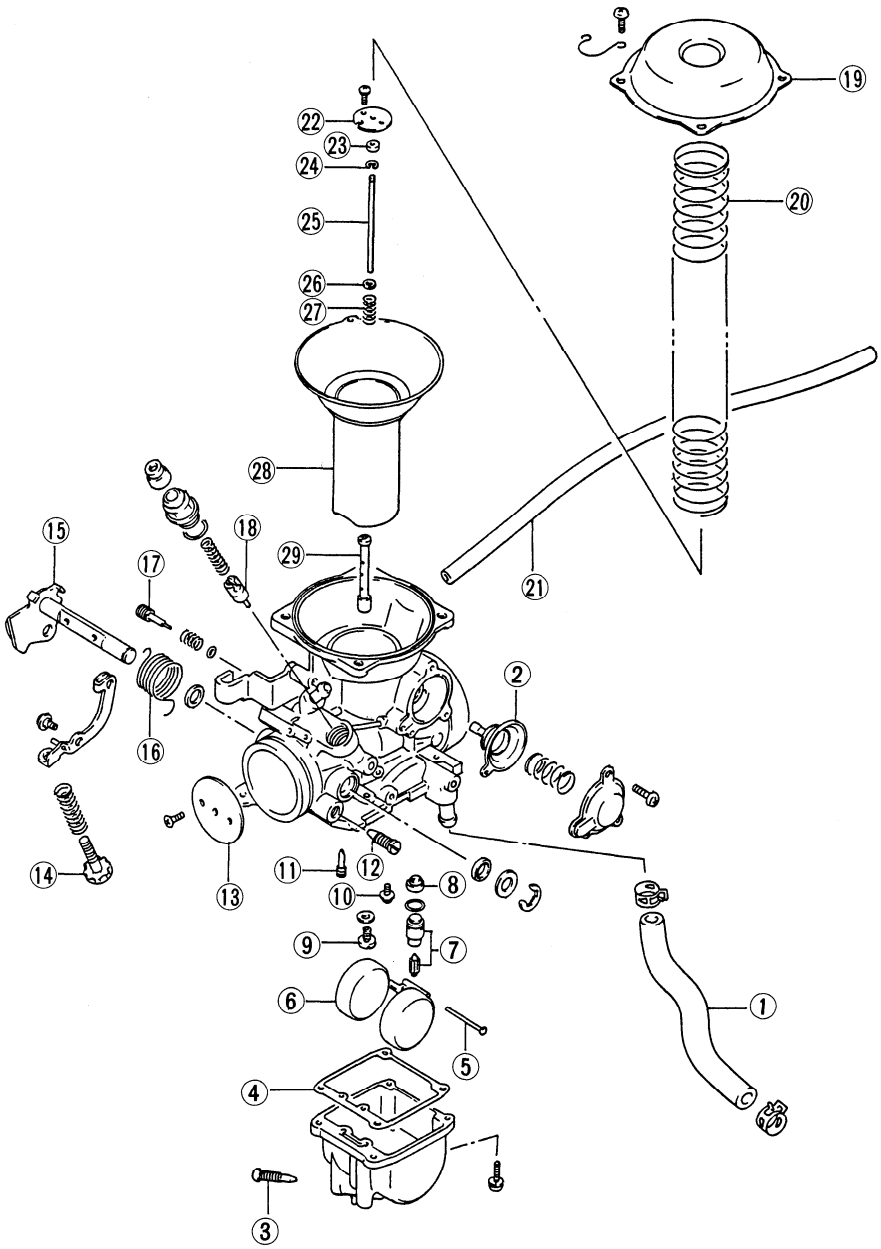
CARBURETOR CONSTRUCTION

No. 2 (FRONT) CARBURETOR



① Syncronizing cable
② Throttle valve
③ Throttle valve shaft
④ Throttle valve return spring
⑤ Float
⑥ Float pin
⑦ Needle valve
⑧ Filter
⑨ Drain screw
⑩ Seal ring
⑪ Main jet
⑫ Main jet holder
⑬ Pilot jet
⑭ Starter plunger
⑮ Balance screw
⑯ Coasting valve
⑰ Fuel hose
⑱ Breather hose
⑲ Carburetor top cap
⑳ Piston valve spring
㉑ Jet needle stopper plate
㉒ Spacer
㉓ E-ring
㉔ Jet needle
㉕ Washer
㉖ Spring
㉗ Piston valve
㉘ Needle jet

No. 1 (REAR) CARBURETOR



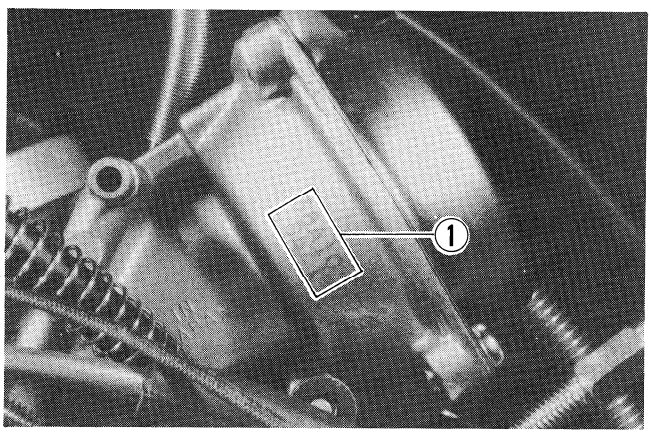
① Fuel hose
② Coasting valve
③ Drain screw
④ Gasket
⑤ Float pin
⑥ Float
⑦ Needle valve
⑧ Filter
⑨ Main jet
⑩ Needle valve stopper screw
⑪ Pilot jet
⑫ Balance screw
⑬ Throttle valve
⑭ Throttle stop screw
⑮ Throttle valve shaft
⑯ Throttle valve return spring
⑰ Pilot screw
⑱ Starter plunger
⑲ Carburetor top cap
⑳ Piston valve spring
㉑ Breather hose
㉒ Jet needle stopper plate
㉓ Spacer
㉔ E-ring
㉕ Jet needle
㉖ Washer
㉗ Spring
㉘ Piston valve
㉙ Needle jet

SPECIFICATIONS

ITEM	SPECIFICATION	
	No. 1 (Rear side)	No. 2 (Front side)
Type	MIKUNI BS 34SS	MIKUNI BDS 34SS
I.D. No.	38A00	←
Bore	34 mm (1.34 in)	←
Idle r/min	1,000 ± 100 r/min	←
Fuel level	7.0 ± 0.5 mm (0.28 ± 0.02 in)	17.0 ± 0.5 mm (0.57 ± 0.02 in)
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	11.5 ± 1.0 mm (0.45 ± 0.04 in)
Main jet	#132.5	←
Main air jet	0.7 mm (0.03 in)	←
Jet needle	5D23	5D21
Needle jet	P-1	P-0
Throttle valve	# 110	←
Pilot jet	#40	#32.5
By-pass	1.1, 1.1, 1.3 mm	1.0, 1.1, 1.1 mm
Pilot outlet	1.0 mm (0.04 in)	←
Valve seat	1.5 mm (0.06 in)	←
Starter jet	# 40	# 37.5
Pilot screw	PRE-SET	←
Pilot air jet	PRE-SET	←
Throttle cable play	0.5 – 1.0 mm (0.02 – 0.04 in)	←

I.D. NO. LOCATION

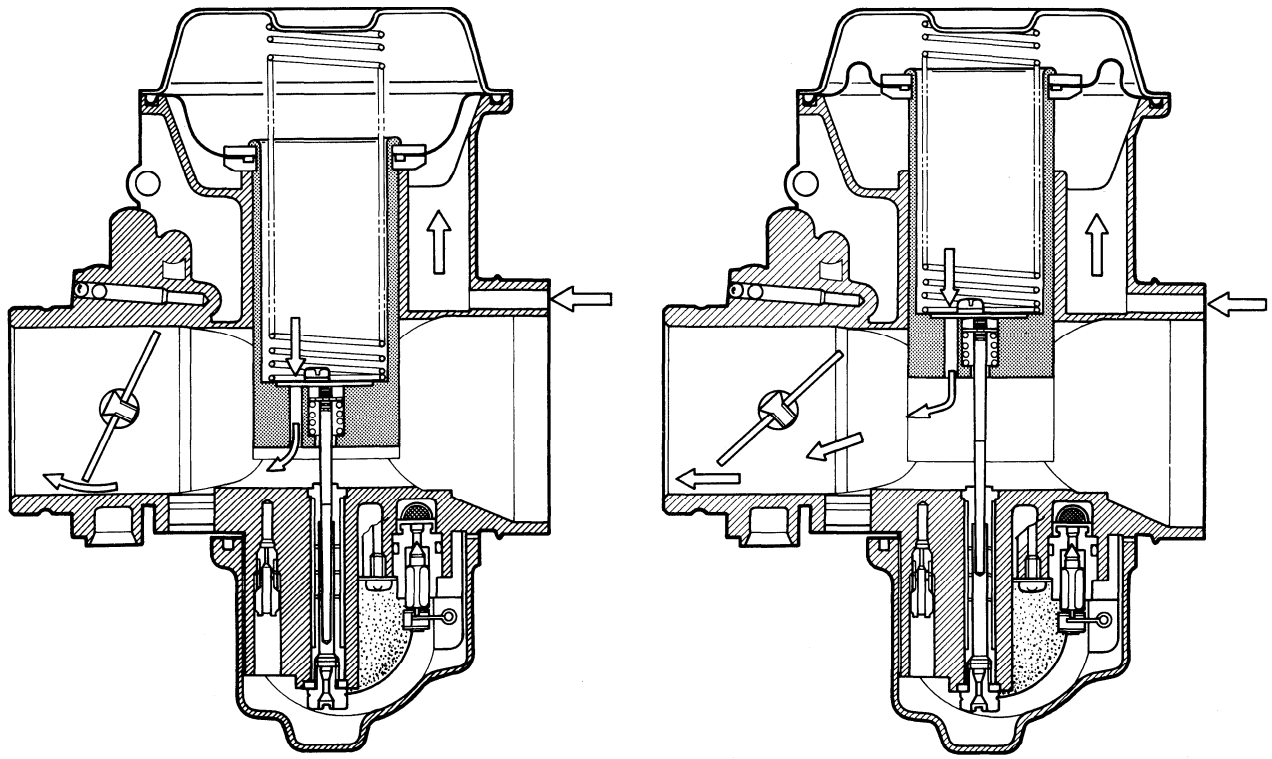
Each carburetor has I.D. Number ① stamped on the carburetor body according to its specifications.



DIAPHRAGM AND PISTON OPERATION

The carburetor is of a variable-venturi type, whose venturi cross section area is increased or decreased automatically by the piston according to the vacuum presented on the down stream side of the venturi. Vacuum is admitted into the diaphragm chamber through an orifice provided in the sliding shaft guide.

Rising vacuum controls the diaphragm movement, causing the piston to rise to increase the said area and thus prevent the air velocity from increasing. Thus, air velocity in the venturi passage is kept relatively constant improved fuel automization and for securing an optimum ratio of fuel to air in the mixture.



Air

SLOW SYSTEM

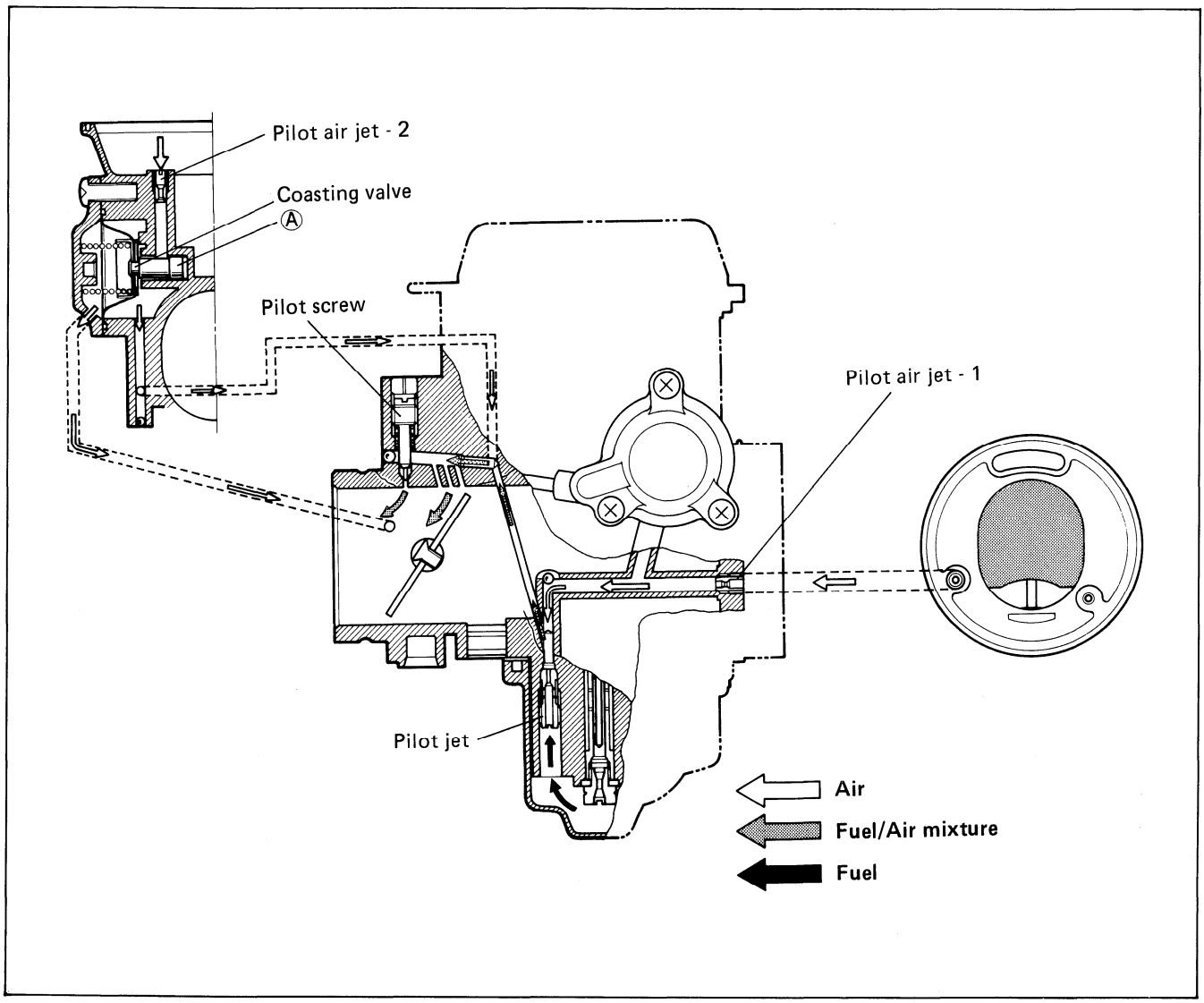
This system supplies fuel during engine operation with throttle valve closed or slightly opened. The fuel from the float chamber is first passed and metered by the pilot jet where it mixes with air coming in through pilot air jet.

This mixture, rich with fuel, then goes up through pilot pipe to pilot screw. A part of the mixture is discharged into the main bore out of the by-pass ports. The remainder is then metered by pilot screw and sprayed out into the main bore through pilot outlet.

TRANSIENT ENRICHMENT SYSTEM

This transient enrichment system is a device which keeps fuel/air mixture ratio constant in order not to generate unstable combustion when the throttle grip is returned suddenly during high speed driving. For normal operation, joining of the air from upper part of carburetor inlet side to pilot air passage obtains proper fuel/air mixture ratio. But if the throttle valve is suddenly closed, a large negative pressure generated on cylinder side is applied to a diaphragm. The valve Ⓐ which interlocks with the diaphragm closes an air passage, thus, the air flows out to the pilot air passage.

This is system to keep the combustion condition constant by varying the fuel/air mixture ratio by controling air flow in the pilot circuit.



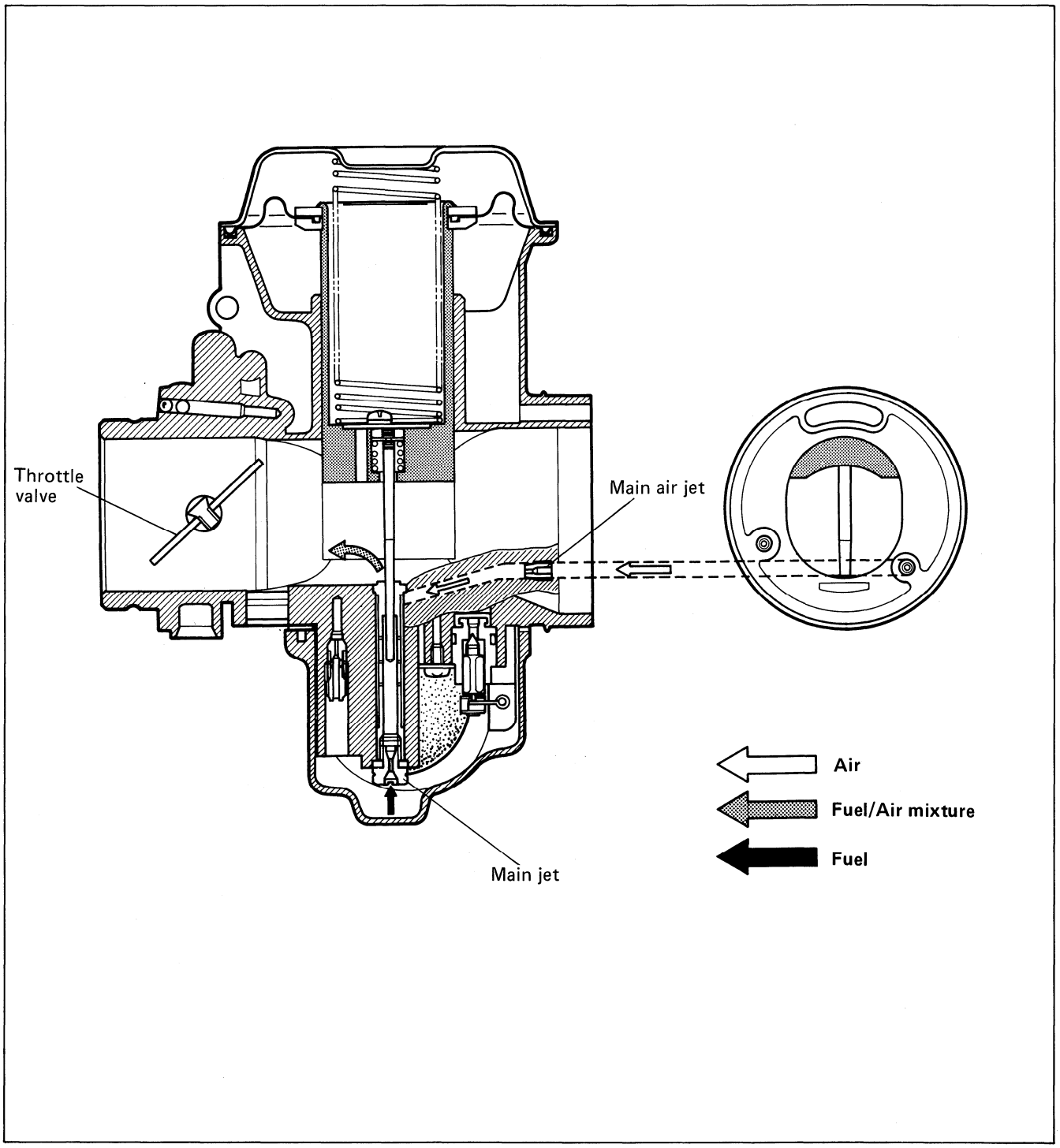
MAIN SYSTEM

As throttle valve is opened, engine speed raises, and this increases vacuum in the venturi. Consequently the piston valve moves upward.

Meanwhile, the fuel in float chamber is metered by main jet, and the metered fuel enters needle jet, in which it mixes with the air admitted through main air jet to form an emulsion.

The emulsified fuel then passes through the clearance between needle jet and jet needle, and is discharged into the venturi, in which it meets main air stream being drawn by the engine.

Mixture proportioning is accomplished in needle jet; the clearance through which the emulsified fuel must flow is large or small, depending ultimately on throttle position.

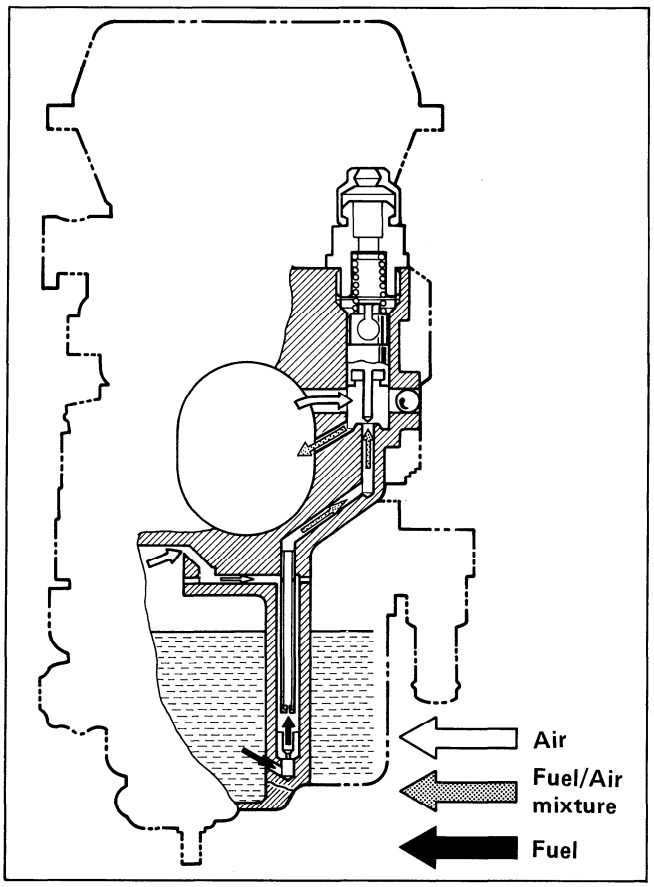


STARTER SYSTEM

Pulling the choke knob allows starter plunger to draw fuel into the starter circuit from the float chamber through starter jet.

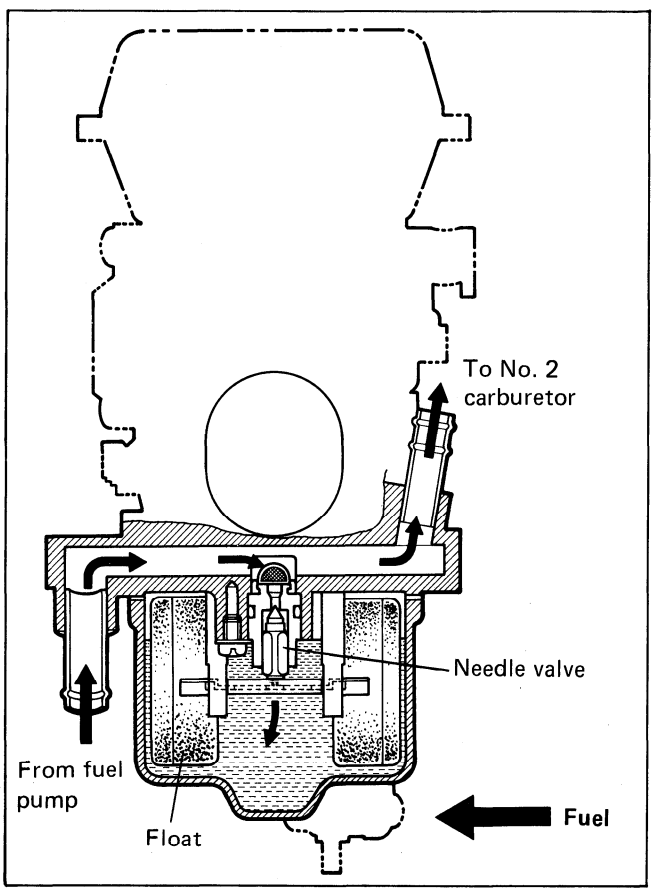
Starter jet meters this fuel, which then flows into starter pipe and mixes with the air coming from the float chamber. The mixture, rich in fuel content, reaches starting plunger and mixes again with the air coming through the main bore.

The two successive mixings of fuel with air are such that a proper fuel/air mixture for starting is produced when the mixture is sprayed out through starter outlet into the main bore.



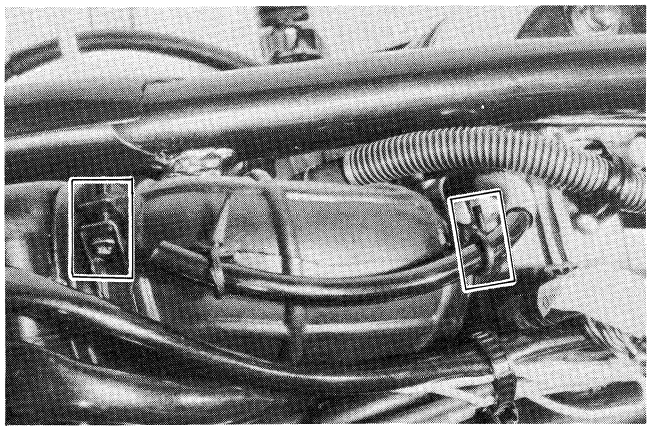
FLOAT SYSTEM

Floats and needle valve are associated with the same mechanism, so that, as the floats move up and down, the needle valve also moves likewise. When fuel level is up in float chamber, floats are up and needle valve remains pushed up against valve seat. Under this condition, no fuel enters the float chamber. As the fuel level falls, floats go down and needle valve unseats itself to admit fuel into the chamber. In this manner, needle valve admits and shuts off fuel alternately to maintain a practically constant fuel level inside the float chamber.

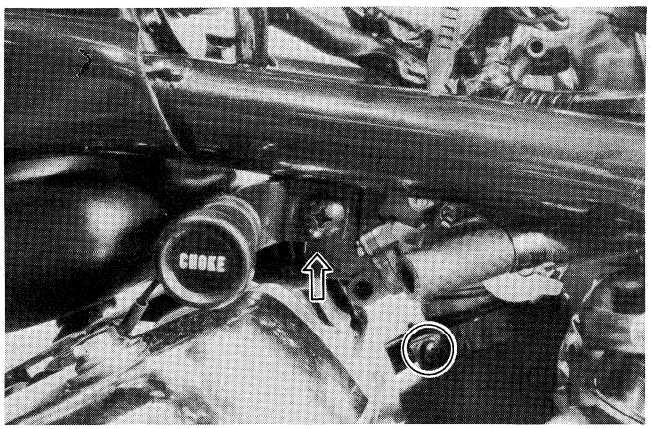


DISASSEMBLY

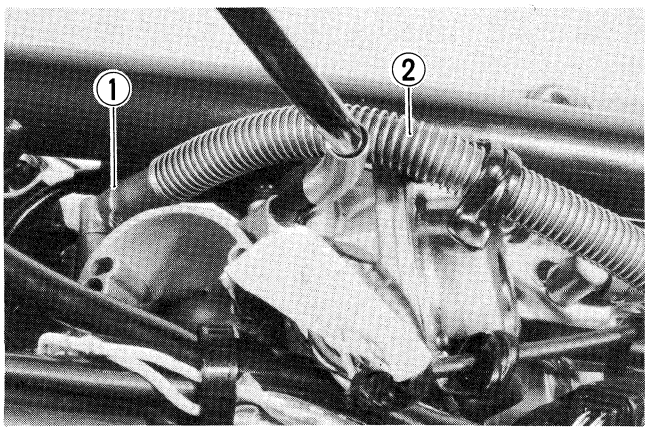
- Loosen the two clamp screws and remove the carburetor inlet pipe of the No. 2 carburetor.



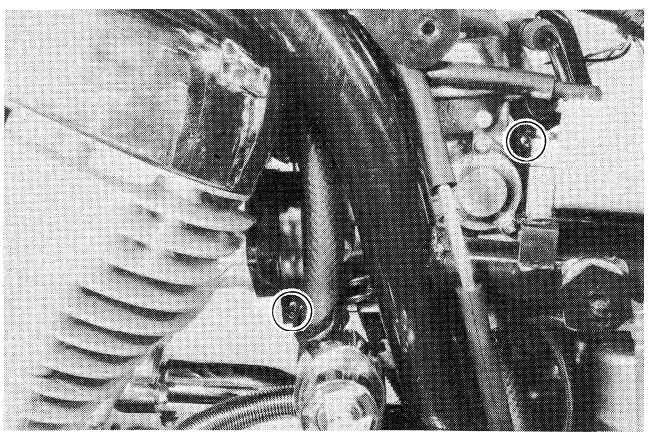
- Loosen a lower clamp screw of the No. 2 carburetor and remove the choke knob.



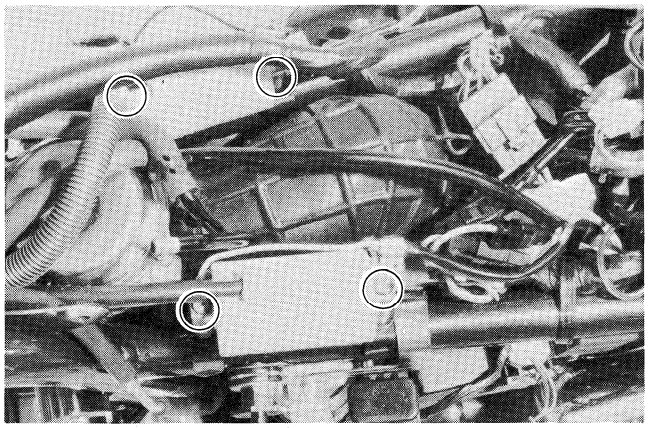
- Slip the clip ① and remove the fuel hose ② from No. 2 carburetor.



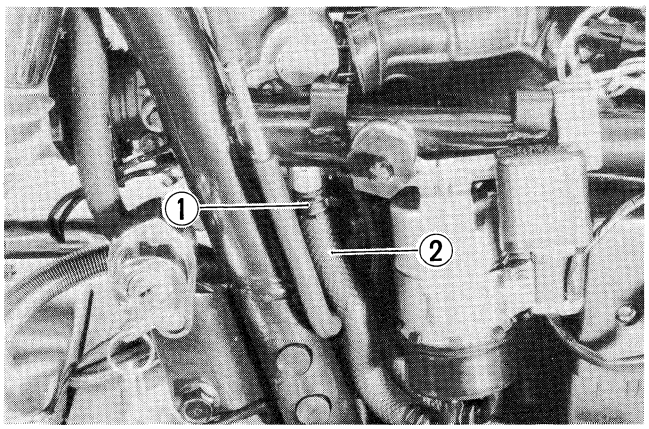
- Loosen the two clamp screws of the No. 1 carburetor.



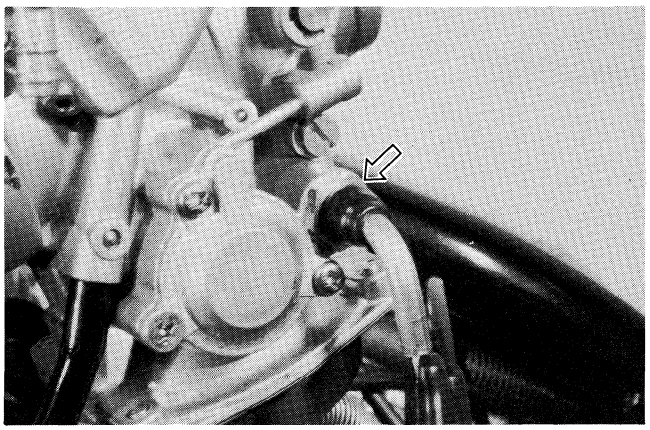
- Remove the two ignition coils by loosening the four respective screws.



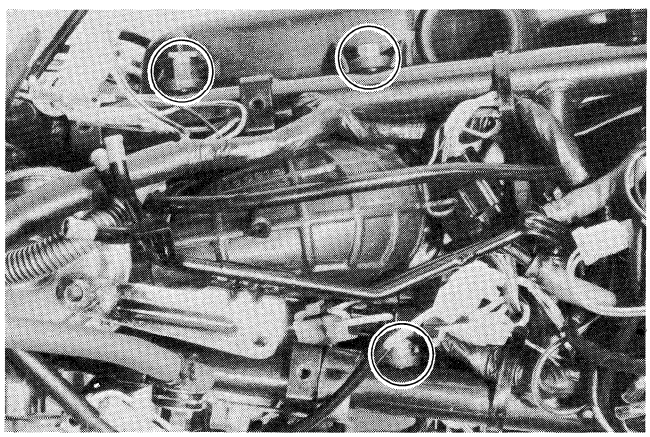
- Slip the clip ① and take out the fuel hose ② from the No. 1 carburetor.



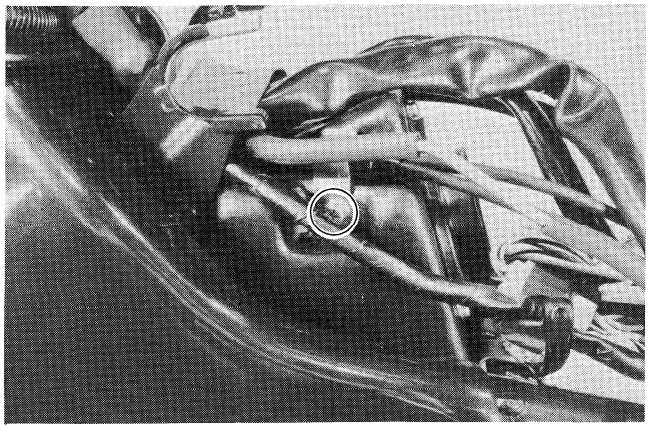
- Remove the starter cable from No. 2 carburetor.



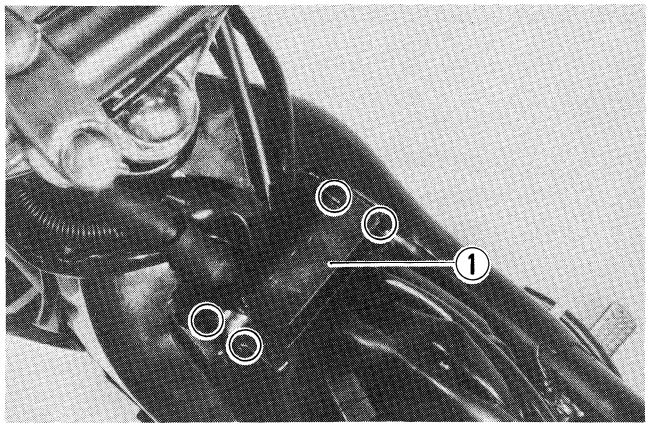
- Remove the three air cleaner mounting bolts and slide back the air cleaner body.



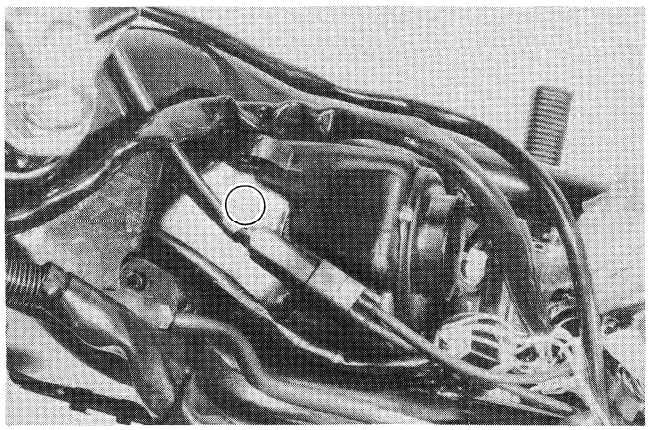
- Remove the throttle cable connector retainer by loosening a screw.



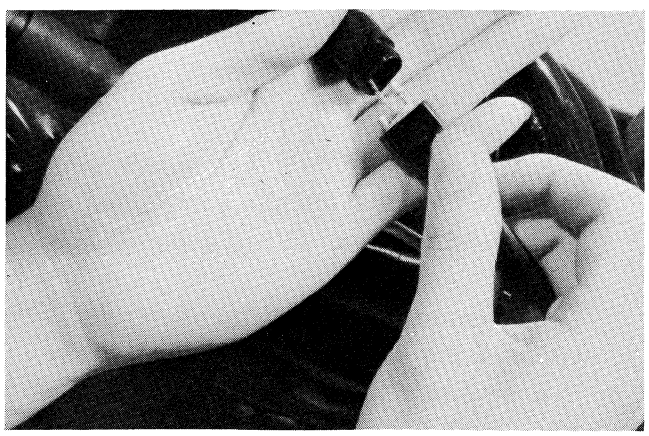
- Remove the fuel tank mounting bracket ① by loosening four screws.



- Remove the throttle cable connector mounting bracket by loosening a screw.

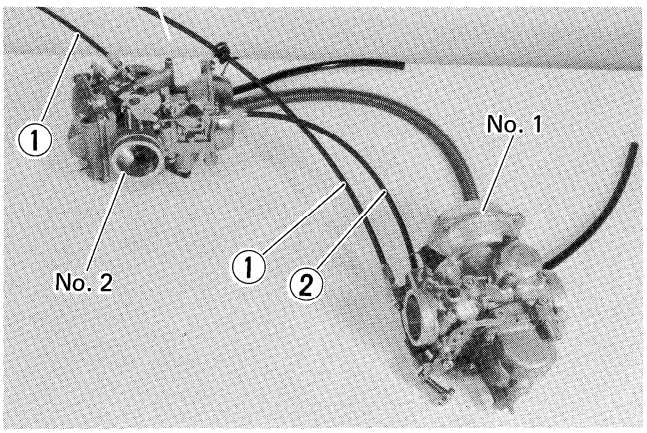


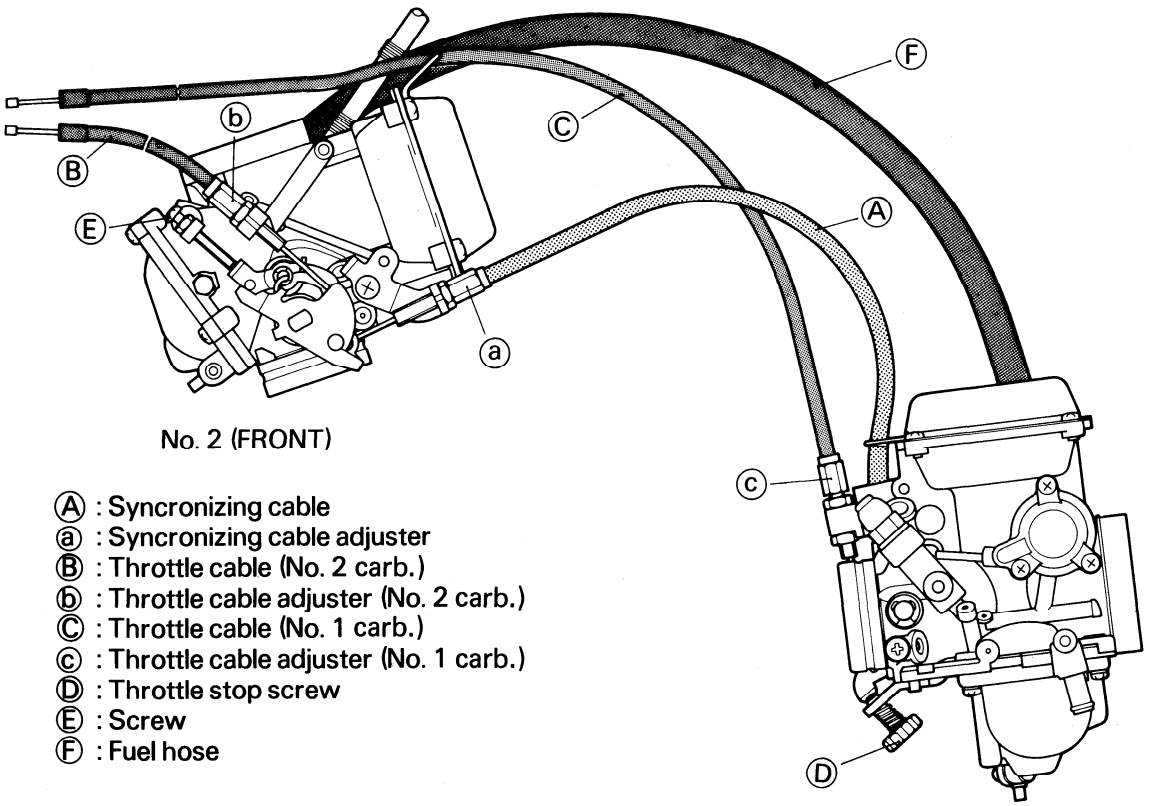
- Divide the connector and disconnect the throttle cable.



- Take out the No. 1 and No. 2 carburetors with the throttle cables ① and the syncronizing cable ② attached to the carburetors.

CAUTION:
Be sure to identify each removed parts as to its location, and lay the parts out in groups designated as "No. 1 carburetor", "No. 2 carburetor", so that each will be restored to the original location during assembly.





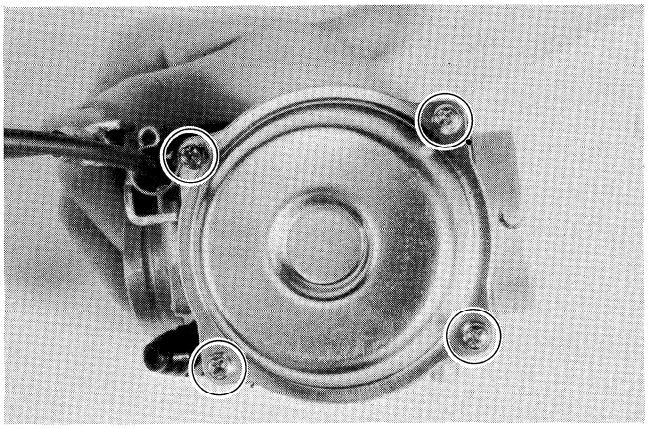
Ⓐ : Syncronizing cable
ⓐ : Syncronizing cable adjuster
Ⓑ : Throttle cable (No. 2 carb.)
ⓑ : Throttle cable adjuster (No. 2 carb.)
Ⓒ : Throttle cable (No. 1 carb.)
ⓒ : Throttle cable adjuster (No. 1 carb.)
Ⓓ : Throttle stop screw
Ⓔ : Screw
Ⓕ : Fuel hose

NOTE:
* **Do not turn the throttle cable adjusters ⓑ,ⓒ and the syncronizing cable adjuster ⓐ.**
* **Once removing a throttle cable or the syncronizing cable or a carburetor body, it is necessary to balance the two carburetors.**

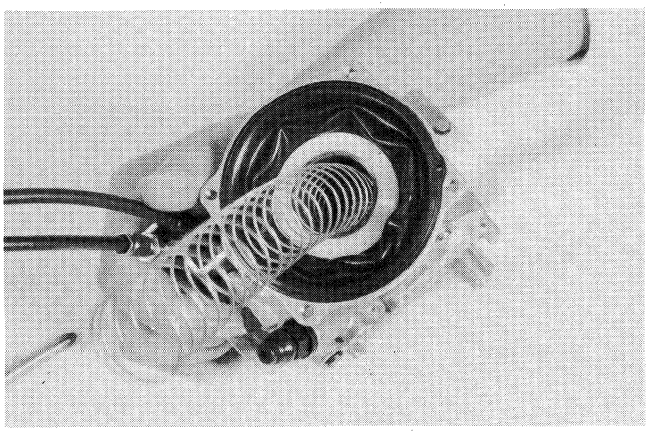
CAUTION:
Do not turn the screw Ⓔ of the No. 2 carburetor.

- Remove the carburetor top cap using impact driver set.

09900-09003	Impact driver set

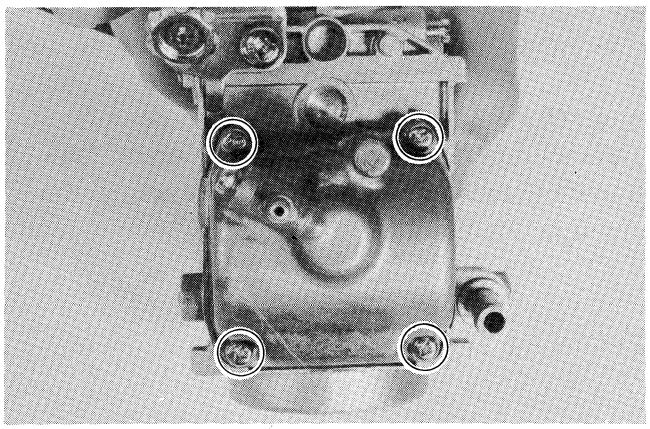


- Remove the piston valve spring and piston valve from the carburetor body.



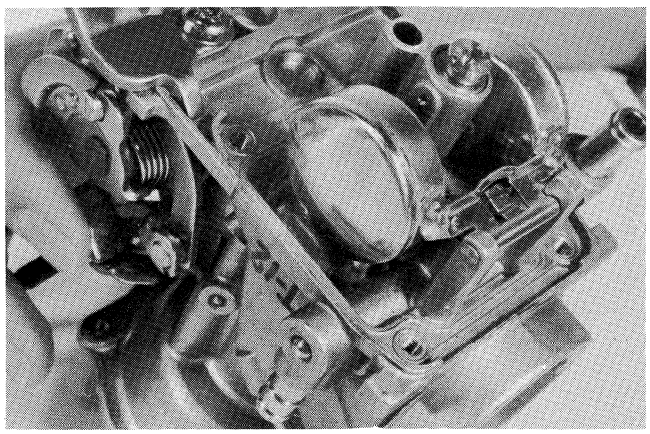
- Using the impact driver, remove the float chamber cap.

09900-09003	Impact driver set

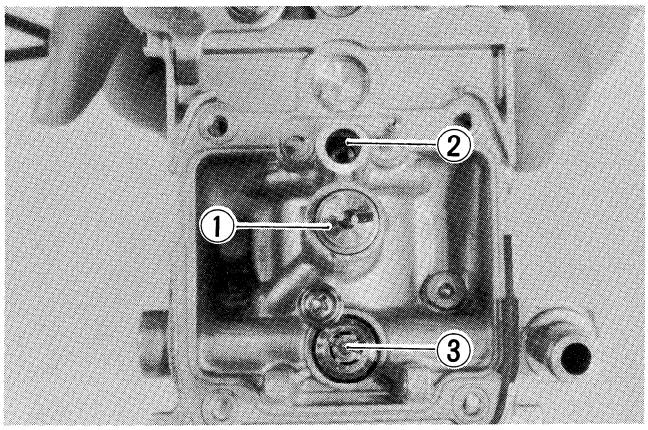


- Pull out the float pin and remove the float.

CAUTION:
When removing the float pin, be careful not to damage the carburetor body.

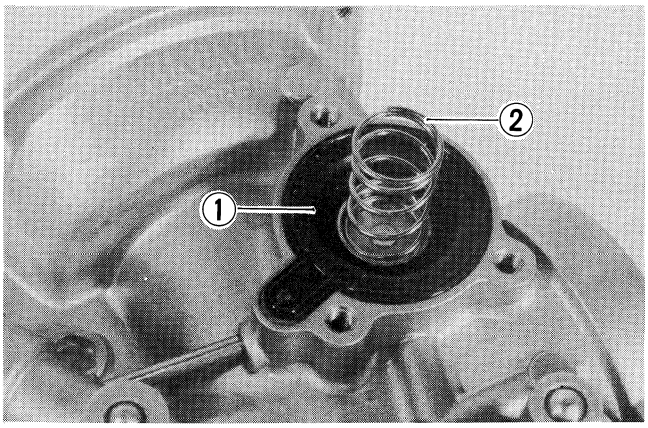


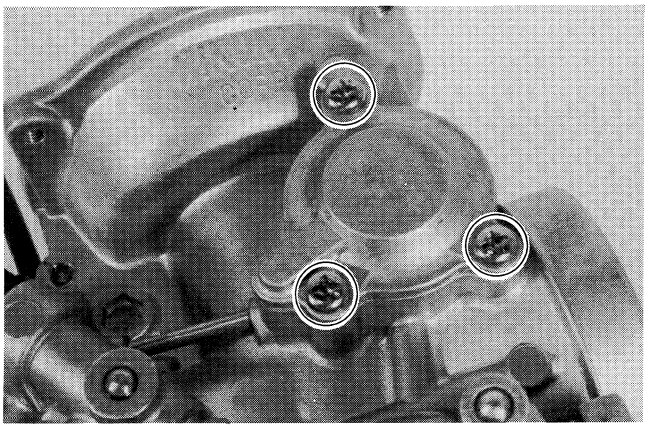
- Remove the main jet ①, pilot jet ② and needle valve ③.



NOTE:
When replacing the main jets, check their size and install them to the proper positions.

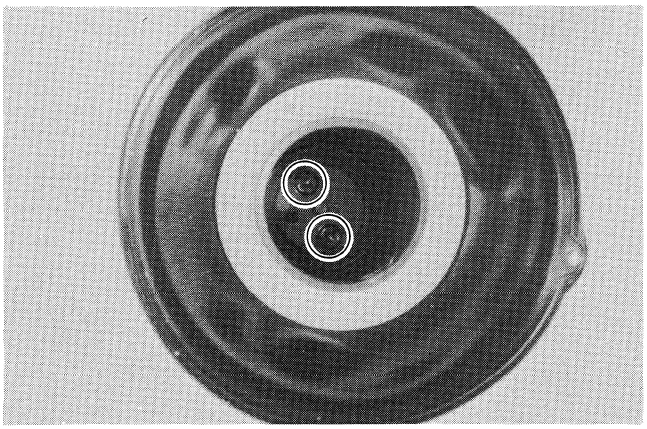
- Unscrew the three screws and remove the coasting valve ① and the spring ②.



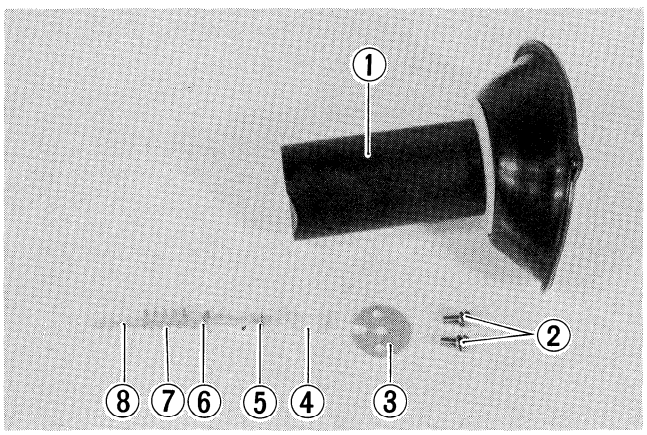


- Remove the jet needle stopper plate screws.

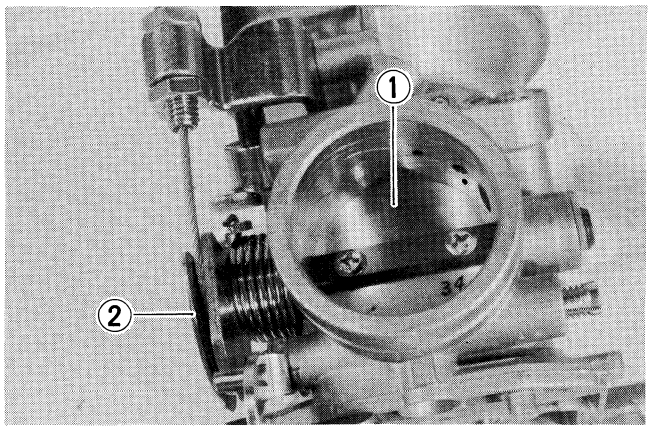
NOTE:
When replacing the jet needles, check their identification codes and install them to the proper positions.



① Piston valve
② Jet needle stopper screw
③ Stopper plate
④ Spacer
⑤ E-ring
⑥ Washer
⑦ Spring
⑧ Jet needle



- Remove the two screws, and pull out the throttle valve ① by turning the throttle valve shaft ②.



09900-09003	Impact driver set

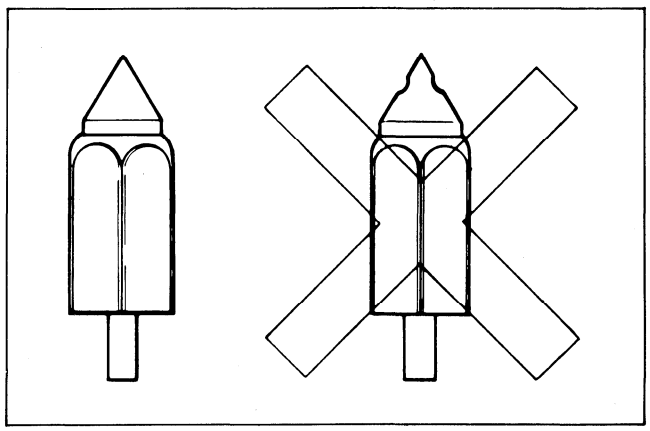
CAUTION:
These two screws are locked by punching its end. Once removing the screws, they will be damaged. When reinstalling the throttle valve, apply Thread lock "1342" to these two screws.

- Check following items for any damage or clogging.

* Pilot jet
* Main jet
* Main air jet
* Pilot air jet
* Needle jet air bleeding hole
* Float
* Needle valve mesh and O-ring
* Diaphragm
* Gasket
* Throttle valve shaft oil seals
* Pilot outlet and by-pass holes
* Fuel hose
* Coasting valve

NEEDLE VALVE INSPECTION

If foreign matter is caught between the valve seat and the needle, the gasoline will continue flowing and cause it to overflow. If the seat and needle are worn beyond the permissible limits, similar trouble will occur. Conversely, if the needle sticks, the gasoline will not flow into the float chamber. Clean the float chamber and float parts with gasoline. If the needle is worn as shown in the illustration, replace it together with available seat. Clean the fuel passage of the mixing chamber with compressed air.

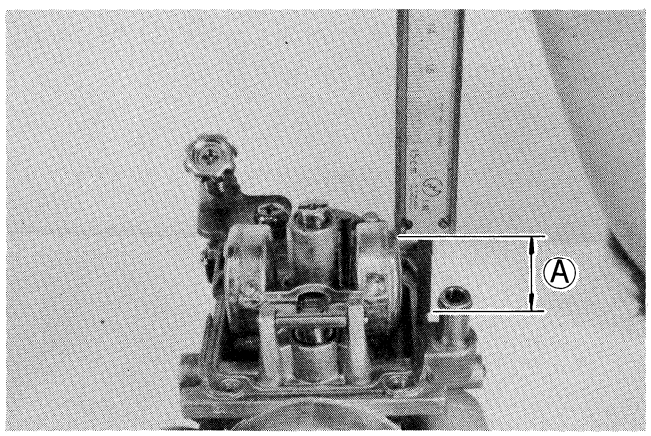


FLOAT HEIGHT ADJUSTMENT

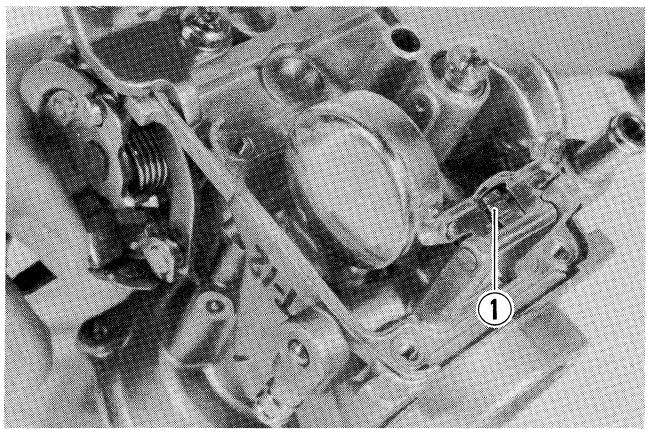
To check the float height, invert the carburetor body, with the float arm kept free, measure the height Ⓐ while float arm is just in contact with needle valve by using calipers.

Float height Ⓐ	No. 1	27.7 ± 1.0 mm (1.09 ± 0.04 in)
	No. 2	11.5 ± 1.0 mm (0.45 ± 0.04 in)

09900-20101	Vernier calipers



- Bend the tongue ① as necessary to bring the height Ⓐ to this value.

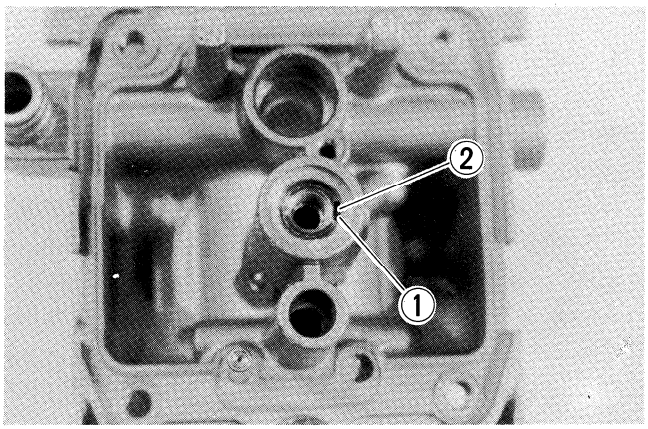


REASSEMBLY

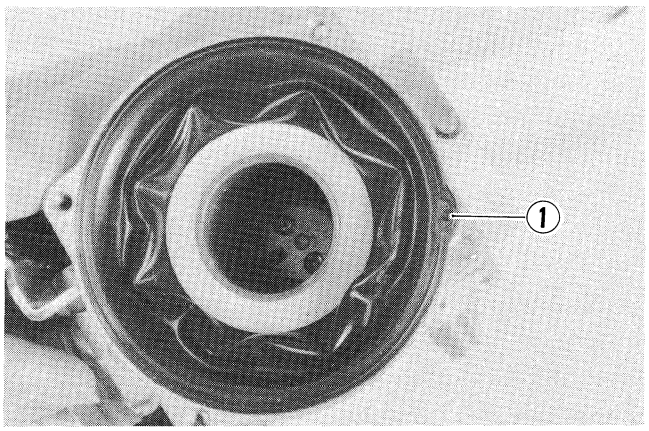
Reassemble the carburetor in the reverse order of disassembly.

Pay attention to the following points.

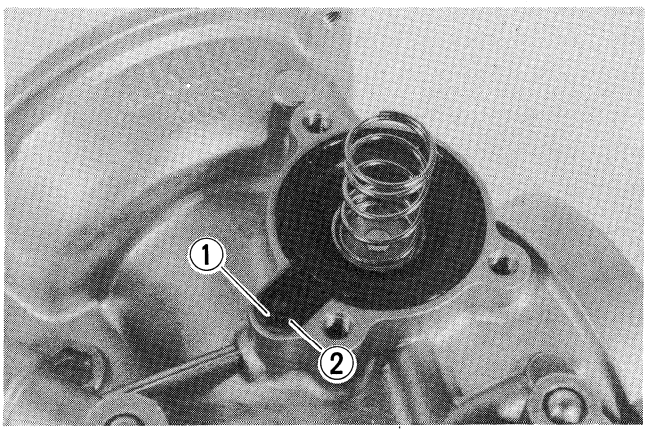
- Align the groove ① of the needle jet with the pin ② and replace it.



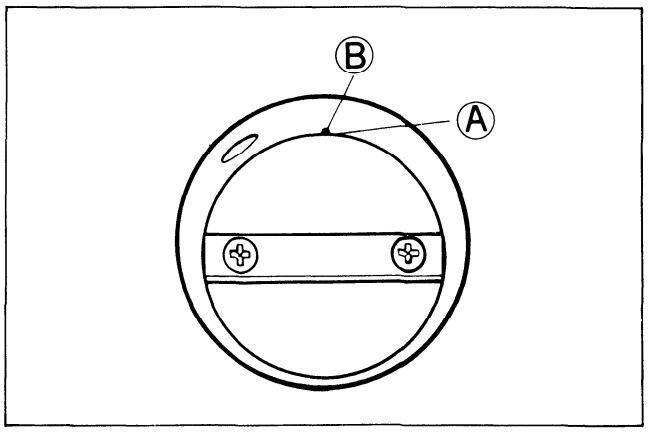
- Place tongue ① of diaphragm to the carburetor body properly.



- When installing the coasting valve to the body, align the hole ① and air hole ② .



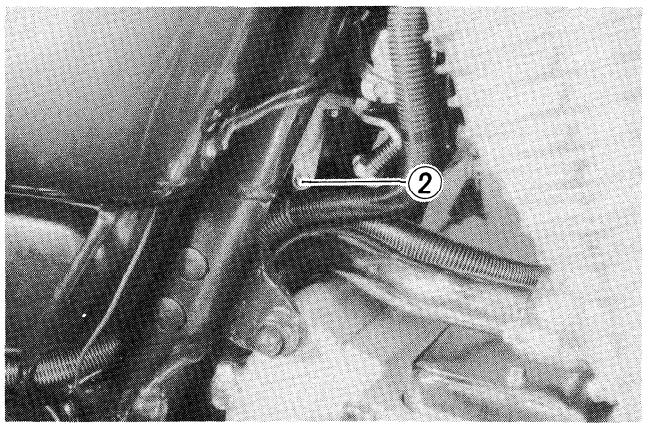
- Set each throttle valve in such a way that its top end Ⓐ meets the foremost bypass Ⓑ.



FUEL LEVEL INSPECTION

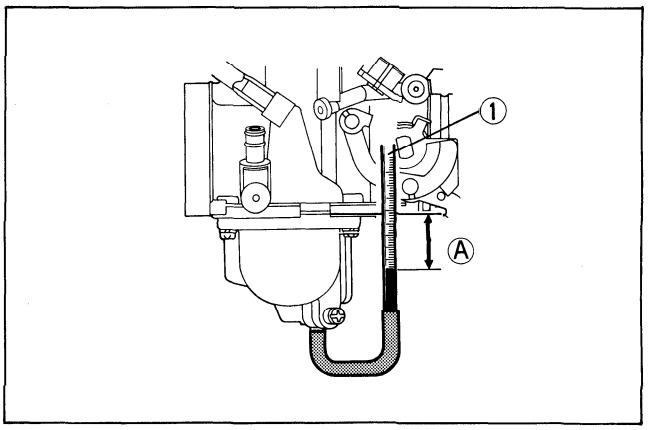
- Install the fuel level gauge ① to the boss of the float chamber body and loosen the carburetor drain screw ② .

09913-10730	Fuel level gauge



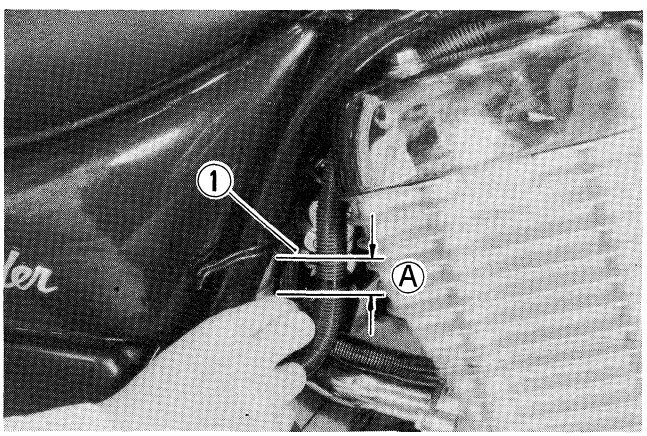
- Run the engine at the idling speed 900 – 1 100 r/min), and measure the distance Ⓐ with the middle line of the level gauged aligned with the mating surface of float bowl (for No. 1 carb.) or the index line of the carburetor body (for No. 2 carb.). Ⓐ should be within the specified range.

Distance Ⓐ	Front (No. 2)	17.0 ± 0.5 mm (0.57 ± 0.02 in)
	Rear (No. 1)	7.0 ± 0.5 mm (0.28 ± 0.02 in)

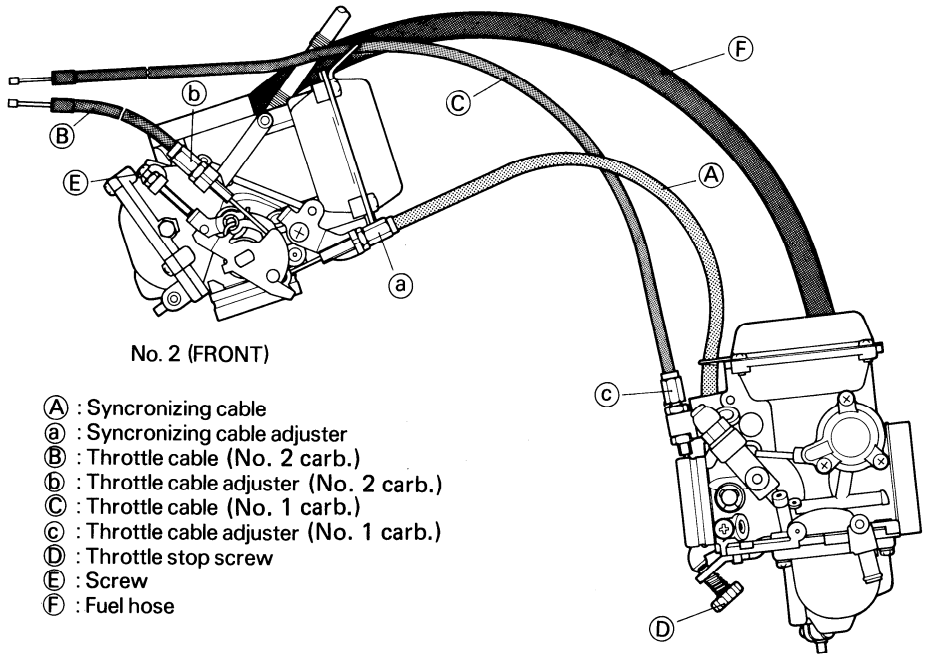


NOTE:
Fuel will not be supplied when the engine is stopped.

- If the fuel level is not within the above tolerance, remove the carburetor from the engine assembly and adjust the float height as shown in the page 6-18.



BALANCING CARBURETORS



Ⓐ : Syncronizing cable
ⓐ : Syncronizing cable adjuster
Ⓑ : Throttle cable (No. 2 carb.)
ⓑ : Throttle cable adjuster (No. 2 carb.)
Ⓒ : Throttle cable (No. 1 carb.)
ⓒ : Throttle cable adjuster (No. 1 carb.)
Ⓓ : Throttle stop screw
Ⓔ : Screw
Ⓕ : Fuel hose

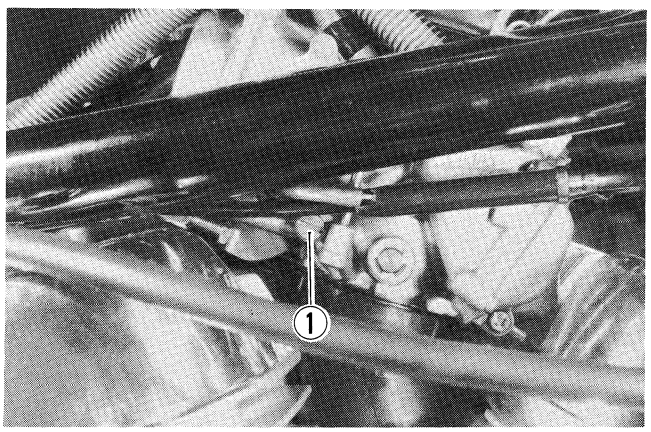
CAUTION:
Once removing the syncronizing cable Ⓐ or throttle cables Ⓑ , Ⓒ or carburetors, it is necessary to balance the two carburetors.

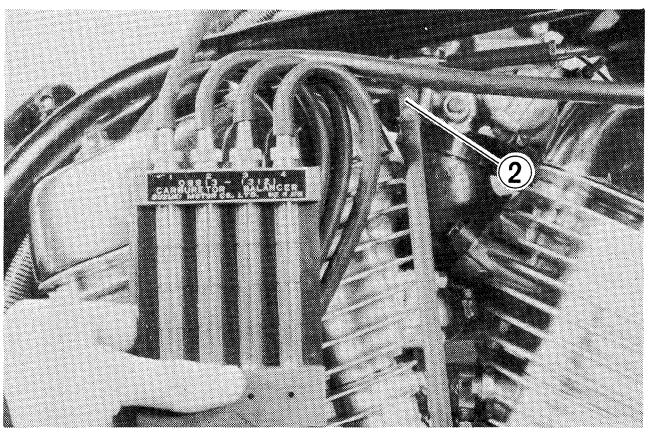
IN CASE OF CHANGING THE SYNCRONIZING CABLE Ⓐ :

As the first step, calibrate the carburetor balancer gauge, as follows:

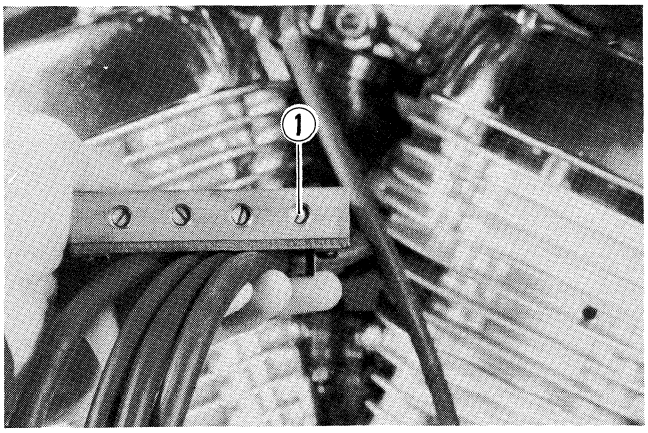
09913-13121	Carburetor balancer
09913-13140	Adapter

- Start up the engine and run it in idling condition for warming up.
- Stop the warm-up engine. Remove vacuum inspection screw ① for No. 1 or No. 2 carburetor and install adapter ② with gasket.
- Connect one of the four rubber hoses of the balancer gauge to this adapter, and start up the engine, and keep it running at 1 000 r/min by turning throttle stop screw Ⓓ.

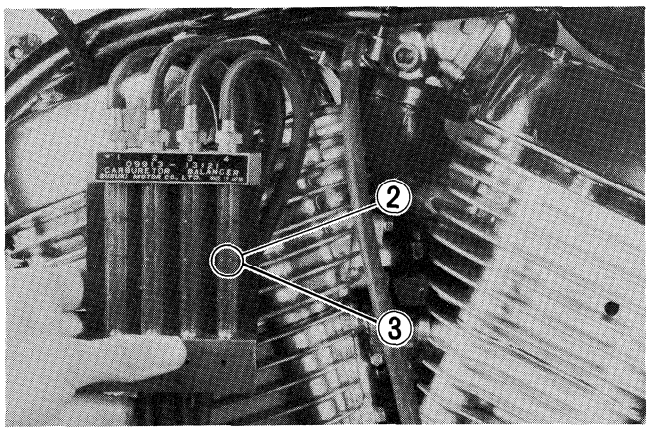




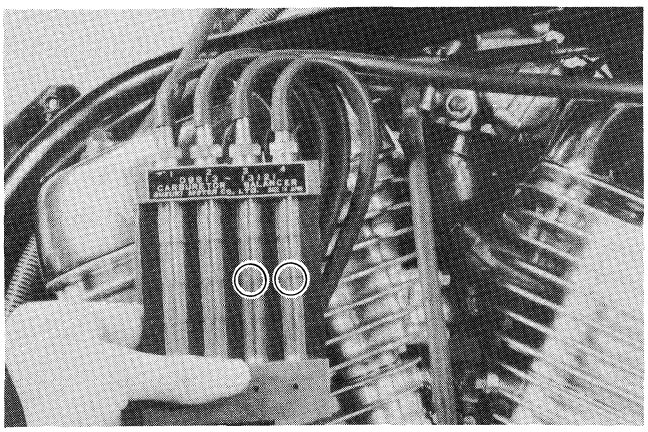
- Turn the air screw ① of the gauge so that the vacuum acting on the tube of that hose will bring the steel ball ② in the tube to the center line ③.

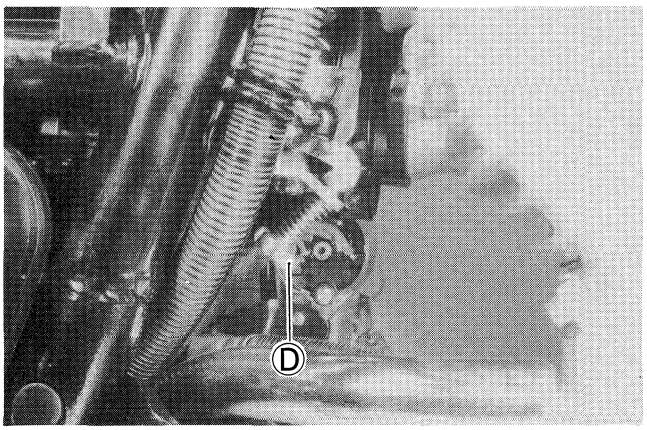


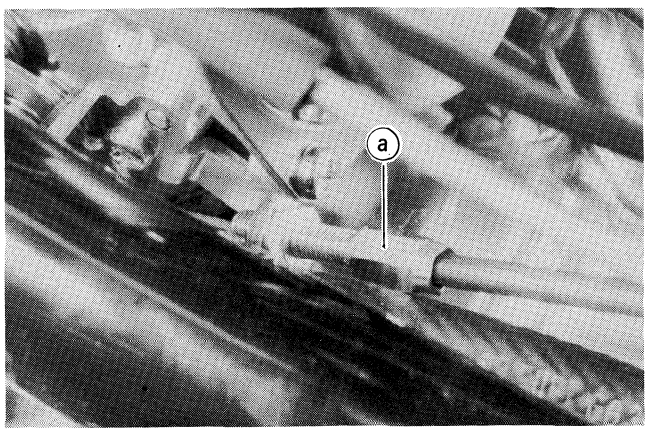
- After making sure that the steel ball stays steady at the center line, disconnect the hose from the adapter and connect the next hose to the adapter. Turn air screw to bring the other steel ball to the center line. Now the balancer has been calibrated.



- Set the carburetor balancer which is calibrated.
- Warm up the engine, and keep it running at 1 000 r/min.
- Under this condition, see if the two steel balls stay equally at the center level line, as they should, to signify that the two carburetors are in balance: if not, loosen lock nut and turn the syncronizing adjuster ⓐ and the throttle stop screw Ⓓ to bring the steel balls to the center level line by keep the engine running at 1 000 r/min.





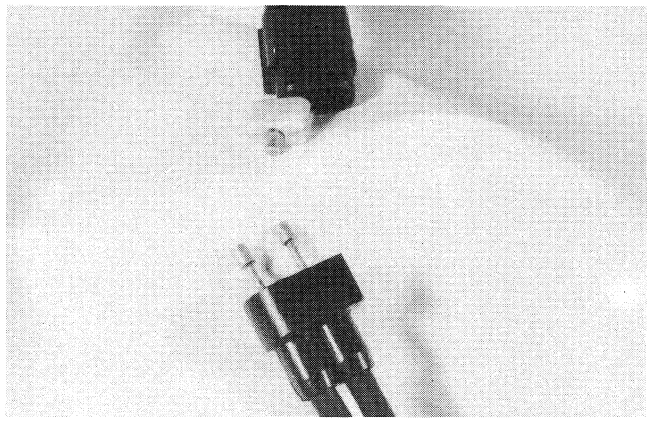


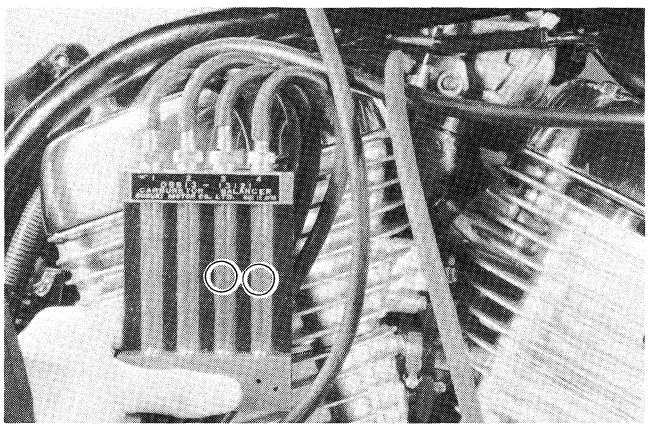
IN CASE OF CHANGING THE THROTTLE CABLE Ⓑ, Ⓒ

As the first step, calibrate the carburetor balancer gauge at 2 000 r/min, as the same manners of the case of changing the syncronizing cable.

- Temporarily remove the No. 1 carburetor.
- Equalize the throttle cables' inner length at the connector by turning the adjusters ⓑ,ⓒ after loosening the lock nuts.

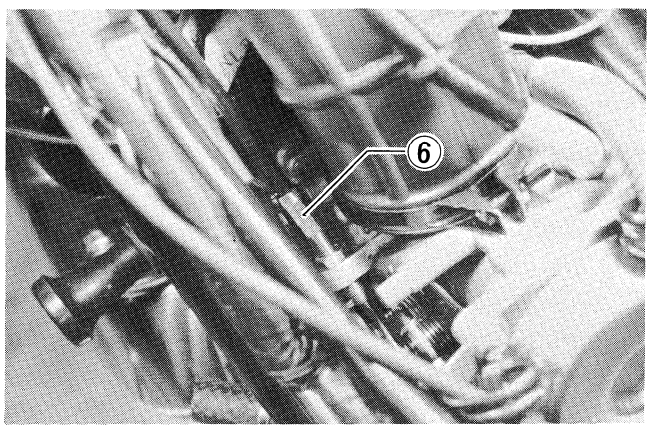
NOTE:
*** Be careful not to twist the throttle cables Ⓑ, Ⓒ.**
*** Throttle cable adjuster ⓒ can not be turned when the No. 1 carburetor is installed to the engine.**





- Install the No. 1 carburetor and set the carburetor balancer which is calibrated at 2 000 r/min.
- Warm up the engine, and keep it running at 2 000 r/min by turning the throttle grip.
- Under this condition, see if the two steel balls stay equally at the center level line, as they should, to signify the two carburetors are in balance: if not, loosen lock nuts and turn the throttle cable adjuster ⓑ to adjust the throttle valve setting to bring the steel balls to the center level line.

NOTE:
When equalizing the throttle cables' inner length, make sure that each throttle cable have enough play.



IN CASE OF CHANGING THE CARBURETORS

When changing the carburetors, it is necessary to remove the synchronizing cable and the throttle cables. So once removing the carburetor, it becomes necessary to adjust the cables by performing above two steps (i.e. IN CASE OF CHANGING THE SYNCRONIZING CABLE and IN CASE OF CHANGING THE THROTTLE CABLE).

CAUTION:
In this case first adjust the syncronizing cable.

LUBRICATION SYSTEM

OIL PRESSURE

Check the oil level in the inspection window and check the oil pressure in the following manner.

- Remove the oil pressure inspection bolt.
- Install the oil pressure adapter ①.
- Install the oil pressure gauge in the position shown in the figure.
- Warm up the engine as follows:
  Summer 10 min. at 2 000 r/min.
  Winter 20 min. at 2 000 r/min.
- After warming up operation, increase the engine speed to 3 000 r/min, and read the oil pressure gauge.
- The oil pump pressure is specified below:

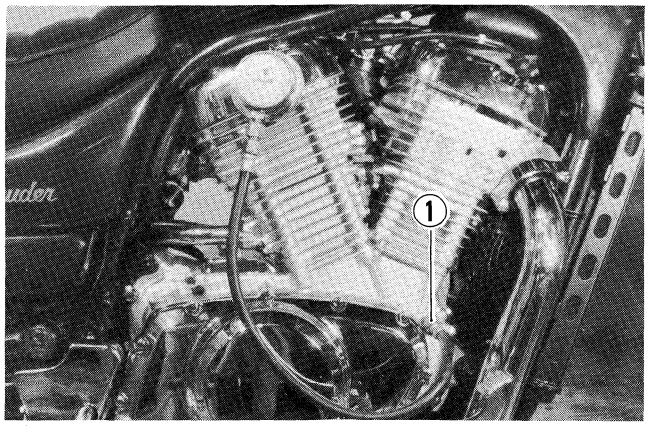
OIL PRESSURE SPECIFICATION

Above 3.5 kg/cm² (50 psi)
Below 6.5 kg/cm² (92 psi) at 3 000 r/min
Oil tmep. at 60° C (140° F)

If the oil pressure is lower or higher than the specifications, several causes may be considered.

* Low oil pressure is usually the result of clogged oil filter, oil leakage from the oil passageway, damaged oil seal, a defective oil pump or a combination of these items.

* High oil pressure is usually caused by a engine oil which is too heavy a weight, a clogged oil passage, improper installation of the oil filter or a combination of these items.



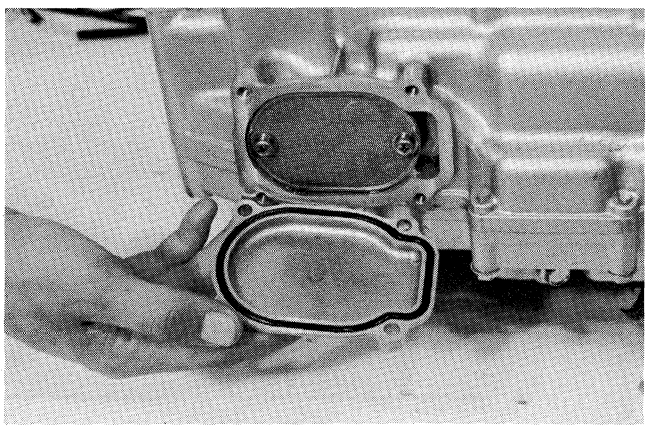
CAUTION:
The recommended engine oil is, API classification SE or SF, 10W-40 motor oil.

09915-74510	Oil pressure gauge
09915-77330	Oil pressure gauge (meter)
09915-74530	Oil pressure gauge adapter

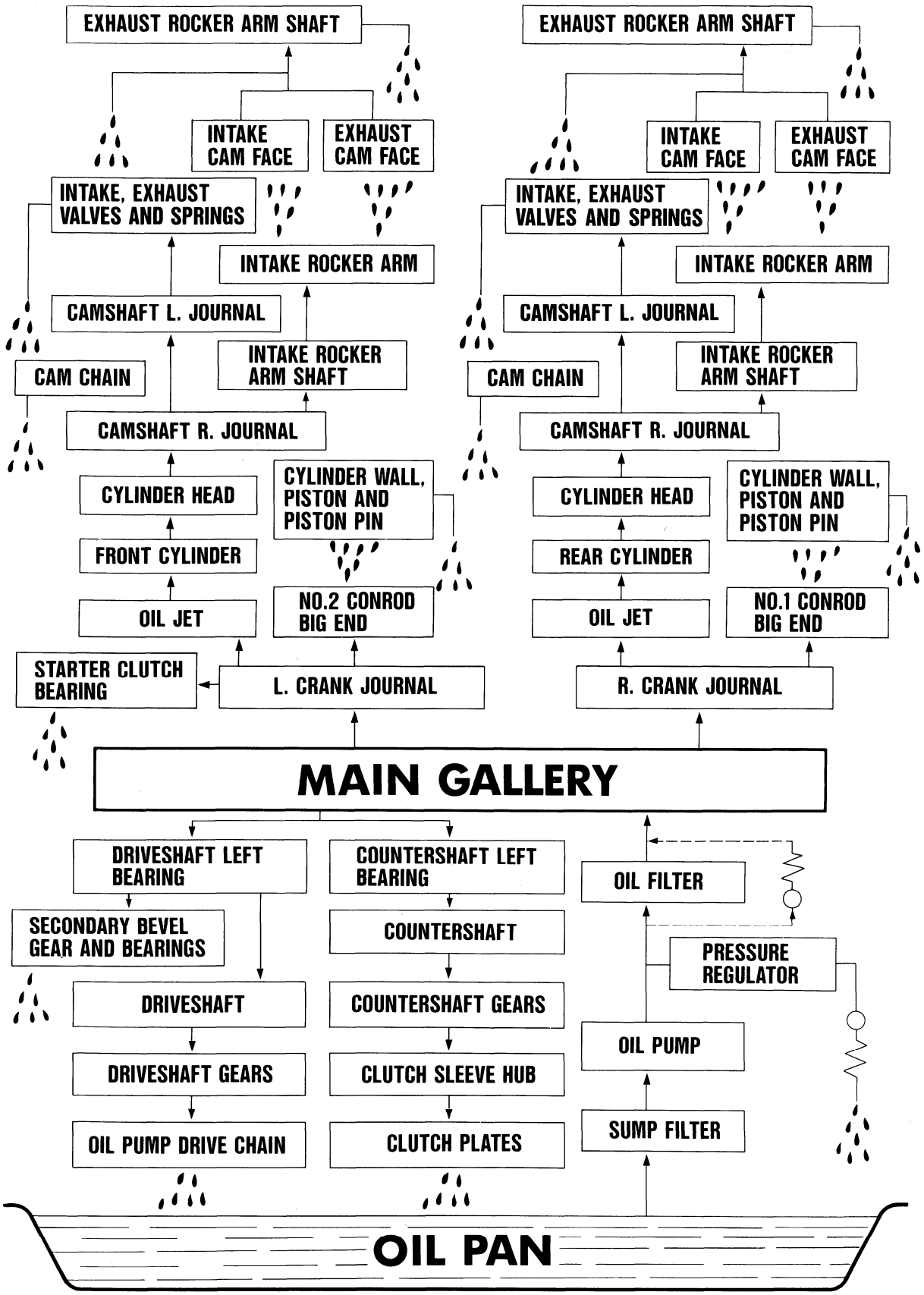
OIL SUMP FILTER

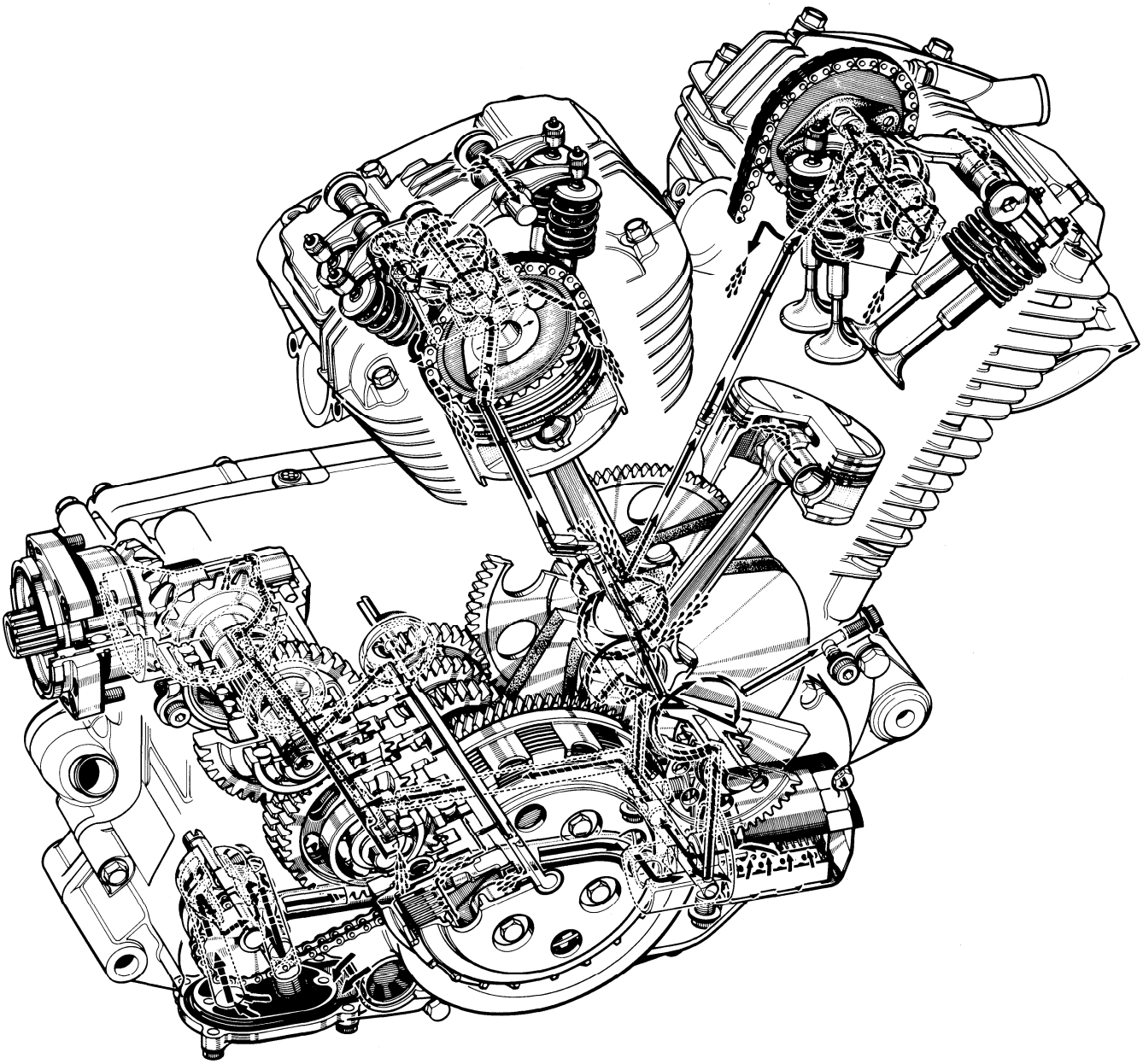
At the same time wash the oil pan. Check to be sure that the strainer screen is free from any sign of rupture and wash the strainer clean periodically. When installing oil sump filter, be sure to face the protrusion to the down side.

NOTE:
When installing the oil pan, be sure to place the O-ring.



LUBRICATION SYSTEM CHART





EMISSION CONTROL INFORMATIONS

CONTENTS

EMISSION CONTROL CARBURETOR COMPONENTS 7- 1

EMISSION CONTROL CARBURETOR COMPONENTS

VS700 motorcycles are equipped with precision, manufactured carburetors for emission level control. These carburetors require special mixture control components and other precision adjustments to function properly.

There are several carburetor mixture control components in each carburetor assembly. Three (3) of these components are machined to much closer tolerances than standard machined carburetor jets. These three (3) particular jets – MAIN JET, NEEDLE JET, PILOT JET – must not be replaced by standard jets. To aid in identifying these three (3) jets a different design of letter and number are used. If replacement of these close tolerance jets becomes necessary, be sure to replace them with the same type close tolerance jets marked as in the examples shown below.

The jet needle is also of special manufacture. Only one clip position is provided on the jet needle. If replacement becomes necessary the jet needle may only be replaced with an equivalent performing replacement component. Suzuki recommends that Genuine Suzuki Parts be utilized whenever possible for the best possible performance and durability.

Conventional Figures Used on Standard Tolerance Jet Components	1 2 3 4 5 6 7 8 9 0
Emission Type Figures Used On Close Tolerance Jet Components	1 2 3 4 5 6 7 8 9 0

The carburetor specification for the emission-controlled VS700 are as follows.

Carburetor I.D. No.	Main Jet	Needle Jet	Jet Needle	Pilot Jet	Pilot Screw
38A00	#132.5 (No. 1) #132.5 (No. 2)	P-1 (No. 1) P-0 (No. 2)	5D23 (No.1) 5D21 (No. 2)	#40 (No. 1) # 32.5 (No. 2)	PRE-SET DO NOT ADJUST

The pilot screw is pre-set by the factory utilizing specialized testing and adjusting procedures. The pilot screw is not adjustable as the idle circuit is "sealed" after factory adjustment. Adjusting, interferring with, improper replacement, or resetting of any of the carburetor components may adversely affect carburetor performance and cause the motorcycle to exceed the exhaust emission level limits. If persons, who are unaware of these special carburetor servicing requirements tamper with the carburetors the Suzuki dealer should restore the carburetors to their original condition or if unable to effect repairs, contact the distributors representative for further technical information and assistance.

ELECTRICAL SYSTEM

CONTENTS

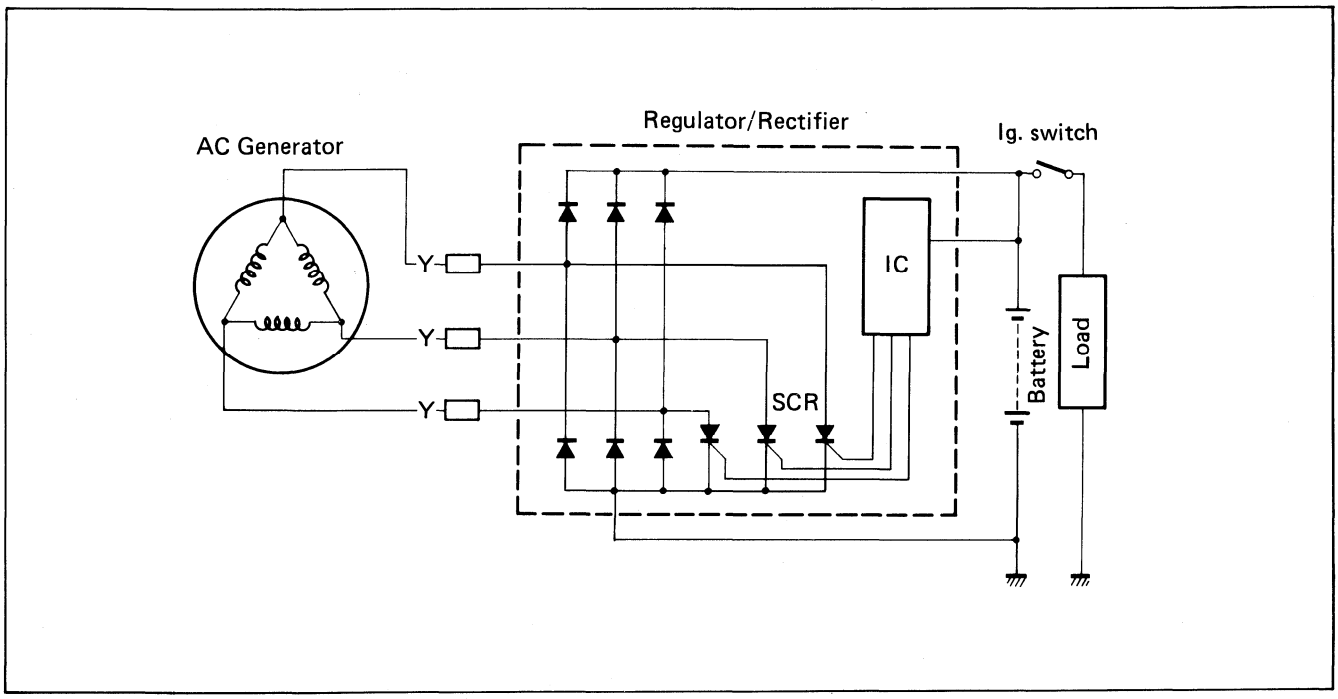
CHARGING SYSTEM 8- 1
IGNITION SYSTEM 8- 5
STARTER SYSTEM 8- 8
SPEEDOMETER AND INSTRUMENT PANEL 8-12
WATER TEMPERATURE UNIT AND INDICATOR 8-14
LAMPS 8-15
SWITCHES 8-16
BATTERY 8-20

CHARGING SYSTEM

DESCRIPTION

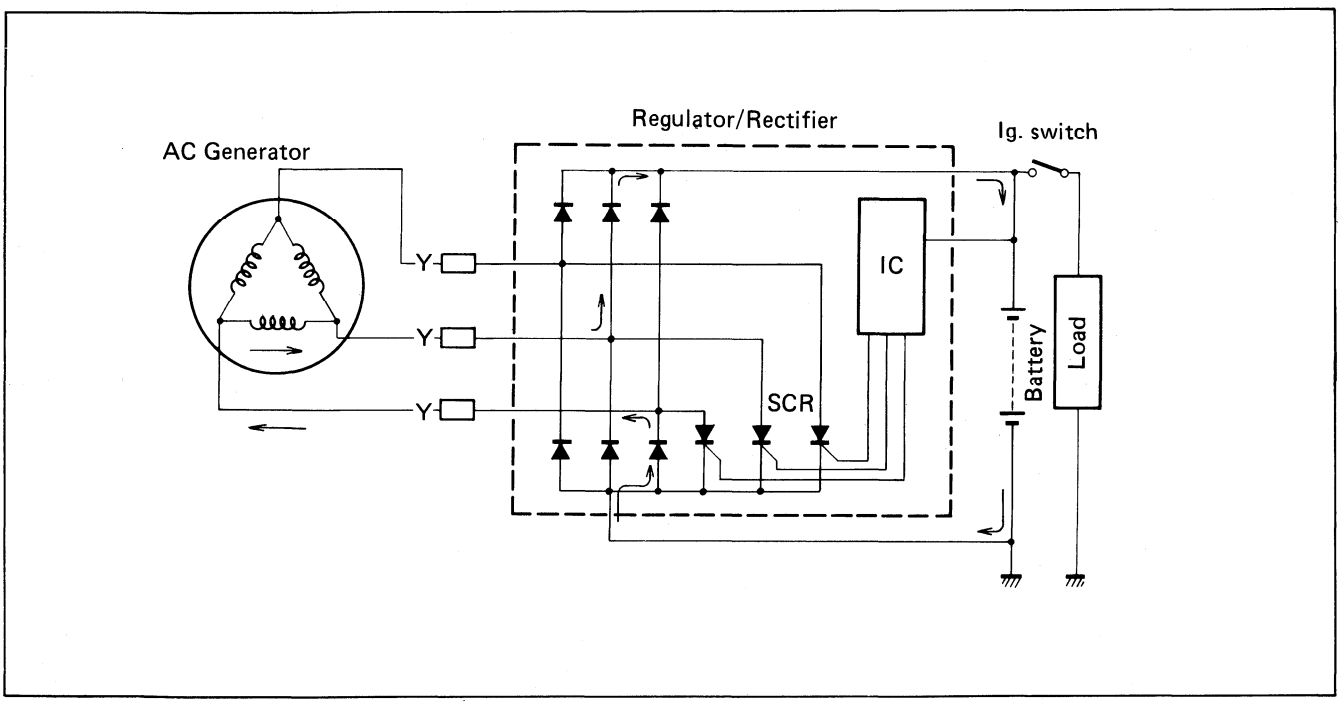
The circuit of the charging system is indicated in the figure, which is composed of an AC generator, regulator/rectifier unit and battery.

The AC current generated from the AC generator is rectified by the rectifier and is turned into DC current, then it charges the battery.

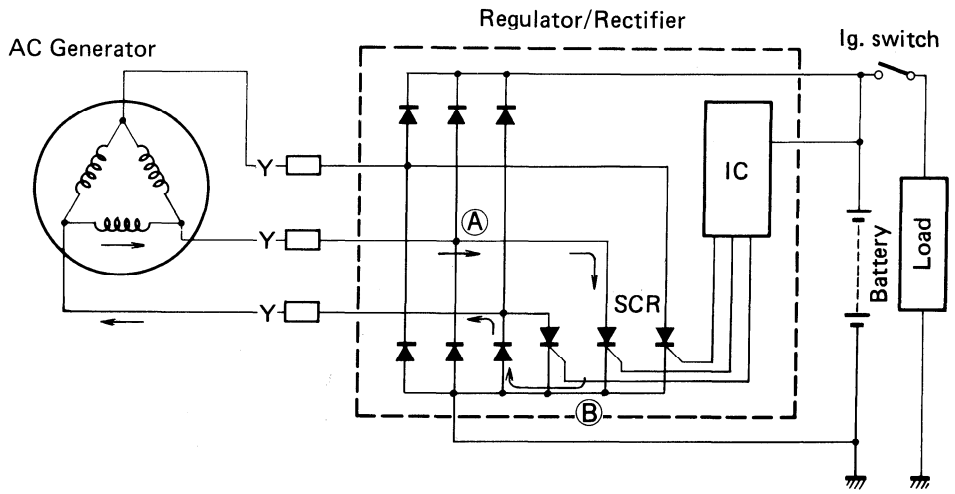


Function of Regulator

While the engine r/min is low and the generated voltage of the AC generator is lower than the adjusted voltage of Regulator, the regulator does not function. However, the generated current charges the battery directly at this time.



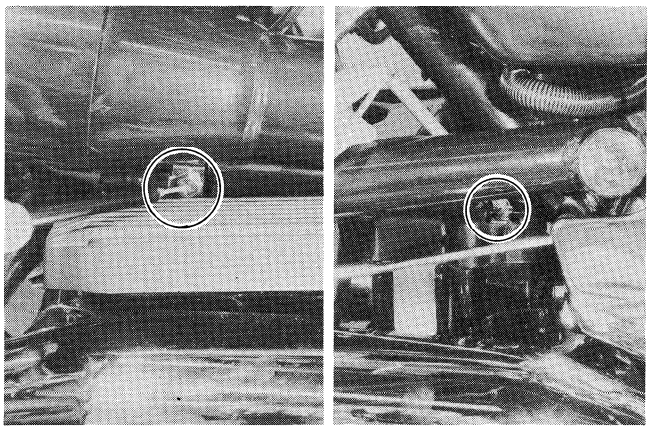
When the engine r/min becomes higher, the generated voltage of the AC generator also becomes higher and the voltage between the battery terminals becomes high accordingly. When it reaches the adjusted voltage of the I.C., (Integrated Circuit) and it is turned "ON", a signal will be sent to the SCR (Thyristor) gate probe and the SCR will be turned "ON".
Then, the SCR becomes conductive in the direction from point Ⓐ to point Ⓑ. At this time, the current generated from the AC generator gets through the SCR without charging the battery and returns to AC generator again. At the end of this state, since the AC current generated from AC generator flows to point Ⓑ, the reverse current tends to flow to SCR. Then, the circuit of SCR turns to the OFF mode and begins to charge the battery again. Thus these repetitions maintain charging voltage and current to the battery constant and protect it from overcharging.



INSPECTION

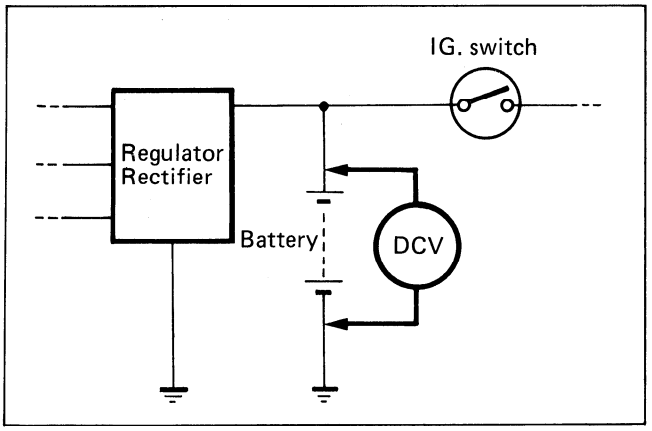
CHARGING OUTPUT CHECK

- Start the engine and keep it running at 5 000 r/min with dimmer switch turned HI position.
- Using the pocket tester, measure the DC voltage between the battery terminal ⊕ and ⊖.
  If the tester reads under 14V or over 15V, check the AC generator no-load performance and regulator/rectifier.



NOTE:
When making this test, be sure that the battery is fully-charged condition.

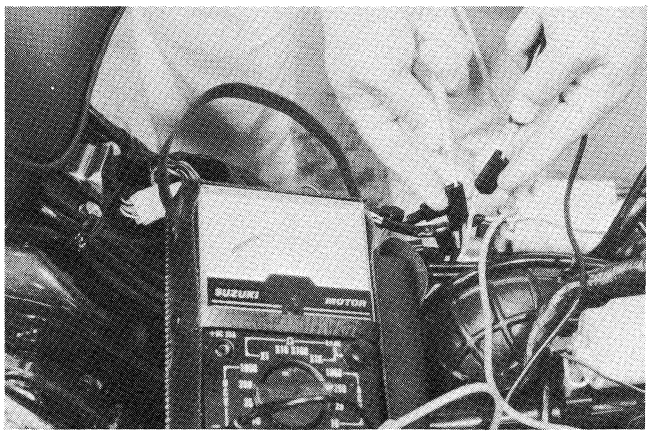
STD charging output	14 – 15V (DC) at 5 000 r/min
09900-25002	Pocket tester

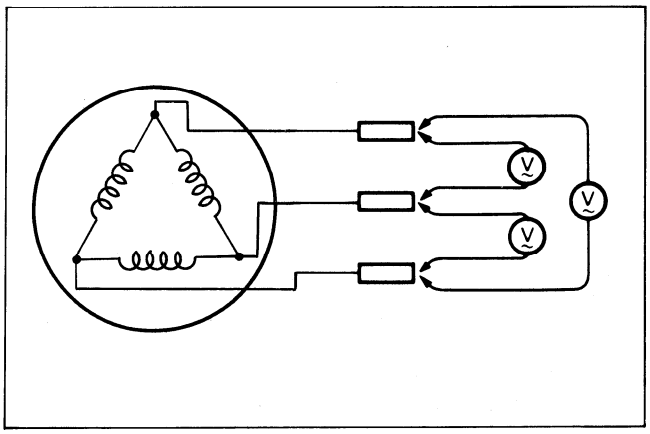


AC GENERATOR NO-LOAD PERFORMANCE

- Remove the frame covers and seat.
- Disconnect the AC generator lead wire couplers.
- Start the engine and keep it running at 5 000 r/min.
- Using the pocket tester, measure the AC voltage between the three yellow lead wires.
  If the tester reads under 65V, the AC generator is faulty.

STD No-load performance	More than 65V (AC) at 5 000 r/min
09900-25002	Pocket tester



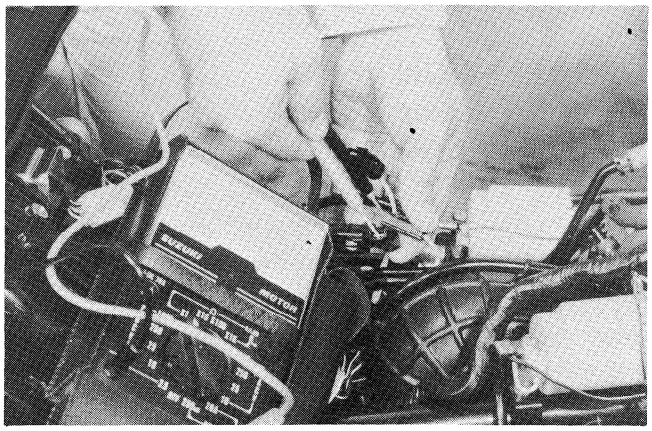


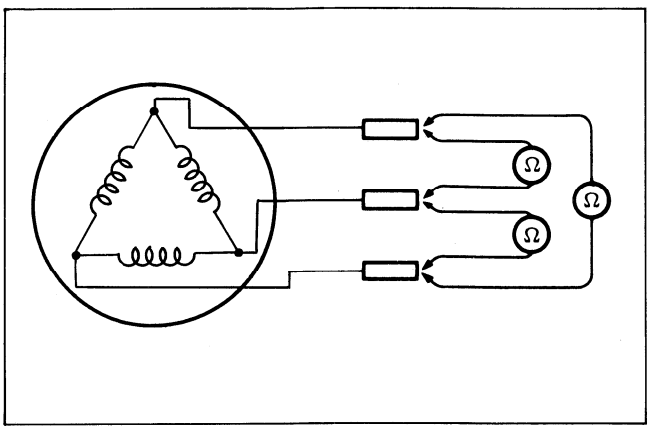
AC GENERATOR CONTINUITY CHECK

- Using the pocket tester, check the continuity between the lead wires of the stator.
  Also check that the stator core is insulated.

NOTE:
When making this test, it is not necessary to remove the AC generator.

09900-25002	Pocket tester





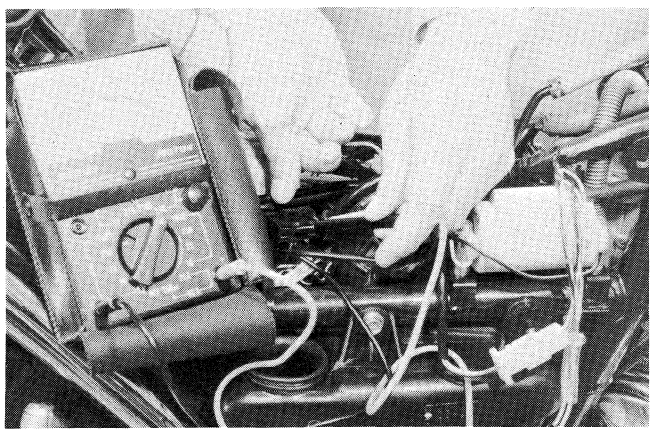
REGULATOR/RECTIFIER

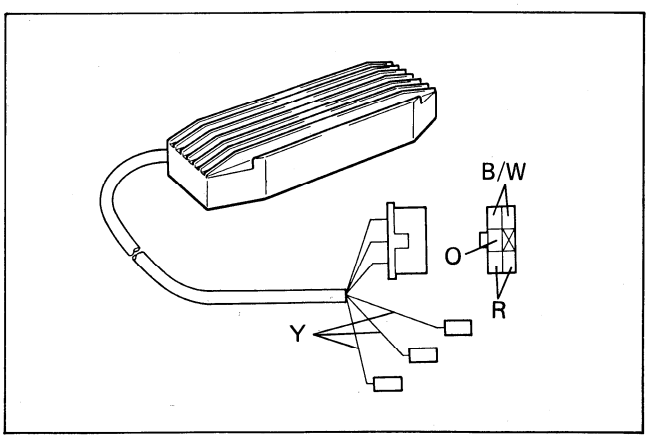
- Remove the frame covers and seat.
- Using the pocket tester (X 1kΩ range), measure the resistance between the lead wires in the following table.
  If the resistance checked is incorrect, replace the regulator/rectifier.

09900-25002	Pocket tester

Unit: kΩ

⊖ Probe of tester to: / ⊕ Probe of tester to:	R	O	B/W	Y
R		∞	∞	∞
O	Approx. 80		Approx. 35	Approx. 50
B/W	Approx. 8.5	Approx. 5.2		Approx. 3
Y	Approx. 3	∞	∞	





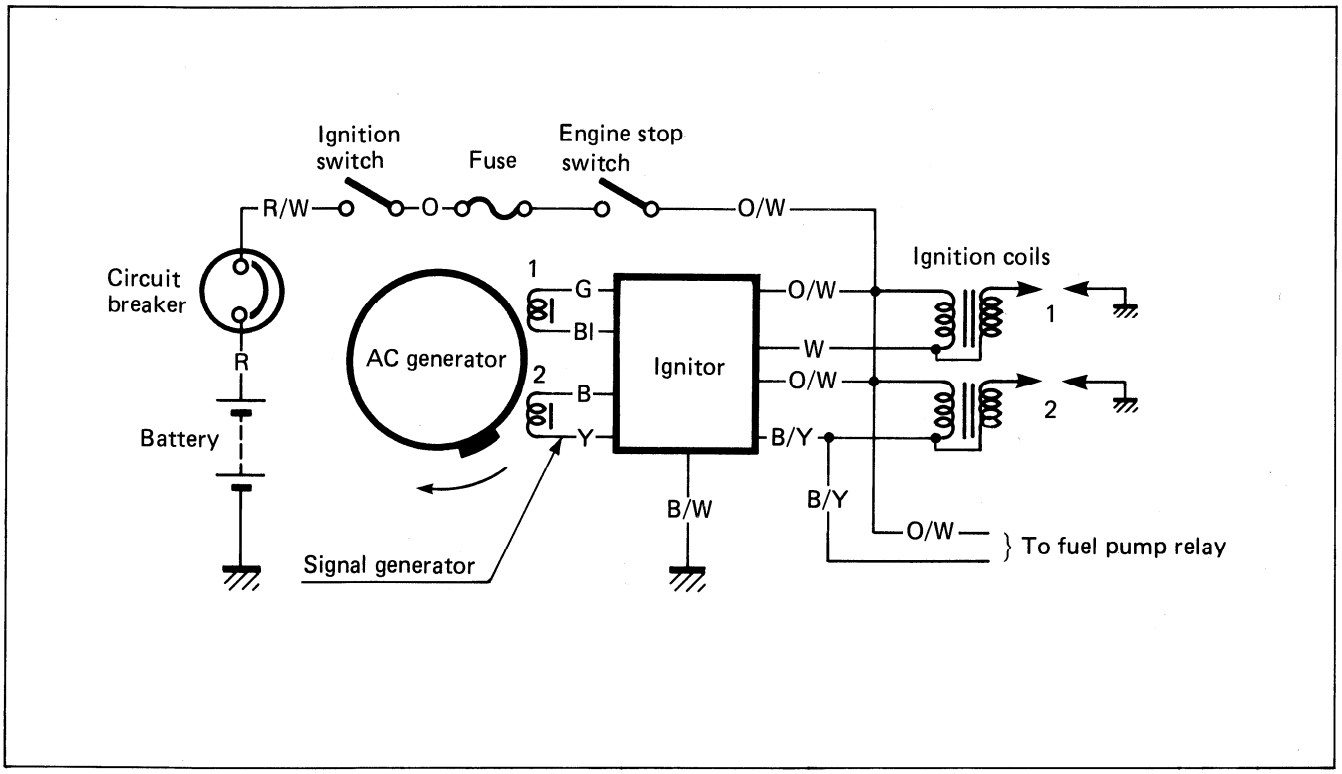
CAUTION:
As transistors, capacitors, Zener diodes, etc. are used inside this regulator/rectifier, the resistance values will differ when an ohmmeter other than the Suzuki pocket tester is used.

IGNITION SYSTEM

DESCRIPTION

The fully transistorized ignition system consists of a signal generator, ignitor, ignition coils, and spark plugs. The signal generator comprises one rotor tip and two pickup coils.

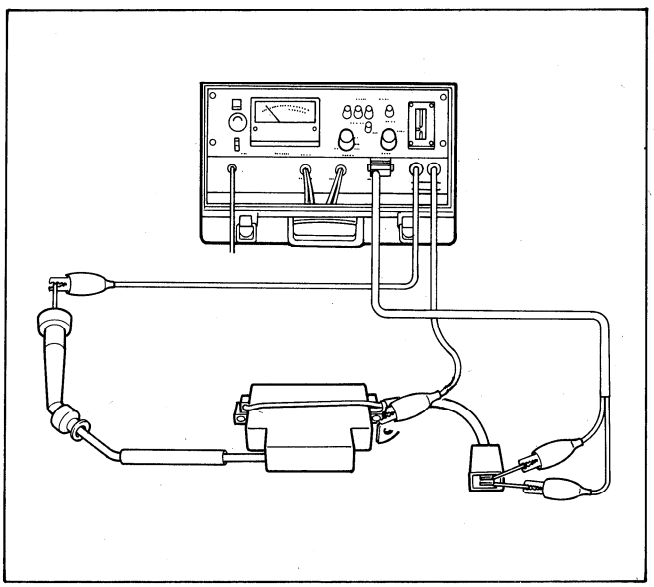
The signal generator coils are mounted on the generator cover. The output of the signal generator goes to the ignitor unit, where it turns ON and OFF the transistor alternately. As the transistor is turned ON and OFF, the current passing through the primary windings of the ignition coil is also turned OFF and ON accordingly, thus it induces the secondary current on the ignition coil secondary windings and produce the spark between spark plug gaps.



INSPECTION

IGNITION COILS (Checking with Electro Tester)

- Remove the ignition coils from the frame.
- Using the electro tester, test each ignition coil for sparking performance. The test connection is as indicated. Make sure that the three-needle sparking distance is at least 8 mm.
  If no sparking or orange color sparking occures with this much gap, then it is defective and must be replaced.



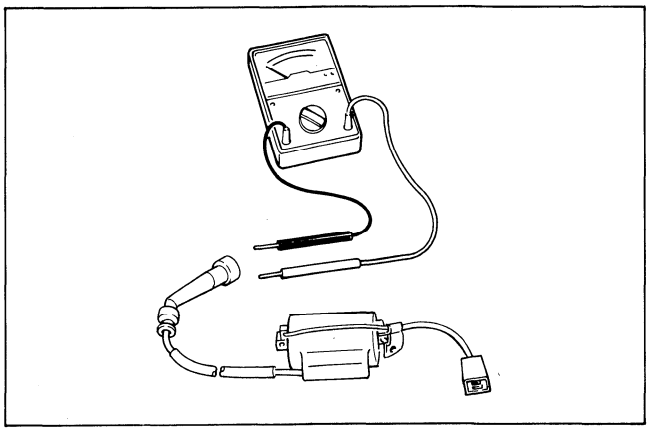
09900-28106	Electro tester
STD Spark performance	8 mm (0.3 in)

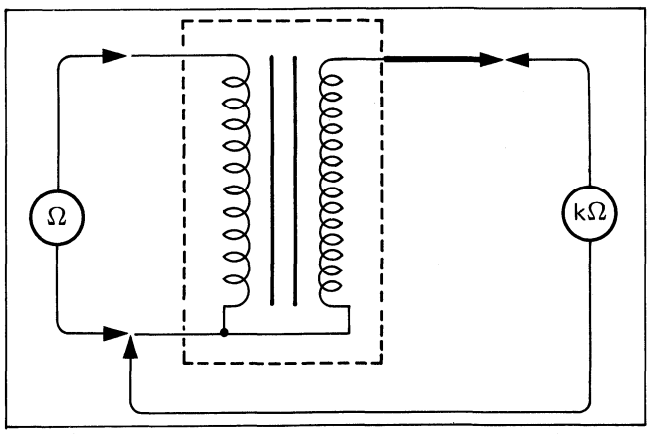
IGNITION COILS (Checking with Pocket Tester)

- A SUZUKI pocket tester or an ohm meter may be used, instead of the electro tester. In either case, the ignition coil is to be checked for continuity in both primary and secondary windings. Exact ohmic readings are not necessary, but, if the windings are in sound condition, their continuity will be noted with these approximate ohmic values.

09900-25002	Pocket tester

Ignition coil resistance	
Primary	2 – 6 Ω
Secondary	10 – 25 kΩ



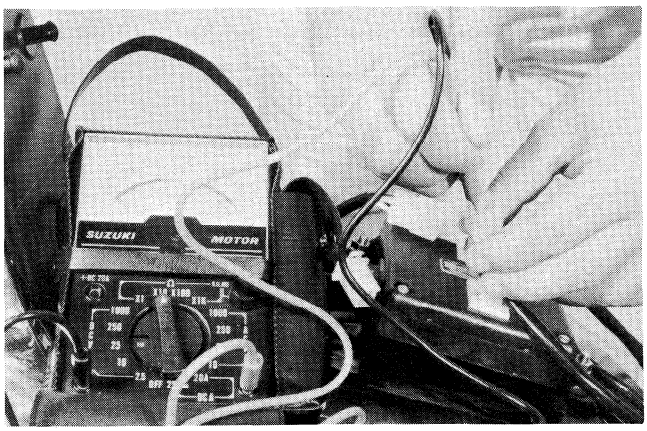


SIGNAL GENERATOR (Checking with Pocket Tester)

- Remove the frame covers and two seats.
- Measure the resistance between lead wires. If the resistance is infinity or less than the specifications, the signal generator must be replaced.

09900-25002	Pocket tester

STD resistance	
Green – Blue	50 – 200 Ω
Black – Yellow	

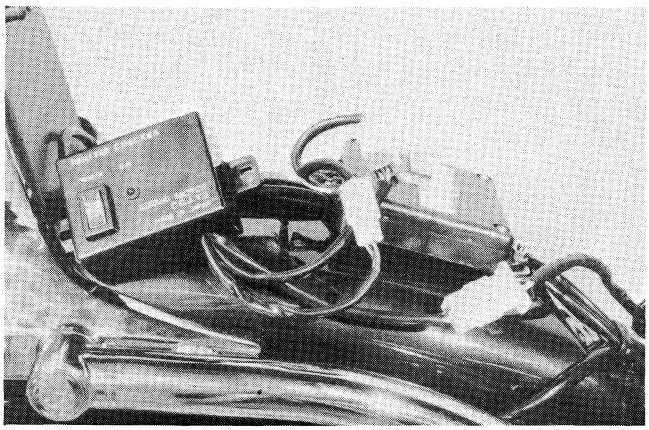


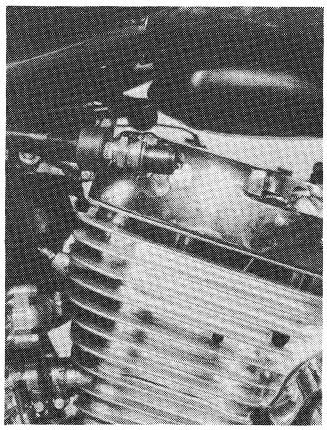
IGNITOR UNIT (Checking with Ignitor Checker)

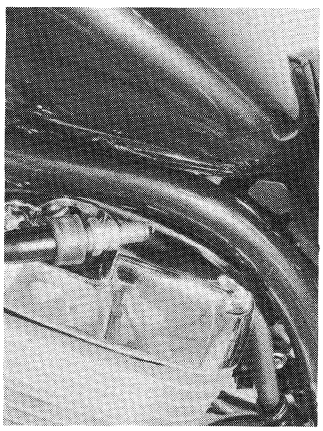
- Remove the spark plugs from Nos. 1 and 2 cylinders. Install the respective plug caps and place the spark plugs on the cylinder head.
- Remove the frame covers and two seats, and then disconnect the ignitor lead wire couplers.
- Connect the couplers on the ignitor checker to the ignitor lead wire couplers, as shown in the illustration.
- Turn the ignition switch to the ON position and engine stop switch to the RUN position.
- Turn the ignitor checker switch to the ON position and check the sparks of respective spark plugs.

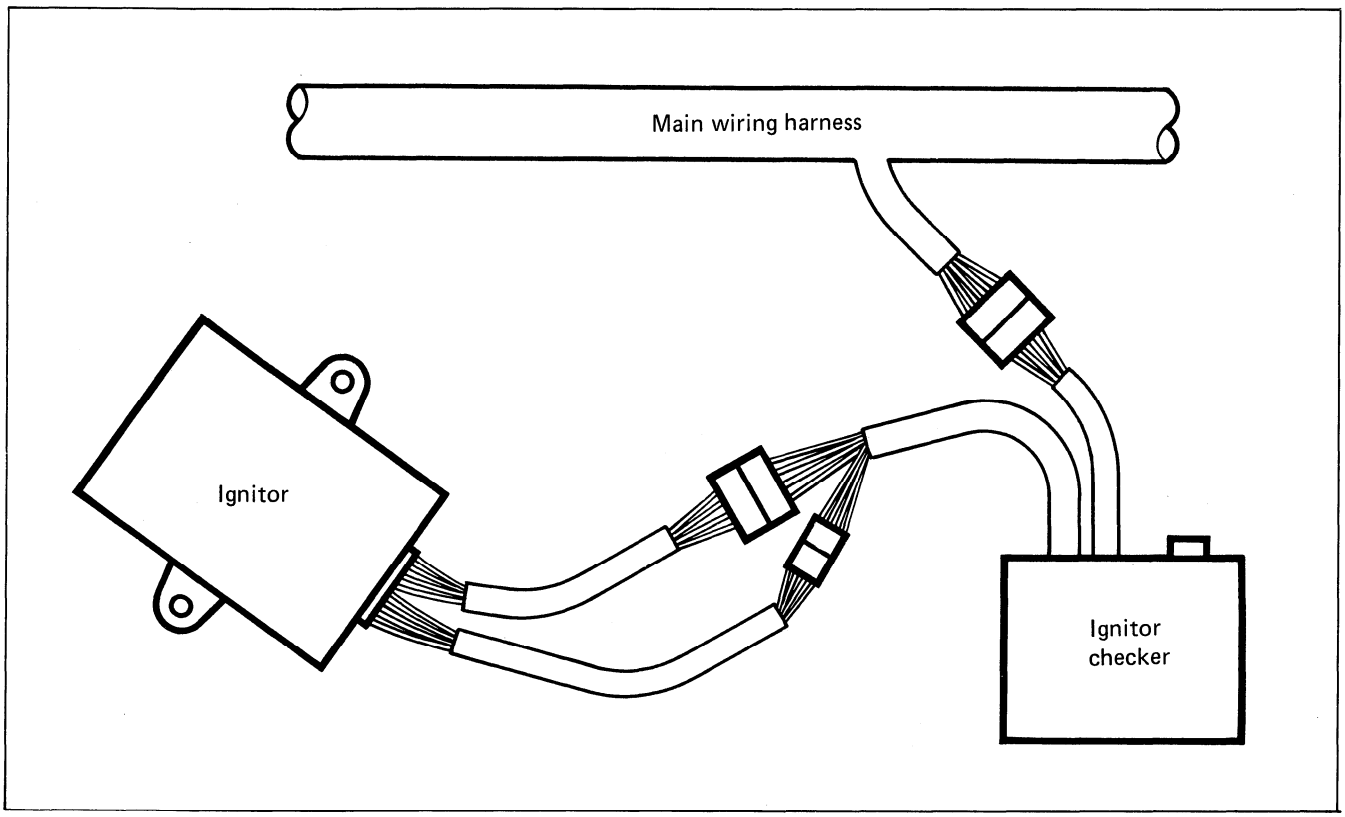
09930-70710	Ignitor checker

NOTE:
This checking presupposes that the ignition coil used for checking is a good one.





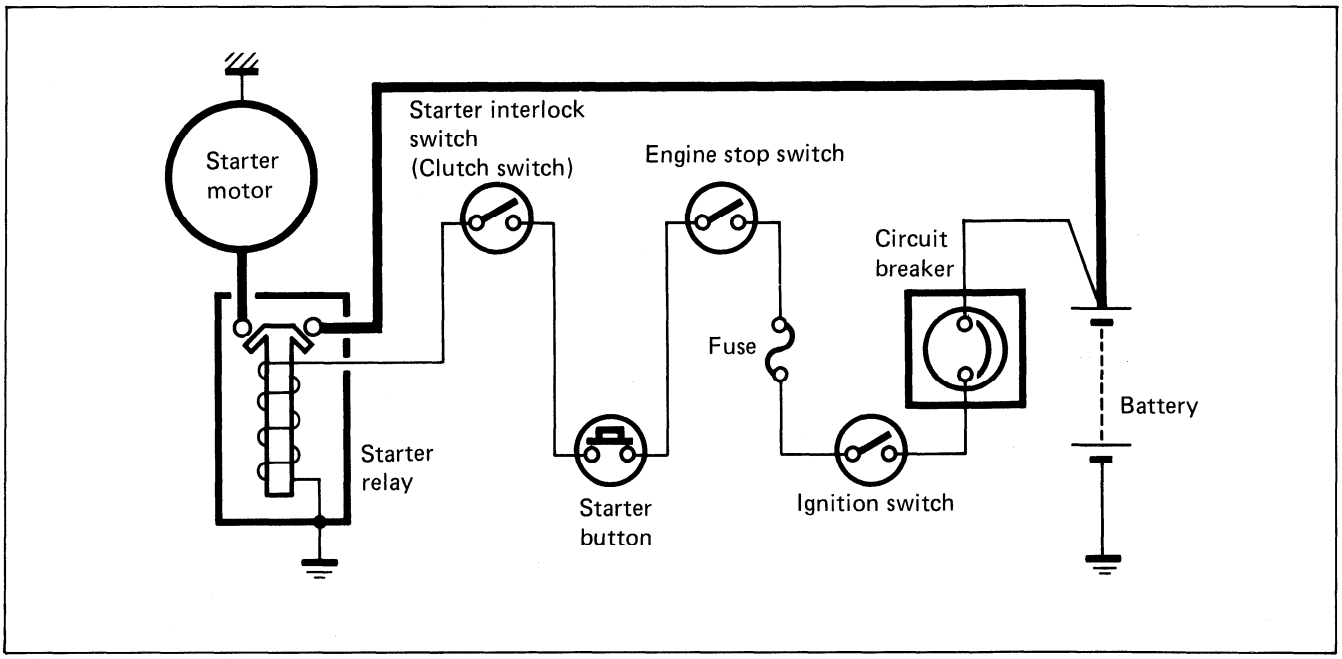




STARTER SYSTEM

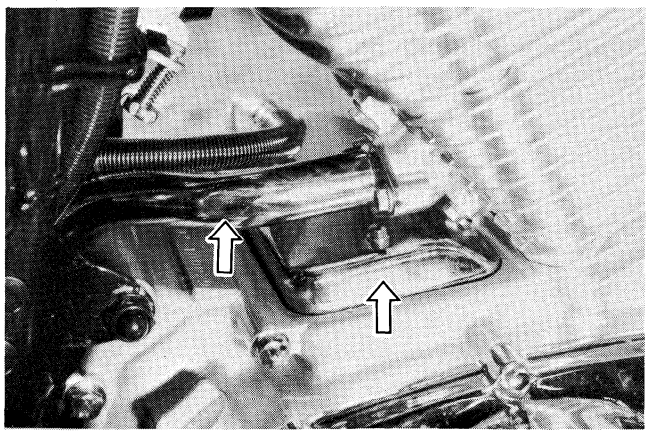
DESCRIPTION

The starter system is shown in the diagram below: namely, the starter motor, relay, interlock switch, starter button, engine stop switch, IG switch and battery. With the clutch lever depresed, pushing the starter button (on the right handlebar switch box) energizes the relay, causing the contact points to close which connects the starter motor to the battery. The motor draws about 80 amperes to start the engine.

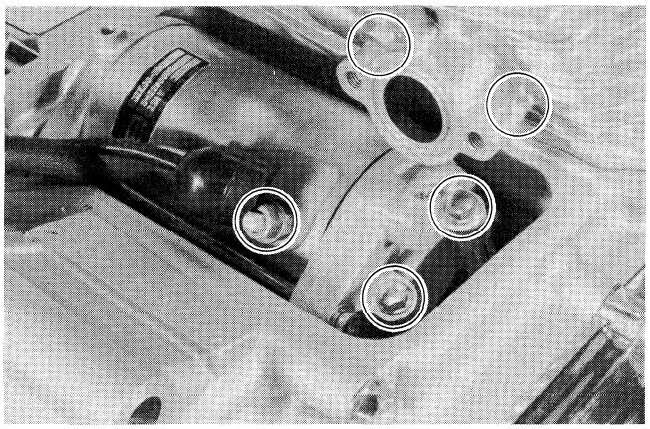


STARTER MOTOR REMOVAL AND DISASSEMBLY

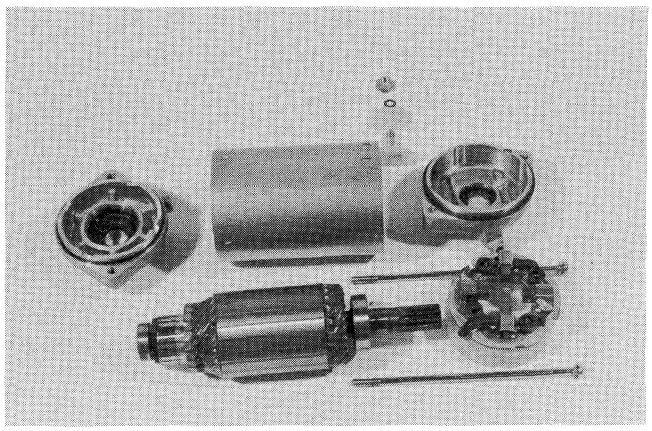
- Drain the cooling solution (See page 3-3).
- Disconnect the radiator hose and remove the pipe.
- Remove the clutch cylinder.
- Remove the starter motor cover.



- Remove the radiator intake pipe.
- Disconnect the starter motor lead wire by removing the nut, then remove the starter motor by removing the mounting bolts.



- Disassemble the starter motor as shown in Fig.

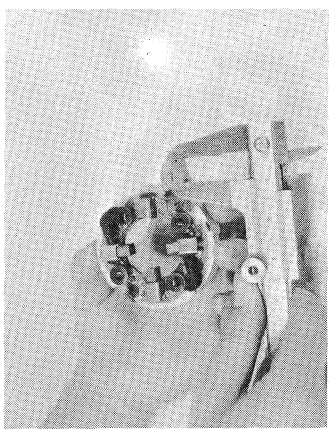


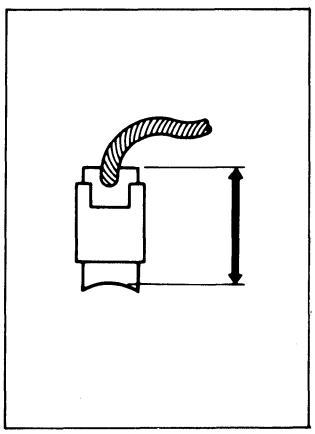
STARTER MOTOR INSPECTION

CARBON BRUSHES

When the brushes are worn, the motor will be unable to produce sufficient torque, and the engine will be difficult to turn over. To prevent this, periodically, inspect the length of the brushes, replacing them when they are too short or chipping.

Service Limit	9 mm (0.35 in)



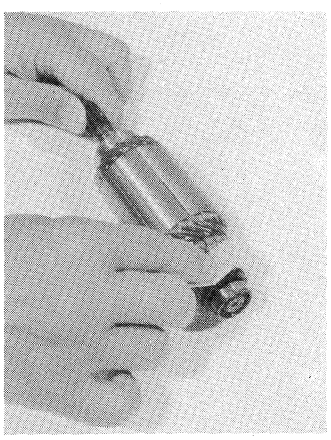


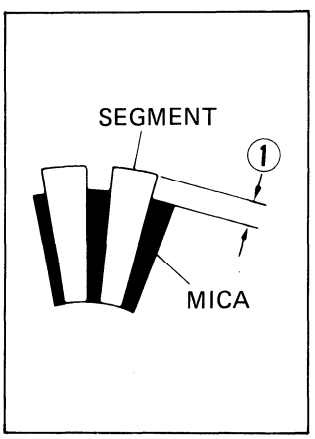
COMMUTATOR

If the commutator surface is dirty, starting performance decreases. Polish the commutator with # 400 or similar fine emery paper when it is dirty. After polishing it, wipe the commutator with a clean dry cloth.

Measure the commutator under cut ①.

Service Limit	0.2 mm (0.008 in)



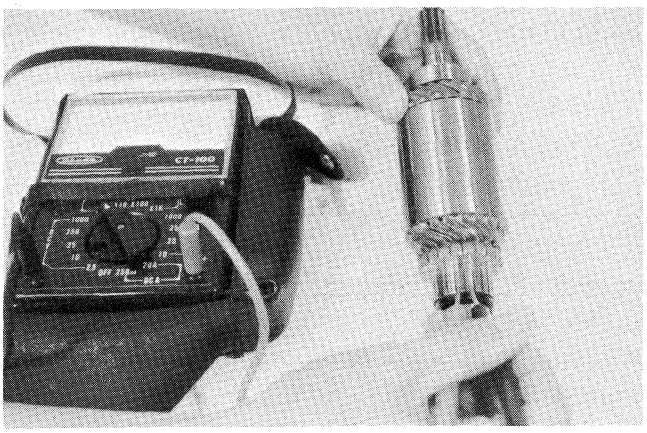


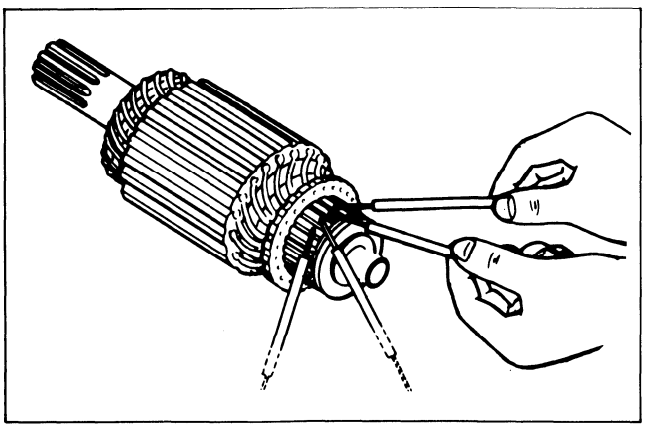
ARMATURE COIL

Using a pocket tester, check the coil for open and ground by placing probe pins on each commutator segment and rotor core (to test for ground) and on any two segments at various places (to test for open), with the brushes lifted off the commutator surface.

If the coil is found to be open-circuited or grounded replace the armature. Continuous use of a defective armature will cause the starter motor to suddenly fail.

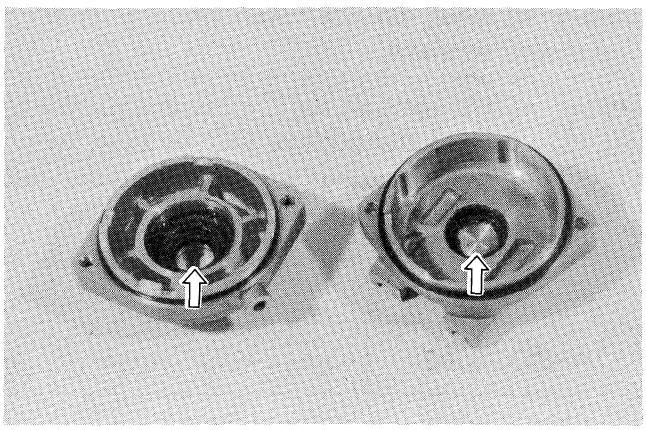
09900-25002	Pocket tester





OIL SEAL

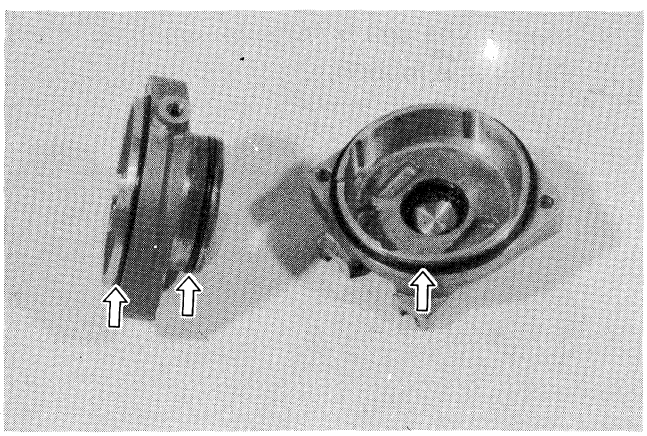
Check the seal lip for damage or oil leakage. If any damage is found, replace it.



STARTER MOTOR REASSEMBLY

O-RING

- Install new O-rings on the correct positions as shown in Fig.



ARMATURE

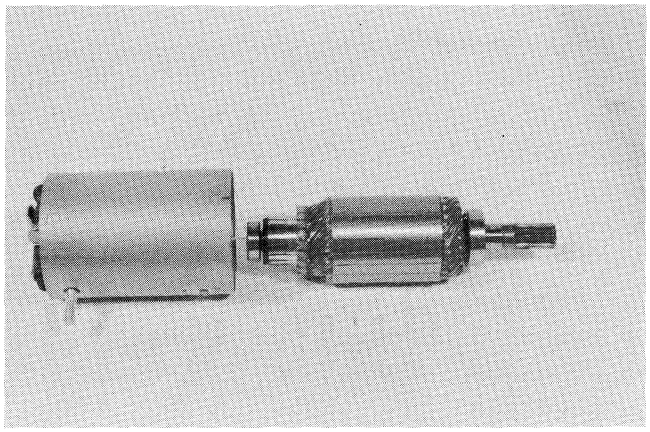
- Apply a small quantity of grease to the armature bearing.
- Apply a small quantity of moly paste to the armature end.

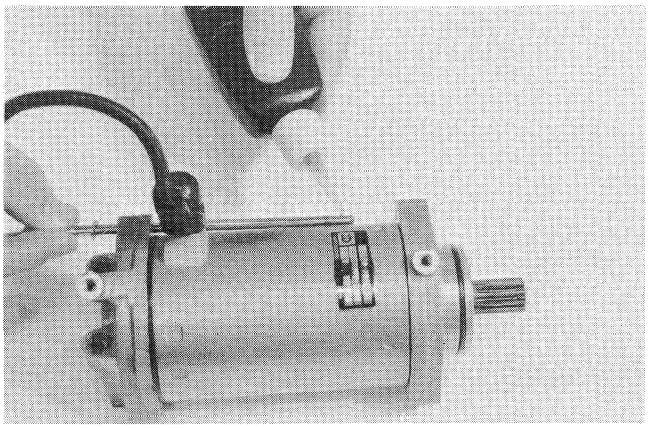
99000-25030	SUZUKI Super grease "A"
99000-25140	SUZUKI moly paste

HOUSING SCREW

- Apply a small quantity of Thread Lock "1342" to the starter motor housing screws.

99000-32050	Thread Lock "1342"

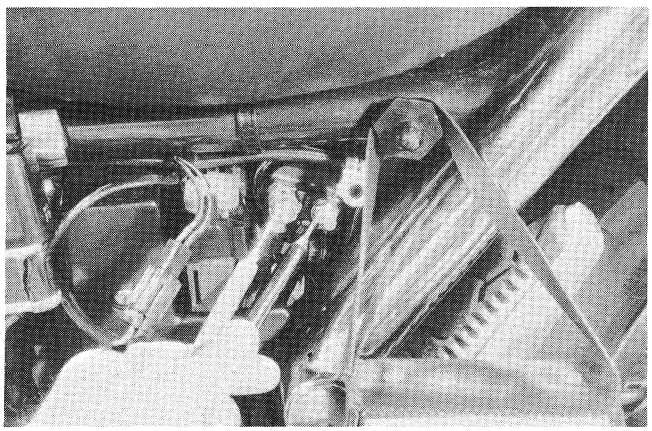




STARTER RELAY INSPECTION

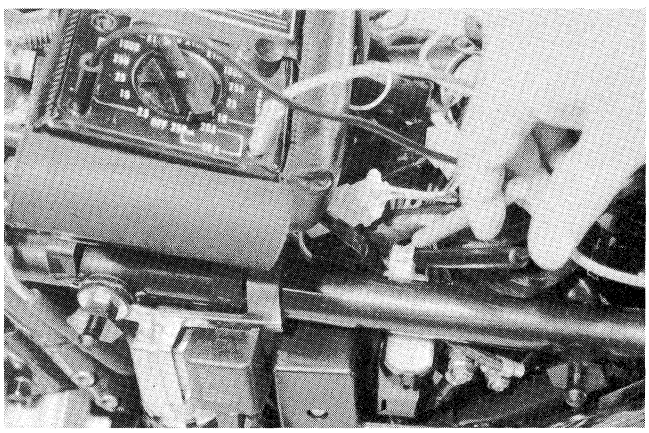
- Remove the left frame cover.
- Disconnect the lead wire of the starter motor at starter relay.

CAUTION:
When removing the lead wire from the starter relay terminal, do not touch the wrench to the other terminal.



- Turn on the ignition switch, inspect the continuity between the positive and negative terminals, when squeezing the clutch lever and pushing the starter button.
  If the starter relay is in sound condition, continuity is found.

09900-25002	Pocket tester



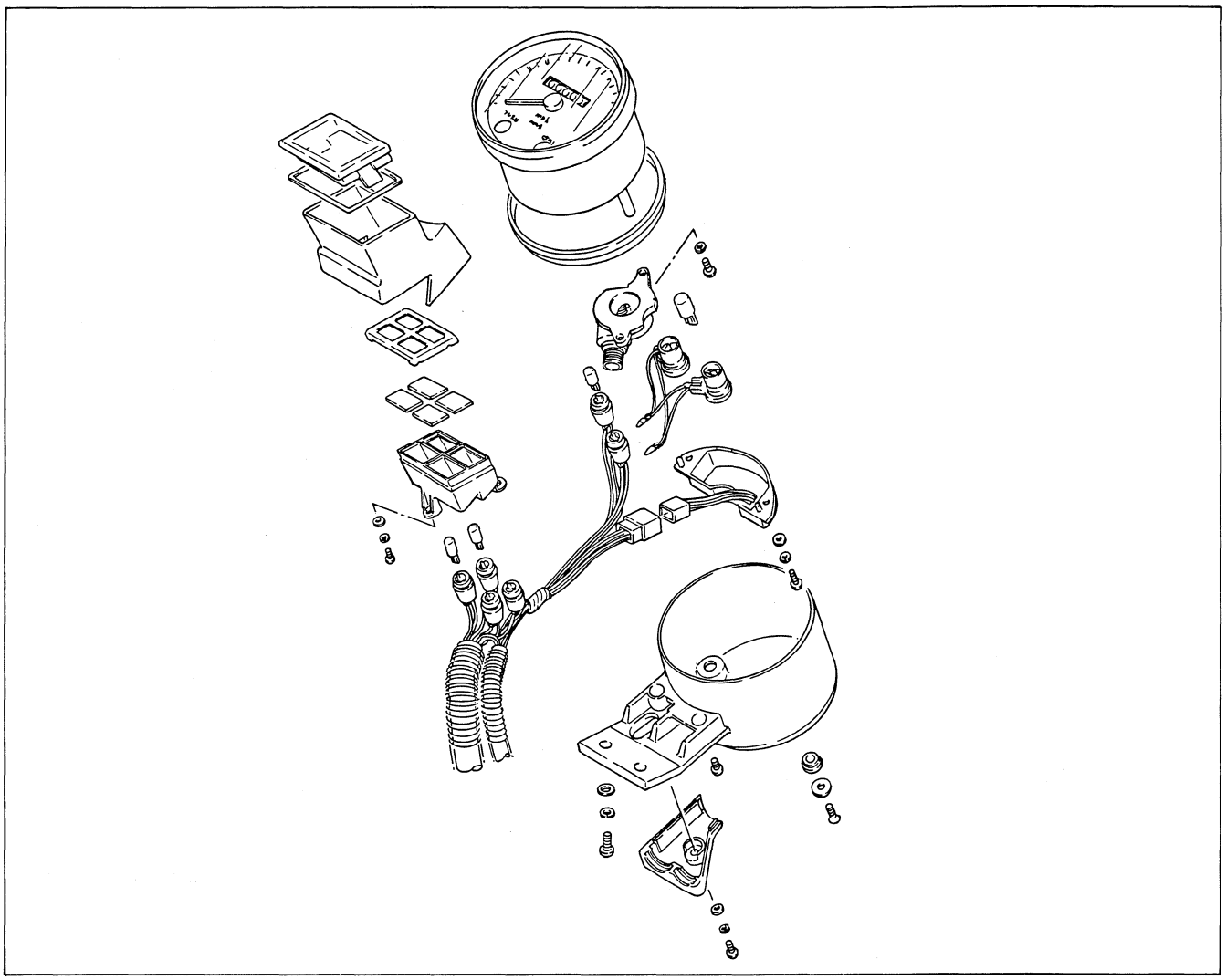
- Check the coil for "open", "ground" and ohmic resistance. The coil is in good condition if the resistance is as follows.

09900-25002	Pocket tester
STD resistance	2 – 6 Ω

SPEEDOMETER AND INSTRUMENT PANEL

REMOVAL AND DISASSEMBLY

- Remove the speedometer and instrument panel (See page 9-19).
- Disassemble the speedometer and instrument panel as follows.

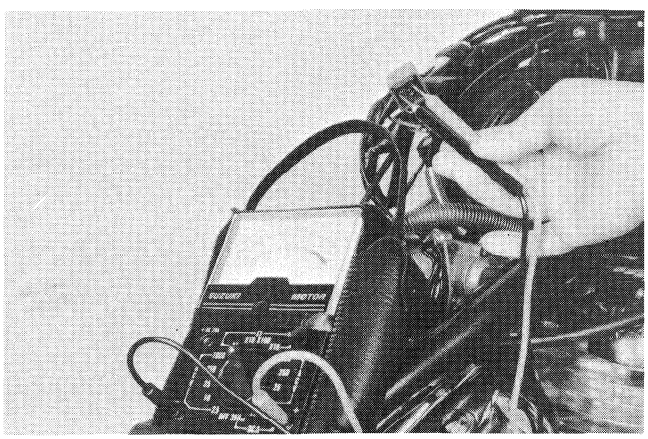


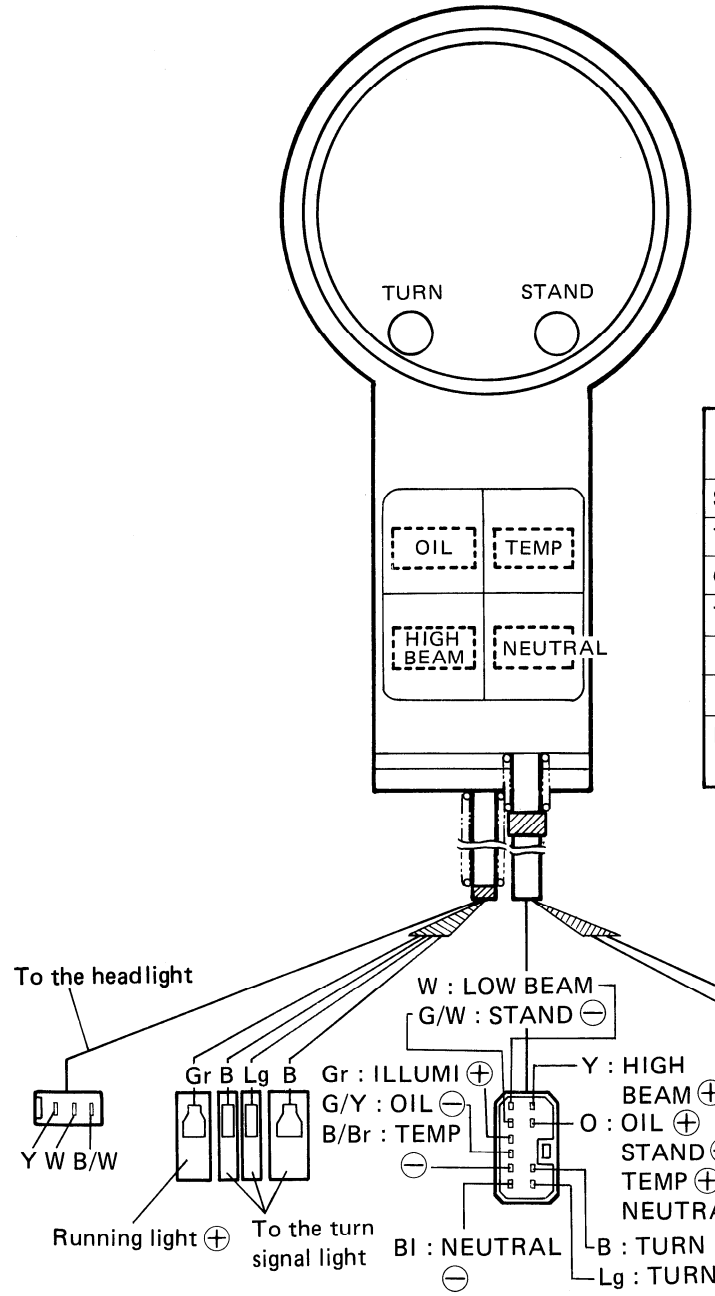
INSPECTION

- Remove the seat and fuel tank.
- Using the pocket tester, check the continuity between lead wires in the following diagram.
  If the continuity measured is incorrect, replace the respective parts.

09900-25002	Pocket tester

NOTE:
When making this test, it is not necessary to remove the speedometer and instrument panel.



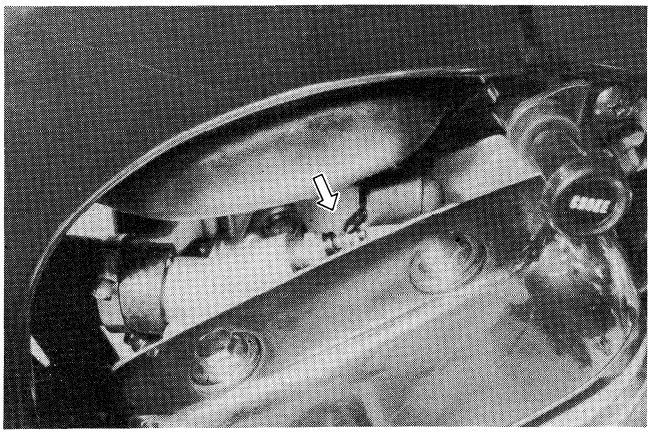


ITEM	⊕ Probe of tester to:	⊖ Probe of tester to:
STAND	O	G/W
TURN	Lg, B	B/W
OIL	O	G/Y
TEMP	O	B/Br
HIGH BEAM	Y	B/W
NEUTRAL	O	Bl
METER ILLUMI	Gr	B/W

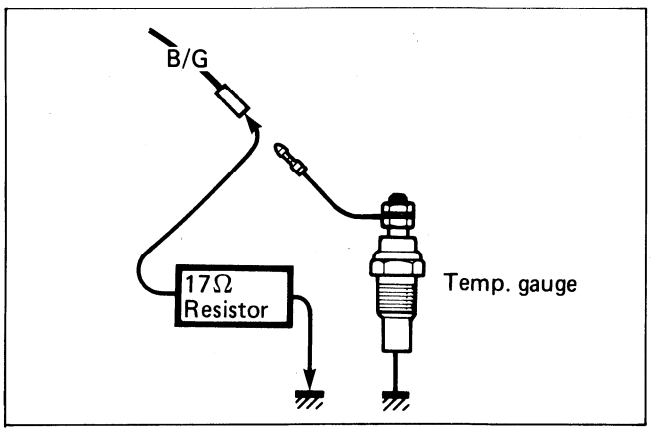
WATER TEMPERATURE UNIT AND INDICATOR

INSPECTION

- Disconnect the Black/Green lead wire from the temp. gauge.

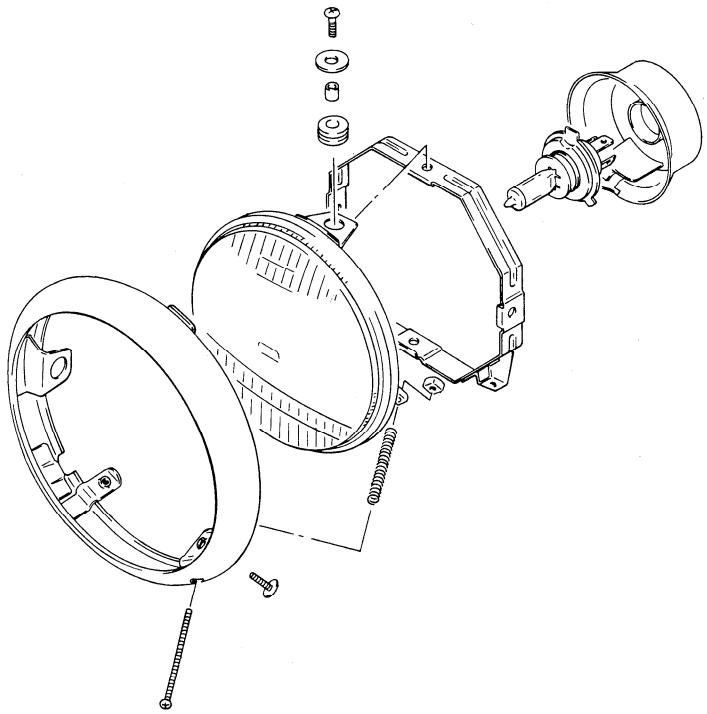


- Connect a 17-ohm resistor between the Black/Green lead wire and ground as shown in illustration.
- With the ignition switch turned on, the temp. indicator light in instrument panel should light.



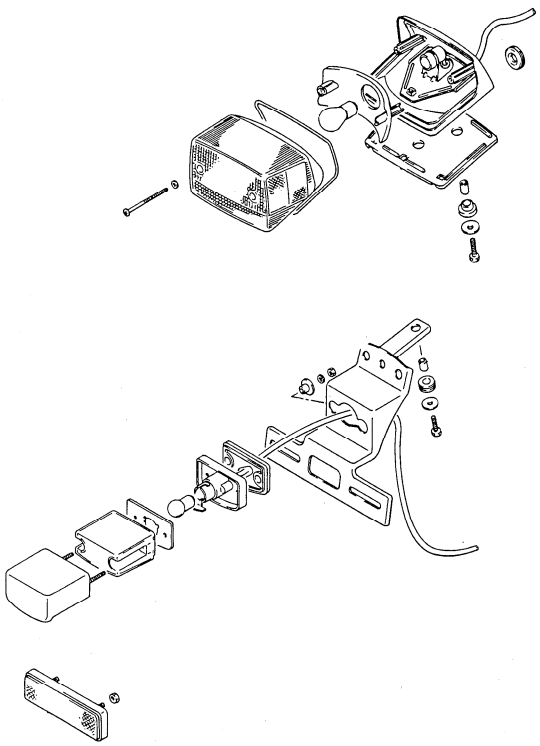
LAMPS

HEADLIGHT



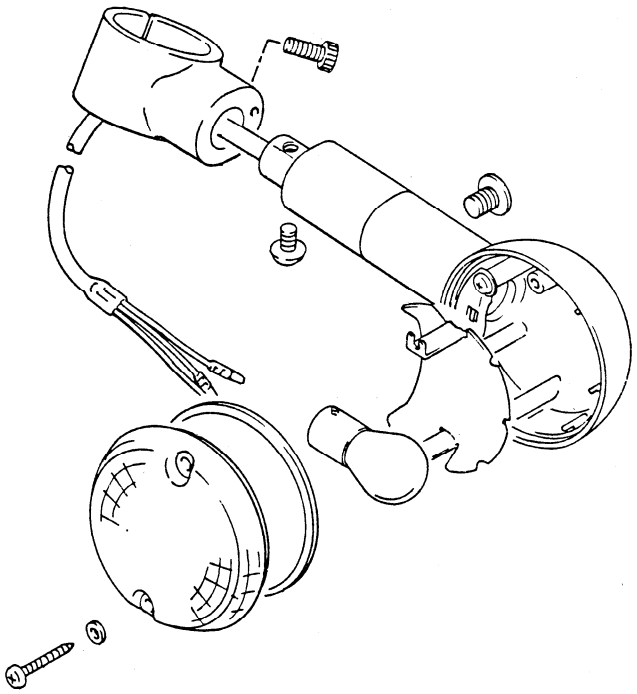
NOTE: Adjust the headlight, both vertical and holizontal, after reassembling.

TAIL/BRAKE LIGHT



CAUTION: Do not overtighten the lens fitting screws.

TURN SIGNAL LIGHT

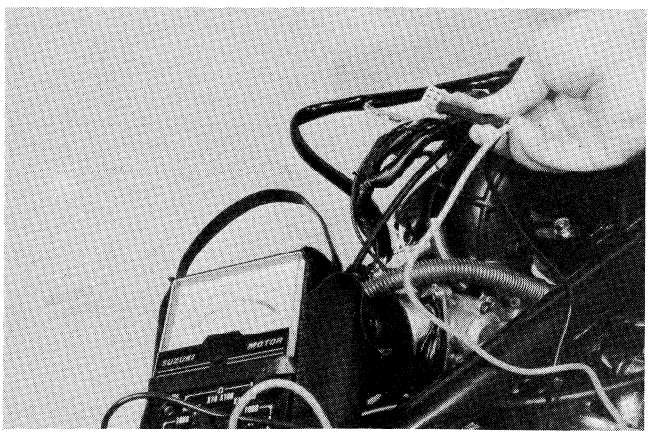


CAUTION: Do not overtighten the lens fitting screws.

SWITCHES

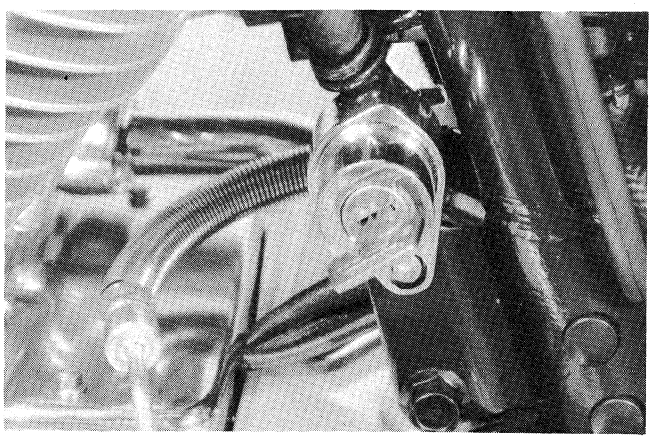
Inspect each switch for continuity with the pocket tester referring to the chart. If any abnormality is found, replace the respective switch assemblies with new ones.

09900-25002	Pocket tester



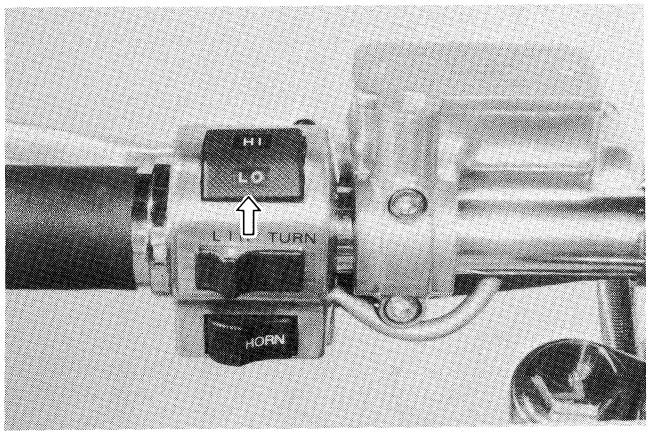
IGNITION SWITCH

	R/W	O	Gr	Br
OFF				
ON	○——	——○	○——	——○
P	○——			——○



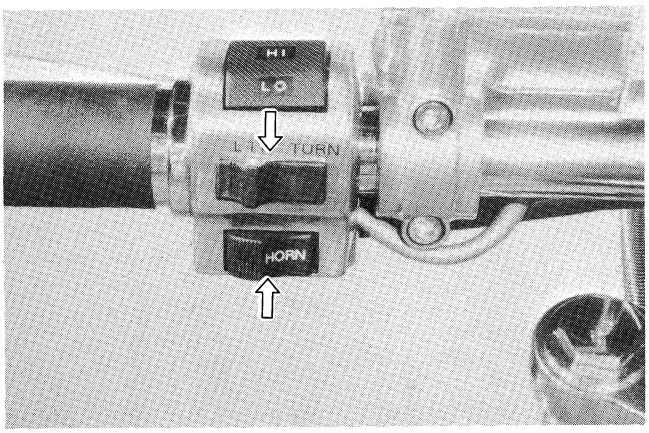
DIMMER SWITCH

	W	Y	O/R
HI		○	○
LO	○		○



TURN SIGNAL SWITCH

	B	Lbl	Lg
R		○	○
OFF			
L	○	○	

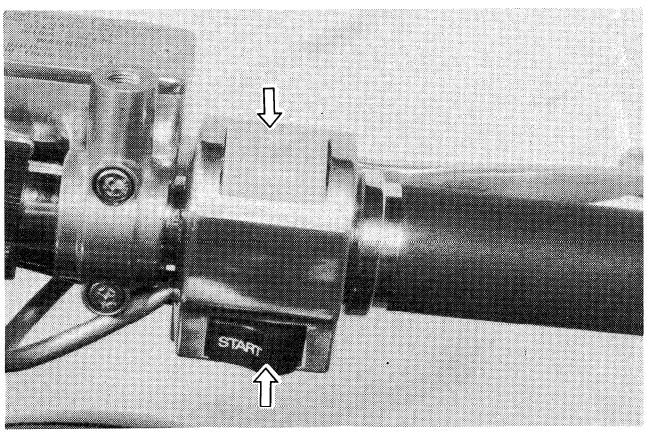


HORN SWITCH

	G	B/W
ON (Push)	○	○
OFF		

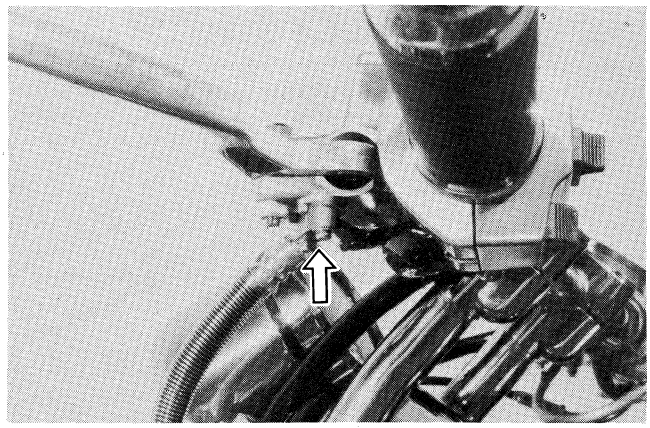
ENGINE STOP AND START SWITCH

	O/W (Red tube)	O/W	Y/G
OFF			
RUN	○	○	
START (Push)		○	○



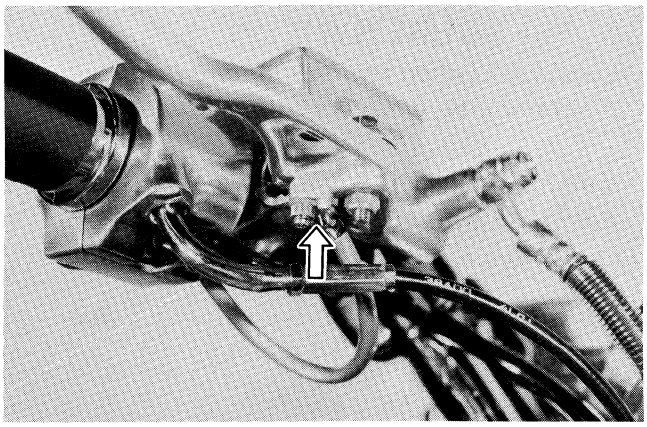
CLUTCH SWITCH

	Y/G	Y/G
ON (Squeeze lever)	○———	———○
OFF		



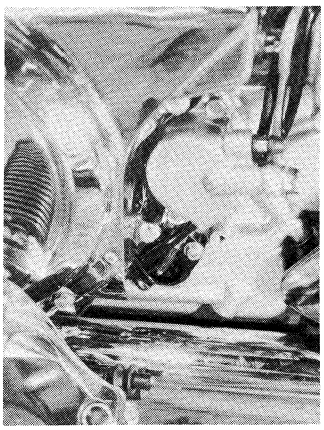
FRONT BRAKE SWITCH

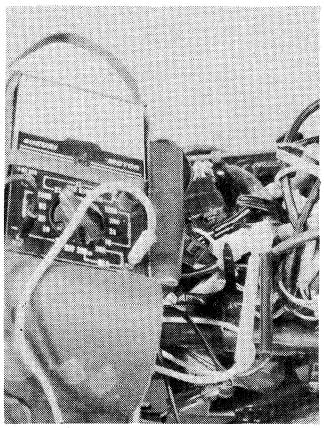
	O	W/B
ON (Squeeze lever)	○———	———○
OFF		



NEUTRAL INDICATOR SWITCH

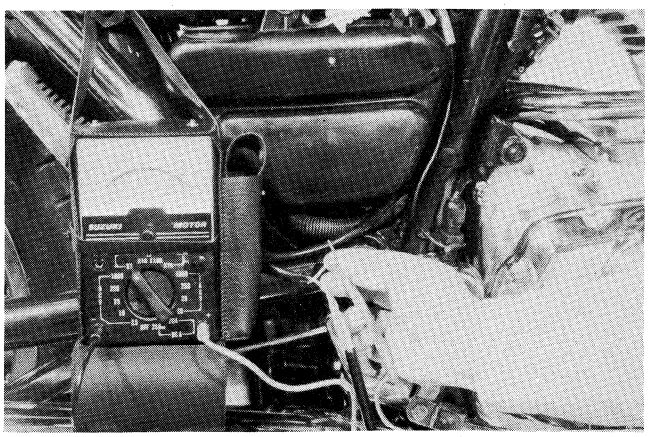
	BI	Ground
Neutral	○———	———○
The others		





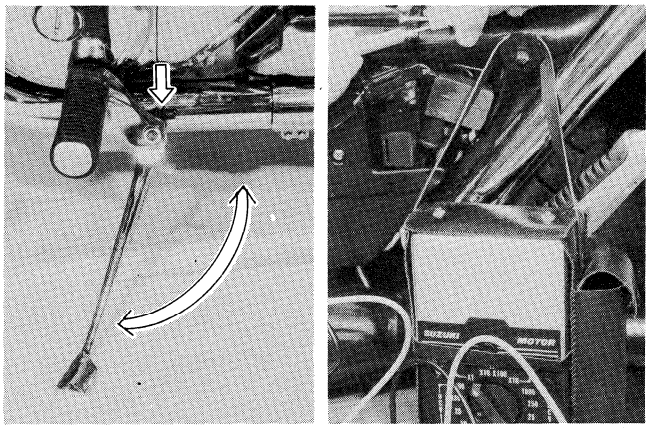
REAR BRAKE SWITCH

	O	W/B
ON (Depress pedal)	○———	———○
OFF		



SIDE STAND CHECK SWITCH

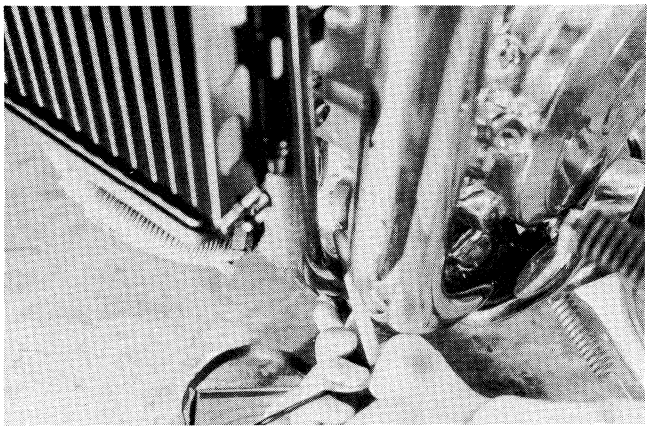
	G/W	B/W
ON (Down position)	○———	———○
OFF (Upright position)		



OIL PRESSURE SWITCH

- Continuity, when engine is stopped.
- No continuity, when engine is running.

NOTE:
Before inspecting the oil pressure switch, check the engine oil level at oil inspection window.



WIRE COLOR

B ..... Black
Bl ..... Blue
Br ..... Brown
G ..... Green
Gr ..... Gray
Lbl ..... Light blue
Lg ..... Light green
O ..... Orange
W ..... White
Y ..... Yellow

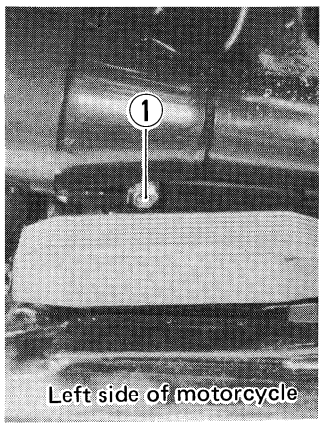
B/W ..... Black with White tracer
G/W ..... Green with White tracer
O/R ..... Orange with Red tracer
O/W ..... Orange with White tracer
R/W ..... Red with White tracer
W/B ..... White with Black tracer
Y/G ..... Yellow with Green tracer

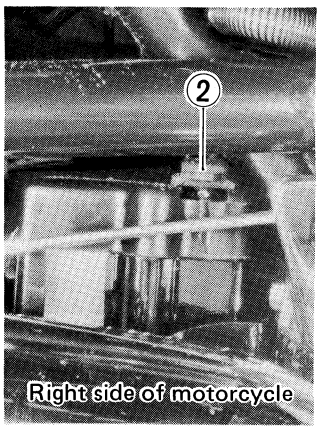
BATTERY

REMOVAL

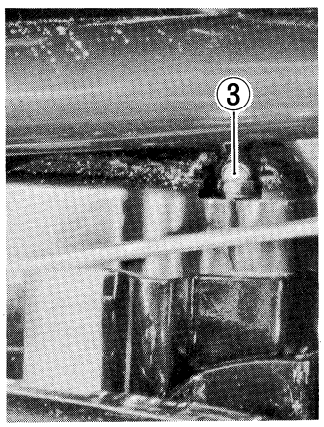
- Disconnect the battery ⊖ lead wire ①.

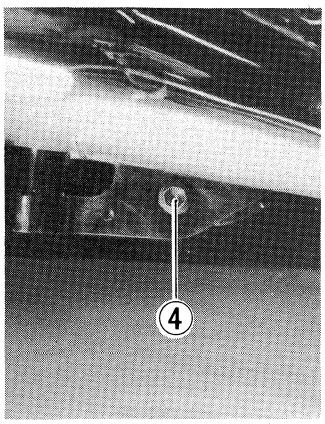
WARNING:
After disconnecting the battery ⊖ lead wire, make sure to remove the battery ⊖ terminal bolt or tighten the bolt fully to the battery ⊖ terminal to prevent the contact of the ⊖ terminal bolt to the other parts, when removing and reinstalling the ⊕ terminal bolt.



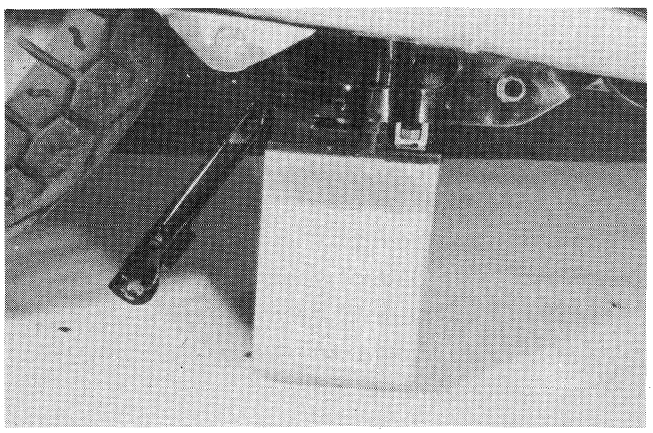


- Remove the battery terminal cover ② by pulling it to the right side.
- Disconnect the battery ⊕ lead wire ③.
- Remove the battery case bottom plate right and left bolts ④ and open the case bottom plate.





- Remove the battery .

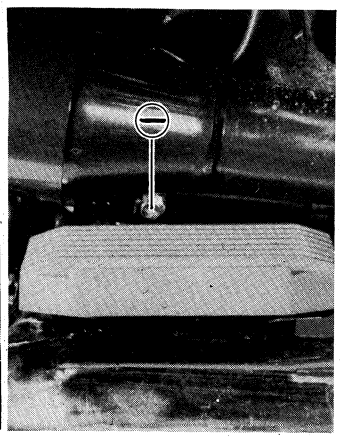


REMOUNTING

Remount the battery in the reverse order of removal.

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





SPECIFICATIONS

Type designation	YB16B-A
Capacity	12V, 57.6 kC (16 Ah)/ 10HR
Standard electrolyte S.G.	1.28 at 20°C (68°F)

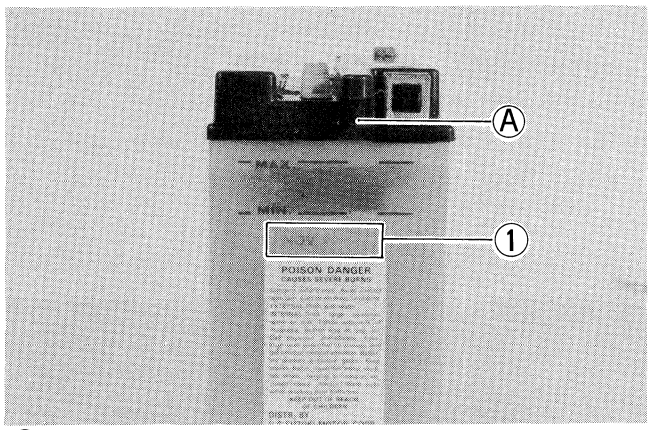
In fitting the battery to the motorcycle, connect the breather pipe to the battery vent.

INITIAL CHARGING

Filling electrolyte

Remove the short sealed tube before filling electrolyte. Fill the battery with electrolyte (dilute sulfuric acid solution with acid concentration of 35.0% by weight, having a specific gravity of 1.28 at 20°C (68°F)) up to indicated MAX. LEVEL. Electrolyte should always be cooled below 30°C (86°F) before filling into battery. Leave battery standing for half an hour after filling. Add additional electrolyte if necessary.

Charge the battery with current as described in the table shown below.



Ⓐ Sealed tube

Maximum charging current	1.6A

Charging time

The charging time for a new battery is determined by the number of months that have elapsed since the date of manufacture.

Confirmation for date of manufacture

Date of manufacture is indicated by a three-part number ①, as shown in the photograph, each indicating month, date and year.

Near the end of the charging period, adjust the specific gravity of electrolyte to the value specified. After charging, adjust the electrolyte level to the MAX. LEVEL with DISTILLED WATER.

Months after manufacturing	Within 6	Within 9	Within 12	Over 12
Necessary charging hours	20	30	40	60

SERVICING

Visually inspect the surface of the battery container. If any signs of cracking or electrolyte leakage from the sides of the battery have occurred, replace the battery with a new one.

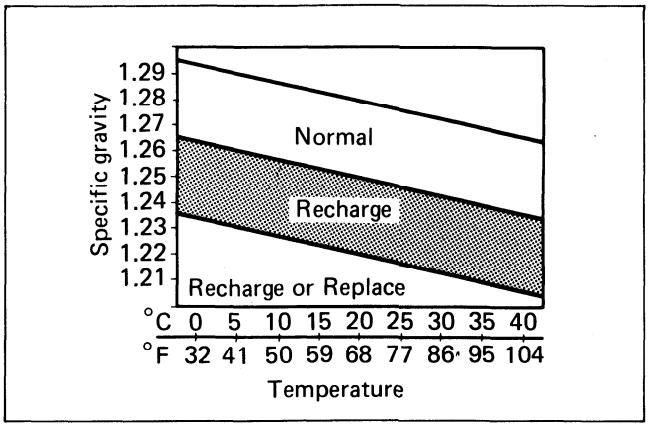
If the battery terminals are found to be coated with rust or an acidic white powdery substance, then this can be cleaned away with sandpaper.

Check the electrolyte level and add distilled water, as necessary to raise the electrolyte to each cell's MAX. level.
Check the battery for proper charge by taking an electrolyte S.G. reading. If the reading is 1.22 or less, as corrected to 20°C (68°F), it means that the battery is still in a run-down condition and needs recharging.

NOTE:
First, remove the ⊖ lead wire.

RECHARGING OPERATION BASED ON S.G. READING

To read the S.G. on the hydrometer, bring the electrolyte in the hydrometer to eye level and read the graduations on the float scale bordering on the meniscus (curved-up portion of electrolyte surface), as shown in figure.

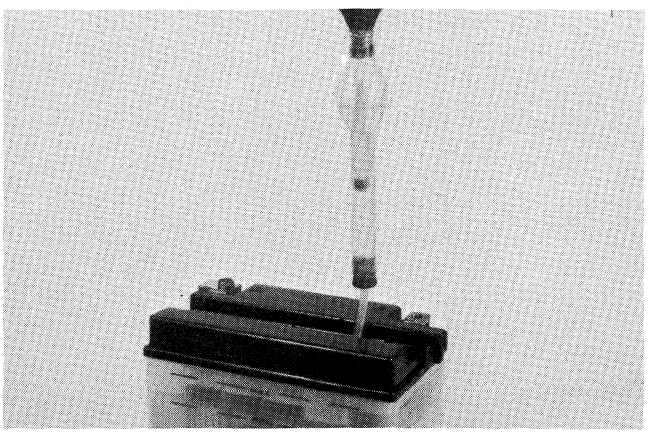


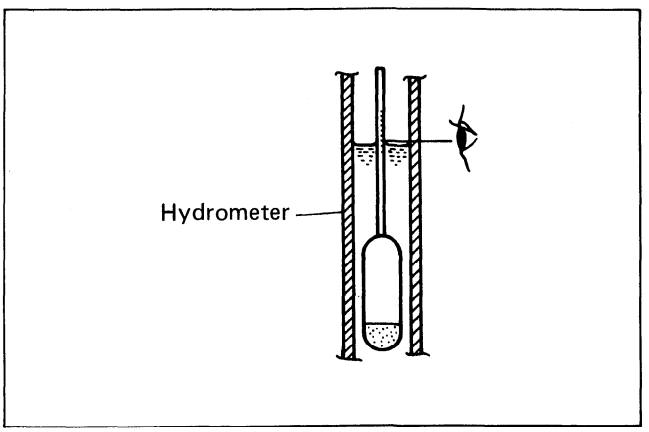
Check the reading (as corrected to 20°C) with chart to determine the recharging time in hour by constant-current charging at a charging rate of 1.6 amperes (which is tenth of the capacity of the present battery).

Be careful not to permit the electrolyte temperature to exceed 45°C (113°F), at any time, during the recharging operation. Interrupt the operation, as necessary, to let the electrolyte cool down. Recharge the battery to the specification.

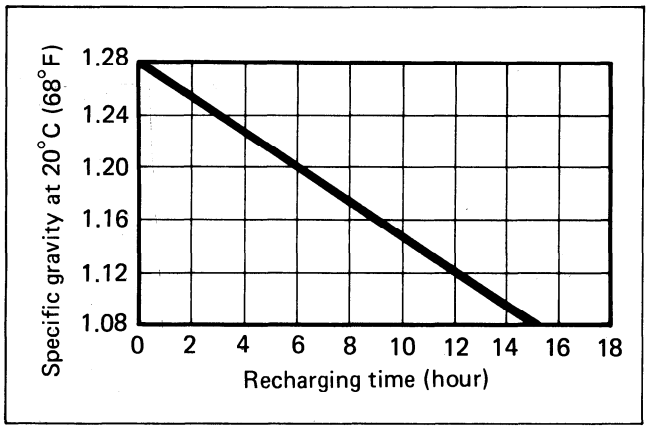
Electrolyte specific gravity	1.28 at 20°C (68°F)

CAUTION:
Constant-voltage charging, otherwise called "quick" charging, is not recommendable for it could shorten the life of the battery.





09900-28403	Hydrometer



SERVICE LIFE

Lead oxide is applied to the pole plates of the battery which will come off gradually during the service. When the bottom of the battery case becomes full of the sediment, the battery cannot be used any more. If the battery is not charged for a long time, lead sulfate is generated on the surface of the pole plates and will deteriorate the performance (sulfation). Replace the battery with a new one in such a case.

When a battery is left for a long term without using, it is subject to sulfate. When the motorcycle is not used for more than 1 month (especially during the winter season), recharge the battery once a month at least.

WARNING:

- **Before charging a battery, remove the seal cap from each cell.**
- **Keep fire and sparks away from a battery being charged.**
- **When removing a battery from the motorcycle, be sure to remove the (–) terminal first.**

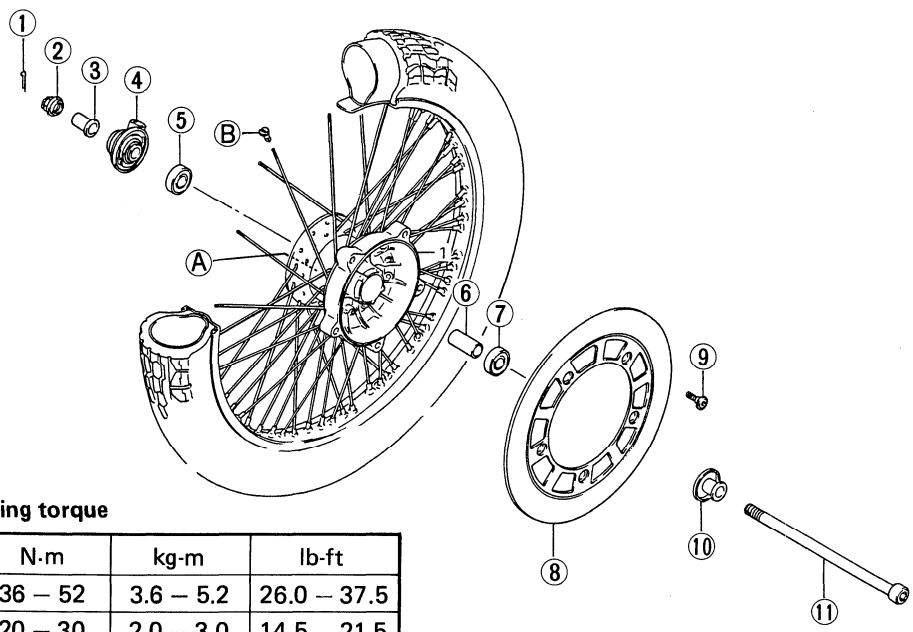
CHASSIS

CONTENTS

FRONT WHEEL 9- 1
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FRONT WHEEL

CONSTRUCTION



① Cotter pin
② Front axle nut
③ Spacer (R)
④ Speedometer gearbox
⑤ Front hub bearing
⑥ Hub bearing spacer
⑦ Bearing
⑧ Disc
⑨ Disc bolt
⑩ Spacer (L)
⑪ Front axle

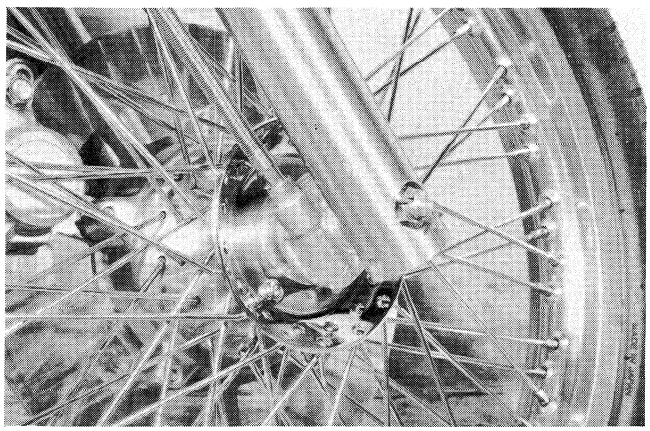
Ⓐ Hub flange bolt
Ⓑ Spoke nipple

Tightening torque

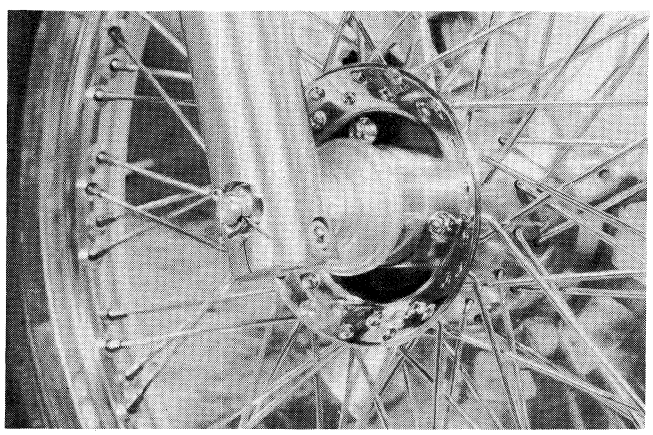
Item	N·m	kg-m	lb-ft
②	36 – 52	3.6 – 5.2	26.0 – 37.5
Ⓐ	20 – 30	2.0 – 3.0	14.5 – 21.5
Ⓑ	4 – 5	0.4 – 0.5	3.0 – 3.5
⑨	15 – 25	1.5 – 2.5	11.0 – 18.0

REMOVAL AND DISASSEMBLY

- Support the machine by using jack and wooden block.
- Remove the speedometer cable from the speedometer drive gearbox.

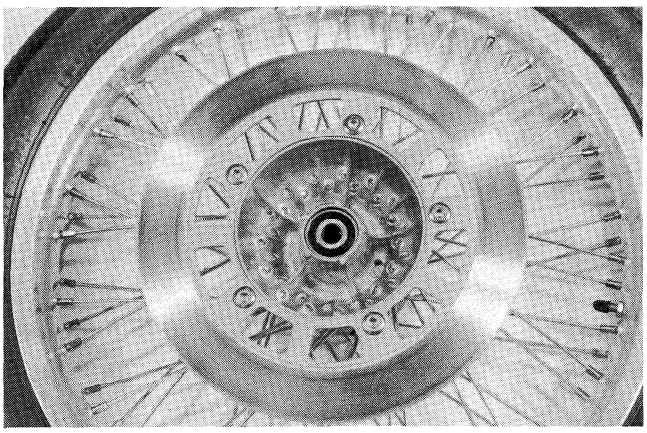


- Pull off cotter pin and remove axle nut and washer.
- Loosen the axle clamp bolt.
- Draw out axle shaft and take off front wheel.



BRAKE DISC

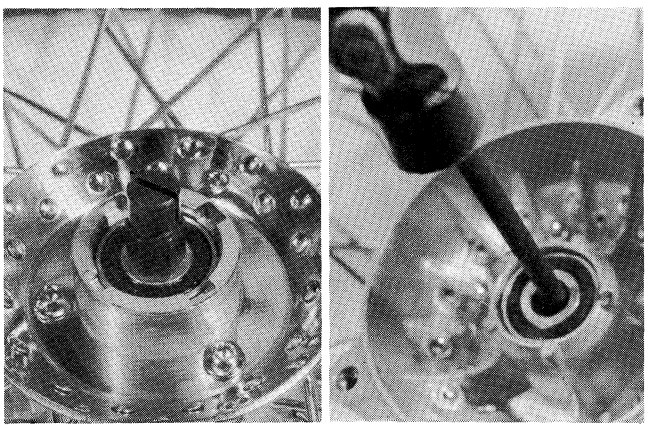
- Remove the securing bolts and separate the disc from wheel.



WHEEL BEARING

Drive out the right and left wheel bearings by using the special tool in the following procedure.

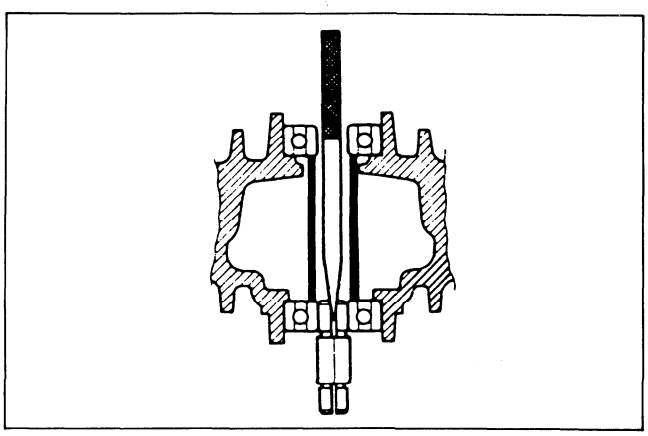
- Insert the adapter into the wheel bearing.
- After inserting the wedge bar from the opposite side, lock the wedge bar in the slit of the adapter.



- Drive out the wheel bearing by knocking the wedge bar.

CAUTION:
The removed bearing should be replaced.

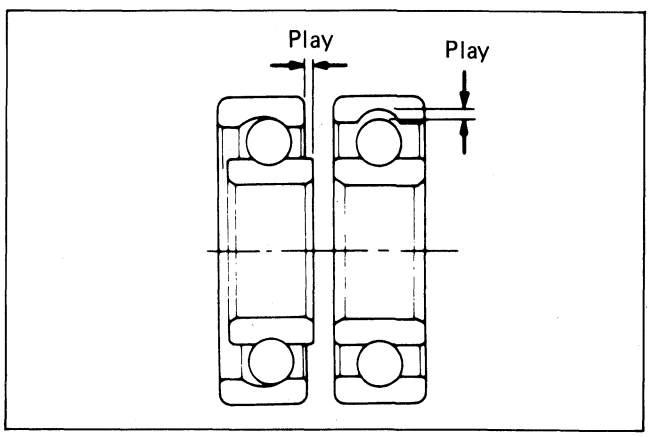
09941-50110	Bearing remover (Not available in USA)



INSPECTION

WHEEL BEARINGS

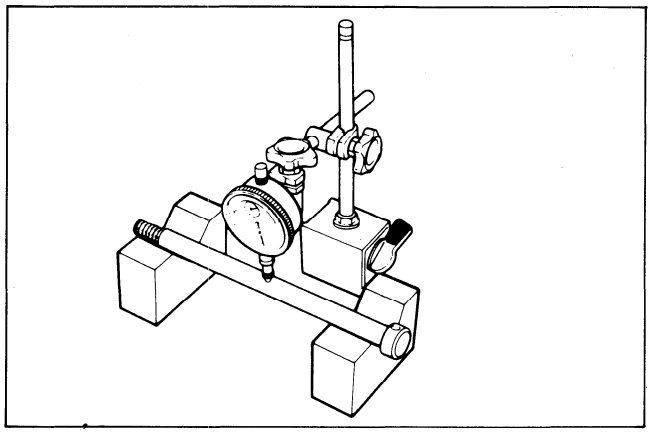
Inspect the play of wheel bearing inner race by hand while fixing it in the wheel.
Rotate the inner race by hand to inspect whether abnormal noise occurs or rotating smoothly.
Replace the bearing if there is something unusual.



AXLE SHAFT

Using a dial gauge, check the axle shaft for runout and replace it if the runout exceeds the limit.

09900-20606	Dial gauge (1/100)
09900-20701	Magnetic stand (Not available in USA)
Service Limit	0.25 mm (0.010 in.)



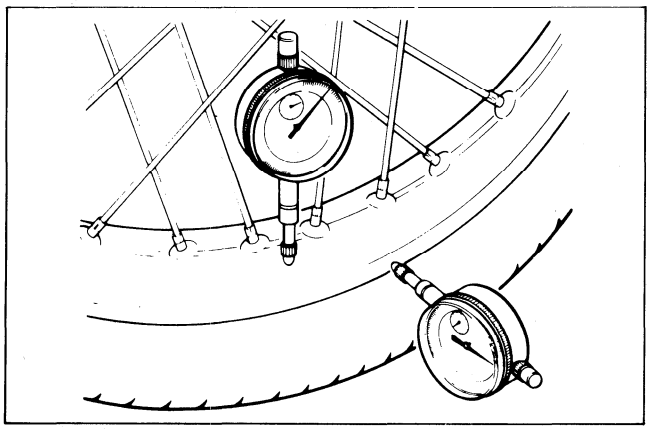
WHEEL RIM

Make sure that the wheel rim runout does not exceed the service limit when checked as shown. An excessive amount of runout is usually due to loose spokes or bent rim.

If properly tightening the spokes will not correct the runout, replace the wheel rim.

NOTE:
Worn or loose wheel bearings must be replaced before attempting to true a wheel rim.

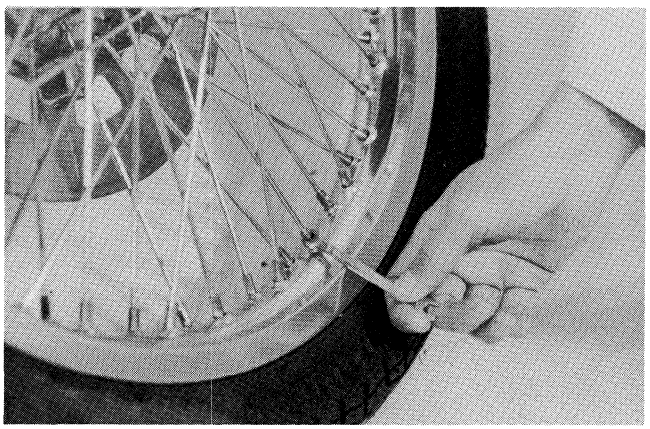
Service Limit (Axial and Radial)	2.0 mm (0.08 in)



SPOKE NIPPLE

Check to be sure that all nipples are tight, and re-tighten them as necessary by using 6 mm open end wrench.

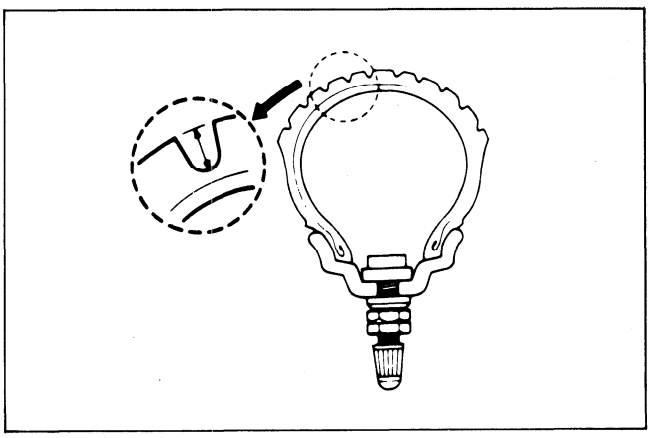
Tightening torque	4 – 5 N·m (0.4 – 0.5 kg-m / 3.0 – 3.5 lb-ft)



TIRE

For proper braking and riding stability, the tire should have sufficient groove depth from the tread surface. If the groove depth, measured as shown in the figure, reaches the wear limit, replace the tire.

	Service Limit
Front	1.6 mm (0.06 in)
Rear	2.0 mm (0.08 in)



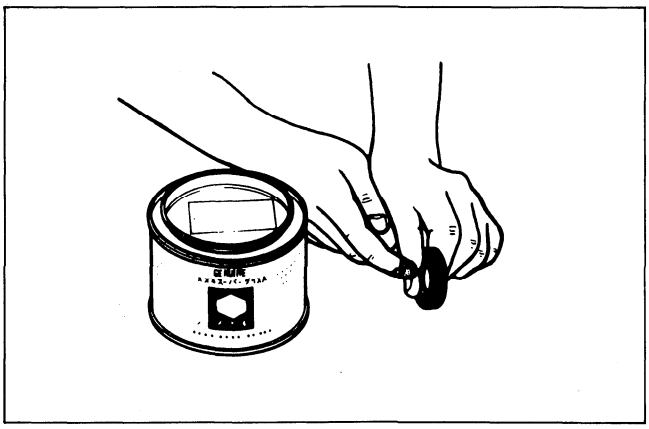
REASSEMBLY

Reassemble and remount the front wheel in the reverse order of disassembly and removal, and also carry out the following steps:

WHEEL BEARING

- Apply grease before installing the bearings.

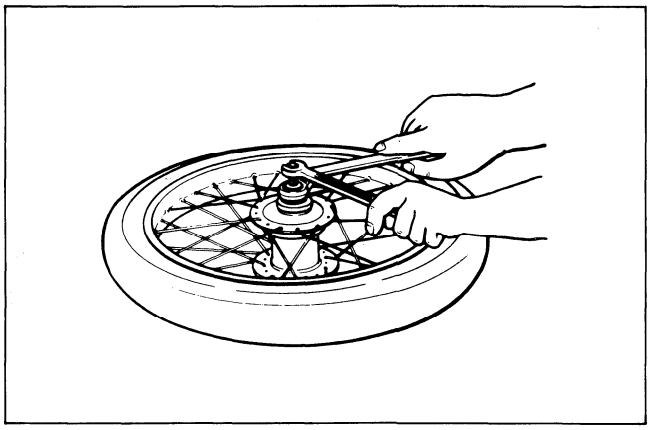
99000-25030	SUZUKI Super grease "A"

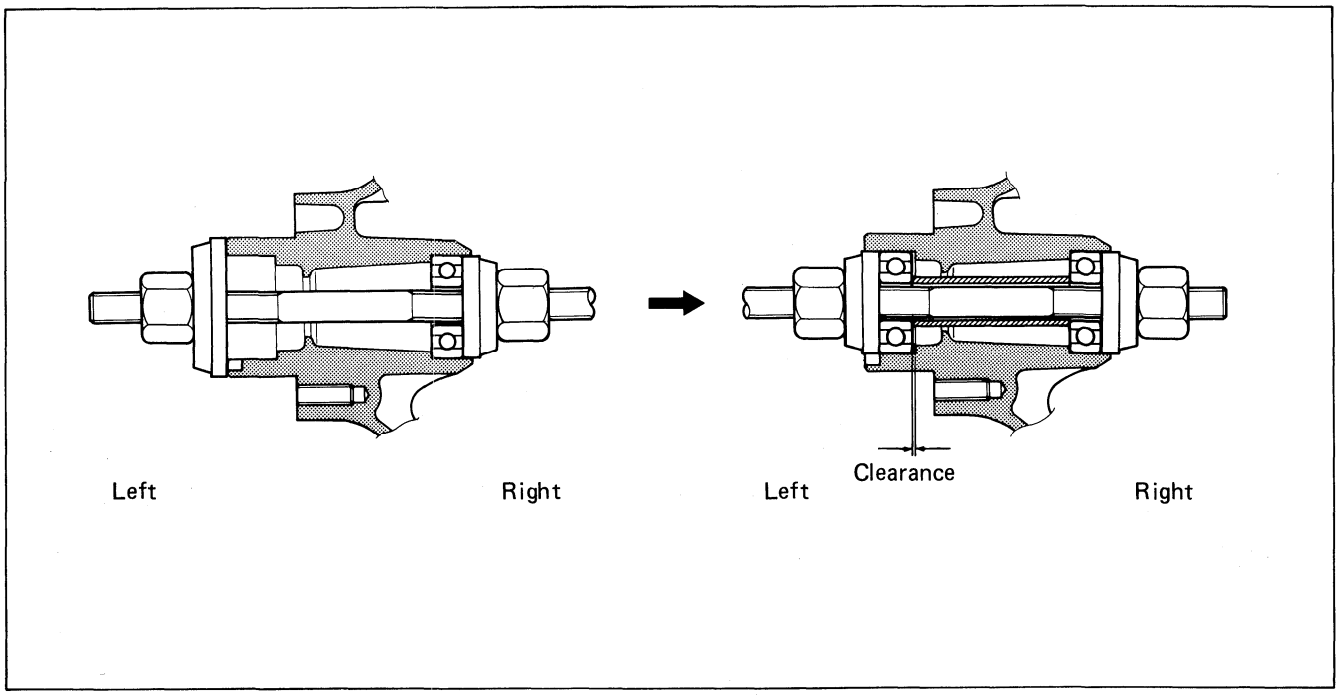


- Install the wheel bearings as follows by using the special tool.

CAUTION:
First install the wheel bearing for right side.

09924-84510	Bearing installer set

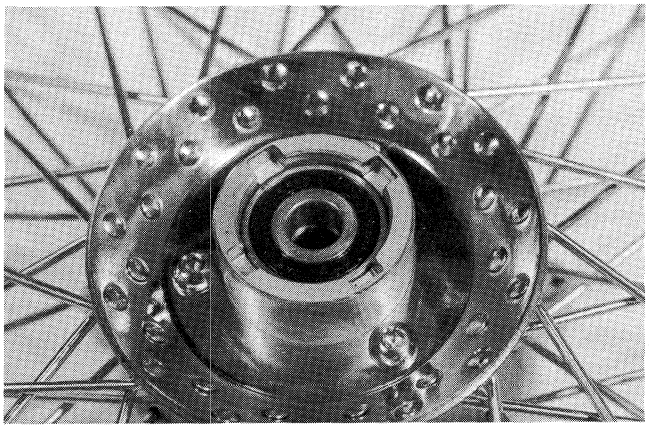




- When reinstalling the hub flange to the hub, apply thread lock "1303" to the three securing bolts.

99000-32030	Thread lock "1303"

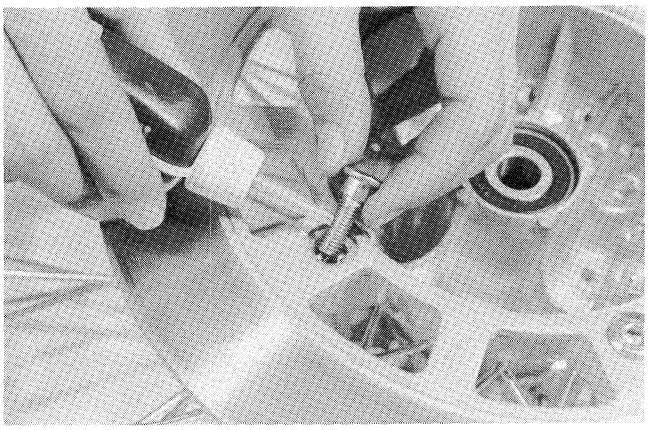
Tightening torque	20 – 30 N·m (2.0 – 3.0 kg-m 14.5 – 21.5 lb-ft)



- Make sure that the brake disc is clean and free of any greasy matter. Apply thread lock "1360" to the disc bolts and tighten the disc bolts to the specified torque.

99000-32130	Thread lock "1360"

Tightening torque	15 – 25 N·m (1.5 – 2.5 kg-m 11.0 – 18.0 lb-ft)



- When remounting the tire to the rim, be sure that the embossed arrow mark on the tire faces toward the rotational direction of the wheel.

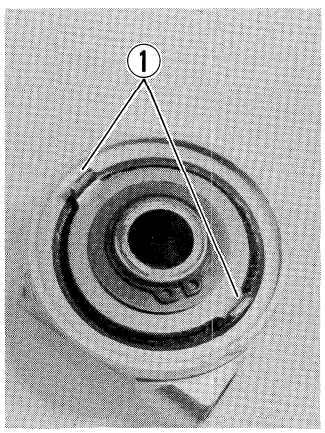
NOTE:
An arrow mark is provided on the front and rear tires.

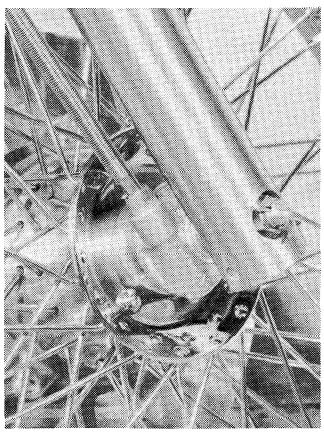


- Before installing the speedometer gearbox grease it and align the two drive pawls ① (for fitting them into the two recesses of the wheel hub) and attach the speedometer gearbox to the wheel hub.
  When tightening the front axle, check to be sure that the speedometer gearbox is in the position as shown.

TIGHTENING TORQUE

	N·m	kg-m	lb-ft
Axle nut	36 – 52	3.6 – 5.2	26.0 – 37.5
Axle clamp bolt	15 – 25	1.5 – 2.5	11.0 – 18.0





FRONT BRAKE

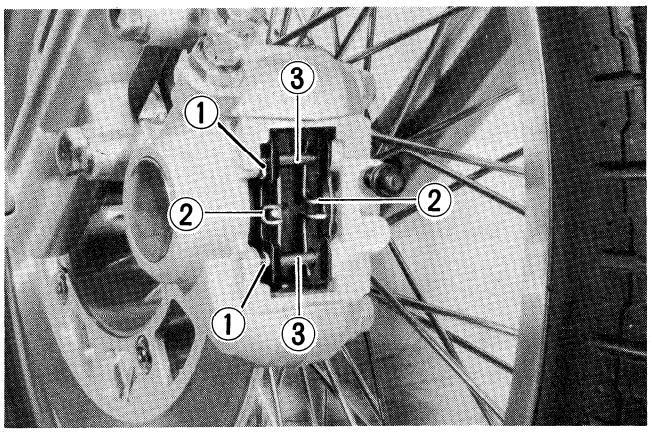
BRAKE PAD REPLACEMENT

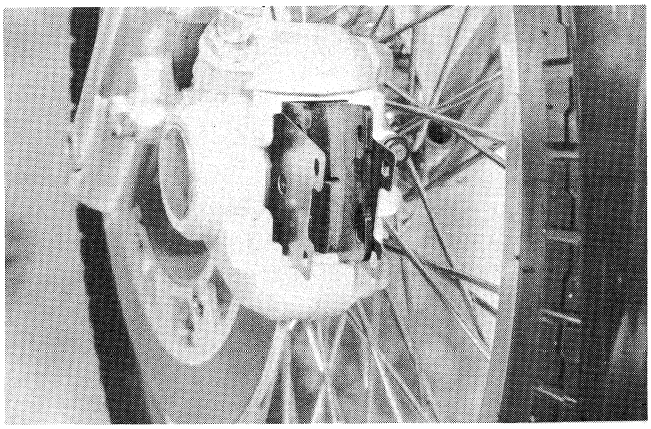
- Remove the dust cover and pull out the two stopper pins ①. While holding the spring ②, pull out the two pad pins ③.

CAUTION:
Do not operate the brake lever while dismounting the pads.

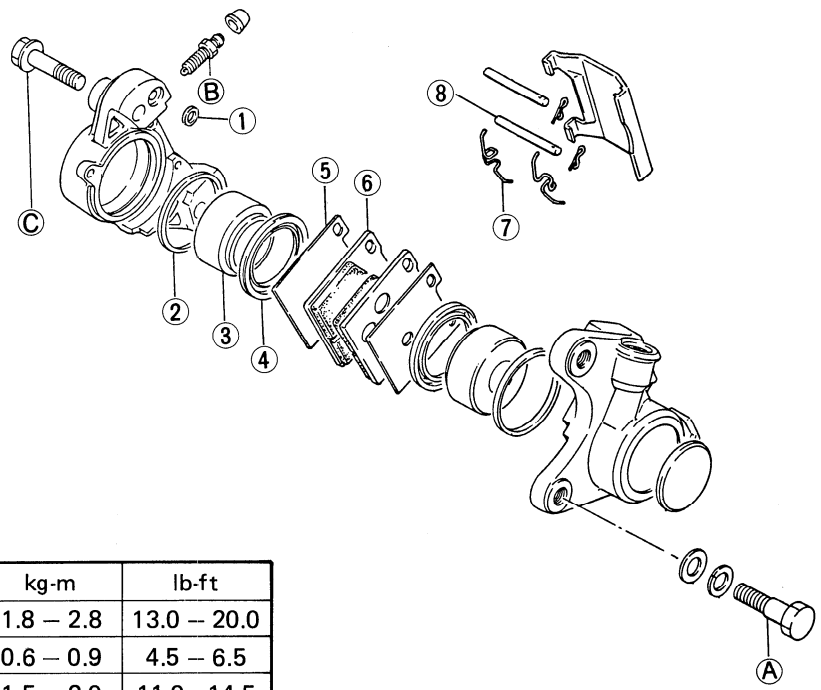
- Pull out brake pads with pad shim.

CAUTION:
Replace the brake pad as a set, otherwise braking performance will be adversely affected.





CALIPER REMOVAL AND DISASSEMBLY



① Seal ring
② Piston seal
③ Piston
④ Dust boot
⑤ Shim
⑥ Pad
⑦ Spring
⑧ Pin

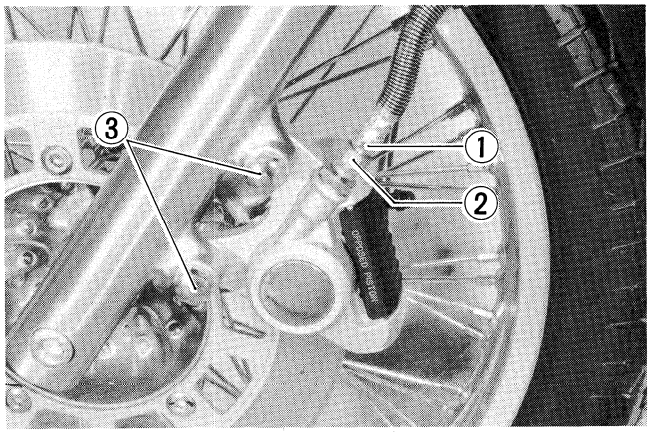
Tightening torque

Item	N·m	kg-m	lb-ft
Ⓐ	18 – 28	1.8 – 2.8	13.0 – 20.0
Ⓑ	6 – 9	0.6 – 0.9	4.5 – 6.5
Ⓒ	15 – 20	1.5 – 2.0	11.0 – 14.5

- Hold the brake hose ① and loosen the nut ②.
- Disconnect brake hose and catch the brake fluid in a suitable receptacle.

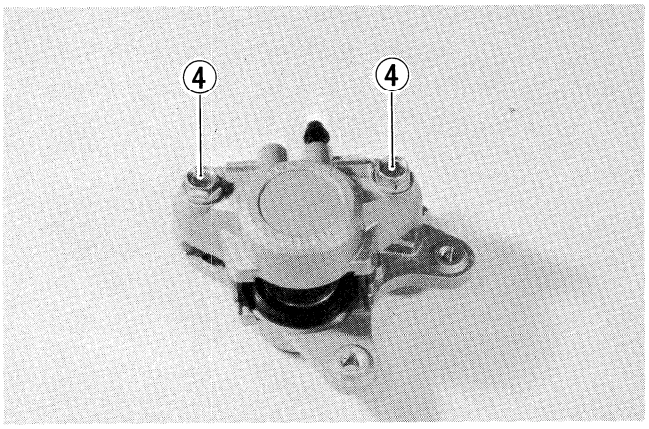
CAUTION:
Never re-use the brake fluid left over from the last servicing and stored for long periods.

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

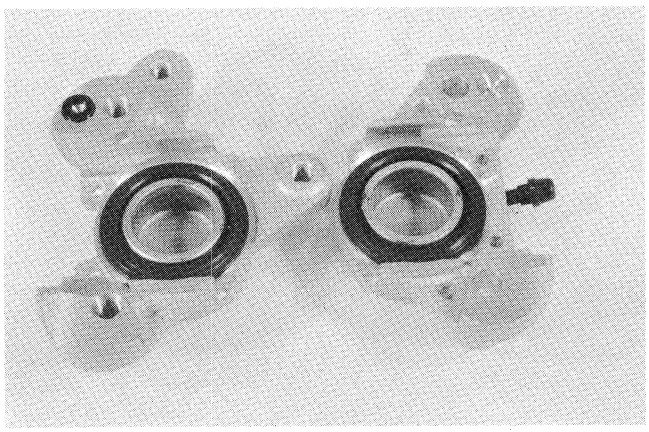


- Remove the caliper mounting bolts ③ and take off the caliper.

NOTE:
Slightly loosen the caliper axle bolts ④ to facilitate later disassembly.

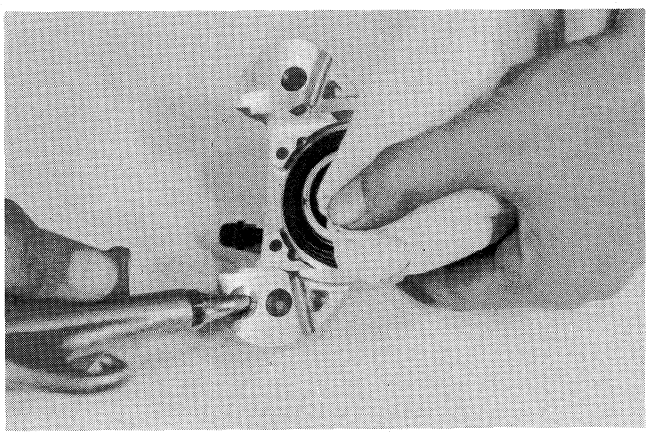


- Remove the brake pad.
- Remove the caliper axle bolts, and separate the caliper halves.

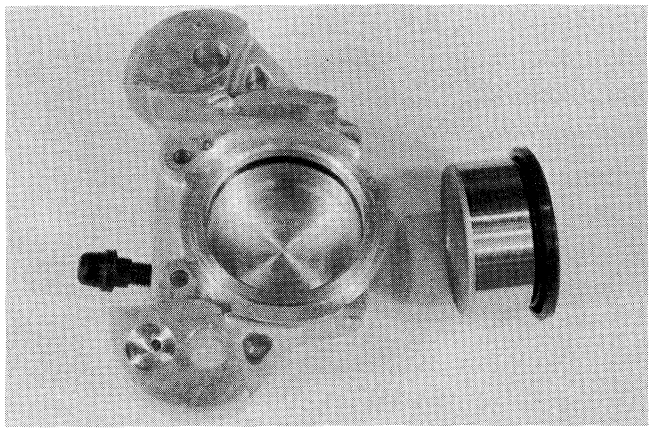


- Place a rag over the piston to prevent popping up. Force out the piston by using air gun.

CAUTION:
Do not use high pressure air to prevent piston damage.

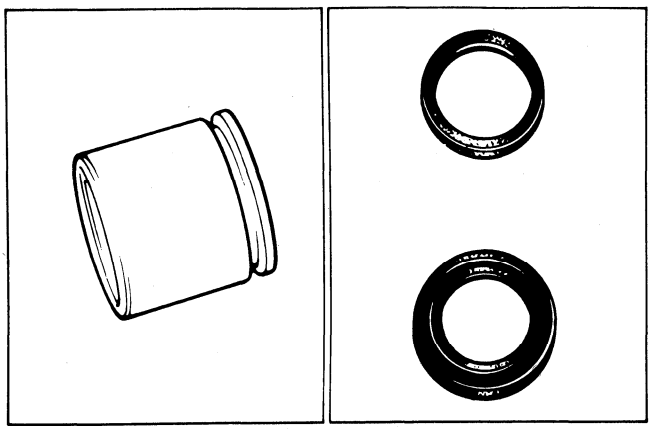


- Remove dust boot and piston seal.



CALIPER AND DISC INSPECTION

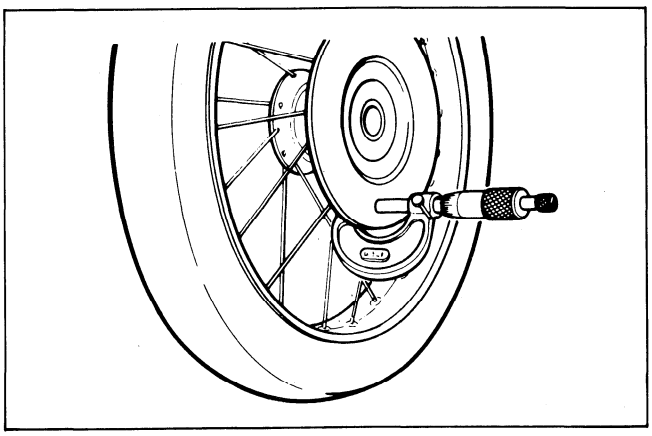
- Inspect the caliper bore wall for nicks, scratches or other damage.
- Inspect each of the rubber parts for damage and wear.
- Inspect the piston surface for any scratches or other damage.



- Check the disc for wear by using a micrometer. Its thickness can be checked with disc and wheel in place. Replace the disc if the thickness exceeds the service limit.

09900-20205	Micrometer (0 – 25 mm)

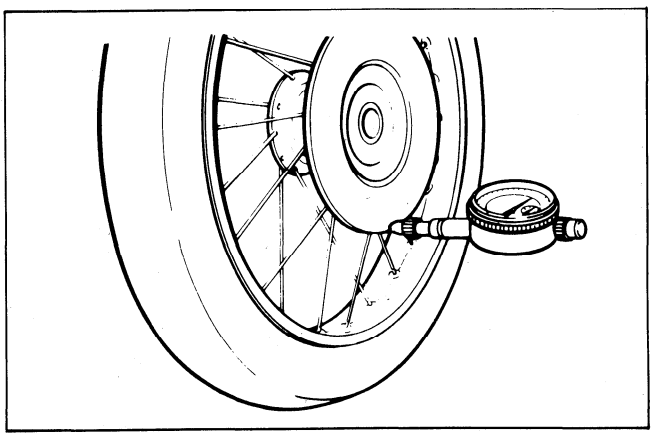
Service Limit	4.5 mm (0.18 in)



- With the disc mounted on the wheel, check the disc for face runout with a dial gauge, as shown. Replace the disc if the runout exceeds the service limit.

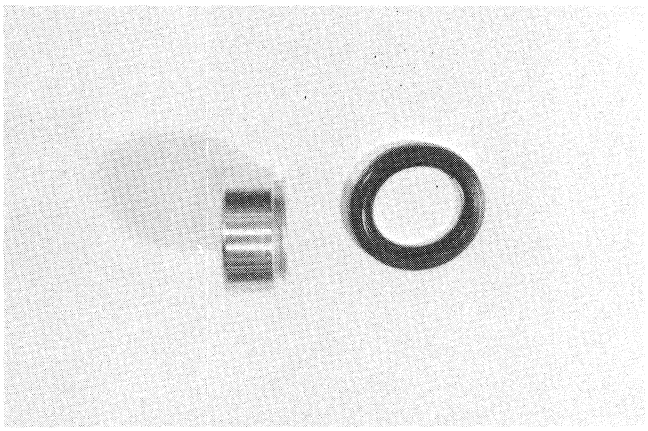
09900-20606	Dial gauge (1/100 mm)
09900-20701	Magnetic stand (Not available in USA)

Service Limit	0.30 mm (0.012 in)



CALIPER REASSEMBLY

Reassemble the caliper in the reverse order of disassembly and also carry out the following steps:



CAUTION:
Wash the caliper components with fresh brake fluid before reassembly.
Never use cleaning solvent or gasoline to wash them.
Apply brake fluid to the caliper bore and piston to be inserted into the bore.

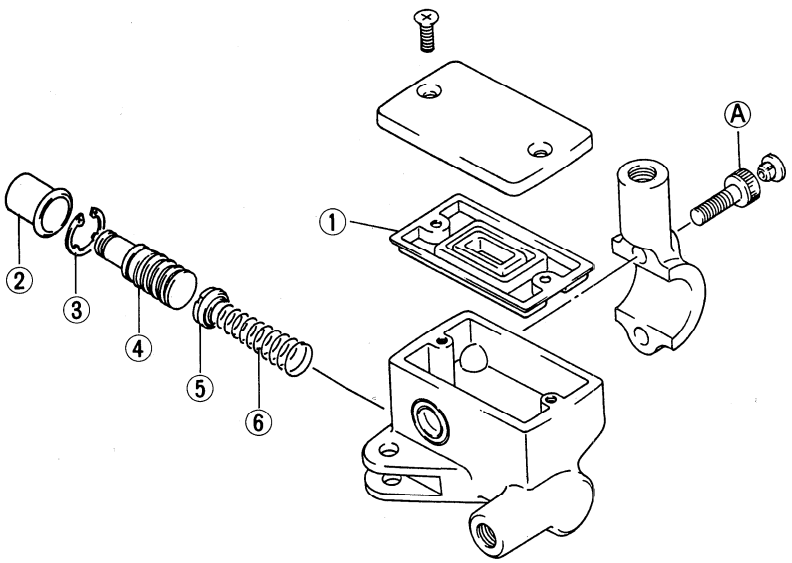
WARNING:
Bleed the air after reassembling caliper (See page 2-13).

Tightening torque:

	N·m	kg-m	lb-ft
Union bolt	20 – 25	2.0 – 2.5	14.5 – 18.0
Caliper mounting bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Caliper axle bolt	15 – 20	1.5 – 2.0	11.0 – 14.5

MASTER CYLINDER REMOVAL AND DISASSEMBLY

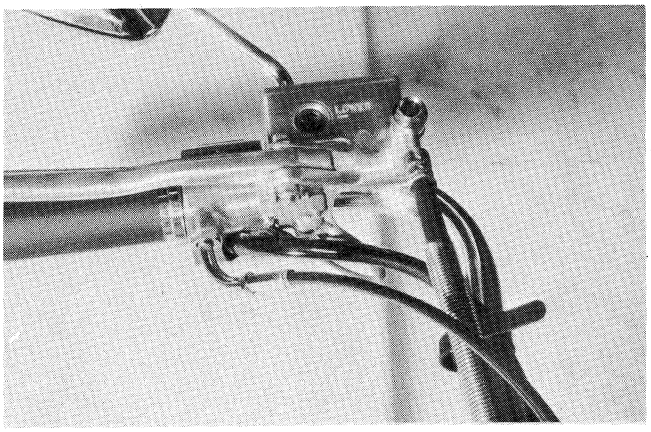
① Diaphragm
② Dust boot
③ Circlip
④ Piston
⑤ Primary cup
⑥ Return spring



Tightening torque

Item	N·m	kg-m	lb-ft
Ⓐ	5 – 8	0.5 – 0.8	3.5 – 6.0

- Take off the front brake light switch.

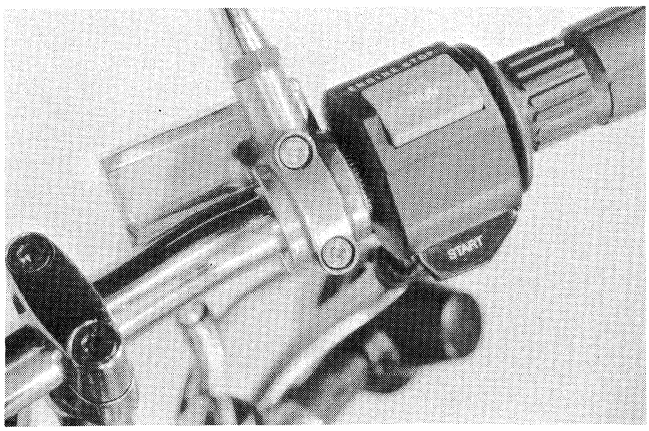


- Place a cloth underneath the union bolt on the master cylinder to catch spilled drops of brake fluid. Unscrew the union bolt and disconnect the brake hose/master cylinder joint.

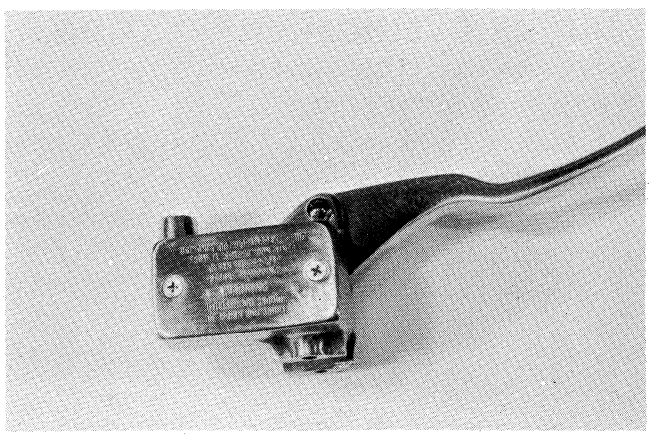


CAUTION:
Completely wipe off any brake fluid adhering to any part of motorcycle. The fluid reacts chemically with paint, plastics, rubber materials, etc.

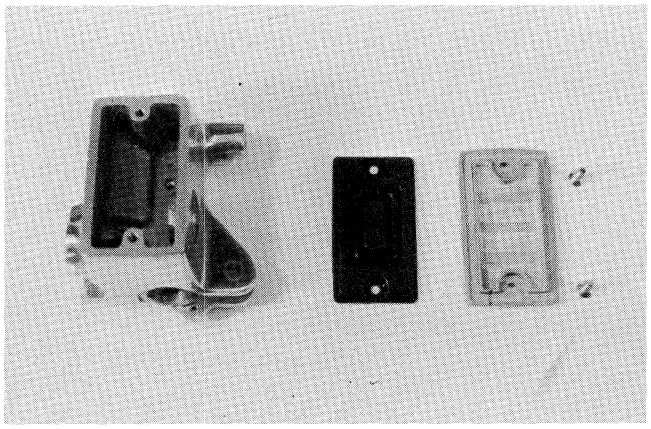
- Remove two clamp bolts and take off the master cylinder assembly.



- Remove the front brake lever.

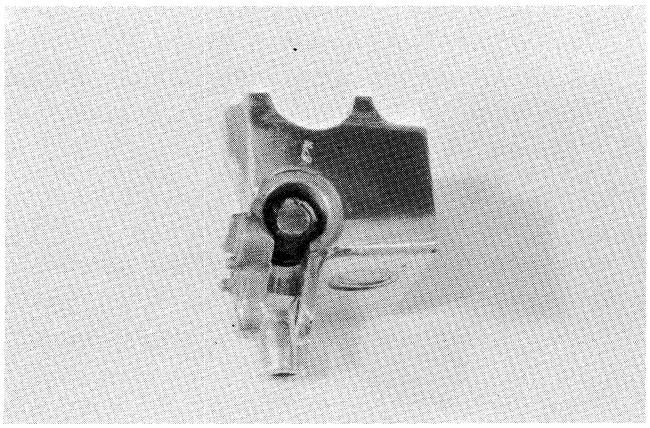


- Remove reservoir cap and diaphragm.
- Drain brake fluid.

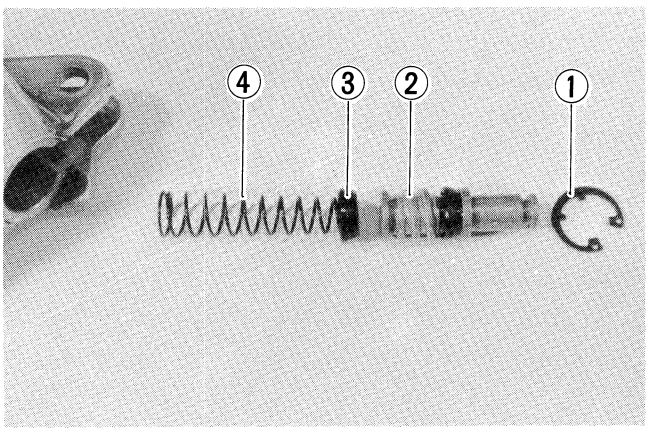


- Pull off dust boot.
- Remove circlip by using the special tool.
- Remove piston, primary cup and spring.

09900-06108	Snap ring pliers

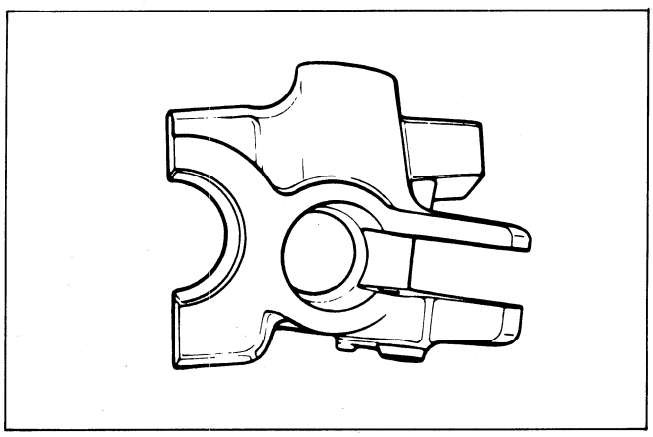


① Circlip
② Piston
③ Primary cup
④ Return spring



MASTER CYLINDER INSPECTION

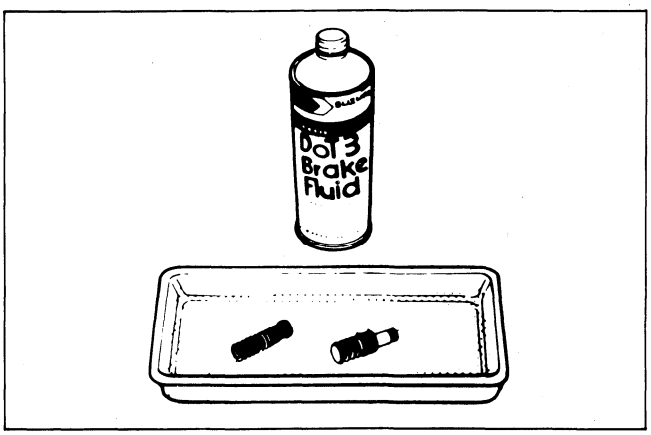
- Inspect the master cylinder bore for any scratches or other damage.
- Inspect the piston surface for scratches or other damage.
- Inspect the primary cup, secondary cup and dust boot for wear or damage.



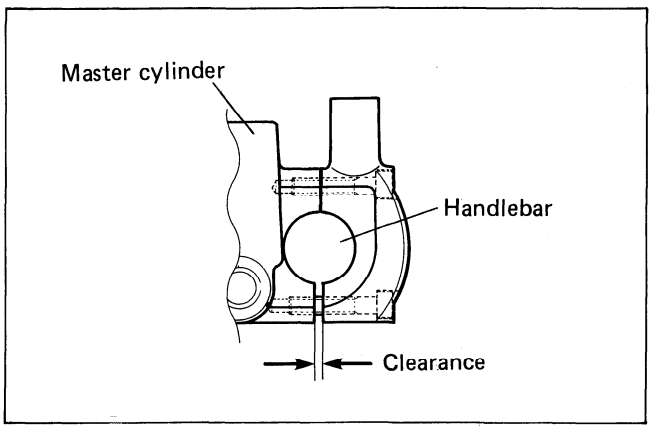
MASTER CYLINDER REASSEMBLY

Reassemble the master cylinder in the reverse order of disassembly and also carry out the following steps:

CAUTION:
Wash the master cylinder components with fresh brake fluid before reassembly. Never use cleaning solvent or gasoline to wash them. Apply brake fluid to the cylinder bore and all the internals to be inserted into the bore.



- Remount the master cylinder on the handlebar as shown in the illustration. Tighten the upper bolt first.

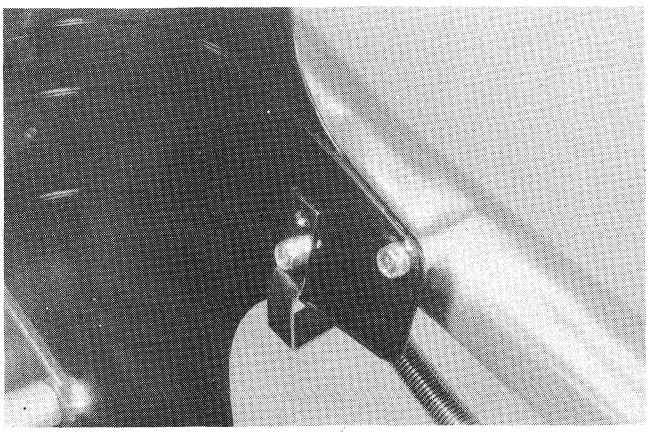


CAUTION:
Bleed the air after reassembling master cylinder. (See page 2-13).
Adjust the front brake light switch after installation.

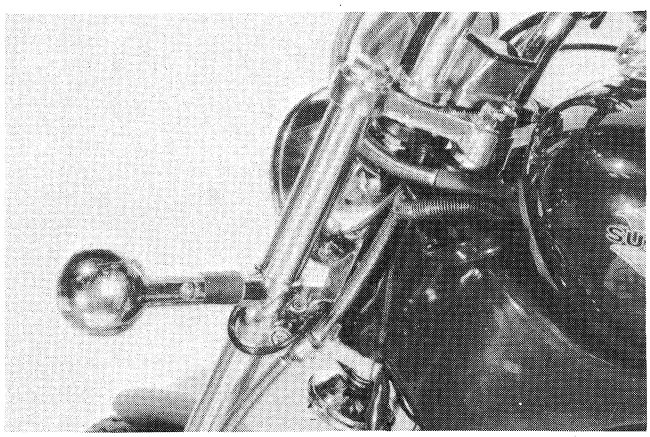
FRONT FORK

REMOVAL

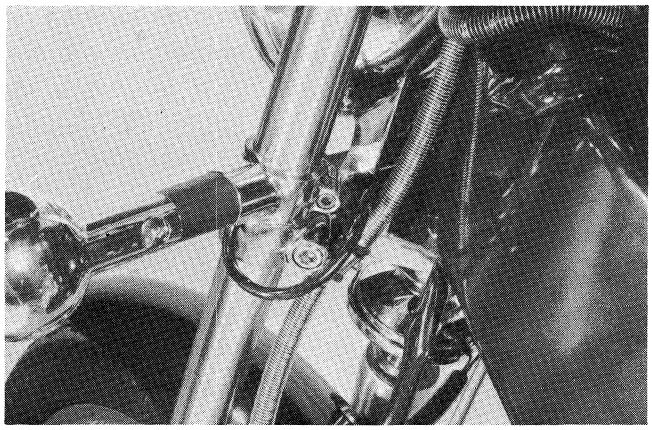
- Remove the front wheel.
- Disconnect the speedometer cable from speedometer drive gearbox. (See page 9-1)
- Remove the caliper. (See page 9-7).
- Remove the front fender.



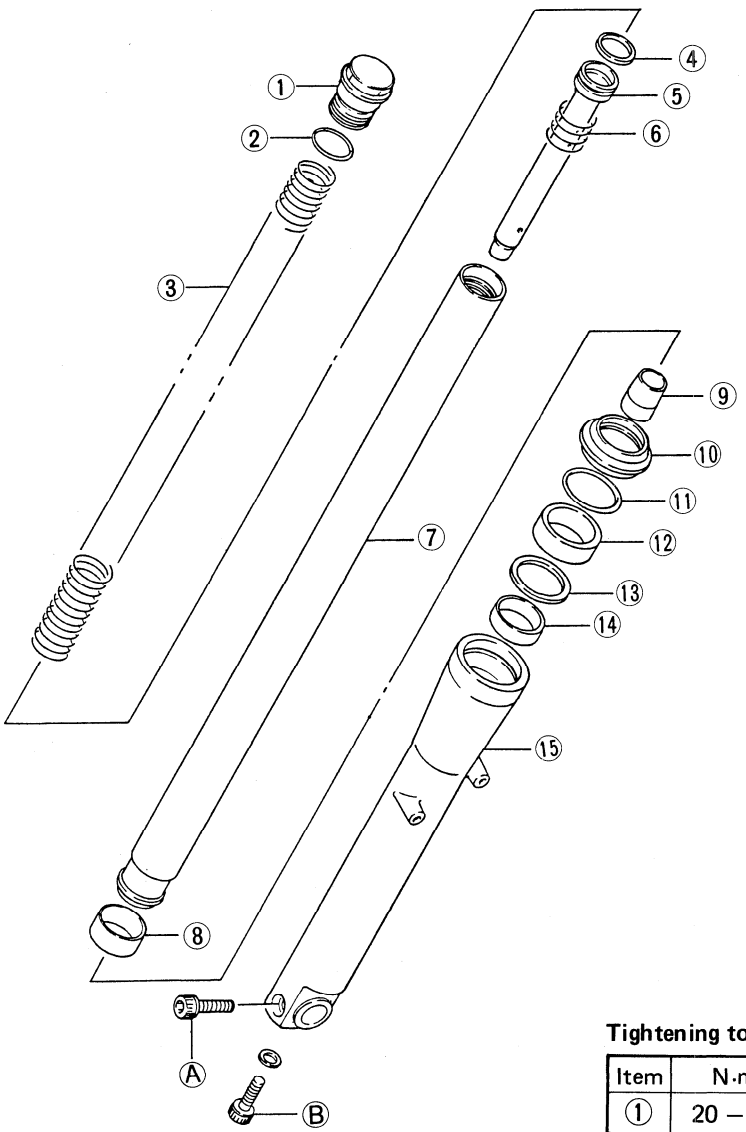
- Loosen the front turn signal lamp clamp bolt.
- Remove the front fork cap bolt.



- Loosen the front fork lower clamp bolt and pull off the front fork.



DISASSEMBLY



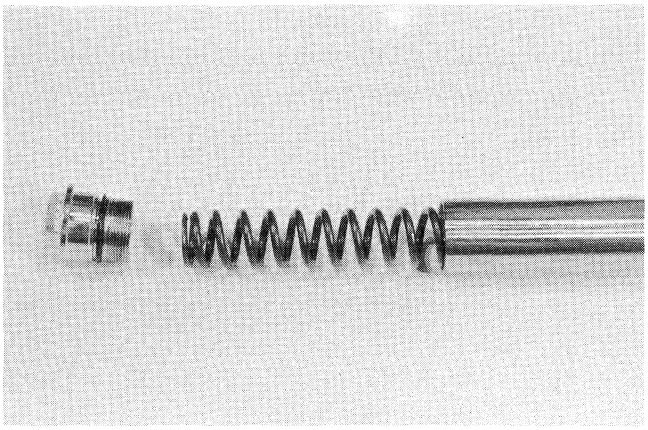
① Front fork cap bolt
② O-ring
③ Fork spring
④ Damper rod ring
⑤ Damper rod
⑥ Rebound spring
⑦ Inner tube
⑧ Anti-friction metal
⑨ Oil lock piece
⑩ Dust seal
⑪ Snap ring
⑫ Oil seal
⑬ Oil seal retainer
⑭ Anti-friction metal
⑮ Outer tube

Ⓐ Axle clamp bolt
Ⓑ Damper rod bolt

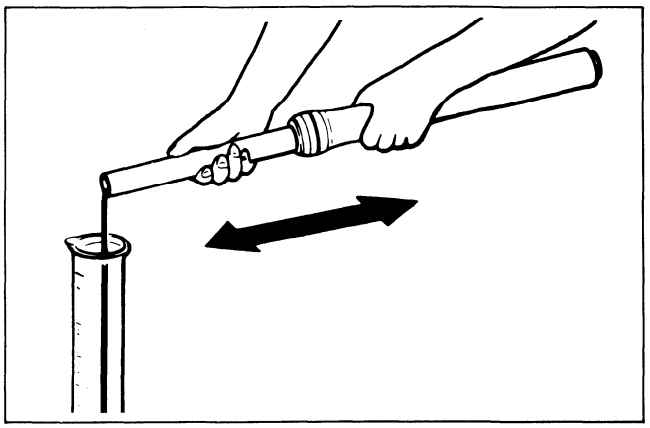
Tightening torque

Item	N·m	kg-m	lb-ft
①	20 – 30	2.0 – 3.0	14.5 – 21.5
Ⓐ	15 – 25	1.5 – 2.5	11.0 – 18.0
Ⓑ	15 – 25	1.5 – 2.5	11.0 – 18.0

- Draw out the fork spring.

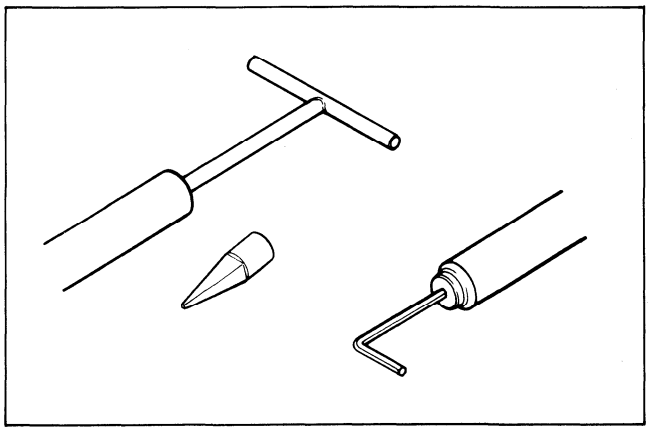


- Invert the fork and stroke it several times to let out the fork oil.
- Under the condition (inverted condition), hold the fork for a few minutes.

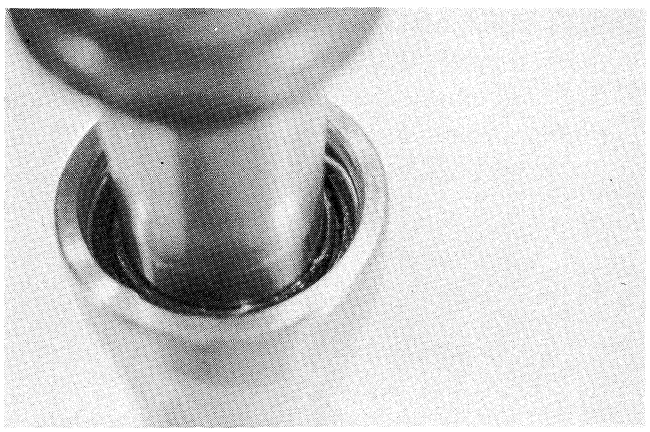


- Remove damper rod securing bolt by using the special tools.
- Draw out damper rod and rebound spring.

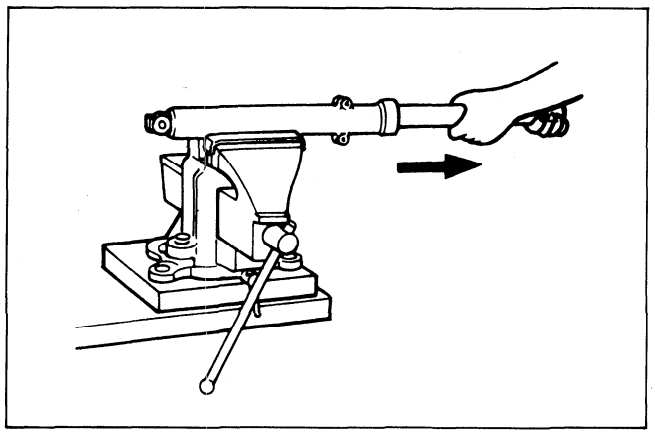
09940-34520	"T" handle
09940-34561	Attachment "D"
09900-00401	"L" type hexagon wrench set (Not available in USA)



- Draw out dust seal.
- Remove stopper ring.

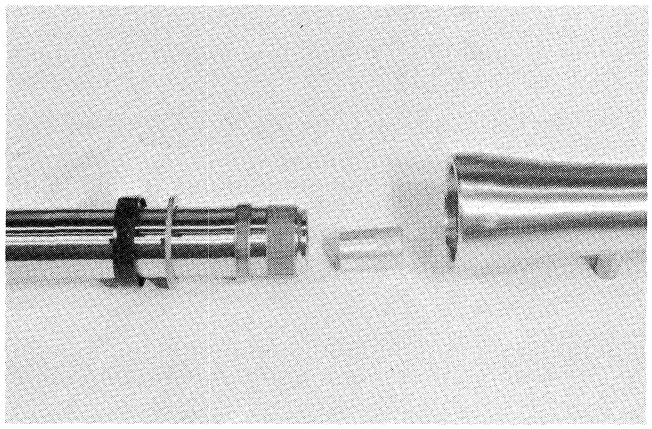


- While holding the caliper mounting or axle holder portion of the outer tube by vise, separate the inner tube from the outer tube as shown.



NOTE:
When separating the inner tube from the outer tube, both anti-friction metals may be damaged and replace them with new ones.

- Remove inner tube anti-friction metal.

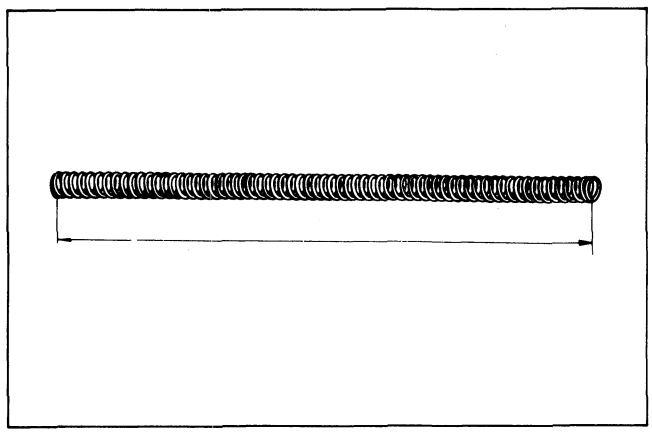


INSPECTION

FORK SPRING

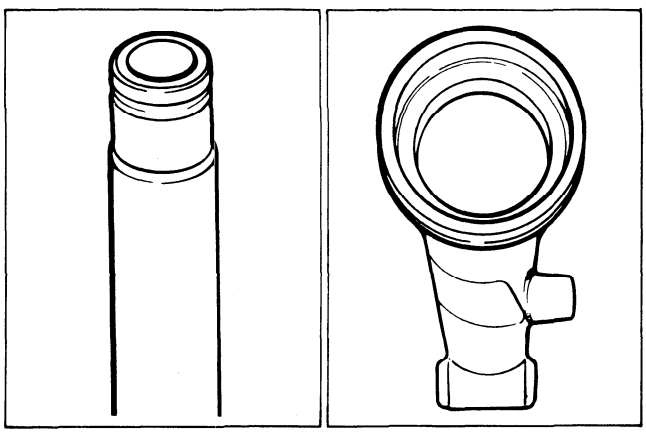
- Measure the fork spring free length. If it is shorter than the service limit, replace it.

Service Limit	563 mm (22.2 in)



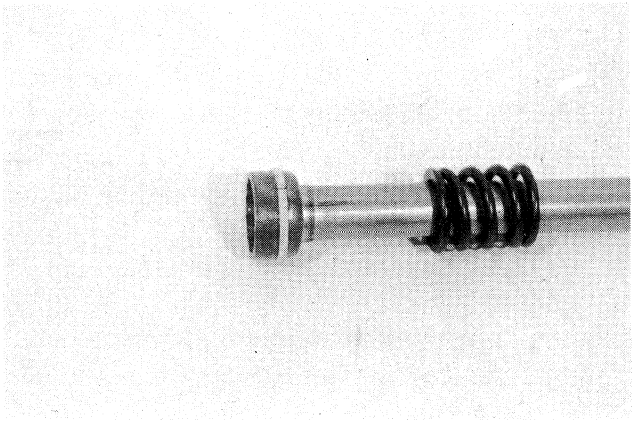
INNER TUBE AND OUTER TUBE

- Inspect inner tube sliding surface for any scuffing and check for bend. Inspect outer tube sliding surface for any scuffing.



DAMPER ROD RING

- Inspect damper rod ring for wear and damage.



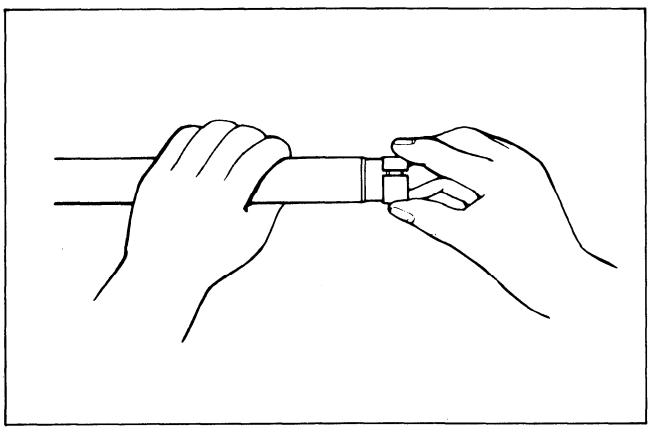
REASSEMBLY

Reassemble and remount the front fork in the reverse order of disassembly and removal and also carry out the following steps:

INNER TUBE METAL

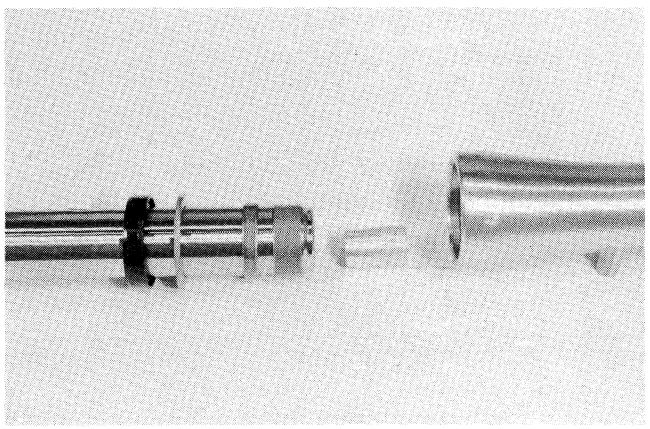
- Hold the inner tube vertically and clean the metal groove.
- Clean the new metal inner surface and install it to the metal groove of the inner tube as shown.

CAUTION:
Use special care to prevent damage to the Teflon coated surface of the Anti-friction metal when mounting it.



OIL LOCK PIECE

- Install the oil lock piece to the damper rod as shown in the Fig.

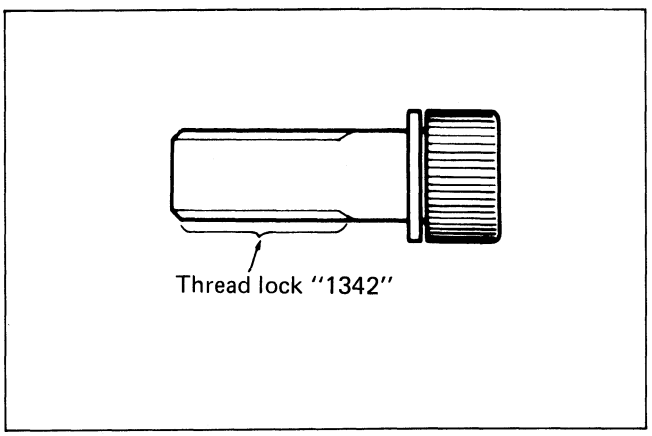


DAMPER ROD BOLT

- Apply Thread lock "1342" to the damper rod bolt.
  Tighten the damper rod bolt to the specified torque.

99000-32040	Thread lock "1342"

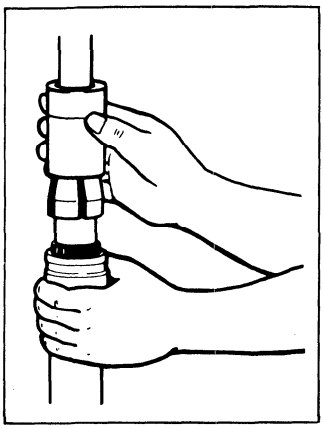
Tightening torque	15 – 25 N·m (1.5 – 2.5 kg-m 11.0 – 18.0 lb-ft)

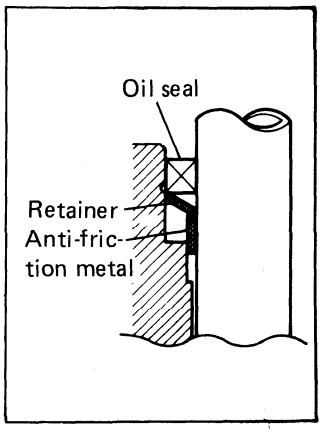


OUTER TUBE METAL, OIL SEAL AND DUST SEAL

Clean the metal groove of outer tube and new metal outer surface.

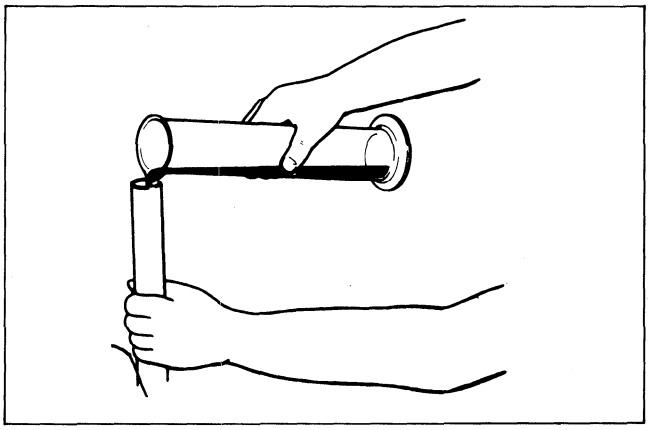
Install the outer tube metal, oil seal retainer, oil seal and dust seal.





CAUTION:
Use special care to prevent damage to the Teflon coated surface of the Anti-friction metal when mounting it.

09940-50112	Front fork oil seal installer

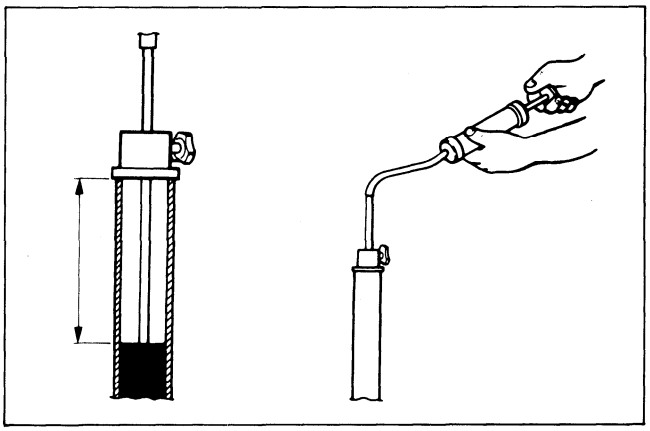


FORK OIL

- For the fork oil, be sure to use a front fork oil whose viscosity rating meets specifications below.

99000-99044-10G	SUZUKI Fork oil # 10 (Not available in USA)
Fork oil capacity	337 ml (11.4 US oz)

- Hold the front fork vertical and adjust the fork oil level with the special tool.

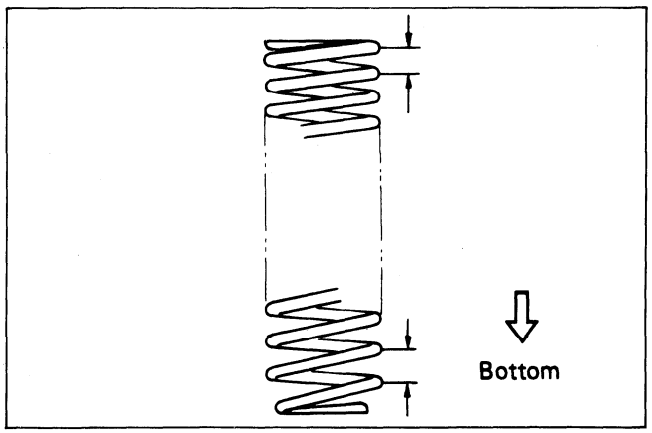


NOTE:
When adjusting oil level, remove the fork spring and compress the inner tube fully.

09943-74111	Fork oil level gauge
STD oil level	144 mm (5.67 in.)

FORK SPRING

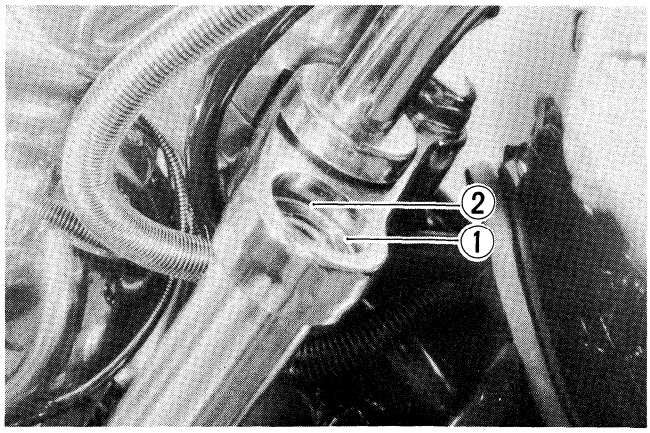
- When reinstalling the fork spring large pitch end should position in bottom.



INNER TUBE

- Install the front fork assembly aligning upper surface ① of the inner tube with the stopper part ② of the steering stem upper bracket.
- Tighten the bolts and nuts to the specified torque.

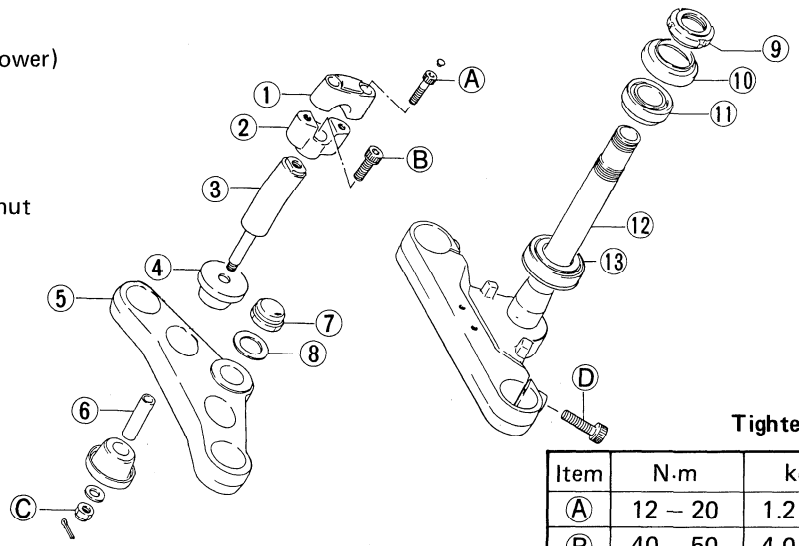
	N·m	kg-m	lb-ft
Front fork lower clamp bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
Front fork cap bolt	25 – 30	2.5 – 3.0	18.0 – 21.5



STEERING STEM

CONSTRUCTION

① Handlebar clamp
② Handlebar clamp (Lower)
③ Handlebar holder
④ Damper
⑤ Steering stem head
⑥ Spacer
⑦ Steering stem head nut
⑧ Washer
⑨ Steering stem nut
⑩ Dust seal
⑪ Steering stem upper bearing
⑫ Steering stem
⑬ Steering stem lower bearing



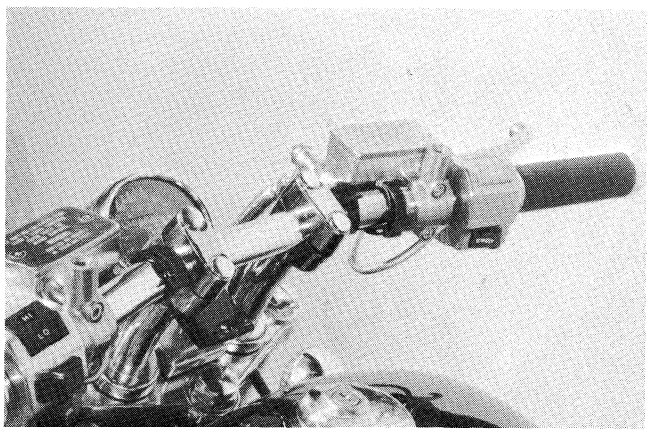
Ⓐ Handlebar clamp bolt
Ⓑ Handlebar holder bolt
Ⓒ Handlebar holder nut
Ⓓ Front fork lower clamp bolt

Tightening torque

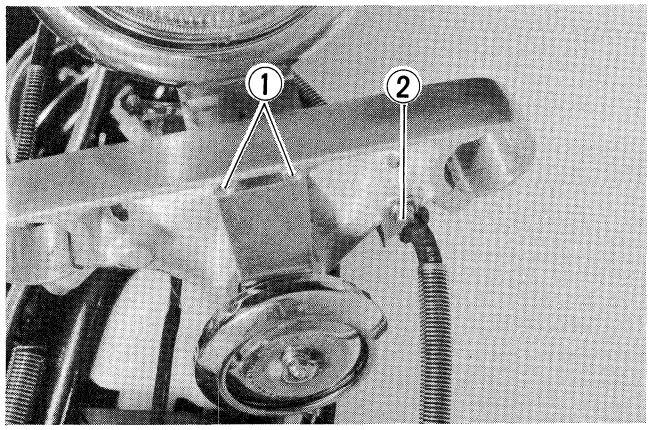
Item	N·m	kg-m	lb-ft
Ⓐ	12 – 20	1.2 – 2.0	8.5 – 14.5
Ⓑ	40 – 50	4.0 – 5.0	29.0 – 36.0
Ⓒ	40 – 50	4.0 – 5.0	29.0 – 36.0
⑦	60 – 100	6.0 – 10.0	43.5 – 72.5
Ⓓ	20 – 30	2.0 – 3.0	14.5 – 21.5

DISASSEMBLY

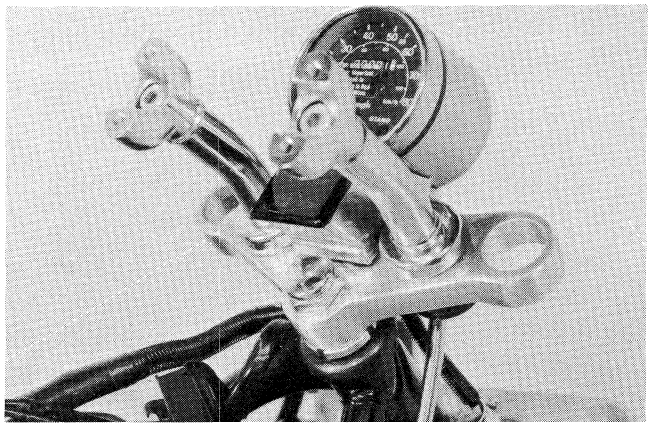
- Remove the front wheel. (See page 9-1)
- Remove the front fork. (See page 9-12)
- Remove the handlebar clamp bolts.



- Disconnect the horn lead wire and headlight lead wire.
- Remove the horn and headlight mounting nuts ①.
- Remove the brake hose clamp bolt ②.



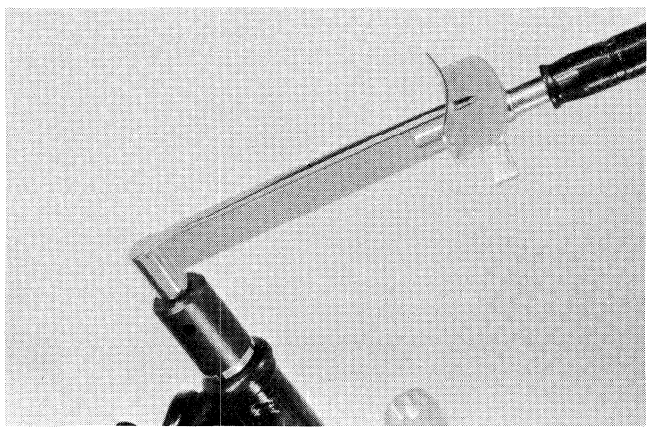
- Disconnect the speedometer and indicator light lead wires.
- Remove the steering stem head nut and dismount the steering stem head.

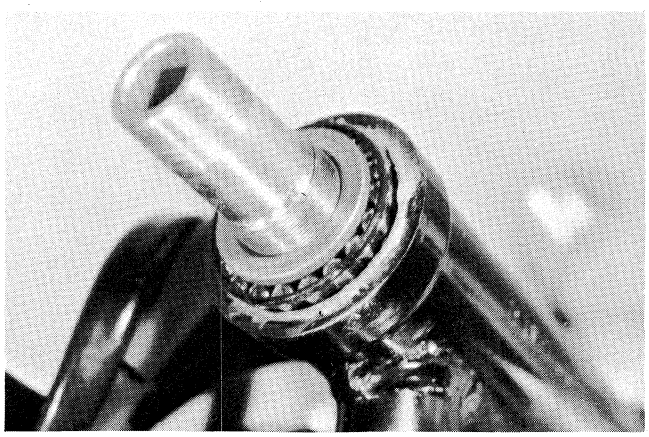


- Remove steering stem nut by using the special tool.
- Remove the upper steering stem bearing.

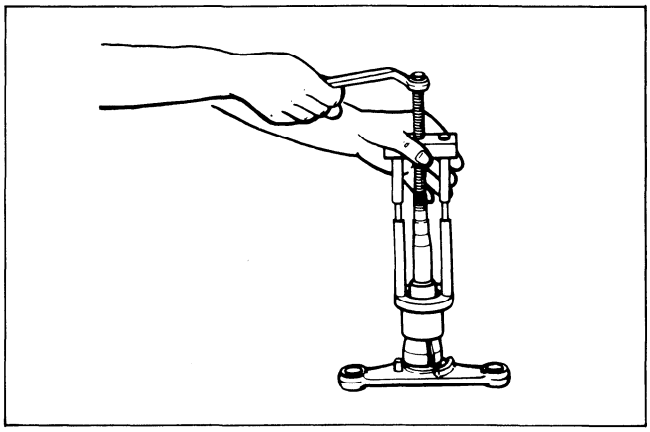
NOTE:
Hold the steering stem lower bracket by hand to prevent dropping.

09940-14911	Steering nut socket wrench





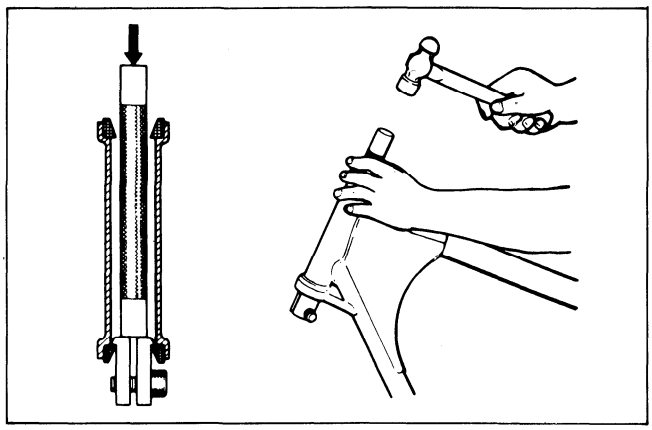
- Draw out lower steering stem bearing by using the special tool.



CAUTION: **The removed bearing should be replaced.**

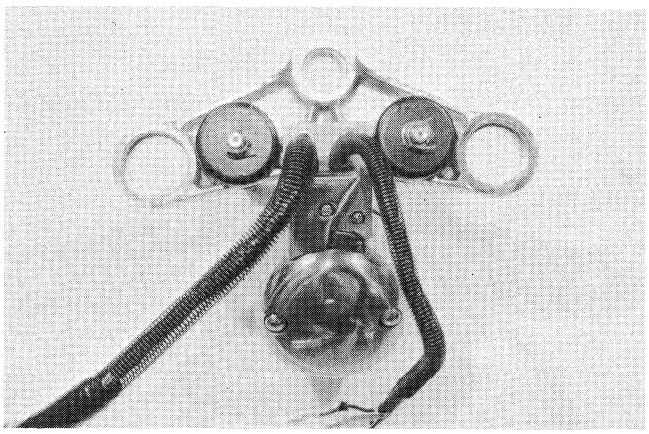
09941-84510	Bearing inner race remover

- Push out steering stem bearing outer races, upper and lower, by using the special tools.

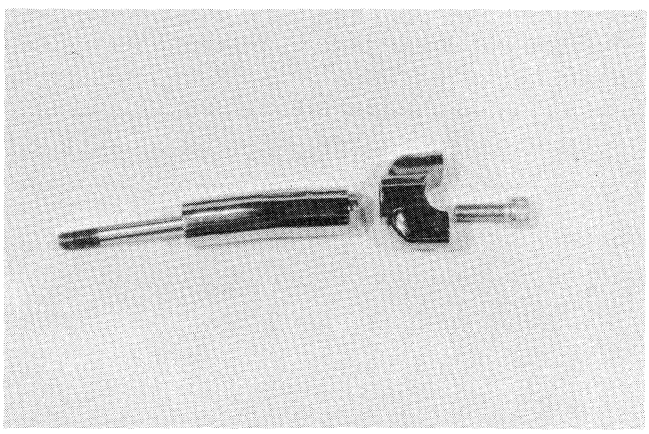


09941-54911	Bearing outer race remover
09941-74910	Steering bearing installer

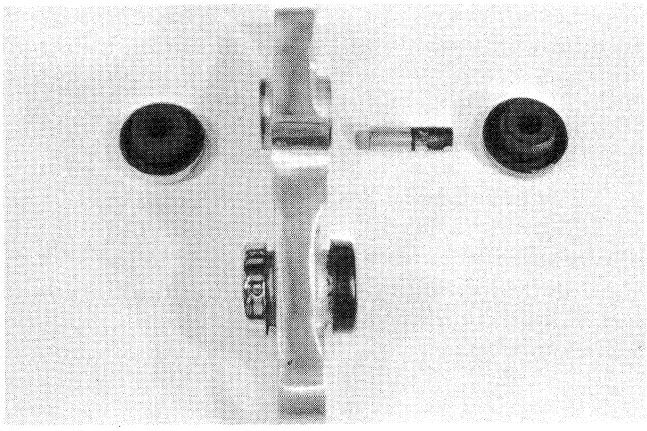
- Remove the speedometer and handlebar holder from the steering stem head.



- Disassemble the handlebar holder.



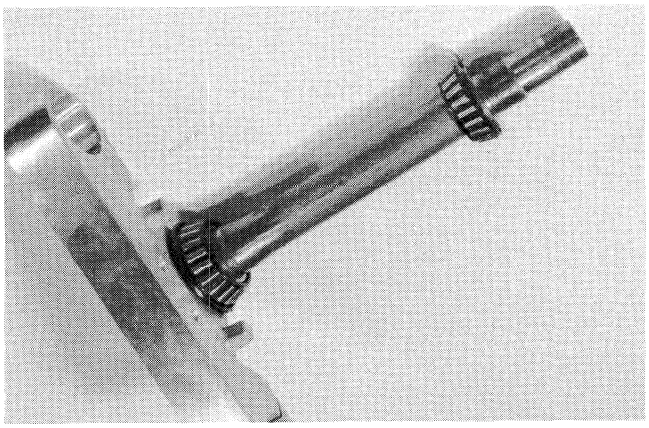
- Remove the pair of handlebar damper rubbers from the steering stem head.



INSPECTION

Inspect and check the removed parts for the following abnormalities.

* Handlebar distortion.
* Handlebar clamp and damper rubber wear.
* Race wear and brinelling.
* Distortion of steering stem.



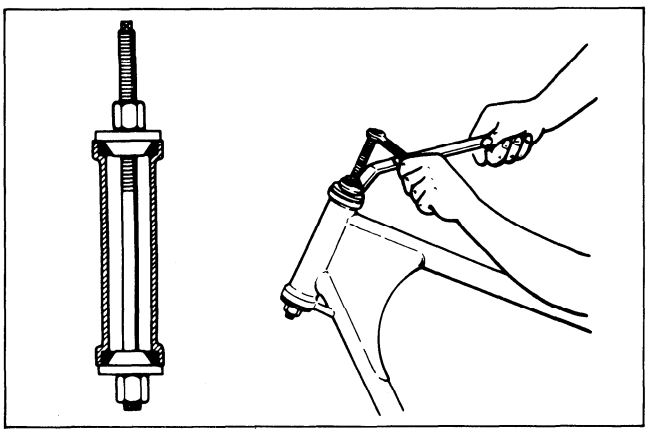
REASSEMBLY

Reassemble and remount the steering stem in the reverse order of disassembly and removal and also carry out the following steps.

OUTER RACES

- Press in the upper and lower outer races by using the special tool.

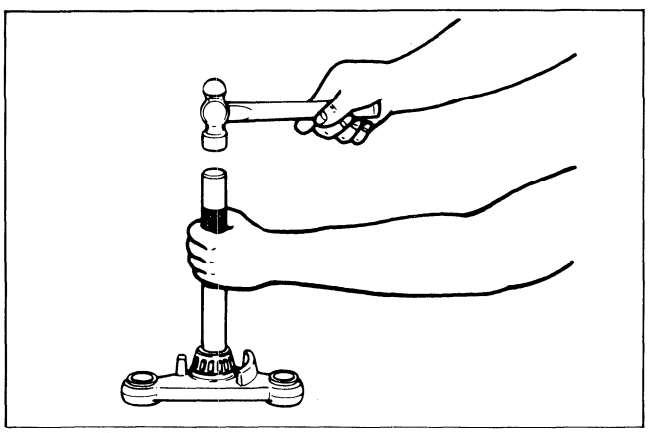
09941-34513	Steering race and swing arm bearing installer



BEARING

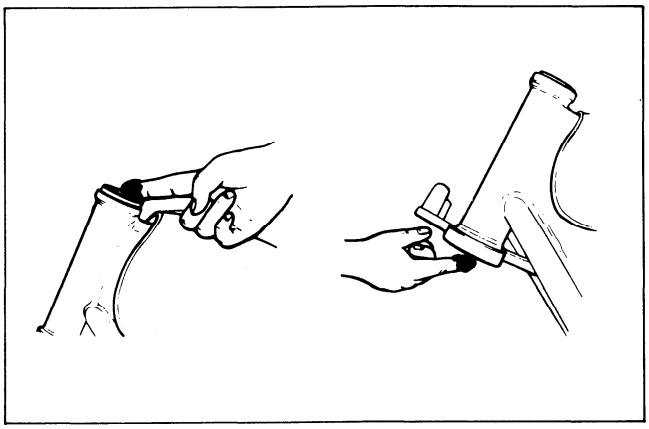
- Press in the lower bearing by using the special tool.

09941-74910	Steering bearing installer



- Apply grease upper and lower bearings before remounting the steering stem.

99000-25030	SUZUKI super grease "A"

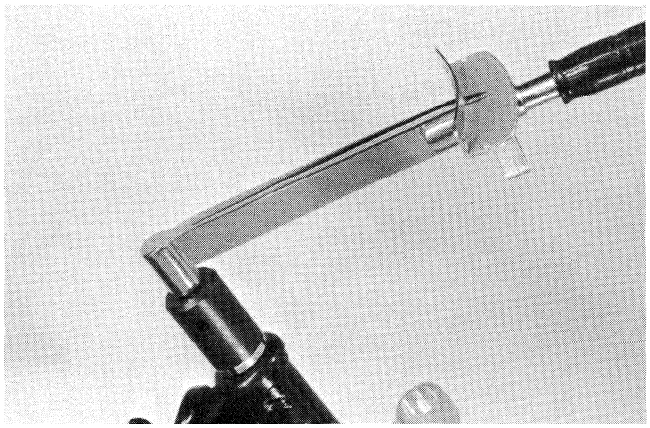


STEM NUT

- Tighten the steering stem nut by using the special tool to the specified torque.
  Turn the front fork right and left 5 or 6 times to seat the bearings.
  Turn out the steering stem nut 1/4 turn.
  Then retighten very lightly so that no play can be detected in the stem.

09940-14911	Stem nut socket wrench

Tightening torque	40 – 50 N·m (4.0 – 5.0 kg-m 29.0 – 36.0 lb-ft)

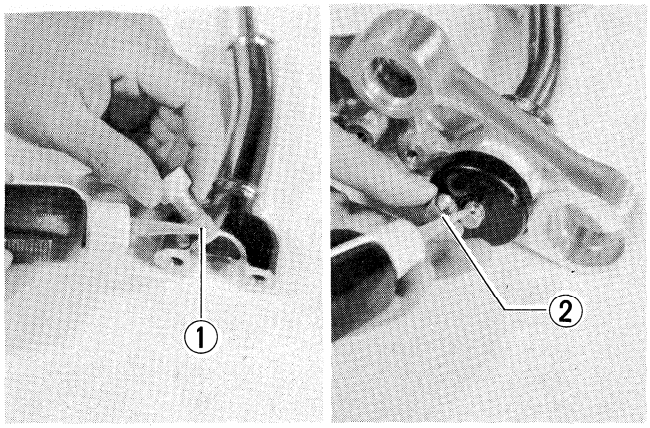


HANDLEBAR HOLDER

- Apply thread lock "1342" to the handlebar holder bolt ① and tighten it to the specification.
- Re-mount the handlebar holder on the steering stem head. Apply thread lock "1342" to the nut ②.

Tightening torque

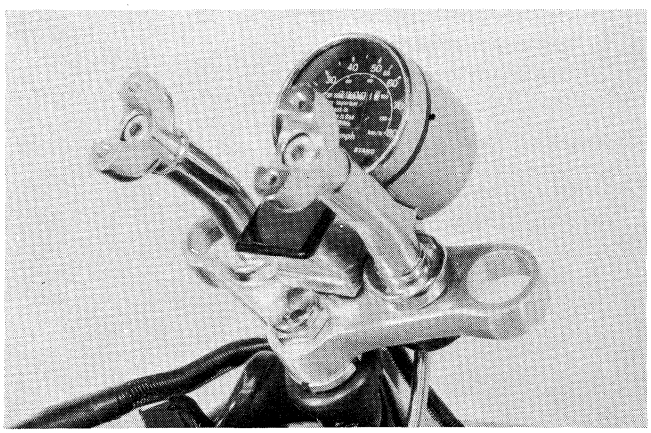
	N·m	kg-m	lb-ft
①	40 – 50	4.0 – 5.0	29.0 – 36.0
②	40 – 50	4.0 – 5.0	29.0 – 36.0



- Remount the front fork upper bracket.
- Tighten the steering stem head nut.

Tightening torque

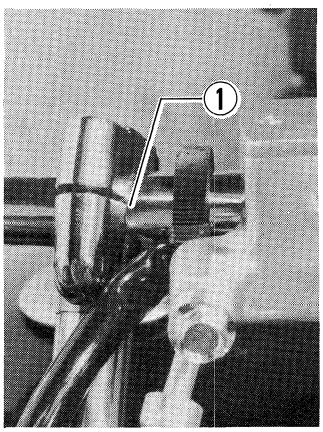
	N·m	kg-m	lb-ft
Steering stem head nut	60 – 100	6.0 – 10.0	43.5 – 72.5

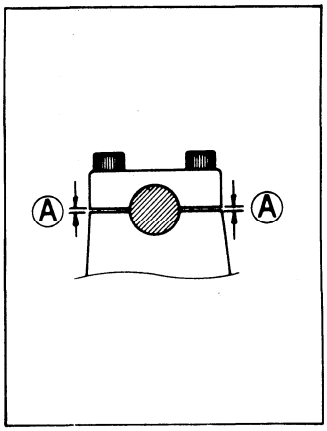


HANDLEBARS

- Set the handlebars to match its punched mark ① to the mating face of the holder.
- Secure the handlebars clamp in such a way that the clearance Ⓐ ahead of and behind the handlebars are equalized.

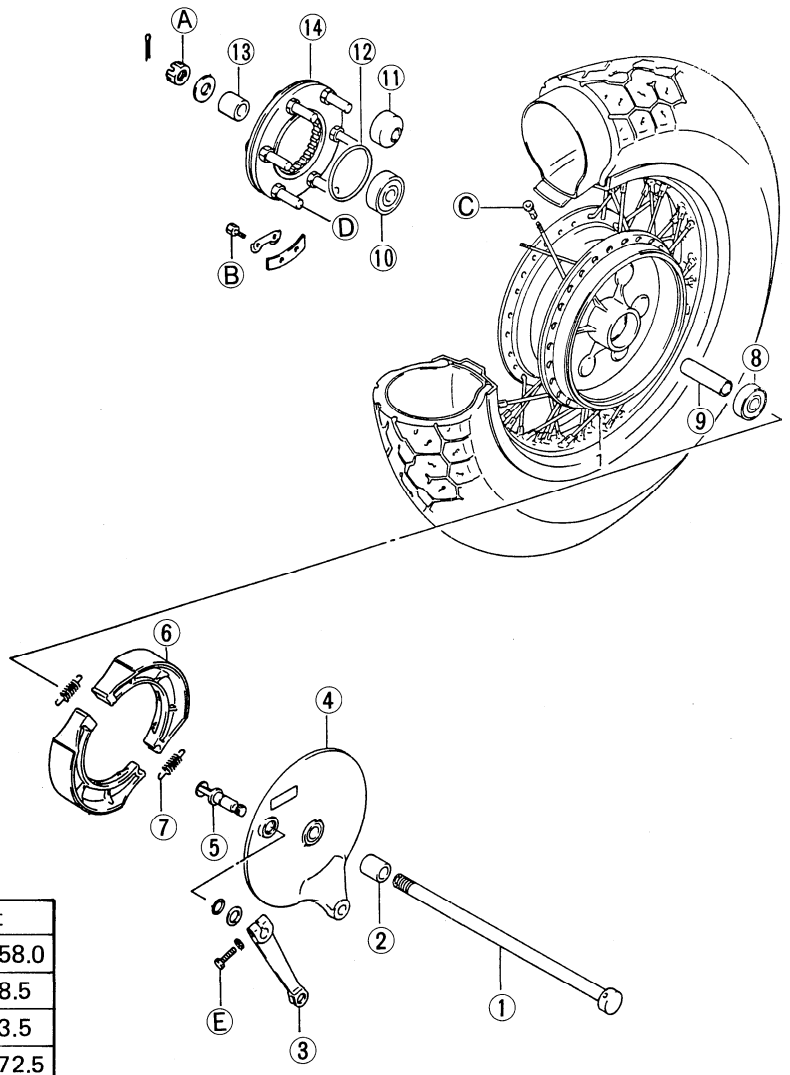
Tightening torque	12 – 20 N·m (1.2 – 2.0 kg-m / 8.5 – 14.5 lb-ft)





REAR WHEEL AND BRAKE

CONSTRUCTION



① Rear axle
② Spacer (RH)
③ Brake cam lever
④ Hub panel
⑤ Brake cam
⑥ Brake shoe
⑦ Return spring
⑧ Bearing (RH)
⑨ Spacer
⑩ Bearing (LH)
⑪ Cushion
⑫ O-ring
⑬ Spacer (LH)
⑭ Driven joint
Ⓐ Axle nut
Ⓑ Driven joint stopper bolt
Ⓒ Spoke nipple
Ⓓ Hub shock absorber bolt
Ⓔ Brake cam lever bolt

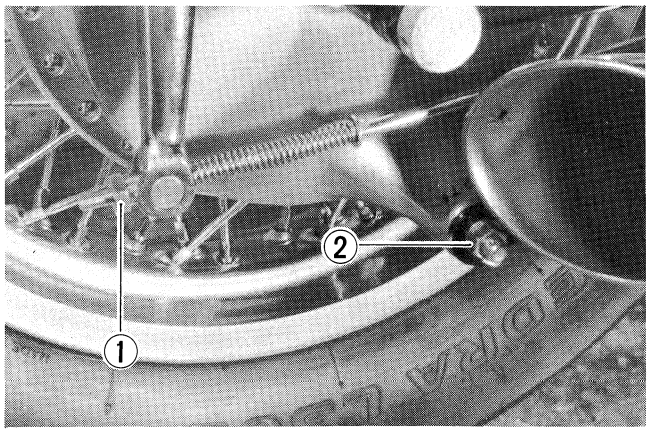
Tightening torque

Item	N·m	kg-m	lb-ft
Ⓐ	50 – 80	5.0 – 8.0	36.0 – 58.0
Ⓑ	8 – 12	0.8 – 1.2	6.0 – 8.5
Ⓒ	4 – 5	0.4 – 0.5	3.0 – 3.5
Ⓓ	90 – 100	9.0 – 10.0	65.0 – 72.5
Ⓔ	5 – 8	0.5 – 0.8	3.5 – 6.0

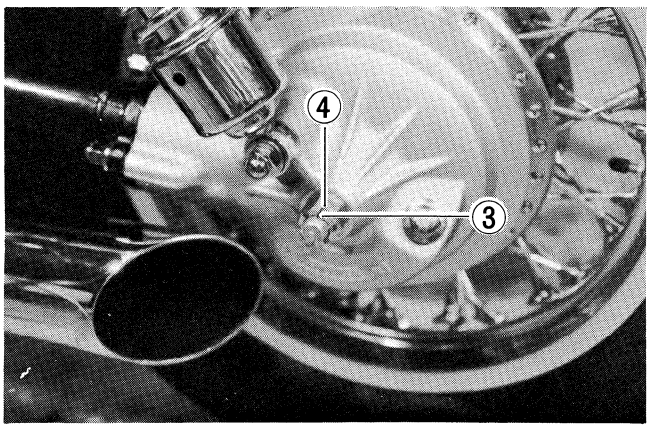
REMOVAL

- Support the machine by using jack and wooden block.
- Remove the rear brake adjuster nut ① and rear torque link nut ②.

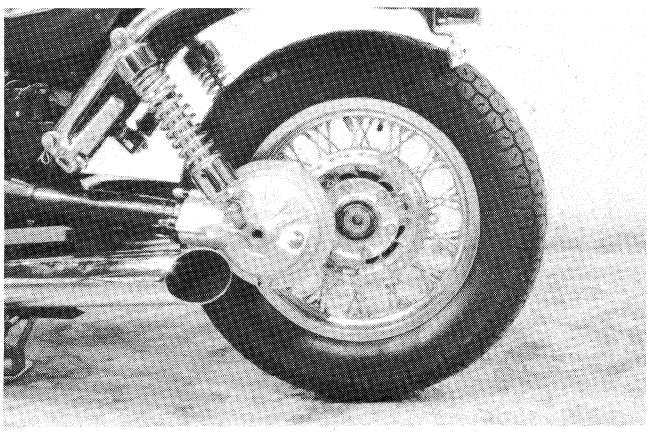
Tightening torque	20 – 30 N·m (2.0 – 3.0 kg-m 14.5 – 21.5 lb-ft)



- Remove the cotter pin ③ and rear axle nut ④ by holding the axle with a rod.

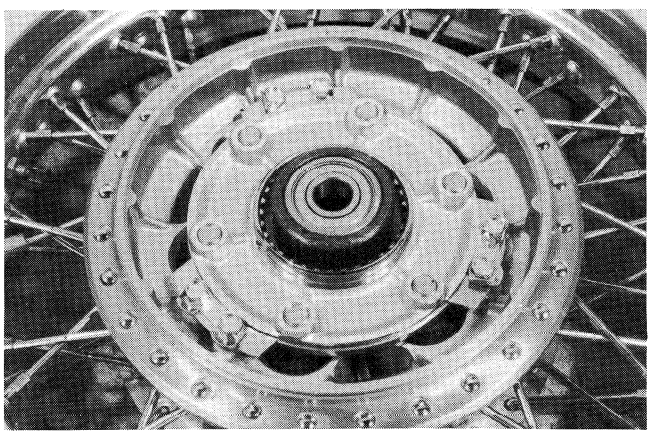


- Draw out the rear axle and remove the rear wheel.

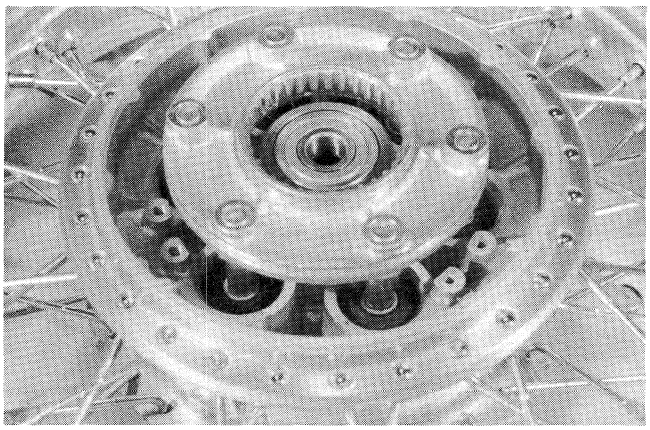


DISASSEMBLY

- Flatten the lock washers and remove the fitting bolts.

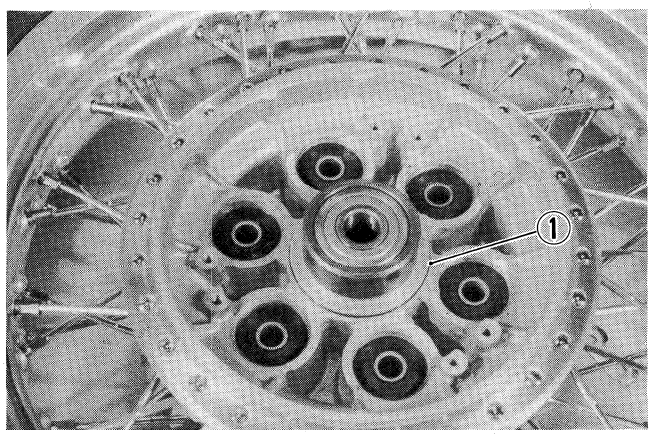


- Pull off the driven joint.



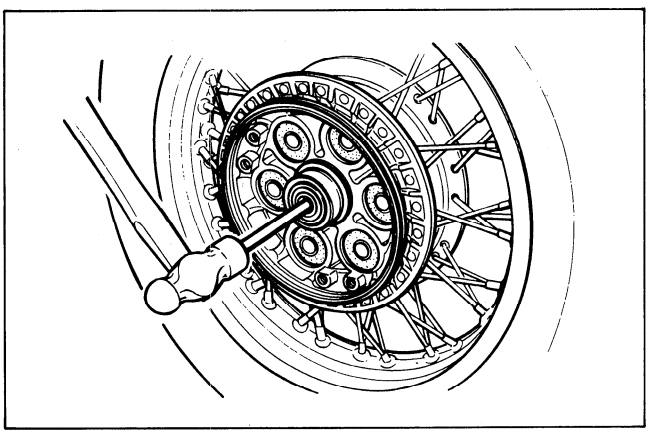
- Remove the O-ring ①.
- Take off the dampers by using the special tools.

09921-20210	Bearing remover
09930-30102	Sliding shaft

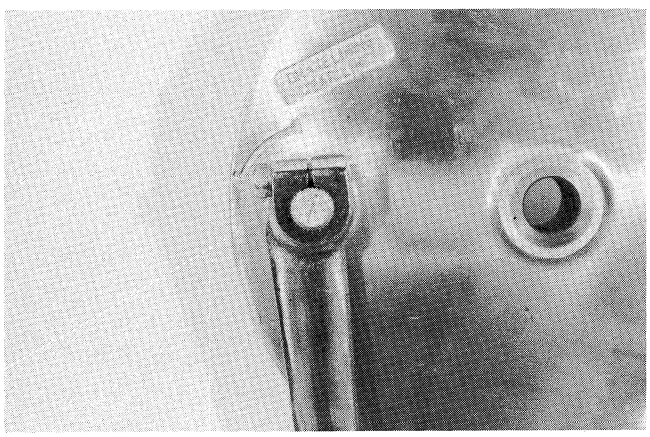


- Remove the wheel bearings with same manner as that of front bearing (Refer to page 9-2).

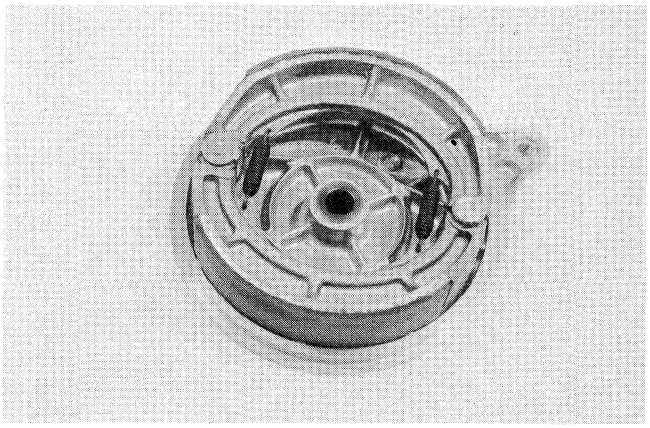
CAUTION:
The removed bearing should be replaced.



- Remove the rear brake cam lever.



- Remove the brake shoe.

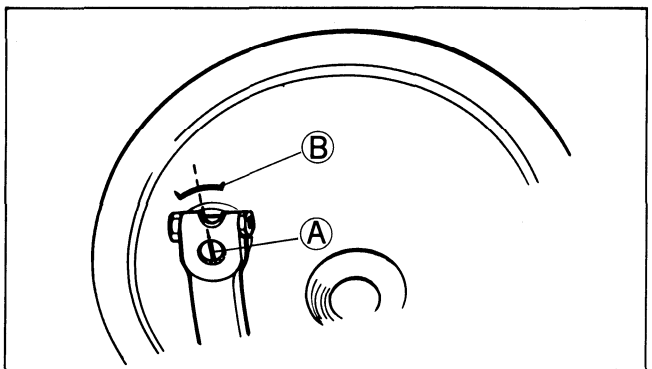


INSPECTION

WHEEL BEARING ..... Refer to page 9-2
AXLE SHAFT ..... Refer to page 9-3
WHEEL ..... Refer to page 9-3
SPOKE NIPPLE ..... Refer to page 9-3
WHEEL RIM ..... Refer to page 9-3
TIRE TREAD DEPTH ..... Refer to page 9-3

BRAKE SHOE

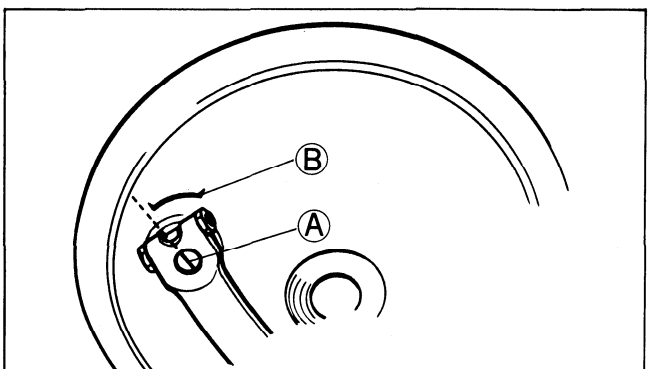
Brake panel incorporate a brake lining wear limit range. If the lining condition is normal, the brake shoe wear indicator Ⓐ, when extended, will fall within the range Ⓑ embossed on the brake panel (when brake is on).



The extension line of the index mark is within the range.

- First check that the brake system is properly adjusted.
- Then check the indicator extension line; the brake should be on at this time.

If the extended line falls outside the indicated range, replace the brake shoe assembly.

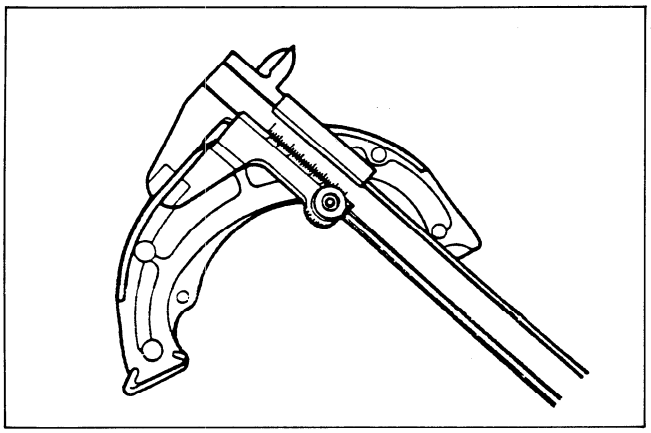


The extension line of the index mark is beyond the range.

CAUTION:
Replace the brake shoe as a set, otherwise braking performance will be adversely affected.

- Check the brake shoe and decide whether it should be replaced or not from the thickness of the brake shoe lining.

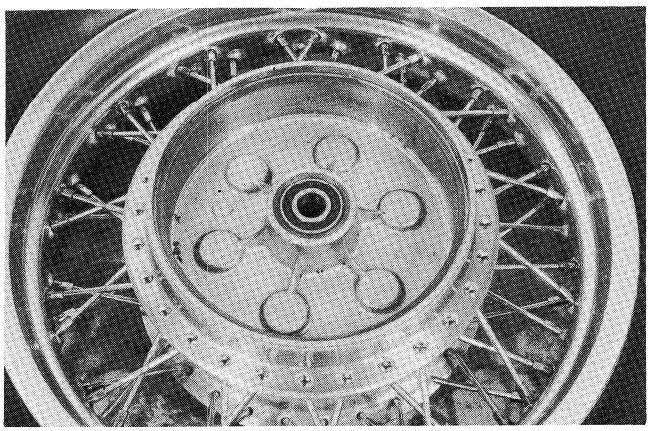
Service Limit	1.5 mm (0.06 in.)



BRAKE DRUM

Measure the brake drum I.D. to determine the extent of wear and, if the limit is exceeded by the wear noted, replace the drum. The value of this limit is indicated inside the drum.

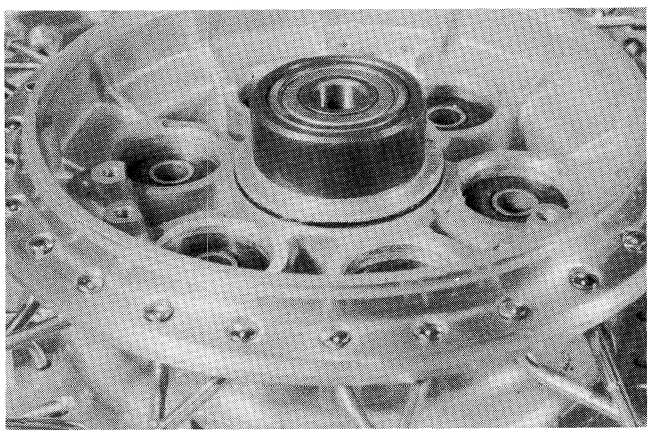
Service Limit	180.7 mm (7.11 in.)



Inspect the drum I.D. for scratch marks. If the I.D. surface is scratched or otherwise roughened, smoothen it with sandpaper.

WHEEL DAMPER

Inspect the wheel dampers and driven joint O-ring for damage or wear.



REASSEMBLY

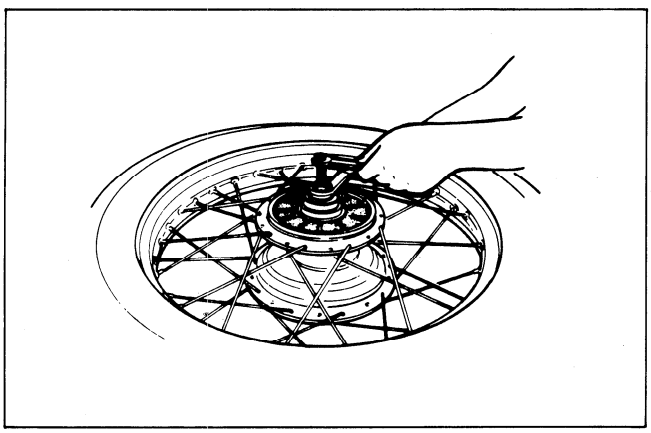
Reassemble and remount the rear wheel in the reverse order of disassembly and removal, and also carry out the following steps:

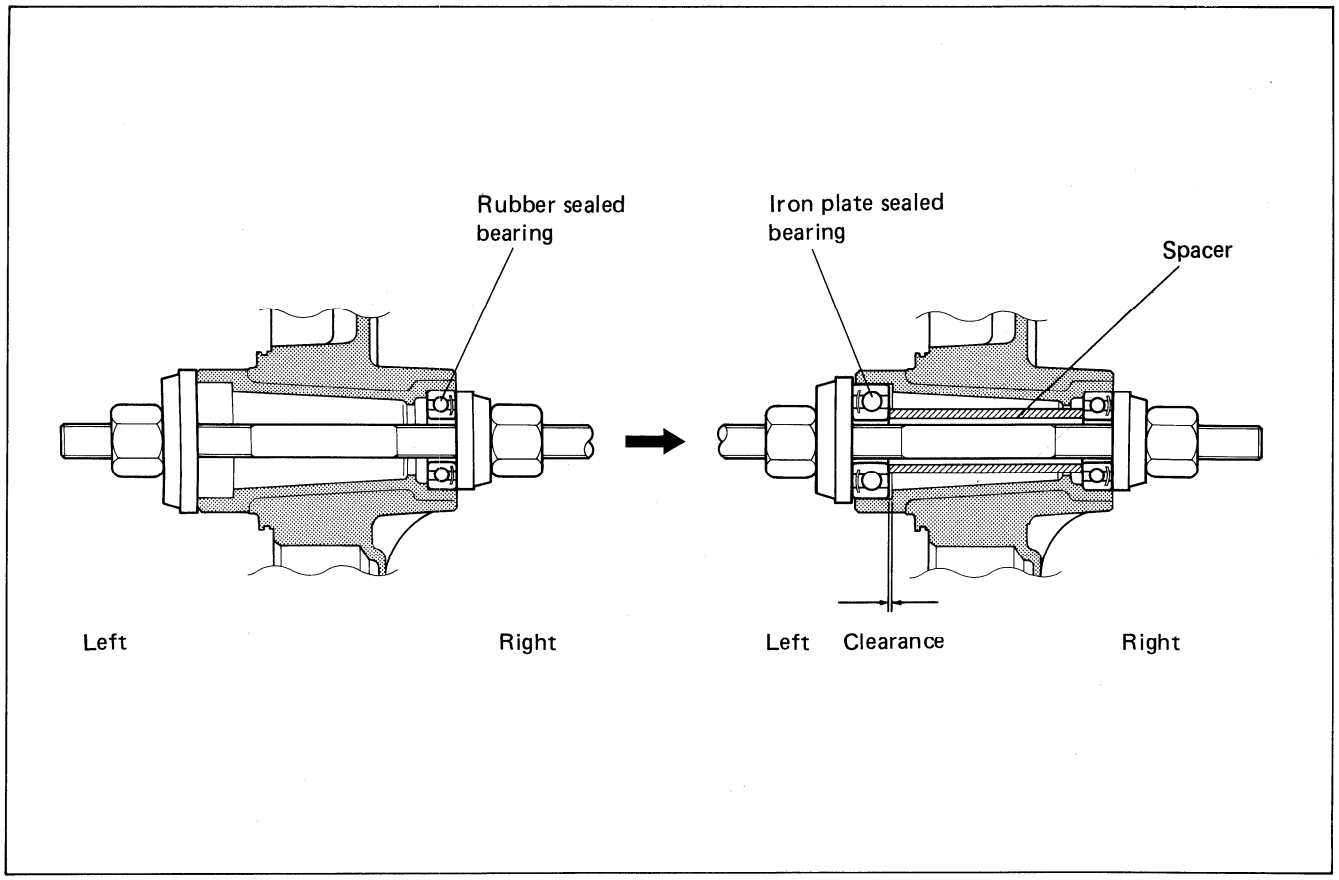
WHEEL BEARINGS

- Install the wheel bearing by using the special tool as shown.

CAUTION:
First install the wheel bearing for right side.

09924-84510	Bearing installer set





- Install the dampers.

NOTE:
If soap water is applied around the damper, it makes the job easier.

- Apply grease to the O-ring before installing the driven joint.
- Apply grease to the final gear spline before installing the rear wheel.

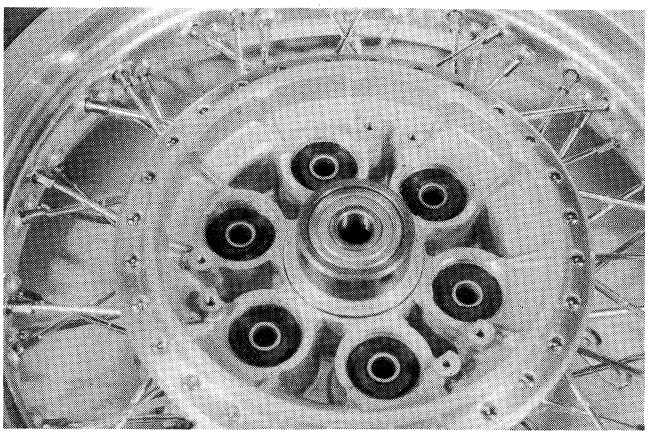
99000-25030	SUZUKI Super grease "A"

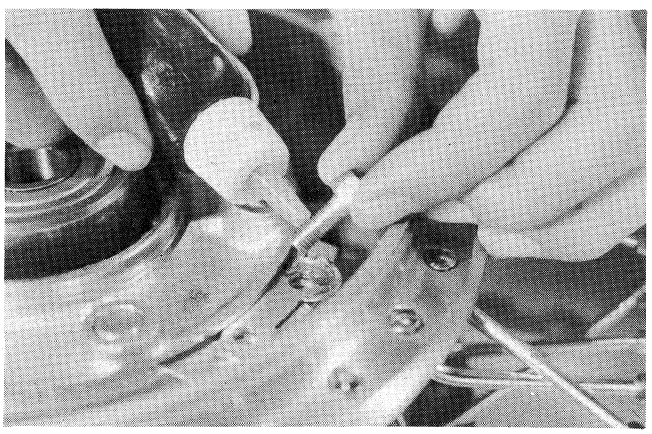
- Tighten the driven joint stopper bolts.

Tightening torque	8 – 12 N·m (0.8 – 1.2 kg-m / 6.0 – 8.5 lb-ft)

- Apply thread lock "1303" to the thread of driven joint stopper bolts.

99000-32030	Thread lock "1303"





- Apply grease to the brake camshaft, camshaft surface, final drive and driven gear joint parts.

WARNING:
Be careful not to apply too much grease to the brake cam shaft.

- Install the brake cam lever and tighten the bolt to the specification.

Tightening torque	5 – 8 N·m (0.5 – 0.8 kg-m / 3.5 – 6.0 lb-ft)

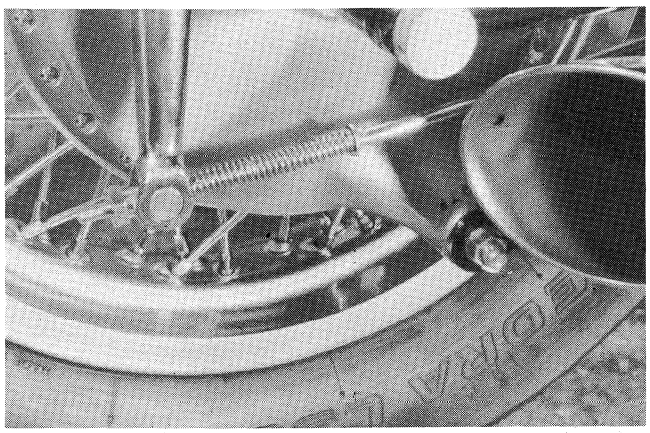
- When tightening the rear axle nut, hold the axle shaft with a suitable rod.

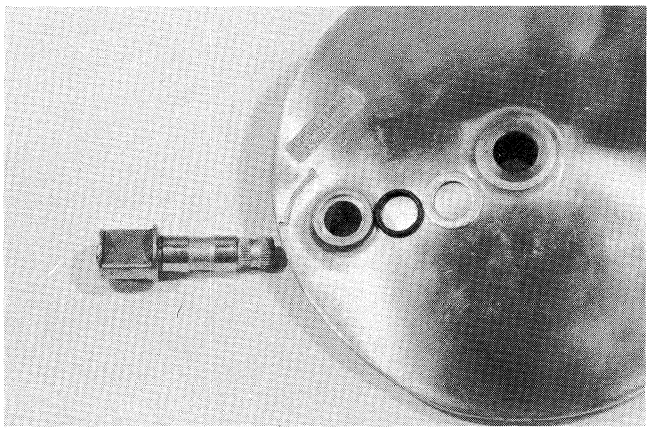
Tightening torque	60 – 96 N·m (6.0 – 9.6 kg-m / 43.5 – 69.5 lb-ft)

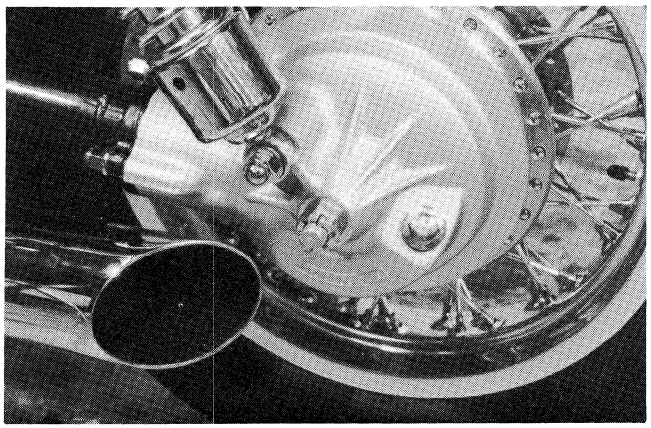
NOTE:
Always install a new cotter pin.

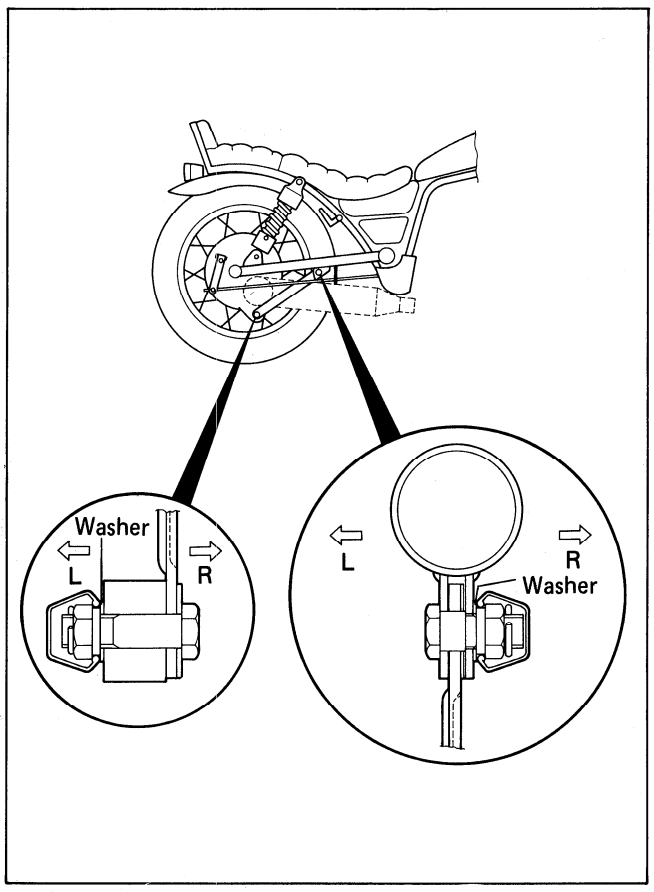
- Install the rear torque link nut to the hub panel and install a new cotter pin.

Tightening torque	20 – 30 N·m (2.0 – 3.0 kg-m / 14.5 – 21.5 lb-ft)





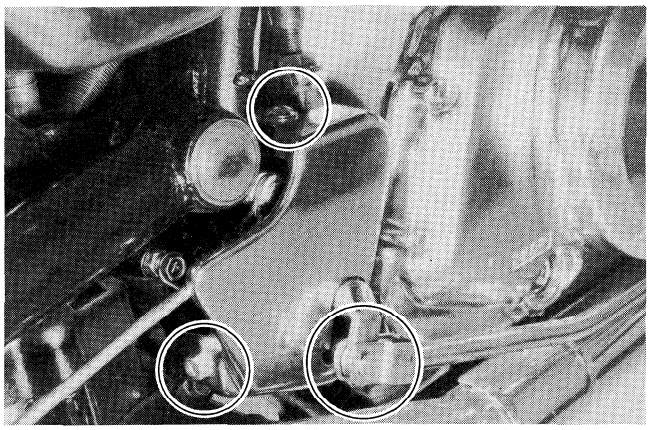




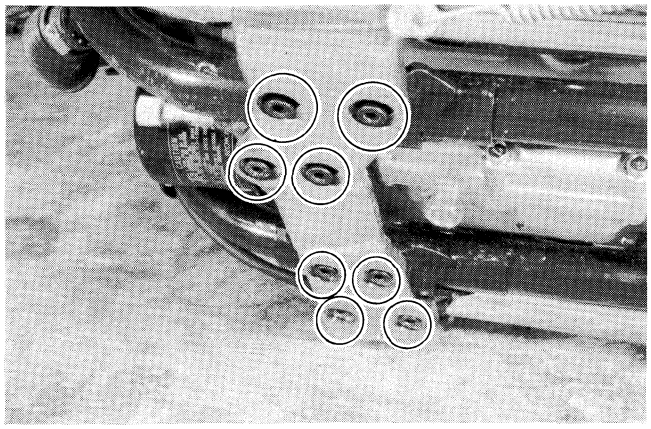
BRAKE ROD LINK

REMOVAL AND DISASSEMBLY

- Remove the brake rod link pin by pulling out the cotter pin.
- Remove the brake gear cover.

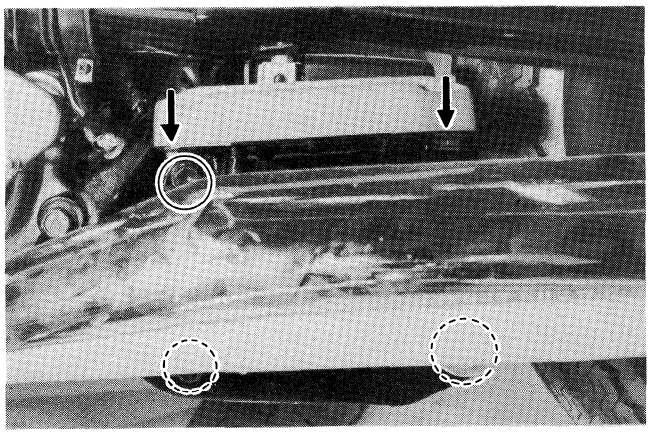


- Remove the front footrest.

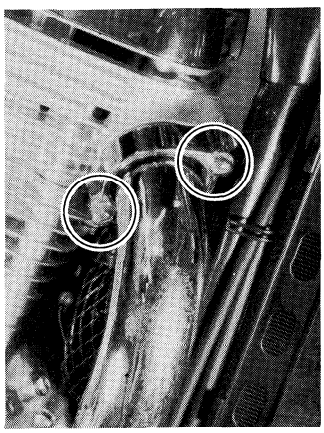


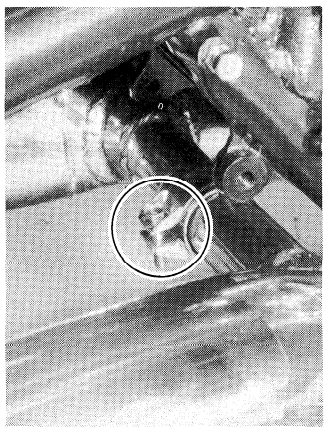
- Remove the battery. (Refer to page 2-3)
- Remove the regulator/rectifier.
- Remove the battery case mounting bolts.

NOTE:
Remove the battery case after removing the front muffler.

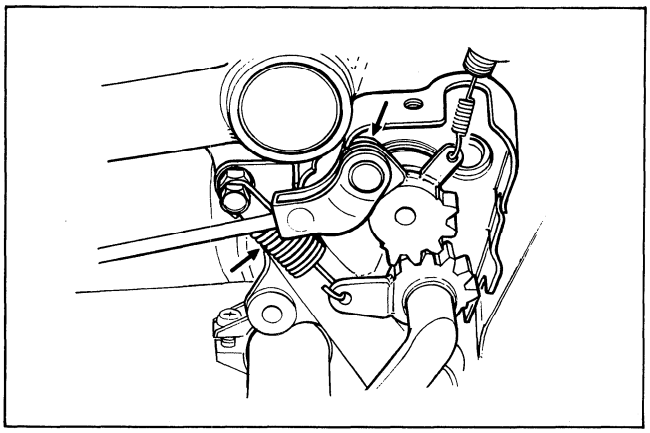


- Remove the front muffler.

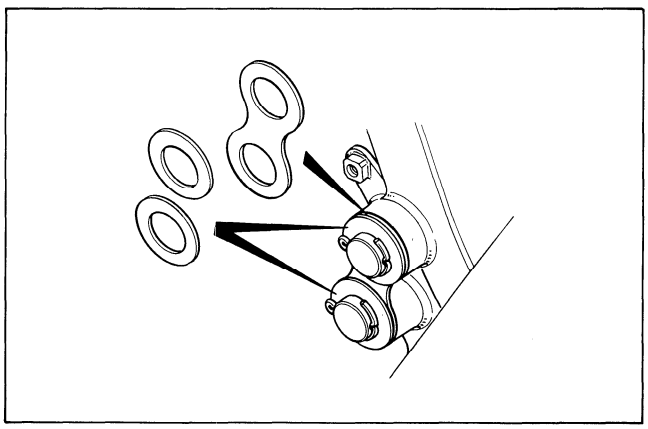




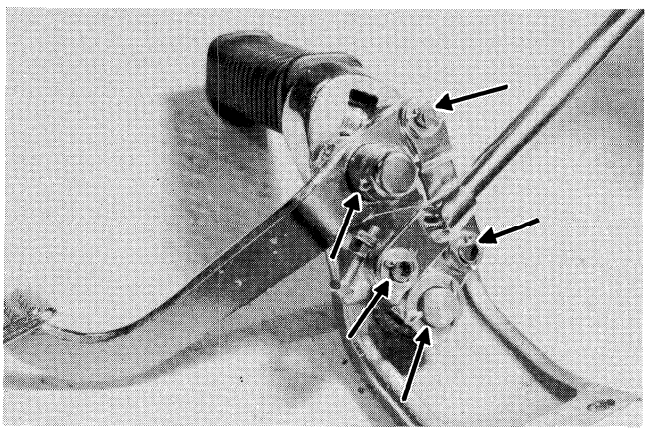
- Remove the spring.
- Remove the brake rod link pin by pulling out the cotter pin.



- Remove the brake gears, washers and oil seals by pulling out the cotter pins.



- Remove the brake pedal, rod link and lever by pulling out the cotter pins.



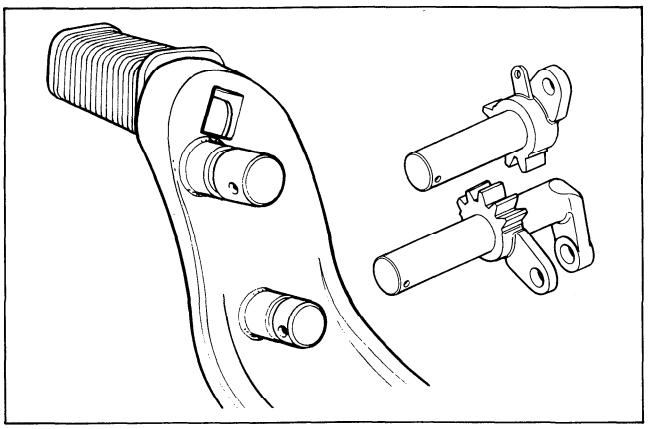
INSPECTION

Inspect the pins, shaft and rubber parts for nicks, scratches or other damage. If there are any, replace the part with a new one.

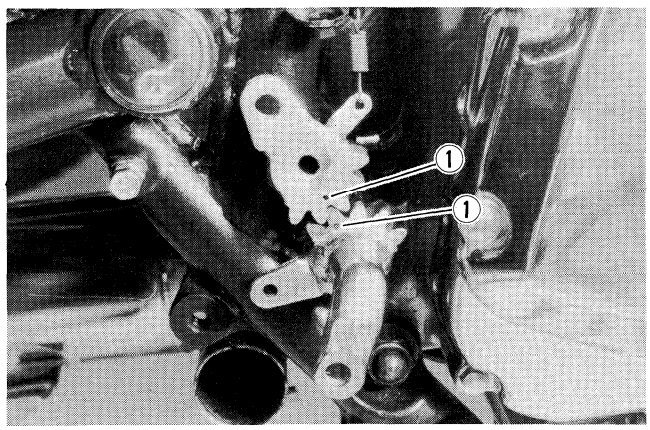
REMOUNTING AND REASSEMBLY

Remount and reassemble the brake rod link in the reverse order of removal and disassembly, and also carry out the following steps. Apply SUZUKI moly paste to the shafts.

99000-25140	SUZUKI Moly paste

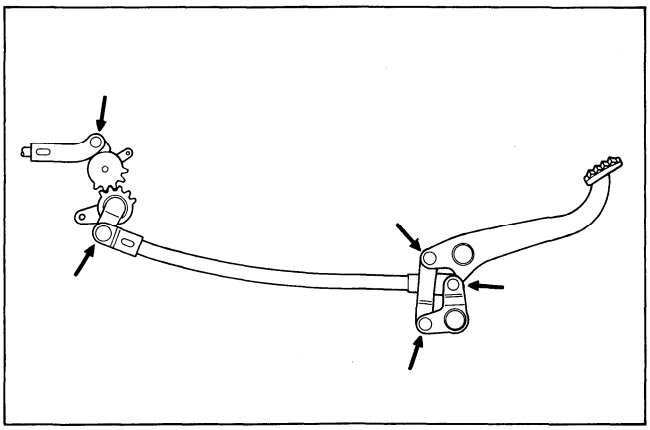


Wipe out the brake gear faces. When installing the brake gears, align the each dot mark ① on the both gears.



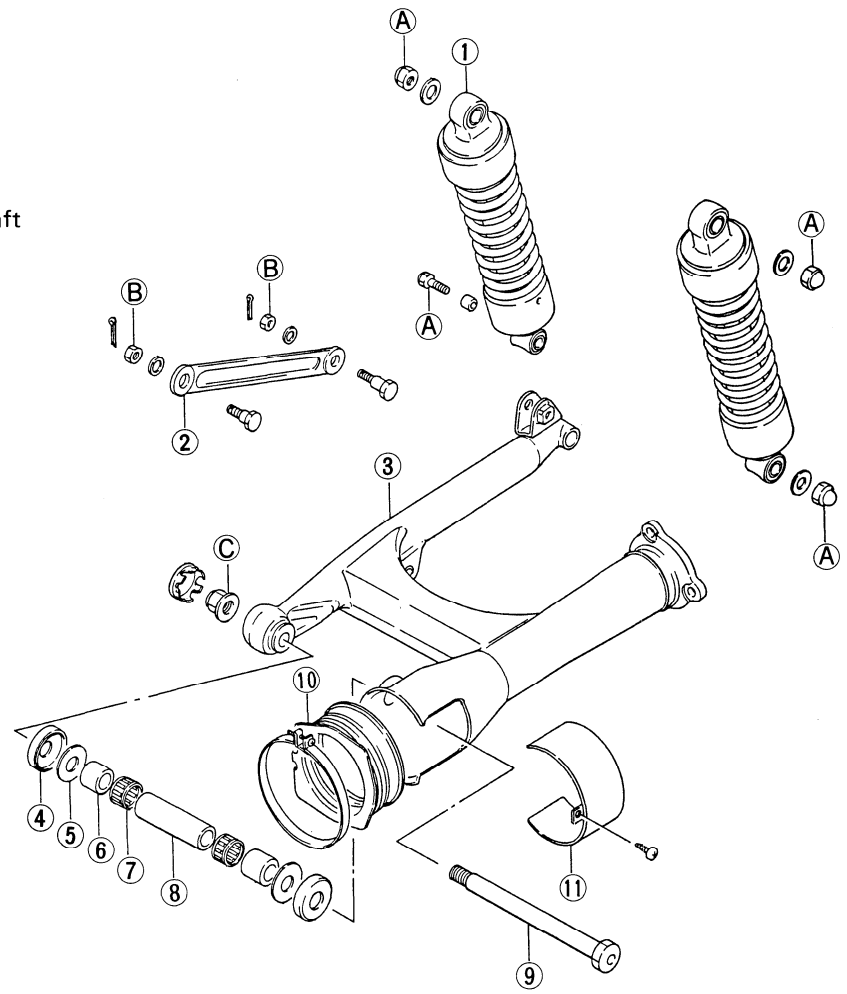
NOTE:
Always install a new cotter pin.

After installing the brake rod links, adjust the brake and apply oil to the rod link pins.
Make sure that the brake system operates positively.



REAR SUSPENSION AND SWINGARM

① Rear shock absorber
② Rear torque link
③ Rear swingarm
④ Dust cover
⑤ Washer
⑥ Spacer
⑦ Needle bearing
⑧ Center spacer
⑨ Swingarm pivot shaft
⑩ Dust boot
⑪ Swingarm cover



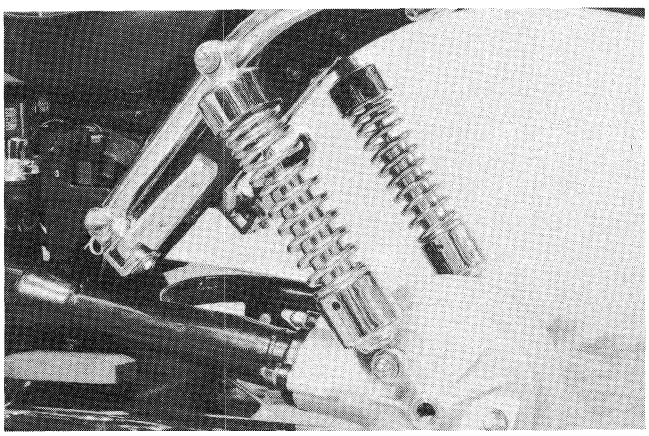
Tightening torque

Item	N·m	kg-m	lb-ft
Ⓐ	20 – 30	2.0 – 3.0	14.5 – 21.5
Ⓑ	20 – 30	2.0 – 3.0	14.5 – 21.5
Ⓒ	50 – 80	5.0 – 8.0	36.0 – 58.0

REMOVAL

- Remove the rear wheel (See page 9-24).
- Remove the right and left rear shock absorbers.

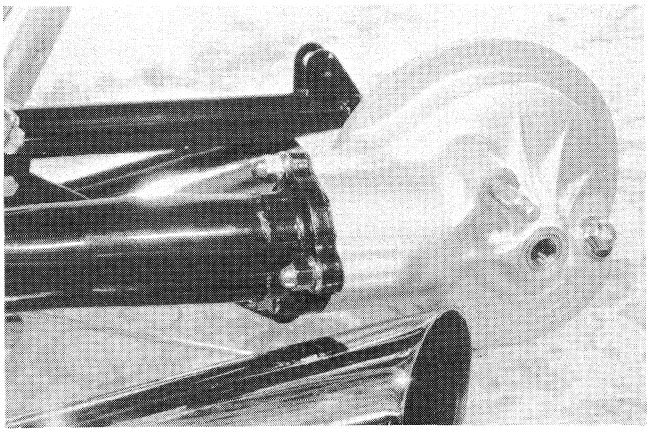
Tightening torque	20 – 30 N·m (2.0 – 3.0 kg-m / 14.0 – 21.5 lb-ft)



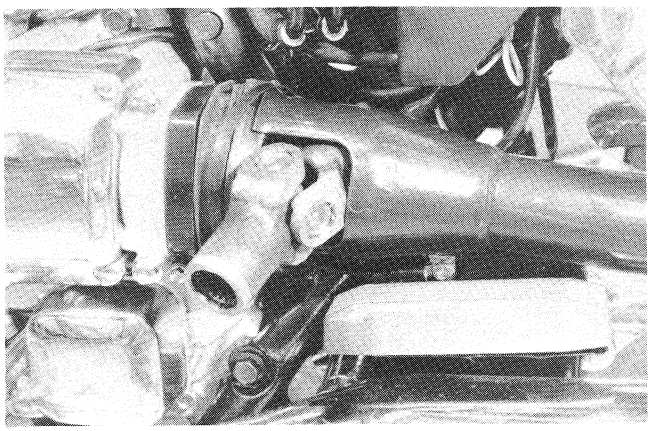
- Remove the final gear case with propeller shaft.

NOTE:
When reinstalling the final gear case apply bond No. "1207B" to the mating surface between rear swingarm and final gear case.

Tightening torque	35 – 45 N·m (3.5 – 4.5 kg-m 25.5 – 32.5 lb-ft)

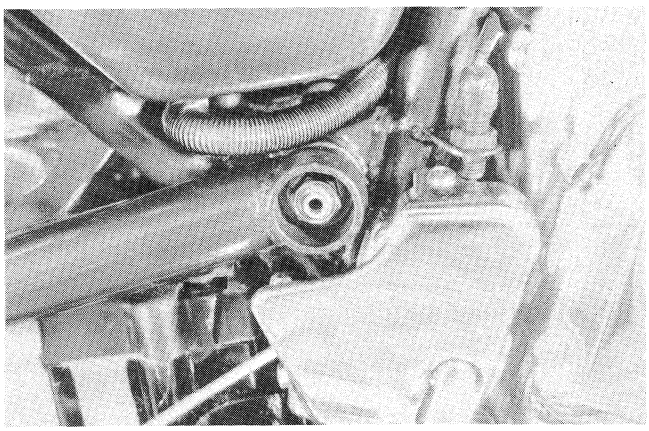


- Loosen the clamp screw and slide the boot forward. Remove the cover and take out the universal joint from the swingarm.

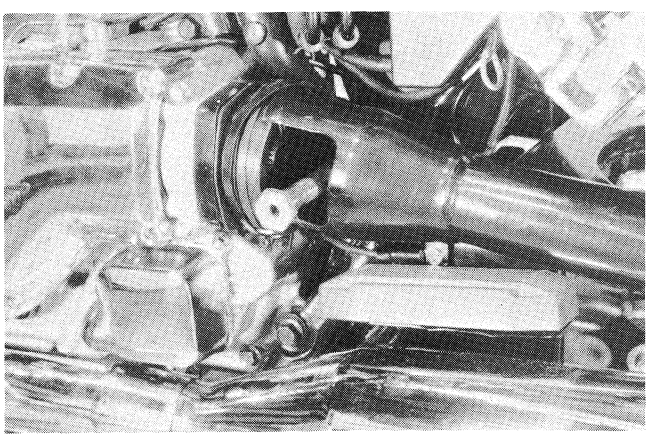


- Remove the cover and loosen the swingarm pivot shaft nut.

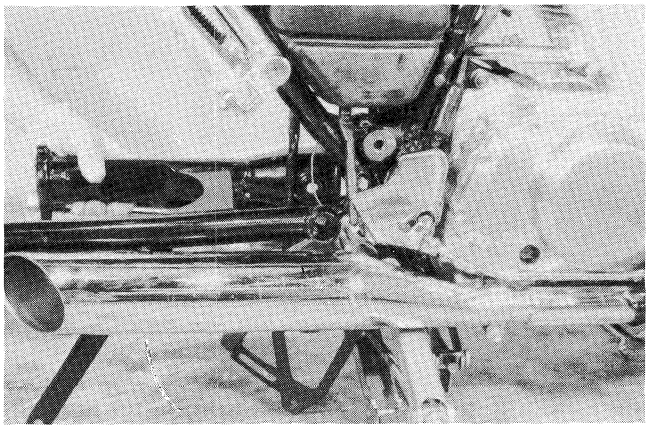
Tightening torque	50 – 80 N·m (5.0 – 8.0 kg-m 36.0 – 58.0 lb-ft)



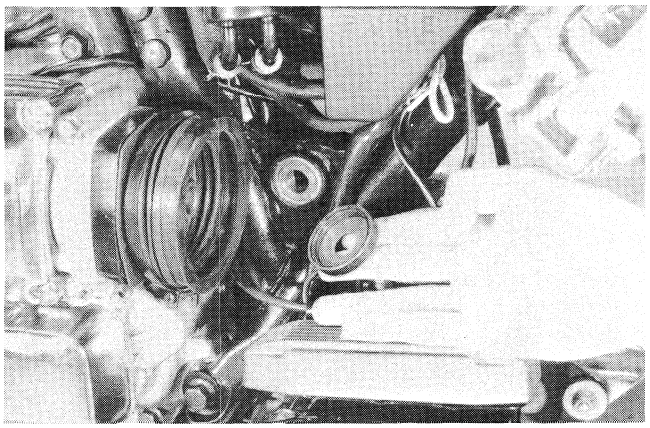
- Draw out the swingarm pivot shaft.



- Remove the rear swingarm from the chassis.



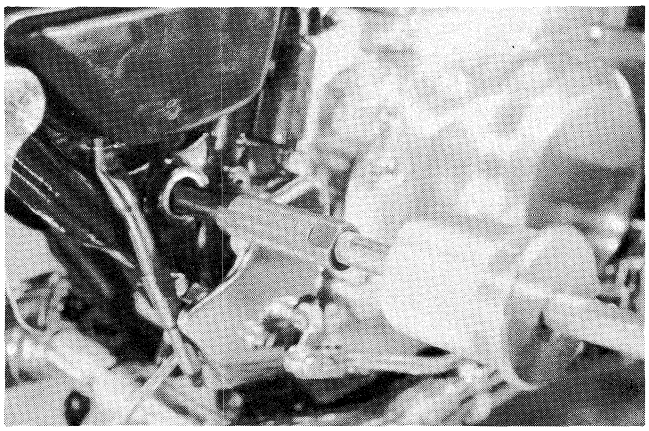
- Remove the swingarm bearing dust cover, right and left spacers and center spacer.



- Using the special tools, remove the swingarm bearings from the pivoting hole.

09930-30102	Sliding shaft
09921-20210	Bearing remover

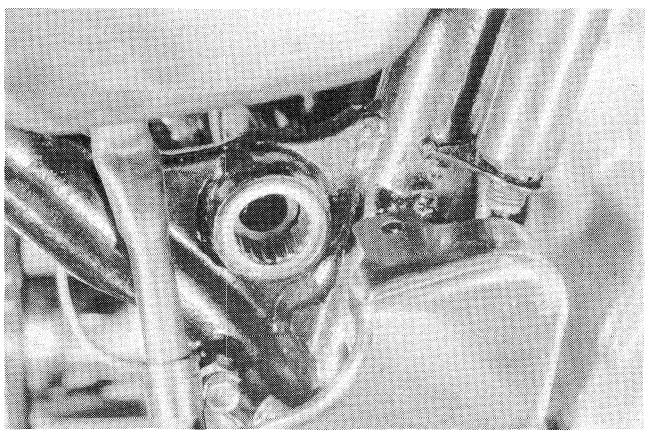
NOTE:
The removed bearing should be replaced with a new one.



INSPECTION

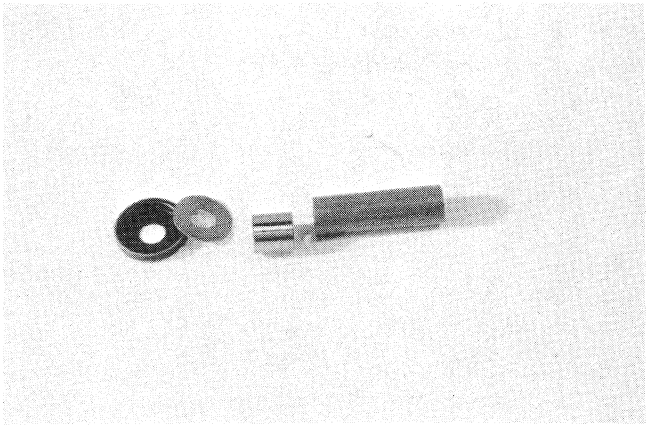
BEARING

Inspect the play of bearing by hand while fixing the spacer in the swingarm pivoting hole.



DUST SEAL
Inspect the dust seal, if they are found to be damaged, replace them with new dust seals.

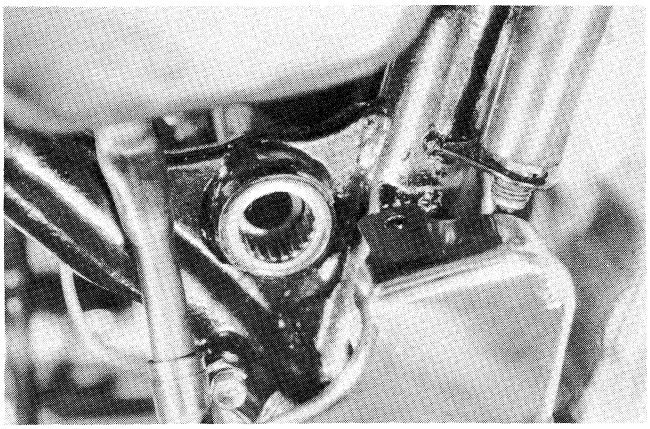
REAR SHOCK ABSORBER
Inspect the rear shock absorber unit for oil leakage or damage. If there is any defect, replace the unit with a new one.



REASSEMBLY
Reassemble and remount the swingarm and rear shock absorber in the reverse order of disassembly and removal, and also carry out the following steps:

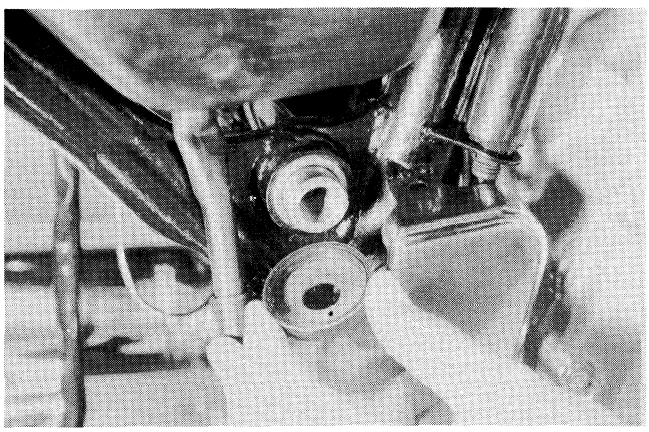
SWINGARM BEARING
- Press in the bearing outer race.

NOTE:
When reinstalling the bearing, stamped mark of bearing is positioned outside.

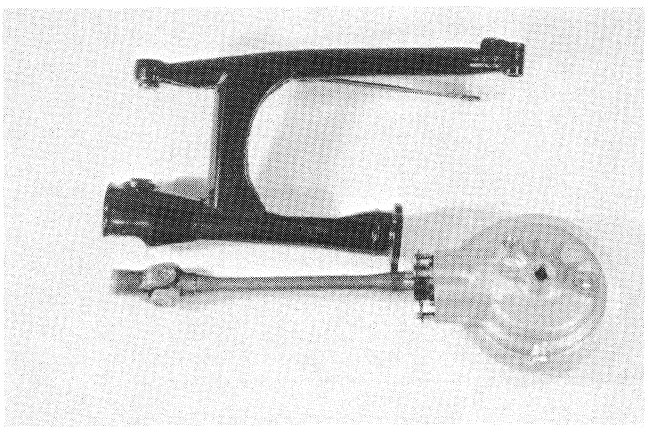


- Apply grease to the spacer, bearing, washer and dust seal.

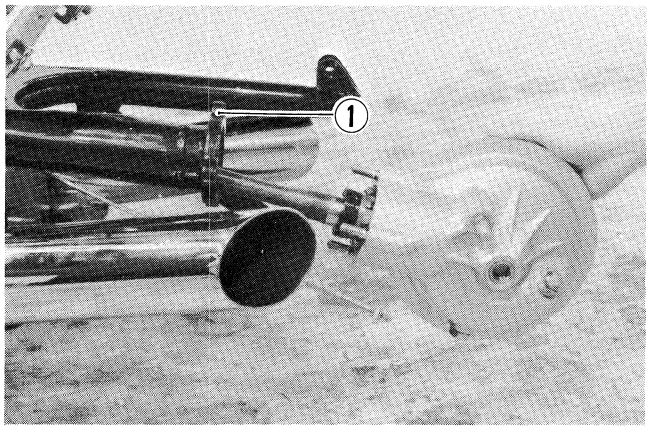
99000-25030	SUZUKI super grease "A"



- Install the propeller shaft and final gear case.
- Apply grease to the joint part of universal joint and propeller shaft.

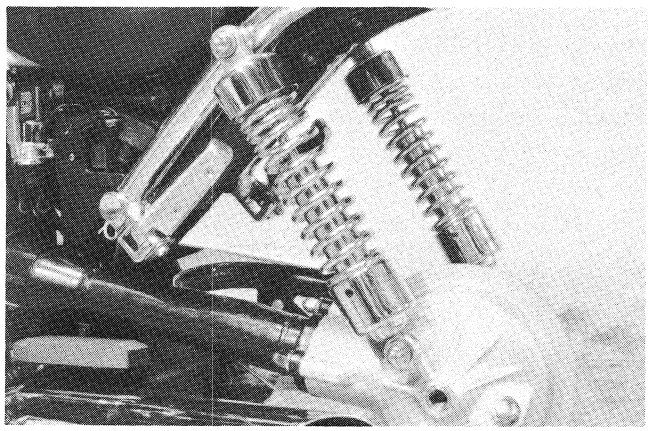


- Install a new gasket ① and apply bond No. 1207B to the mating surface.

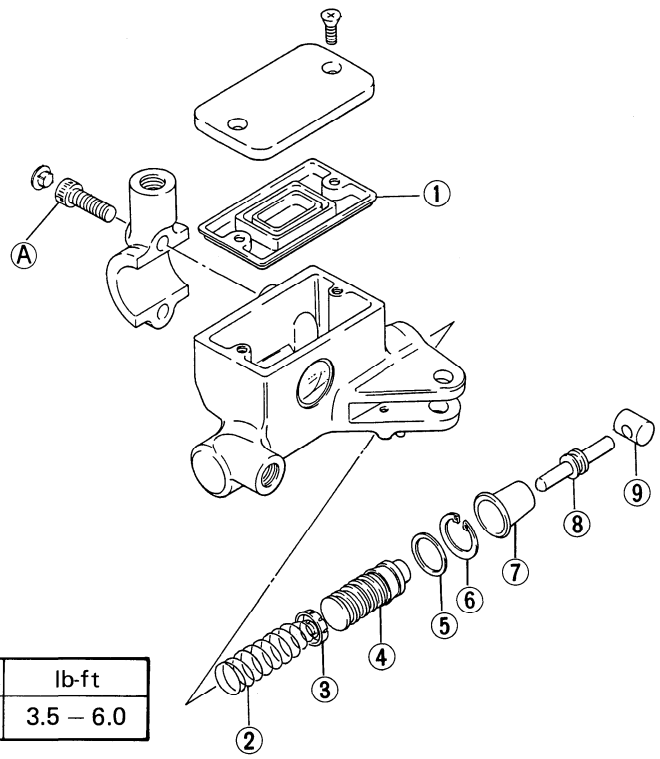


- When reinstalling the rear shock absorbers, make sure that both spring position should be equalized.

Standard setting	3 position



CLUTCH MASTER CYLINDER



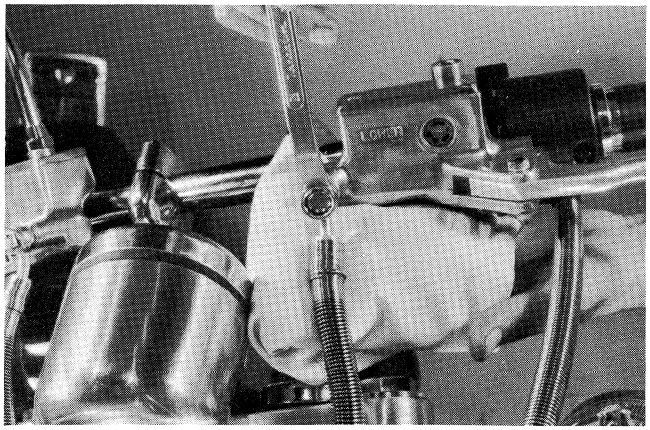
① Diaphragm
② Return spring
③ Primary cup
④ Piston
⑤ Washer
⑥ Circlip
⑦ Dust boot
⑧ Push rod
⑨ Piece

Tightening torque

Item	N·m	kg-m	lb-ft
Ⓐ	5 – 8	0.5 – 0.8	3.5 – 6.0

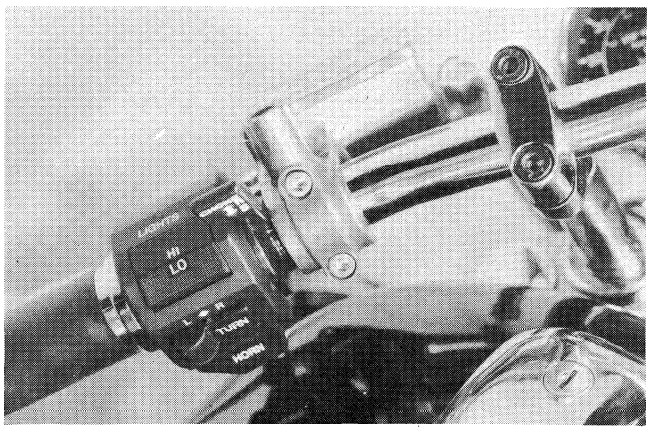
REMOVAL AND DISASSEMBLY

- Take off the starter interlock switch.
- Place a cloth underneath the union bolt on the master cylinder to catch spilled drops of brake fluid. Unscrew the union bolt and disconnect the clutch hose/master cylinder joint.

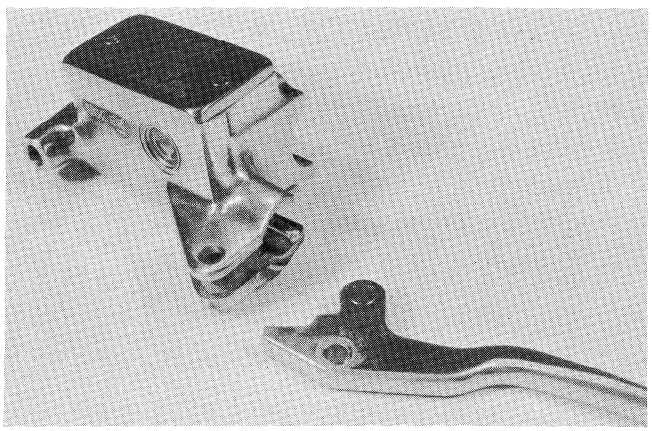


CAUTION:
Completely wipe off any clutch fluid adhering to any part of motorcycle. The fluid reacts chemically with paint, plastics, rubber materials, etc.

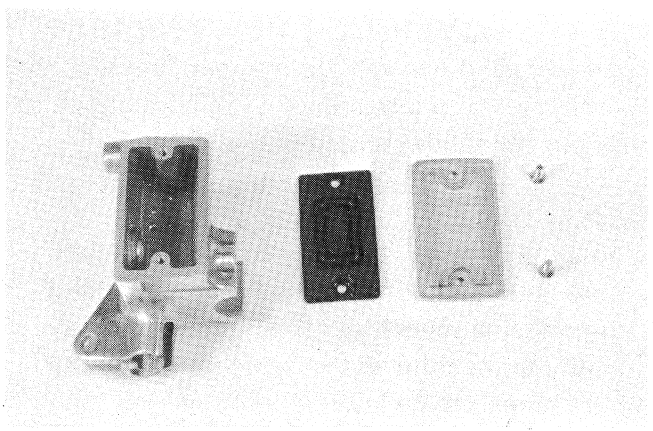
- Remove the two clamp bolts and take off master cylinder assembly.



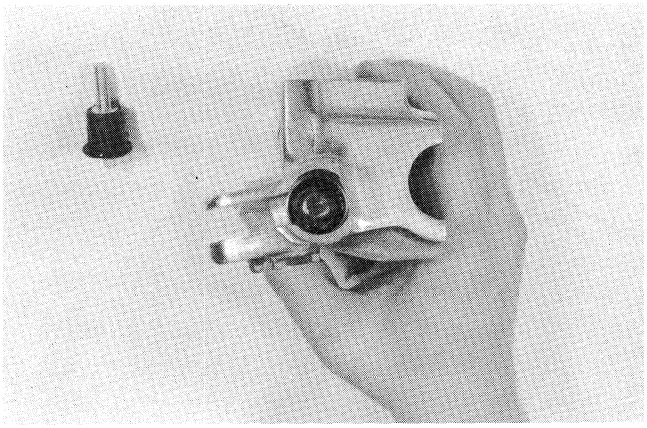
- Remove the clutch lever.
- Remove reservoir cap screws.



- Remove reservoir cap and diaphragm.
- Drain brake fluid.

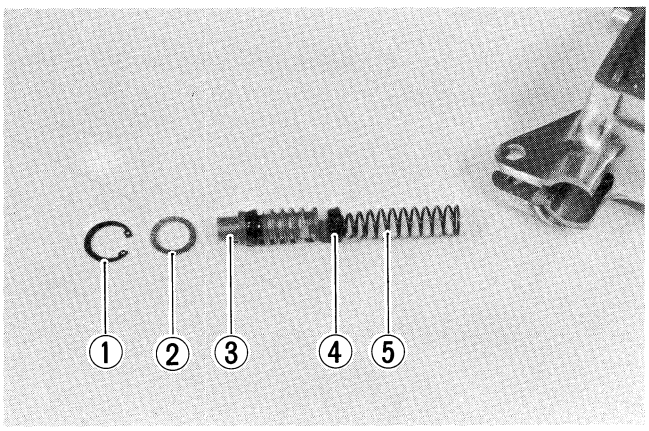


- Remove the push rod and dust boot.



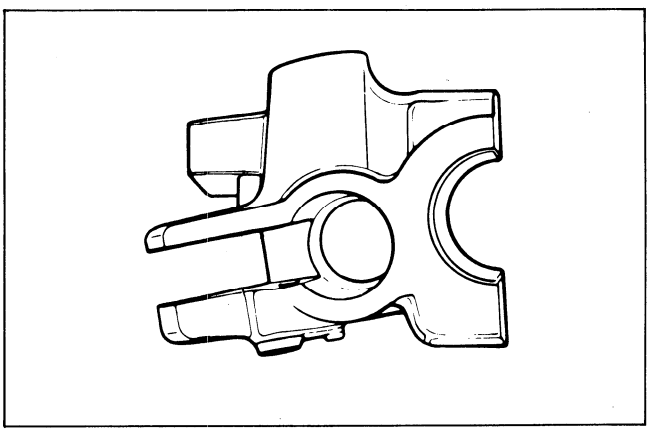
- Remove circlip by using the special tool.
- Remove piston, primary cup and spring.

09900-06108	Snap ring pliers



MASTER CYLINDER INSPECTION

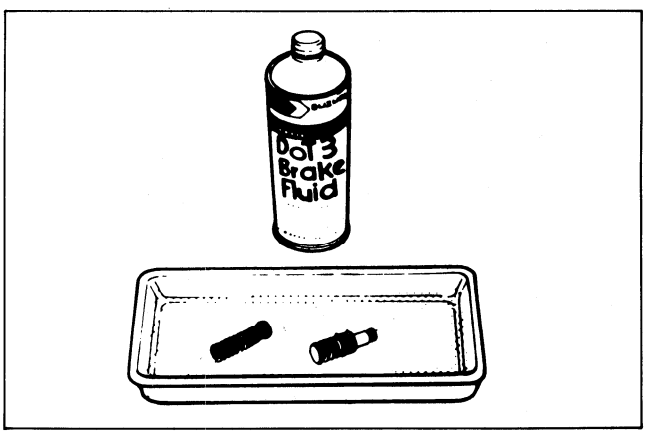
- Inspect the master cylinder bore for any scratches or other damage.
- Inspect the piston surface for scratches or other damage.
- Inspect the primary cup and dust boot for wear or damage.



MASTER CYLINDER REASSEMBLY

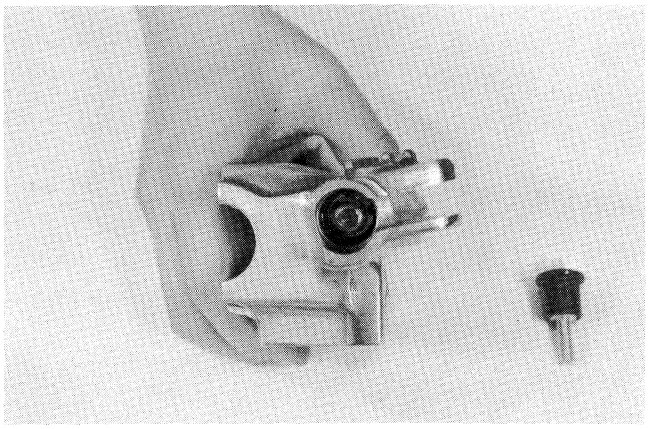
Reassemble and remount the master cylinder in the reverse order of disassembly and removal, and also carry out the following steps:

CAUTION:
Wash the master cylinder components with fresh brake fluid before reassembly. Never use cleaning solvent or gasoline to wash them. Apply brake fluid to the cylinder bore and all the internals to be inserted into the bore.

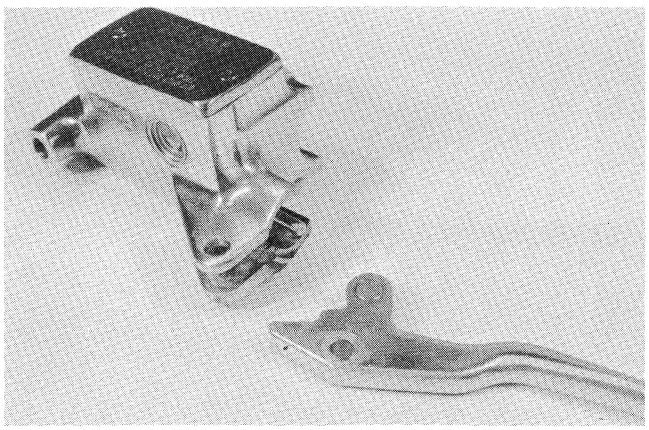


- Apply SUZUKI moly paste to the end of push rod.

99000-25140	SUZUKI moly paste

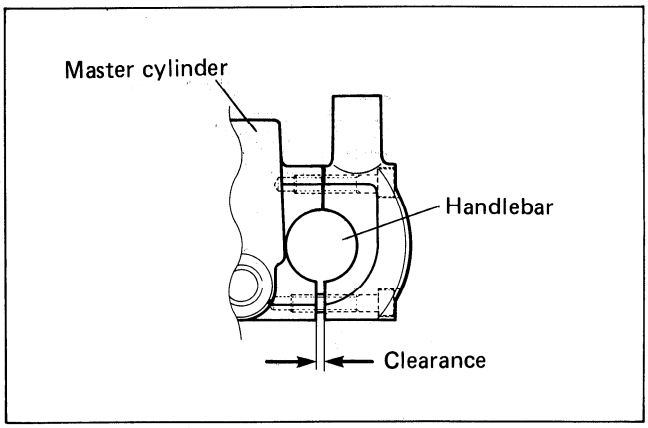


- Align the push rod with hole of lever piece.



When remounting the master cylinder on the handlebars, tighten the upper clamp bolts first as shown.

Tightening torque	5 – 8 N·m (0.5 – 0.8 N·m 3.5 – 6.0 lb-ft)



CAUTION:
Bleed the air after reassembling master cylinder (See page 2-10).
Adjust the starter disconnect switch after installation.

SERVICING INFORMATION

CONTENTS

TROUBLESHOOTING 10- 1
WIRING DIAGRAM 10- 9
CABLE, HARNESS AND HOSE ROUTING 10-10
SPECIAL TOOLS 10-16
TIGHTENING TORQUE 10-21
SERVICE DATA 10-24

TROUBLESHOOTING

ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not start, or is hart to start.	**Compression too low**	
	1. Valve clearance out of adjustment.	Adjust.
	2. Worn valve guides or poor seating of valves.	Adjust.
	3. Valves mistiming.	Repair, or replace.
	4. Piston rings excessively worn.	Replace.
	5. Worn-down cylinder bores.	Replace, or rebore.
	6. Starter motor cranks too slowly.	Consult "electrical complaints".
	Plugs not sparking	
	1. Fouled spark plugs.	Clean.
	2. Wet spark plug.	Clean and dry.
	3. Defective ignition coil.	Replace.
	4. Open or short in high-tension cord.	Replace.
	5. Defective pick-up coil or ignitor unit.	Replace.
	No fuel reaching the carburtors	
	1. Clogged hole in the fuel tank cap.	Clean.
	2. Clogged or defective fuel cock.	Clean or replace.
	3. Defective fuel pump.	Replace.
	4. Defective fuel pump relay.	Replace.
	5. Defective carburetor float valve.	Replace.
	6. Clogged fuel pipe or suction pipe.	Clean.
	7. Defective pick-up coil ignition coil/ignitor.	Replace.
Engine stalls easily.	1. Fouled spark plugs.	Clean.
	2. Defective pick-up coil or ignitor unit.	Replace.
	3. Clogged fuel pipe.	Replace.
	4. Defective fuel pump/fuel pump relay	Replace.
	5. Clogged jets in carburetors.	Clean.
	6. Vave clearance out of adjustment.	Adjust.
Noisy engine.	**Excessive valve chatter**	
	1. Valve clearance too large.	Adjust.
	2. Weakened or broken valve springs.	Replace.
	3. Camshaft journal worn and burnt.	Replace.
	Noise appears to come from pistons	
	1. Pistons or cylinders worn down.	Replace.
	2. Combustion chambers fouled with carbon.	Clean.
	3. Piston pins or piston pin bore worn.	Replace.
	4. Piston rings or ring groove worn.	Replace.
	Noise seems to come from timing chain	
	1. Stretched chain.	Replace.
	2. Worn sprockets.	Replace.
	3. Tension adjuster not working.	Replace.
	Noise seems to come from clutch	
	1. Worn splines of countershaft or hub.	Replace.
	2. Worn teeth of clutch plates.	Replace.
	3. Distorted clutch plates, driven and drive.	Replace.
	4. Worn/Damaged clutch push rod bearing	Replace.

Complaint	Symptom and possible causes	Remedy
Noisy engine.	**Noise seems to come from crankshaft**	
	1. Rattling bearings due to wear.	Replace.
	2. Big-end bearings worn and burnt.	Replace.
	3. Journal bearing worn and burnt.	Replace.
	4. Thrust clearance too large.	Adjust.
	Noise seems to come from transmission	
	1. Gears worn or rubbing.	Replace.
	2. Badly worn splines.	Replace.
	3. Primary gears worn or rubbing.	Replace.
	Noise seems to come from water pump.	
	1. Too much play on pump drive chain	Adjust.
	2. Worn or damaged drive chain/sprocket.	Replace.
	3. Impeller touches crankcase.	Replace.
Slipping clutch	1. Weakened clutch springs.	Replace
	2. Worn or distorted pressure plate.	Replace.
	3. Distorted clutch plates, driven and drive.	Replace.
Dragging clutch	1. Leakage of clutch fluid.	Repair.
	2. Worn or damaged master cylinder/clutch cylinder.	Replace.
	3. Damaged oil seal/clutch hose.	Replace.
	4. Some clutch springs weakened while others are not.	Replace.
	5. Distorted pressure plate or clutch plates.	Replace.
Transmission will not shift	1. Broken gearshift cam.	Replace.
	2. Distorted gearshift forks.	Replace.
	3. Too much play on gearshift lever.	Adjust.
	4. Worn gearshift pawl/guide.	Replace.
Transmission will not shift back.	1. Broken return spring on shift shaft.	Replace.
	2. Shift shafts are rubbing or sticky.	Repair or replace.
Transmission jumps out of gear.	1. Worn shifting gears on drive shaft or countershaft.	Replace.
	2. Distorted or worn gearshift forks.	Replace.
	3. Weakened stopper spring on gearshift stopper.	Replace.
Engine idles poorly.	1. Valve clearance out of adjustment.	Adjust.
	2. Poor seating of valves.	Repair or replace.
	3. Defective valve guides.	Replace.
	4. Spark plug gaps too wide.	Adjust.
	5. Defective ignition coil.	Replace.
	6. Defective pick-up coil or ignitor unit.	Replace.
	7. Float-chamber fuel level out of adjustment in carbs.	Adjust.
	8. Clogged jets or imbalance of carburetors.	Clean or adjust.
	9. Defective fuel pump/fuel pump relay.	Replace.
Engine runs poorly in high-speed range.	1. Valve springs weakened.	Replace.
	2. Valve timing out of adjustment.	Adjust.
	3. Spark plug gaps too narrow.	Adjust.
	4. Clogged jets or imbalance of carburetors.	Clean or adjust.
	5. Defective ignition coil.	Replace.

Complaint	Symptom and possible causes	Remedy
Engine runs poorly in high-speed range.	6. Defective pick-up coil or ignitor unit.	Replace.
	7. Float-chamber fuel level too low.	Adjust.
	8. Clogged air cleaner element.	Clean.
	9. Clogged fuel pipe, resulting in inadequate fuel supply to carburetors.	Clean, and prime.
	10. Defective fuel pump/fuel pump relay.	Replace.
Dirty or heavy exhaust smoke.	1. Too much engine oil in the engine.	Check with level inspection window, drain out excess oil.
	2. Worn piston rings or cylinders.	Replace.
	3. Worn valve guides.	Replace.
	4. Cylinder walls scored or scuffed.	Rebore or replace.
	5. Worn valves stems.	Replace.
	6. Defective stem seal.	Replace.
Engine lacks power.	1. Loss of valve clearance.	Adjust.
	2. Weakened valve springs.	Replace.
	3. Valve timing out of adjustment.	Adjust.
	4. Worn piston rings or cylinders.	Replace.
	5. Poor seating of valves.	Repair.
	6. Spark plug gaps incorrect.	Adjust or replace.
	7. Clogged jets in carburetors.	Clean.
	8. Float-chamber fuel level out of adjustment.	Adjust.
	9. Clogged air cleaner element.	Clean.
	10. Carburetor balancing adjuster loose.	Retighten and balance the carbs.
	11. Sucking air from intake pipe.	Retighten or replace.
	12. Too much engine oil in the engine.	Drain out excess oil.
	13. Defective fuel pump/fuel pump relay.	Replace.
	14. Defective pick-up coil/ignitor unit/ignition coil.	Replace.
Engine overheats.	1. Heavy carbon deposit on piston crowns.	Clean.
	2. Not enough oil in the engine.	Add oil.
	3. Defective oil pump or clogged oil circuit.	Replcae or clean.
	4. Fuel level too low in float chambers.	Adjust.
	5. Suck air from intake pipes.	Retighten or replace.
	6. Use incorrect engine oil.	Change.
	7. Defective cooling system.	See radiator section.

SHAFT DRIVE

Complaint	Symptom and possible causes	Remedy
Noisy shaft drive	**Noise seems to come from secondary bevel gear and final bevel gear assemblies.**	
	1. Oil level too low.	Refill. (Check oil jet/replace oil seal)
	2. Drive and driven bevel gears damaged or worn.	Replace.
	3. Excessive backlash.	Adjust.
	4. Improper tooth contact.	Adjust.
	5. Damage to bearings.	Replace.
	Noise seems to come from propeller shaft area.	
	1. Propeller shaft universal joint damaged.	Replace.
	2. Propeller shaft splines damaged or worn.	Replace.
	3. Insufficient lubricant.	Refill. (Replace oil seal)
	4. Cam dog contacting surface damaged or worn.	Replace.

Complaint	Symptom and possible causes	Remedy
No power transmitted from engine to rear wheel.	1. Broken propeller shaft. 2. Broken gear teeth. 3. Broken or damaged input/output cam dog.	Replace. Replace. Replace.
Secondary bevel gear and final bevel gear assemblies oil leak.	1. Damage to oil seals. 2. Damage to O-rings. 3. Loose bolts on secondary gear case and final gear bearing case.	Replace. Replace. Retighten.

CARBURETOR

Complaint	Symptom and possible causes	Remedy
Trouble with starting.	1. Starter jet is clogged. 2. Starter pipe is clogged. 3. Air leaking from a joint between starter body and carburetor. 4. Air leaking from carburetor's joint or vacuum gauge joint. 5. Starter plunger is not operating properly.	Clean. Clean. Check starter body and carburetor for tightness, adjust and replace gasket. Check and adjust. Check and adjust.
Idling or low-speed trouble	1. Pilot jet, pilot air jet are clogged or loose. 2. Air leaking from carburetor's joint, vacuum gauge joint, or starter. 3. Pilot outlet or bypass is clogged. 4. Starter plunger is not fully closed.	Check and clean. Check and adjust. Check and clean. Check and adjust.
Medium- or high-speed trouble.	1. Main jet or main air jet is clogged. 2. Needle jet is clogged. 3. Throttle valve not operating properly. 4. Filter is clogged. 5. Carburetor balancing adjuster loose.	Check and clean. Check and clean. Check throttle valve for operation. Check and clean. Retighten and balance the carbs.
Overflow and fuel level fluctuations.	1. Needle valve is worn or damaged. 2. Spring in needle vavle is broken. 3. Float is not working properly. 4. Foreign matter has adhered to needle valve. 5. Fuel level is too high or low. 6. Clogged carburetor air vent pipe. 7. Defective fuel pump/fuel pump relay. 8. Defective pick-up coil/ignitor unit/ignition coil.	Replace. Replace. Check and adjust. Clean. Adjust float height. Clean. Replace. Replace.

RADIATOR

Complaint	Symptom and possible causes	Remedy
Engine overheats.	1. Not enough cooling water.	Add coolant.
	2. Radiator core is clogged with dirt or trashes.	Clean.
	3. Erratic thermostat, stuck in closed position.	Replace.
	4. Faulty cooling fan.	Repair or replace.
	5. Defective thermo-switch.	Replace.
	6. Clogged water passage.	Clean.
	7. Air trapped in the cooling circuit.	Bleed out air.
	8. Defective water pump/pump drive chain.	Replace.
	9. Use incorrect cooling water.	Replace.
Engine overcools.	1. Erratic thermostat, stuck in full-open position.	Replace.
	2. Defective thermo-switch.	Replace.
	3. Extremely cold weather.	Put on the radiator cover.

ELECTRICAL

Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking.	1. Defective ignition coil.	Replace.
	2. Defective spark plugs.	Replace.
	3. Defective pick-up coil or ignitor unit.	Replace.
Spark plugs soon become fouled with carbon.	1. Mixture too rich.	Adjust carburetors.
	2. Idling speed set too high.	Adjust carburetors.
	3. Incorrect gasoline.	Change.
	4. Dirty element in air cleaner.	Clean.
	5. Spark plugs too cold.	Replace by hot type plugs.
Spark plugs become fouled too soon.	1. Worn piston rings.	Replace.
	2. Pistons or cylinders worn.	Replace.
	3. Excessive clearance of valve stems in valve guides.	Replace.
	4. Worn stem oil seal.	Replace.
Spark plug electrodes overheat or burn.	1. Spark plugs too hot.	Replace by cold type plugs.
	2. The engine overheats.	Tune up.
	3. Defective pick-up coil or ignitor unit.	Replace.
	4. Spark plugs loose.	Retighten.
	5. Mixture too lean.	Adjust carburetors.
Generator does not charge.	1. Open or short in lead wires, or loose lead connections.	Repair or replace or retighten.
	2. Shorted, grounded or open generator coils.	Replace.
	3. Shorted or panctured regulator/rectifier.	Replace.
Generator charge, but charging rate is below the specification.	1. Lead wires tend to get shorted or open-circuited or loosely connected at terminals.	Repair, or retighten.
	2. Grounded or open-circuited stator coils of generator.	Replace.
	3. Defective regulator/rectifier.	Replace.
	4. Not enough electrolyte in the battery.	Add distilled water between the level lines.
	5. Defective cell plates in the battery.	Replace the battery.

Complaint	Symptom and possible causes	Remedy
Generator overcharges.	1. Internal short-circuit in the battery. 2. Resistor element in the regulator/rectifier damaged or defective. 3. Regulator/rectifier poorly grounded.	Replace the battery. Replace. Clean and tighten ground connection.
Unstable charging.	1. Lead wire insulation frayed due to vibration, resulting in intermittent shorting. 2. Generator internally shorted. 3. Defective regulator/rectifier.	Repair or replace. Replace. Replace.
Starter button is not effective.	1. Battery run down. 2. Defective switch contacts. 3. Brushes not seating properly on commutator in starter motor. 4. Defective starter relay/starter interlock switch.	Recharge or replace. Replace. Repair or replace. Replace.

BATTERY

Complaint	Symptom and possible causes	Remedy
"Sulfation", acidic white powdery substance or spots on surfaces of cell plates.	1. Not enough electrolyte. 2. Battery case is cracked. 3. Battery has been left in a run-down condition for a long time. 4. Contaminated electrolyte (Foreign matter has enteres the battery and become mixed with the electrolyte.)	Add distilled water, if the battery has not been damaged and "sulfation" has not advanced too far, and recharge. Replace the battery. Replace the battery. If "sulfation" has not advanced too far, try to restore the battery by replacing the electrolyte, recharging it fully with the battery detached from the motorcycle and then adjusting electrolyte S.G.
Battery runs down quickly.	1. The charging method is not correct. 2. Cell plates have lost much of their active material as a result of over-charging. 3. A short-circuit condition exists within the battery due to excessive accumulation of sediments caused by the high electrolyte S.G. 4. Electrolyte S.G. is too low. 5. Contaminated electrolyte. 6. Battery is too old.	Check the generator, regulator/rectifier and circuit connections, and make necessary adjustments to obtain specified charging operation. Replace the battery, and correct the charging system. Replace the battery. Recharge the battery fully and adjust electrolyte S.G. Replace the electrolyte, recharge the battery and then adjust S.G. Replace the battery.

Complaint	Symptom and possible causes	Remedy
Reversed battery polarity.	The battery has been connected the wrong way round in the system, so that it is being charged in the reverse direction.	Replace the battery and be sure to connect the battery properly.
Battery. "sulfation"	1. Charging rate too low or too high. (When not in use, batteries should be recharged at least once a month to avoid sulfation.) 2. Battery electrolyte excessive or insufficient, or its specific gravity too high or too low. 3. The battery left unused for too long in cold climate.	Replace the battery. Keep the electrolyte up to the prescribed level, or adjust the S.G. by consulting the battery maker's direction. Replace the battery, if badly sulfated.
Battery discharges too rapidly.	1. Dirty container top and sides. 2. Impurities in the electrolyte or electrolyte S.G. is too high.	Clean. Change the electrolyte by consulting the battery maker's directions.

CHASSIS

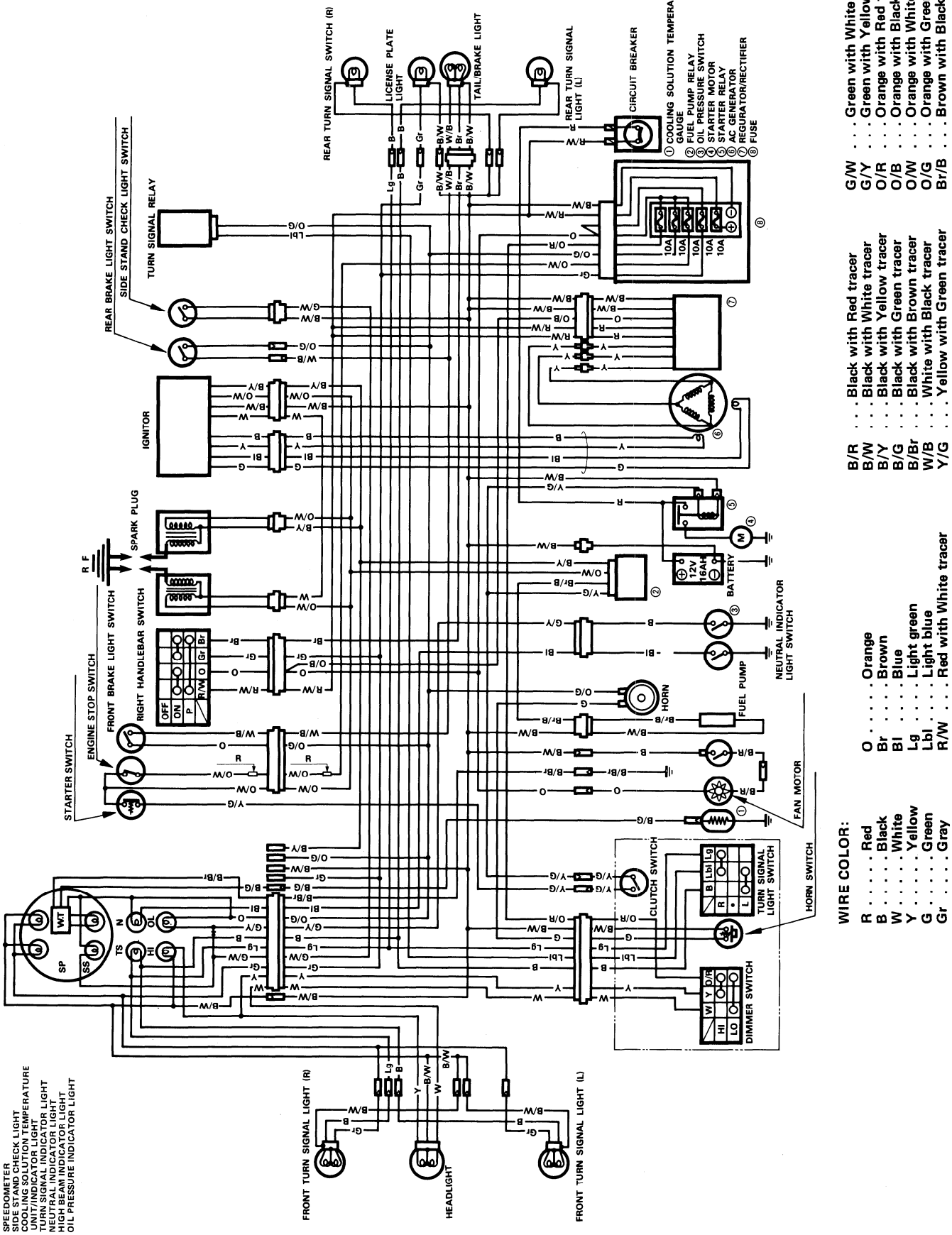
Complaint	Symptom and possible causes	Remedy
Handling feels too heavy.	1. Steering stem nut overtightened. 2. Worn roller bearing or race in steering stem. 3. Distorted steering stem. 4. Not enough pressure in tires. 5. Overtightened steering races.	Adjust. Replace. Replace. Adjust. Adjust.
Steering oscillation.	1. Loss of balance between right and left suspensions. 2. Bent front fork. 3. Bent front axle or crooked tire. 4. Loose steering stem bearings. 5. Worn or incorrect tires or wrong tire pressure.	Adjust. Repair or replace. Replace. Adjust. Adjust or replace.
Wobbly front wheel.	1. Distorted wheel. 2. Worn front wheel bearings. 3. Defective or incorrect tire. 4. Loose nut on axle. 5. Loose nuts on rear shock. 6. Worn swingarm bearings.	Replace. Replace. Replace. Retighten. Retighten. Replace.
Front suspension too soft.	1. Weakened springs. 2. Not enough fork oil. 3. Not enough fork air. 4. Wrong weight fork oil.	Replace. Refill. Adjust to specification. Replace.
Front suspension too stiff.	1. Fork oil too viscous. 2. Too much fork oil. 3. Fork air too high. 4. Front axle bent. 5. Fork tubes not adjusted evenly in forks stem and steering stem head.	Replace. Remove excess oil. Adjust to specification. Replace. Adjust.
Noisy front suspension.	1. Not enough fork oil. 2. Loose nuts on suspension.	Refill. Retighten.

Complaint	Symptom and possible causes	Remedy
Wobbly rear wheel.	1. Distorted wheel rim. 2. Worn-down rear wheel bearings or swingarm bearings. 3. Defective or incorrect tire. 4. Worn swingarm bearings. 5. Loose nuts on rear suspension.	Replace. Replace. Replace. Replace. Retighten.
Rear suspension too soft.	1. Weakened spring. 2. Rear suspension adjuster improperly set. 3. Oil leakage of rear shock absorber.	Replace. Reset. Replace.
Rear suspension too stiff.	1. Rear suspension adjuster improperly set. 2. Shock absorber shaft bent. 3. Swingarm bent. 4. Worn swingarm bearings.	Adjust. Replace. Replace. Replace.
Noisy rear suspension.	1. Loose nut on rear suspension. 2. Worn swingarm bearings.	Retighten. Replace.

BRAKES

Complaint	Symptom and possible causes	Remedy
Poor braking.	1. Not enough brake fluid in the reservoir. 2. Air trapped intake fluid circuit. 3. Pads/shoe worn down. 4. Too much play on brake lever/pedal.	Refill to level mark. Bleed air out. Replace. Adjust.
Insufficient brake power.	1. Leakage of brake fluid from hydraulic system. 2. Worn pads/shoe. 3. Oil adhesion on engaging surface of pads/shoe. 4. Worn disc. 5. Air entered into hydraulic system.	Repair or replace. Replace. Clean disc and pads. Replace. Bleed air.
Brake squeaking.	1. Carbon adhesion on pad/shoe surface. 2. Tilted pad. 3. Damaged wheel bearing. 4. Loose front-wheel axle or rear-wheel axle. 5. Worn pads/shoe. 6. Foreign material in brake fluid. 7. Clogged return port of master cylinder. 8. Wrongly fixed pad shims. 9. Calipers binding no caliper axles.	Repair surface with sandpaper. Modify pad fitting. Replace. Tighten to specified torque. Replace. Replace brake fluid. Disassemble and clean master cylinder. Set correctly. Clean and lubricate.
Excessive brake lever stroke.	1. Air entered into hydraulic system. 2. Insufficient brake fluid. 3. Improper quality of brake fluid.	Bleed air. Replenish fluid to specified level; bleed air. Replace with correct fluid.
Leakage of brake fluid.	1. Insufficient tightening of connection joints. 2. Cracked hose. 3. Worn piston and/or cup.	Tighten to specified torque. Replace. Replace piston and/or cup.

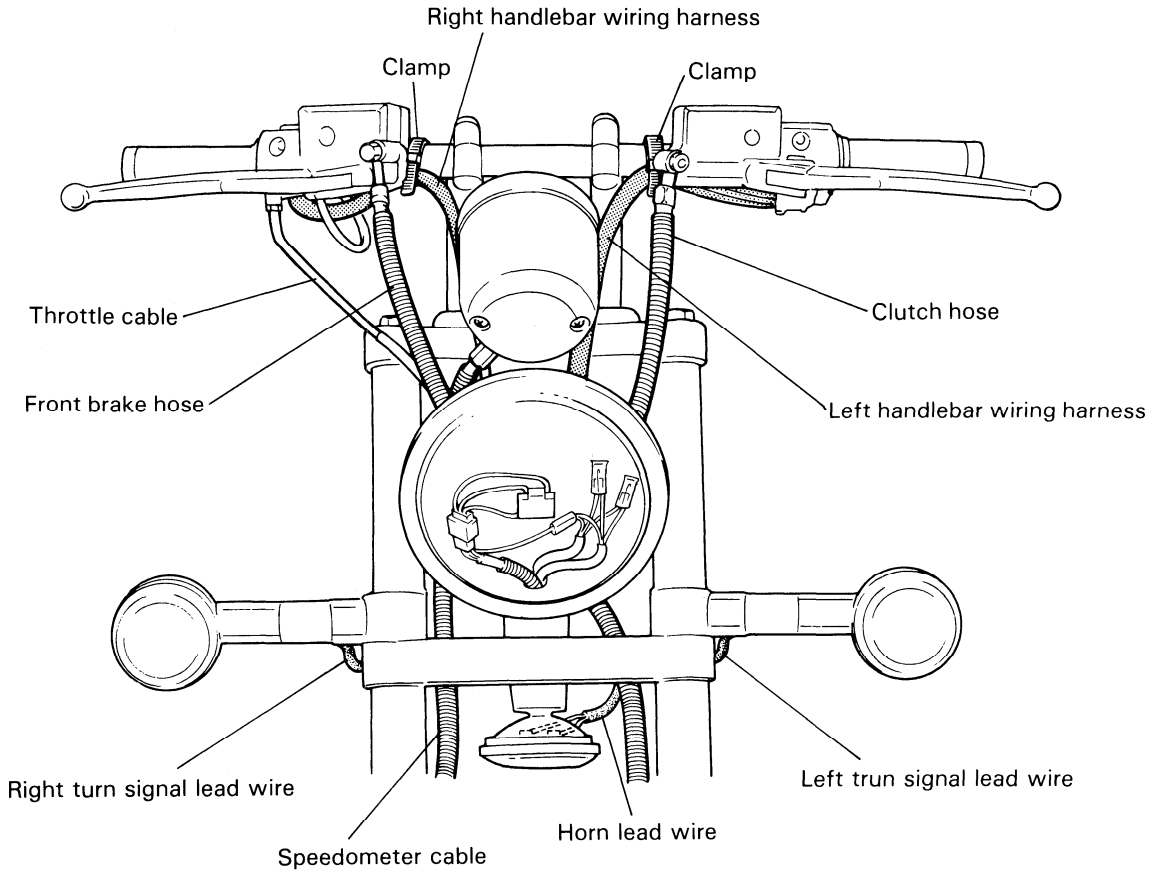
WIRING DIAGRAM

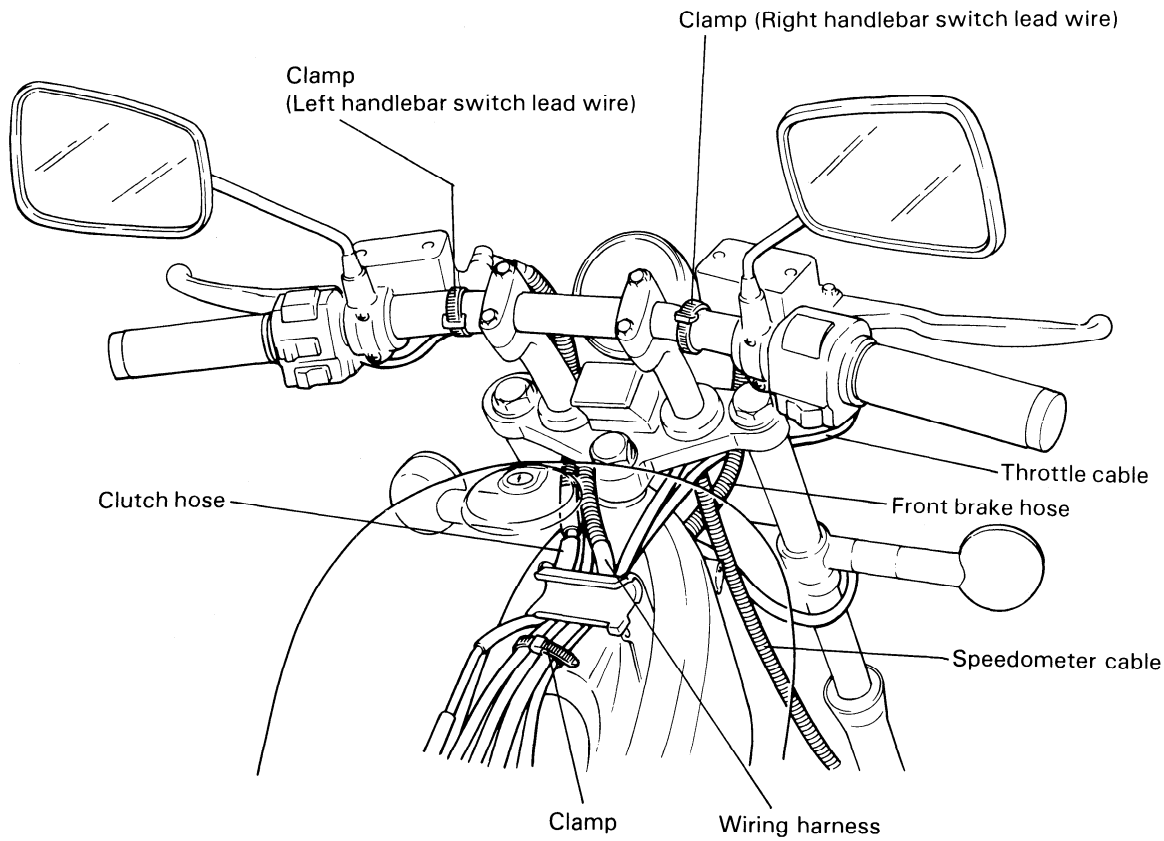


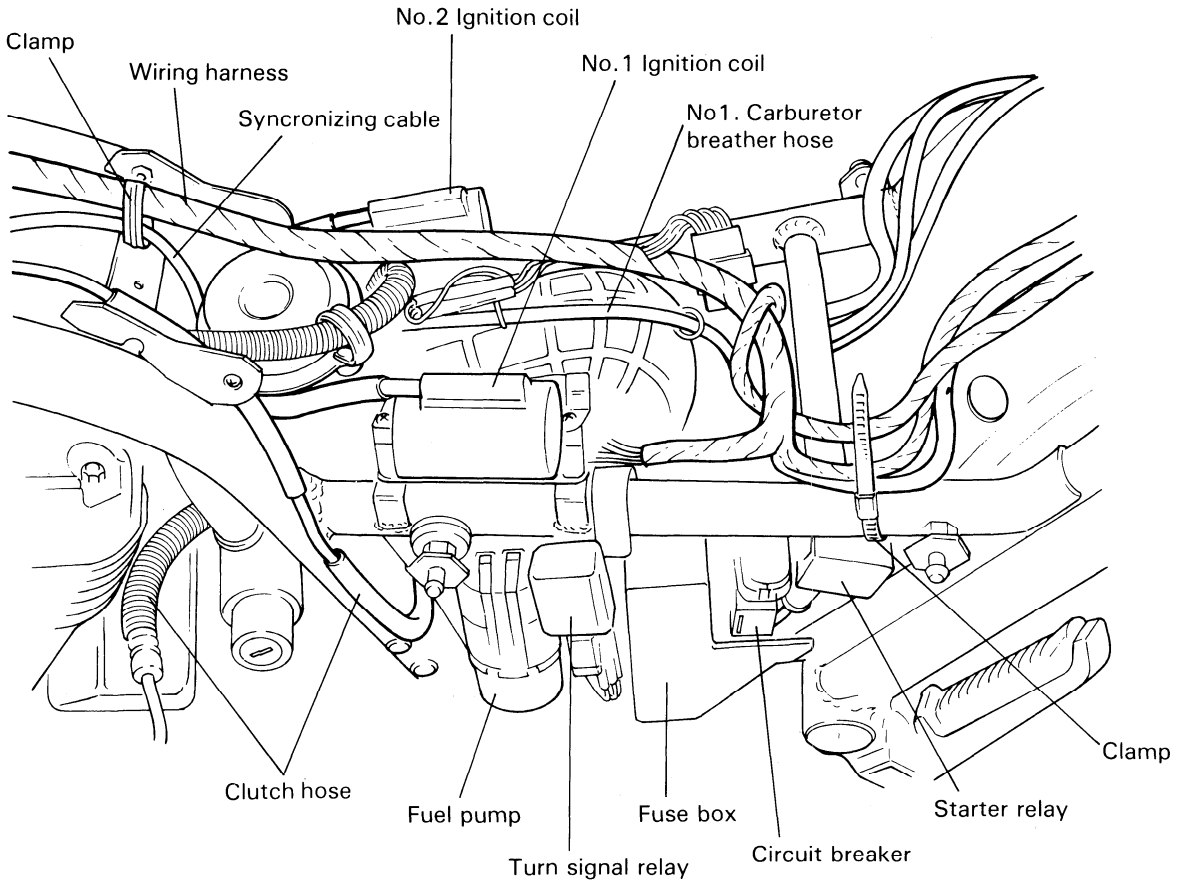
WIRE COLOR:

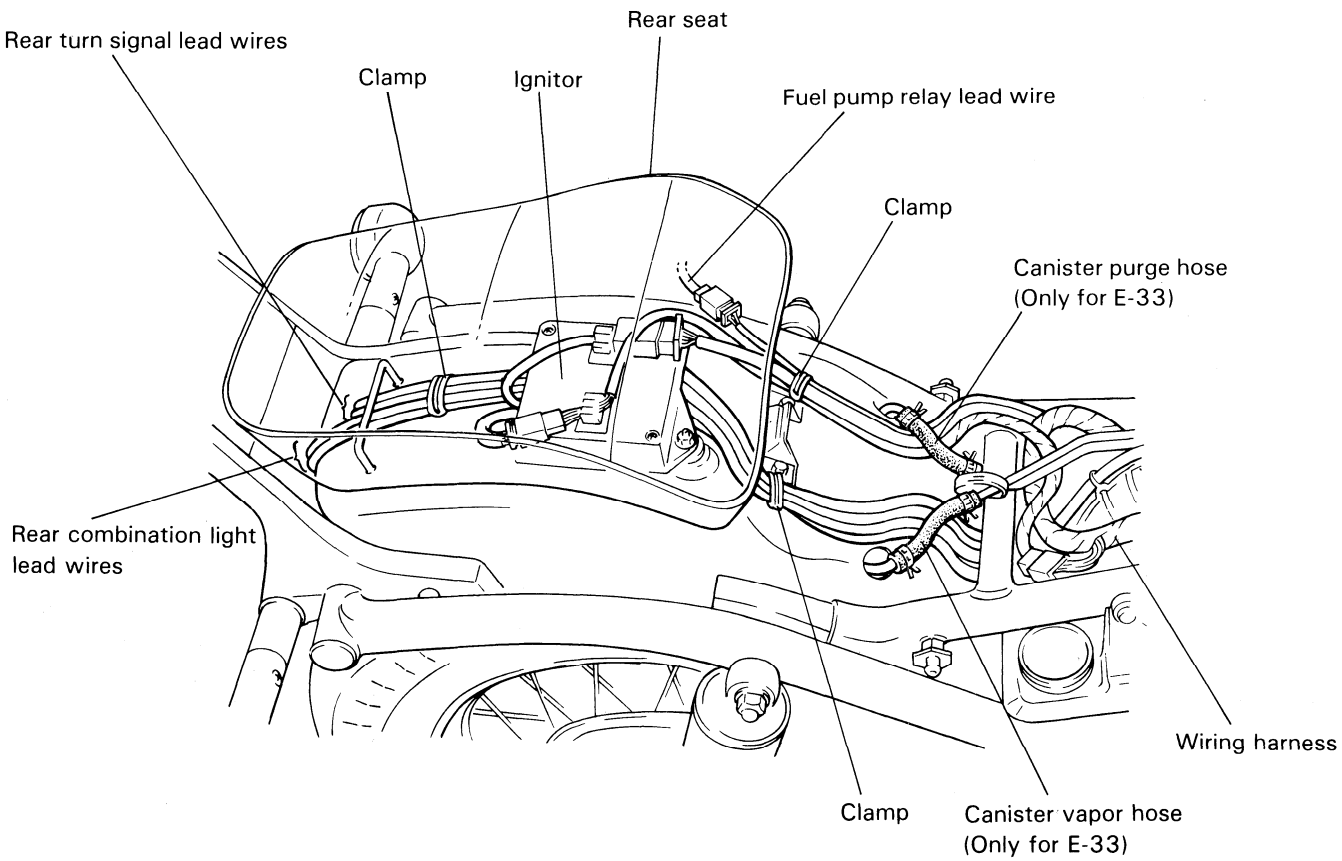
R . . . . . Red	O . . . . . Orange	B/R . . . Black with Red tracer	G/W . . . Green with White tracer
B . . . . . Black	Br . . . . Brown	B/W . . . Black with White tracer	G/Y . . . Green with Yellow tracer
W . . . . . White	Bl . . . . Blue	B/Y . . . Black with Yellow tracer	O/R . . . Orange with Red tracer
Y . . . . . Yellow	Lg . . . . Light green	B/G . . . Black with Green tracer	O/B . . . Orange with Black tracer
G . . . . . Green	Lbl . . . . Light blue	B/Br . . . Black with Brown tracer	O/W . . . Orange with White tracer
Gr . . . . Gray	R/W . . . Red with White tracer	W/B . . . White with Black tracer	O/G . . . Orange with Green tracer
		Y/G . . . Yellow with Green tracer	Br/B . . . Brown with Black tracer

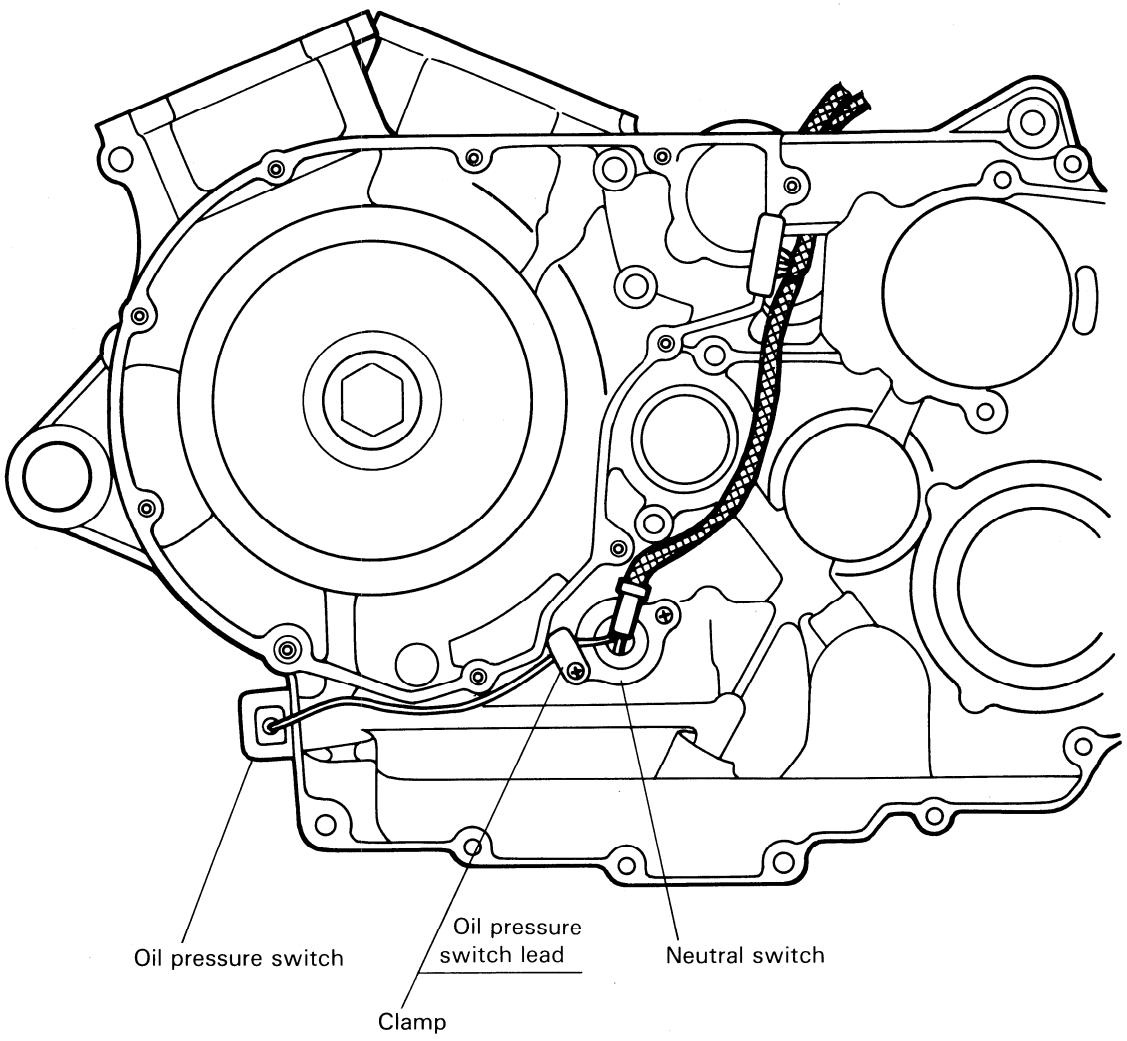
CABLE, HARNESS AND HOSE ROUTING

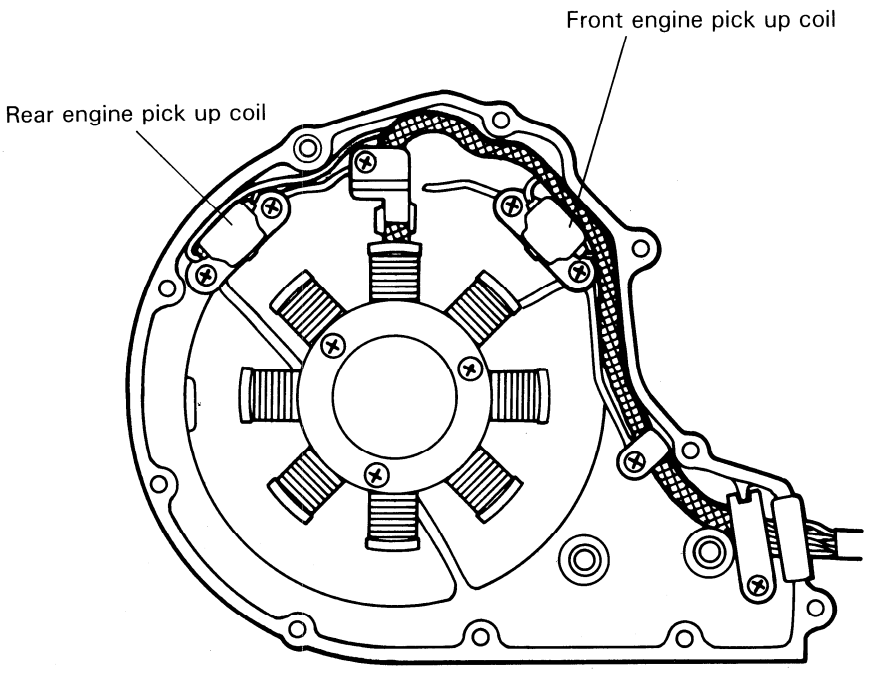




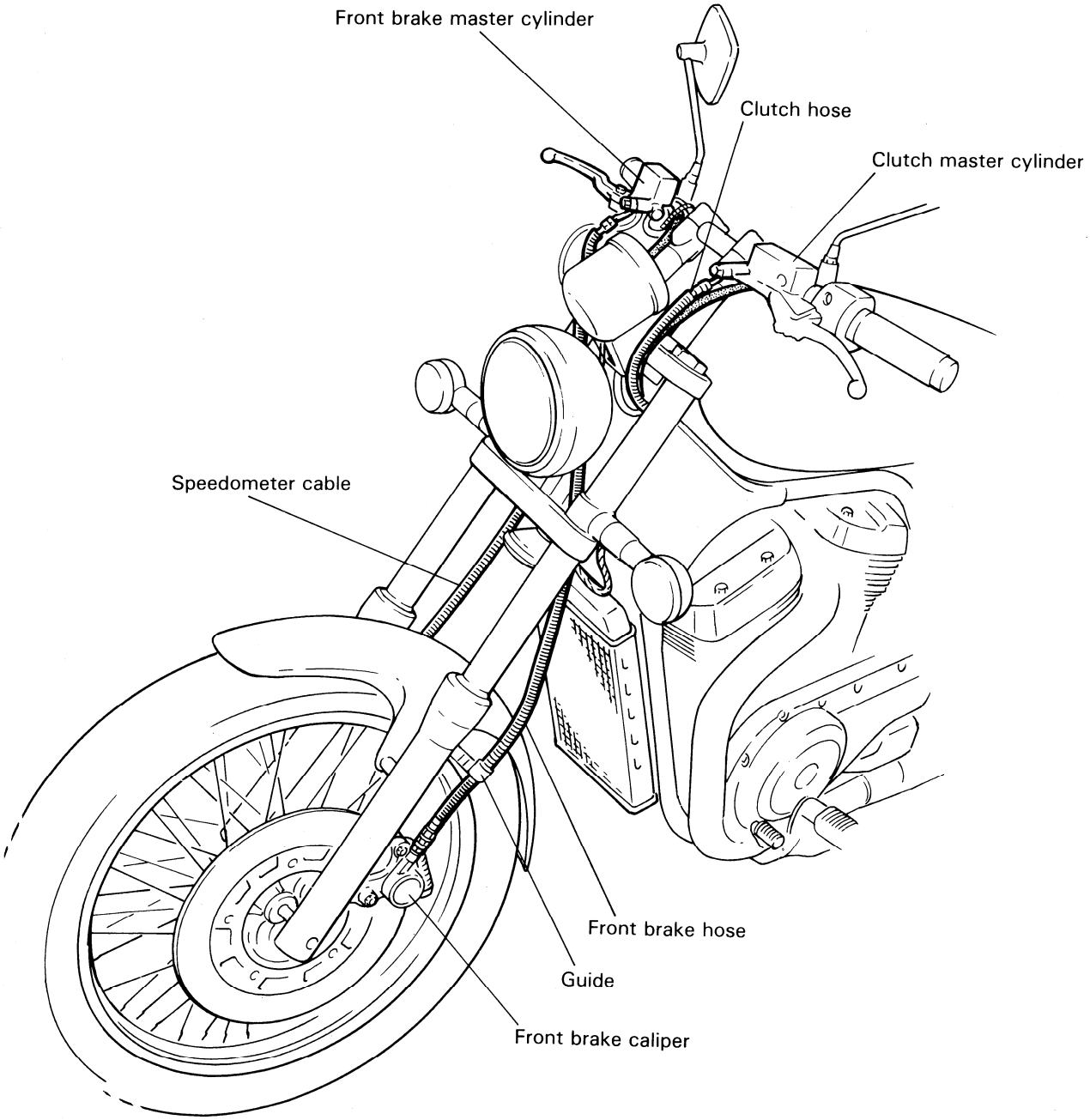

Clamp
Wiring harness
Syncronizing cable
No.2 Ignition coil
No.1 Ignition coil
No1. Carburetor breather hose
Clamp
Clutch hose
Fuel pump
Turn signal relay
Fuse box
Circuit breaker
Starter relay


Rear turn signal lead wires
Clamp
Ignitor
Rear seat
Fuel pump relay lead wire
Clamp
Canister purge hose (Only for E-33)
Rear combination light lead wires
Wiring harness
Clamp
Canister vapor hose (Only for E-33)

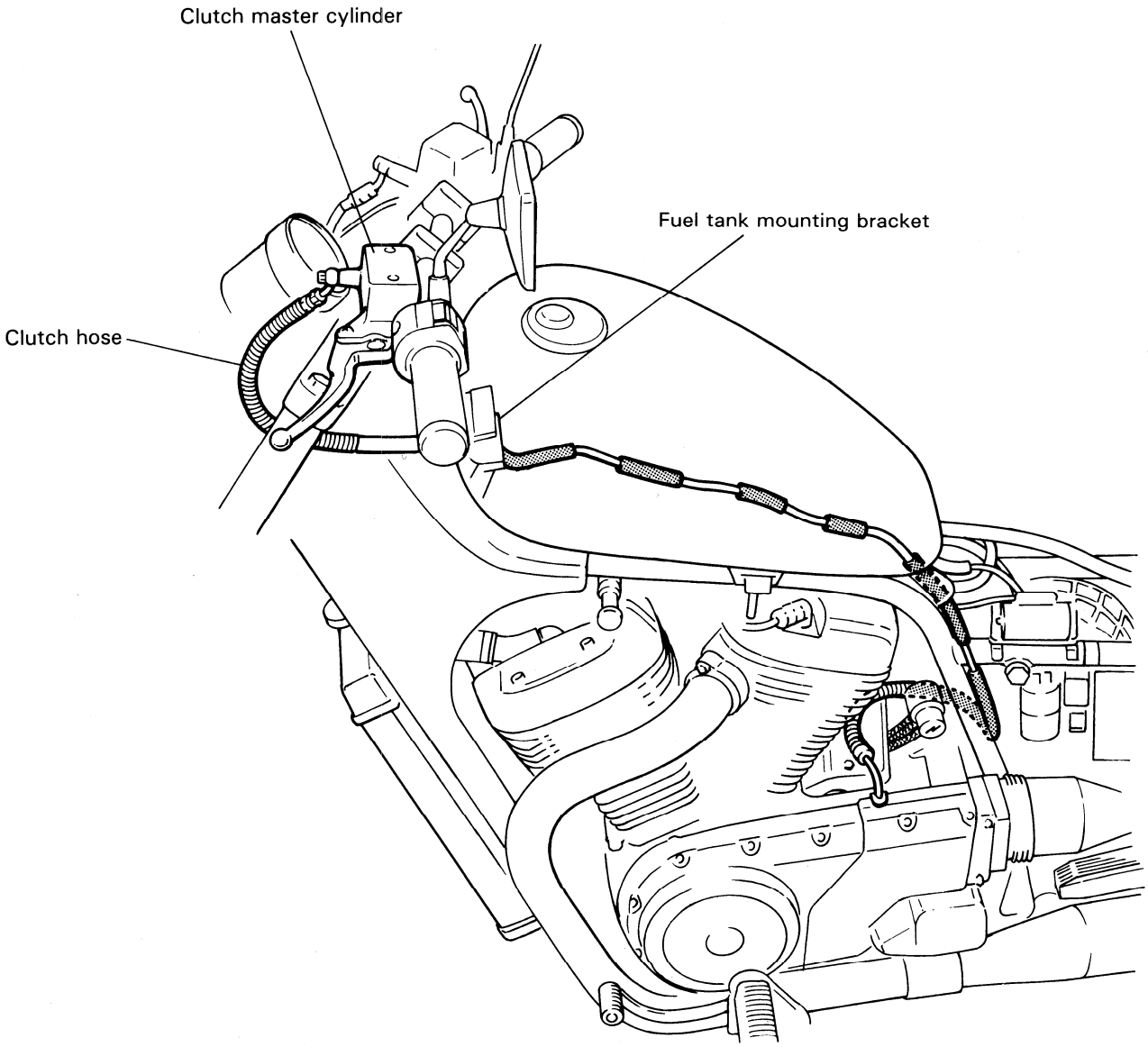

Oil pressure switch
Oil pressure switch lead
Neutral switch
Clamp


Front engine pick up coil
Rear engine pick up coil

FRONT BRAKE HOSE ROUTING



CLUTCH HOSE ROUTING



California model only

PERIODIC MAINTENANCE

NOTE:
Refer to page 2-1 for periodic maintenance described in this page.

MAINTENANCE CHART

Item \ Interval	km	1 000	6 000	12 000	18 000	24 000
	miles	600	4 000	7 500	11 000	15 000
	Month	2	12	24	36	48
Fuel line and vapor hose		I	I	I	I	I
		Replace every four years				

SERVICE DATA

NOTE:
Refer to the pages 10-24 through 10-31 except for the service data described in this page.

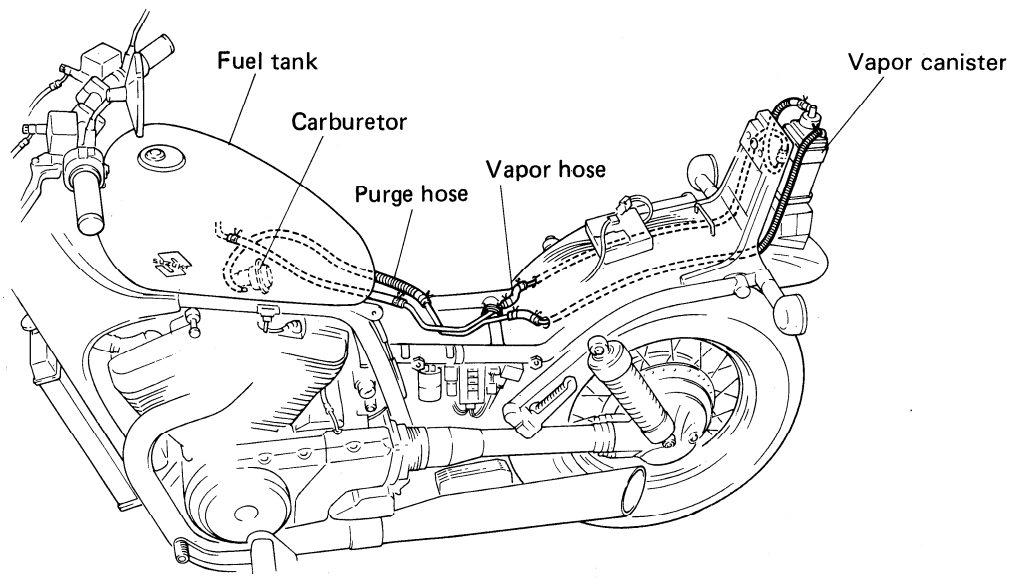
CARBURETOR

ITEM	SPECIFICATION
I.D. No.	38A10

FUEL + OIL + COOLING SOLUTION

ITEM	SPECIFICATION	NOTE
Fuel tank including reserve	11.0 L (2.9 US gal)	
reserve	3.0 L (3.2 US qt)	

VAPOR HOSE ROUTING

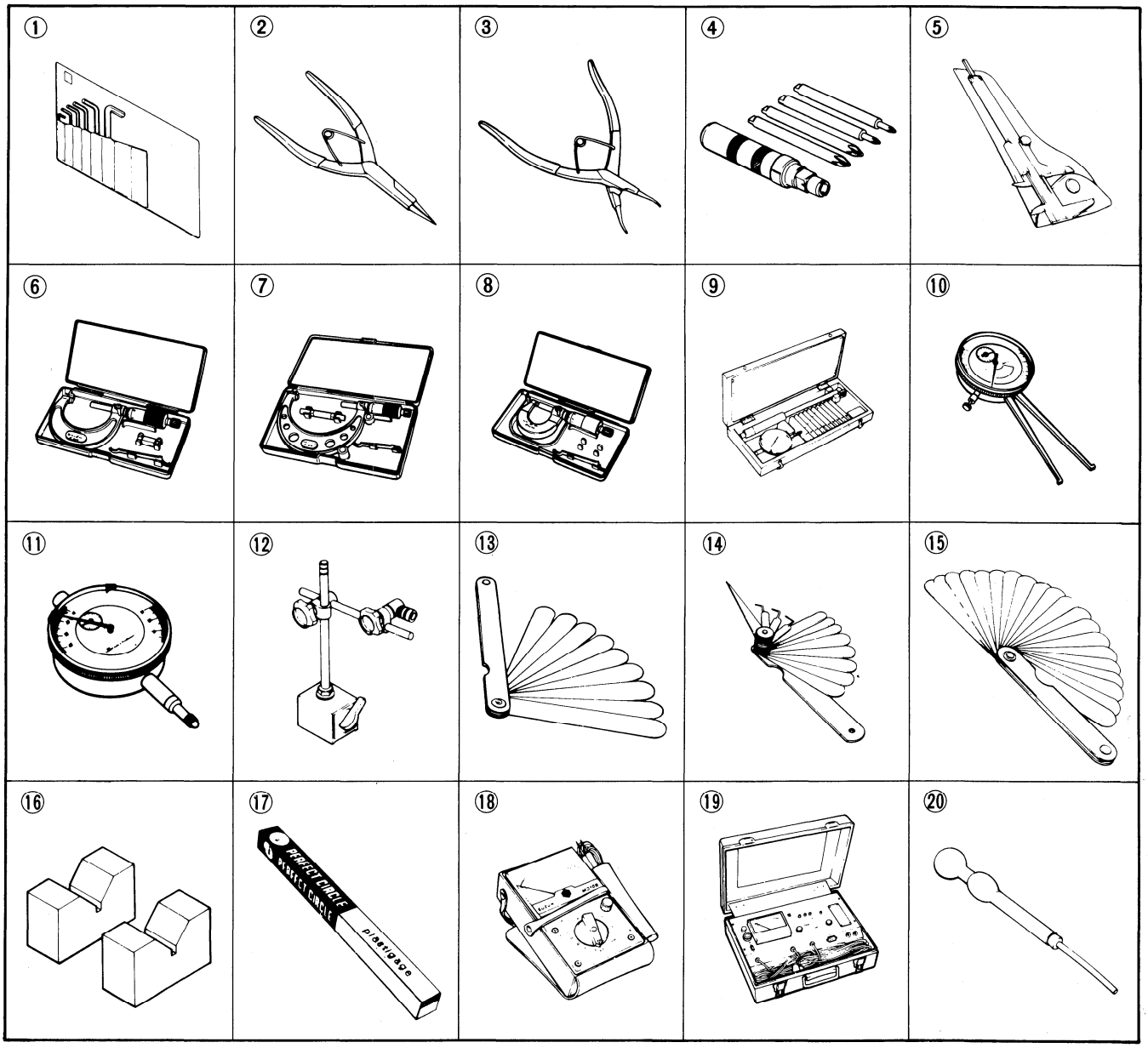


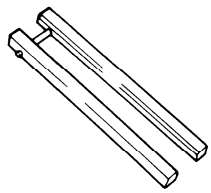
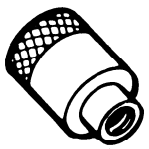
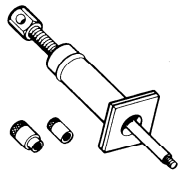
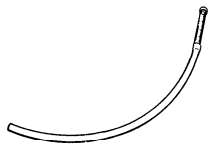
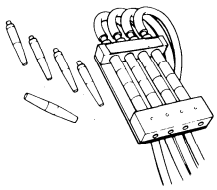
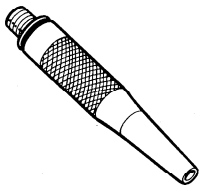
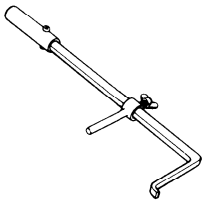
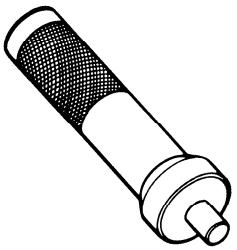
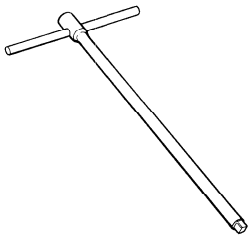
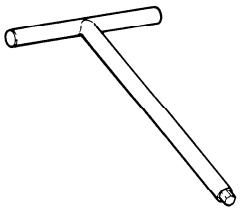
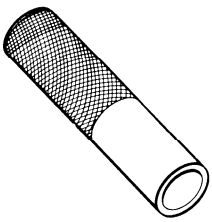
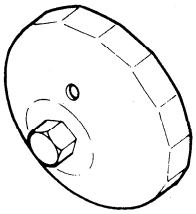
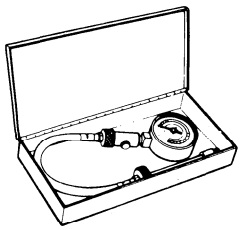
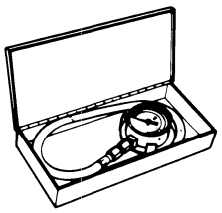
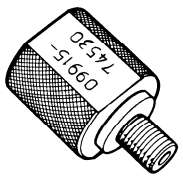
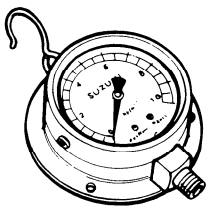
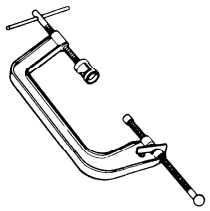
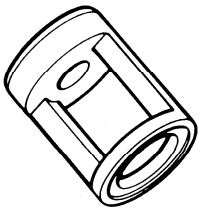
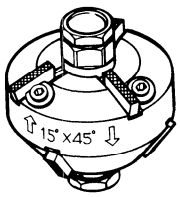
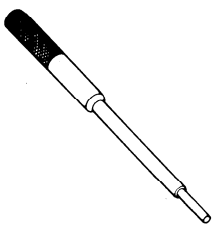
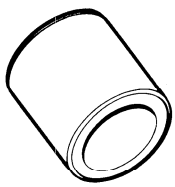
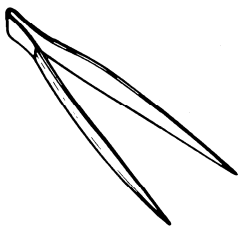
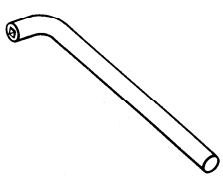
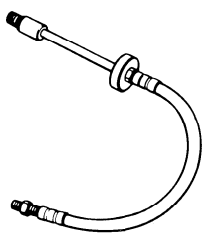
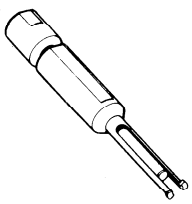
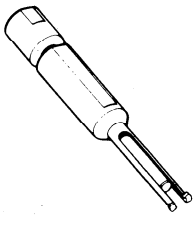
SPECIAL TOOLS

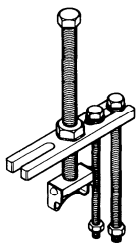
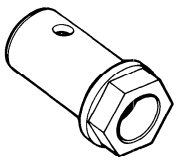
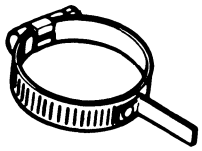
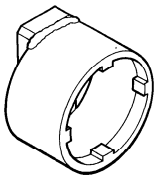
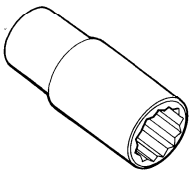
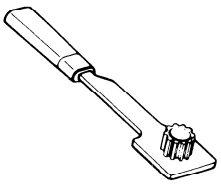
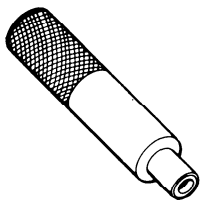
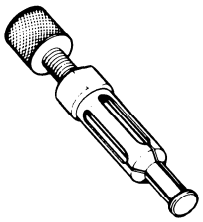
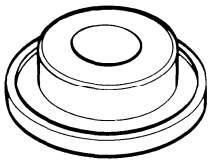
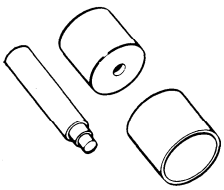
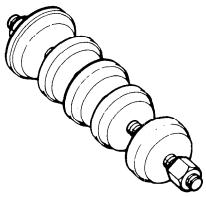
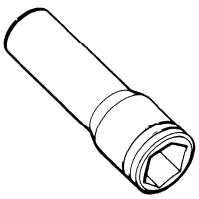
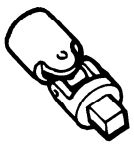
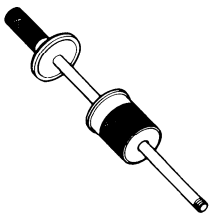
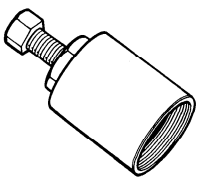
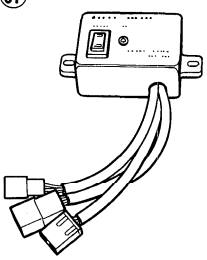
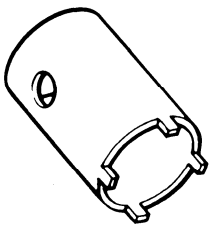
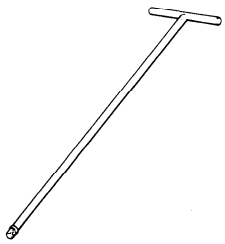
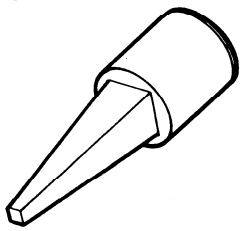
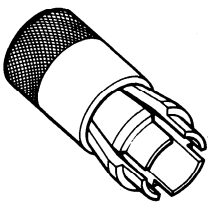
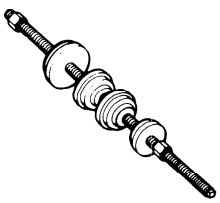
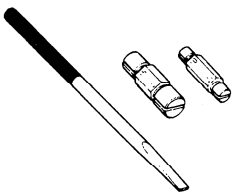
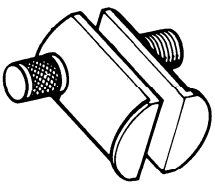
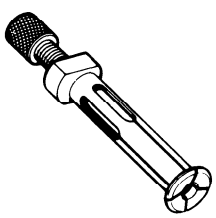
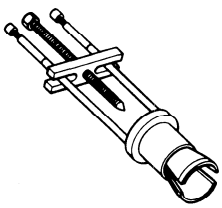
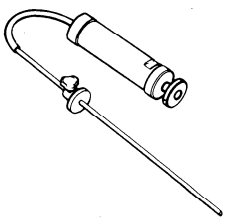
ITEM	PART NO.	PART NAME
1	09900-00401	"L"-type hexagon wrench set (Not available in USA)
2	09900-06107	Snap ring pliers
3	09900-06108	Snap ring pliers
4	09900-09003	Impact driver set
5	09900-20101	Vernier calipers
6	09900-20202	Micrometer (25 – 50 mm)
7	09900-20204	Micrometer (50 – 75 mm)
8	09900-20205	Micrometer (0 – 25 mm)
9	09900-20508	Cylinder gauge set
10	09900-20605	Dial calipers (Not available in USA)
11	09900-20606	Dial gauge (1/100 mm)
12	09900-20701	Magnetic stand (Not available in USA)
13	09900-20803	Thickness gauge
14	09900-20804	Thickness gauge
15	09900-20806	Thickness gauge
16	09900-21304	V-block (100 mm) (Not available in USA)
17	09900-22301	Plastigauge (Not available in USA)
18	09900-25002	Pocket tester
19	09900-28106	Electro tester
20	09900-28403	Hydrometer
21	09910-20115	Con-rod holder
22	09910-33210	Attachment
23	09910-34510	Piston pin puller
24	09913-10730	Fuel level gauge
25	09913-13121	Carburetor balancer
26	09913-13140	Adapter
27	09913-50121	Oil seal remover
28	09913-75820	Bearing installer
29	09914-24510	T-handle
30	09914-25811	"T"-type hexagon wrench
31	09914-79610	Bearing remover
32	09915-47320	Oil filter wrench
33	09915-64510	Compression gauge
34	09915-74510	Oil pressure gauge
35	09915-74530	Adapter

ITEM	PART NO.	PART NAME
36	09915-77330	Oil pressure gauge (meter)
37	09916-14510	Valve lifter
38	09916-14910	Valve lifter attachment
39	09916-24420	Valve seat cutter (N-116)
	09916-24440	Adapter (N-503-1)
	09916-24480	Solid pilot (N-140-5.5)
	09916-24910	Cutter blade (N-212)
	09916-24980	T-handle (N-503)
40	09916-34541	Reamer handle
41	09916-34550	Valve guide reamer
42	09916-34580	Valve guide hole reamer
43	09916-44910	Valve guide remover
44	09916-44920	Attachment
45	09916-84510	Tweezers
46	09917-10410	Valve adjuster driver
47	09918-03810	Adapter
48	09920-53722	Clutch sleeve hub holder
49	09921-20200	Bearing remover
50	09921-20210	Bearing remover
51	09921-21810	Bearing holder
52	09921-21820	Bearing retainer wrench
53	09923-73210	Bearing remover
54	09924-34510	Backlash measuring tool
55	09924-62410	Final drive gear bearing holder wrench
56	09924-62420	22 mm Long socket
57	09924-64510	Final drive gear coupling holder
58	09924-74510	Handle
59	09924-74520	Oil seal installer and remover
60	09924-74550	Bearing installer
61	09924-74570	Final driven gear bearing installer and remover
62	09924-84510	Bearing installer set
63	09930-10410	Socket wrench
64	09930-14530	Universal joint
65	09930-30102	Sliding shaft
66	09930-30720	Rotor remover
67	09930-70710	Ignitor checker

ITEM	PART NO.	PART NAME
68	09940-14911	Steering nut socket wrench
69	09940-34520	T-handle
70	09940-34561	Attachment "D"
71	09940-50112	Front fork oil seal installer
72	09941-34513	Steering race and swingarm bearing installer
73	09941-50110	Bearing remover (Not available in USA)
74	09941-54911	Bearing outer race remover
75	09941-64510	Bearing and oil seal remover
76	09941-74910	Steering bearing installer
77	09941-84510	Bearing inner race remover
78	09943-74111	Fork oil level gauge
79	09918-53810	Tensioner lock tool



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TIGHTENING TORQUE

ENGINE

ITEM		N·m	kg-m	lb-ft
Cylinder head cover bolt	M6	9 – 11	0.9 – 1.1	6.5 – 8.0
	M8	21 – 25	2.1 – 2.5	15.0 – 18.0
Cylinder head bolt and nut	M10	35 – 40	3.5 – 4.0	25.5 – 29.0
	M8	8 – 12	0.8 – 1.2	6.0 – 8.5
	M6	9 – 11	0.9 – 1.1	6.5 – 8.0
Primary drive gear bolt		80 – 110	8.0 – 11.0	58.0 – 79.5
Clutch sleeve hub nut		50 – 70	5.0 – 7.0	36.0 – 50.5
Rocker arm bolt		25 – 30	2.5 – 3.0	18.0 – 21.5
Chain guide bolt		8 – 12	0.8 – 1.2	6.0 – 8.5
Chain tensioner bolt		8 – 12	0.8 – 1.2	6.0 – 8.5
Cam chain sprocket bolt		14 – 16	1.4 – 1.6	10.0 – 11.5
Tappet adjuster lock nut		13 – 16	1.3 – 1.6	9.5 – 11.5
Crankcase bolt	M6	9 – 13	0.9 – 1.3	6.5 – 9.5
	M8	20 – 24	2.0 – 2.4	14.5 – 17.5
Secondary gear case bolt		20 – 24	2.0 – 2.4	14.5 – 17.5
Oil gallery plug	M6	4 – 7	0.4 – 0.7	3.0 – 5.0
	M8	15 – 20	1.5 – 2.0	11.0 – 14.5
	M10	12 – 18	1.2 – 1.8	8.5 – 13.0
	M14	20 – 25	2.0 – 2.5	14.5 – 18.0
	M16	20 – 25	2.0 – 2.5	14.5 – 18.0
Oil pipe clamp bolt		8 – 12	0.8 – 1.2	6.0 – 8.5
Magneto cover hole plug		12 – 18	1.2 – 1.8	8.5 – 13.0
T.D.C. Inspection plug		20 – 25	2.0 – 2.5	14.5 – 18.0
Oil drain plug		18 – 23	1.8 – 2.3	13.0 – 16.5
Oil pump bolt		7 – 9	0.7 – 0.9	5.0 – 6.5
Oil relief valve		25 – 30	2.5 – 3.0	18.0 – 21.5
Oil filter union bolt		12 – 18	1.2 – 1.8	8.5 – 13.0
Engine mounting bolt	L: 125	70 – 88	7.0 – 8.8	50.5 – 63.5
	L: 130	70 – 88	7.0 – 8.8	50.5 – 63.5
	L: 150	70 – 88	7.0 – 8.8	50.5 – 63.5
Drive shaft bolt		60 – 70	6.0 – 7.0	43.5 – 50.5

ITEM		N·m	kg-m	lb-ft
Secondary bevel drive gear shaft nut		80 – 110	8.0 – 11.0	58.0 – 79.5
Magneto rotor bolt		140 – 160	14.0 – 16.0	101.5 – 115.5
Frame mounting bolt		40 – 60	4.0 – 6.0	29.0 – 43.5
Engine mounting bracket bolt	M8	18 – 28	1.8 – 2.8	13.0 – 20.0
	M6	8 – 12	0.8 – 1.2	6.0 – 8.5
Con-rod nut		49 – 53	4.9 – 5.3	35.5 – 38.5

COOLING

ITEM		N·m	kg-m	lb-ft
Radiator mounting bolt	M10	50 – 65	5.0 – 6.5	36.0 – 47.0
Fan switch		10 – 15	1.0 – 1.5	7.0 – 11.0
Temperature gauge		12 – 15	1.2 – 1.5	8.5 – 11.0

SHAFT DRIVE

ITEM	N·m	kg-m	lb-ft
Secondary drive bevel gear housing bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Secondary driven bevel gear housing bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Final drive bevel gear shaft nut	90 – 110	9.0 – 11.0	65.0 – 79.5
Final drive bevel gear bearing stopper	90 – 120	9.0 – 12.0	65.0 – 87.0
Final driven gear bearing retainer screw	8 – 10	0.8 – 1.0	6.0 – 7.0
Final gear bearing case bolt	20 – 26	2.0 – 2.6	14.5 – 19.0

CHASSIS

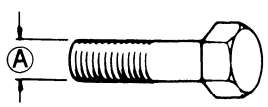
ITEM	N·m	kg-m	lb-ft
Steering stem head nut	60 – 100	6.0 – 10.0	43.5 – 72.5
Front fork cap bolt	25 – 30	2.5 – 3.0	18.0 – 21.5
Front fork lower clamp bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
Handlebar clamp bolt	12 – 20	1.2 – 2.0	8.5 – 14.5
Handlebar holder bolt	40 – 50	4.0 – 5.0	29.0 – 36.0
Handlebar holder nut	40 – 50	4.0 – 5.0	29.0 – 36.0
Front fork damper rod bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Front axle nut	36 – 52	3.6 – 5.2	26.0 – 37.5
Front axle clamp bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Front master cylinder mounting bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
Brake hose union bolt	20 – 25	2.0 – 2.5	14.5 – 18.0

ITEM	N·m	kg-m	lb-ft
Caliper mounting bolt	25 – 40	2.5 – 4.0	18.0 – 29.0
Caliper housing bolt	15 – 20	1.5 – 2.0	11.0 – 14.5
Caliper air bleeder valve	6 – 9	0.6 – 0.9	4.5 – 6.5
Disc plate bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Hub frange bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
Spoke nipple	4 – 5	0.4 – 0.5	3.0 – 3.5
Clutch master cylinder mounting bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
Rear shock absorber fitting nut (upper)	20 – 30	2.0 – 3.0	14.5 – 21.5
(lower)	20 – 30	2.0 – 3.0	14.5 – 21.5
Rear axle nut	60 – 96	6.0 – 9.6	43.5 – 69.5
Rear brake cam lever bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
Rear torque link nut (front)	20 – 30	2.0 – 3.0	14.5 – 21.5
(rear)	20 – 30	2.0 – 3.0	14.5 – 21.5
Final gear case joint nut	35 – 45	3.5 – 4.5	25.5 – 32.5
Rear wheel driven joint bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
Rear swingarm pivot nut	50 – 80	5.0 – 8.0	36.0 – 58.0
Front footrest bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Rear hub shock absorber bolt	90 – 100	9.0 – 10.0	65.0 – 72.5

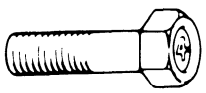
TIGHTENING TORQUE CHART

For other bolts and nuts not listed above, refer to this chart:

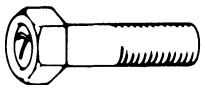
Bolt Diameter Ⓐ (mm)	Conventional or "4" marked bolt			"7" marked bolt		
	N·m	kg-m	lb-ft	N·m	kg-m	lb-ft
4	1.0 – 2.0	0.1 – 0.2	0.7 – 1.5	1.5 – 3.0	0.15 – 0.3	1.0 – 2.0
5	2.0 – 4.0	0.2 – 0.4	1.5 – 3.0	3.0 – 6.0	0.3 – 0.6	2.0 – 4.5
6	4.0 – 7.0	0.4 – 0.7	3.0 – 5.0	8.0 – 12.0	0.8 – 1.2	6.0 – 8.5
8	10.0 – 16.0	1.0 – 1.6	7.0 – 11.5	18.0 – 28.0	1.8 – 2.8	13.0 – 20.0
10	22.0 – 35.0	2.2 – 3.5	16.0 – 25.5	40.0 – 60.0	4.0 – 6.0	29.0 – 43.5
12	35.0 – 55.0	3.5 – 5.5	25.5 – 40.0	70.0 – 100.0	7.0 – 10.0	50.5 – 72.5
14	50.0 – 80.0	5.0 – 8.0	36.0 – 58.0	110.0 – 160.0	11.0 – 16.0	79.5 – 115.5
16	80.0 – 130.0	8.0 – 13.0	58.0 – 94.0	170.0 – 250.0	17.0 – 25.0	123.0 – 181.0
18	130.0 – 190.0	13.0 – 19.0	94.0 – 137.5	200.0 – 280.0	20.0 – 28.0	144.5 – 202.5



Conventional bolt



"4" marked bolt



"7" marked bolt

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	29.9—30.1 (1.78—1.19)	———
	EX.	25.9—26.1 (1.02—1.03)	———
Valve lift	IN.	8.5 (0.33)	———
	EX.	8.5 (0.33)	———
Valve clearance(when cold)	IN. & EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.020—0.047 (0.0008—0.0019)	0.35 (0.014)
	EX.	0.035—0.062 (0.0014—0.0024)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.465—5.480 (0.2152—0.2157)	———
	EX.	5.450—5.465 (0.2146—0.2152)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	4.0 (0.16)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length	INNER	———	32.5 (1.28)
	OUTER	———	36.0 (1.42)
Valve spring tension	INNER	6.51 – 7.45 kg (14.35 – 16.51 lbs) at length 24.5 mm (0.96 in)	———
	OUTER	12.09—13.91 kg (26.65—30.67 lbs) at length 36.0 mm (1.42 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.925—35.965 (1.4144—1.4159)	35.62 (1.401)
	EX.	36.919—36.959 (1.4535—1.4551)	36.61 (1.441)
Camshaft journal oil clearance	0.032 – 0.066 (0.0013 – 0.0026)		0.150 (0.0059)

ITEM	STANDARD		LIMIT
Camshaft journal holder I.D.	No. 1 Right side No. 2 Left side	20.012 – 20.025 (0.7879 – 0.7884)	———
	No. 1 Left side No. 2 Right side	25.012 – 25.025 (0.9847 – 0.9852)	———
Camshaft journal O.D.	No. 1 Right side No. 2 Left side	19.959 – 19.980 (0.7858 – 0.7866)	———
	No. 1 Left side No. 2 Right side	24.959 – 24.980 (0.9826 – 0.9835)	———
Camshaft runout	———		0.10 (0.004)
Cam chain 20-pitch length	———		128.9 (5.07)
Rocker arm I.D.	IN. & EX.	12.000–12.018 (0.4724–0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966–11.984 (0.4711–0.4718)	———
Cylinder head distortion		———	0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	13–16 kg/cm² (185–228 psi)			11 kg/cm² (156 psi)
Compression pressure difference	———			2 kg/cm² (28 psi)
Piston to cylinder clearance	0.050 – 0.060 (0.0020–0.0024)			0.120 (0.0047)
Cylinder bore	80.000–80.015 (3.1496–3.1502)			80.080 (3.1527)
Piston diam.	79.945–79.960 (3.1474–3.1480) Measure at 15 mm (0.6 in) from the skirt end.			79.880 (3.1449)
Cylinder distortion	———			0.05 (0.002)
Piston ring free end gap	1st	N	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd	N	Approx. 10.5 (0.413)	8.4 (0.331)
Piston ring end gap	1st		0.20–0.35 (0.008–0.014)	0.70 (0.28)
	2nd		0.20–0.035 (0.008–0.014)	0.70 (0.28)
Piston ring to groove clearance	1st		———	0.180 (0.007)
	2nd		———	0.150 (0.006)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01—1.03 (0.0398—0.0406)	———
	2nd	1.21—1.23 (0.0476—0.0484)	———
	Oil	2.51—2.53 (0.0988—0.0996)	———
Piston ring thickness	1st	0.975—0.990 (0.0384—0.0390)	———
	2nd	1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	20.003 — 20.008 (0.7875 — 0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996 — 20.000 (0.7872 — 0.7874)		19.988 (0.7869)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010—20.018 (0.7878—0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10—0.20 (0.004—0.010)	0.30 (0.012)
Conrod big end width	21.95—22.00 (0.8642—0.8661)	———
Crank pin width	22.10—22.15 (0.8700—0.8720)	———
Conrod big end oil clearance	0.024—0.042 (0.0009—0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982—41.000 (1.6135—1.6142)	———
Crankshaft journal oil clearance	0.020 — 0.050 (0.0008—0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965—47.980 (1.8884—1.8890)	———
Crankshaft thrust bearing thickness	1.925—2.175 (0.0758—0.0856)	———
Crankshaft thrust clearance	0.040—0.120 (0.0016—0.0047)	———
Crankshaft runout	———	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 × 32/29)	———
Oil pressure (at 60°C, 140°F)	Above 3.5 kg/cm² (50 psi) Below 6.5 kg/cm² (92 psi) at 3 000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92—3.08 (0.115—0.121)	2.62 (0.103)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.622—0.630)		15.0 (0.591)
Driven plate thickness	1.60 ± 0.05 (0.0630 ± 0.0002)		———
Driven plate distortion	———		0.10 (0.004)
Clutch spring free length	———		34.0 (1.34)
Clutch master cylinder bore	14.000—14.043 (0.5512—0.5529)		———
Clutch master cylinder piston diam.	13.957—13.984 (0.5495—0.5506)		———
Clutch release cylinder bore	38.100—38.162 (1.5000—1.5024)		———
Clutch release cylinder piston diam.	38.042—38.075 (1.4977—1.4990)		———

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		———
Secondary reduction ratio		1.133 (30/30 × 17/15)		———
Final reduction ratio		3.090 (34/11)		———
Gear ratios	Low	2.285 (32/14)		———
	2nd	1.631 (31/19)		———
	3rd	1.227 (27/22)		———
	4th	1.000 (25/25)		———
	Top	0.851 (23/27)		———
Shift fork to groove clearance		No.1	0.10—0.30 (0.004—0.012)	0.50 (0.020)
		No.2	0.10—0.30 (0.004—0.012)	0.50 (0.020)
Shift fork groove width		No.1	5.50—5.60 (0.217—0.220)	———
		No.2	4.50—4.60 (0.177—0.181)	———
Shift fork thickness		No.1	5.30—5.40 (0.209—0.213)	———
		No.2	4.30—4.40 (0.169—0.173)	———

SHAFT DRIVE

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.05—0.32 (0.002—0.013)		———
Final bevel gear backlash	Drive side	0.03—0.064 (0.001—0.025)	———

CARBURETOR

ITEM	SPECIFICATION	
	No.1 (Rear side)	No.2 (Front side)
Carburetor Type	MIKUNI BS34SS	MIKUNI BDS34SS
I.D. No.	38A00	←
Bore size	34 mm (1.34 in)	←
Idle r/min.	1 000 ± 100 r/min.	←
Fuel level	7.0 ± 0.5 mm (0.28 ± 0.02 in)	17.0 ± 0.5 mm (0.57 ± 0.02 in)
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	11.5 ± 1.0 mm (0.45 ± 0.04 in)
Main jet (M.J.)	#132.5	←
Main air jet (M.A.J.)	0.7 mm	←
Jet needle (J.N.)	5D23	5D21
Needle jet (N.J.)	P-1	P-0
Throttle valve (Th.V.)	#110	←
Pilot jet (P.J.)	#40	#32.5
By pass (B.P.)	1.1, 1.1, 1.3 mm	1.0, 1.1 1.1 mm
Pilot outlet (P.O.)	1.0 mm (0.04 in)	←
Valve seat (V.S.)	1.5 mm (0.06 in)	←
Starter jet (G.S.)	#40	#37.5
Pilot screw (P.S.)	PRE-SET	←
Pilot air jet (P.A.J.)	PRE-SET	←
Throttle cable play	0.5—1.0 mm (0.02—0.04 in)	←

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION		NOTE
Ignition timing	5° B.T.D.C. Below 1 650 ± 100 r/min. and 30° B.T.D.C. Above 3 500 ± 100 r/min.		
Firing order	1·2		
Spark plug	Type	NGK: DP8EA-9 N.D.:X24EP-UP	
	Gap	0.8—0.9 (0.031 — 0.035)	
Spark performance	Over 8 (0.3) at 1 atm.		
Signal coil resistance	Approx.	50—200 Ω	G—Bl, B—Y
Ignition coil resistance	Primary	2—6 Ω	O/W—W or B/Y
	Secondary	10—25 kΩ	Plug cap— W or B/Y

ITEM	STANDARD		LIMIT
Generator no-load voltage	More than 65 V (AC) at 5 000 r/min.		
Regulated voltage	14—15 V at 5 000 r/min.		
Starter motor brush length	Limit: 9 (0.35)		N.D.
Commutator under-cut	Limit: 0.2 (0.008)		
Starter relay resistance	2—6 Ω		
Battery	Type designation	YB16B-A	
	Capacity	12V57.6kC(16Ah)/10HR	
	Standard electrolyte S.G.	1.28 at 20°C (68°F)	
Fuse size	Headlight	10 A	
	Signal	10 A	
	Ignition	10 A	
	Tail	10 A	
	Power source	10 A	
Circuit breaker	30 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Tail/Brake light		8/23
Turn signal light	Front	8/23
	Rear	23
Speedometer light		3
Water temp. indicator light		3
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		3
Oil pressure indicator light		3
Side stand check light		3
License light		8

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20—30 (0.8—0.12)		———
Rear brake pedal height	40 (1.6)		———
Brake drum I.D.	Rear	———	180.7 (7.11)
Brake lining thickness	———		1.5 (0.06)
Brake disc thickness	5.0 ± 0.2 (0.197 ± 0.008)		4.5 (0.18)

ITEM	STANDARD		LIMIT
Brake disc runout		———	0.30 (0.012)
Master cylinder bore		15.870–15.913 (0.6248–0.6265)	———
Master cylinder piston diam.		15.827–15.854 (0.6231–0.6242)	———
Brake caliper cylinder bore		38.180–38.256 (1.5031–1.5061)	———
Brake caliper piston diam.		38.098–38.148 (1.4999–1.5019)	———
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axel runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Tire size	Front	100/90-19 57H	———
	Rear	140/90-15 70H	———
Tire tread depth	Front	———	1.6 (0.06)
	Rear	———	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITME	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	———	
Front fork spring free length	———	563 (22.2)	
Front fork oil level	144 (5.67)	———	
Rear wheel travel	115 (4.5)	———	
Swingarm pivot shaft runout	———	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	200	2.00	28	225	2.25	32
REAR	225	2.25	32	250	2.50	36

FUEL + OIL

ITEM		SPECIFICATION	NOTE
Fuel type		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 tank including reserve		12.0 L (3.2 US gal)	
reserve		3.0 L (3.4 US qt)	
Engine oil type		SAE 10W/40, API SE or SF	
Engine oil capacity	Change	2 400 ml (2.5 US qt)	
	Filter change	2 800 ml (3.0 US qt)	
	Overhaul	3 300 ml (3.5 US qt)	
Front fork oil type		Fork oil #10	
Front fork oil capacity (each leg)		337 ml (11.4 US oz)	
Final bevel gear oil type		SAE 90 hypoid gear oil with GL-5 under API classification	
Final bevel gear oil capacity		200—220 ml (6.8—7.4 US oz)	
Brake fluid type		DOT3 or DOT4	
Radiator		1 700 ml (1.8 US qt)	

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	———
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	———
Radiator cap valve release pressure		0.90 ± 0.15 kg/cm² (12.8 ± 2.1 psi, 90 ± 15 kPa)	———
Electric fan thermo-switch operating temperature	ON	Approx. 110°C (230°F)	———
	OFF	Approx. 104°C (219°F)	———

FOREWORD

This section has been produced to aid SUZUKI mechanics in properly maintaining and repairing VS700GLEP/GLEF.
This manual has been written primarily for the experienced SUZUKI mechanic but will also be very useful even for the apprentice mechanic and do-it-yourself mechanic. The entire manual should be thoroughly reviewed before any servicing is performed.

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NOTE:
Any differences in service data and service specifications with those that apply to the VS700GL ('86 model) model are clearly indicated with an asterisk (*).
Refer to the service manual (VS700GL 99500-36050-03E) for details which are not given in this supplementary service manual.

VIEW OF VS700GLE



VS700GLEP



VS700GLEF

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 225 mm (87.6 in)
Overall width	710 mm (28.0 in) . . . . . GLEF 750 mm (29 5 in) . . . . . GLEP
Overall height	1 000 mm (43.3 in) . . . . . GLEF 1 085 mm (46.7 in) . . . . . GLEP
Wheelbase	1 545 mm (60.8 in)
Ground clearance	125 mm (4.9 in)
Seat height	685 mm (27.0 in)
*Dry mass	VS700GLEF 188 kg (414 lbs) 189 kg (417 lbs) . . . . . . For California model VS700GLEP 189 kg (417 lbs) 190 kg (419 lbs) . . . . . . For California model

ENGINE

Type	Four-stroke, water-cooled, OHC, TSCC, 45-degree V-twin
Number of cylinders	2
Bore	80.0 mm (3.150 in)
Stroke	69.6 mm (2.740 in)
Piston displacement	699 cm^3 (42.7 cu. in)
Carburetor, front rear	MIKUNI BDS34SS, single MIKUNI BS34SS, single
Air cleaner	Polyester fiber element
Starter system	Electric
Lubrication system	Wet sump
Compression ratio	10.0 : 1

TRANSMISSION

Clutch	Wet multi-plate type, hydraulically operated
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction	1.690 (71/42)
Secondary reduction	1.133 (30/30 x 17/15)
Final reduction	3.090 (34/11)
Gear ratios, Low	2.285 (32/14)
2nd 3rd 4th Top	1.631 (31/19) 1.227 (27/22) 1.000 (25/25) 0.851 (23/27)
Drive system	Shaft drive

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Swinging arm, oil damped, spring pre-load 5-way adjustable
Steering angle	40° (right & left)
Caster	56° 45′
Trail	143 mm (5.6 in)
Turning radius	2.8 m (9.2 ft)
Front brake	Disc brake, hydraulically operated
Rear brake	Internal expanding
Front tire size	100/90-19 57H
Rear tire size	140/90-15 70H
Front fork stroke	130 mm (5.1 in)
Rear wheel travel	90 mm (3.5 in)

ELECTRICAL

Ignition type	Transistorized
Ignition timing	5° B.T.D.C. below 1 650 r/min and 30° B.T.D.C. above 3 500 r/min
Spark plug	NGK DP8EA-9 or NIPPON DENSO X24EP-U9
Battery	12V 57.6 kC (16 Ah)/ 10 HR
Fuse	10/10/10/10/10A
Circuit breaker	30A
Headlight	12V 60/55W
Tail/Brake light	12V 8/23W
Running/Front turn signal light	12V 8/23W
Rear turn signal light	12V 23W
Speedometer light	12V 3W
Neutral indicator light	12V 3W
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 3W
Side stand check light	12V 3W
Water temperature indicator light	12V 3W
Oil pressure indicator light	12V 3W
License plate light	12V 8W

CAPACITIES

Fuse tank including reserve	12.0 L (3.2/2.6 US/Imp gal) 11.0 L (2.9/2.4 US/Imp gal) . . . . For California model
reserve	3.0 L (3.4/2.9 US/Imp qt)
Engine oil	2.4 L (2.5/2.1 US/Imp qt)
Coolant	1.7 L (1.8/1.5 US/Imp qt)

GLEF . . . . . Flat handlebar
GLEP . . . . . Pullback handlebar

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. Traveling distance are expressed in terms of kilometers or miles.

NOTE:
Vehicles operated under severe conditions may require more frequent servicing.

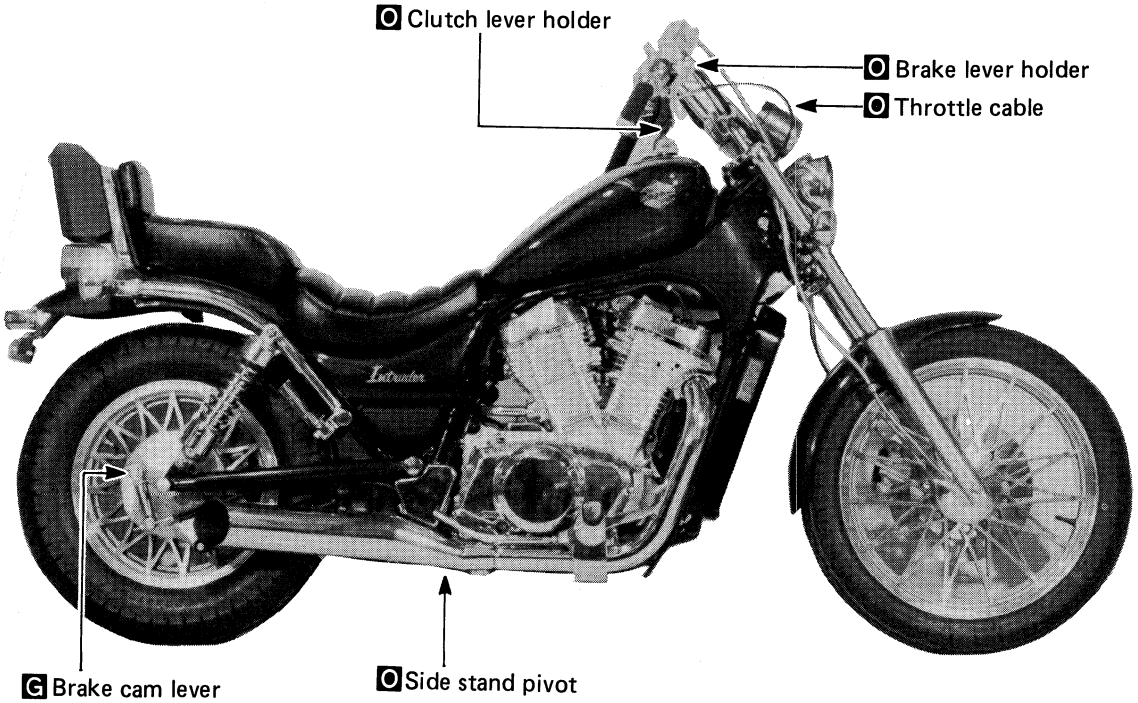
PERIODIC MAINTENANCE CHART

Item \ Interval						
	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		–	I	I	I	I
Air cleaner element		Clean every 6 000 km (4 000 miles) and replace every 12 000 km (7 500 miles)				
Valve clearance		–	I	I	I	I
Spark plugs		–	I	R	I	R
Fuel line		I	I	I	I	I
		Replace every 4 years				
Engine oil and oil filter		R	–	R	–	R
Carburetor		I	I	I	I	I
Clutch hose		I	I	I	I	I
		Replace every 4 years				
Clutch fluid		I	I	I	I	I
		Change every 2 years				
Radiator hose		I	–	I	–	I
		Replace every 4 years				
Coolant		Change every 2 years				
Final gear oil		R	–	I	–	I
Brake hose		I	I	I	I	I
		Replace every 4 years				
Brake fluid		I	I	I	I	I
		Change every 2 years				
Brakes		I	I	I	I	I
Tires		I	I	I	I	I
Steering		I	I	I	I	I
Front fork		I	–	I	–	I
Chassis bolts and nuts		T	T	T	T	T

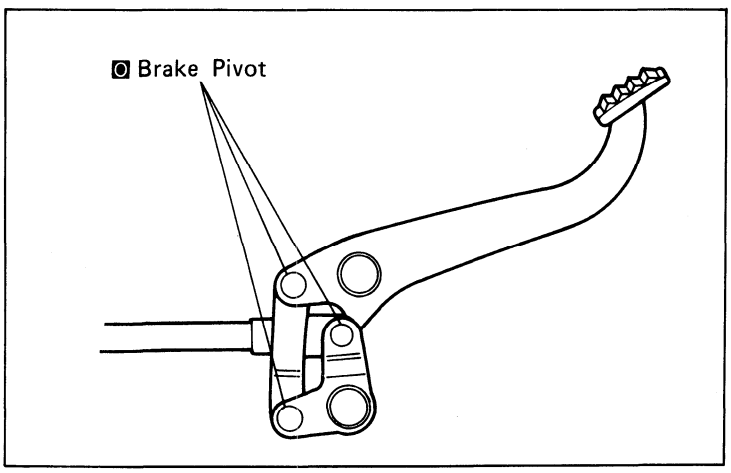
NOTE: I = Inspect, R = Replace, T = Tighten

LUBRICATION POINT

Proper lubrication is important for smooth operation and long life of each working part of the motorcycle and also for safe riding. It is a good practice to oil the machine after a long rough ride and after getting it wet in the rain or after washing it. Major oiling points are indicated below.



O . . . . . Motor oil
G . . . . . Grease



CAUTION:
Be careful not to apply too much grease to the brake cam shaft. If grease gets on the linings, brake slippage will result.

MAINTENANCE AND TUNE-UP PROCEDURE

BATTERY

Inspect Every 6 000 km (4 000 miles or 12 months)

- Disconnect the battery ⊖ lead wire ①.

CAUTION:
After disconnecting the battery ⊖ lead wire, make sure to remove the battery ⊖ terminal bolt to prevent the contact of ⊖ terminal bolt and other part.

- Remove battery ⊕ terminal cover by screwing the securing bolt.
- Disconnect the battery ⊕ terminal.

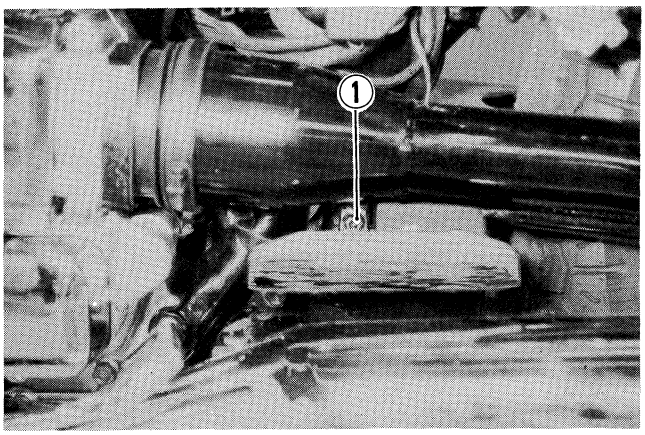
NOTE:
After disconnecting the ⊕ terminal, make sure to remove the ⊕ terminal bolt.

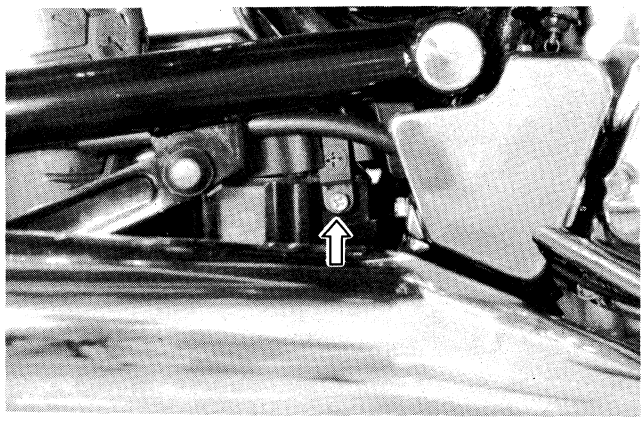
- Remove the battery case bottom plate right and left bolts ④ and open the case bottom plate.
- Remove the battery.
- Check electrolyte for level and specific gravity. Add distilled water, as necessary to keep the surface of the electrolyte above the MIN. level line but not above the MAX. level line.
- For checking specific gravity, use a hydrometer to determine the charged condition.

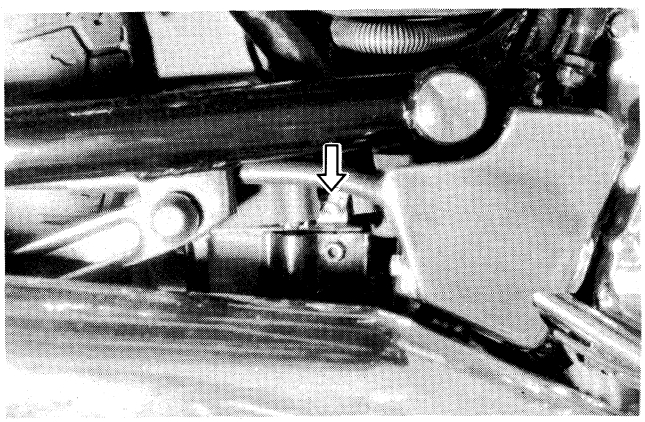
09900 - 28403	Hydrometer

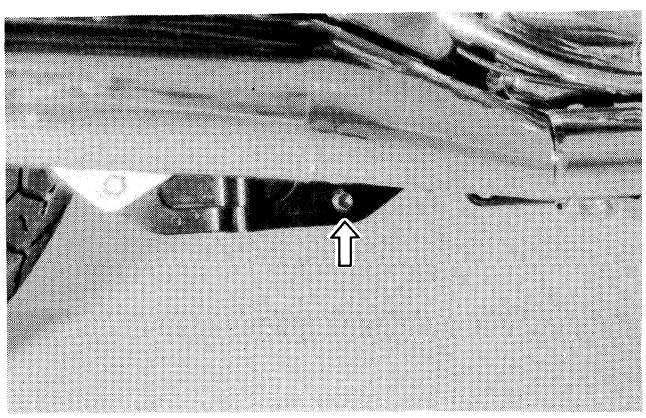
Standard specific gravity	1.28 at 20°C (68°F)

- An S.G. reading of 1.28 (at 20°C) or under means that the battery needs recharging. Remove the battery from the machine and charge it with a battery charger.



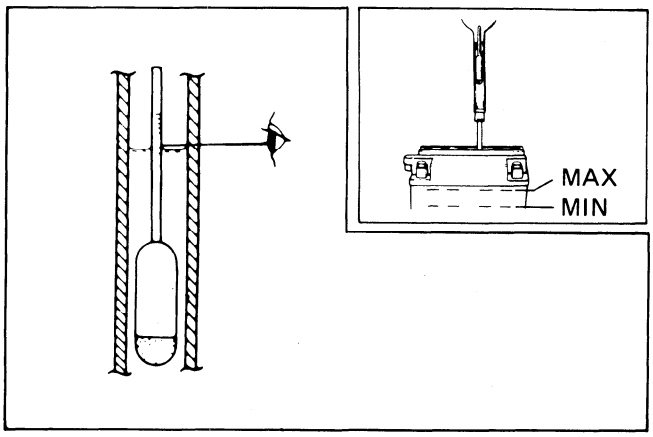






CAUTION:
* **Never charge a battery while still in the machine as damage may result to battery or regulator/rectifier.**
* **Be careful not to bend, obstruct, or change the routing of the vent tube from the battery, make certain that the vent tube is attached to the battery vent fitting and that the opposite end is always open.**

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



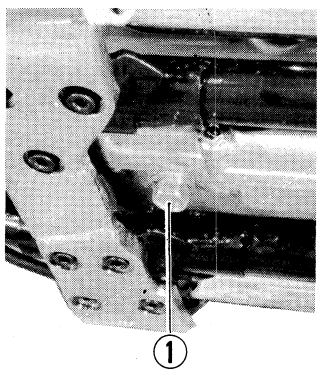
- Make sure that the breather pipe is tightly secured and undamaged, and is routed correctly.

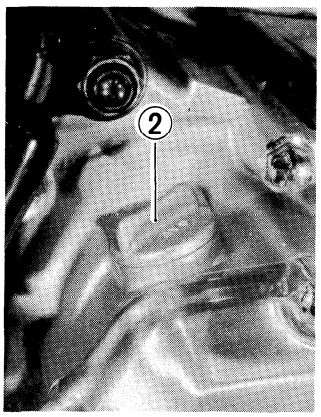
ENGINE OIL AND OIL FILTER

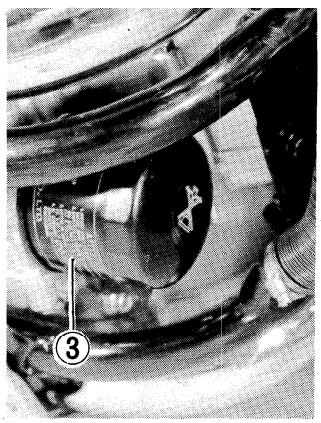
Replace Initialy at 1 000 km (600 miles or 2 months) and Every 12 000 km (7 500 miles or 24 months).

The 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, supported on the center stand.
- Place an oil pan under the engine and drain the oil by removing the drain plug ① and filler cap ②.
- Remove the oil filter ③ by using the special tool and replace it with a new one.



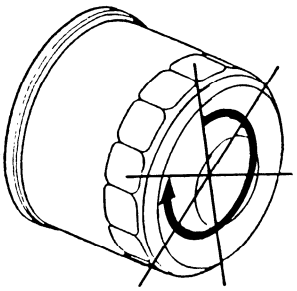




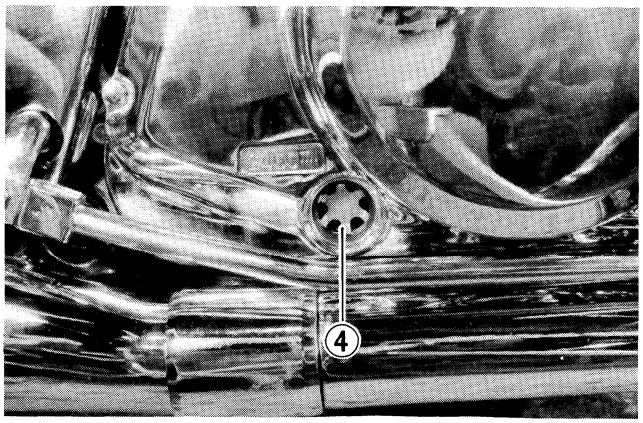


09915 - 47320	Oil filter wrench

- Apply engine oil lightly to the gasket of the new filter before installation.
- Install the new filter turning it by hand until you feel the filter gasket contacts the mounting surface. Then tighten 5/6 turn using the oil filter wrench.
- Fit drain plug ① securely, and install fresh oil through the filler. The engine will hold about 2.8 L of oil.
  Use API classification of SE or SF oil with SAE 10W/40 viscosity.
- Start up the engine and allow it to run for several seconds at idling speed.
- Check for oil leakage around the oil filter.
- Turn off the engine and wait about one minute, then check the oil level through the inspection window ④. If the level is below mark "F", supply oil to that level.



Tighten 5/6 turn after contacting gasket.

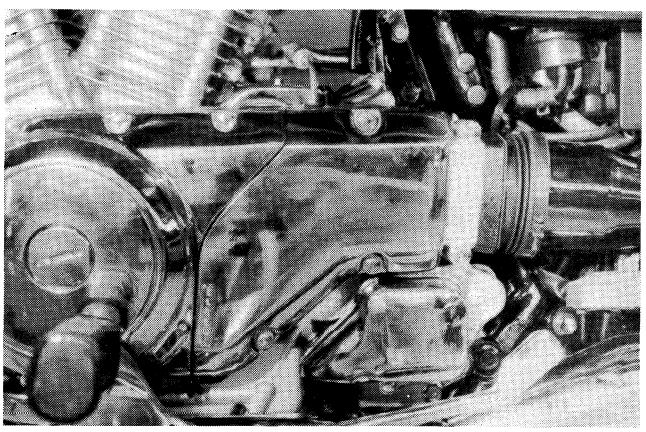


NECESSARY AMOUNT OF ENGINE OIL

Oil change	2.4 L
Filter change	2.8 L
Overhaul engine	3.3 L

SHAFT DRIVE

Secondary cover is changed to floating type.

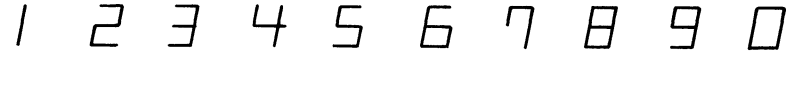


EMISSION CONTROL CARBURETOR COMPONENTS

VS700 motorcycles are equipped with precision, manufactured carburetors for emission level control. These carburetors require special mixture control components and other precision adjustments to function properly.

There are several carburetor mixture control components in each carburetor assembly. Three (3) of these components are machined to much closer tolerances than standard machined carburetor jets. These three (3) particular jets – MAIN JET, NEEDLE JET, PILOT JET – must not be replaced by standard jets. To aid in identifying these three (3) jets a different design of letter and number are used. If replacement of these close tolerance jets becomes necessary, be sure to replace them with the same type close tolerance jets marked as in the examples shown below.

The jet needle is also of special manufacture. Only one clip position is provided on the jet needle. If replacement becomes necessary the jet needle may only be replaced with an equivalent performing replacement component. Suzuki recommends that Genuine Suzuki Parts be utilized whenever possible for the best possible performance and durability.

Conventional Figures Used on Standard Tolerance Jet Components	1 2 3 4 5 6 7 8 9 0
Emission Type Figures Used On Close Tolerance Jet Components	

The carburetor specification for the emission-controlled VS700 are as follows.

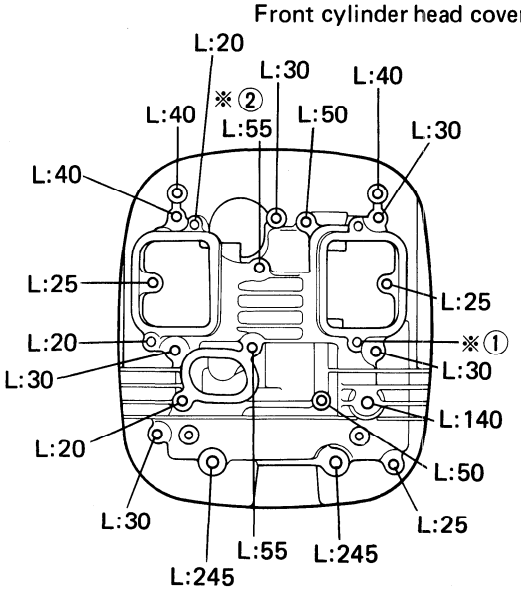
Carburetor I.D. No.	Main Jet	Needle Jet	Jet Needle	Pilot Jet	Pilot Screw
38A10 California model	#132.5 (No. 1) #132.5 (No. 2)	P-1 (No. 1) P-0 (No. 2)	5D23 (No. 1) 5D21 (No. 2)	#40 (No. 1) #32.5 (No. 2)	PRE-SET DO NOT ADJUST
38A00 Other state models	#132.5 (No. 1) #132.5 (No. 2)	P-1 (No. 1) P-0 (No. 2)	5D23 (No. 1) 5D21 (No. 2)	#40 (No. 1) #32.5 (No. 2)	PRE-SET DO NOT ADJUST

The pilot screw is pre-set by the factory utilizing specialized testing and adjusting procedures. The pilot screw is not adjustable as the idle circuit is "sealed" after factory adjustment. Adjusting, interferring with, improper replacement, or resetting of any of the carburetor components may adversely affect carburetor performance and cause the motorcycle to exceed the exhaust emission level limits. If persons, who are unaware of these special carburetor servicing requirements tamper with the carburetors the Suzuki dealer should restore the carburetors to their original condition or if unable to effect repairs, contact the distributors representative for further technical information and assistance.

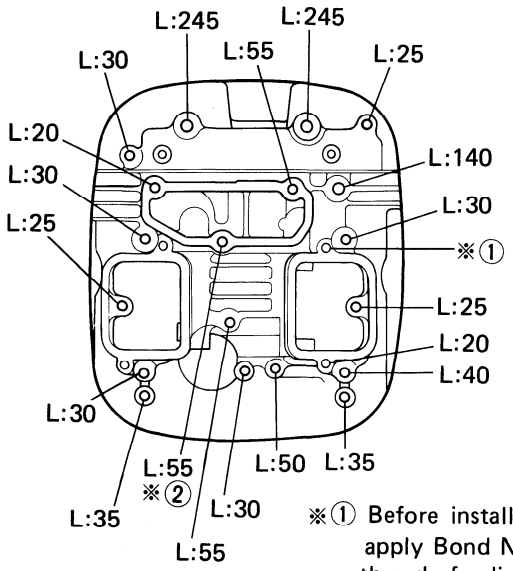
CYLINDER

Change the location of cylinder head cover bolt.

Front cylinder head cover



Rear cylinder head cover



※① Before installing the stud bolt apply Bond No. 1216 to the thread of cylinder head cover side.

※② Apply Bond No. 1215 to the thread of bolt.

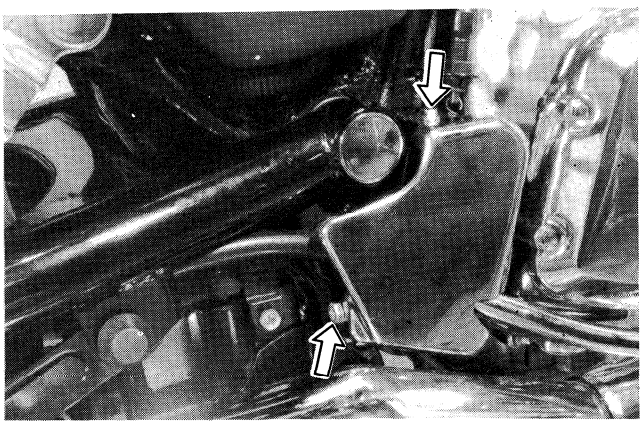
L : Length Unit : mm

CHASSIS

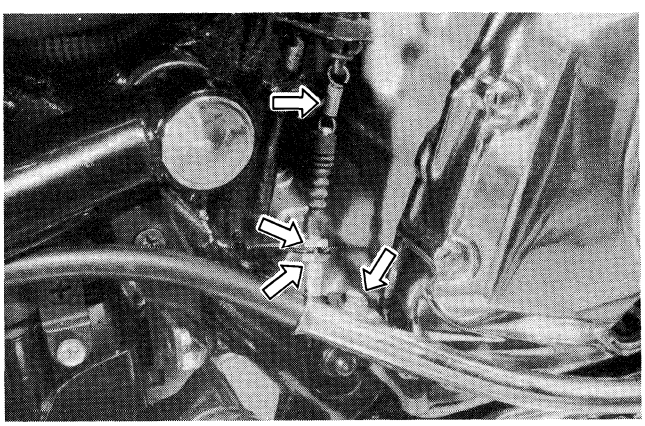
REAR BRAKE CABLE

REMOVAL AND DISASSEMBLY

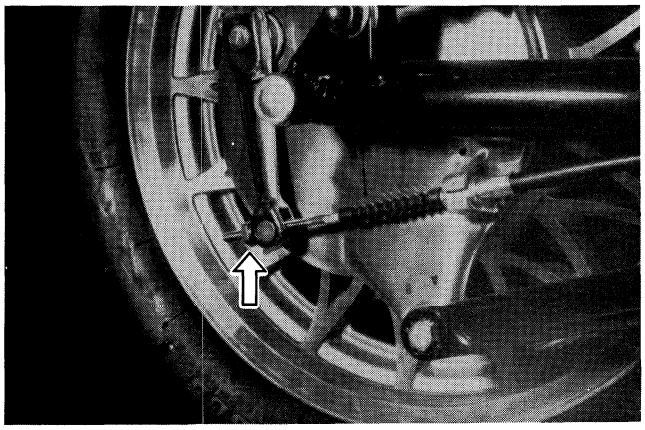
- Remove the brake cable cover.



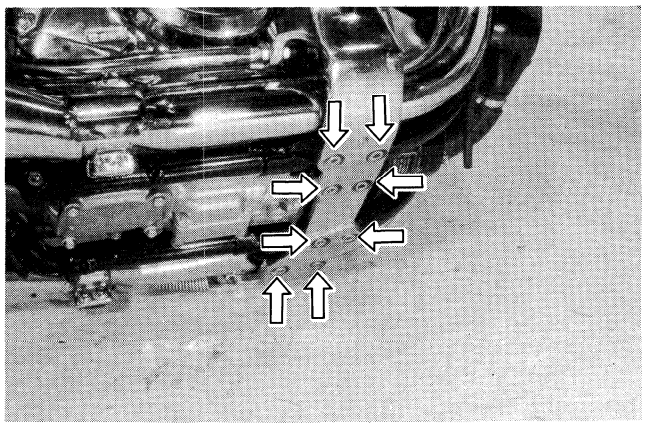
- Remove the brake cable retainer bolt.
- Remove the rear brake light switch cable and spring.



- Remove the rear brake cable adjuster.

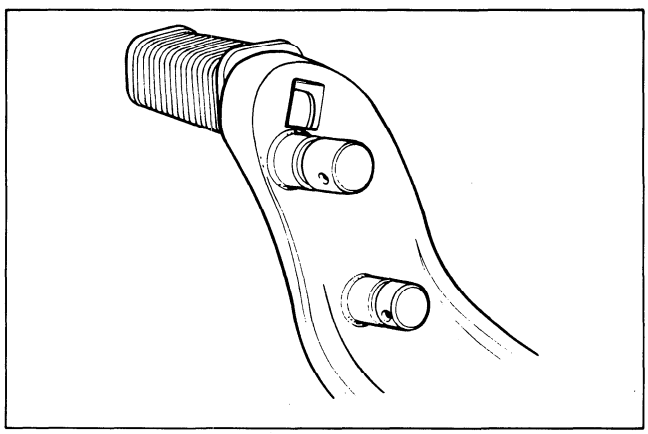


- Remove the footrest.



INSPECTION

Inspect the pins and shaft for nicks, scratchs or other damage. If there are any, replace the part with a new one.



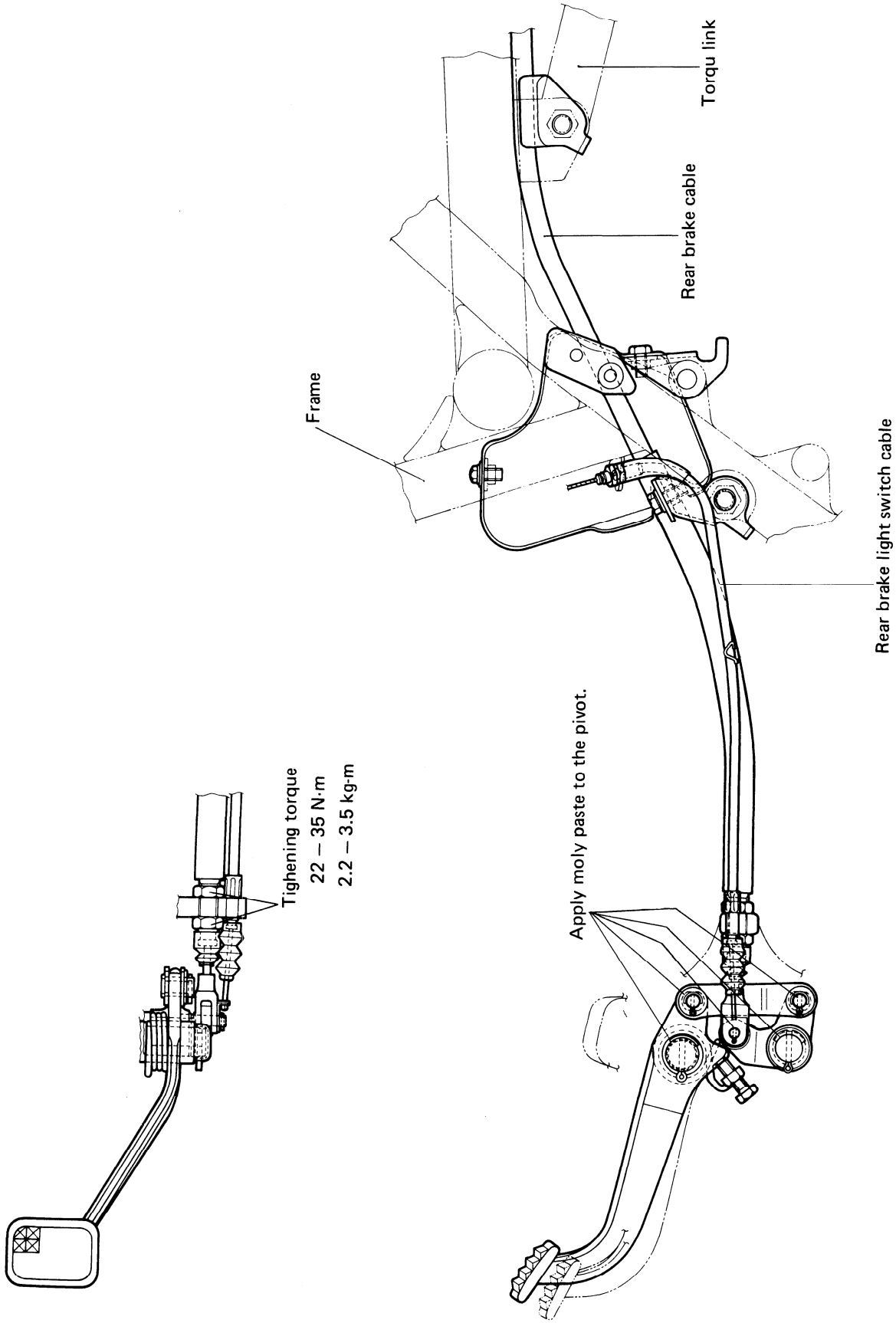
REASSEMBLY AND REMOUNTING

Remount and reassemble the brake cable in the reverse order of removal and disassembly, and also carry out the following steps. Apply SUZUKI moly paste to the shafts.

99000 - 25140	SUZUKI Moly paste.

After installing the brake cable, adjust the brake and apply oil to pivot. Make sure that the brake system operates positively.

REAR BRAKE CABLE AND PEDAL INSTALLATION



SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	29.9—30.1 (1.78—1.19)	———
	EX.	25.9—26.1 (1.02—1.03)	———
Valve lift	IN.	8.5 (0.33)	———
	EX.	8.5 (0.33)	———
Valve clearance (when cold)	IN. & EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.020—0.047 (0.0008—0.0019)	0.35 (0.014)
	EX.	0.035—0.062 (0.0014—0.0024)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.465—5.480 (0.2152—0.2157)	———
	EX.	5.450—5.465 (0.2146—0.2152)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	4.0 (0.16)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length	INNER	———	32.5 (1.28)
	OUTER	———	36.0 (1.42)
Valve spring tension	INNER	6.51—7.49 kg (14.35—16.51 lbs) at length 24.5 mm (0.96 in)	———
	OUTER	12.09—13.91 kg (26.65—30.67 lbs) at length 36.0 mm (1.42 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.925—35.965 (1.4144—1.4159)	35.625 (1.4025)
	EX.	36.919—36.959 (1.4535—1.4551)	36.619 (1.4417)
Camshaft journal oil clearance	0.032—0.066 (0.0013—0.0026)		0.150 (0.0059)

ITEM	STANDARD		LIMIT
Camshaft journal holder I.D.	No.1 Right side No.2 Left side	20.012—20.025 (0.7879—0.7884)	———
	No.1 Left side No.2 Right side	25.012—25.025 (0.9847—0.9852)	———
Camshaft journal O.D.	No.1 Right side No.2 Left side	19.959—19.980 (0.7858—0.7866)	———
	No.1 Left side No.2 Right side	24.959—24.980 (0.9826—0.9835)	———
Camshaft runout	———		0.10 (0.004)
Cam chain 20-pitch length	———		128.0 (5.07)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	———
Cylinder head distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	13—16 kg/cm^2 (185—228 psi)			11 kg/cm^2 (156 psi)
Compression pressure difference	———			2 kg/cm^2 (28 psi)
Piston to cylinder clearance	0.050—0.060 (0.0020—0.0024)			0.120 (0.0047)
Cylinder bore	80.000—80.015 (3.1496—3.1502)			81.080 (3.1527)
Piston diam.	79.950—79.965 (3.1476—3.1482) Measure at 15 mm (0.6 in) from the skirt end.			79.880 (3.1449)
Cylinder distortion	———			0.05 (0.002)
Piston ring free end gap	1st	N	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd	N	Approx. 10.5 (0.413)	8.4 (0.331)
Piston ring end gap	1st		0.20—0.35 (0.008—0.014)	0.70 (0.028)
	2nd		0.20—0.35 (0.008—0.014)	0.70 (0.028)
Piston ring to groove clearance	1st		———	0.180 (0.007)
	2nd		———	0.150 (0.006)
Piston ring groove width	1st		1.01—1.03 (0.0398—0.0406)	———
	2nd		1.21—1.23 (0.0476—0.0484)	———

ITEM	STANDARD		LIMIT
Piston ring groove width	Oil	2.51—2.53 (0.0988—0.0996)	———
Piston ring thickness	1st	0.975—0.990 (0.0384—0.0390)	———
	2nd	1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	20.003—20.008 (0.7875—0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996—20.000 (0.7872—0.7874)		19.980 (0.7869)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010—20.018 (0.7878—0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10—0.20 (0.004—0.010)	0.30 (0.012)
Conrod big end width	21.95—22.00 (0.8642—0.8661)	———
Crank pin width	22.10—22.15 (0.8700—0.8720)	———
Conrod big end oil clearance	0.024—0.042 (0.0009—0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982—41.000 (1.6135—1.6142)	———
Crankshaft journal oil clearance	0.020—0.050 (0.0008—0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965—47.980 (1.8884—1.8890)	———
Crankshaft thrust bearing thickness	1.925—2.175 (0.0758—0.0856)	———
Crankshaft thrust clearance	0.040—0.120 (0.0016—0.0047)	———
Crankshaft runout	———	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 × 32/29)	———
Oil pressure (at 60°C, 140°F)	Above 3.5 kg/cm^2 (50 psi) Below 6.5 kg/cm^2 (92 psi) at 3 000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92—3.08 (0.115—0.121)	2.62 (0.103)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)

ITEM	STANDARD	LIMIT
Drive plate claw width	15.8—16.0 (0.620—0.630)	15.0 (0.591)
Driven plate distortion	———	0.10 (0.004)
Clutch spring free length	———	34.0 (1.34)
Clutch master cylinder bore	14.000—14.043 (0.5512—0.5529)	———
Clutch master cylinder piston diam.	13.957—13.984 (0.5495—0.5506)	———
Clutch release cylinder bore	38.100—38.162 (1.5000—1.5024)	———
Clutch release cylinder piston diam.	38.042—38.075 (1.4977—1.4990)	———

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		1.690 (71/42)	———
Secondary reduction ratio		1.133 (30/30 × 17/15)	———
Final reduction ratio		3.090 (34/11)	———
Gear ratios	Low	2.285 (32/14)	———
	2nd	1.631 (31/19)	———
	3rd	1.227 (27/22)	———
	4th	1.000 (25/25)	———
	Top	0.851 (23/27)	———
Shift fork groove clearance	No.1	0.10—0.30 (0.004—0.012)	0.50 (0.020)
	No.2	0.10—0.30 (0.004—0.012)	0.50 (0.020)
Shift fork groove width	No.1	5.50—5.60 (0.217—0.220)	———
	No.2	4.50—4.60 (0.177—0.181)	———
Shift fork thickness	No.1	5.30—5.40 (0.209—0.213)	———
	No.2	4.30—4.40 (0.169—0.173)	———

SHAFT DRIVE

Unit: mm (in)

ITEM		STANDARD	LIMIT
Secondary bevel gear backlash		0.05—0.32 (0.002—0.013)	———
Final bevel gear backlash	Drive side	0.03—0.64 (0.001—0.025)	

CARBURETOR

ITEM		SPECIFICATION			
		Other state models		California model	
		No.1 (Rear side)	No.2 (Front side)	No.1 (Rear side)	No.2 (Front side)
Carburetor type		MIKUNI BS34SS	MIKUNI BDS34SS	MIKUNI BS34SS	MIKUNI BDS34SS
Bore size		34 mm (1.34 in)	←	←	←
I.D. No.		38A00	←	38A10	←
Idle r/min.		1 000 ± 100 r/min.	←	←	←
Fuel level		7.0±0.5 mm (0.28±0.02 in)	17.0±0.5 mm (0.57±0.02 in)	7.0±0.5 mm (0.28±0.02 in)	17.0±0.5 mm (0.57±0.02 in)
Float height		27.7±1.0 mm (1.09±0.04 in)	11.5±1.0 mm (0.45±0.04 in)	27.7±1.0 mm (1.09±0.04 in)	11.5±1.0 mm (0.45±0.04 in)
Main jet	(M.J.)	#132.5	←	←	←
Main air jet	(M.A.J.)	0.7 mm	←	←	←
Jet needle	(J.N.)	5D23	5D21	5D23	5D21
Needle jet	(N.J.)	P-1	P-0	P-1	P-0
Throttle valve	(Th.V.)	#110	←	←	←
Pilot jet	(P.J.)	#40	#32.5	#40	#32.5
By-pass	(B.P.)	1.1,1.1,1.3mm	1.0,1.1,1.1mm	1.1,1.1,1.3mm	1.0,1.1,1.1mm
Pilot outlet	(P.O.)	1.0 mm	←	←	←
Valve seat	(V.S.)	1.5 mm	←	←	←
Starter jet	(G.S.)	#40	#37.5	#40	#37.5
Pilot screw	(P.S.)	PRE-SET	←	←	←
Pilot air jet 1	(P.A.J.1)	PRE-SET	←	←	←
Pilot air jet 2	(P.A.J.2)	PRE-SET	←	←	←
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←	←	←

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	———
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	———
Radiator cap valve release pressure		0.90 ± 0.15 kg/cm² (12.8 ± 2.1 psi, 90 ± 15 kPa)	———
Electric fan thermo-switch operating temperature	ON	Approx. 110°C (230°F)	———
	OFF	Approx. 104°C (219°F)	———

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION	NOTE
Ignition timing	5° B.T.D.C. below 1 650 ± 100 r/min. and 30° B.T.D.C. above 3 500 ± 100 r/min.	
Firing order	1-2	

ITEM		SPECIFICATION		
Spark plug		Type	NGK: DP8EA-9 N.D.:X24EP-U9	
		Gap	0.8—0.9 (0.031—0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx.	50—200 Ω	G—Bl, B—Y
Ignition coil resistance		Primary	2—6 Ω	O/W—W or B/Y
		Secondary	10—25 kΩ	Plug cap— W or B/Y
Generator no-load voltage		More than 65 V (AC) at 5 000 r/min.		
Regulated voltage		14—15 V at 5 000 r/min.		
Starter motor brush length		Limit: 9 (0.35)		
Commutator under-cut		Limit: 0.2 (0.008)		
Starter relay resistance		2—6 Ω		
Battery	Type designation	YB16B-A		
	Capacity	12 V 57.6 kC (16 Ah)/10 HR		
	Standard electrolyte S.G.	1.28 at 20°C (68°F)		
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Tail	10 A		
	Power source	10 A		
Circuit breaker		30 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Tail/Brake light		8/23
Turn signal light	Front	8/23
	Rear	23
Speedometer light		3
Water temp. indicator light		3
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		3
Oil pressure indicator light		3
Side stand check light		3
License light		8

BRAKE + WHEEL

Unit: mm (in)

ITEM		STANDARD	LIMIT
Rear brake pedal free travel		20—30 (0.8—1.2)	———
Rear brake pedal height		40 (1.6)	———
Brake drum I.D.	Rear	———	180.7 (7.11)
Brake lining thickness		———	1.5 (0.06)
Brake disc thickness	Front	5.0 ± 0.2 (0.197 ± 0.008)	4.5 (0.18)
Brake disc runout		———	0.30 (0.012)
Master cylinder bore	Front	15.870—15.913 (0.6248—0.6265)	———
Master cylinder piston diam.	Front	15.827—15.854 (0.6231—0.6242)	———
Brake caliper cylinder bore	Front	38.180—38.256 (1.5031—1.5061)	———
Brake caliper piston diam.	Front	38.098—38.148 (1.4999—1.5019)	———
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axle runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Tire size	Front	100/90-19 57H	———
	Rear	140/90-15 70H	———
Tire tread depth	Front	———	1.6 (0.06)
	Rear	———	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	———	
Front fork spring free length	———	563 (22.2)	
Front fork oil level	144 (5.67)	———	
Rear wheel travel	90 (3.5)	———	
Swingarm pivot shaft runout	———	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm^2	psi	kPa	kg/cm^2	psi
FRONT	200	2.00	28	225	2.25	32
REAR	225	2.25	32	250	2.50	36

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	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 tank including reserve	12.0 L (3.2 US gal)		
	11 L (2.9 US gal)		For California
reserve	3.0 L (3.4 US qt)		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	2 400 ml (2.5 US qt)	
	Filter change	2 800 ml (3.0 US qt)	
	Overhaul	3 300 ml (3.5 US qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	337 ml (11.4 US oz)		
Final bevel gear oil type	SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity	200—220 ml (6.8—7.4 US oz)		
Brake fluid type	DOT3 or DOT4		
Radiator	1 700 ml (1.8 US qt)		

VS700GLH ('87-MODEL)

This section describes service data and service procedure which differ from those of the VS700GLG (86-model) and up-to-date information of the VS700GLG.
This section has been written primarily for the experience SUZUKI maintenance but will also be very useful even for the apprentice mechanic. The entire manual should be thoroughly reviewed before any servicing is performed.

NOTE:
- *Any differences between "G" (86-model) and "H" (87-model) in specifications and service data are clearly indicated with the asterisk marks (*).*
- *Please refer to the sections 1 through 11 for details which are not given in this section.*

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VIEW OF SUZUKI VS700GLH



RIGHT SIDE



LEFT SIDE

SPECIFICATIONS

DIMENSIONS AND DRY MASS

* Overall length	2 235 mm (88.0 in.)	
Overall width	710 mm (28.0 in.)	GLF, GLEF
	750 mm (29.5 in.)	GLP, GLEP
* Overall height	1 110 mm (43.7 in.)	GLF, GLEF
	1 190 mm (46.9 in.)	GLP, GLEP
* Wheelbase	1 560 mm (61.4 in.)	
* Ground clearance	130 mm (5.1 in.)	
Seat height	685 mm (27.0 in.)	
Dry mass	185 kg (408 lb.)	GLF
	186 kg (410 lb.)	GLP, GLF (California model)
	187 kg (412 lb.)	GLP (California model)
	188 kg (414 lb.)	GLEF
	189 kg (417 lb.)	GLEP, GLEF (California mode
	190 kg (419 lb.)	GLEP (California model)

ENGINE

Type	Four-stroke, water-cooled, OHC, TSCC, 45-degree V-twir
Number of cylinders	2
Bore	80.0 mm (3.150 in.)
Stroke	69.6 mm (2.740 in.)
Piston displacement	699 cm^3 (42.7 cu. in.)
Compression ratio	10.0 : 1
Carburetor	MIKUNI BDS34SS . . . . . front
	MIKUNI BS34SS . . . . . rear
Air cleaner	Polyester fiber element
Starter system	Electric starter motor
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type, hydraulically operated
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	1.690 (71/42)
Gear ratios, Low	2.285 (32/14)
2nd	1.631 (31/19)
3rd	1.227 (27/22)
4th	1.000 (25/25)
Top	0.851 (23/27)
Secondary reduction ratio	1.133 (17/15 x 30/30)
Final reduction ratio	3.090 (34/11)
Drive system	Shaft drive

*Difference from "G" (86-model).

CHASSIS

Front suspension	Telescopic type
Rear suspension	Spring preload 5-way adjustable
Front suspension stroke	130 mm (5.1 in.)
Rear wheel travel	90 mm (3.5 in.)
Caster	56° 45'
Trail	143 mm (5.6 in.)
Steering angle	40°
Turning radius	2.8 m (9.2 ft.)
Front brake	Disc
Rear brake	Internal expanding
Front tire	100/90-19 57H
Rear tire	140/90-15 70H

ELECTRICAL

Ignition type	Transistorized
Ignition timing	5° B.T.D.C. below 1650 rpm and 30° B.T.D.C. above 3500 rpm
Spark plug	NGK DP8EA-9 or NIPPON DENSO X24EP-U9
Battery	12V 57.6 kC (16Ah)/10HR
Circuit breaker	30A
Fuse	10/10/10/10/10A
Headlight	12V 60/55W
Running/Front turn signal light	12V 8/23W
Rear turn signal light	12V 23W
Tail/brake light	12V 8/23W
License plate light	12V 8W
Speedometer light	12V 3W
Neutral indicator light	12V 3W
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 3W
Oil pressure indicator light	12V 3W
Water temp. indicator light	12V 3W

CAPACITIES

Fuel tank, including reserve	12.0 L (3.2 US gal.) 11.0 L (2.9 US gal.) . . . For California
reserve	3.0 L (3.4 US qt.)
Engine oil, oil change	2 400 ml (2.5 US qt.)
with filter change	2 800 ml (3.0 US qt.)
Coolant	1.7 L (1.8 US qt.)
Final gear oil	200 – 220 ml (6.8 – 7.4 US oz.)

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM		STANDARD	LIMIT
Valve diam.	IN.	30 (1.18)	———
	EX.	26 (1.02)	———
Valve lift	IN.	8.5 (0.33)	———
	EX.	8.5 (0.33)	———
Valve clearance (when cold)	IN. & EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.020—0.047 (0.0008—0.0019)	0.35 (0.014)
	EX.	0.035—0.062 (0.0014—0.0024)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.465—5.480 (0.2152—0.2157)	———
	EX.	5.450—5.465 (0.2146—0.2152)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	4.0 (0.16)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	———	32.5 (1.28)
	OUTER	———	36.0 (1.42)
Valve spring tension (IN. & EX.)	INNER	6.51—7.49 kg (14.35—16.51 lbs) at length 32.5 mm (1.28 in)	———
	OUTER	12.09—13.91 kg (26.65—30.67 lbs) at length 36.0 mm (1.42 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM		STANDARD	LIMIT
Cam height	IN.	35.925 – 35.965 (1.4144 – 1.4159)	35.625 (1.4025)
	EX.	36.919—36.959 (1.4535—1.4551)	36.619 (1.4417)
Camshaft journal oil clearance	IN. & EX.	0.032—0.066 (0.0013—0.0026)	0.150 (0.0059)

ITEM	STANDARD		LIMIT
Camshaft journal holder I.D.	No.1 Right side / No.2 Left side	20.012—20.025 (0.7879—0.7884)	———
	No.1 Left side / No.2 Right side	25.012—25.025 (0.9874—0.9852)	———
Camshaft journal O.D.	No.1 Right side / No.2 Left side	19.959—19.980 (0.7858—0.7866)	———
	No.1 Left side / No.2 Right side	24.959—24.980 (0.9826—0.9835)	———
Camshaft runout	IN. & EX.	———	0.10 (0.004)
*Cam chain 20-pitch length	———		128.9 (5.07)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	———
Cylinder head distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	1 300—1 600 kPa (13—16 kg/cm^2 185—228 psi)		1 100 kPa (11 kg/cm^2 156 psi)
Compression pressure difference	———		200 kPa (2 kg/cm^2 28 psi)
Piston to cylinder clearance	0.050 — 0.060 (0.0020 — 0.0024)		0.120 (0.0047)
Cylinder bore	80.000—80.015 (3.1496—3.1502)		80.080 (3.1527)
Piston diam.	79.950—79.965 (3.1476—3.1482) Measure at 15 mm (0.6 in) from the skirt end.		79.880 (3.1449)
Cylinder distortion	———		0.05 (0.002)
Piston ring free end gap	1st	N	Approx. 10.5 (0.413)	8.4 (0.33)
	2nd	N	Approx. 10.5 (0.413)	8.4 (0.33)
Piston ring end gap	1st		0.20—0.35 (0.008—0.014)	0.70 (0.028)
	2nd		0.20—0.35 (0.008—0.014)	0.70 (0.028)

*Difference from "G" (86-model)

ITEM	STANDARD		LIMIT
Piston ring to groove clearance	1st	———	0.180 (0.007)
	2nd	———	0.150 (0.006)
Piston ring groove width	1st	1.01—1.03 (0.0398—0.0406)	———
	2nd	1.21—1.23 (0.0476—0.0484)	———
	Oil	2.51—2.53 (0.0988—0.0966)	———
Piston ring thickness	1st	0.975—0.990 (0.0384—0.0390)	———
	2nd	1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	20.003—20.008 (0.7875—0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996—20.000 (0.7872—0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010—20.018 (0.7878—0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10—0.20 (0.004—0.008)	0.30 (0.012)
Conrod big end width	21.95—22.00 (0.864—0.866)	———
Crank pin width	22.10—22.15 (0.870—0.872)	———
Conrod big end oil clearance	0.024—0.042 (0.0009—0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982—41.000 (1.6135—1.6142)	———
Crankshaft journal oil clearance	0.020—0.050 (0.0008—0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965—47.980 (1.8884—1.8890)	———
Crankshaft thrust bearing thickness	1.925—2.175 (0.0758—0.0856)	———
Crankshaft thrust clearance	0.040—0.120 (0.0016—0.0047)	———
Crankshaft runout	———	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 × 32/29)	———
Oil pressure (at 60°C, 140°F)	Above 350 kPa (3.5 kg/cm^2, 50 psi) Below 650 kPa (6.5 kg/cm^2, 92 psi) at 3 000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92—3.08 (0.115—0.121)	2.62 (0.103)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.622—0.630)		15.0 (0.591)
Driven plate distortion	———		0.10 (0.004)
Clutch spring free length	———		34.0 (1.34)
Clutch master cylinder bore	14.000—14.043 (0.5512—0.5529)		———
Clutch master cylinder piston diam.	13.957—13.984 (0.5495—0.5506)		———
Clutch release cylinder bore	38.100—38.162 (1.5000—1.5024)		———
Clutch release cylinder piston diam.	38.042—38.075 (1.4977—1.4990)		———

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	———
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	———
Radiator cap valve release pressure		90 ± 15 kPa (0.90 ± 0.15 kg/cm^2, 12.8 ± 2.1 psi)	———
Electric fan thermo-switch operating temperature	ON	Approx. 110°C (230°F)	———
	OFF	Approx. 104°C (219°F)	———

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		1.690 (71/42)	———
Secondary reduction ratio		1.133 (30/30 × 17/15)	———
Final reduction ratio		3.090 (34/11)	———
Gear ratios	Low	2.285 (32/14)	———
	2nd	1.631 (31/19)	———
	3rd	1.227 (27/22)	———
	4th	1.000 (25/25)	———
	Top	0.851 (23/27)	———
Shift fork to groove clearance	No.1	0.10—0.30 (0.004—0.012)	0.50 (0.020)
	No.2	0.10—0.30 (0.004—0.012)	0.50 (0.020)
Shift fork groove width	No.1	5.50—5.60 (0.217—0.220)	———
	No.2	4.50—4.60 (0.177—0.181)	———

ITME	STANDARD		LIMIT
Shift fork thickness	No.1	5.30—5.40 (0.209—0.213)	———
	No.2	4.30—4.40 (0.169—0.173)	———

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.08—0.13 (0.003—0.005)		———
Final bevel gear backlash	Drive side	0.03—0.064 (0.001—0.0025)	

CARBURETOR

ITEM		SPECIFICATION			
		California		Other states	
		No. 1 (Rear side)	No. 2 (Front side)	No. 1 (Rear side)	No. 2 (Front side)
Carburetor type		MIKUNI BS34SS	MIKUNI BDS34SS	MIKUNI BS34SS	MIKUNI BDS34SS
Bore size		34 mm (1.34 in)	←	←	←
*I.D. No.		38A70	←	38A40	←
Idle r/min.		1 000 ± 100 r/min.	←	←	←
Fuel level		7.0 ± 0.5 mm (0.28±0.02 in)	17.0 ± 0.5 mm (0.67±0.02 in)	7.0 ± 0.5 mm (0.28±0.02 in)	17.0 ± 0.5 mm (0.67±0.02 in)
Float height		27.7 ± 1.0 mm (1.09±0.04 in)	11.5 ± 1.0 mm (0.45±0.04 in)	27.7 ± 1.0 mm (1.09±0.04 in)	11.5 ± 1.0 mm (0.45±0.04 in)
Main jet	(M.J.)	#132.5	←	←	←
Main air jet	(M.A.J.)	0.7 mm	←	←	←
Jet needle	(J.N.)	5D23-1st	5D21-1st	5D23-1st	5D21-1st
Needle jet	(N.J.)	P-1	P-0	P-1	P-0
Throttle valve	(Th.V.)	#110	←	←	←
Pilot jet	(P.J.)	#40	#32.5	#40	#32.5
By-pass	(B.P.)	1.1, 1.1, 1.3 mm	1.0, 1.1, 1.1 mm	1.1, 1.1, 1.3 mm	1.0, 1.1, 1.1 mm
Pilot outlet	(P.O.)	1.0 mm	←	←	←
Valve seat	(V.S.)	1.5 mm	←	←	←
Starter jet	(G.S.)	#40	#37.5	#40	#37.5
Pilot screw	(P.S.)	PRE-SET	←	←	←
Pilot air jet 1	(P.A.J.1)	PRE-SET	←	←	←
Pilot air jet 2	(P.A.J.2)	PRE-SET	←	←	←
Throttle cable play		0.5 – 1.0 mm (0.02–0.04 in)	←	←	←

*Difference from "G" 86-model.

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Ignition timing		5° B.T.D.C. Below 1 650 ± 100 r/min. and 30° B.T.D.C. at 3 500 ± 100 r/min.		
Firing order		1-2		
Spark plug		Type	N.D.: X24EP-U9 NGK: DP8EA-9	
		Gap	0.8—0.9 (0.032—0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx.	50—200 Ω	G—Bl, B—Y
Ignition coil resistance		Primary	2—6 Ω	O/W—W or B/Y
		Secondary	10 — 25 kΩ	Plug cap—W or B/Y
Generator no-load voltage		More than 65 V (AC) at 5 000 r/min.		
Regulated voltage		14 — 15 V at 5 000 r/min.		
Starter motor brush length		Limit: 9 (0.35)		
		Commutator under-cut	Limit: 0.2 (0.008)	
Starter relay resistance		2—6 Ω		
*Battery	Type designation	YB16B-A1		
	Voltage	12 V		
	Capacity	57.6 kC (16 Ah)/10 HR		
	Standard electrolyte S.G.	1.28 at 20°C (68°F)		
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Tail	10 A		
	Power source	10 A		
Circuit breaker		30 A		

WATTAGE .....

The sidestand check light is eliminated for the adoption of the sidestand ignition interlock system.

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Tail/Brake light		8/23
Turn signal light	Front	8/23
	Rear	23
Speedometer light		3

*Differences from "G" (86-model).

Unit: W

ITEM	SPECIFICATION
Water temp. indicator light	3
Turn signal indicator light	3
High beam indicator light	1.7
Neutral indicator light	3
Oil pressure indicator light	3
License light	8

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		———
Rear brake pedal height	40 (1.6)		———
Brake lining thickness	———		1.5 (0.06)
Brake drum I.D.	Rear	———	180.7 (7.11)
Brake disc thickness	Front	5.0 ± 0.2 (0.20 ± 0.01)	4.5 (0.18)
Brake disc runout	———		0.30 (0.012)
Master cylinder bore	Front	15.870 – 15.913 (0.6248 – 0.6265)	———
Master cylinder piston diam.	Front	15.827 – 15.854 (0.6231 – 0.6242)	———
Brake caliper cylinder bore	Front	38.180 – 38.256 (1.5031 – 1.5061)	———
Brake caliper piston diam.	Front	38.098 – 38.148 (1.4999 – 1.5019)	———
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axle runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Tire size (Tubeless tire is used in CAST WHEEL)	Front	100/90-19 57H	———
	Rear	140/90-15 70H	———
Tire tread depth	Front	———	1.6 (0.06)
	Rear	———	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	———	
*Front fork spring free length	———	360.8 (14.20)	
*Front fork oil level	117.4 (4.62)	———	
Rear wheel travel	115 (4.53)	———	
Swingarm pivot shaft runout	———	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	SOLO RIDING WITH LIGHT OR LITTLE CARGO LOAD			DUAL RIDING OR SOLO RIDING WITH HEAVY CARGO LOAD		
	kPa	kg/cm^2	psi	kPa	kg/cm^2	psi
FRONT	200	2.00	28	225	2.25	32
REAR	225	2.25	32	250	2.50	36

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	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 tank including reserve	11.0 L (2.9 US gal)		California
	12.0 L (3.2 US gal)		Other states
reserve	3.0 L (3.4 US qt)		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	2 400 ml (2.5 US qt)	
	Filter change	2 800 ml (3.0 US qt)	
	Overhaul	3 300 ml (3.5 US qt)	
Front fork oil type	Fork oil #10		
*Front fork oil capacity (each leg)	355 ml (12.0 US oz)		
Final bevel gear oil type	SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity	200 – 220 ml (6.8 – 7.4 US oz)		
Brake fluid type	DOT3 or DOT4		
Radiator	1 700 ml (1.8 US oz)		

*Differences from "G" (86-model).

CHANGES

FUEL SYSTEM

Fuel cut relay is united to the fuel pump on this model.

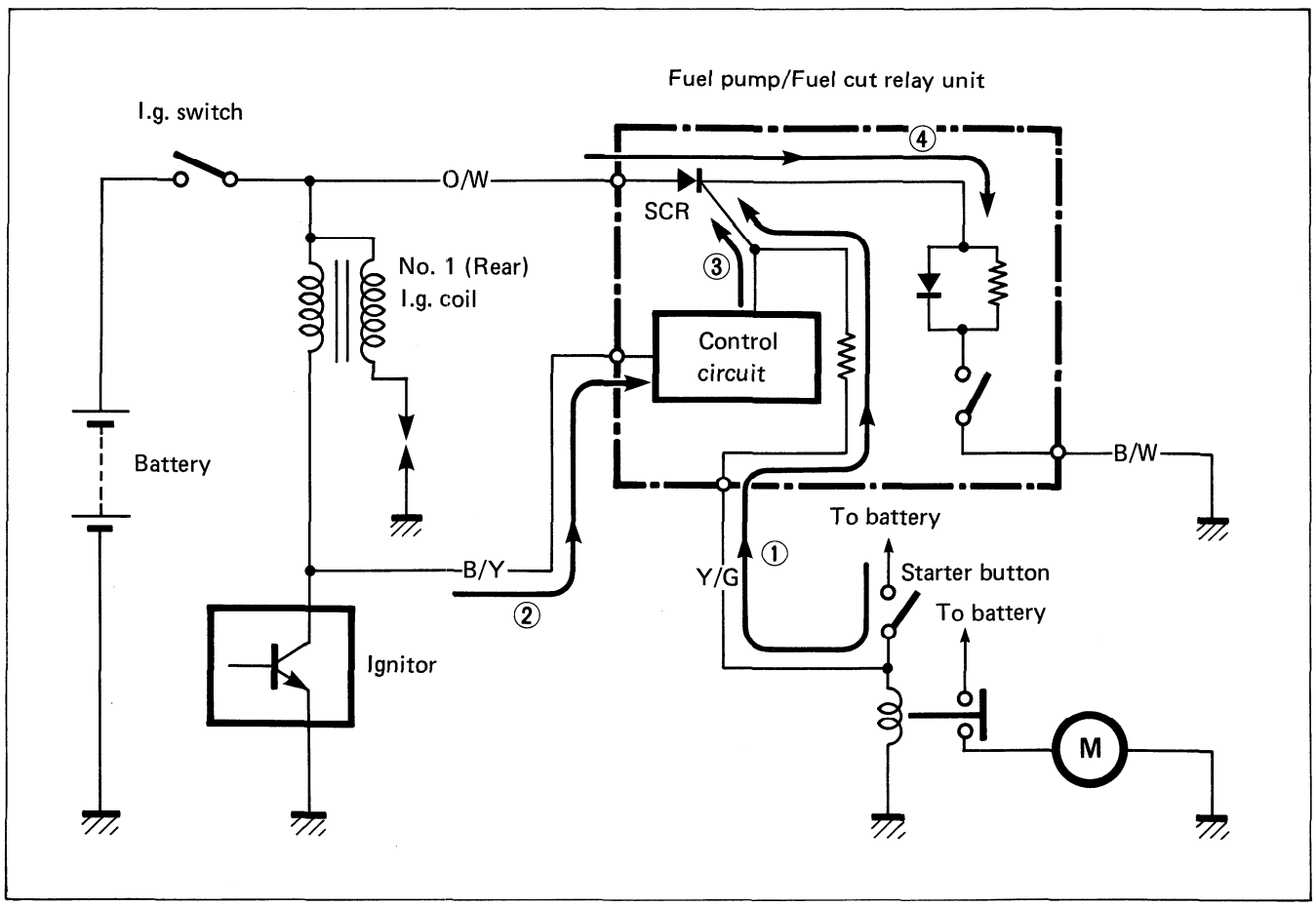
DESCRIPTION

Starting the engine:

In order to supplement fuel supply when starting the engine, current ① is sent from the battery by turning the starter button "ON" and passes through the resister, thus SCR turns "ON".
When the SCR turns "ON", current ④ is set from the battery, thus operating the fuel pump.

After start:

The current ② generated at No. 1 coil (rear) flows to the fuel pump relay's control circuit.
The control circuit receives this current ② and send signal ③ to the SCR, turning it "ON". When the SCR turns "ON", current ④ is sent from the battery through the fuel pump relay, thus operating the fuel pump.
For safety purposes the fuel pump stops automatically when the engine stop producing ignition spark and the signal from the ignition coil is not sent.



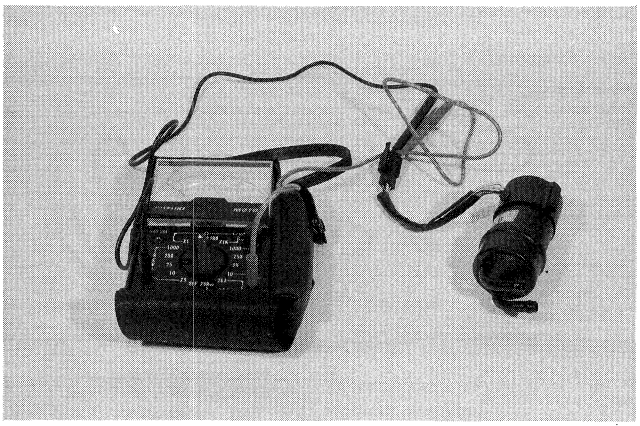
Inspection method for the fuel pump/fuel cut relay unit has been changed.
Inspection for above unit is carried out two steps.
1st step is a measure of the resistance.

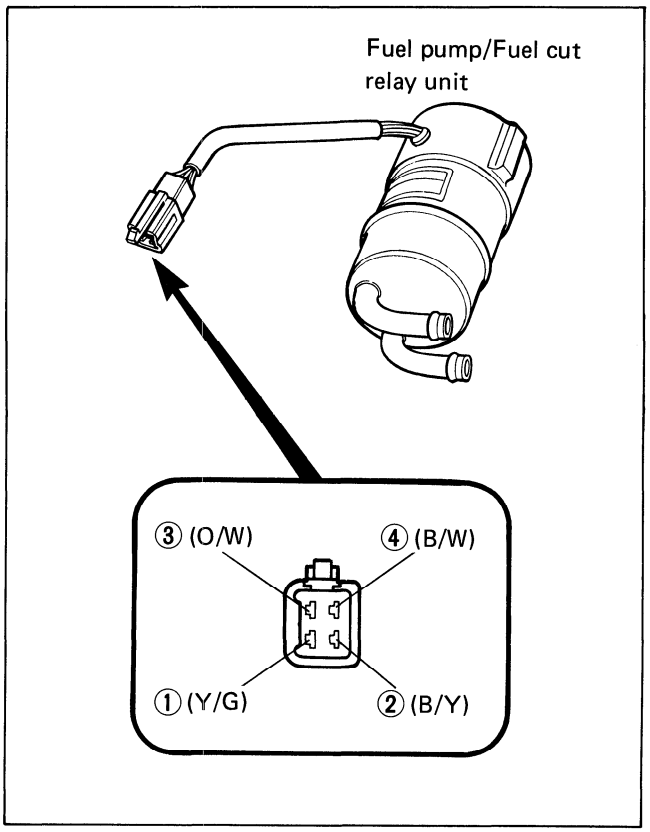
- Remove the seat and left frame cover.
- Disconnect the fuel pump/fuel cut relay unit lead coupler ①.
- Using the SUZUKI pocket tester (x kΩ range), measure the resistance between the lead wires in the following table.
- If the resistance checked is incorrect, replace the fuel pump relay.

09900-25002	Pocket tester

Unit: kΩ

		⊕ Probe of tester to:			
		① (Y/G)	② (B/Y)	③ (O/W)	④ (B/W)
⊖ Probe of tester to:	① (Y/G)		30 – 50	∞	10 – 14
	② (B/Y)	∞		∞	∞
	③ (O/W)	∞	∞		∞
	④ (B/W)	10 – 14	20 – 40	∞	





2nd step is a measure of amount of kerosene.
Place the fuel pump and battery as shown in the following figure.
Measure the amount of kerosene discharged and conduct a test on the fuel pump.

WARNING:
Do not use gasoline, which is extremely flammable and explosive.

NOTE:
The battery must be fully charged. Upon completion of the test, all the kerosene should be removed from the parts.

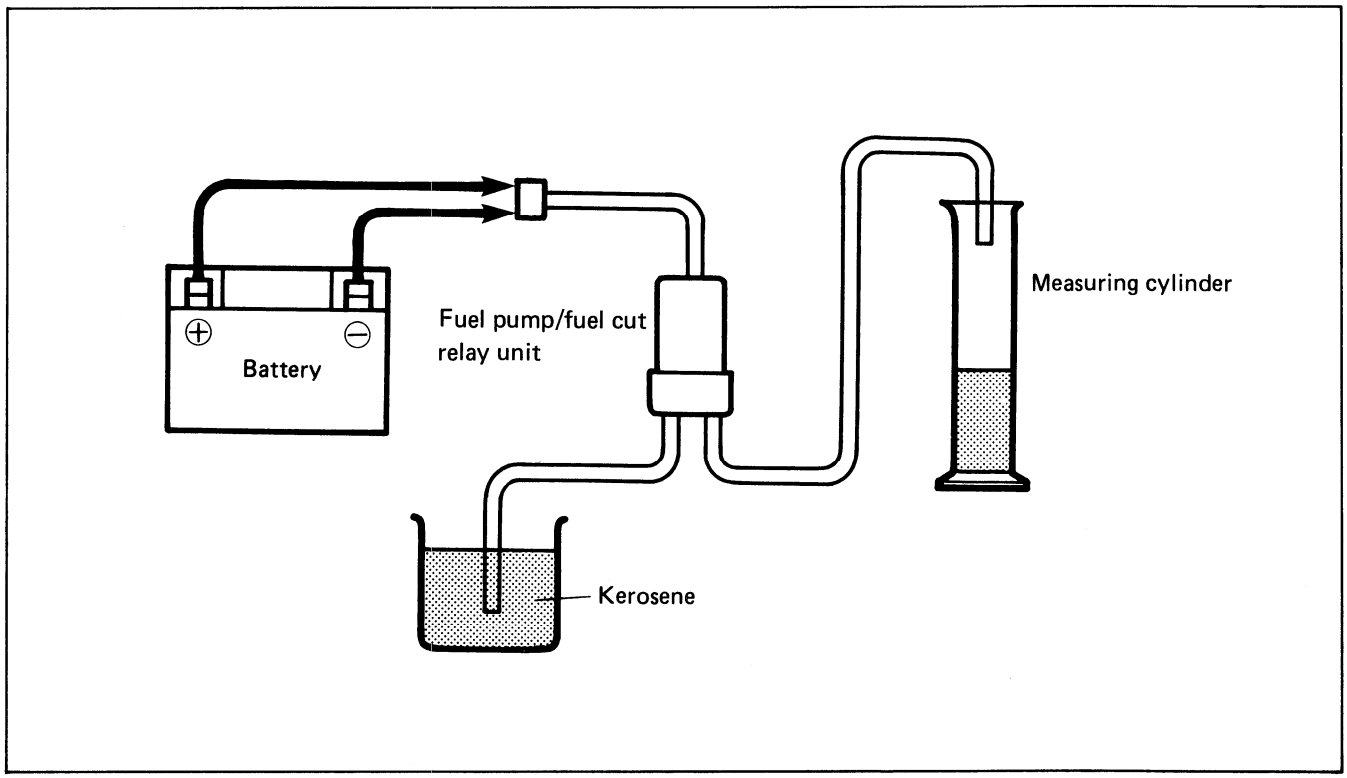
Connect the Y/G terminal and O/W terminal with jumper wire.

Attach the fuel pump harness O/W to the battery ⊕ terminal and B/W to the battery ⊖ termianl.

Measure the discharge amount from the fuel pump for 1 minute using a measuring cylinder.

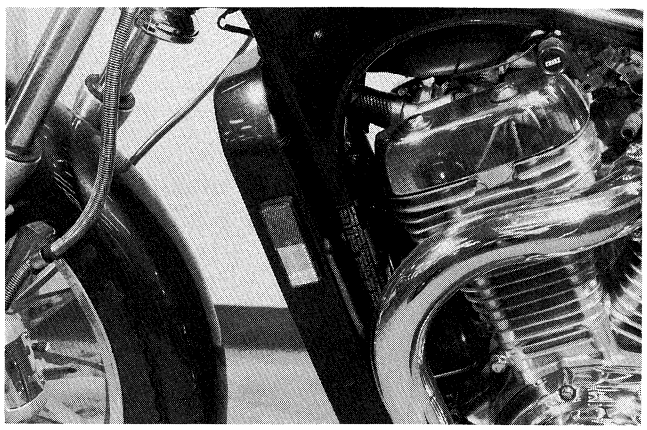
Discharge amount	Over 600 ml (1.27 US pt)

If the discharge amount is less than the specification, it means that the fuel pump with a new unit.



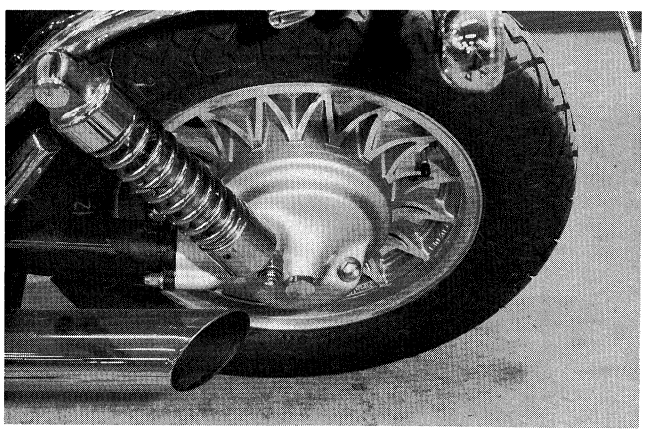
RADIATOR COVER

Radiator cover color has been changed to body color.



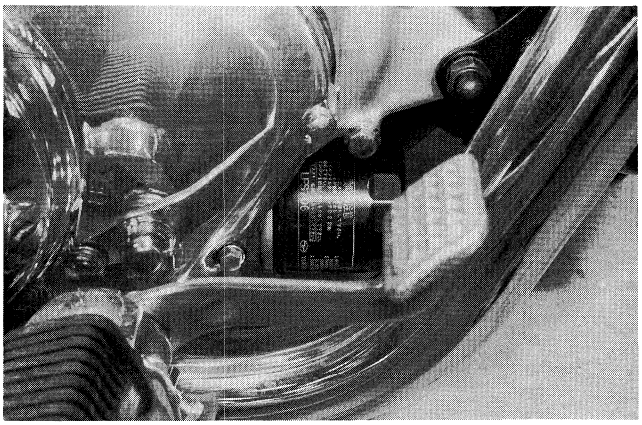
FINAL DRIVE GEAR CASE

Rib located on gear case surface is disappeared.



OIL FILTER

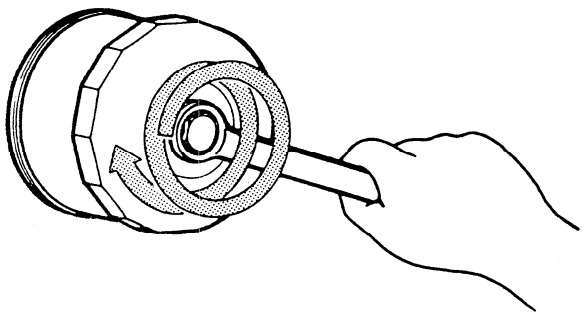
Oil filter has been changed to small size.
Oil filter capacity is as same as old type.



Installation method is as follows.

- Install the new filter turning it by hand until you feel the filter gasket contacts the mounting surface. Then tighten 2 turns using the oil filter wrench.

09915-40610	Oil filter wrench



Turn the filter 2 turns after contacting with the mounting surface.

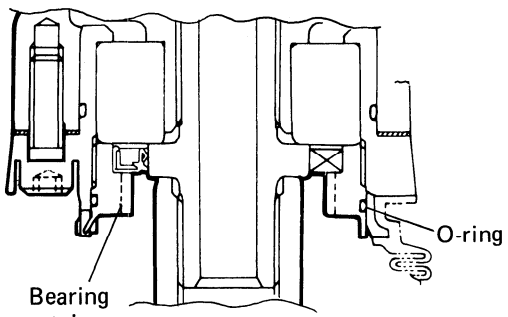
SECONDARY BEVEL GEAR

Secondary driven bevel gear bearing retainer has been divided into oil seal housing and bearing retainer.

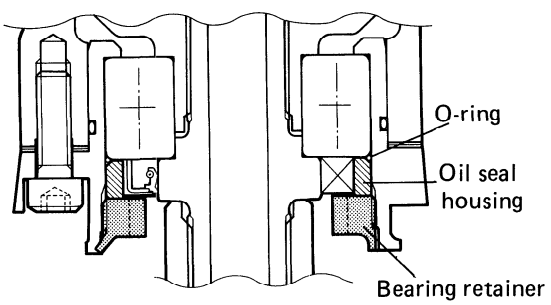
NOTE:
Always use a new oil seal.

O-ring position has been also changed.

NOTE:
Always use a new O-ring.



"G" model

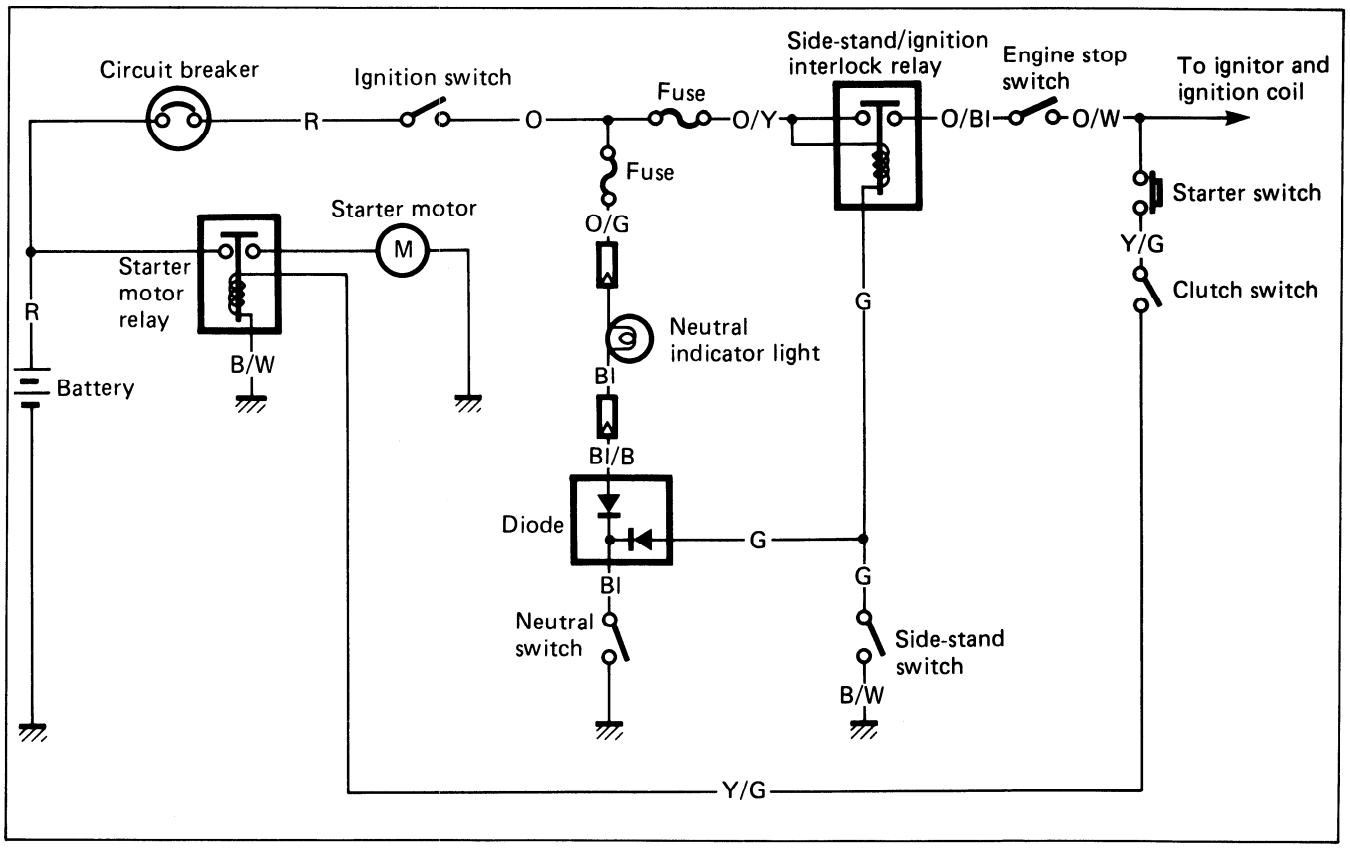


"H" model

SIDE STAND/IGNITION INTERLOCK SYSTEM

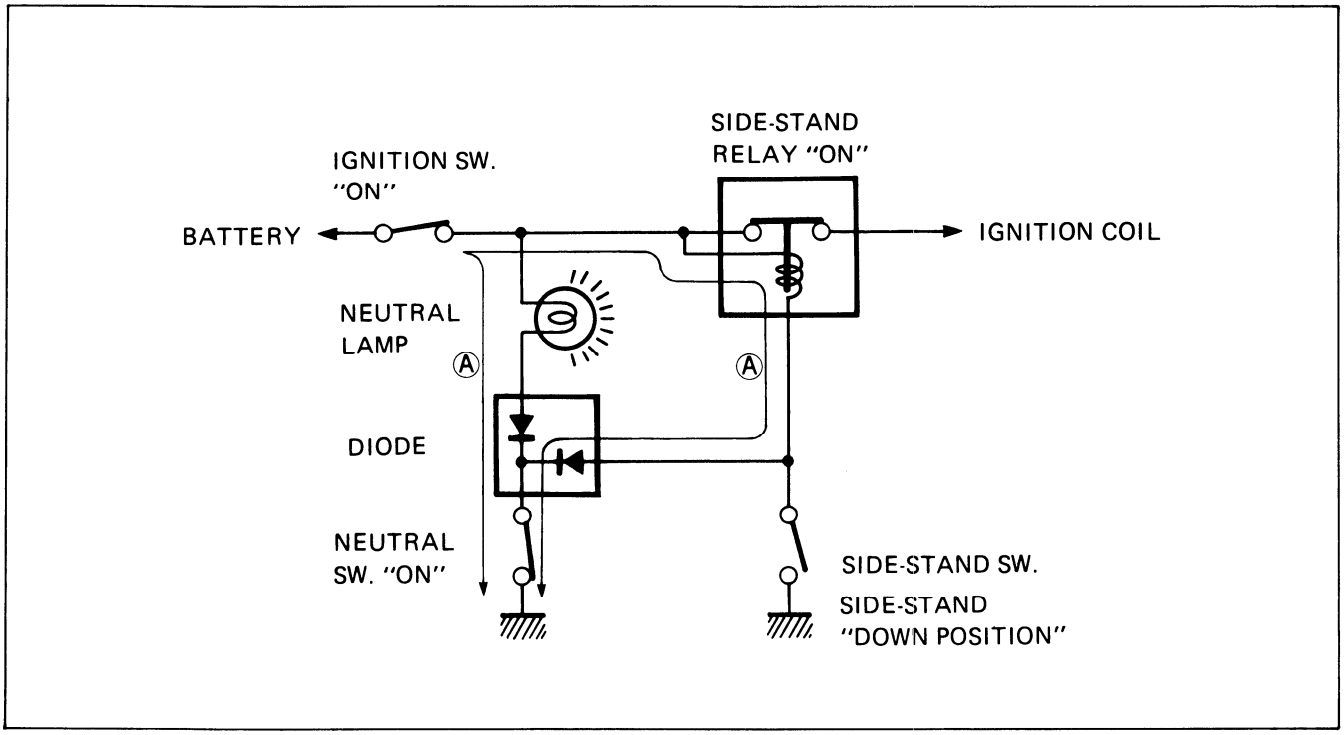
This motorcycle have been equipped with the side-stand/Ignition interlock system which is used to prevent motorcycle starting while side-stand stays down position.
The system is operated by an electric circuit provided between the battery and ignition coil.
The circuit in this system consists of side-stand/neutral relay, light, diode, side-stand switch and neutral switch.

The circuit decides to live the ignition coil depending on the position of TRANSMISSION and SIDE-STAND.

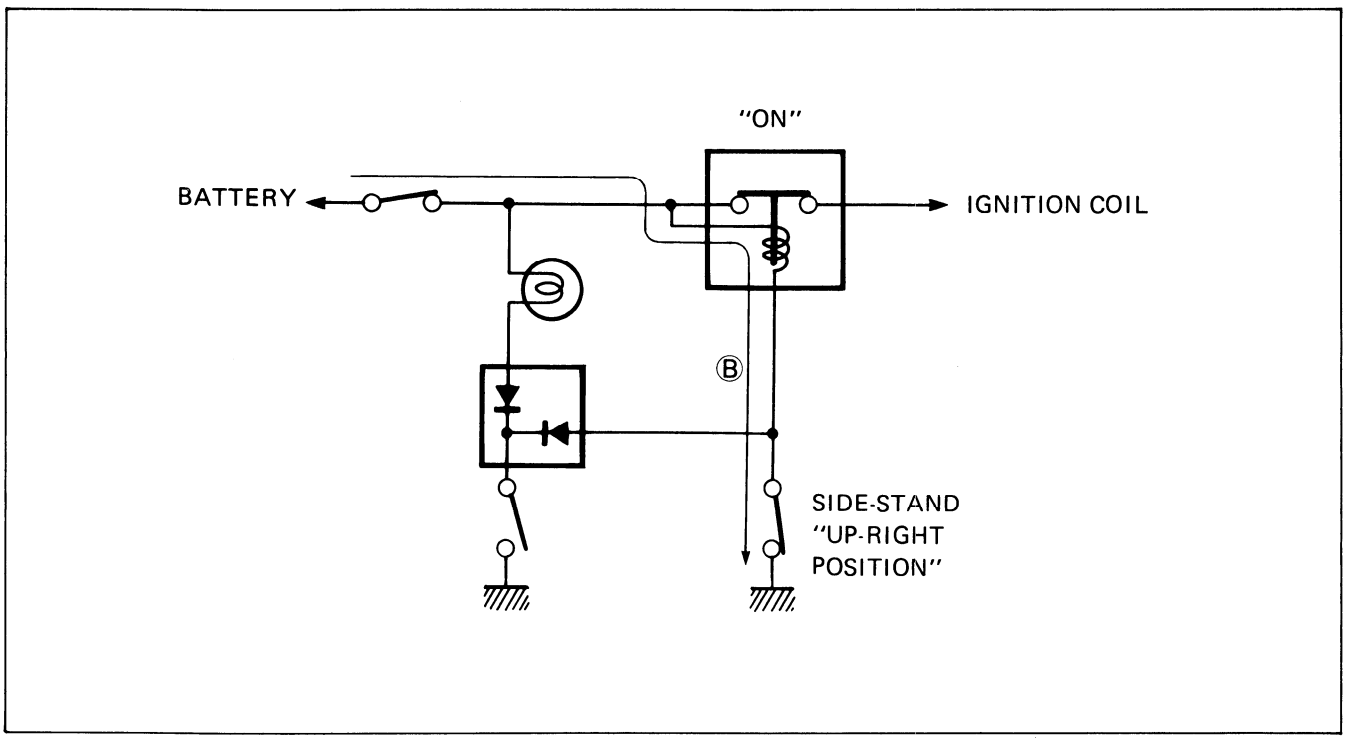


The ignition coil lives only in two situations as follows:

1. Transmission: "NEUTRAL (ON)" Side-stand: "DOWN (OFF)"
   The current flow Ⓐ turns "ON" the relay and the ignition coil lives even the side-stand is kept down. This is for warming up the engine.



2. Side-stand: "UP-RIGHT (ON)"
   The current flow Ⓑ turns "ON" the relay and the ignition coil lives. The engine can be easily started at any transmission position.



INSPECTION

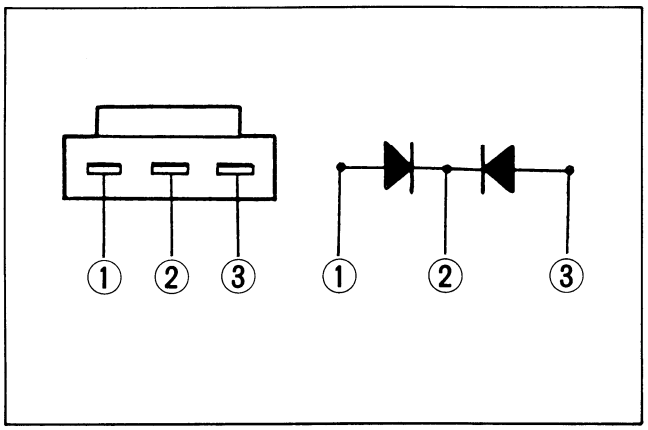
If the interlock system does not operate properly, check each component. If any abnormality is found, replace the component with a new one.

09900-25002	Pocket tester

Diode

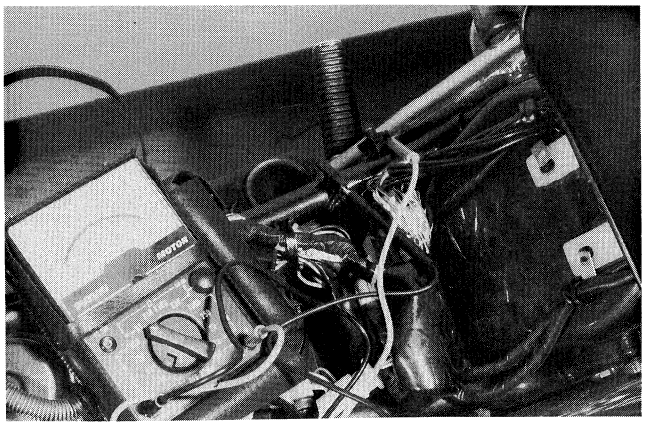
The diode can pass current only in one direction.

- Check the continuity between ① and ②. If one way continuity the diode is in good condition.
- Also check the continuity between ② and ③ as required.



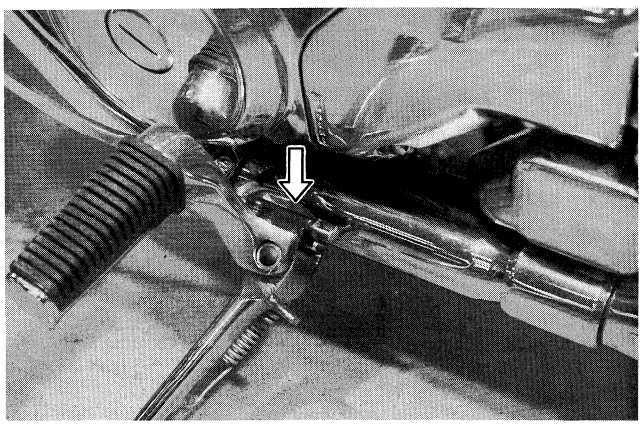
Neutral switch

- Disconnect the neutral switch lead and check the continuity between BI and ground with the transmission in "NEUTRAL".



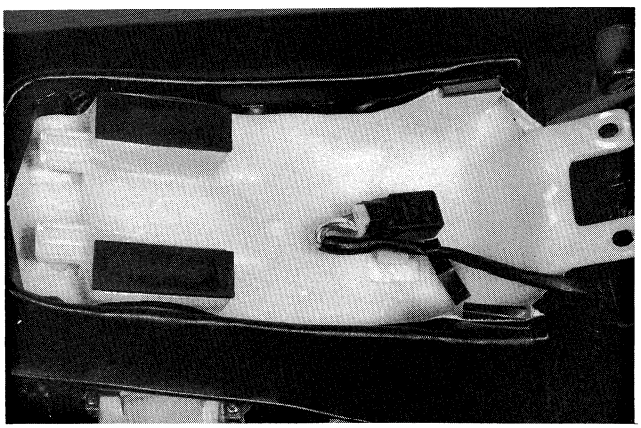
Side-stand switch

	G	B/W
ON (Up-right position)	○———	———○
OFF (Down position)		

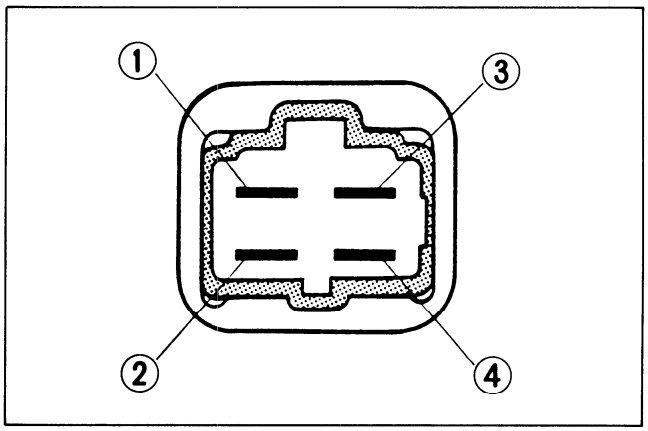


Side-stand/ignition interlock relay

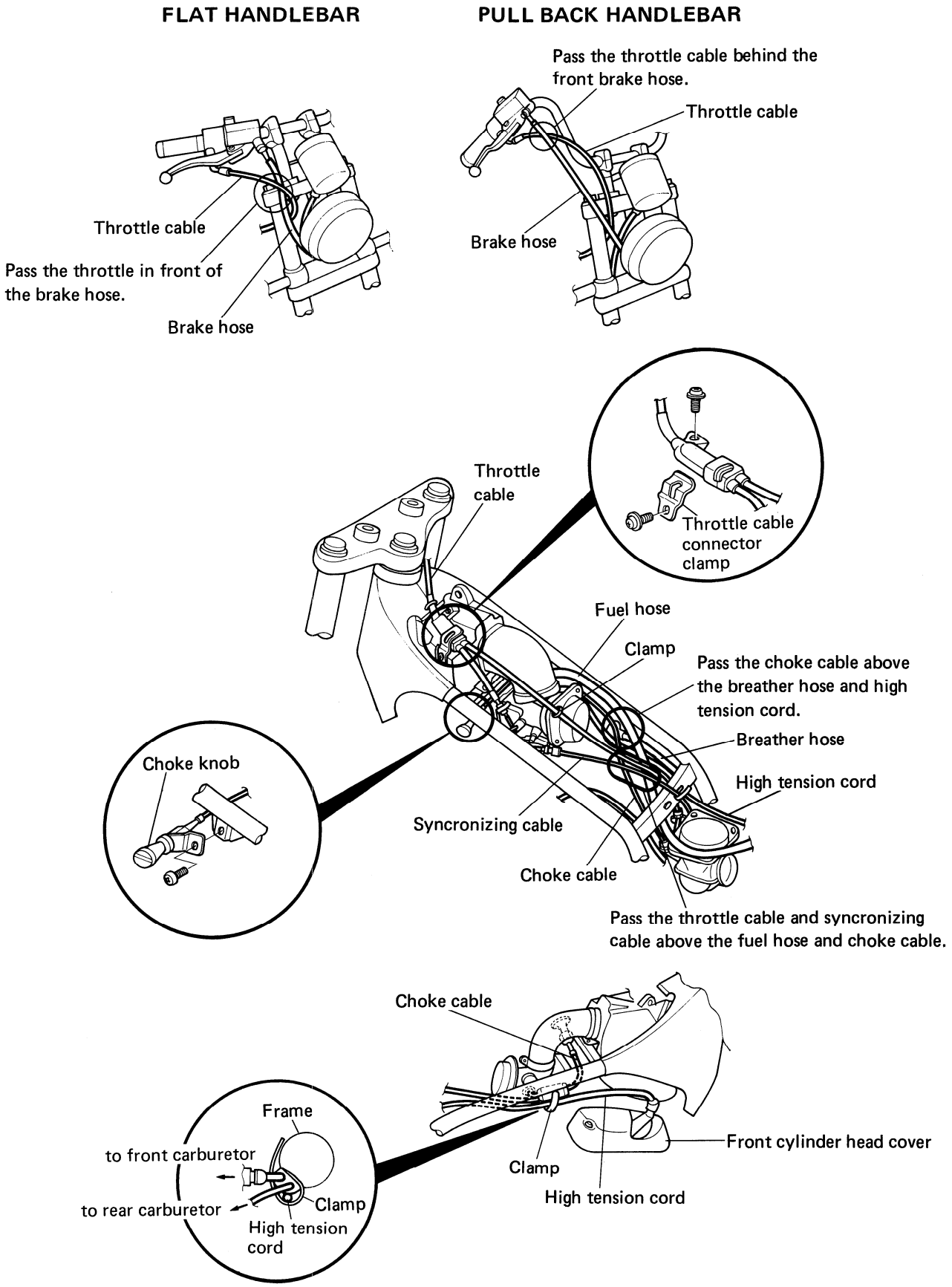
The side-stand/ignition interlock relay is located behind the rear seat.



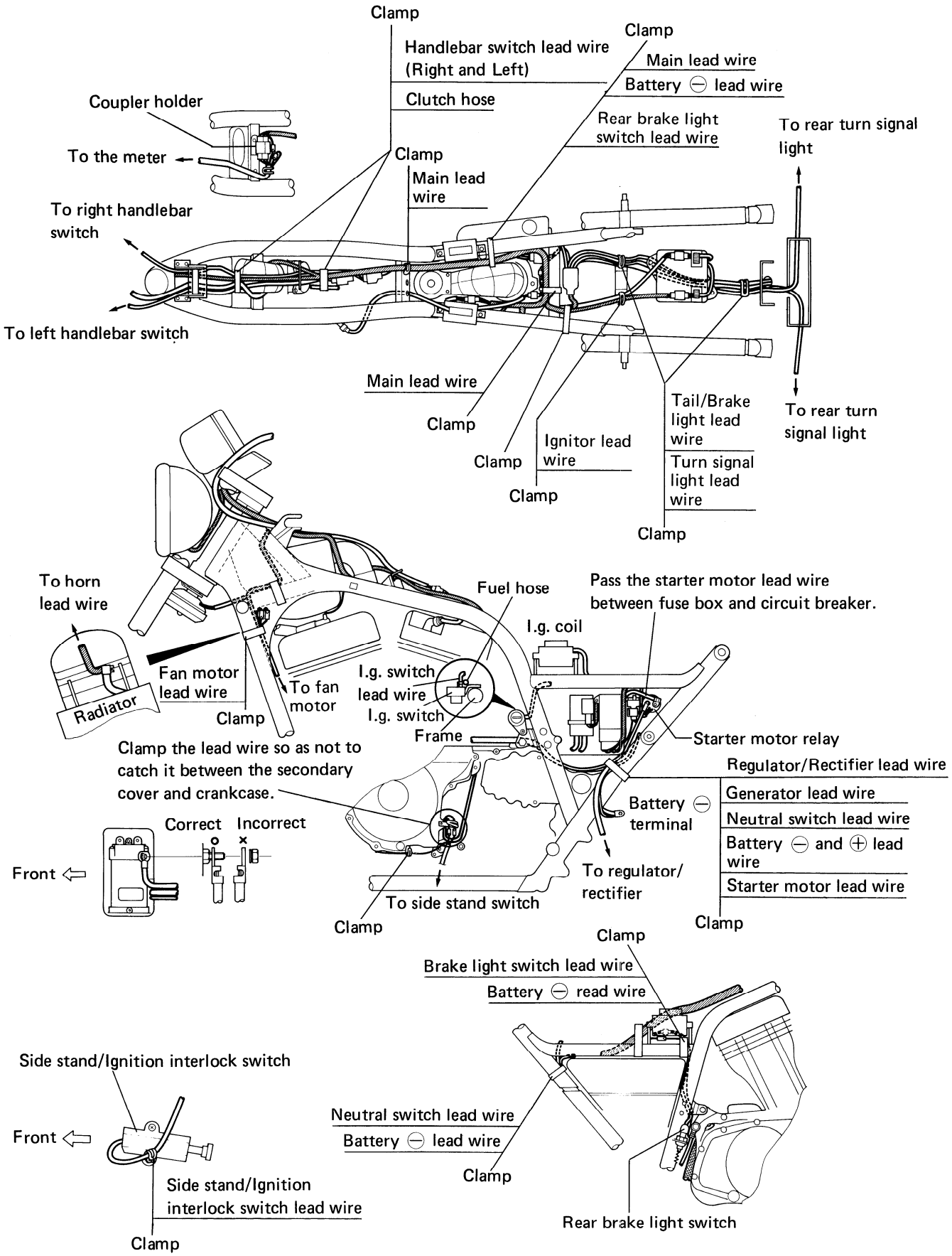
First check the insulation between ① and ② terminals with pocket tester. Then apply 12 volts to ③ and ④ terminals, ⊕ to ③ and ⊖ to ④, and check the continuity between ① and ②.
If there is no continuity, replace it with a new one.



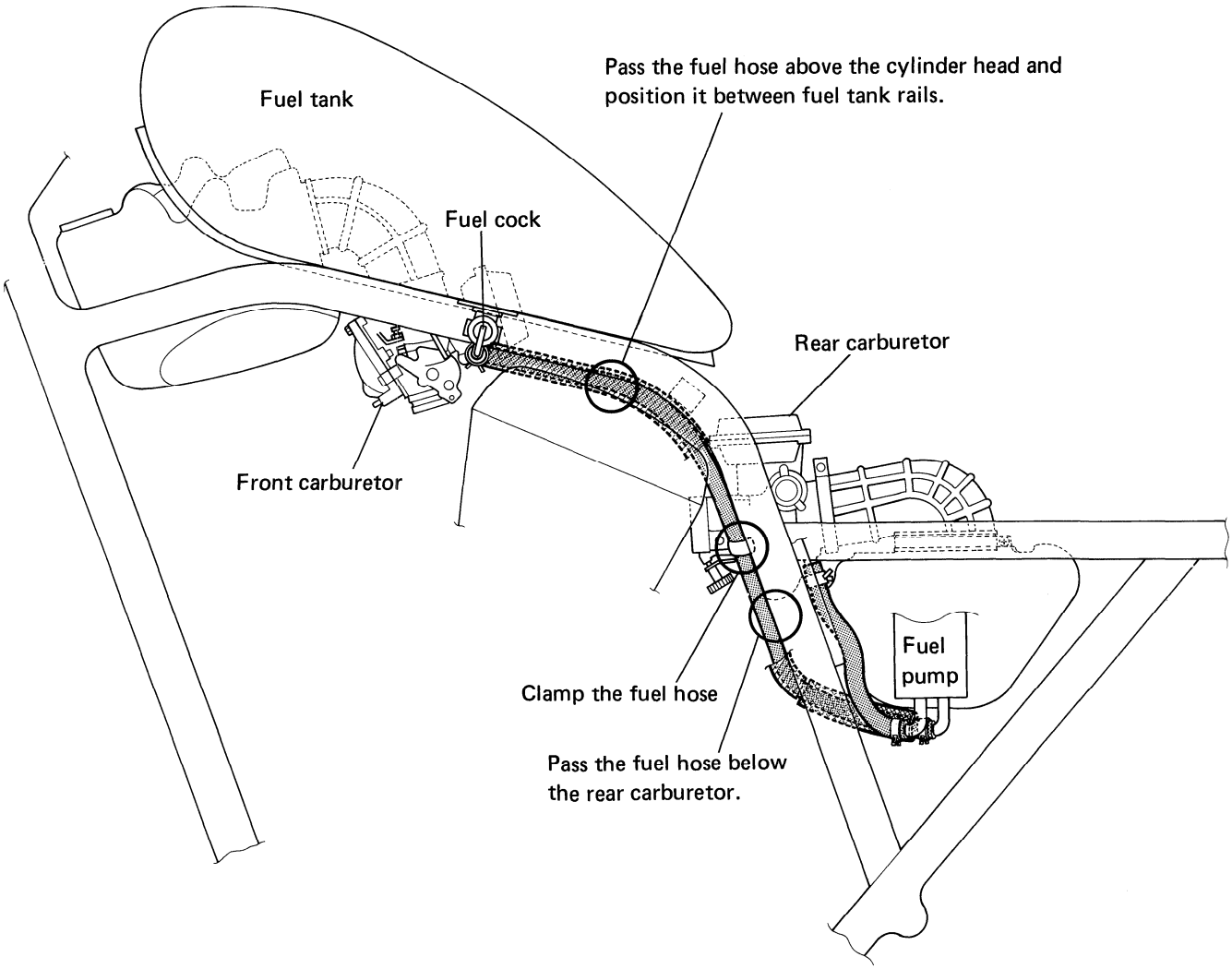
CABLE ROUTING



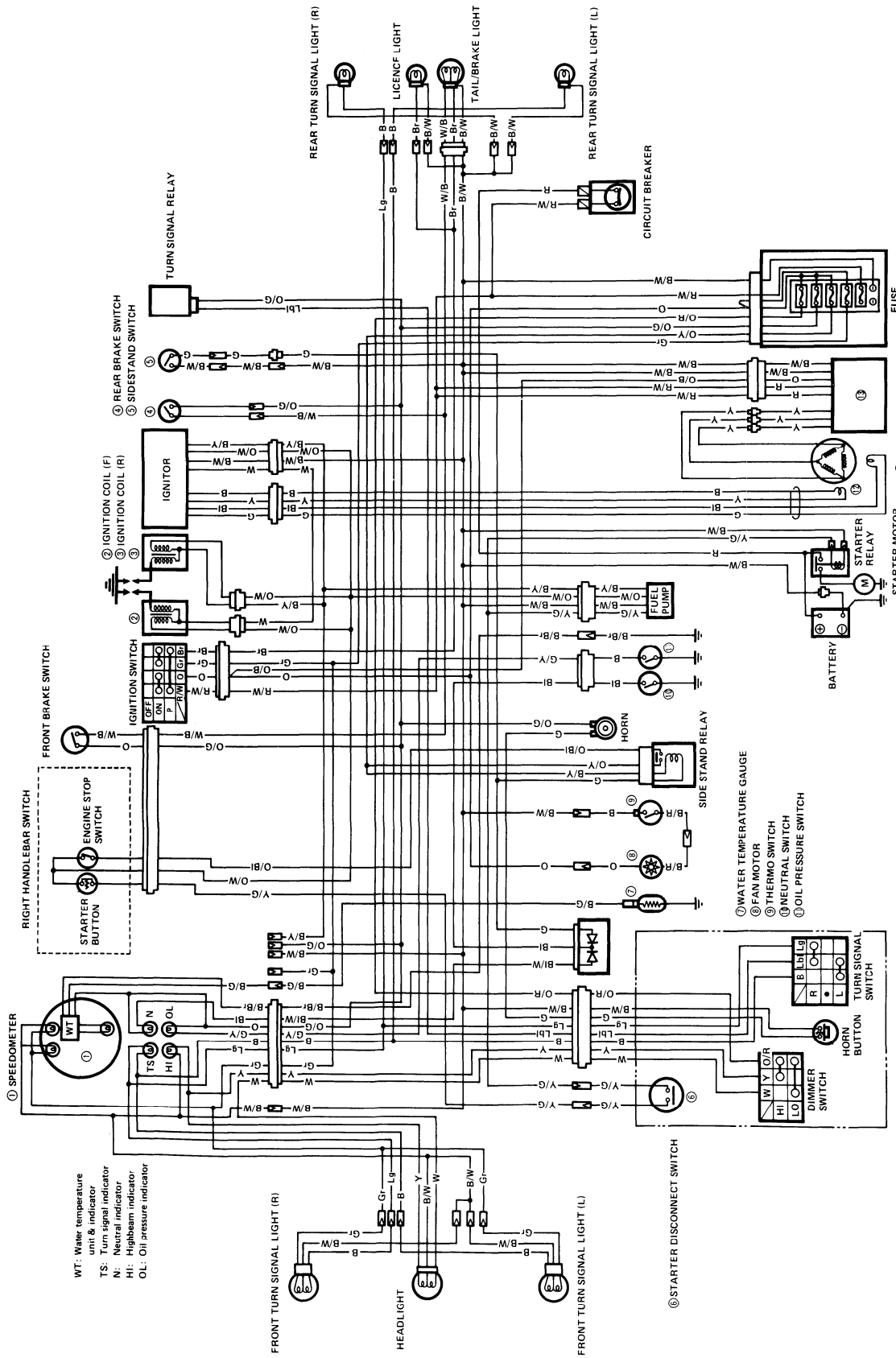
WIRE HARNESS ROUTING



HOSE ROUTING



WIRING DIAGRAM



WIRE COLOR

B . . . . . Black	O . . . . . Orange	B/W . . . . . Black with White tracer	O/R . . . . . Orange with Red tracer
Bl . . . . . Blue	R . . . . . Red	B/Y . . . . . Black with Yellow tracer	O/W . . . . . Orange with White tracer
Br . . . . . Brown	W . . . . . White	Bl/W . . . . . Blue with White tracer	O/Y . . . . . Orange with Yellow tracer
G . . . . . Green	Y . . . . . Yellow	G/Y . . . . . Green with Yellow tracer	R/W . . . . . Red with White tracer
Gr . . . . . Gray	B/Br . . . . . Black with Brown tracer	O/B . . . . . Orange with Black tracer	W/B . . . . . White with Black tracer
Lbl . . . . . Light bleu	B/G . . . . . Black with Green tracer	O/Bl . . . . . Orange with Blue tracer	Y/G . . . . . Yellow with Green tracer
Lg . . . . . Light green	B/R . . . . . Black with Red tracer	O/G . . . . . Orange with Green tracer	

VS750GLJ ('88-MODEL)

FOREWORD

This VS750GLJ supplementary service manual describes up-to-date service procedures which differ from those of the VS700GLH ('87-model).

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VIEW OF SUZUKI VS750GLJ



LEFT SIDE



RIGHT SIDE

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 255 mm (88.8 in)
Overall width	750 mm (29.5 in)
Overall height	1 220 mm (48.0 in)
Wheelbase	1 560 mm (61.4 in)
Ground clearance	135 mm (5.3 in)
Seat height	685 mm (27.0 in)
Dry mass	199 kg (438 lbs)... E-03 200 kg (440 lbs)... E-33

ENGINE

Type	Four-stroke, water-cooled, OHC, 45-degree V-twin
Number of cylinders	2
Bore	80.0 mm (3.150 in)
Stroke	*74.4 mm (2.929 in)
Piston displacement	*747 cm^3 (45.6 cu. in)
Compression ratio	10.0 : 1
Carburetor	MIKUNI BDS34SS .... front MIKUNI BS34SS ... rear
Air cleaner	Polyester fiber 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	1.690 (71/42)
Secondary reduction	1.133 (17/15)
Final reduction	3.090 (34/11)
Gear ratios, Low 2nd 3rd 4th Top	2.285 (32/14) 1.631 (31/19) 1.227 (27/22) 1.000 (25/25) 0.851 (23/27)
Drive system	Shaft drive

NOTE:
E-33 . . . For California, E-03 . . . For other states

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Swingarm, oil damped, spring pre-load 5-way adjustable
Steering angle	40° (right & left)
Caster	56°
Trail	*152 mm (6.0 in)
Turning radius	2.8 m (9.2 ft)
Front brake	Disc
Rear brake	Internal expanding
Front tire size	*80/90-21 48H
Rear tire size	140/90-15 70H
Front fork stroke	130 mm (5.1 in)
Rear wheel travel	90 mm (3.5 in)

ELECTRICAL

Ignition type	Transistorized
Ignition timing	5° B.T.D.C. below 1 650 r/min and 30° B.T.D.C. above 3 500 r/min
Spark plug	N.G.K.: DP8EA-9 N.D.: X24EP-U9
Battery	12V 57.6 kC (16 Ah/ 10HR)
Generator	Three phase A.C. Generator
Fuse	10/10/10/10/10A

CAPACITIES

Fuel tank including reserve	12.0 L (3.2 US gal)..E-03 11.0 L (2.9 US gal)..E-33
reserve	3.0 L (3.4 US qt)
Engine oil	2.4 L (2.5 US qt)
Front fork oil	*413 ml (14.0 US oz)
Final bevel gear oil	200 – 220 ml (6.8 – 7.4 US oz)
Coolant	1 700 ml (1.8 US qt)

(*) Asterisk mark indicates the new VS750GLJ model specifications.
These specifications are subject to change without notice.

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	———
	EX.	26 (1.02)	———
Valve lift	IN.	8.5 (0.33)	———
	EX.	8.5 (0.33)	———
Valve clearance (when cold)	IN. & EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.020—0.047 (0.0008—0.0019)	0.35 (0.014)
	EX.	0.035—0.062 (0.0014—0.0024)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.465—5.480 (0.2152—0.2157)	———
	EX.	5.450—5.465 (0.2146—0.2152)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	4.0 (0.16)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	———	38.3 (1.51)
	OUTER	———	40.1 (1.58)
Valve spring tension (IN. & EX.)	INNER	6.51—7.49 kg (14.35—16.51 lbs) at length 32.5 mm (1.28 in)	———
	OUTER	12.09—13.91 kg (26.65—30.67 lbs) at length 36.0 mm (1.42 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954—35.994 (1.4155—1.4171)	35.660 (1.4039)
	EX.	36.919—36.959 (1.4535—1.4551)	36.620 (1.4417)
Camshaft journal oil clearance	IN. & EX.	0.032—0.066 (0.0013—0.0026)	0.150 (0.0059)

ITEM	STANDARD		LIMIT
Camshaft journal holder I.D.	No.1 Right side / No.2 Left side	20.012—20.025 (0.7879—0.7884)	———
	No.1 Left side / No.2 Right side	25.012—25.025 (0.9874—0.9852)	———
Camshaft journal O.D.	No.1 Right side / No.2 Left side	19.959—19.980 (0.7858—0.7866)	———
	No.1 Left side / No.2 Right side	24.959—24.980 (0.9826—0.9835)	———
Camshaft runout	IN. & EX.	———	0.10 (0.004)
Cam chain 20-pitch length	———		128.9 (5.07)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	———
Cylinder head distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	1 300—1 600 kPa (13—16 kg/cm² 185—228 psi)		1 100 kPa (11 kg/cm² 156 psi)
Compression pressure difference	———		200 kPa (2 kg/cm² 28 psi)
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)		0.120 (0.0047)
Cylinder bore	80.000—80.015 (3.1496—3.1502)		80.085 (3.1529)
Piston diam.	79.950—79.965 (3.1476—3.1482) Measure at 15 mm (0.6 in) from the skirt end.		79.880 (3.1449)
Cylinder distortion	———		0.05 (0.002)
Piston ring free end gap	1st	N	Approx. 10.5 (0.413)	8.4 (0.33)
	2nd	N	Approx. 10.5 (0.413)	8.4 (0.33)
Piston ring end gap	1st		0.20—0.35 (0.008—0.014)	0.70 (0.028)
	2nd		0.20—0.35 (0.008—0.014)	0.70 (0.028)

ITEM	STANDARD		LIMIT
Piston ring to groove clearance	1st	———	0.180 (0.007)
	2nd	———	0.150 (0.006)
Piston ring groove width	1st	1.01—1.03 (0.0398—0.0406)	———
	2nd	1.21—1.23 (0.0476—0.0484)	———
	Oil	2.51—2.53 (0.0988—0.0966)	———
Piston ring thickness	1st	0.975—0.990 (0.0384—0.0390)	———
	2nd	1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	20.003—20.008 (0.7875—0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996—20.000 (0.7872—0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010—20.018 (0.7878—0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10—0.20 (0.004—0.008)	0.30 (0.012)
Conrod big end width	21.95—22.00 (0.864—0.866)	———
Crank pin width	22.10—22.15 (0.870—0.872)	———
Conrod big end oil clearance	0.024—0.042 (0.0009—0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982—41.000 (1.6135—1.6142)	———
Crankshaft journal oil clearance	0.020—0.050 (0.0008—0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965—47.980 (1.8884—1.8890)	———
Crankshaft thrust bearing thickness	1.925—2.175 (0.0758—0.0856)	———
Crankshaft thrust clearance	0.040—0.120 (0.0016—0.0047)	———
Crankshaft runout	———	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 × 32/29)	———
Oil pressure (at 60°C, 140°F)	Above 350 kPa (3.5 kg/cm^2, 50 psi) Below 650 kPa (6.5 kg/cm^2, 92 psi) at 3 000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92—3.08 (0.115—0.121)	2.62 (0.103)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.622—0.630)		15.0 (0.591)
Driven plate distortion	———		0.10 (0.004)
Clutch spring free length	———		34.0 (1.34)
Clutch master cylinder bore	14.000—14.043 (0.5512—0.5529)		———
Clutch master cylinder piston diam.	13.957—13.984 (0.5495—0.5506)		———
Clutch release cylinder bore	38.100—38.162 (1.5000—1.5024)		———
Clutch release cylinder piston diam.	38.042—38.075 (1.4977—1.4990)		———

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	———
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	———
Radiator cap valve release pressure		90 ± 15 kPa (0.90 ± 0.15 kg/cm², 12.8 ± 2.1 psi)	———
Electric fan thermo-switch operating temperature	ON	Approx. 110°C (230°F)	———
	OFF	Approx. 104°C (219°F)	———

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		———
Secondary reduction ratio		1.133 (30/30 × 17/15)		———
Final reduction ratio		3.090 (34/11)		———
Gear ratios	Low	2.285 (32/14)		———
	2nd	1.631 (31/19)		———
	3rd	1.227 (27/22)		———
	4th	1.000 (25/25)		———
	Top	0.851 (23/27)		———
Shift fork to groove clearance		No.1	0.10—0.30 (0.004—0.012)	0.50 (0.020)
		No.2	0.10—0.30 (0.004—0.012)	0.50 (0.020)
Shift fork groove width		No.1	5.50—5.60 (0.217—0.220)	———
		No.2	4.50—4.60 (0.177—0.181)	———

ITME	STANDARD		LIMIT
Shift fork thickness	No.1	5.30—5.40 (0.209—0.213)	———
	No.2	4.30—4.40 (0.169—0.173)	———

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.08—0.13 (0.003—0.005)		———
Final bevel gear backlash	Drive side	0.03—0.064 (0.001—0.0025)	

CARBURETOR

ITEM		SPECIFICATION			
		For other states		For California	
		No.1 (Rear side)	No.2 (Front side)	No.1 (Rear side)	No.2 (Front side)
Carburetor type		MIKUNI BS34SS	MIKUNI BDS34SS	MIKUNI BS34SS	MIKUNI BDS34SS
Bore size		34 mm (1.34 in)	←	←	←
I.D. No.		*39A00	←	*39A10	←
Idle r/min.		1 000 ± 100 r/min.	←	←	←
Fuel level		7.0±0.5 mm (0.28±0.02 in)	17.0±0.5 mm (0.67±0.02 in)	7.0±0.5 mm (0.28±0.02 in)	17.0±0.5 mm (0.67±0.02 in)
Float height		27.7±1.0 mm (1.09±0.04 in)	11.5±1.0 mm (0.45±0.04 in)	27.7±1.0 mm (1.09±0.04 in)	11.5±1.0 mm (0.45±0.04 in)
Main jet	(M.J.)	#132.5	←	←	←
Main air jet	(M.A.J.)	0.7 mm	←	←	←
Jet needle	(J.N.)	5D23	5D21	5D23	5D21
Needle jet	(N.J.)	P-1	*P-4	P-1	*P-4
Throttle valve	(Th.V.)	#110	←	←	←
Pilot jet	(P.J.)	#40	*#25	#40	*#25
Pilot outlet	(P.O.)	1.0 mm	←	←	←
Valve seat	(V.S.)	1.5 mm	←	←	←
Starter jet	(G.S.)	#40	#37.5	#40	#37.5
Pilot screw	(P.S.)	PRE-SET	←	←	←
Pilot air jet 1	(P.A.J.1)	PRE-SET	←	←	←
Pilot air jet 2	(P.A.J.2)	PRE-SET	←	←	←
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←	←	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←	←	←

(*) Asterisk mark indicates the new VS750GLJ model specifications.

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Ignition timing		5° B.T.D.C. Below 1 650 ± 100 r/min. and 30° B.T.D.C. at 3 500 ± 100 r/min.		
Firing order		1-2		
Spark plug		Type	N.D.: X24EP-U9 NGK: DP8EA-9	
		Gap	0.8–0.9 (0.032–0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx.	50–200 Ω	G–Bl
Ignition coil resistance		Primary	2–6 Ω	⊕ terminal – ⊖ terminal
		Secondary	15–40 kΩ	plug cap – ⊖ termianl
Generator no-load voltage		More than 65 V (AC) at 5 000 r/min.		
Regulated voltage		13.5–15.5 V at 5 000 r/min.		
Starter motor brush length		Limit: 9 (0.35)		N.D.
		Commutator under-cut Limit: 0.2 (0.008)		
Starter relay resistance		2–6 Ω		
Battery	Type designation	YB16B-A1		
	Voltage	12 V		
	Capacity	57.6 kC (16 Ah)/10 HR		
	Standard electrolyte S.G.	1.28 at 20°C (68°F)		
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Tail	10 A		
	Power source	10 A		
Circuit breaker		30 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Tail/Brake light		*5/21
Front turn signal light		*5/21
Rear turn signal light		*21
Speedometer light		3.4
Water temp. meter light		3
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		3
Oil pressure indicator light		3
License light		8

(*) Asterisk mark indicates the new VS750GLJ model specifications.

BRAKE + WHEEL

Unit: mm (in)

ITEM		STANDARD	LIMIT
Rear brake pedal free travel		20–30 (0.8–1.2)	———
Rear brake pedal height		40 (1.6)	———
Brake lining thickness	Rear	———	1.5 (0.06)
Brake drum I.D.	Rear	———	180.7 (7.11)
Brake disc thickness	Front	5.0 ± 0.2 (0.20 ± 0.01)	4.5 (0.18)
Brake disc runout		———	0.30 (0.012)
Master cylinder bore	Front	*12.700–12.743 (0.5000–0.5017)	———
Master cylinder piston diam.	Front	*12.657–12.684 (0.4983–0.4993)	———
Brake caliper cylinder bore	Front	*42.850–42.926 (1.6870–1.6900)	———
Brake caliper piston diam.	Front	*42.770–42.820 (1.6839–1.6858)	———
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axle runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Tire size	Front	*80/90-21 48H	———
	Rear	140/90-15 70H	———
Tire tread depth	Front	———	1.6 (0.06)
	Rear	———	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	———	
Front fork spring free length	———	*348.3 (13.71)	
Front fork oil level	*124.3 (4.89)	———	
Rear wheel travel	90 (3.5)	———	
Swingarm pivot shaft runout	———	0.30 (0.012)	

(*) Asterisk mark indicates the new VS750GLJ model specifications.

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	SOLO RIDING WITH LIGHT OR LITTLE CARGO LOAD			DUAL RIDING OR SOLO RIDING WITH HEAVY CARGO LOAD		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	200	2.00	28	225	2.25	32
REAR	225	2.25	32	250	2.50	36

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	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 tank including reserve	12.0 L (3.2/2.6 US/Imp gal)		For other states
	11.0 L (2.9/2.4 US/Imp gal)		For California
reserve	3.0 L (3.4/2.9 US/Imp qt)		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	2 400 ml (2.5/2.1 US/Imp qt)	
	Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
	Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	*413 ml (14.0/14.5 US/Imp oz)		
Final bevel gear oil type	SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity	200—220 ml (6.8/7.0—7.4/7.7 US/Imp oz)		
Brake fluid type	DOT3 or DOT4		
Radiator	1 700 ml (1.8/1.5 US/Imp oz)		

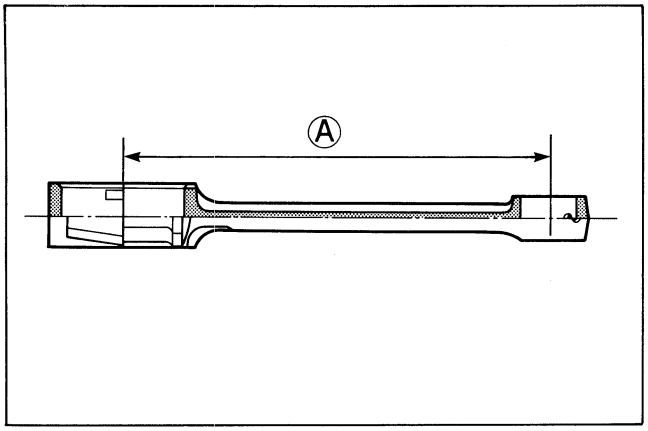
(*) Asterisk mark indicates the new VS750GLJ model specifications.

CHANGES

CONROD

Conrod has been changed as shown below.

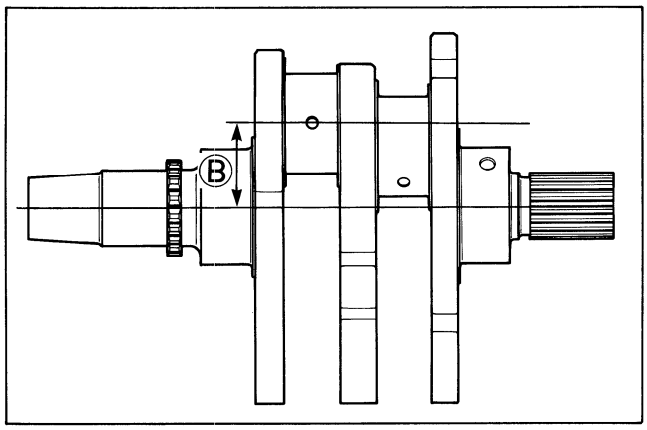
Item	VS700GLH	VS750GLJ
Ⓐ	154.7 mm (6.09 in)	152.3 mm (6.00 in)



CRANKSHAFT

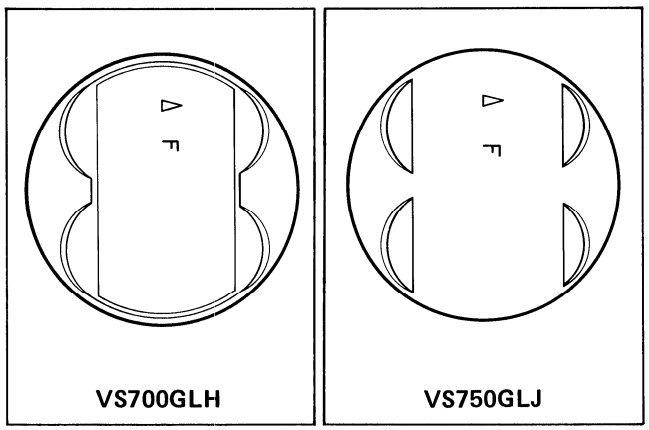
Crankshaft has been changed as shown below.

Item	VS700GLH	VS750GLJ
Ⓑ	34.8 mm (1.37 in)	37.2 mm (1.46 in)



PISTON

The shape of the piston head has been changed as shown in the illustration.



VS700GLH VS750GLJ

FRONT FORK

Front fork inner tube O.D. have been changed as follows.

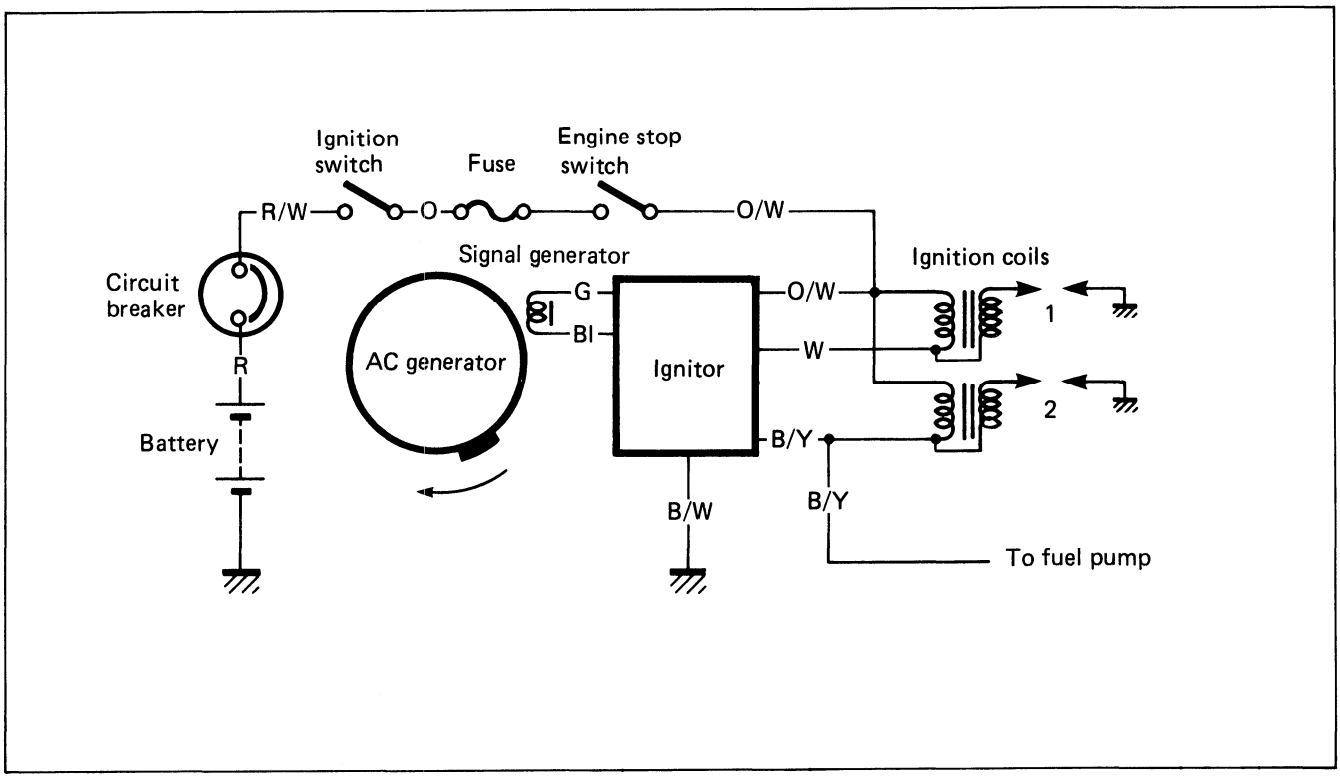
VS700GLH	VS750GLJ
ϕ 30 mm (1.2 in)	ϕ 33 mm (1.3 in)

IGNITION SYSTEM

DESCRIPTION

The fully transistorized ignition system consists of a signal generator, ignitor, ignition coils, and spark plugs. The signal generator comprises one rotor tip and one pickup coil.

The signal generator coil is mounted on the generator cover. The output of the signal generator goes to the ignitor unit, where it turns ON and OFF the transistor alternately. As the transistor is turned ON and OFF, the current passing through the primary windings of the ignition coil is also turned OFF and ON accordingly, thus it induces the secondary current on the ignition coil secondary windings and produce the spark between spark plug gaps.



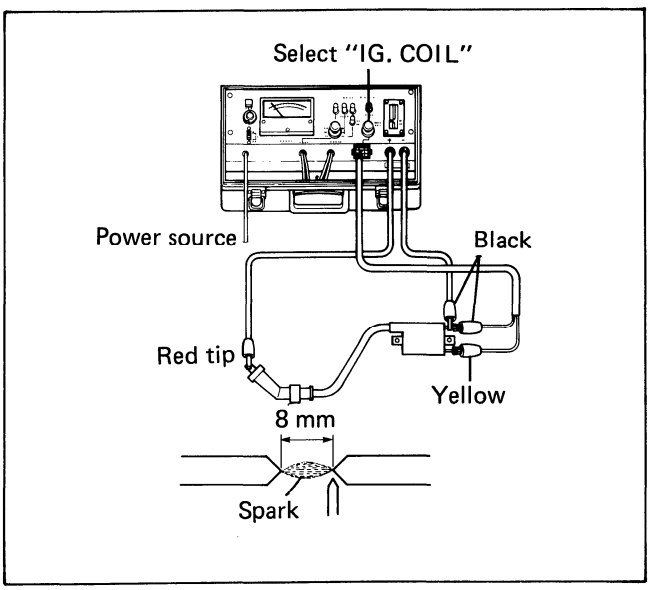
INSPECTION

IGNITION COILS (Checking with Electro Tester)

- Remove the ignition coils from the frame.
- Using the electro tester, test each ignition coil for sparking performance. The test connection is as indicated. Make sure that the three-needle sparking distance is at least 8 mm.
  If no sparking or orange color sparking occures with this much gap, then it is defective and must be replaced.

09900-28106	Electro tester

STD Spark performance	8 mm (0.3 in)

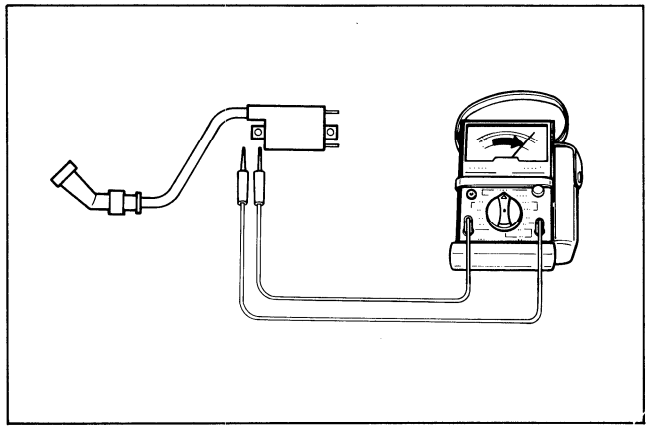


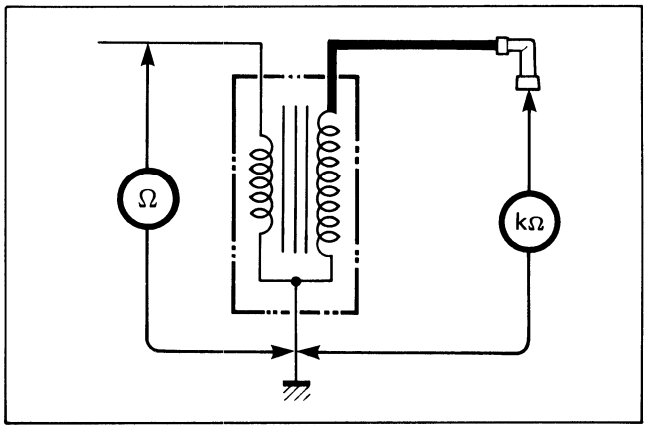
IGNITION COILS (Checking with Pocket Tester)

- A SUZUKI pocket tester or an ohm meter may be used, instead of the electro tester. In either case, the ignition coil is to be checked for continuity in both primary and secondary windings. Exact ohmic readings are not necessary, but, if the windings are in sound condition, their continuity will be noted with these approximate ohmic values.

09900-25002	Pocket tester

Ignition coil resistance	
Primary	2 – 6 Ω
Secondary	15 – 40 kΩ



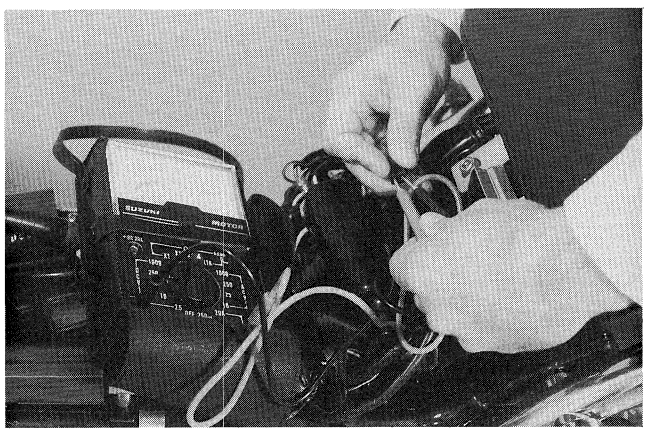


SIGNAL GENERATOR (Checking with Pocket Tester)

- Remove the frame covers and rider seat.
- Measure the resistance between lead wires. If the resistance is infinity or less than the specifications, the signal generator must be replaced.

09900-25002	Pocket tester

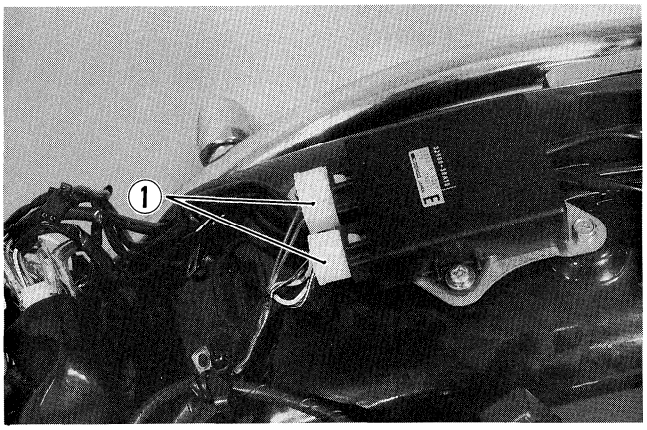
STD resistance	
Green – Blue	50 – 200 Ω

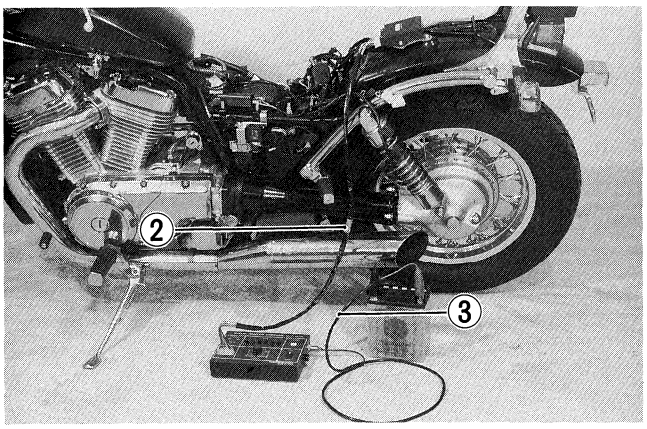


IGNITOR UNIT (Checking with Digital Ignitor Checker)

This section explains the checking procedure for the ignitor unit with the special tool. With this checker, the ignitor unit can be checked either on the motorcycle or off the motorcycle. The following explains the checking procedure on the motorcycle.

09931-64410	Digital ignitor checker





WIRING PROCEDURE

- Remove the frame covers and two seats.
- Disconnect the ignitor lead wire couplers ①.
- Prepare the checker lead wire "MODE 1" ② which comes supplied with the checker and connect its end to the ignitor unit and another end to the checker.
- Connect the power source leads ③ to the battery.

CAUTION:

*** Do not use the battery equipped on the motorcycle.**

*** Be sure to connect the black lead to the battery ⊖ terminal and red lead to the ⊕ terminal.**

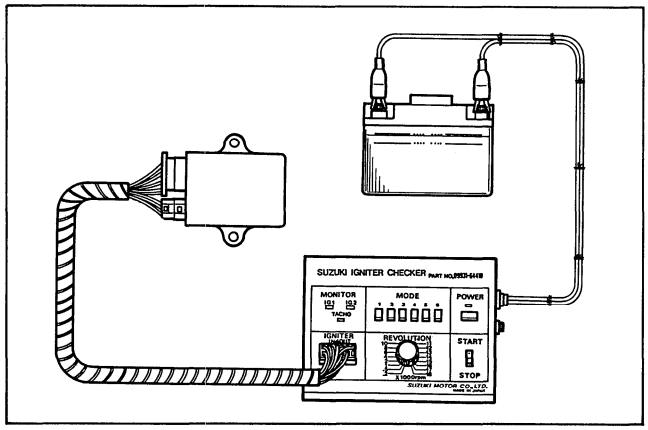
*** Make sure "START" switch is in "OFF" position, before connecting the power source lead.**

NOTE:

When making this test, be sure that the battery is fully-charged condition.

CHECK PROCEDURE

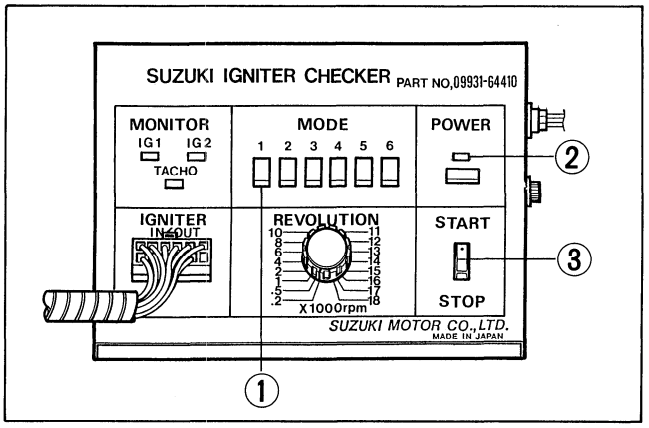
With all the lead wires properly connected, check the ignitor unit in the following steps.



FIRST STEP

Depress "MODE 1" button ① then "POWER" buttom ②.

This time, "POWER" lamp should come on. If not, battery is under-charged.

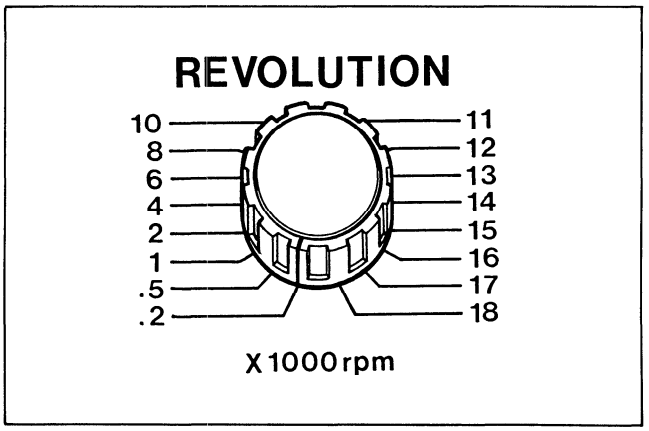


SECOND STEP

Set "REVOLUTION" dial to ".2" position in which the checker produces the ignition primary current pulses simulating 200 r/min of engine revolution when "START" switch is turned on.

With "START" switch ③ is turned to on position, check that two "MONITOR" lamps turn on and off in slow frequency in order of ④ – ⑤ as illustrated.

If these lamps do not turn on and off, the ignitor unit should be replaced.

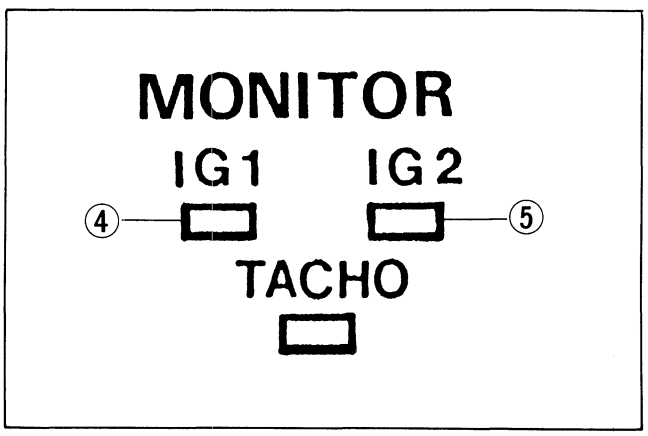


THIRD STEP

Turn "REVOLUTION" dial up gradually (assuming the engine is gradually revved up) and check that the "MONITOR" lamp flash frequency as explained in the "SECOND STEP" above increases.

As the dial pointer passes beyond the graduation "4" (4 000 r/min), two lamps should shown continuously lighted.

If these lamps do not light, the ignitor unit should be replaced.



EMISSION CONTROL CARBURETOR COMPONENTS

VS750 motorcycles are equipped with precision, manufactured carburetors for emission level control. These carburetors require special mixture control components and other precision adjustments to function properly.

There are several carburetor mixture control components in each carburetor assembly. Three (3) of these components are machined to much closer tolerances than standard machined carburetor jets. These three (3) particular jets – MAIN JET, NEEDLE JET, PILOT JET – must not be replaced by standard jets. To aid in identifying these three (3) jets a different design of letter and number are used. If replacement of these close tolerance jets becomes necessary, be sure to replace them with the same type close tolerance jets marked as in the examples shown below.

The jet needle is also of special manufacture. Only one clip position is provided on the jet needle. If replacement becomes necessary the jet needle may only be replaced with an equivalent performing replacement component. Suzuki recommends that Genuine Suzuki Parts be utilized whenever possible for the best possible performance and durability.

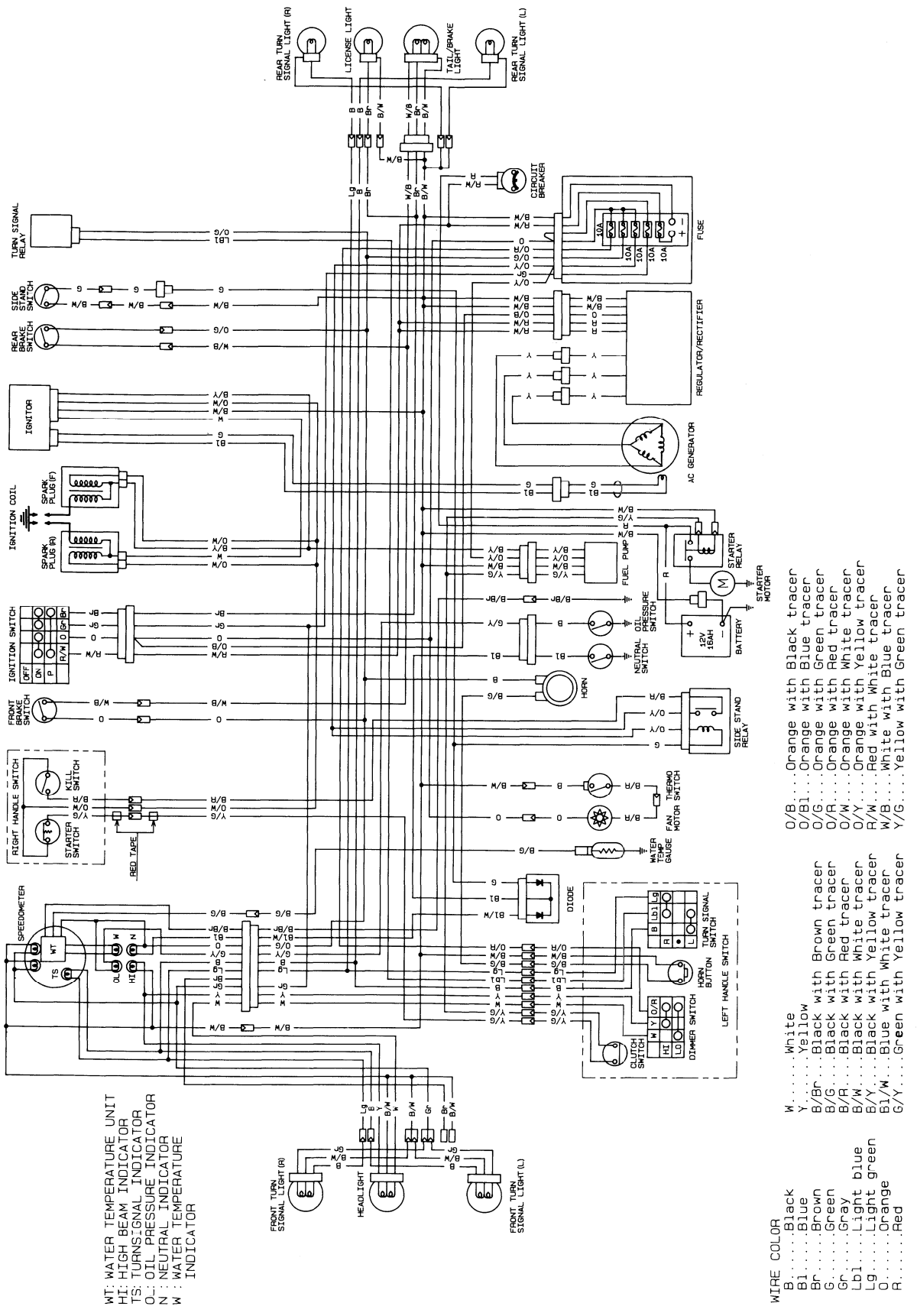
Conventional Figures Used on Standard Tolerance Jet Components	1 2 3 4 5 6 7 8 9 0
Emission Type Figures Used On Close Tolerance Jet Components	1 2 3 4 5 6 7 8 9 0

The carburetor specification for the emission-controlled VS750 are as follows.

Carburetor I.D. No.	Main Jet	Needle Jet	Jet Needle	Pilot Jet	Pilot Screw
39A10 California model	#132.5 (No. 1) #132.5 (No. 2)	P-1 (No. 1) P-4 (No. 2)	5D23 (No. 1) 5D21 (No. 2)	#40 (No. 1) #25 (No. 2)	PRE-SET DO NOT ADJUST
39A00 Other state models	#132.5 (No. 1) #132.5 (No. 2)	P-1 (No. 1) P-4 (No. 2)	5D23 (No. 1) 5D21 (No. 2)	#40 (No. 1) #25 (No. 2)	PRE-SET DO NOT ADJUST

The pilot screw is pre-set by the factory utilizing specialized testing and adjusting procedures. The pilot screw is not adjustable as the idle circuit is "sealed" after factory adjustment. Adjusting, interferring with, improper replacement, or resetting of any of the carburetor components may adversely affect carburetor performance and cause the motorcycle to exceed the exhaust emission level limits. If persons, who are unaware of these special carburetor servicing requirements tamper with the carburetors the Suzuki dealer should restore the carburetors to their original condition or if unable to effect repairs, contact the distributors representative for further technical information and assistance.

WIRING DIAGRAM



WT: WATER TEMPERATURE UNIT
HI: HIGH BEAM INDICATOR
TS: TURNSIGNAL INDICATOR
OL: OIL PRESSURE INDICATOR
N : NEUTRAL INDICATOR
W : WATER TEMPERATURE INDICATOR

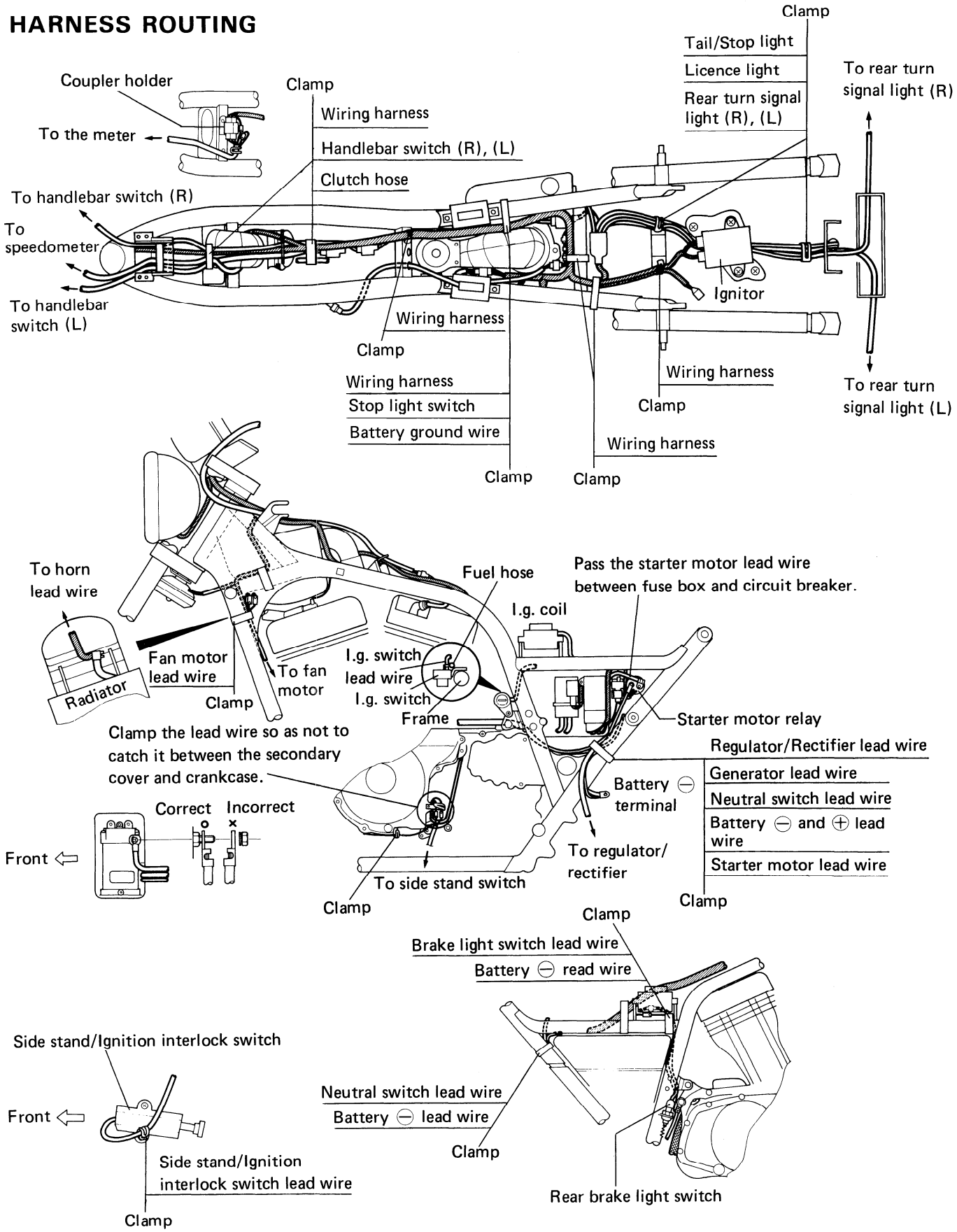
WIRE COLOR

B	Black	W	White
Bl	Blue	Y	Yellow
Br	Brown	B/Br	Black with Brown tracer
G	Green	B/G	Black with Green tracer
Gr	Gray	B/R	Black with Red tracer
Lbl	Light blue	B/W	Black with White tracer
Lg	Light green	B/Y	Black with Yellow tracer
O	Orange	Bl/W	Blue with White tracer
R	Red	G/Y	Green with Yellow tracer

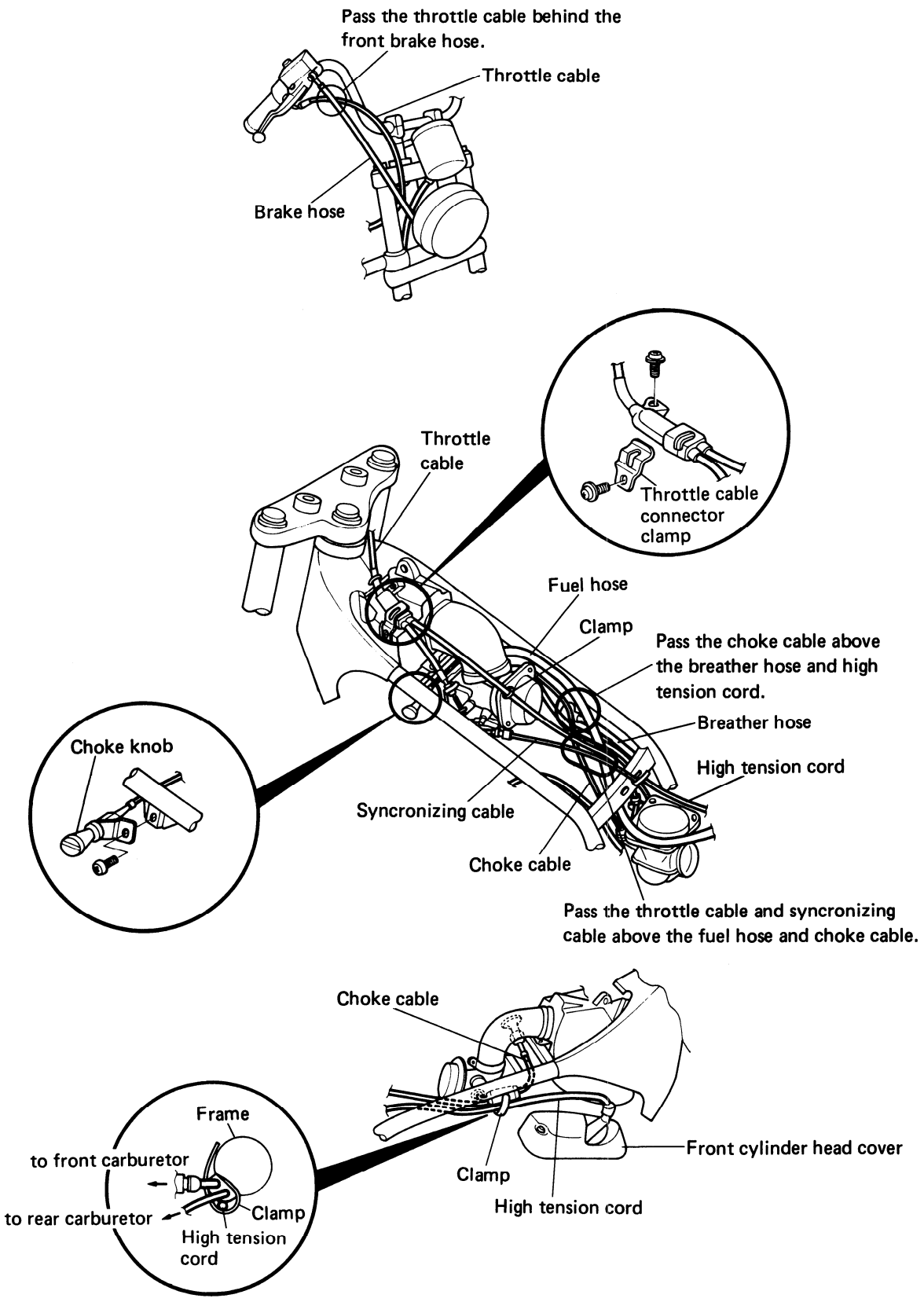
O/B	Orange with Black tracer
O/Bl	Orange with Blue tracer
O/G	Orange with Green tracer
O/R	Orange with Red tracer
O/W	Orange with White tracer
O/Y	Orange with Yellow tracer
R/W	Red with White tracer
W/B	White with Blue tracer
Y/G	Yellow with Green tracer

HARNESS, CABLE AND HOSE ROUTING

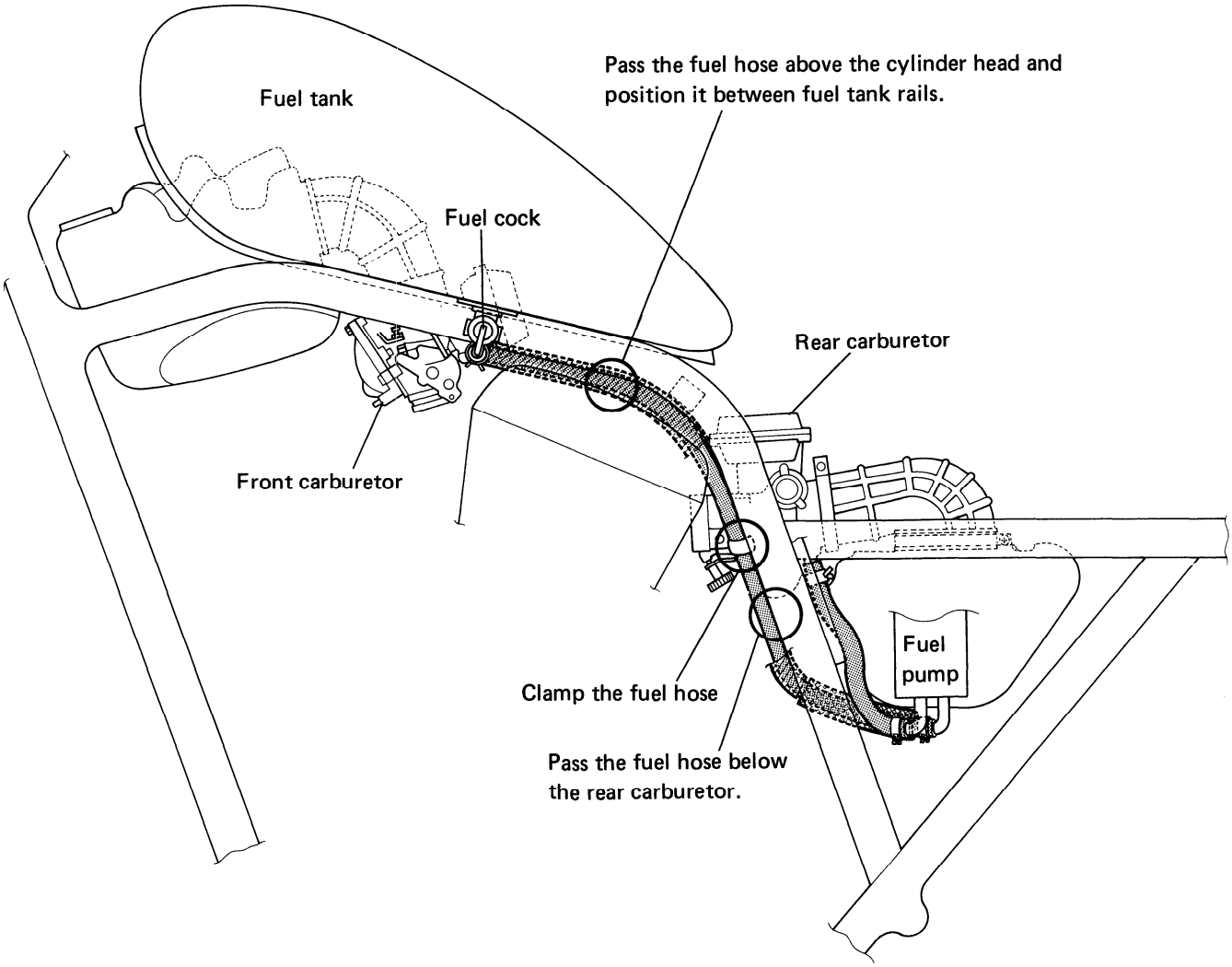
HARNESS ROUTING

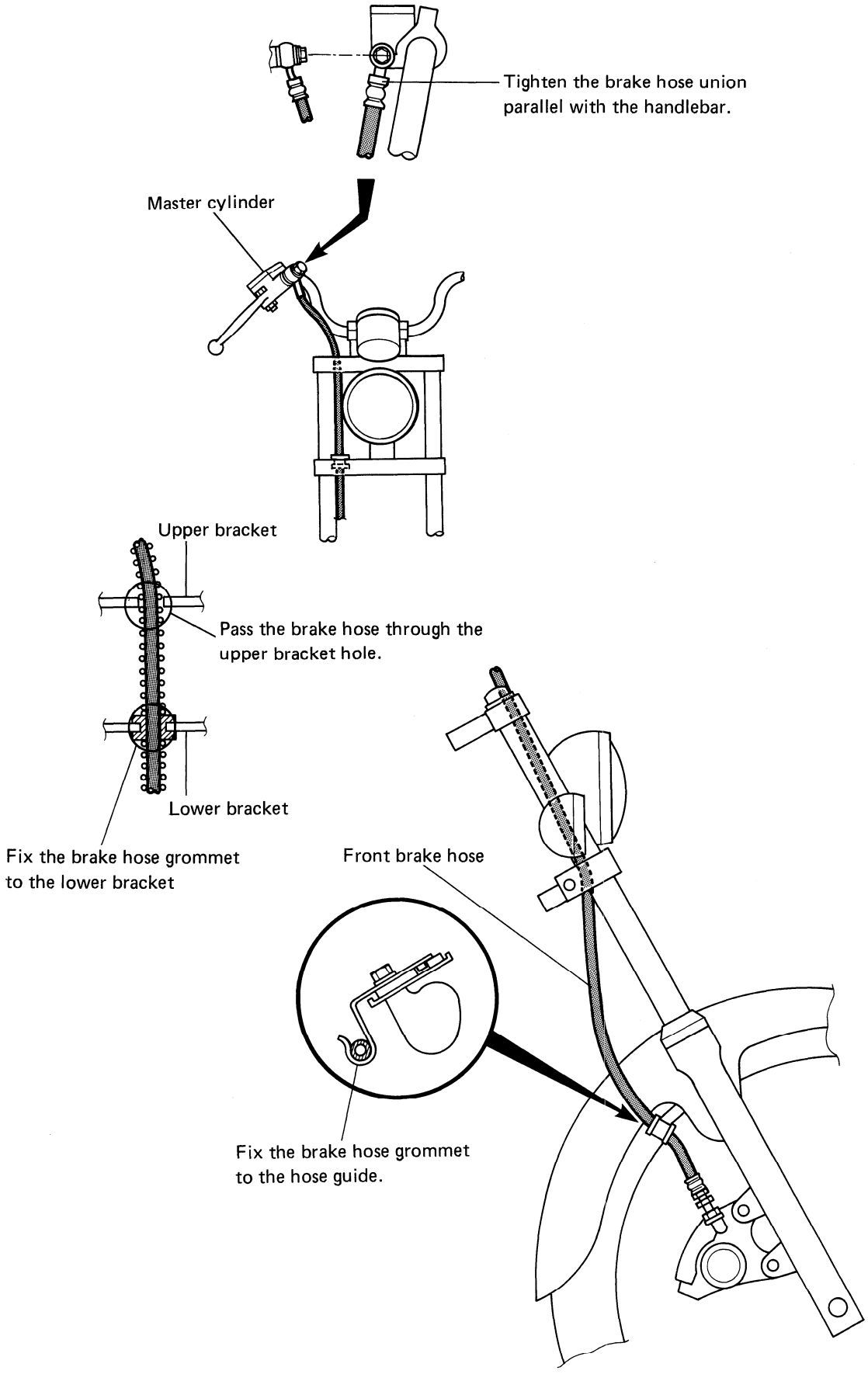


CABLE ROUTING



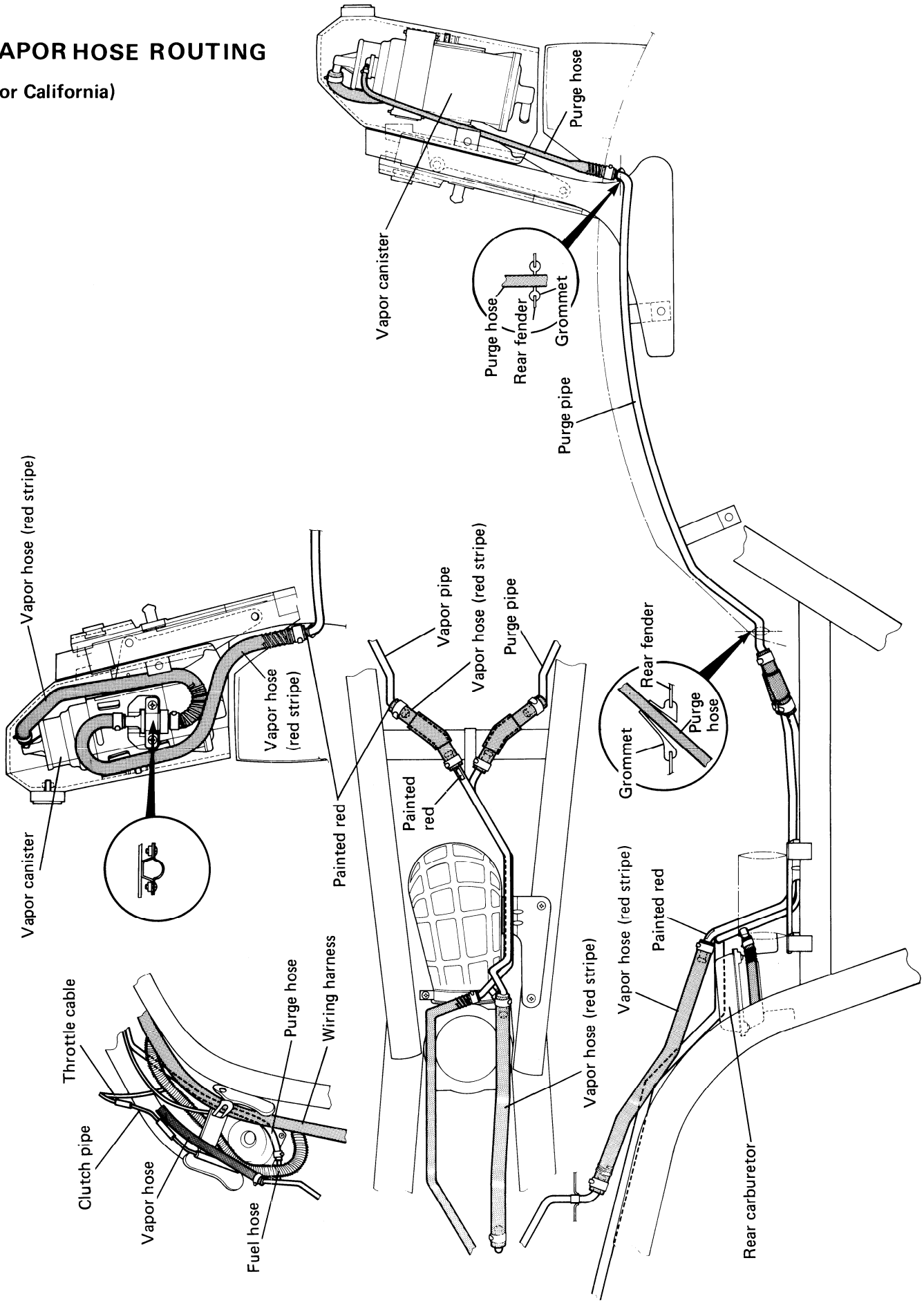
HOSE ROUTING




Tighten the brake hose union parallel with the handlebar.
Master cylinder
Upper bracket
Pass the brake hose through the upper bracket hole.
Lower bracket
Fix the brake hose grommet to the lower bracket
Front brake hose
Fix the brake hose grommet to the hose guide.

VAPOR HOSE ROUTING

(For California)



TIGHTENING TORQUE

ENGINE

ITEM		N·m	kg-m	lb-ft
Cylinder head cover bolt	M6	9 – 11	0.9 – 1.1	6.5 – 8.0
	M8	21 – 25	2.1 – 2.5	15.0 – 18.0
Cylinder head bolt and nut	M10	35 – 40	3.5 – 4.0	25.5 – 29.0
	M8	8 – 12	0.8 – 1.2	6.0 – 8.5
	M6	9 – 11	0.9 – 1.1	6.5 – 8.0
Primary drive gear bolt		80 – 110	8.0 – 11.0	58.0 – 79.5
Clutch sleeve hub nut		50 – 70	5.0 – 7.0	36.0 – 50.5
Rocker arm bolt		25 – 30	2.5 – 3.0	18.0 – 21.5
Chain guide bolt		8 – 12	0.8 – 1.2	6.0 – 8.5
Chain tensioner bolt		8 – 12	0.8 – 1.2	6.0 – 8.5
Cam chain sprocket bolt		14 – 16	1.4 – 1.6	10.0 – 11.5
Tappet adjuster lock nut		13 – 16	1.3 – 1.6	9.5 – 11.5
Crankcase bolt	M6	9 – 13	0.9 – 1.3	6.5 – 9.5
	M8	20 – 24	2.0 – 2.4	14.5 – 17.5
Secondary gear case bolt		20 – 24	2.0 – 2.4	14.5 – 17.5
Oil gallery plug	M6	4 – 7	0.4 – 0.7	3.0 – 5.0
	M8	15 – 20	1.5 – 2.0	11.0 – 14.5
	M10	12 – 18	1.2 – 1.8	8.5 – 13.0
	M14	20 – 25	2.0 – 2.5	14.5 – 18.0
	M16	20 – 25	2.0 – 2.5	14.5 – 18.0
Oil pipe clamp bolt		8 – 12	0.8 – 1.2	6.0 – 8.5
Magneto cover hole plug		12 – 18	1.2 – 1.8	8.5 – 13.0
T.D.C. Inspection plug		20 – 25	2.0 – 2.5	14.5 – 18.0
Oil drain plug		18 – 23	1.8 – 2.3	13.0 – 16.5
Oil pump bolt		7 – 9	0.7 – 0.9	5.0 – 6.5
Oil relief valve		25 – 30	2.5 – 3.0	18.0 – 21.5
Oil filter union bolt		12 – 18	1.2 – 1.8	8.5 – 13.0
Engine mounting bolt	L: 125	70 – 88	7.0 – 8.8	50.5 – 63.5
	L: 130	70 – 88	7.0 – 8.8	50.5 – 63.5
	L: 150	70 – 88	7.0 – 8.8	50.5 – 63.5
Drive shaft bolt		60 – 70	6.0 – 7.0	43.5 – 50.5

ITEM		N·m	kg-m	lb-ft
Secondary bevel drive gear shaft nut		80 – 110	8.0 – 11.0	58.0 – 79.5
Magneto rotor bolt		140 – 160	14.0 – 16.0	101.5 – 115.5
Frame mounting bolt		40 – 60	4.0 – 6.0	29.0 – 43.5
Engine mounting bracket bolt	M8	18 – 28	1.8 – 2.8	13.0 – 20.0
	M6	8 – 12	0.8 – 1.2	6.0 – 8.5
Con-rod nut		49 – 53	4.9 – 5.3	35.5 – 38.5

COOLING

ITEM		N·m	kg-m	lb-ft
Radiator mounting bolt	M10	50 – 65	5.0 – 6.5	36.0 – 47.0
Fan switch		10 – 15	1.0 – 1.5	7.0 – 11.0
Temperature gauge		12 – 15	1.2 – 1.5	8.5 – 11.0

SHAFT DRIVE

ITEM	N·m	kg-m	lb-ft
Secondary drive bevel gear housing bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Secondary driven bevel gear housing bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Final drive bevel gear shaft nut	90 – 110	9.0 – 11.0	65.0 – 79.5
Final drive bevel gear bearing stopper	90 – 120	9.0 – 12.0	65.0 – 87.0
Final driven gear bearing retainer screw	8 – 10	0.8 – 1.0	6.0 – 7.0
Final gear bearing case bolt	20 – 26	2.0 – 2.6	14.5 – 19.0

CHASSIS

ITEM	N·m	kg-m	lb-ft
Steering stem head nut	60 – 100	6.0 – 10.0	43.5 – 72.5
Front fork cap bolt	*60 – 100	*6.0 – 10.0	*43.5 – 72.5
Front fork lower clamp bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
Handlebar clamp bolt	12 – 20	1.2 – 2.0	8.5 – 14.5
Handlebar holder bolt	40 – 50	4.0 – 5.0	29.0 – 36.0
Handlebar holder nut	40 – 50	4.0 – 5.0	29.0 – 36.0
Front fork damper rod bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Front axle nut	36 – 52	3.6 – 5.2	26.0 – 37.5
Front axle clamp bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Front master cylinder mounting bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
Brake hose union bolt	20 – 25	2.0 – 2.5	14.5 – 18.0

(*) Asterisk mark indicates the new VS750GLJ model specifications.

ITEM	N·m	kg-m	lb-ft
Caliper mounting bolt	25 – 40	2.5 – 4.0	18.0 – 29.0
Caliper housing bolt	15 – 20	1.5 – 2.0	11.0 – 14.5
Caliper air bleeder valve	6 – 9	0.6 – 0.9	4.5 – 6.5
Disc plate bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Hub frange bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
Spoke nipple	4 – 5	0.4 – 0.5	3.0 – 3.5
Clutch master cylinder mounting bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
Rear shock absorber fitting nut (upper and lower)	20 – 30	2.0 – 3.0	14.5 – 21.5
Rear axle nut	60 – 96	6.0 – 9.6	43.5 – 69.5
Rear brake cam lever bolt	*8 – 12	*0.8 – 1.2	*6.0 – 8.5
Rear torque link nut (front and rear)	20 – 30	2.0 – 3.0	14.5 – 21.5
Final gear case joint nut	35 – 45	3.5 – 4.5	25.5 – 32.5
Rear wheel driven joint bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
Rear swingarm pivot nut	50 – 80	5.0 – 8.0	36.0 – 58.0
Front footrest bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Rear hub shock absorber bolt	90 – 100	9.0 – 10.0	65.0 – 72.5

(*) Asterisk mark indicates the new VS750GLJ model specifications.

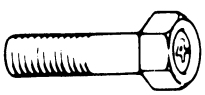
TIGHTENING TORQUE CHART

For other bolts and nuts not listed above, refer to this chart:

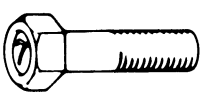
Bolt Diameter Ⓐ (mm)	Conventional or "4" marked bolt			"7" marked bolt		
	N·m	kg-m	lb-ft	N·m	kg-m	lb-ft
4	1.0 – 2.0	0.1 – 0.2	0.7 – 1.5	1.5 – 3.0	0.15 – 0.3	1.0 – 2.0
5	2.0 – 4.0	0.2 – 0.4	1.5 – 3.0	3.0 – 6.0	0.3 – 0.6	2.0 – 4.5
6	4.0 – 7.0	0.4 – 0.7	3.0 – 5.0	8.0 – 12.0	0.8 – 1.2	6.0 – 8.5
8	10.0 – 16.0	1.0 – 1.6	7.0 – 11.5	18.0 – 28.0	1.8 – 2.8	13.0 – 20.0
10	22.0 – 35.0	2.2 – 3.5	16.0 – 25.5	40.0 – 60.0	4.0 – 6.0	29.0 – 43.5
12	35.0 – 55.0	3.5 – 5.5	25.5 – 40.0	70.0 – 100.0	7.0 – 10.0	50.5 – 72.5
14	50.0 – 80.0	5.0 – 8.0	36.0 – 58.0	110.0 – 160.0	11.0 – 16.0	79.5 – 115.5
16	80.0 – 130.0	8.0 – 13.0	58.0 – 94.0	170.0 – 250.0	17.0 – 25.0	123.0 – 181.0
18	130.0 – 190.0	13.0 – 19.0	94.0 – 137.5	200.0 – 280.0	20.0 – 28.0	144.5 – 202.5



Conventional bolt



"4" marked bolt



"7" marked bolt

CONTENT

SERVICE DATA 14-1

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	———
	EX.	26 (1.02)	———
Valve lift	IN.	8.5 (0.33)	———
	EX.	8.5 (0.33)	———
Valve clearance (when cold)	IN. & EX.	0.08—0.13 (0.003—0.005)	———
Valve guide to valve stem clearance	IN.	0.020—0.047 (0.0008—0.0019)	0.35 (0.014)
	EX.	0.035—0.062 (0.0014—0.0024)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	———
Valve stem O.D.	IN.	5.465—5.480 (0.2152—0.2157)	———
	EX.	5.450—5.465 (0.2146—0.2152)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	4.0 (0.16)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	———	38.3 (1.51)
	OUTER	———	40.1 (1.58)
Valve spring tension (IN. & EX.)	INNER	6.51—7.49 kg (14.35—16.51 lbs) at length 32.5 mm (1.28 in)	———
	OUTER	12.09—13.91 kg (26.65—30.67 lbs) at length 36.0 mm (1.42 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954—35.994 (1.4155—1.4171)	35.660 (1.4039)
	EX.	36.919—36.959 (1.4535—1.4551)	36.620 (1.4417)
Camshaft journal oil clearance	IN. & EX.	0.032—0.066 (0.0013—0.0026)	0.150 (0.0059)

ITEM	STANDARD		LIMIT
Camshaft journal holder I.D.	No.1 Right side / No.2 Left side	20.012—20.025 (0.7879—0.7884)	———
	No.1 Left side / No.2 Right side	25.012—25.025 (0.9874—0.9852)	———
Camshaft journal O.D.	No.1 Right side / No.2 Left side	19.959—19.980 (0.7858—0.7866)	———
	No.1 Left side / No.2 Right side	24.959—24.980 (0.9826—0.9835)	———
Camshaft runout	IN. & EX.	———	0.10 (0.004)
Cam chain 20-pitch length	———		128.9 (5.07)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	———
Cylinder head distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	1 300—1 600 kPa (13—16 kg/cm² 185—228 psi)		1 100 kPa (11 kg/cm² 156 psi)
Compression pressure difference	———		200 kPa (2 kg/cm² 28 psi)
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)		0.120 (0.0047)
Cylinder bore	80.000—80.015 (3.1496—3.1502)		80.085 (3.1529)
Piston diam.	79.950—79.965 (3.1476—3.1482) Measure at 15 mm (0.6 in) from the skirt end.		79.880 (3.1449)
Cylinder distortion	———		0.05 (0.002)
Piston ring free end gap	1st	N	Approx. 10.5 (0.413)	8.4 (0.33)
	2nd	N	Approx. 10.5 (0.413)	8.4 (0.33)
Piston ring end gap	1st		0.20—0.35 (0.008—0.014)	0.70 (0.028)
	2nd		0.20—0.35 (0.008—0.014)	0.70 (0.028)

ITEM	STANDARD		LIMIT
Piston ring to groove clearance	1st	———	0.180 (0.007)
	2nd	———	0.150 (0.006)
Piston ring groove width	1st	1.01—1.03 (0.0398—0.0406)	———
	2nd	1.21—1.23 (0.0476—0.0484)	———
	Oil	2.51—2.53 (0.0988—0.0966)	———
Piston ring thickness	1st	0.975—0.990 (0.0384—0.0390)	———
	2nd	1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	20.003—20.008 (0.7875—0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996—20.000 (0.7872—0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010—20.018 (0.7878—0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10—0.20 (0.004—0.008)	0.30 (0.012)
Conrod big end width	21.95—22.00 (0.864—0.866)	———
Crank pin width	22.10—22.15 (0.870—0.872)	———
Conrod big end oil clearance	0.024—0.042 (0.0009—0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982—41.000 (1.6135—1.6142)	———
Crankshaft journal oil clearance	0.020—0.050 (0.0008—0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965—47.980 (1.8884—1.8890)	———
Crankshaft thrust bearing thickness	1.925—2.175 (0.0758—0.0856)	———
Crankshaft thrust clearance	0.040—0.120 (0.0016—0.0047)	———
Crankshaft runout	———	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 × 32/29)	———
Oil pressure (at 60°C, 140°F)	Above 350 kPa (3.5 kg/cm², 50 psi) Below 650 kPa (6.5 kg/cm², 92 psi) at 3 000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92–3.08 (0.115–0.121)	2.62 (0.103)
	No.2	3.45–3.55 (0.136–0.140)	3.15 (0.124)
Drive plate claw width	15.8–16.0 (0.622–0.630)		15.0 (0.591)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		34.0 (1.34)
Clutch master cylinder bore	14.000–14.043 (0.5512–0.5529)		—
Clutch master cylinder piston diam.	13.957–13.984 (0.5495–0.5506)		—
Clutch release cylinder bore	38.100–38.162 (1.5000–1.5024)		—
Clutch release cylinder piston diam.	38.042–38.075 (1.4977–1.4990)		—

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	—
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	—
Radiator cap valve release pressure		90 ± 15 kPa (0.90 ± 0.15 kg/cm², 12.8 ± 2.1 psi)	—
Electric fan thermo-switch operating temperature	ON	Approx. 110°C (230°F)	—
	OFF	Approx. 104°C (219°F)	—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD	LIMIT
Primary reduction ratio		1.690 (71/42)	—
Secondary reduction ratio		1.133 (30/30 × 17/15)	—
Final reduction ratio		3.090 (34/11)	—
Gear ratios	Low	2.285 (32/14)	—
	2nd	1.631 (31/19)	—
	3rd	1.227 (27/22)	—
	4th	1.000 (25/25)	—
	Top	0.851 (23/27)	—
Shift fork to groove clearance	No.1	0.10–0.30 (0.004–0.012)	0.50 (0.020)
	No.2	0.10–0.30 (0.004–0.012)	0.50 (0.020)
Shift fork groove width	No.1	5.50–5.60 (0.217–0.220)	—
	No.2	4.50–4.60 (0.177–0.181)	—

ITME	STANDARD		LIMIT
Shift fork thickness	No.1	5.30—5.40 (0.209—0.213)	———
	No.2	4.30—4.40 (0.169—0.173)	———

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash		0.08—0.13 (0.003—0.005)	———
Final bevel gear backlash	Drive side	0.03—0.064 (0.001—0.0025)	

CARBURETOR

ITEM		SPECIFICATION			
		E-03		E-33	
		No.1 (Rear side)	No.2 (Front side)	No.1 (Rear side)	No.2 (Front side)
Carburetor type		MIKUNI BS34SS	MIKUNI BDS34SS	MIKUNI BS34SS	MIKUNI BDS34SS
Bore size		34 mm (1.34 in)	←	←	←
I.D. No.		39A00	←	39A10	←
Idle r/min.		1 000 ± 100 r/min.	←	←	←
Fuel level		7.0±0.5 mm (0.28±0.02 in)	17.0±0.5 mm (0.67±0.02 in)	7.0±0.5 mm (0.28±0.02 in)	17.0±0.5 mm (0.67±0.02 in)
Float height		27.7±1.0 mm (1.09±0.04 in)	11.5±1.0 mm (0.45±0.04 in)	27.7±1.0 mm (1.09±0.04 in)	11.5±1.0 mm (0.45±0.04 in)
Main jet	(M.J.)	#132.5	←	←	←
Main air jet	(M.A.J.)	0.7 mm	←	←	←
Jet needle	(J.N.)	5D23-1st	5D21-1st	5D23-1st	5D21-1st
Needle jet	(N.J.)	P-I	P-4	P-I	P-4
Throttle valve	(Th.V.)	#110	←	←	←
Pilot jet	(P.J.)	#40	#25	#40	#25
Pilot outlet	(P.O.)	1.0 mm	←	←	←
Valve seat	(V.S.)	1.5 mm	←	←	←
Starter jet	(G.S.)	#40	#37.5	#40	#37.5
Pilot screw	(P.S.)	PRE-SET	←	←	←
Pilot air jet 1	(P.A.J.1)	#65	#70	#65	#70
Pilot air jet 2	(P.A.J.2)	1.9 mm	←	←	←
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←	←	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←	←	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Ignition timing		5° B.T.D.C. Below 1 650 ± 100 r/min. and 30° B.T.D.C. at 3 500 ± 100 r/min.		
Firing order		1-2		
Spark plug		Type	N.D.: X24EPR-U9 NGK: DPR8EA-9	
		Gap	0.8—0.9 (0.032—0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx.	50—200 Ω	G—Bl
Ignition coil resistance		Primary	2—6 Ω	⊕ terminal— ⊖ terminal
		Secondary	15—40 kΩ	Plug cap— ⊖ terminal
Generator no-load voltage		More than 65 V (AC) at 5 000 r/min.		
Regulated voltage		13.5—15.5 V at 5 000 r/min.		
Starter motor brush length		Limit: 9 (0.35)		N.D.
		Commutator under-cut Limit: 0.2 (0.008)		
Starter relay resistance		2—6 Ω		
Battery	Type designation	YB16B-A1		
	Voltage	12 V		
	Capacity	57.6 kC (16 Ah)/10 HR		
	Standard electrolyte S.G.	1.28 at 20°C (68°F)		
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Tail	10 A		
	Power source	10 A		
Circuit breaker		30 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Tail/Brake light		5/21
Turn signal light		5/21 (Front), 21 (Rear)
Speedometer light		3.4
Water temp. meter light		3
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		3
Oil pressure indicator light		3
License light		8

BRAKE + WHEEL

Unit: mm (in)

ITEM		STANDARD	LIMIT
Rear brake pedal free travel		20—30 (0.8—1.2)	———
Rear brake pedal height		40 (1.6)	———
Brake lining thickness	Rear	———	1.5 (0.056)
Brake drum I.D.	Rear	———	180.7 (7.11)
Brake disc thickness	Front	5.0 ± 0.2 (0.20 ± 0.01)	4.5 (0.18)
Brake disc runout		———	0.30 (0.012)
Master cylinder bore	Front	12.700—12.743 (0.5000—0.5017)	———
Master cylinder piston diam.	Front	12.657—12.684 (0.4983—0.4993)	———
Brake caliper cylinder bore	Front	42.850—42.926 (1.6870—1.6900)	———
Brake caliper piston diam.	Front	42.770—42.820 (1.6839—1.6858)	———
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axle runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Tire size (Tubeless tire is used in CAST WHEEL)	Front	80/90-21 48H	———
	Rear	140/90-15 M/C 70H	———
Tire tread depth	Front	———	1.6 (0.06)
	Rear	———	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	———	
Front fork spring free length	———	348.3 (13.71)	
Front fork oil level	124.3 (4.89)	———	
Rear wheel travel	90 (3.5)	———	
Swingarm pivot shaft runout	———	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	SOLO RIDING WITH LIGHT OR LITTLE CARGO LOAD			DUAL RIDING OR SOLO RIDING WITH HEAVY CARGO LOAD		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Unleaded or low-lead type gasoline of at least 85-95 pump octane ($\frac{R+M}{2}$) or 89 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertlary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		
Fuel tank including reserve	12.0 L (3.2/2.6 US/Imp gal)		E-03
	11.0 L (2.9/2.4 US/Imp gal)		E-33
reserve	3.0 L (3.2/2.6 US/Imp qt)		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	2 400 ml (2.5/2.1 US/Imp qt)	
	Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
	Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	413 ml (14.0/14.5 US/Imp oz)		
Final bevel gear oil type	SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity	200—220 ml (6.8/7.0—7.4/7.7 US/Imp oz)		
Brake fluid type	DOT4		
Radiator	1 700 ml (1.8/1.5 US/Imp oz)		

VS750GLFL/GLPL ('90-MODEL)
VS750GLFM/GLPM ('91-MODEL)

CONTENT

SERVICE DATA 15-1

15

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	—
	EX.	26 (1.02)	—
Valve lift	IN.	8.5 (0.33)	—
	EX.	8.5 (0.33)	—
Valve clearance (when cold)	IN. & EX.	0.08—0.13 (0.003—0.005)	—
Valve guide to valve stem clearance	IN.	0.020—0.047 (0.0008—0.0019)	0.35 (0.014)
	EX.	0.035—0.062 (0.0014—0.0024)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	—
Valve stem O.D.	IN.	5.465—5.480 (0.2152—0.2157)	—
	EX.	5.450—5.465 (0.2146—0.2152)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	4.0 (0.16)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	—	38.3 (1.51)
	OUTER	—	40.1 (1.58)
Valve spring tension (IN. & EX.)	INNER	6.51—7.49 kg (14.35—16.51 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	12.09—13.91 kg (26.65—30.67 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954—35.994 (1.4155—1.4171)	35.66 (1.404)
	EX.	36.919—36.959 (1.4535—1.4551)	36.62 (1.442)
Camshaft journal oil clearance	0.032—0.066 (0.0013—0.0026)		0.150 (0.0059)

ITEM	STANDARD		LIMIT
Camshaft journal holder I.D.	No.1 Right side No.2 Left side	20.012—20.025 (0.7879—0.7884)	—
	No.1 Left side No.2 Right side	25.012—25.025 (0.9847—0.9852)	—
Camshaft journal O.D.	No.1 Right side No.2 Left side	19.959—19.980 (0.7858—0.7866)	—
	No.1 Left side No.2 Right side	24.959—24.980 (0.9826—0.9835)	—
Camshaft runout	Front & Rear	—	0.10 (0.004)
Cam chain 20-pitch length		—	128.9 (5.07)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	—
Cylinder head distortion		—	0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	1 300—1 600 kPa (13—16 kg/cm², 185—228 psi)		1 100 kPa (11 kg/cm², 156 psi)
Compression pressure difference	—		200 kPa (2 kg/cm², 28 psi)
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)		0.120 (0.0047)
Cylinder bore	80.000—80.015 (3.1496—3.1502)		80.085 (3.1529)
Piston diam.	79.950—79.965 (3.1476—3.1482) Measure at 15 mm (0.6 in) from the skirt end.		79.880 (3.1449)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st N	Approx. 10.5 (0.413)	8.4 (0.33)
	2nd N	Approx. 10.5 (0.413)	8.4 (0.33)
Piston ring end gap	1 st	0.20—0.35 (0.008—0.014)	0.70 (0.028)
	2nd	0.20—0.35 (0.008—0.014)	0.70 (0.028)

ITEM	STANDARD		LIMIT
Piston ring to groove clearance	1st	—	0.180 (0.007)
	2nd	—	0.150 (0.006)
Piston ring groove width	1st	1.01 – 1.03 (0.0398 – 0.0406)	—
	2nd	1.21 – 1.23 (0.0476 – 0.0484)	—
	Oil	2.51 – 2.53 (0.0988 – 0.0996)	—
Piston ring thickness	1st	0.975 – 0.990 (0.0384 – 0.0390)	—
	2nd	1.170 – 1.190 (0.0461 – 0.0469)	—
Piston pin bore	20.003 – 20.008 (0.7875 – 0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996 – 20.000 (0.7872 – 0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010 – 20.018 (0.7878 – 0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10 – 0.20 (0.004 – 0.008)	0.30 (0.012)
Conrod big end width	21.95 – 22.00 (0.864 – 0.866)	—
Crank pin width	22.10 – 22.15 (0.870 – 0.872)	—
Conrod big end oil clearance	0.024 – 0.042 (0.0009 – 0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982 – 41.000 (1.6135 – 1.6142)	—
Crankshaft journal oil clearance	0.020 – 0.050 (0.0008 – 0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965 – 47.980 (1.8884 – 1.8890)	—
Crankshaft thrust bearing thickness	1.925 – 2.175 (0.0758 – 0.0856)	—
Crankshaft thrust clearance	0.040 – 0.120 (0.0016 – 0.0047)	—
Crankshaft runout	—	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 x 32/29)	—
Oil pressure (at 60°C, 140°F)	Above 350 kPa (3.5 kg/cm^2, 50 psi) Below 650 kPa (6.5 kg/cm^2, 92 psi) at 3 000 r/min.	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92—3.08 (0.115—0.121)	2.62 (0.103)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.622—0.630)		15.0 (0.591)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		34.0 (1.34)
Clutch master cylinder bore	14.000—14.043 (0.5512—0.5529)		—
Clutch master cylinder piston diam.	13.957—13.984 (0.5495—0.5506)		—
Clutch release cylinder bore	38.100—38.162 (1.5000—1.5024)		—
Clutch release cylinder piston diam.	38.042—38.075 (1.4977—1.4990)		—

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	—
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	—
Radiator cap valve release pressure		110 ± 15 kPa (1.1 ± 0.15 kg/cm^2, 15.6 ± 2.1 psi)	—
Electric fan thermo-switch operating temperature	ON	Approx. 105°C (221°F)	—
	OFF	Approx. 99°C (210°F)	—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		—
Secondary reduction ratio		1.133 (30/30 x 17/15)		—
Final reduction ratio		3.090 (34/11)		—
Gear ratios	Low	2.285 (32/14)		—
	2nd	1.631 (31/19)		—
	3rd	1.227 (27/22)		—
	4th	1.000 (25/25)		—
	Top	0.851 (23/27)		—
Shift fork to groove clearance		No.1	0.10—0.30 (0.004—0.012)	0.50 (0.020)
		No.2	0.10—0.30 (0.004—0.012)	0.50 (0.020)
Shift fork groove width		No.1	5.50—5.60 (0.217—0.220)	—
		No.2	4.50—4.60 (0.177—0.181)	—

ITEM	STANDARD		LIMIT
Shift fork thickness	No.1	5.30—5.40 (0.209—0.213)	———
	No.2	4.30—4.40 (0.169—0.173)	———

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.08—0.13 (0.003—0.005)		———
Final bevel gear backlash	Drive side	0.03—0.064 (0.001—0.0025)	———

CARBURETOR

ITEM		SPECIFICATION			
		E-03		E-33	
		No.1 (Rear side)	No.2 (Front side)	No.1 (Rear side)	No.2 (Front side)
Carburetor type		MIKUNI BS34SS	MIKUNI BDS34SS	MIKUNI BS34SS	MIKUNI BDS34SS
Bore size		34 mm (1.34 in)	←	←	←
I.D. No.		39A00	←	39A10	←
Idle r/min.		1 000± 100 r/min	←	←	←
Fuel level		7.0±0.5 mm (0.28±0.02 in)	17.0±0.5 mm (0.67±0.02 in)	7.0±0.5 mm (0.28±0.02 in)	17.0±0.5 mm (0.67±0.02 in)
Float height		27.7±1.0mm (1.09±0.04 in)	11.5±1.0 mm (0.45±0.04 in)	27.7±1.0 mm (1.09±0.04 in)	11.5±1.0 mm (0.45±0.04 in)
Main jet	(M.J.)	#132.5	←	←	←
Main air jet	(M.A.J.)	0.7 mm	←	←	←
Jet needle	(J.N.)	5D23-1st	5D21-1st	5D23-1st	5D21-1st
Needle jet	(N.J.)	P-1	P-4	P-1	P-4
Throttle valve	(Th.V,)	#110	←	←	←
Pilot jet	(P.J.)	#40	#25	#40	#25
Pilot outlet	(P.O.)	1.0 mm	←	←	←
Valve seat	(V.S.)	1.5 mm	←	←	←
Starter jet	(G.S.)	#40	#37.5	#40	#37.5
Pilot screw	(P.S.)	PRE-SET	←	←	←
Pilot air jet 1	(P.A.J.1)	#65	#70	#65	#70
Pilot air jet 2	(P.A.J.2)	1.9 mm	←	←	←
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←	←	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←	←	←

CARBURETOR

ITEM		SPECIFICATION			
		E-28		The others	
		No.1 (Rear side)	No.2 (Front side)	No.1 (Rear side)	No.2 (Front side)
Carburetor type		MIKUNI BS34SS	MIKUNI BDS34SS	MIKUNI BS34SS	MIKUNI BDS34SS
Bore size		34 mm (1.34 in)	←	←	←
I.D. No.		38A80	←	39A90	←
Idle r/min.		1000± 100 r/min	←	←	←
Fuel level		7.0±0.5 mm (0.28±0.02 in)	17.0±0.5 mm (0.67±0.02 in)	7.0±0.5 mm (0.28±0.02 in)	17.0±0.5 mm (0.67±0.02 in)
Float height		27.7±1.0 mm (1.09±0.04 in)	11.5±1.0 mm (0.45±0.04 in)	27.7±1.0 mm (1.09±0.04 in)	11.5±1.0 mm (0.45±0.04 in)
Main jet	(M.J.)	#132.5	←	#110	#100
Main air jet	(M.A.J.)	0.7 mm	←	←	←
Jet needle	(J.N.)	5D22-3rd	←	5D27-3rd	←
Needle jet	(N.J.)	P-4	P-3	P-4	P-2
Throttle valve	(Th.V.)	#110	←	←	←
Pilot jet	(P.J.)	#40	#32.5	#37.5	#32.5
Pilot outlet	(P.O.)	1.0 mm	←	1.2 mm	←
Valve seat	(V.S.)	1.5 mm	←	←	←
Starter jet	(G.S.)	#40	#37.5	#40	#37.5
Pilot screw	(P.S.)	3½ turns back	←	←	←
Pilot air jet 1	(P.A.J.1)	#75	←	#60	#65
Pilot air jet 2	(P.A.J.2)	1.7 mm	←	1.9 mm	←
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←	←	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←	←	←

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION		NOTE
Ignition timing	5° B.T.D.C. Below 1 650 ± 100 r/min. and 30° B.T.D.C. at 3 500 ± 100 r/min.		
Firing order	1.2		
Spark plug	Type	N.D.:X24EPR-U9 NGK: DPR8EA-9	
	Gap	0.8—0.9 (0.032—0.035)	
Spark performance	Over 8 (0.3) at 1 atm.		
Signal coil resistance	Approx.	50—200Ω	G—Bl
Ignition coil resistance	Primary	2—6Ω	⊕ terminal— ⊖ terminal
	Secondary	15—40 kΩ	Plug cap— ⊖ terminal
Generator no-load voltage	More than 65 V (AC) at 5 000 r/min.		

ITEM		SPECIFICATION	NOTE
Regulated voltage		13.5—15.5 V at 5 000 r/min.	
Starter motor brush length		Limit:9 (0.35)	N.D.
		Commutator under-cut Limit: 0.2 (0.008)	
Starter relay resistance		2—6Ω	
Battery	Type designation	YB16B-A1	
	Voltage	12V	
	Capacity	57.6 kC (16 Ah)/10 HR	
	Standard electrolyte S.G.	1.28 at 20°C (68°F)	
Fuse size	Headlight	10A	
	Signal	10A	
	Ignition	10A	
	Tail	10A	
	Power source	10A	
Circuit breaker		30A	

WATTAGE

Unit: W

ITEM		SPECIFICATION	
		E-03,28,33	The others
Headlight	HI	60	←
	LO	55	←
Parking light			3.4
Tail/Brake light		5/21	←
Turn signal light		5/21 (Front), 21 (Rear)	21
Speedometer light		3.4	←
Water temp. meter light		3	←
Turn signal indicator light		3	←
High beam indicator light		1.7	←
Neutral indicator light		3	←
Oil pressure indicator light		3	←
License light		8	5

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20—30 (0.8—1.2)		—
Rear brake pedal height	40 (1.6)		—
Brake lining thickness	Rear	—	1.5 (0.056)
Brake drum I.D.	Rear	—	180.7 (7.11)
Brake disc tickness	Front	5.0 ± 0.2 (0.20 ± 0.01)	4.5 (0.18)
Brake disc runout	—		0.30 (0.012)

ITEM	STANDARD		LIMIT
Master cylinder bore	Front	12.700–12.743 (0.5000–0.5017)	—
Master cylinder piston diam.	Front	12.657–12.684 (0.4983–0.4993)	—
Brake caliper cylinder bore	Front	42.850–42.926 (1.6870–1.6900)	—
Brake caliper piston diam.	Front	42.770–42.820 (1.6839–1.6858)	—
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)
Tire size (Tubeless tire is used in CAST WHEEL)	Front	80/90-21 48H	—
	Rear	140/90-15 M/C 70H	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	—	
Front fork spring free length	—	348.3 (13.71)	
Front fork oil level	124.3 (4.89)	—	
Rear wheel travel	90 (3.5)	—	
Swingarm pivot shaft runout	—	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	SOLO RIDING WITH LIGHT OR LITTLE CARGO LOAD			DUAL RIDING OR SOLO RIDING WITH HEAVY CARGO LOAD		
	kPa	kg/cm^2	psi	kPa	kg/cm^2	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 85 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		E-03
	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.		E-28
	Gasoline used should be graded 85-95 octane or higher. An unleaded or low-lead type gasoline is recommended.		For the others
Fuel tank including reserve	12.0 L (3.2/2.6 US/Imp gal)		E-03
	11.0 L (2.9/2.4 US/Imp gal)		E-33
reserve	3.0 L (3.2/2.6 US/Imp qt)		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	2 400 ml (2.5/2.1 US/Imp qt)	
	Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
	Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	413 ml (14.0/14.5 US/Imp oz)		
Final bevel gear oil type	SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity	200—220 ml (6.8/7.0—7.4/7.7 US/Imp oz)		
Brake fluid type	DOT4		
Radiator	1 700 ml (1.8/1.5 US/Imp oz)		

VS800GLN ('92-MODEL)

FOREWORD

This section describes service data, service specifications and servicing procedures which differ from those of the VS750GLFM/GLPM ('91-MODEL).

NOTE:
- *Any differences between VS750GLFM/GLPM ('91-MODEL) and VS800GLN ('92-MODEL) in specifications and service data are clearly indicated with the asterisk marks (*).*
- *Please refer to the sections 1 through 15 for details which are not given in this section.*

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VIEW OF SUZUKI VS800GLN



SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	*2 280 mm (89.8 in) . . . E-18 2 255 mm (88.8 in) . . . Others
Overall width	*770 mm (30.3 in)
Overall height	*1 200 mm (47.2 in)
Wheelbase	1 560 mm (61.4 in)
Ground clearance	*125 mm (4.9 in)
Seat height	*755 mm (29.7 in) . . . E-22 685 mm (27.0 in) . . . Others
Dry mass	*201 kg (443 lbs) . . . E-33 *200 kg (440 lbs) . . . Others

ENGINE

Type	Four-stroke, water-cooled, TSCC, OHC, 45-degree V-twin
Number of cylinders	2
Bore	*83.0 mm (3.268 in)
Stroke	74.4 mm (2.929 in)
Piston displacement	*805 cm^3 (49.1 cu. in)
Compression ratio	10.0 : 1
Carburetor	*MIKUNI BDS36SS . . . front MIKUNI BS36SS . . . rear
Air cleaner	Non woven fabric element
Starter system	Electric starter motor
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction	1.690 (71/42)
Secondary reduction	1.133 (17/15)
Final reduction	3.090 (34/11)
Gear ratios, Low 2nd 3rd 4th Top	2.285 (32/14) 1.631 (31/19) 1.227 (27/22) 1.000 (25/25) 0.851 (23/27)
Drive system	Shaft drive

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Swingarm, oil damped, spring pre-load 5-way adjustable
Steering angle	40° (right & left)
Caster	*56° 45′
Trail	145 mm (5.71 in.)
Turning radius	2.9 m
Front brake	Disc
Rear brake	Internal expanding
Front tire size	80/90-21 48H
Rear tire size	140/90-15 M/C 70H
Front fork stroke	130 mm (5.1 in)
Rear wheel travel	90 mm (3.5 in)

ELECTRICAL

Ignition type	Transistorized
Ignition timing	5° B.T.D.C. below 1 650 r/min and 30° B.T.D.C. above 3 500 r/min
Spark plug	*NGK DPR8EA-9 NIPPONDENSO X24EPR-U9
Battery	12V 57.6 kC (16 Ah/10HR)
Generator	Three phase A.C. Generator
Fuse	10/10/10/10/10A

CAPACITIES

Fuel tank including reserve	11.0 L (2.9/2.4 US/Imp. gal) . . . E-33 12.0 L (3.2/2.6 US/Imp. gal) . . . Others
reverse	3.0 L (0.8/0.7 US/Imp. gal)
Engine oil	2.4 L (2.5/2.1 US/Imp. qt)
Front fork oil	413 ml (14.0/14.5 US/Imp. oz)
Final bevel gear oil	200 – 220 ml (6.8/7.0 – 7.4/7.7 US/Imp. oz)
Coolant	1 700 ml (1.8/1.5 US/Imp. qt)

(*) Asterisk mark indicates the new N-model specifications.

These specifications are subject to change without notice.

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	—
	EX.	26 (1.02)	—
Valve lift	IN.	8.5 (0.33)	—
	EX.	8.5 (0.33)	—
Valve clearance (when cold)	IN. & EX.	0.08—0.13 (0.003—0.005)	—
Valve guide to valve stem clearance	IN.	0.020—0.047 (0.0008—0.0019)	0.35 (0.014)
	EX.	0.035—0.062 (0.0014—0.0024)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	—
Valve stem O.D.	IN.	5.465—5.480 (0.2152—0.2157)	—
	EX.	5.450—5.465 (0.2146—0.2152)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	4.0 (0.16)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length	INNER	—	38.3 (1.51)
	OUTER	—	40.1 (1.58)
Valve spring tension	INNER	6.51—7.49 kg (14.35—16.51 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	12.09—13.91 kg (26.65—30.67 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954—35.994 (1.4155—1.4171)	35.660 (1.4039)
	EX.	36.919—36.959 (1.4535—1.4551)	36.620 (1.4417)
Camshaft journal oil clearance	0.032—0.066 (0.0013—0.0026)		0.150 (0.0059)

ITEM	STANDARD		LIMIT
Camshaft journal holder I.D.	No.1 Left side No.2 Right side	20.012—20.025 (0.7879—0.7884)	———
	No.1 Right side No.2 Left side	25.012—25.025 (0.9847—0.9852)	———
Camshaft journal O.D.	No.1 Left side No.2 Right side	19.959—19.980 (0.7858—0.7866)	———
	No.1 Right side No.2 Left side	24.959—24.980 (0.9826—0.9835)	———
Camshaft runout	———		0.10 (0.004)
Cam chain 20-pitch length	———		128.9 (5.07)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	———
Cylinder head distortion	———		0.05 (0.002)
Cylinder head cover distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	1 300—1 600 kPa (13—16 kg/cm², 185—228 psi)		1 100 kPa (11 kg/cm², 156 psi)
Compression pressure difference	———		200 kPa (2 kg/cm², 28 psi)
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)		0.120 (0.0047)
Cylinder bore	*83.000—83.015 (3.2677—3.2683)		83.085 (3.2711)
Piston diam.	*82.950—82.965 (3.2657—3.2663) Measure 15 mm (0.6 in) from the skirt end.		82.880 (3.2630)
Cylinder distortion	———		0.05 (0.002)
Piston ring free end gap	1st R	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd R	Approx. *11.8 (0.465)	9.4 (0.370)
Piston ring end gap	1st	0.20—0.35 (0.008—0.014)	0.70 (0.028)
	2nd	0.20—0.35 (0.008—0.014)	0.70 (0.028)
Piston ring groove clearance	1st	———	0.180 (0.007)
	2nd	———	0.150 (0.006)

Asterisk mark (*) indicates the new N-model specifications.

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01—1.03 (0.0398—0.0406)	—
	2nd	1.21—1.23 (0.0476—0.0484)	—
	Oil	2.51—2.53 (0.0988—0.0996)	—
Piston ring thickness	1st	*0.970—0.990 (0.0382—0.0390)	—
	2nd	1.170—1.190 (0.0461—0.0469)	—
Piston pin bore	*20.002—20.008 (0.7875—0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996—20.000 (0.7827—0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010—20.018 (0.7878—0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10—0.20 (0.004—0.008)	0.30 (0.012)
Conrod big end width	21.95—22.00 (0.864—0.866)	—
Crank pin width	22.10—22.15 (0.870—0.872)	—
Conrod big end oil clearance	0.024—0.042 (0.0009—0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982—41.000 (1.6135—1.6142)	—
Crankshaft journal oil clearance	0.020—0.050 (0.0008—0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965—47.980 (1.8884—1.8890)	—
Crankshaft thrust bearing thickness	1.925—2.175 (0.0758—0.0856)	—
Crankshaft thrust clearance	*0.05—0.10 (0.002—0.004)	—
Crankshaft runout	—	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 x 32/29)	—
Oil pressure (at 60°C,140°F)	Above 350 kPa (3.5 kg/cm², 50 psi) Below 650 kPa (6.5 kg/cm², 92 psi) at 3 000 r/min.	—

Asterisk mark (*) indicates the new N-model specifications.

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92—3.08 (0.115—0.121)	2.62 (0.103)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.622—0.630)		15.0 (0.591)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		34.0 (1.34)
Clutch master cylinder bore	14.000—14.043 (0.5512—0.5529)		—
Clutch master cylinder piston diam.	13.957—13.984 (0.5495—0.5506)		—
Clutch release cylinder bore	38.100—38.162 (1.5000—1.5024)		—
Clutch release cylinder piston diam.	38.042—38.075 (1.4977—1.4990)		—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		—
Secondary reduction ratio		1.133 (30/30 x 17/15)		—
Final reduction ratio		3.090 (34/11)		—
Gear ratios	Low	2.285 (32/14)		—
	2nd	1.631 (31/19)		—
	3rd	1.227 (27/22)		—
	4th	1.000 (25/25)		—
	Top	0.851 (23/27)		—
Shift fork to groove clearance		No.1	0.10—0.30 (0.004—0.012)	0.50 (0.020)
		No.2	0.10—0.30 (0.004—0.012)	0.50 (0.020)
Shift fork groove width		No.1	5.50—5.60 (0.217—0.220)	—
		No.2	4.50—4.60 (0.177—0.181)	—
Shift fork thickness		No.1	5.30—5.40 (0.209—0.213)	—
		No.2	4.30—4.40 (0.169—0.173)	—

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.05—0.32 (0.002—0.013)		———
Final bevel gear backlash	Drive side	0.03—0.064 (0.001—0.025)	———

*CARBURETOR

ITEM	SPECIFICATION	
	E-02,04,16,21,25,34,53	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E0	←
Idle r/min.	1100 ± 100 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#107.5	#95
Main air jet (M.A.J.)	1.8 mm	←
Jet needle (J.N.)	5F109-3rd	5C29-3rd
Needle jet (N.J.)	P-3	P-4
Throttle valve (Th.V.)	#115	←
Pilot jet (P.J.)	#42.5	#40
By-pass (B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet (P.O.)	0.8 mm	1.0 mm
Valve seat (V.S.)	1.5 mm	←
Starter jet (G.S.)	#25	#22.5
Pilot screw (P.S.)	(PRE-SET) 2.0 turns back	(PRE-SET) 1½ turns back
Pilot air jet (P.A.J.)	No.1:(#70), No.2:(2.0 mm)	No.1:(#65), No.2:(1.3 mm)
Throttle cable play	0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play	0.5—1.0 mm (0.02—0.04 in)	←

* CARBURETOR

ITEM	SPECIFICATION	
	E-03	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E1	←
Idle r/min.	1200 ± 50 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Main air jet (M.A.J.)	1.6 mm	←
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7	P-2
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
By-pass (B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet (P.O.)	0.8 mm	1.0 mm

Asterisk mark (*) indicates the new N-model specifications.

ITEM		SPECIFICATION	
		E-03	
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET)	(PRE-SET)
Pilot air jet	(P.A.J.)	No.1:(#65),No.2:(1.95 mm)	No.1:(#65), No.2:(1.25 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

*CARBURETOR

ITEM		SPECIFICATION	
		E-18	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E2	←
Idle r/min.		1200±50 r/min.	←
Float height		27.7±1.0 mm (1.09±0.04 in)	9.1±1.0 mm (0.36±0.04 in)
Main jet	(M.J.)	#107.5	#97.5
Main air jet	(M.A.J.)	1.8 mm	←
Jet needle	(J.N.)	5F107-3rd	5D48-3rd
Needle jet	(N.J.)	P-5	P-1
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#42.5	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET) 1-¼ turns back	(PRE-SET) 1-¾ turns back
Pilot air jet	(P.A.J.)	No.1:(#55), No.2:(1.45 mm)	No.1:(#65), No.2:(1.35 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

*CARBURETOR

ITEM		SPECIFICATION	
		E-17,22	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E3	←
Idle r/min.		1100±100 r/min.	←
Float height		27.7±1.0 mm (1.09±0.04 in)	9.1±1.0 mm (0.36±0.04 in)
Main jet	(M.J.)	#107.5	#100
Main air jet	(M.A.J.)	1.8 mm	←
Jet needle	(J.N.)	5F109-3rd	5C29-3rd

Asterisk mark (*) indicates the new N-model specifications.

ITEM		SPECIFICATION	
		E-17,22	
Needle jet	(N.J.)	P-3	P-4
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#45	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET) 1⅜ turns back	(PRE-SET) 1.0 turn back
Pilot air jet	(P.A.J.)	No.1:(#70), No.2:(2.0 mm)	No.1:(#65), No.2:(1.2 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

* CARBURETOR

ITEM		SPECIFICATION	
		E-01,28	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E4	←
Idle r/min.		1200±100 r/min.	←
Float height		27.7±1.0 mm (1.09±0.04 in)	9.1±1.0 mm (0.36±0.04 in)
Main jet	(M.J.)	#132.5	#127.5
Main air jet	(M.A.J.)	1.6 mm	←
Jet needle	(J.N.)	5D61-3rd	5D48-3rd
Needle jet	(N.J.)	P-7	P-2
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	#45	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET) 1⅛ turns back	(PRE-SET) 1¼ turns back
Pilot air jet	(P.A.J.)	No.1:(#65), No.2:(1.95 mm)	No.1:(#65), No.2:(1.25 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

*CARBURETOR

ITEM	SPECIFICATION	
	E-33	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E5	←
Idle r/min.	1200±50 r/min.	←

Asterisk mark (*) indicates the new N-model specifications.

ITEM		SPECIFICATION	
		E-33	
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	# 132.5	# 127.5
Main air jet	(M.A.J.)	1.6 mm	←
Jet needle	(J.N.)	5D35-1st	5D47-1st
Needle jet	(N.J.)	P-7	P-2
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	# 45	# 40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET)	(PRE-SET)
Pilot air jet	(P.A.J.)	No.1:(#65), No.2:(1.95 mm)	No.1:(#65), No.2:(1.25 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION		NOTE
Ignition timing	5° B.T.D.C. Below 1 650 r/min. and 30° B.T.D.C. Above 3 500 r/min.		
Firing order	1·2		
Spark plug	Type	*N.G.K.: DPR8EA-9 ND: X24EPR-U9	
	Gap	0.8—0.9 (0.031—0.035)	
Spark performance	Over 8 (0.3) at 1 atm.		
Signal coil resistance	Approx. 50—200 Ω (G—Bl)		
Ignition coil resistance	Primary	2—6 Ω	⊕ tap—⊖ tap
	Secondary	15—40 kΩ	Plug cap—⊕ tap
Generator no-load voltage (When engine cold)	More than 65V (AC) at 5 000 r/min.		
Regulated voltage	13.5—15.5 V at 5 000 r/min.		
Starter motor brush length	Limit: 9 (0.35)		N.D.
Commutator under-cut	Limit: 0.2 (0.008)		
Starter relay resistance	2—6 Ω		
Battery	Type designation	YB16B-A1	
	Capacity	12V57.6kC (16Ah)/10HR	
	Standard electrolyte S.G.	1.28 at 20°C (68°F)	

Asterisk mark (*) indicates the new N-model specifications.

ITEM		SPECIFICATION	NOTE
Fuse size	Headlight	10 A	
	Signal	10 A	
	Ignition	10 A	
	Tail	10 A	
	Power source	10 A	
Circuit breaker		30 A	

WATTAGE

Unit:W

ITEM		SPECIFICATION	
		E-03,28,33	The others
Headlight	HI	60	←
	LO	55	←
Parking light			*4
Tail/Brake light		5/21	←
Turn signal light		5/21 (Front), 21 (Rear)	21
Speedometer light		3.4	←
Water temp. meter light		3	←
Turn signal indicator light		3	←
High beam indicator light		1.7	←
Neutral indicator light		3	←
Oil pressure indicator light		3	←
License light		8	5

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20—30 (0.8—1.2)		—
Rear brake pedal height	40 (1.6)		—
Brake lining thickness	Rear	—	1.5 (0.056)
Brake drum I.D.	Rear	—	180.7 (7.11)
Brake disc thickness	Front	5.0±0.2 (0.20±0.01)	4.5 (0.18)
Brake disc runout	—		0.30 (0.012)
Master cylinder bore	Front	12.700—12.743 (0.5000—0.5017)	—
Master cylinder piston diam.	Front	12.657—12.684 (0.4983—0.4993)	—
Brake caliper cylinder bore	Front	42.850—42.926 (1.6870—1.6900)	—
Brake caliper piston diam.	Front	42.770—42.820 (1.6839—1.6858)	—
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)

Asterisk mark (*) indicates the new N-model specifications.

ITEM	STANDARD		LIMIT
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)
Tire size	Front	80/90-21 48H	—
	Rear	140/90-15 M/C 70H	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	—	
Front fork spring free length	—	348.3 (13.71)	
Front fork oil level	124.3 (4.89)	—	
Rear wheel travel	90 (3.5)	—	
Swingarm pivot shaft runout	—	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

FUEL + OIL + COOLANT

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		U.S.A. model
	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$ method) or 91 octane or higher rated by the Research Method.		Canada model
	Gasoline used should be graded 85-95 octane or higher. An unleaded gasoline is recommended.		Other models
Fuel tank including reserve	11.0 L (2.9/2.4 US/Imp gal)		California model only
	12.0 L (3.2/2.6 US/Imp gal)		Other models
reserve	3.0 L (0.8/0.7 US/Imp gal)		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	2 400 ml (2.5/2.1 US/Imp qt)	
	Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
	Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type	Fork oil # 10		
Front fork oil capacity (each leg)	413 ml (14.0/14.5 US/Imp oz)		
Final bevel gear oil type	SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity	200—220 ml (6.8/7.0—7.4/7.7 US/Imp oz)		
Brake fluid type	DOT4		
Coolant capacity	1 700 ml (1.8/1.5 US/Imp qt)		

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	———
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	———
Radiator cap valve release pressure		110 ± 15 kPa (15.6 ± 2.1 psi, 1.1 ± 0.15 kg/cm²)	———
Electric fan thermo-switch operating temperature	ON	Approx. 105°C (221°F)	———
	OFF	*Approx. 100°C (212°F)	———

Asterisk mark (*) indicates the new N-model specifications.

TIGHTENING TORQUE

ENGINE

ITEM		N·m	kg-m	lb-ft
Cylinder head cover bolt	M6	9 – 11	0.9 – 1.1	6.5 – 8.0
	M8	21 – 25	2.1 – 2.5	15.0 – 18.0
Cylinder head bolt and nut	M10	35 – 40	3.5 – 4.0	25.5 – 29.0
	M8	8 – 12	0.8 – 1.2	6.0 – 8.5
	M6	9 – 11	0.9 – 1.1	6.5 – 8.0
Primary drive gear bolt		80 – 110	8.0 – 11.0	58.0 – 79.5
Clutch sleeve hub nut		50 – 70	5.0 – 7.0	36.0 – 50.5
Rocker arm bolt		25 – 30	2.5 – 3.0	18.0 – 21.5
Chain guide bolt		8 – 12	0.8 – 1.2	6.0 – 8.5
Chain tensioner bolt		8 – 12	0.8 – 1.2	6.0 – 8.5
Cam chain sprocket bolt		14 – 16	1.4 – 1.6	10.0 – 11.5
Tappet adjuster lock nut		13 – 16	1.3 – 1.6	9.5 – 11.5
Crankcase bolt	M6	9 – 13	0.9 – 1.3	6.5 – 9.5
	M8	20 – 24	2.0 – 2.4	14.5 – 17.5
Secondary gear case bolt		20 – 24	2.0 – 2.4	14.5 – 17.5
Oil gallery plug	M6	4 – 7	0.4 – 0.7	3.0 – 5.0
	M8	15 – 20	1.5 – 2.0	11.0 – 14.5
	M10	12 – 18	1.2 – 1.8	8.5 – 13.0
	M14	20 – 25	2.0 – 2.5	14.5 – 18.0
	M16	20 – 25	2.0 – 2.5	14.5 – 18.0
Oil pipe clamp bolt		8 – 12	0.8 – 1.2	6.0 – 8.5
Magneto cover hole plug		12 – 18	1.2 – 1.8	8.5 – 13.0
T.D.C. Inspection plug		20 – 25	2.0 – 2.5	14.5 – 18.0
Oil drain plug		18 – 23	1.8 – 2.3	13.0 – 16.5
Oil pump bolt		7 – 9	0.7 – 0.9	5.0 – 6.5
Oil relief valve		25 – 30	2.5 – 3.0	18.0 – 21.5
Oil filter union bolt		12 – 18	1.2 – 1.8	8.5 – 13.0
Engine mounting bolt	L: 125	70 – 88	7.0 – 8.8	50.5 – 63.5
	L: 130	70 – 88	7.0 – 8.8	50.5 – 63.5
	L: 150	70 – 88	7.0 – 8.8	50.5 – 63.5
Drive shaft bolt		60 – 70	6.0 – 7.0	43.5 – 50.5

ITEM		N·m	kg-m	lb-ft
Secondary bevel drive gear shaft nut		80 – 110	8.0 – 11.0	58.0 – 79.5
Magneto rotor bolt		140 – 160	14.0 – 16.0	101.5 – 115.5
Frame mounting bolt		40 – 60	4.0 – 6.0	29.0 – 43.5
Engine mounting bracket bolt	M8	18 – 28	1.8 – 2.8	13.0 – 20.0
	M6	8 – 12	0.8 – 1.2	6.0 – 8.5
Con-rod nut		49 – 53	4.9 – 5.3	35.5 – 38.5

COOLING

ITEM		N·m	kg-m	lb-ft
Radiator mounting bolt	M10	50 – 65	5.0 – 6.5	36.0 – 47.0
Fan switch		10 – 15	1.0 – 1.5	7.0 – 11.0
Temperature gauge		12 – 15	1.2 – 1.5	8.5 – 11.0

SHAFT DRIVE

ITEM	N·m	kg-m	lb-ft
Secondary drive bevel gear housing bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Secondary driven bevel gear housing bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Final drive bevel gear shaft nut	90 – 110	9.0 – 11.0	65.0 – 79.5
Final drive bevel gear bearing stopper	90 – 120	9.0 – 12.0	65.0 – 87.0
Final driven gear bearing retainer screw	8 – 10	0.8 – 1.0	6.0 – 7.0
Final gear bearing case bolt	20 – 26	2.0 – 2.6	14.5 – 19.0

CHASSIS

ITEM	N·m	kg-m	lb-ft
Steering stem head nut	60 – 100	6.0 – 10.0	43.5 – 72.5
Front fork cap bolt	60 – 100	6.0 – 10.0	43.5 – 72.5
* Front fork lower clamp bolt	22 – 35	2.2 – 3.5	15.9 – 25.3
* Handlebar clamp bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Handlebar holder bolt	40 – 50	4.0 – 5.0	29.0 – 36.0
Handlebar holder nut	40 – 50	4.0 – 5.0	29.0 – 36.0
Front fork damper rod bolt	15 – 25	1.5 – 2.5	11.0 – 18.0
Front axle nut	36 – 52	3.6 – 5.2	26.0 – 37.5
* Front axle clamp bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Front master cylinder mounting bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
Brake hose union bolt	20 – 25	2.0 – 2.5	14.5 – 18.0

Asterisk mark (*) indicates the new N-model specifications.

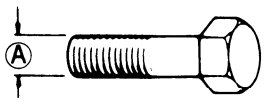
ITEM	N·m	kg-m	lb-ft
* Caliper mounting bolt	27 – 43	2.7 – 4.3	19.5 – 31.1
Caliper housing bolt	15 – 20	1.5 – 2.0	11.0 – 14.5
Caliper air bleeder valve	6 – 9	0.6 – 0.9	4.5 – 6.5
* Disc plate bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Hub frange bolt	20 – 30	2.0 – 3.0	14.5 – 21.5
Spoke nipple	4 – 5	0.4 – 0.5	3.0 – 3.5
Clutch master cylinder mounting bolt	5 – 8	0.5 – 0.8	3.5 – 6.0
* Rear shock absorber fitting nut (upper and lower)	22 – 35	2.2 – 3.5	15.9 – 25.3
Rear axle nut	60 – 96	6.0 – 9.6	43.5 – 69.5
Rear brake cam lever bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
* Rear torque link nut (front and rear)	22 – 35	2.2 – 3.5	15.9 – 25.3
Final gear case joint nut	35 – 45	3.5 – 4.5	25.5 – 32.5
Rear wheel driven joint bolt	8 – 12	0.8 – 1.2	6.0 – 8.5
* Rear swingarm pivot nut	84 – 108	8.4 – 10.8	60.8 – 78.1
* Front footrest bolt	18 – 28	1.8 – 2.8	13.0 – 20.0
Rear hub shock absorber bolt	90 – 100	9.0 – 10.0	65.0 – 72.5

Asterisk mark (*) indicates the new N-model specifications.

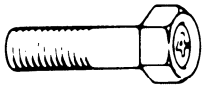
TIGHTENING TORQUE CHART

For other bolts and nuts not listed above, refer to this chart:

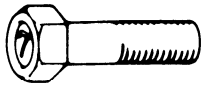
Bolt Diameter Ⓐ (mm)	Conventional or "4" marked bolt			"7" marked bolt		
	N·m	kg-m	lb-ft	N·m	kg-m	lb-ft
4	1.0 – 2.0	0.1 – 0.2	0.7 – 1.5	1.5 – 3.0	0.15 – 0.3	1.0 – 2.0
5	2.0 – 4.0	0.2 – 0.4	1.5 – 3.0	3.0 – 6.0	0.3 – 0.6	2.0 – 4.5
6	4.0 – 7.0	0.4 – 0.7	3.0 – 5.0	8.0 – 12.0	0.8 – 1.2	6.0 – 8.5
8	10.0 – 16.0	1.0 – 1.6	7.0 – 11.5	18.0 – 28.0	1.8 – 2.8	13.0 – 20.0
10	22.0 – 35.0	2.2 – 3.5	16.0 – 25.5	40.0 – 60.0	4.0 – 6.0	29.0 – 43.5
12	35.0 – 55.0	3.5 – 5.5	25.5 – 40.0	70.0 – 100.0	7.0 – 10.0	50.5 – 72.5
14	50.0 – 80.0	5.0 – 8.0	36.0 – 58.0	110.0 – 160.0	11.0 – 16.0	79.5 – 115.5
16	80.0 – 130.0	8.0 – 13.0	58.0 – 94.0	170.0 – 250.0	17.0 – 25.0	123.0 – 181.0
18	130.0 – 190.0	13.0 – 19.0	94.0 – 137.5	200.0 – 280.0	20.0 – 28.0	144.5 – 202.5



Conventional bolt



"4" marked bolt



"7" marked bolt

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. Traveling distance are expressed in terms of kilometers or miles.

NOTE:
Vehicles operated under severe conditions may require more frequent servicing.

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
	mile	600	4 000	7 500	11 000	15 000
	months	2	12	24	36	48
*Battery (Specific gravity of electrolyte)		I	I	I	I	I
*Air cleaner element		–	I	R	I	R
Valve clearance		–	I	I	I	I
Spark plugs		–	I	R	I	R
*Engine oil		R	R	R	R	R
Engine oil filter		R	–	R	–	R
*Fuel lines		–	I	I	I	I
Vapor hose (California model only)		Replace every four years				
*Fuel cock strainer		–	–	C	–	C
*Throttle cable play		I	I	I	I	I
*Engine idle speed		I	I	I	I	I
Clutch hoses		I	I	I	I	I
		Replace every four years				
Clutch fluid		I	I	I	I	I
		Replace every two years				
Radiator hoses		I	–	I	–	I
		Replace every four years				
Coolant		Replace every two years				
Final gear oil		R	–	I	–	I
*Brake hoses		–	I	I	I	I
		Replace evey four years				
*Brake fluid		–	I	I	I	I
		Replace every two years				
Brakes		I	I	I	I	I
*Tires		–	I	I	I	I
Steering		I	I	I	I	I
*Front fork		–	–	I	–	I
*Rear suspension		–	–	I	–	I
Chassis bolts and nuts		T	T	T	T	T
*Exhaust pipe bolt		T	T	T	T	T

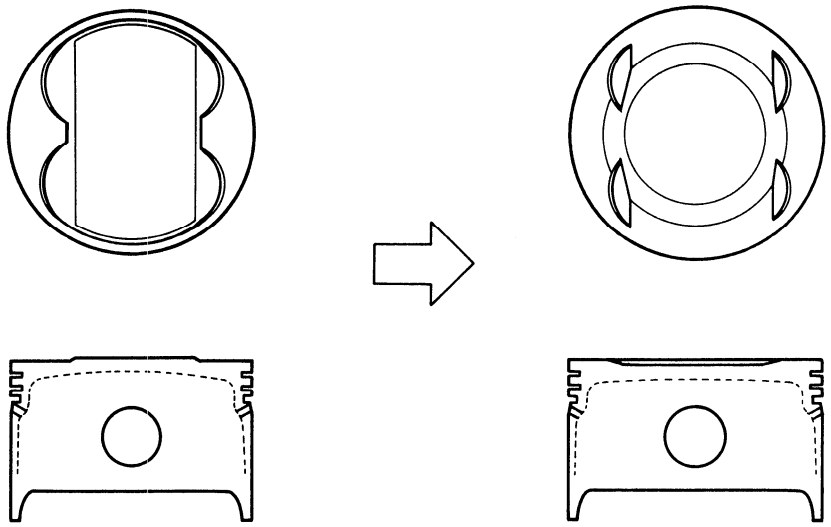
NOTE: T = Tighten, I = Inspect, R = Replace, C = Clean

Asterisk mark (*) indicates the new N-model specifications.

FEATURES

PISTON

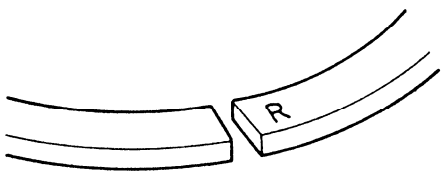
ITEM	VS750	VS800
O.D.	79.950 – 79.965 mm (3.1476 – 3.1482 in) 15 mm (0.6 in) from skirt end	82.950 – 82.965 mm (3.2657 – 3.2663 in) 15 mm (0.6 in) from skirt end



VS750 VS800

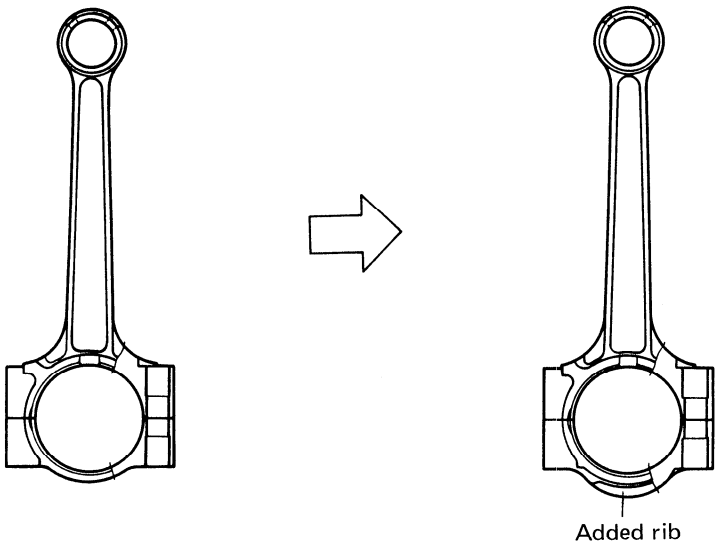
PISTON RINGS

		VS750	VS800
Free end gap	1st	(N) 10.5 mm (0.413 in)	(R) 10.5 mm (0.413 in)
	2nd	(N) 10.5 mm (0.413 in)	(R) 11.8 mm (0.465 in)
End gap	1st	0.20 – 0.35 mm (0.008 – 0.014 in)	←
	2nd	0.20 – 0.35 mm (0.008 – 0.014 in)	←
Groove width	1st	1.01 – 1.03 mm (0.0398–0.0406 in)	←
	2nd	1.21 – 1.23 mm (0.0476–0.0484 in)	←
	Oil	2.51 – 2.53 mm (0.0988–0.0996 in)	←
Thickness	1st	0.975 – 0.990 mm (0.0384–0.0390 in)	0.970 – 0.990 mm (0.0382–0.0390 in)
	2nd	1.170 – 1.190 mm (0.0461–0.0469 in)	←



CONROD

Reinforce rib is added on the conrod cap.



VS750 VS800

CRANKPIN BEARING

Color	Part No.
	VS750 ⇨ VS800
GREEN	12164-38A01-0A0 ⇨ -45C00-0A0
BLACK	12164-38A01-0B0 ⇨ -45C00-0B0
BROWN	12164-38A01-0C0 ⇨ -45C00-0C0
YELLOW	12164-38A01-0D0 ⇨ -45C00-0D0
BLUE	12164-38A01-0E0 ⇨ -45C00-0E0

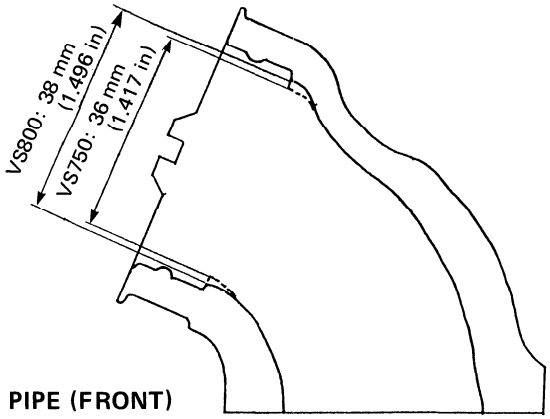
BEARING SELECTION TABLE

Bearing color and thickness

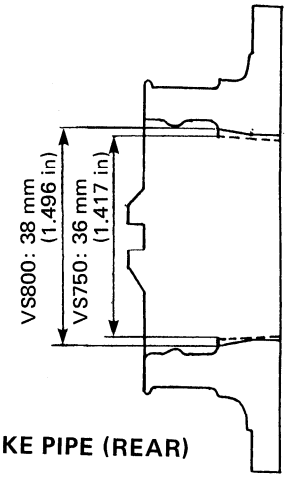
	Color code No.	1	2	3
	Crank pin O.D. / Conrod I.D.	41 $^{0}_{-0.006\ mm}$ (1.61 $^{0}_{-0.0002\ in}$)	41 $^{-0.006\ mm}_{-0.012\ mm}$ (1.61 $^{-0.0002\ in}_{-0.0005\ in}$)	41 $^{-0.012\ mm}_{-0.018\ mm}$ (1.61 $^{-0.0005\ in}_{-0.0007\ in}$)
1	44 $^{+0.006\ mm}_{0}$ (1.73 $^{+0.0002\ in}_{0}$)	GREEN 1.485 – 1.488 mm (0.0585 – 0.0586 in)	BLACK 1.488 – 1.491 mm (0.0586 – 0.0587 in)	BROWN 1.491 – 1.494 mm (0.0587 – 0.0588 in)
2	44 $^{+0.012\ mm}_{+0.006\ mm}$ (1.73 $^{+0.0005\ in}_{+0.0002\ in}$)	BLACK 1.488 – 1.491 mm (0.0586 – 0.0587 in)	BROWN 1.491 – 1.494 mm (0.0587 – 0.0588 in)	YELLOW 1.494 – 1.497 mm (0.0588 – 0.0589 in)
3	44 $^{+0.018\ mm}_{+0.012\ mm}$ (1.73 $^{+0.0007\ in}_{+0.0005\ in}$)	BROWN 1.491 – 1.494 mm (0.0587 – 0.0588 in)	YELLOW 1.494 – 1.497 mm (0.0588 – 0.0589 in)	BLUE 1.497 – 1.500 mm (0.0589 – 0.0590 in)

STD oil clearance: 0.024 – 0.042 mm (0.00094 – 0.00165 in)

INTAKE PIPE



INTAKE PIPE (FRONT)



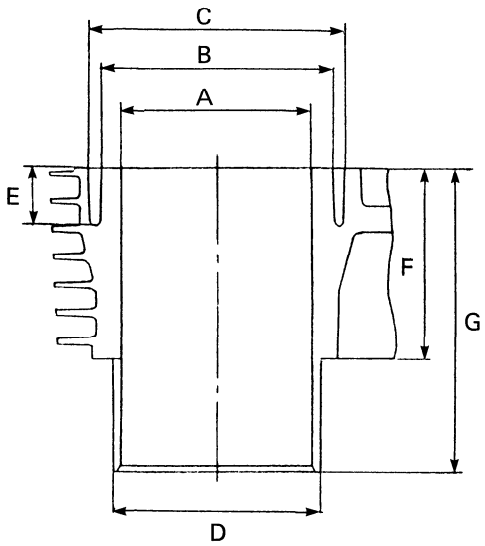
INTAKE PIPE (REAR)

CYLINDER

Unit: mm (in)

Dimensions	VS750	VS800
A	80.0 (3.15)	83.0 (3.27)
B	97.5 (3.84)	100 (3.94)
C	110 (4.33)	111 (4.37)
D	86 (3.39)	90 (3.54)
E	25 (0.98)	←
F	82.2 (3.24)	←
G	130.8 (5.15)	←

Displacement	VS750	VS800
Stamp	747 cc (45.9 cu. in)	805 cc (49.1 cu. in)

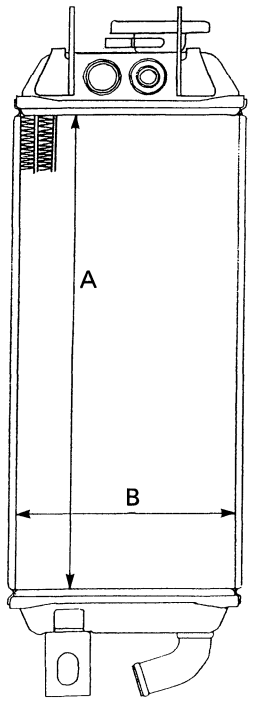


GASKETS

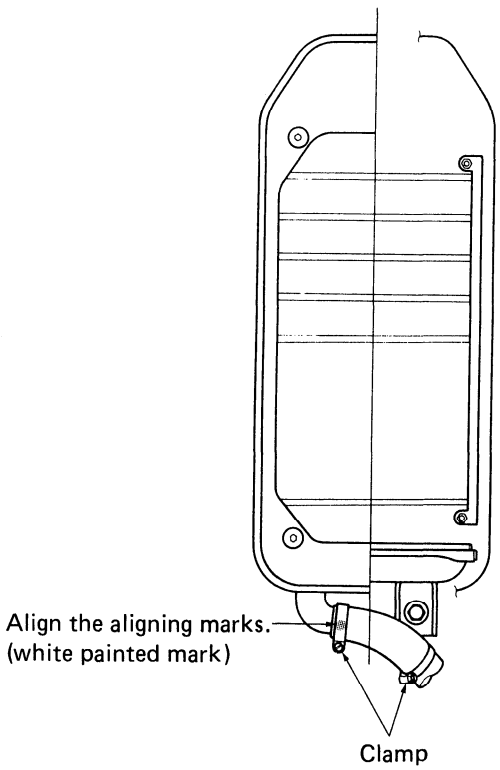
ITEM	PART NO.
Cylinder head gasket (Front)	11141-38A01 ⇨ -45C00 Bore-uped, same thickness
Cylinder head gasket (Rear)	11142-38A03 ⇨ -45C00 Bore-uped, same thickness
Breather cover gasket	11187-38A02 ⇨ -38A02-H17 Non-Asbestos, same thickness
Cylinder base gasket	11241-38A10 ⇨ -45C20 Non-Asbestos, same thickness

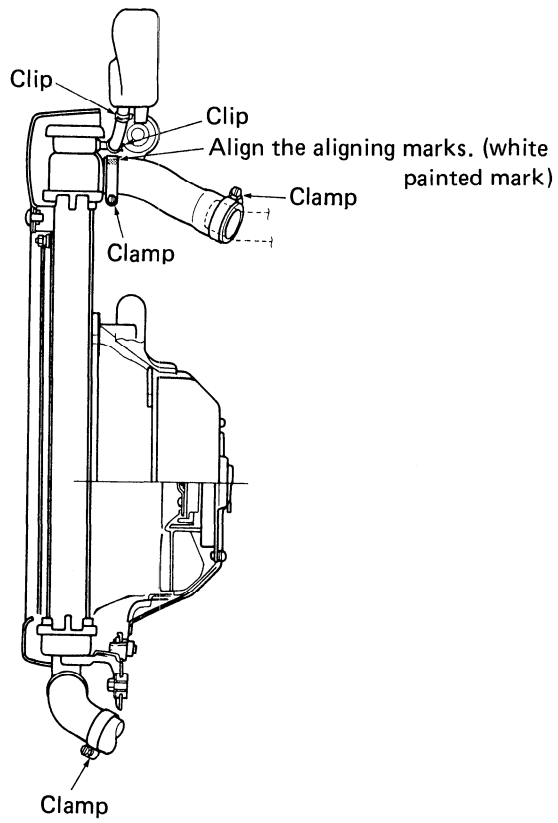
RADIATOR

ITEM	VS750	VS800
A	325 mm (12.8 in)	360 mm (14.2 in)
B	160 mm (6.3 in)	188 mm (7.4 in)
A x B	52,000 mm^2 (80.6 in^2)	67,680 mm^2 (104.9 in^2)
Radiating capacity	59,442 kJ/h (14,200 Kcal/h)	77,442 kJ/h (18,500 Kcal/h)

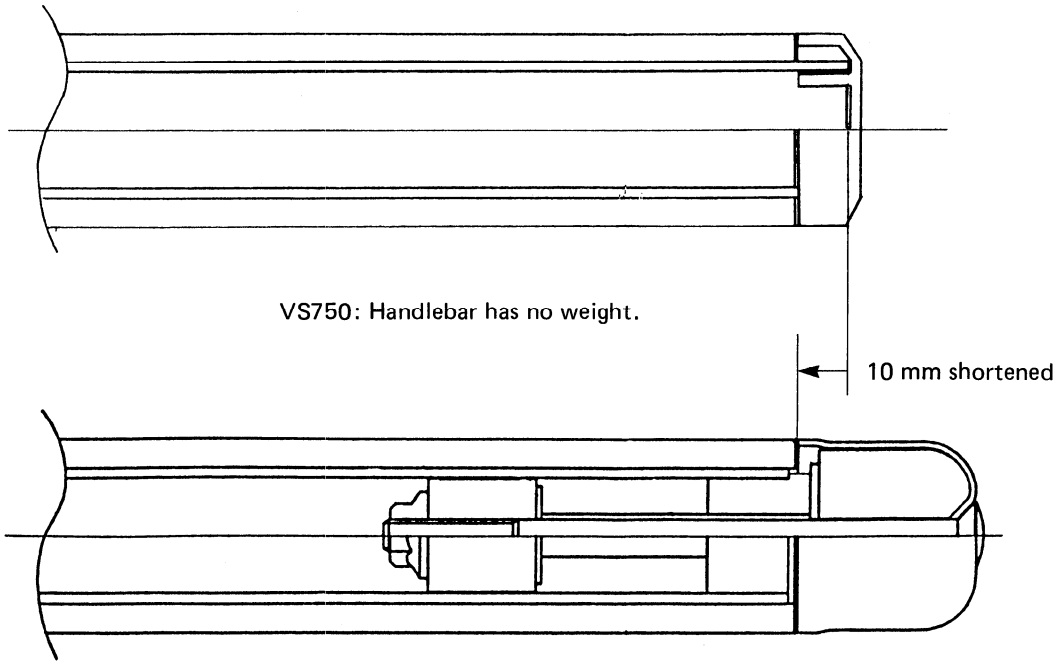


RADIATOR HOSE CONNECTION





HANDLEBAR



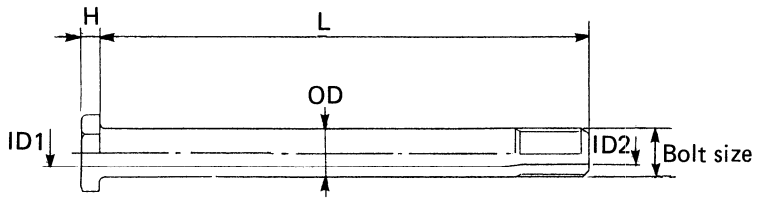
VS750: Handlebar has no weight.

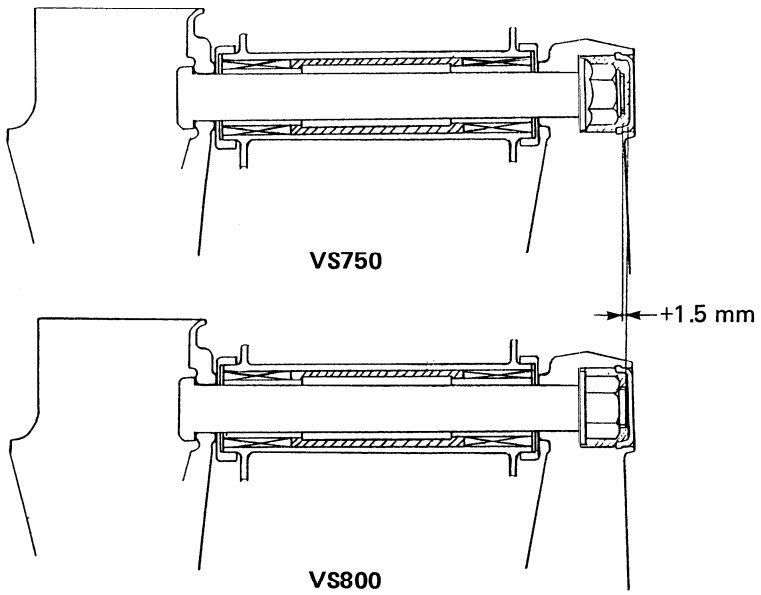
VS800: Handlebar has 190 grams of weight plus bolt, nut and spacers at both ends.

PIVOT SHAFT

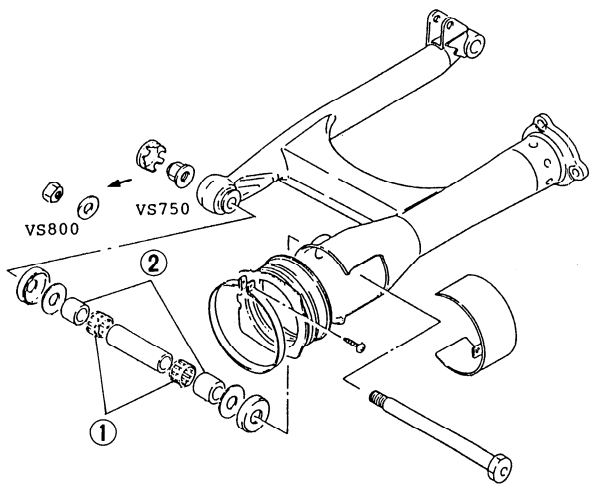
Unit: mm (in)

ITEM	VS750	VS800
Bolt size	M14	M16
H	6 (0.24)	←
L	157 (6.18)	158.5 (6.24)
OD	14 (0.55)	16 (0.63)
ID1	7 (0.28)	9 (0.35)
ID2	6 (0.24)	7 (0.28)



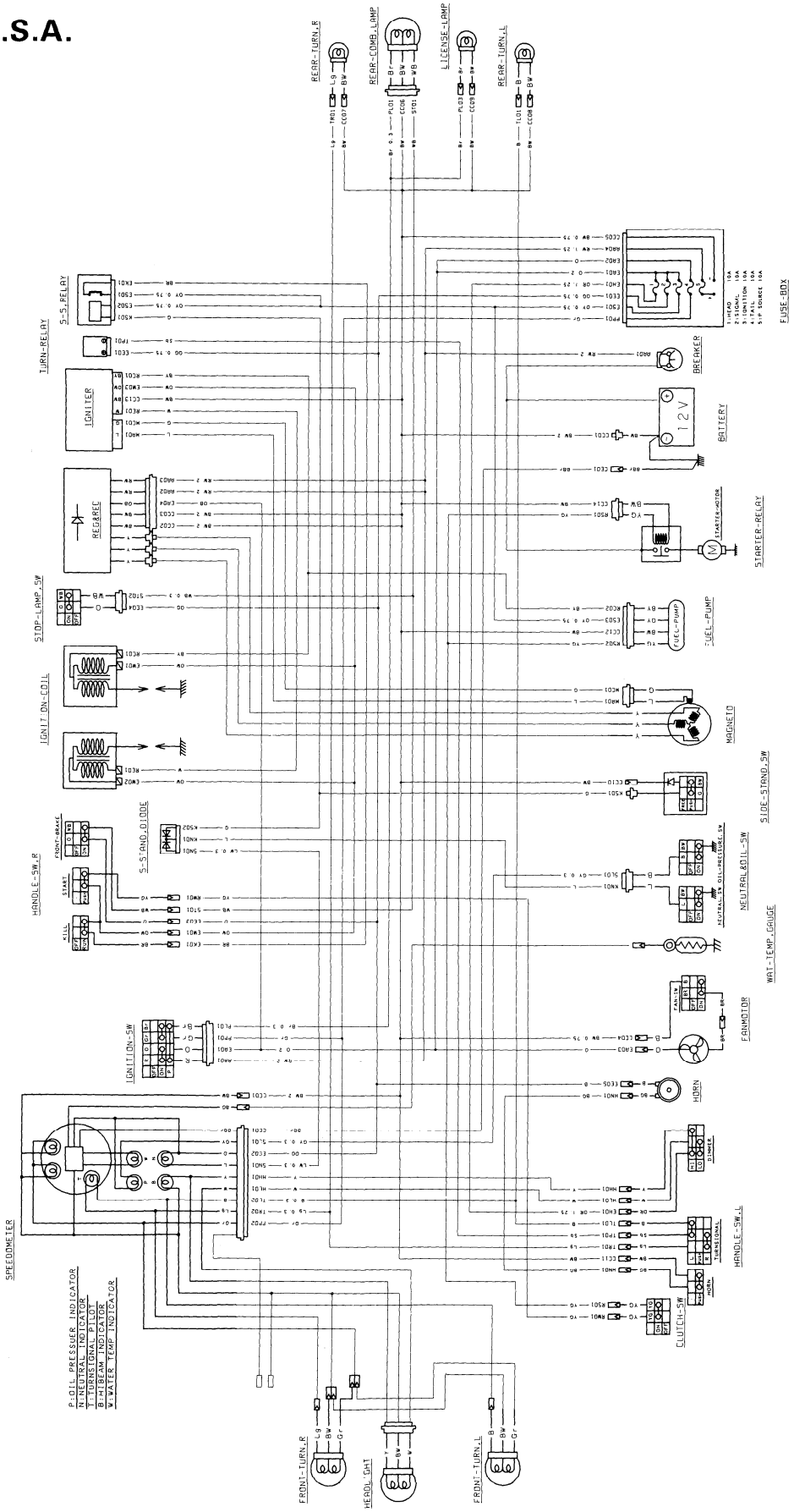


*Bearings ① are the same as VS750, while thickness of spacers ② are reduced from 4 mm (0.16 in) to 3 mm (0.12 in).



WIRING DIAGRAM

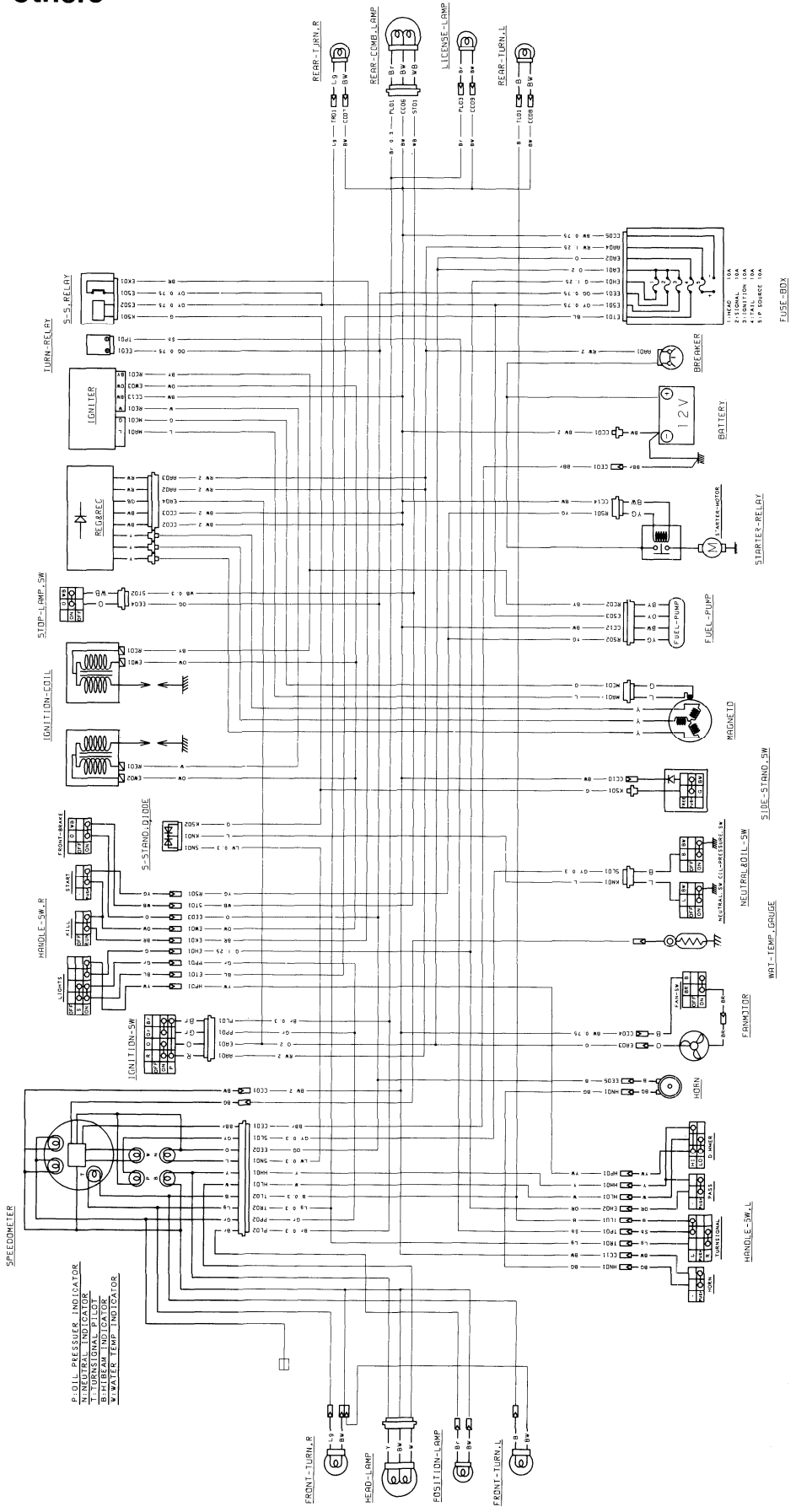
For U.S.A.



WIRE COLOR

B . . . . . Black	W . . . . . White	O/B . . . Orange with Black tracer
Br . . . . . Brown	Y . . . . . Yellow	O/G . . . Orange with Green tracer
G . . . . . Green	B/Br . . . Black with Brown tracer	O/R . . . Orange with Red tracer
Gr . . . . . Gray	B/G . . . Black with Green tracer	O/W . . . Orange with White tracer
L . . . . . Blue	B/L . . . Black with Blue tracer	O/Y . . . Orange with Yellow tracer
Lg . . . . . Light green	B/R . . . Black with Red tracer	R/W . . . Red with White tracer
O . . . . . Orange	B/W . . . Black with White tracer	L/W . . . Blue with White tracer
R . . . . . Red	B/Y . . . Black with Yellow tracer	W/B . . . White with Blue tracer
Sb . . . . . Light blue	G/Y . . . Green with Yellow tracer	Y/G . . . Yellow with Green tracer
		Y/W . . . Yellow with White tracer

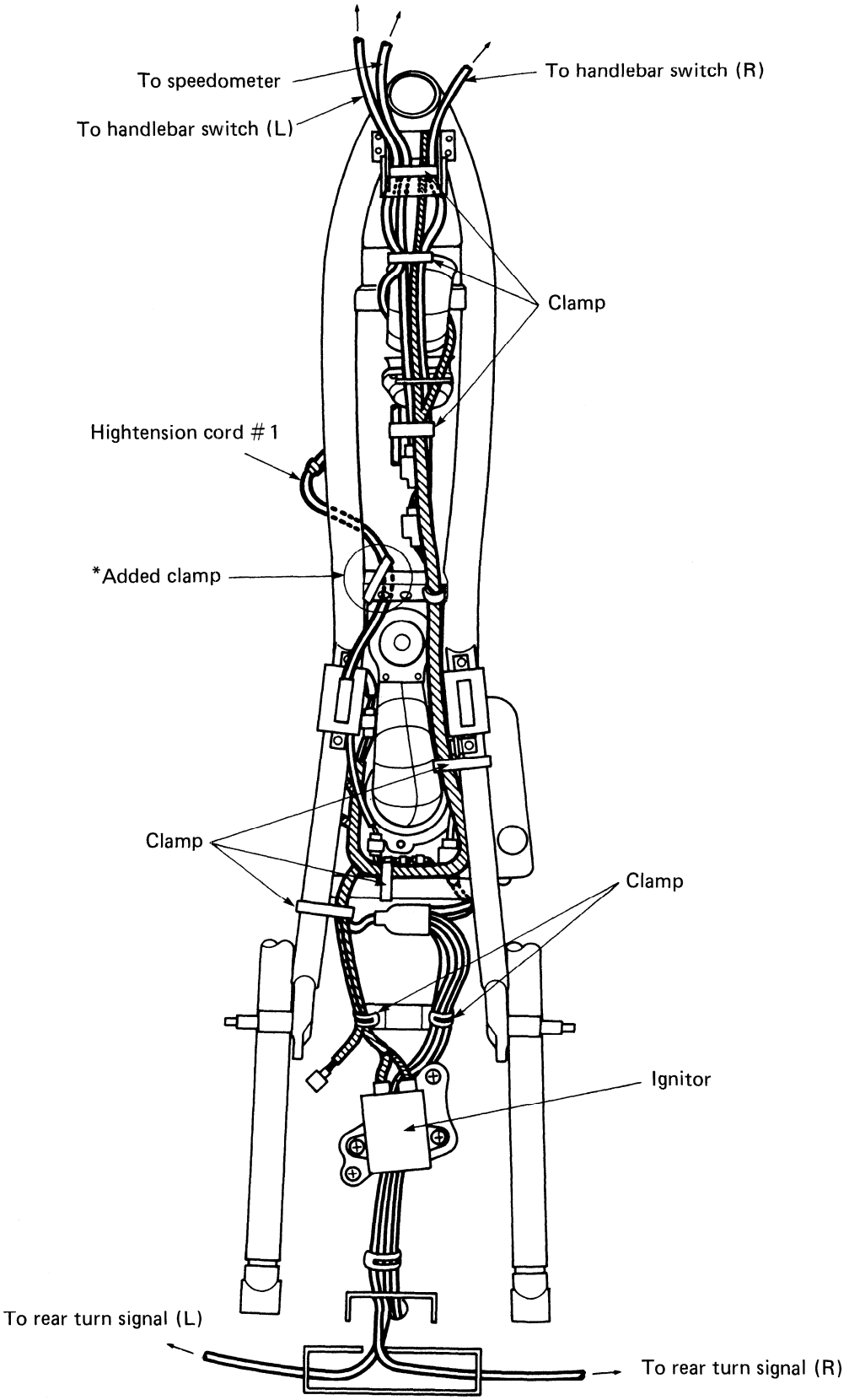
For the others



WIRE COLOR

B	Black	W	White
Br	Brown	Y	Yellow
G	Green	B/Br . . .	Black with Brown tracer
Gr	Gray	B/G . . .	Black with Green tracer
L	Blue	B/L . . .	Black with Blue tracer
Lg	Light green	B/R . . .	Black with Red tracer
O	Orange	B/W . . .	Black with White tracer
R	Red	B/Y . . .	Black with Yellow tracer
Sb	Light blue	G/Y . . .	Green with Yellow tracer
		O/B . . .	Orange with Black tracer
		O/G . . .	Orange with Green tracer
		O/R . . .	Orange with Red tracer
		O/W . . .	Orange with White tracer
		O/Y . . .	Orange with Yellow tracer
		R/W . . .	Red with White tracer
		L/W . . .	Blue with White tracer
		W/B . . .	White with Blue tracer
		Y/G . . .	Yellow with Green tracer
		Y/W . . .	Yellow with White tracer

WIRE ROUTING

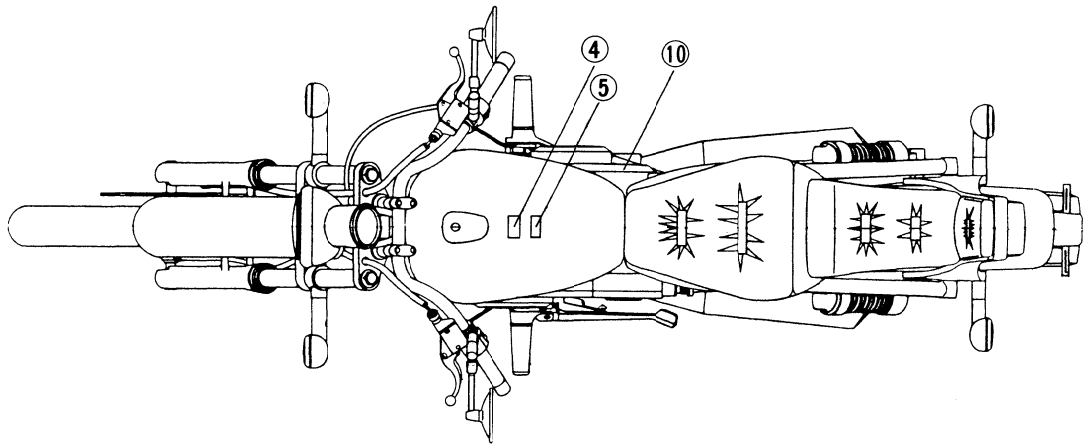


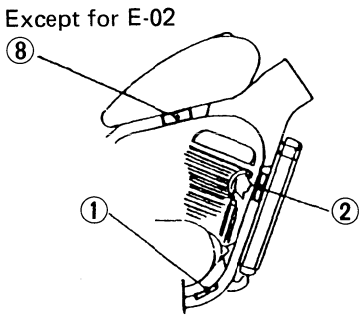
Asterisk mark (*) indicates the new "N" model.

LABEL INFORMATION

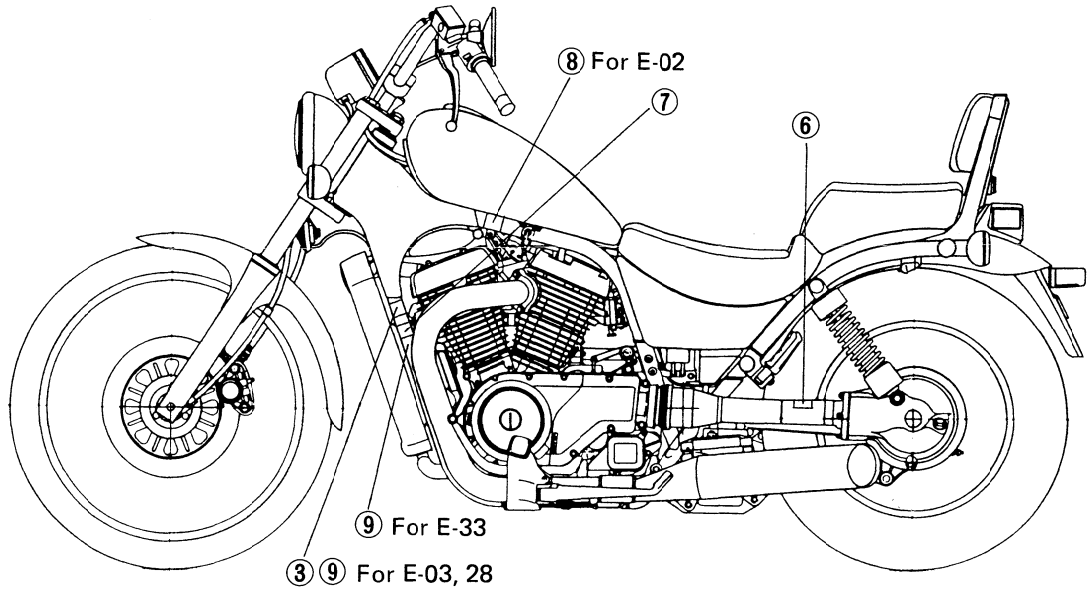
①	Noise label	For E-03, 21, 33
②	Information label	For E-03, 33
③	Vaccum hose routing label	Only for E-33
④	Fuel caution label	Only for E-02
⑤	Warning safety label	All models
⑥	Asbestos warning label	Only for E-02
⑦	National safety label	Only for E-28
⑧	ID plate	Except for E03, 28, 33
⑨	Safety plate	For E-03, 28, 33
⑩	Tire pressure lable	Inside of frame cover All models

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





Right side



EMISSION CONTROL CARBURETOR COMPONENTS

VS800 motorcycles are equipped with precision, manufactured carburetors for emission level control. These carburetors require special mixture control components and other precision adjustments to function properly.

There are several carburetor mixture control components in each carburetor assembly. Three (3) of these components are machined to much closer tolerances than standard machined carburetor jets. These three (3) particular jets — MAIN JET, NEEDLE JET, PILOT JET — must not be replaced by standard jets. To aid in identifying these three (3) jets a different design of letter and number are used. If replacement of these close tolerance jets becomes necessary, be sure to replace them with the same type close tolerance jets marked as in the examples shown below.

The jet needle is also of special manufacture. Only one clip position is provided on the jet needle. If replacement becomes necessary the jet needle may only be replaced with an equivalent performing replacement component. Suzuki recommends that Genuine Suzuki Parts be utilized whenever possible for the best possible performance and durability.

Conventional Figures Used on Standard Tolerance Jet Components	1 2 3 4 5 6 7 8 9 0
Emission Type Figures Used On Close Tolerance jet Components	1 2 3 4 5 6 7 8 9 0

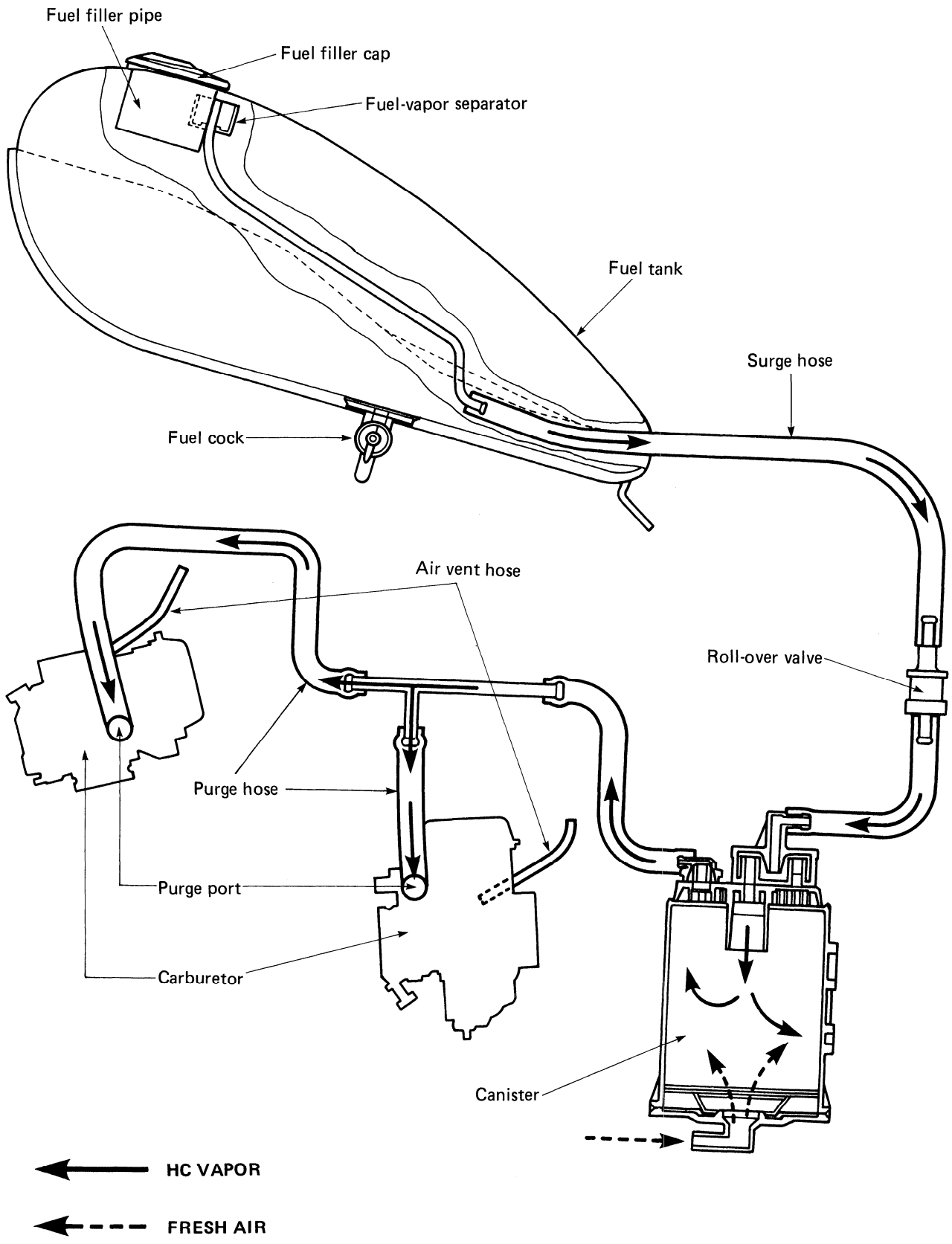
The carburetor specification for the emission-controlled VS800 are as follows.

Carburetor I.D. No.	Main Jet	Needle Jet	Jet Needle	Pilot Jet	Pilot Screw
38E5 (California model)	No. 1: #132.5	No. 1: P-7	No. 1: 5D35-1st	No. 1: #45	PRE-SET DO NOT ADJUST
38E1 (Other state models)	No. 2: #127.5	No. 2: P-2	No. 2: 5D47-1st	No. 2: #40	

The pilot screw is pre-set by the factory utilizing specialized testing and adjusting procedures. The pilot screw is not adustable as the idle circuit is "sealed" after factory adjustment. Adjusting, interferring with, improper replacement, or resetting of any of the carburetor components may adversely affect carburetor performance and cause the motorycle to exceed the exhaust emission level limits. If persons, who are unaware of these special carburetor servicing requirements tamper with the carburetors the Suzuki dealer should restore the carburetors to their original condition or if unable to effect repairs, contact the distributors representative for further technical information and assistance.

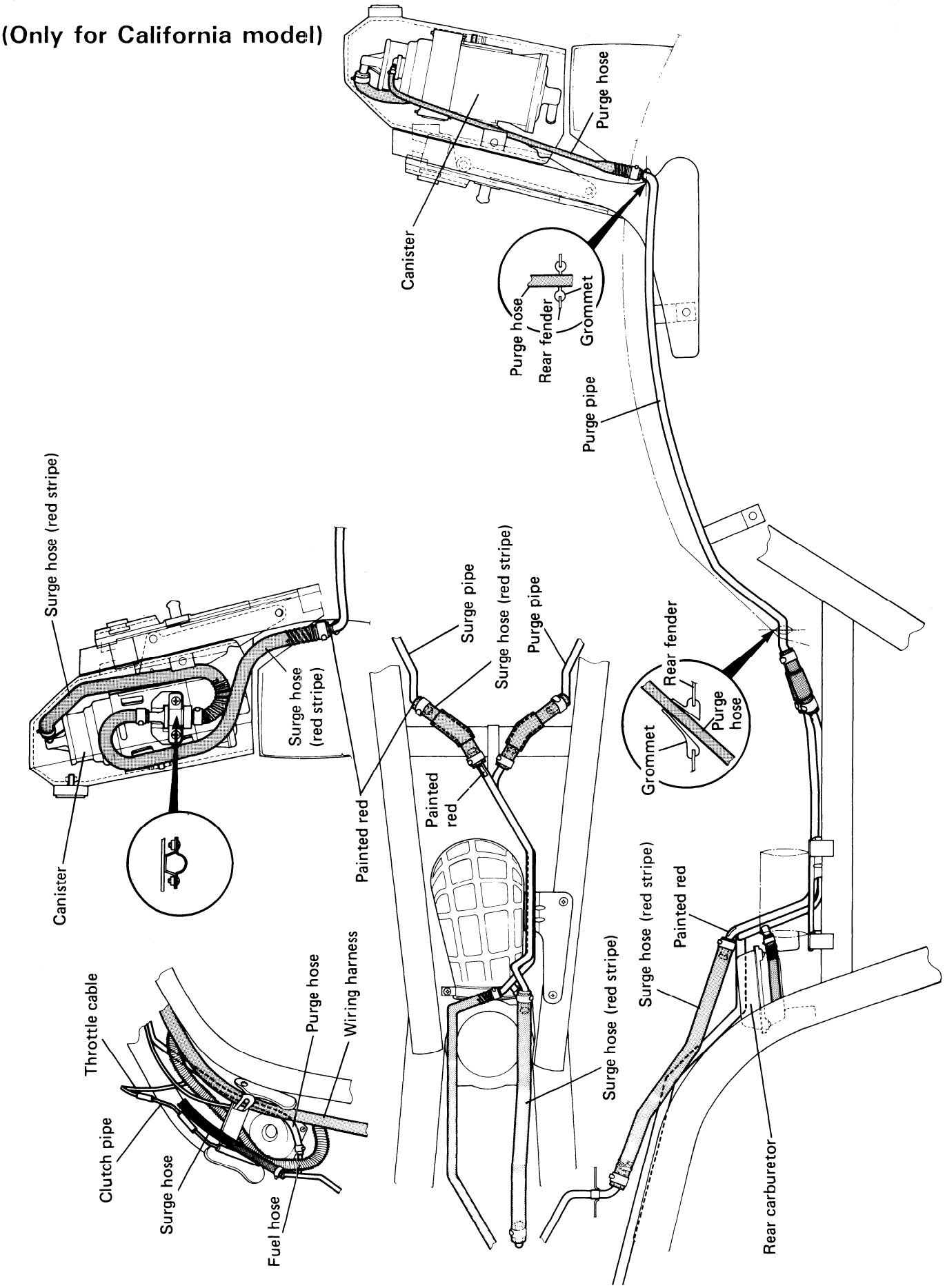
EVAPORATIVE EMISSION CONTROL SYSTEM

(Only for California model)



CANISTER HOSE ROUTING

(Only for California model)



CONTENTS

SERVICE DATA 17-1

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	—
	EX.	26 (1.02)	—
Valve lift	IN.	8.5 (0.33)	—
	EX.	8.5 (0.33)	—
Valve clearance (when cold)	IN. & EX.	0.08—0.13 (0.003—0.005)	—
Valve guide to valve stem clearance	IN.	0.020—0.047 (0.0008—0.0019)	0.35 (0.014)
	EX.	0.035—0.062 (0.0014—0.0024)	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	—
Valve stem O.D.	IN.	5.465—5.480 (0.2152—0.2157)	—
	EX.	5.450—5.465 (0.2146—0.2152)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	4.0 (0.16)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length	INNER	—	38.3 (1.51)
	OUTER	—	40.1 (1.58)
Valve spring tension	INNER	6.51—7.49 kg (14.35—16.51 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	12.09—13.91 kg (26.65—30.67 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954—35.994 (1.4155—1.4171)	35.660 (1.4039)
	EX.	36.919—36.959 (1.4535—1.4551)	36.620 (1.4417)
Camshaft journal oil clearance	0.032—0.066 (0.0013—0.0026)		0.150 (0.0059)

ITEM	STANDARD		LIMIT
Camshaft journal holder I.D.	No.1 Left side No.2 Right side	20.012—20.025 (0.7879—0.7884)	———
	No.1 Right side No.2 Left side	25.012—25.025 (0.9847—0.9852)	———
Camshaft journal O.D.	No.1 Left side No.2 Right side	19.959—19.980 (0.7858—0.7866)	———
	No.1 Right side No.2 Left side	24.959—24.980 (0.9826—0.9835)	———
Camshaft runout	———		0.10 (0.004)
Cam chain 20-pitch length	———		128.9 (5.07)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	———
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	———
Cylinder head distortion	———		0.05 (0.002)
Cylinder head cover distortion	———		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	1 300—1 600 kPa (13—16 kg/cm², 185—228 psi)		1 100 kPa (11 kg/cm², 156 psi)
Compression pressure difference	———		200 kPa (2 kg/cm², 28 psi)
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)		0.120 (0.0047)
Cylinder bore	83.000—83.015 (3.2677—3.2683)		83.085 (3.2711)
Piston diam.	82.950—82.965 (3.2657—3.2663) Measure at 15 mm (0.6 in) from the skirt end.		82.880 (3.2630)
Cylinder distortion	———		0.05 (0.002)
Piston ring free end gap	1st R	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd R	Approx. 11.8 (0.465)	9.4 (0.370)
Piston ring end gap	1st	0.20—0.35 (0.008—0.014)	0.70 (0.028)
	2nd	0.20—0.35 (0.008—0.014)	0.70 (0.028)
Piston ring groove clearance	1st	———	0.180 (0.007)
	2nd	———	0.150 (0.006)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01—1.03 (0.0398—0.0406)	—
	2nd	1.21—1.23 (0.0476—0.0484)	—
	Oil	2.51—2.53 (0.0988—0.0996)	—
Piston ring thickness	1st	0.970—0.990 (0.0382—0.0390)	—
	2nd	1.170—1.190 (0.0461—0.0469)	—
Piston pin bore	20.002—20.008 (0.7875—0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996—20.000 (0.7827—0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010—20.018 (0.7878—0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10—0.20 (0.004—0.008)	0.30 (0.012)
Conrod big end width	21.95—22.00 (0.864—0.866)	—
Crank pin width	22.10—22.15 (0.870—0.872)	—
Conrod big end oil clearance	0.024—0.042 (0.0009—0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982—41.000 (1.6135—1.6142)	—
Crankshaft journal oil clearance	0.020—0.050 (0.0008—0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965—47.980 (1.8884—1.8890)	—
Crankshaft thrust bearing thickness	1.925—2.175 (0.0758—0.0856)	—
Crankshaft thrust clearance	0.05—0.10 (0.002—0.004)	—
Crankshaft runout	—	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 x 32/29)	—
Oil pressure (at 60°C,140°F)	Above 350 kPa (3.5 kg/cm², 50 psi) Below 650 kPa (6.5 kg/cm², 92 psi) at 3 000 r/min.	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92—3.08 (0.115—0.121)	2.62 (0.103)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.622—0.630)		15.0 (0.591)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		34.0 (1.34)
Clutch master cylinder bore	14.000—14.043 (0.5512—0.5529)		—
Clutch master cylinder piston diam.	13.957—13.984 (0.5495—0.5506)		—
Clutch release cylinder bore	38.100—38.162 (1.5000—1.5024)		—
Clutch release cylinder piston diam.	38.042—38.075 (1.4977—1.4990)		—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		—
Secondary reduction ratio		1.133 (30/30 x 17/15)		—
Final reduction ratio		3.090 (34/11)		—
Gear ratios	Low	2.285 (32/14)		—
	2nd	1.631 (31/19)		—
	3rd	1.227 (27/22)		—
	4th	1.000 (25/25)		—
	Top	0.851 (23/27)		—
Shift fork to groove clearance		No.1	0.10—0.30 (0.004—0.012)	0.50 (0.020)
		No.2	0.10—0.30 (0.004—0.012)	0.50 (0.020)
Shift fork groove width		No.1	5.50—5.60 (0.217—0.220)	—
		No.2	4.50—4.60 (0.177—0.181)	—
Shift fork thickness		No.1	5.30—5.40 (0.209—0.213)	—
		No.2	4.30—4.40 (0.169—0.173)	—

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.05—0.32 (0.002—0.013)		———
Final bevel gear backlash	Drive side	0.03—0.064 (0.001—0.025)	———

CARBURETOR

ITEM	SPECIFICATION	
	E-02,04,16,21,25,34,53	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E0	←
Idle r/min.	1100 ± 100 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#107.5	#95
Main air jet (M.A.J.)	1.8 mm	←
Jet needle (J.N.)	5F109-3rd	5C29-3rd
Needle jet (N.J.)	P-3	P-4
Throttle valve (Th.V.)	#115	←
Pilot jet (P.J.)	#42.5	#40
By-pass (B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet (P.O.)	0.8 mm	1.0 mm
Valve seat (V.S.)	1.5 mm	←
Starter jet (G.S.)	#25	#22.5
Pilot screw (P.S.)	(PRE-SET) 2.0 turns back	(PRE-SET) 1½ turns back
Pilot air jet (P.A.J.)	No.1:(#70), No.2:(2.0 mm)	No.1:(#65), No.2:(1.3 mm)
Throttle cable play	0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play	0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-03	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E1	←
Idle r/min.	1200 ± 50 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Main air jet (M.A.J.)	1.6 mm	←
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7	P-2
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
By-pass (B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet (P.O.)	0.8 mm	1.0 mm

ITEM		SPECIFICATION	
		E-03	
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET)	(PRE-SET)
Pilot air jet	(P.A.J.)	No.1:(#65), No.2:(1.95 mm)	No.1:(#65), No.2:(1.25 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-18	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E2	←
Idle r/min.		1200±50 r/min.	←
Float height		27.7±1.0 mm (1.09±0.04 in)	9.1±1.0 mm (0.36±0.04 in)
Main jet	(M.J.)	#107.5	#97.5
Main air jet	(M.A.J.)	1.8 mm	←
Jet needle	(J.N.)	5F107-3rd	5D48-3rd
Needle jet	(N.J.)	P-5	P-1
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#42.5	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET) 1-¼ turns back	(PRE-SET) 1-¾ turns back
Pilot air jet	(P.A.J.)	No.1:(#55), No.2:(1.45 mm)	No.1:(#65), No.2:(1.35 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-17,22	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E3	←
Idle r/min.		1100±100 r/min.	←
Float height		27.7±1.0 mm (1.09±0.04 in)	9.1±1.0 mm (0.36±0.04 in)
Main jet	(M.J.)	#107.5	#100
Main air jet	(M.A.J.)	1.8 mm	←
Jet needle	(J.N.)	5F109-3rd	5C29-3rd

ITEM		SPECIFICATION	
		E-17,22	
Needle jet	(N.J.)	P-3	P-4
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#45	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET) 1⅜ turns back	(PRE-SET) 1.0 turn back
Pilot air jet	(P.A.J.)	No.1:(#70), No.2:(2.0 mm)	No.1:(#65), No.2:(1.2 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-01,28	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E4	←
Idle r/min.		1200±100 r/min.	←
Float height		27.7±1.0 mm (1.09±0.04 in)	9.1±1.0 mm (0.36±0.04 in)
Main jet	(M.J.)	#132.5	#127.5
Main air jet	(M.A.J.)	1.6 mm	←
Jet needle	(J.N.)	5D61-3rd	5D48-3rd
Needle jet	(N.J.)	P-7	P-2
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	#45	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET) 1⅛ turns back	(PRE-SET) 1¼ turns back
Pilot air jet	(P.A.J.)	No.1:(#65), No.2:(1.95 mm)	No.1:(#65), No.2:(1.25 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-33	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E5	←
Idle r/min.	1200±50 r/min.	←

ITEM		SPECIFICATION	
		E-33	
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#132.5	#127.5
Main air jet	(M.A.J.)	1.6 mm	←
Jet needle	(J.N.)	5D35-1st	5D47-1st
Needle jet	(N.J.)	P-7	P-2
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	#45	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET)	(PRE-SET)
Pilot air jet	(P.A.J.)	No.1:(#65), No.2:(1.95 mm)	No.1:(#65), No.2:(1.25 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

ELECTRICAL

Unit: mm (in)

ITEM	SPECIFICATION		NOTE
Ignition timing	5° B.T.D.C. Below 1 650 r/min. and 30° B.T.D.C. Above 3 500 r/min.		
Firing order	1-2		
Spark plug	Type	N.G.K.: DPR8EA-9 ND: X24EPR-U9	
	Gap	0.8—0.9 (0.031—0.035)	
Spark performance	Over 8 (0.3) at 1 atm.		
Signal coil resistance	Approx. 50—200 Ω (G—Bl)		
Ignition coil resistance	Primary	2—6 Ω	⊕ tap—⊖ tap
	Secondary	15—40 kΩ	Plug cap—⊕ tap
Generator no-load voltage (When engine cold)	More than 65V (AC) at 5 000 r/min.		
Regulated voltage	13.5—15.5 V at 5 000 r/min.		
Starter motor brush length	Limit: 9 (0.35)		N.D.
Commutator under-cut	Limit: 0.2 (0.008)		
Starter relay resistance	2—6 Ω		
Battery	Type designation	YB16B-A1	
	Capacity	12V57.6kC (16Ah)/10HR	
	Standard electrolyte S.G.	1.28 at 20°C (68°F)	

ITEM		SPECIFICATION	NOTE
Fuse size	Headlight	10 A	
	Signal	10 A	
	Ignition	10 A	
	Main	25 A	
	Power source	10 A	

WATTAGE

Unit:W

ITEM		SPECIFICATION	
		E-03,28,33	The others
Headlight	HI	60	←
	LO	55	←
Parking light			4
Tail/Brake light		5/21	←
Turn signal light		5/21 (Front), 21 (Rear)	21
Speedometer light		3.4	←
Water temp. meter light		3	←
Turn signal indicator light		3	←
High beam indicator light		1.7	←
Neutral indicator light		3	←
Oil pressure indicator light		3	←
License light		8	5

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20—30 (0.8—1.2)		—
Rear brake pedal height	40 (1.6)		—
Brake lining thickness	Rear	—	1.5 (0.056)
Brake drum I.D.	Rear	—	180.7 (7.11)
Brake disc thickness	Front	5.0±0.2 (0.20±0.01)	4.5 (0.18)
Brake disc runout	—		0.30 (0.012)
Master cylinder bore	Front	12.700—12.743 (0.5000—0.5017)	—
Master cylinder piston diam.	Front	12.657—12.684 (0.4983—0.4993)	—
Brake caliper cylinder bore	Front	42.850—42.926 (1.6870—1.6900)	—
Brake caliper piston diam.	Front	42.770—42.820 (1.6839—1.6858)	—
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)

ITEM	STANDARD		LIMIT
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)
Tire size	Front	80/90-21 48H	—
	Rear	140/90-15 M/C 70H	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	—	
Front fork spring free length	—	348.3 (13.71)	
Front fork oil level	124.3 (4.89)	—	
Rear wheel travel	90 (3.5)	—	
Swingarm pivot shaft runout	—	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

FUEL + OIL + COOLANT

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		U.S.A. model
	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$ method) or 91 octane or higher rated by the Research Method.		Canada model
	Gasoline used should be graded 85-95 octane or higher. An unleaded gasoline is recommended.		Other models
Fuel tank including reserve	11.0 L (2.9/2.4 US/Imp gal)		California model only
	12.0 L (3.2/2.6 US/Imp gal)		Other models
reserve	3.0 L (0.8/0.7 US/Imp gal)		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	2 400 ml (2.5/2.1 US/Imp qt)	
	Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
	Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	413 ml (14.0/14.5 US/Imp oz)		
Final bevel gear oil type	SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity	200—220 ml (6.8/7.0—7.4/7.7 US/Imp oz)		
Brake fluid type	DOT4		
Coolant capacity	1 700 ml (1.8/1.5 US/Imp qt)		

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	———
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	———
Radiator cap valve release pressure		1.1 ± 0.15 kg/cm² (15.6 ± 2.1 psi, 110 ± 15 kPa)	———
Electric fan thermo-switch operating temperature	ON	Approx. 105°C (221°F)	———
	OFF	Approx. 100°C (212°F)	———

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SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2280 mm (89.8 in) E18
	2255 mm (88.8 in) . . . . . Others
Overall width	770 mm (30.3 in)
Overall height	1200 mm (47.2 in)
Wheelbase	1560 mm (61.4 in)
Ground clearance	125 mm (4.9 in)
Seat height	685 mm (27.0 in)
Dry mass	201 kg (443 lbs) E33
	200 kg (441 lbs) . . . . . Others

ENGINE

Type	Four-stroke, liquid-cooled, OHC, TSCC, 45° V-twin
Valve clearance (IN & EX)	0.08—0.13 mm (0.003—0.005 in)
Number of cylinders	2
Bore	83.0 mm (3.268 in)
Stroke	74.4 mm (2.929 in)
Piston displacement	805 cm^3 (49.1 in)
Compression ratio	10.0 : 1
Carburetor, front	BDS36, single
rear	BS36, single
Air cleaner	Non woven fabric element
Starter system	Electric starter motor
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	1.690 (71/42)
Gear ratios, Low	2.285 (32/14)
2nd	1.631 (31/19)
3rd	1.227 (27/22)
4th	1.000 (25/25)
Top	0.851 (23/27)
Secondary reduction ratio	1.133 (30/30 x 17/15)
Final reduction ratio	3.090 (34/11)
Drive system	Shaft drive

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Swingarm, coil spring, oil damped, spring preload 5-way adjustable
Front suspension stroke	130 mm (5.1 in)
Rear wheel travel	90 mm (3.5 in)
Caster	56° 45'
Trail	145 mm (5.71 in)
Steering angle	40° (right & left)
Turning radius	2.9 m (9.5 ft)
Front brake	Disc brake, hydraulically operated
Rear brake	Internal expanding, mechanically operated
Front tire size	80/90-21 48H
Rear tire size	140/90-15 M/C 70H

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	5° B.T.D.C. below 1650 r/min and 30° B.T.D.C. above 3500 r/min
Spark plug	NGK DPR8EA-9 or NIPPONDENSO X24EPR-U9
Battery	12V 57.6 kC (16 Ah)/10HR
Fuse	25/10/10/10/10A
Headlight	12V 60/55W
Parking or city light	12V 4W . . . . . except E03,28,33
Turn signal light	12V 21W
Running light (in front turn signal)	12V 5W . . . . . E03,28,33 only
Tail/Brake light	12V 5/21W
License plate light	12V 8W E03,28,33
	12V 5W . . . . . Others
Neutral indicator light	12V 3W
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 3W
Oil pressure indicator light	12V 3W
Coolant temperature check light	12V 3W

CAPACITIES

Fuel tank, including reserve	11.0 L (2.9/2.4 US/Imp. gal) E33
	12.0 L (3.2/2.6 US/Imp. gal) . . . . . Others
Reserve	3.0 L (0.8/0.7 US/Imp. gal)
Engine oil, change	2400 ml (2.5/2.1 US/Imp. qt)
with filter change	2800 ml (3.0/2.5 US/Imp. qt)
overhaul	3300 ml (3.5/2.9 US/Imp. qt)
Final gear oil	200—220 ml (6.8/7.0—7.4/7.7 US/Imp. oz)
Coolant (including reserve)	1700 ml (1.8/1.5 US/Imp. qt)
Front fork oil (each leg)	413 ml (14.0/14.5 US/Imp. oz)

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	—
	EX.	26 (1.02)	—
Valve lift	IN.	8.5 (0.33)	—
	EX.	8.5 (0.33)	—
Valve clearance (when cold)	IN. & EX.	0.08—0.13 (0.003—0.005)	—
Valve guide to valve stem clearance	IN.	0.020—0.047 (0.0008—0.0019)	—
	EX.	0.035—0.062 (0.0014—0.0024)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	—
Valve stem O.D.	IN.	5.465—5.480 (0.2152—0.2157)	—
	EX.	5.450—5.465 (0.2146—0.2152)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	4.0 (0.16)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length	INNER	—	38.3 (1.51)
	OUTER	—	40.1 (1.58)
Valve spring tension	INNER	6.51—7.49 kg (14.35—16.51 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	12.09—13.91 kg (26.65—30.67 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954—35.994 (1.4155—1.4171)	35.660 (1.4039)
	EX.	36.919—36.959 (1.4535—1.4551)	36.620 (1.4417)

ITEM	STANDARD		LIMIT
Camshaft journal oil clearance	0.032—0.066 (0.0013—0.0026)		0.150 (0.0059)
Camshaft journal holder I.D.	No.1 Left side No.2 Right side	20.012—20.025 (0.7879—0.7884)	—
	No.1 Right side No.2 Left side	25.012—25.025 (0.9847—0.9852)	—
Camshaft journal O.D.	No.1 Left side No.2 Right side	19.959—19.980 (0.7858—0.7866)	—
	No.1 Right side No.2 Left side	24.959—24.980 (0.9826—0.9835)	—
Camshaft runout	—		0.10 (0.004)
Cam chain 20-pitch length	—		128.9 (5.07)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	—
Cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	1 300—1 600 kPa (13—16 kg/cm², 185—228 psi)		1 100 kPa (11 kg/cm², 156 psi)
Compression pressure difference	—		200 kPa (2 kg/cm², 28 psi)
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)		0.120 (0.0047)
Cylinder bore	83.000—83.015 (3.2677—3.2683)		83.085 (3.2711)
Piston diam.	82.950—82.965 (3.2657—3.2663) Measure at 15 mm (0.6 in) from the skirt end.		82.880 (3.2630)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st R	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd R	Approx. 11.8 (0.465)	9.4 (0.370)
Piston ring end gap	1st	0.20—0.35 (0.008—0.014)	0.70 (0.028)
	2nd	0.20—0.35 (0.008—0.014)	0.70 (0.028)
Piston ring groove clearance	1st	—	0.180 (0.007)
	2nd	—	0.150 (0.006)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01—1.03 (0.0398—0.0406)	———
	2nd	1.21—1.23 (0.0476—0.0484)	———
	Oil	2.51—2.53 (0.0988—0.0996)	———
Piston ring thickness	1st	0.970—0.990 (0.0382—0.0390)	———
	2nd	1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	20.002—20.008 (0.7875—0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996—20.000 (0.7827—0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010—20.018 (0.7878—0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10—0.20 (0.004—0.008)	0.30 (0.012)
Conrod big end width	21.95—22.00 (0.864—0.866)	———
Crank pin width	22.10—22.15 (0.870—0.872)	———
Conrod big end oil clearance	0.024—0.042 (0.0009—0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982—41.000 (1.6135—1.6142)	———
Crankshaft journal oil clearance	0.020—0.050 (0.0008—0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965—47.980 (1.8884—1.8890)	———
Crankshaft thrust bearing thickness	1.925—2.175 (0.0758—0.0856)	———
Crankshaft thrust clearance	0.05—0.10 (0.002—0.004)	———
Crankshaft runout	———	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 x 32/29)	———
Oil pressure (at 60°C,140°F)	Above 350 kPa (3.5 kg/cm², 50 psi) Below 650 kPa (6.5 kg/cm², 92 psi) at 3 000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92—3.08 (0.115—0.121)	2.62 (0.103)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.622—0.630)		15.0 (0.591)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		34.0 (1.34)
Clutch master cylinder bore	14.000—14.043 (0.5512—0.5529)		—
Clutch master cylinder piston diam.	13.957—13.984 (0.5495—0.5506)		—
Clutch release cylinder bore	38.100—38.162 (1.5000—1.5024)		—
Clutch release cylinder piston diam.	38.042—38.075 (1.4977—1.4990)		—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		—
Secondary reduction ratio		1.133 (30/30 x 17/15)		—
Final reduction ratio		3.090 (34/11)		—
Gear ratios	Low	2.285 (32/14)		—
	2nd	1.631 (31/19)		—
	3rd	1.227 (27/22)		—
	4th	1.000 (25/25)		—
	Top	0.851 (23/27)		—
Shift fork to groove clearance		No.1	0.10—0.30 (0.004—0.012)	0.50 (0.020)
		No.2	0.10—0.30 (0.004—0.012)	0.50 (0.020)
Shift fork groove width		No.1	5.50—5.60 (0.217—0.220)	—
		No.2	4.50—4.60 (0.177—0.181)	—
Shift fork thickness		No.1	5.30—5.40 (0.209—0.213)	—
		No.2	4.30—4.40 (0.169—0.173)	—

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.05—0.32 (0.002—0.013)		———
Final bevel gear backlash	Drive side	0.03—0.064 (0.001—0.025)	———

CARBURETOR

ITEM	SPECIFICATION	
	E-02,04,25,34,53	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E0	←
Idle r/min.	1100 ± 100 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#107.5	#95
Main air jet (M.A.J.)	1.8 mm	←
Jet needle (J.N.)	5F109-3rd	5C29-3rd
Needle jet (N.J.)	P-3	P-4
Throttle valve (Th.V.)	#115	←
Pilot jet (P.J.)	#42.5	#40
By-pass (B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet (P.O.)	0.8 mm	1.0 mm
Valve seat (V.S.)	1.5 mm	←
Starter jet (G.S.)	#25	#22.5
Pilot screw (P.S.)	(PRE-SET) 2.0 turns back	(PRE-SET) 1½ turns back
Pilot air jet (P.A.J.)	No.1:(#70), No.2:(2.0 mm)	No.1:(#65), No.2:(1.3 mm)
Throttle cable play	0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play	0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-03	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E1	←
Idle r/min.	1200 ± 50 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Main air jet (M.A.J.)	1.6 mm	←
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7	P-2
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
By-pass (B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet (P.O.)	0.8 mm	1.0 mm

ITEM		SPECIFICATION	
		E-03	
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET)	(PRE-SET)
Pilot air jet	(P.A.J.)	No.1:(#65), No.2:(1.95 mm)	No.1:(#65), No.2:(1.25 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-18	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E2	←
Idle r/min.		1200±50 r/min.	←
Float height		27.7±1.0 mm (1.09±0.04 in)	9.1±1.0 mm (0.36±0.04 in)
Main jet	(M.J.)	#107.5	#97.5
Main air jet	(M.A.J.)	1.8 mm	←
Jet needle	(J.N.)	5F107-3rd	5D48-3rd
Needle jet	(N.J.)	P-5	P-1
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#42.5	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET) 1-¼ turns back	(PRE-SET) 1-¾ turns back
Pilot air jet	(P.A.J.)	No.1:(#55), No.2:(1.45 mm)	No.1:(#65), No.2:(1.35 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-22	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E3	←
Idle r/min.		1100±100 r/min.	←
Float height		27.7±1.0 mm (1.09±0.04 in)	9.1±1.0 mm (0.36±0.04 in)
Main jet	(M.J.)	#107.5	#100
Main air jet	(M.A.J.)	1.8 mm	←
Jet needle	(J.N.)	5F109-3rd	5C29-3rd

ITEM		SPECIFICATION	
		E-22	
Needle jet	(N.J.)	P-3	P-4
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#45	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET) 1⅜ turns back	(PRE-SET) 1.0 turn back
Pilot air jet	(P.A.J.)	No.1:(#70), No.2:(2.0 mm)	No.1:(#65), No.2:(1.2 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-28	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E4	←
Idle r/min.		1200±100 r/min.	←
Float height		27.7±1.0 mm (1.09±0.04 in)	9.1±1.0 mm (0.36±0.04 in)
Main jet	(M.J.)	#132.5	#127.5
Main air jet	(M.A.J.)	1.6 mm	←
Jet needle	(J.N.)	5D61-3rd	5D48-3rd
Needle jet	(N.J.)	P-7	P-2
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	#45	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET) 1⅛ turns back	(PRE-SET) 1¼ turns back
Pilot air jet	(P.A.J.)	No.1:(#65), No.2:(1.95 mm)	No.1:(#65), No.2:(1.25 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-33	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E5	←
Idle r/min.	1200±50 r/min.	←

ITEM		SPECIFICATION	
		E-33	
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	# 132.5	# 127.5
Main air jet	(M.A.J.)	1.6 mm	←
Jet needle	(J.N.)	5D35-1st	5D47-1st
Needle jet	(N.J.)	P-7	P-2
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	#45	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET)	(PRE-SET)
Pilot air jet	(P.A.J.)	No.1:(#65), No.2:(1.95 mm)	No.1:(#65), No.2:(1.25 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-37	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E8	←
Idle r/min.		1100 ± 100 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#107.5	#95
Main air jet	(M.A.J.)	1.8 mm	←
Jet needle	(J.N.)	5F109-3rd	5C29-3rd
Needle jet	(N.J.)	P-3	P-4
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#42.5	#40
By-pass	(B.P.)	0.8 mm x 2PCS	0.8 mm x 3PCS
Pilot outlet	(P.O.)	0.8 mm	1.0 mm
Valve seat	(V.S.)	1.5 mm	←
Starter jet	(G.S.)	#25	#22.5
Pilot screw	(P.S.)	(PRE-SET) 2.0 turns back	(PRE-SET) 1½ turns back
Pilot air jet	(P.A.J.)	No.1:(#70), No.2:(2.0 mm)	No.1:(#65), No.2:(1.3 mm)
Throttle cable play		0.5—1.0 mm (0.02—0.04 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Ignition timing		5° B.T.D.C. Below 1 650 r/min. and 30° B.T.D.C. Above 3 500 r/min.		
Firing order		1-2		
Spark plug		Type	N.G.K.: DPR8EA-9 ND: X24EPR-U9	
		Gap	0.8—0.9 (0.031—0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx. 50—200 Ω (G—Bl)		
Ignition coil resistance		Primary	2—6 Ω	⊕ tap—⊖ tap
		Secondary	15—40 kΩ	Plug cap—⊕ tap
Generator no-load voltage (When engine cold)		More than 65V (AC) at 5 000 r/min.		
Regulated voltage		13.5—15.5 V at 5 000 r/min.		
Starter motor brush length		Limit: 9 (0.35)		N.D.
Commutator under-cut		Limit: 0.2 (0.008)		
Starter relay resistance		2—6 Ω		
Battery		Type designation	YB16B-A1	
		Capacity	12V57.6kC (16Ah)/10HR	
		Standard electrolyte S.G.	1.28 at 20°C (68°F)	
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Main	25 A		
	Power source	10 A		

WATTAGE

Unit:W

ITEM		SPECIFICATION	
		E-03,28,33	The others
Headlight	HI	60	←
	LO	55	←
Parking light			4
Tail/Brake light		5/21	←
Turn signal light		5/21 (Front), 21 (Rear)	21
Speedometer light		3.4	←
Water temp. meter light		3	←
Turn signal indicator light		3	←
High beam indicator light		1.7	←
Neutral indicator light		3	←
Oil pressure indicator light		3	←
License light		8	5

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20—30 (0.8—1.2)		—
Rear brake pedal height	40 (1.6)		—
Brake lining thickness	Rear	—	1.5 (0.056)
Brake drum I.D.	Rear	—	180.7 (7.11)
Brake disc thickness	Front	5.0±0.2 (0.20±0.01)	4.5 (0.18)
Brake disc runout	—		0.30 (0.012)
Master cylinder bore	Front	12.700—12.743 (0.5000—0.5017)	—
Master cylinder piston diam.	Front	12.657—12.684 (0.4983—0.4993)	—
Brake caliper cylinder bore	Front	42.850—42.926 (1.6870—1.6900)	—
Brake caliper piston diam.	Front	42.770—42.820 (1.6839—1.6858)	—
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)
Tire size	Front	80/90-21 48H	—
	Rear	140/90-15 M/C 70H	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	—	
Front fork spring free length	—	348.3 (13.71)	
Front fork oil level	124.3 (4.89)	—	
Rear wheel travel	90 (3.5)	—	
Swingarm pivot shaft runout	—	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

FUEL + OIL + COOLANT

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		U.S.A. model
	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$ method) or 91 octane or higher rated by the Research Method.		Canada model
	Gasoline used should be graded 85-95 octane or higher. An unleaded gasoline is recommended.		Other models
Fuel tank including reserve	11.0 L (2.9/2.4 US/Imp gal)		California model only
	12.0 L (3.2/2.6 US/Imp gal)		Other models
reserve	3.0 L (0.8/0.7 US/Imp gal)		
Engine oil type	SAE 10W/40, API SE or SF		
Engine oil capacity	Change	2 400 ml (2.5/2.1 US/Imp qt)	
	Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
	Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	413 ml (14.0/14.5 US/Imp oz)		
Final bevel gear oil type	SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity	200–220 ml (6.8/7.0–7.4/7.7 US/Imp oz)		
Brake fluid type	DOT4		
Coolant capacity	1 700 ml (1.8/1.5 US/Imp qt)		

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	———
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	———
Radiator cap valve release pressure		1.1 ± 0.15 kg/cm² (15.6 ± 2.1 psi, 110 ± 15 kPa)	———
Electric fan thermo-switch operating temperature	ON	Approx. 105°C (221°F)	———
	OFF	Approx. 100°C (212°F)	———

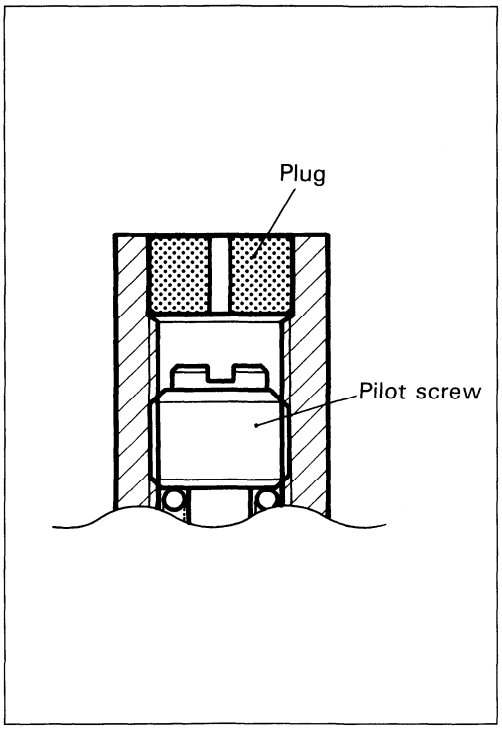
CARBURETOR

PILOT SCREW REMOVAL AND INSTALLATION

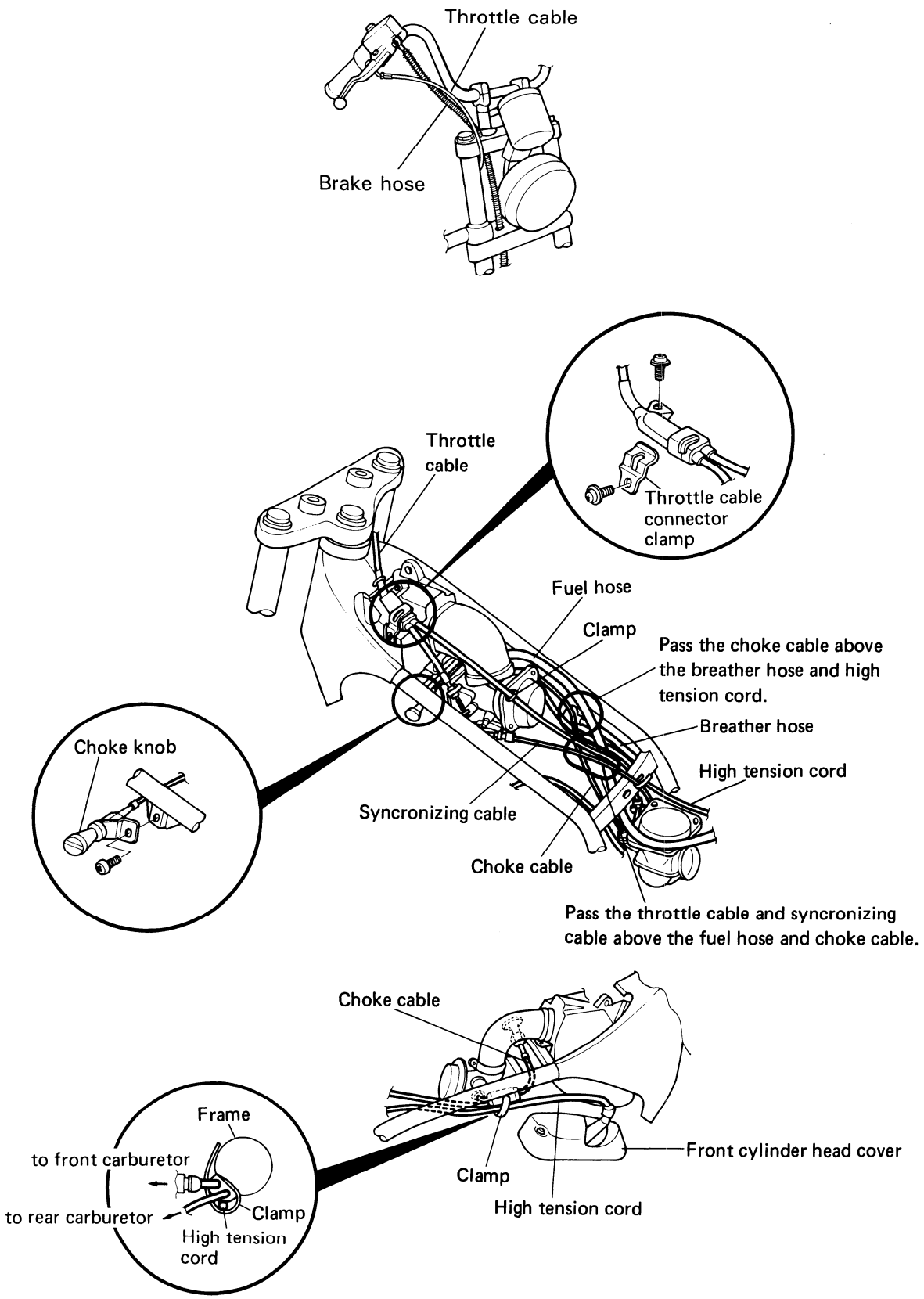
- Remove the plug by carefully punching a hole in it using an awl or suitable tool.
- Before removing the pilot screw, determine the setting by slowly turning it clockwise and count the number of turns required to lightly seat the screw. Turn the screw counterclockwise to remove it.

NOTE:
This counted number is important when reassembling pilot screw to original position.

- When installing the pilot screw, turn it in fully but not tightly. From that position turn it out the same number as counted during removal.
- Install the new plug in the pilot screw hole.



CABLE ROUTING



VS800GLT/V ('96/'97-MODEL)

This section describes service data and servicing procedures which differ from those of the VS800GLS ('95-MODEL).

NOTE:

* *Any differences between VS800GLS ('95-MODEL) and VS800GLT ('96-MODEL) in specifications and service data are clearly indicated with the asterisk marks (*).*
* *Please refer to the sections 1 through 18 for details which are not given in this section.*

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SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2280 mm (89.8 in) E18
	2255 mm (88.8 in) . . . . . Others
Overall width	770 mm (30.3 in)
Overall height	1215 mm (47.8 in)
Wheelbase	1560 mm (61.4 in)
Ground clearance	125 mm (4.9 in)
Seat height	*700 mm (27.6 in)
Dry mass	202 kg (445 lbs) E33
	201 kg (443 lbs) . . . . . Others

ENGINE

Type	Four-stroke, liquid-cooled, OHC, TSCC, 45° V-twin
Valve clearance (IN & EX)	0.08—0.13 mm (0.003—0.005 in)
Number of cylinders	2
Bore	83.0 mm (3.268 in)
Stroke	74.4 mm (2.929 in)
Piston displacement	805 cm³ (49.1 in)
Compression ratio	10.0 : 1
Carburetor, front	BDS36, single
rear	BS36, single
Air cleaner	Non-woven fabric element
Starter system	Electric starter motor
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	1.690 (71/42)
Gear ratios, Low	2.285 (32/14)
2nd	1.631 (31/19)
3rd	1.227 (27/22)
4th	1.000 (25/25)
Top	0.851 (23/27)
Secondary reduction ratio	1.133 (30/30 x 17/15)
Final reduction ratio	3.090 (34/11)
Drive system	Shaft drive

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Swingarm, coil spring, oil damped, spring preload 5-way adjustable
Front suspension stroke	130 mm (5.1 in)
Rear wheel travel	90 mm (3.5 in)
Caster	56° 45′
Trail	145 mm (5.71 in)
Steering angle	40° (right & left)
Turning radius	2.9 m (9.5 ft)
Front brake	Disk brake, hydraulically operated
Rear brake	Internal expanding, mechanically operated
Front tire size	80/90-21 48H
Rear tire size	140/90-15 M/C 70H

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	5° B.T.D.C. below 1650 r/min and 30° B.T.D.C. above 3500 r/min
Spark plug	NGK DPR8EA-9 or NIPPONDENSO X24EPR-U9
Battery	12V 57.6 kC (16 Ah)/10HR
Fuse	25/10/10/10/10A
Headlight	12V 60/55W
Parking or city light	12V 4W . . . . . except E03,28,33
Turn signal light	12V 21W
Running light (in front turn signal)	12V 5W . . . . . E03,28,33 only
Tail/Brake light	12V 5/21W
License plate light	12V 8W E03,28,33
	12V 5W . . . . . Others
Neutral indicator light	12V 3W (T-MODEL), 12V 1.7W (V-MODEL)
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 3W
Oil pressure indicator light	12V 3W (T-MODEL), 12V 1.7W (V-MODEL)
Coolant temperature check light	12V 3W (T-MODEL), 12V 1.7W (V-MODEL)

CAPACITIES

Fuel tank, including reserve	11.0 L (2.9/2.4 US/Imp. gal) E33
	12.0 L (3.2/2.6 US/Imp. gal) . . . . . Others
Reserve	3.0 L (0.8/0.7 US/Imp. gal)
Engine oil, change	2400 ml (2.5/2.1 US/Imp. qt)
with filter change	2800 ml (3.0/2.5 US/Imp. qt)
overhaul	3300 ml (3.5/2.9 US/Imp. qt)
Final gear oil	200—220 ml (6.8/7.0—7.4/7.7 US/Imp. oz)
Coolant (including reserve)	1700 ml (1.8/1.5 US/Imp. qt)
Front fork oil (each leg)	418 ml (14.1/14.7 US/Imp. oz)

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	—
	EX.	26 (1.02)	—
Valve lift	IN.	8.5 (0.33)	—
	EX.	8.5 (0.33)	—
Valve clearance (when cold)	IN. & EX.	0.08—0.13 (0.003—0.005)	—
Valve guide to valve stem clearance	IN.	*0.010—0.037 (0.0004—0.0015)	—
	EX.	*0.030—0.057 (0.0012—0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	—
Valve stem O.D.	IN.	*5.475—5.490 (0.2156—0.2161)	—
	EX.	*5.455—5.470 (0.2148—0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	4.0 (0.16)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length	INNER	—	38.3 (1.51)
	OUTER	—	40.1 (1.58)
Valve spring tension	INNER	6.51—7.49 kg (14.35—16.51 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	12.09—13.91 kg (26.65—30.67 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954—35.994 (1.4155—1.4171)	35.660 (1.4039)
	EX.	36.919—36.959 (1.4535—1.4551)	36.620 (1.4417)

ITEM	STANDARD		LIMIT
Camshaft journal oil clearance	0.032—0.066 (0.0013—0.0026)		0.150 (0.0059)
Camshaft journal holder I.D.	No.1 Left side No.2 Right side	20.012—20.025 (0.7879—0.7884)	—
	No.1 Right side No.2 Left side	25.012—25.025 (0.9847—0.9852)	—
Camshaft journal O.D.	No.1 Left side No.2 Right side	19.959—19.980 (0.7858—0.7866)	—
	No.1 Right side No.2 Left side	24.959—24.980 (0.9826—0.9835)	—
Camshaft runout	—		0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	—
Cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	1 300—1 600 kPa (13—16 kg/cm², 185—228 psi)			1 100 kPa (11 kg/cm², 156 psi)
Compression pressure difference	—			200 kPa (2 kg/cm², 28 psi)
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)			0.120 (0.0047)
Cylinder bore	83.000—83.015 (3.2677—3.2683)			83.085 (3.2711)
Piston diam.	82.950—82.965 (3.2657—3.2663) Measure at 15 mm (0.6 in) from the skirt end.			82.880 (3.2630)
Cylinder distortion	—			0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd	R	Approx. 11.8 (0.465)	9.4 (0.370)
Piston ring end gap	1st		0.20—0.35 (0.008—0.014)	0.70 (0.028)
	2nd		0.20—0.35 (0.008—0.014)	0.70 (0.028)
Piston ring groove clearance	1st		—	0.180 (0.007)
	2nd		—	0.150 (0.006)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01—1.03 (0.0398—0.0406)	———
	2nd	1.21—1.23 (0.0476—0.0484)	———
	Oil	2.51—2.53 (0.0988—0.0996)	———
Piston ring thickness	1st	0.970—0.990 (0.0382—0.0390)	———
	2nd	1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	20.002—20.008 (0.7875—0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996—20.000 (0.7827—0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010—20.018 (0.7878—0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10—0.20 (0.004—0.008)	0.30 (0.012)
Conrod big end width	21.95—22.00 (0.864—0.866)	———
Crank pin width	22.10—22.15 (0.870—0.872)	———
Conrod big end oil clearance	0.024—0.042 (0.0009—0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982—41.000 (1.6135—1.6142)	———
Crankshaft journal oil clearance	0.020—0.050 (0.0008—0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965—47.980 (1.8884—1.8890)	———
Crankshaft thrust bearing thickness	1.925—2.175 (0.0758—0.0856)	———
Crankshaft thrust clearance	0.05—0.10 (0.002—0.004)	———
Crankshaft runout	———	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 x 32/29)	———
Oil pressure (at 60°C,140°F)	Above 350 kPa (3.5 kg/cm², 50 psi) Below 650 kPa (6.5 kg/cm², 92 psi) at 3 000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92—3.08 (0.115—0.121)	2.62 (0.103)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.622—0.630)		15.0 (0.591)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		34.0 (1.34)
Clutch master cylinder bore	14.000—14.043 (0.5512—0.5529)		—
Clutch master cylinder piston diam.	13.957—13.984 (0.5495—0.5506)		—
Clutch release cylinder bore	38.100—38.162 (1.5000—1.5024)		—
Clutch release cylinder piston diam.	38.042—38.075 (1.4977—1.4990)		—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		—
Secondary reduction ratio		1.133 (30/30 x 17/15)		—
Final reduction ratio		3.090 (34/11)		—
Gear ratios	Low	2.285 (32/14)		—
	2nd	1.631 (31/19)		—
	3rd	1.227 (27/22)		—
	4th	1.000 (25/25)		—
	Top	0.851 (23/27)		—
Shift fork to groove clearance		No.1	0.10—0.30 (0.004—0.012)	0.50 (0.020)
		No.2	0.10—0.30 (0.004—0.012)	0.50 (0.020)
Shift fork groove width		No.1	5.50—5.60 (0.217—0.220)	—
		No.2	4.50—4.60 (0.177—0.181)	—
Shift fork thickness		No.1	5.30—5.40 (0.209—0.213)	—
		No.2	4.30—4.40 (0.169—0.173)	—

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.05—0.32 (0.002—0.013)		———
Final bevel gear backlash	Drive side	0.03—0.064 (0.001—0.025)	———

CARBURETOR

ITEM	SPECIFICATION	
	E-02,04,25,34,53	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	*38E9	*←
Idle r/min.	1100 ± 100 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#107.5	#95
Jet needle (J.N.)	5F109-3rd	5C29-3rd
Needle jet (N.J.)	P-3	P-4
Throttle valve (Th.V.)	#115	←
Pilot jet (P.J.)	#42.5	#40
Pilot screw (P.S.)	*(PRE-SET) 1¾ turns back	*(PRE-SET) 1¼ turns back
Throttle cable play	3—6 mm (0.12—0.24 in)	←
Choke cable play	0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-03	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E1	←
Idle r/min.	1200 ± 50 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7M	P-2M
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play	3—6 mm (0.12—0.24 in)	←
Choke cable play	0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-18	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E2	←
Idle r/min.		1200 ± 50 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#107.5	#97.5
Jet needle	(J.N.)	5F107-3rd	5D48-3rd
Needle jet	(N.J.)	P-5	P-1
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#42.5	#40
Pilot screw	(P.S.)	(PRE-SET) 1¼ turns back	(PRE-SET) 1¾ turns back
Throttle cable play		3—6 mm (0.12—0.24 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-17,22	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		*38EA	*←
Idle r/min.		1100 ± 100 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#107.5	#100
Jet needle	(J.N.)	5F109-3rd	5C29-3rd
Needle jet	(N.J.)	P-3	P-4
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#45	#40
Pilot screw	(P.S.)	*(PRE-SET) 1½ turns back	*(PRE-SET) 1⅝ turns back
Throttle cable play		3—6 mm (0.12—0.24 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-28	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E4	←
Idle r/min.		1200 ± 100 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#132.5	#127.5
Jet needle	(J.N.)	5D61-3rd	5D48-3rd
Needle jet	(N.J.)	P-7	P-2
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	#45	#40
Pilot screw	(P.S.)	(PRE-SET) 1⅛ turns back	(PRE-SET) 1¼ turns back
Throttle cable play		3—6 mm (0.12—0.24 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-33	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E5	←
Idle r/min.		1200 ± 50 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#132.5	#127.5
Jet needle	(J.N.)	5D35-1st	5D47-1st
Needle jet	(N.J.)	P-7M	P-2M
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	#45	#40
Pilot screw	(P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play		3—6 mm (0.12—0.24 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-37	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		*38EB	*←
Idle r/min.		1100 ± 100 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#107.5	#95
Jet needle	(J.N.)	5F109-3rd	5C29-3rd
Needle jet	(N.J.)	P-3	P-4
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#42.5	#40
Pilot screw	(P.S.)	(PRE-SET) 2.0 turns back	(PRE-SET) 1½ turns back
Throttle cable play		3—6 mm (0.12—0.24 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Ignition timing		5° B.T.D.C. Below 1 650 r/min. and 30° B.T.D.C. Above 3 500 r/min.		
Firing order		1-2		
Spark plug		Type	N.G.K.: DPR8EA-9 ND: X24EPR-U9	
		Gap	0.8—0.9 (0.031—0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx. 50—200 Ω (G—Bl)		
Ignition coil resistance		Primary	2—6 Ω	⊕ tap—⊖ tap
		Secondary	15—40 kΩ	Plug cap—⊕ tap
Generator no-load voltage (When engine cold)		*More than 75V (AC) at 5 000 r/min.		
Regulated voltage		13.5—15.5 V at 5 000 r/min.		
Starter motor brush length		Limit: 9 (0.35)		N.D.
Commutator under-cut		Limit: 0.2 (0.008)		
Starter relay resistance		2—6 Ω		
Battery		Type designation	YB16B-A1	
		Capacity	12V57.6kC (16Ah)/10HR	
		Standard electrolyte S.G.	1.28 at 20°C (68°F)	
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Main	25 A		
	Power source	10 A		

WATTAGE

Unit:W

ITEM		SPECIFICATION		
		E-03,28,33 (T-MODEL)	E-03,28,33 (V-MODEL)	The others
Headlight	HI	60	←	←
	LO	55	←	←
Parking light				4
Tail/Brake light		5/21	←	←
Turn signal light		5/21 (Front), 21 (Rear)	←	21
Speedometer light		3.4	←	←
Water temp. meter light		3	1.7	3
Turn signal indicator light		3	←	←
High beam indicator light		1.7	←	←
Neutral indicator light		3	1.7	3
Oil pressure indicator light		3	1.7	3
License light		8	←	5

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20—30 (0.8—1.2)		———
Rear brake pedal height	40 (1.6)		———
Brake lining thickness	Rear	———	1.5 (0.056)
Brake drum I.D.	Rear	———	180.7 (7.11)
Brake disc thickness	Front	5.0±0.2 (0.20±0.01)	4.5 (0.18)
Brake disc runout	———		0.30 (0.012)
Master cylinder bore	Front	12.700—12.743 (0.5000—0.5017)	———
Master cylinder piston diam.	Front	12.657—12.684 (0.4983—0.4993)	———
Brake caliper cylinder bore	Front	42.850—42.926 (1.6870—1.6900)	———
Brake caliper piston diam.	Front	42.770—42.820 (1.6839—1.6858)	———
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axle runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Wheel rim size	Front	J21 × 2.15	———
	Rear	J15M/C × MT3.00	———

ITEM	STANDARD		LIMIT
Tire size	Front	80/90-21 48H	———
	Rear	140/90-15 M/C 70H	———
Tire tread depth	Front	———	1.6 (0.06)
	Rear	———	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	———	
Front fork spring free length	———	348.3 (13.71)	
Front fork oil level	124.3 (4.89)	———	
Rear wheel travel	90 (3.5)	———	
Swingarm pivot shaft runout	———	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

FUEL + OIL + COOLANT

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		U.S.A. model
	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$ method) or 91 octane or higher rated by the Research Method.		Canada model
	Gasoline used should be graded 85-95 octane or higher. An unleaded gasoline is recommended.		Other models
Fuel tank including reserve	11.0 L (2.9/2.4 US/Imp gal)		California model only
	12.0 L (3.2/2.6 US/Imp gal)		Other models
reserve	3.0 L (0.8/0.7 US/Imp gal)		
Engine oil type	SAE 10W/40, API SE, SF or SG		
Engine oil capacity	Change	2 400 ml (2.5/2.1 US/Imp qt)	
	Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
	Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	413 ml (14.0/14.5 US/Imp oz)		
Final bevel gear oil type	SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity	200—220 ml (6.8/7.0—7.4/7.7 US/Imp oz)		
Brake fluid type	DOT4		
Coolant capacity	1 700 ml (1.8/1.5 US/Imp qt)		

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	———
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	———
Radiator cap valve release pressure		1.1 ± 0.15 kg/cm² (15.6 ± 2.1 psi, 110 ± 15 kPa)	———
Electric fan thermo-switch operating temperature	ON	Approx. 105°C (221°F)	———
	OFF	Approx. 100°C (212°F)	———

TIGHTENING TORQUE

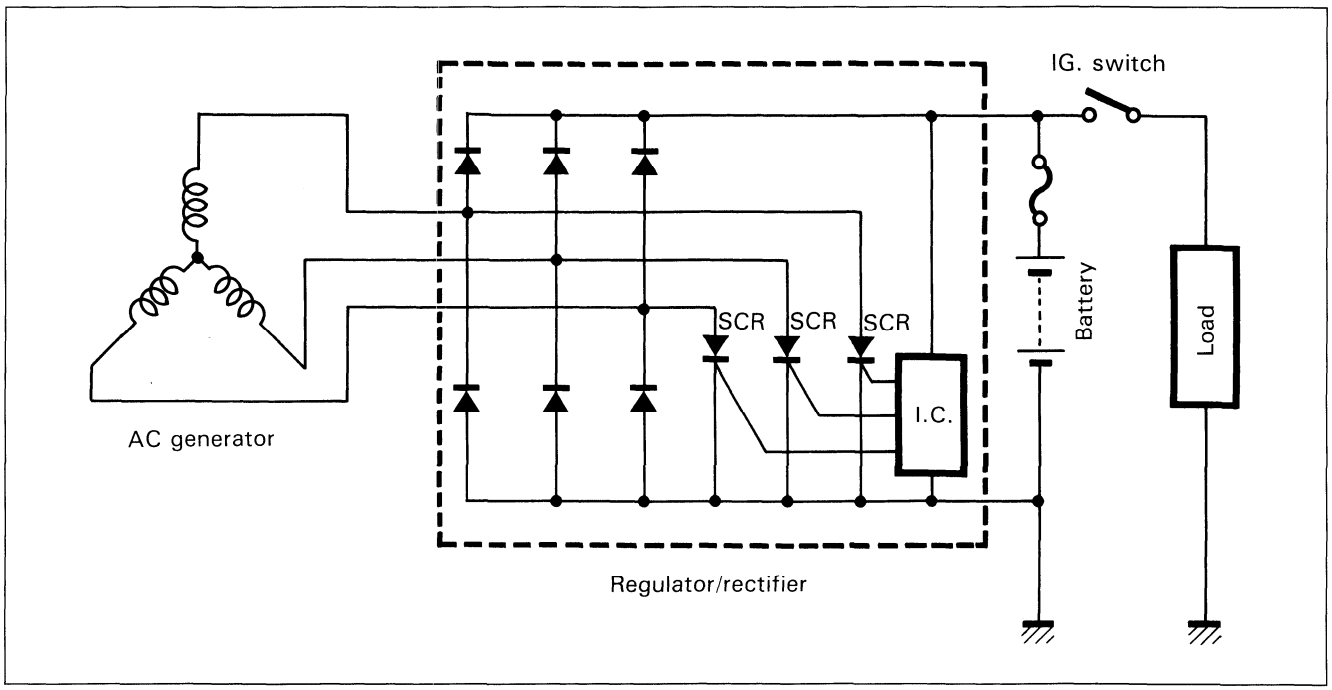
CHASSIS

ITEM	N·m	kg-m	lb-ft
Steering stem head nut	80	8.0	58.0
Front fork cap bolt	80	8.0	58.0
Front fork lower clamp bolt	29	2.9	21.0
Handlebar clamp bolt	23	2.3	16.5
Handlebar holder nut	*90	*9.0	*65.0
Front fork damper rod bolt	20	2.0	14.5
Front axle	44	4.4	32.0
Front axle clamp bolt	23	2.3	16.5
Front master cylinder mounting bolt	10	1.0	7.0
Brake hose union bolt	23	2.3	16.5
Caliper mounting bolt	35	3.5	25.5
Caliper housing bolt	18	1.8	13.0
Caliper air bleeder valve	7.5	0.75	5.5
Disc plate bolt	23	2.3	16.5
Hub flange bolt	25	2.5	18.0
Spoke nipple	4.5	0.45	3.5
Clutch master cylinder mounting bolt	6.5	0.65	4.5
Rear shock absorber fitting nut (upper and lower)	29	2.9	21.0
Rear axle nut	78	7.8	56.5
Rear brake cam lever bolt	10	1.0	7.0
Rear torque link nut (front and rear)	29	2.9	21.0
Final gear case joint nut	40	4.0	29.0
Rear wheel driven joint bolt	10	1.0	7.0
Rear swingarm pivot nut	96	9.6	69.5
Front footrest bolt	23	2.3	16.5
Rear hub shock absorber bolt	95	9.5	68.5

CHARGING SYSTEM

DESCRIPTION

The circuit of the charging system is indicated in the figure, which is composed of the AC generator (Y-connection), regulator/rectifier unit and battery.
The AC (Alternating Current) generated from the AC generator is rectified by the rectifier and is turned into DC (Direct Current), then it charges the battery.

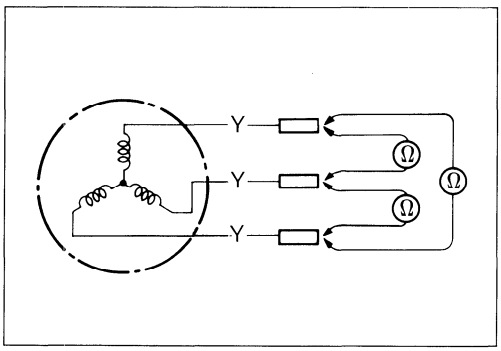


FUNCTION OF REGULATOR

The regulator/rectifier function in the same principles of the '95(S)-model.

INSPECTION

GENERATOR COIL CONTINUITY INSPECTION



- Remove the frame cover and seat.
- Disconnect the generator couplers.

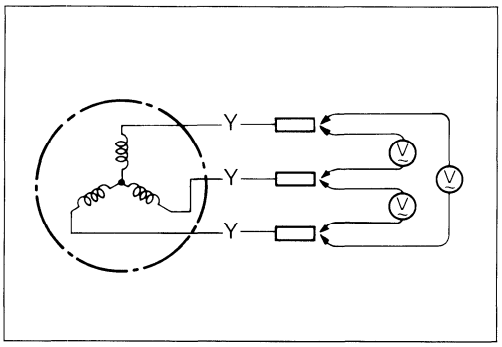
Using a pocket tester, inspect the continuity between the three lead wires.
Also check that the stator core is insulated.
If there is no continuity, replace the stator with a new one.

09900-25002: Pocket tester

Tester knob indication: x 1Ω range

NOTE:
When making above test, it is not necessary to remove the AC generator.

GENERATOR NO-LOAD PERFORMANCE INSPECTION



- Start the engine and keep it running at 5 000 r/min.

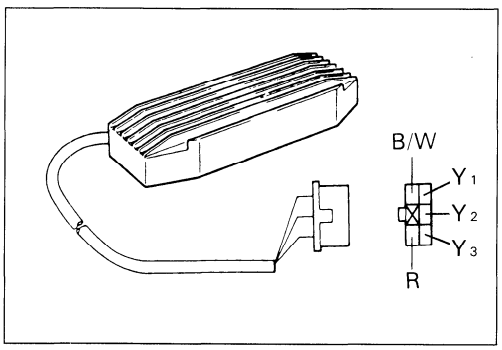
Using a pocket tester, measure the voltage between the three lead wires.
If the tester reads under the specified value, replace the AC generator with a new one.

09900-25002: Pocket tester

Tester knob indication: AC250V

Generator no-load performance:
More than 75V at 5 000 r/min
(When engine is cold)

REGULATOR/RECTIFIER INSPECTION



- Remove the frame cover, seat and rear seat.
- Disconnect the regulator/rectifier coupler.

Using a pocket tester, measure the resistance between the lead wires in the following table.
If resistance is incorrect, replace the regulator/rectifier.

09900-25002: Pocket tester

Tester knob indication: x 1kΩ range

Unit: kΩ

⊖ Probe of tester to: \ ⊕ Probe of tester to:	R	B/W	Y_1	Y_2	Y_3
R		∞	∞	∞	∞
B/W	1—20		1—10	1—10	1—10
Y_1	1—10	∞		∞	∞
Y_2	1—10	∞	∞		∞
Y_3	1—10	∞	∞	∞	

Y: Yellow, R: Red, B/W: Black with White tracer, ∞: Infinity

NOTE:
As diodes, thyristors are used inside this regulator/rectifier, the resistance values will differ when an ohmmeter other than the SUZUKI pocket tester is used.

IGNITOR UNIT INSPECTION

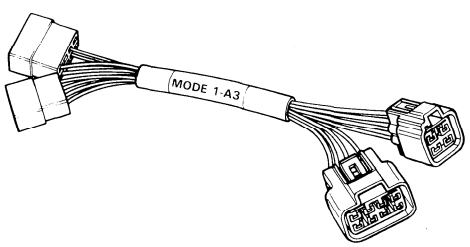
CHECKING WITH DIGITAL IGNITOR CHECKER

Check the ignitor unit with the special tools as shown below.

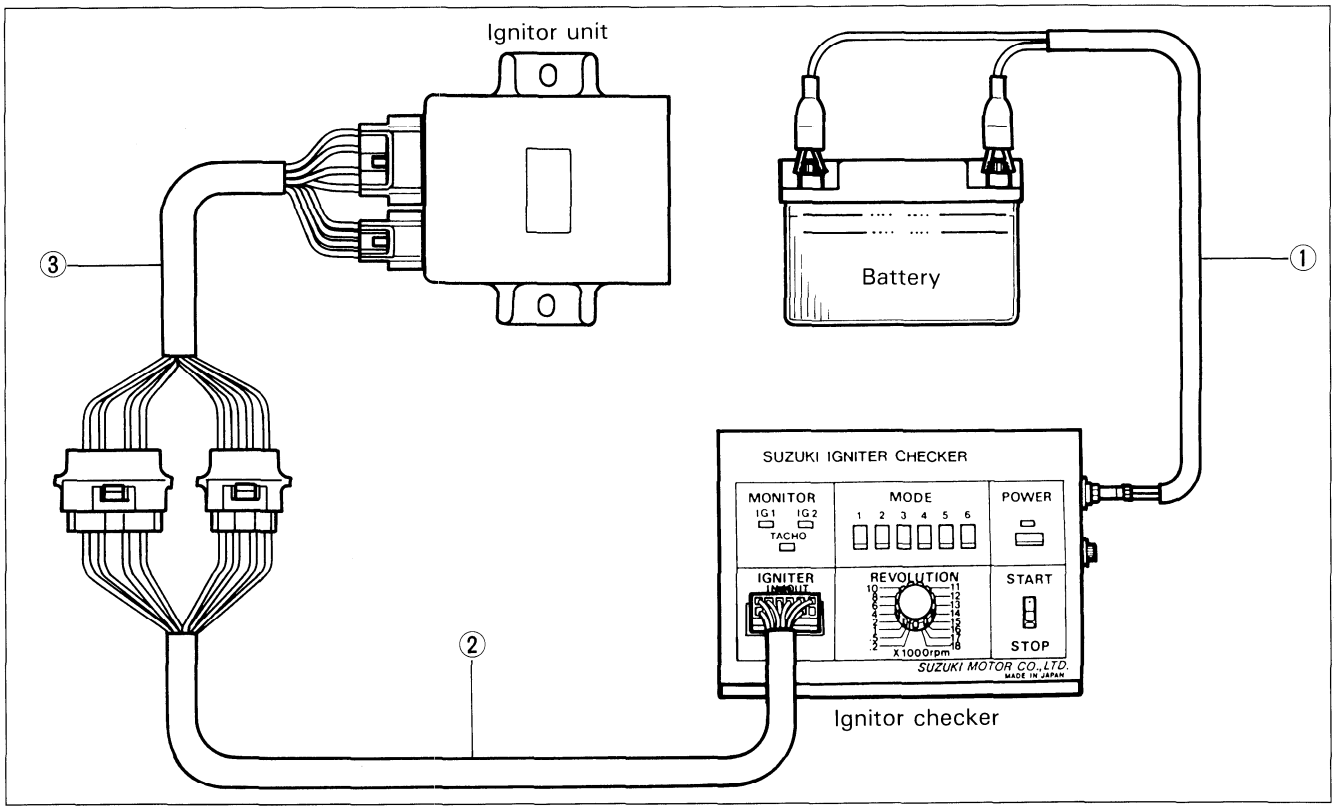
TOOL 09931-94490: Digital ignitor checker
***09931-61740: Lead wire "MODE 1-A3"**

NOTE:
**Asterisk mark indicates the new special tool.*

New Special Tool



(Lead wire "MODE 1-A3")



WIRING PROCEDURE:

- Remove the frame cover, seat and rear seat.
- Disconnect two ignitor lead wire couplers from the ignitor unit.
- Connect the power source lead wire ①, lead wire "MODE 1-A" ② and lead wire "MODE 1-A3" ③ as shown in the previous illustration.

⚠ CAUTION

*** Do not use the battery equipped on the motorcycle.**
*** Be sure to connect the black lead to the battery ⊖ terminal and red lead to the ⊕ terminal.**
*** Make sure "START" switch is in "off" position before connecting the power source lead wires.**

NOTE:
When making this test, be sure that the battery is fully-charged condition.

CHECK PROCEDURE:

With all the lead wires properly connected, check the ignitor unit in the same manner of the '95 (S)-model.

SPEEDOMETER AND INSTRUMENT PANEL

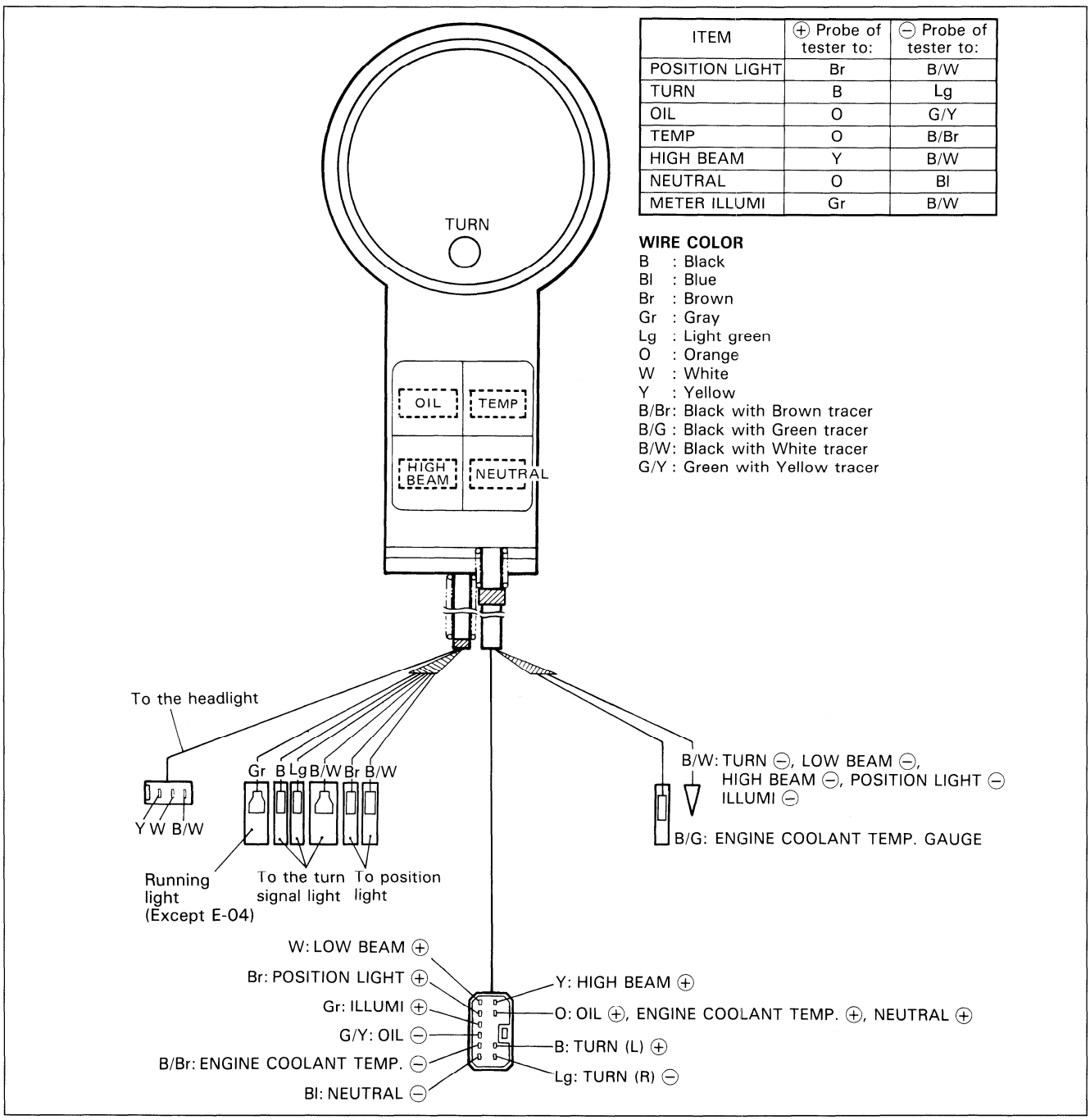
INSPECTION

Using the pocket tester, check the continuity between lead wires in the diagram.
If the continuity measured is incorrect, replace the respective parts.

TOOL 09900-25002: Pocket tester

Tester knob indication: x 1Ω range

NOTE:
When making this test, it is not necessary to remove the speedometer.

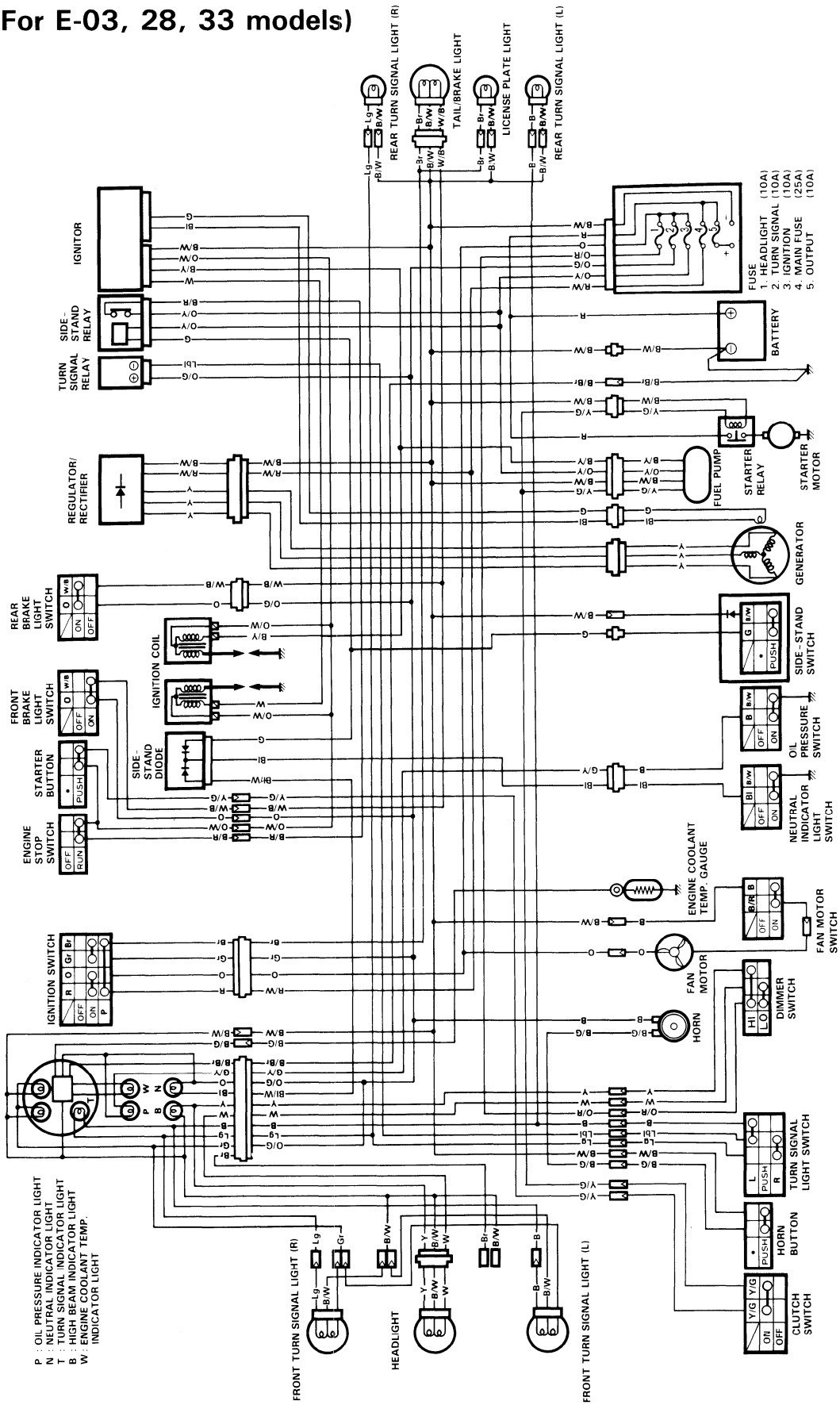


ITEM	⊕ Probe of tester to:	⊖ Probe of tester to:
POSITION LIGHT	Br	B/W
TURN	B	Lg
OIL	O	G/Y
TEMP	O	B/Br
HIGH BEAM	Y	B/W
NEUTRAL	O	Bl
METER ILLUMI	Gr	B/W

WIRE COLOR
B : Black
Bl : Blue
Br : Brown
Gr : Gray
Lg : Light green
O : Orange
W : White
Y : Yellow
B/Br: Black with Brown tracer
B/G : Black with Green tracer
B/W: Black with White tracer
G/Y : Green with Yellow tracer

WIRING DIAGRAM

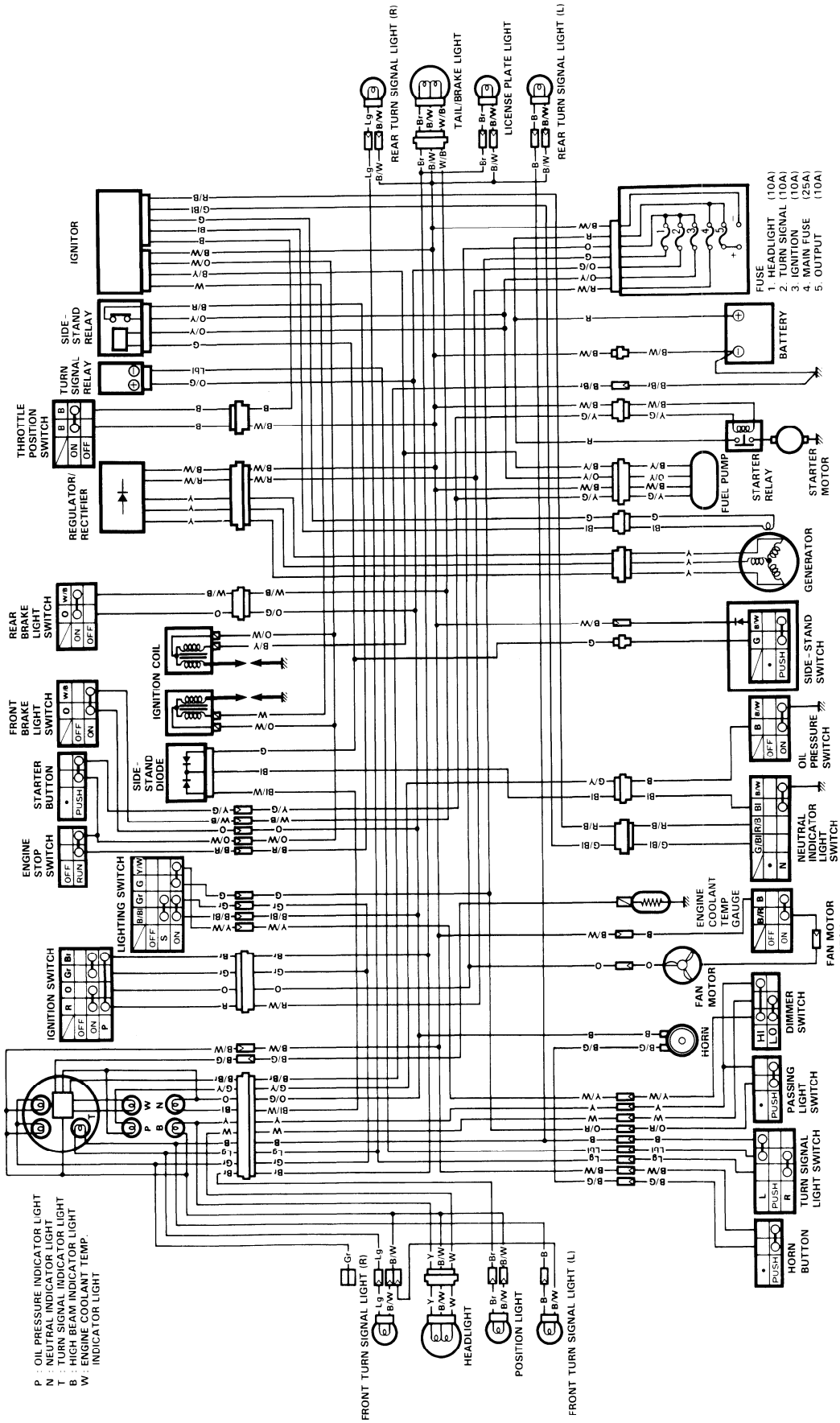
(For E-03, 28, 33 models)



WIRE COLOR

B : Black	O : Orange	B/R : Black with Red tracer	O/R : Orange with Red tracer
Bl : Blue	R : Red	B/W : Black with White tracer	O/Y : Orange with Yellow tracer
Br : Brown	Y : Yellow	B/Y : Black with Yellow tracer	O/W : Orange with White tracer
G : Green	W : White	Bl/W : Blue with White tracer	R/W : Red with White tracer
Gr : Gray	B/Bl : Black with Blue tracer	G/Y : Green with Yellow tracer	Y/G : Yellow with Green tracer
Lbl : Light blue	B/Br : Black with Brown tracer	O/B : Orange with Black tracer	Y/W : Yellow with White tracer
Lg : Light green	B/G : Black with Green tracer	O/G : Orange with Green tracer	W/B : White with Black tracer

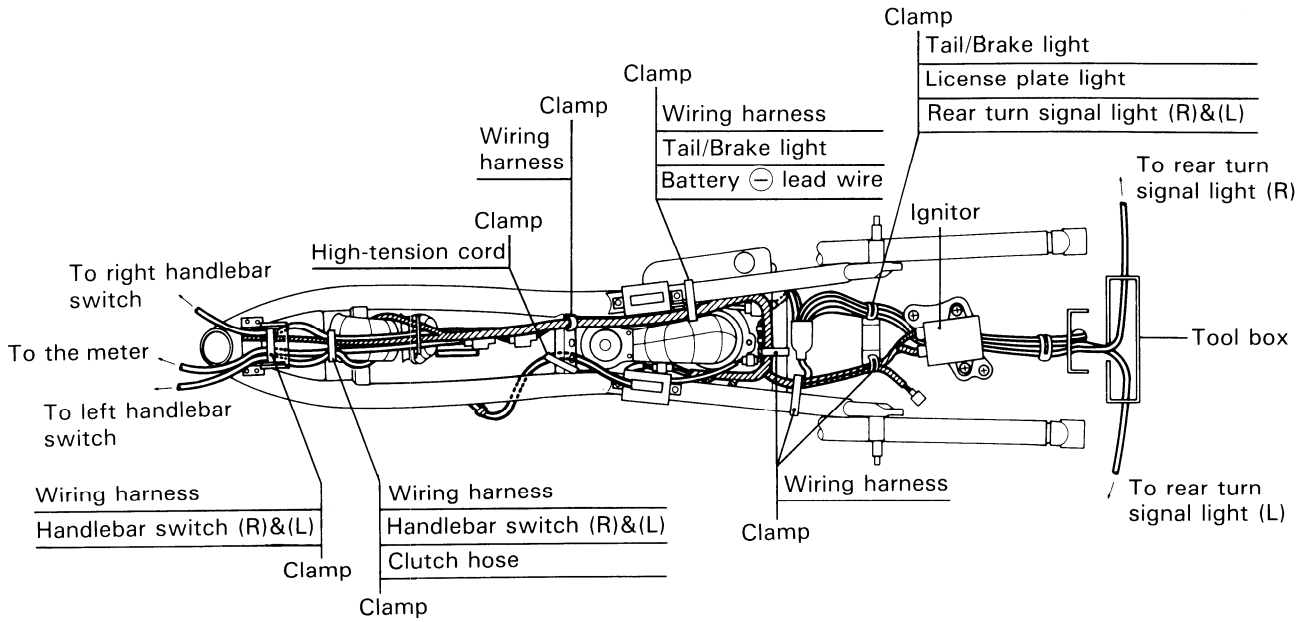
(For the others)

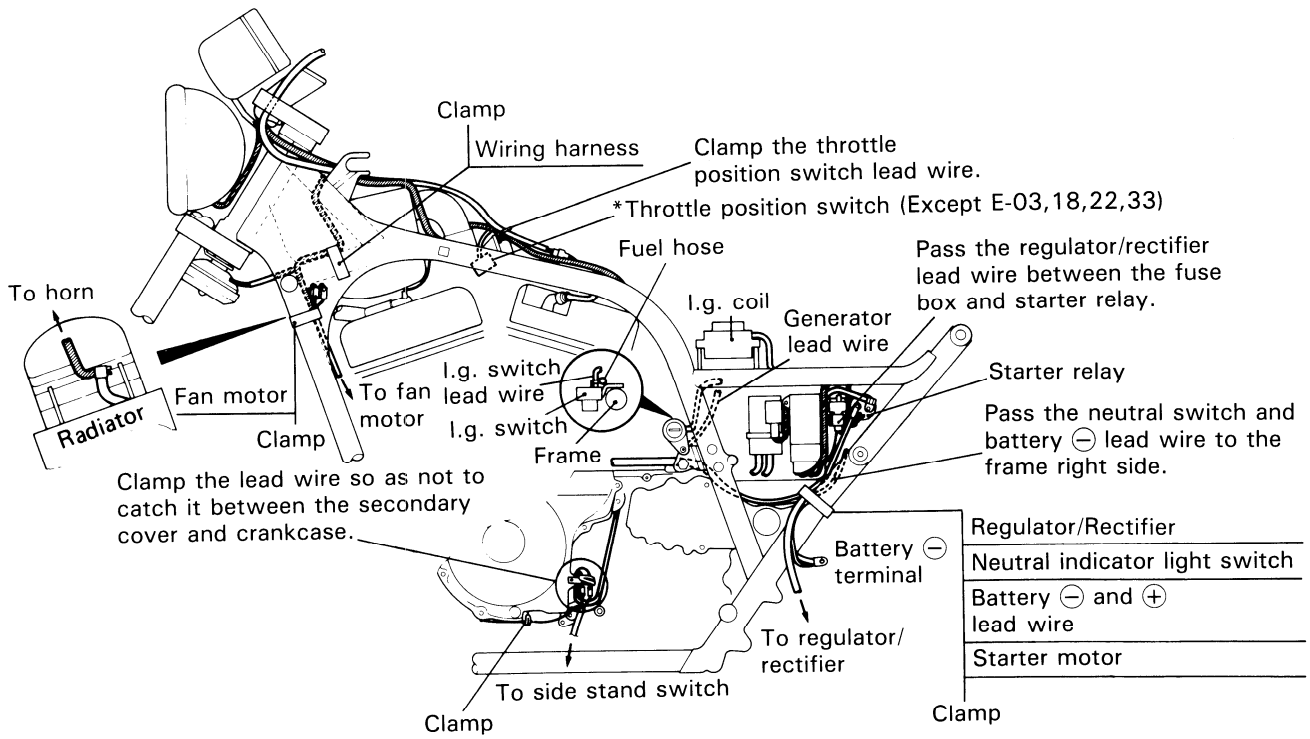


WIRE COLOR

B	: Black	R	: Red		
Bl	: Blue	Y	: Yellow	B/Y	: Black with Yellow tracer
Br	: Brown	W	: White	Bl/W	: Blue with White tracer
G	: Green	B/Bl	: Black with Blue tracer	G/Y	: Green with Yellow tracer
Gr	: Gray	B/Br	: Black with Brown tracer	G/Bl	: Green with Blue tracer
Lbl	: Light blue	B/G	: Black with Green tracer	O/B	: Orange with Black tracer
Lg	: Light green	B/R	: Black with Red tracer	O/G	: Orange with Green tracer
O	: Orange	B/W	: Black with White tracer	O/R	: Orange with Red tracer
				O/Y	: Orange with Yellow tracer
				O/W	: Orange with White tracer
				R/B	: Red with Black tracer
				R/W	: Red with White tracer
				Y/G	: Yellow with Green tracer
				Y/W	: Yellow with White tracer
				W/B	: White with Black tracer

WIRE HARNESS ROUTING





VS800GLW/X ('98/'99-MODEL)

CONTENTS

SPECIFICATIONS 20- 1

SERVICE DATA 20- 2

NOTE:
The specifications and service data are the same as those of the V-MODEL.

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 290 mm (90.2 in) E-18
	2 255 mm (88.8 in) ..... Others
Overall width	770 mm (30.3 in)
Overall height	1 215 mm (47.8 in)
Wheelbase	1 560 mm (61.4 in)
Ground clearance	125 mm (4.9 in)
Seat height	700 mm (27.6 in)
Dry mass	202 kg (445 lbs) E-33
	201 kg (443 lbs) ..... Others

ENGINE

Type	Four-stroke, liquid-cooled, OHC, TSCC, 45° V-twin
Valve clearance (IN &EX)	0.08–0.13 mm (0.003–0.005 in)
Number of cylinders	2
Bore	83.0 mm (3.268 in)
Stroke	74.4 mm (2.929 in)
Displacement	805 cm^3 (49.1 cu. in)
Compression ratio	10.0 : 1
Carburetor, front	BDS36, single
rear	BS36, single
Air cleaner	Non-woven fabric element
Starter system	Electric starter motor
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	1.690 (71/42)
Gear ratios, Low	2.285 (32/14)
2nd	1.631 (31/19)
3rd	1.227 (27/22)
4th	1.000 (25/25)
Top	0.851 (23/27)
Secondary reduction ratio	1.133 (30/30 × 17/15)
Final reduction ratio	3.090 (34/11)
Drive system	Shaft drive

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Swingarm, coil spring, oil damped, spring preload 5-way adjustable
Front suspension stroke	130 mm (5.1 in)
Rear wheel travel	90 mm (3.5 in)
Caster	33° 15′
Trail	145 mm (5.71 in)
Steering angle	40° (right & left)
Turning radius	2.9 m (9.5 ft)
Front brake	Disk brake
Rear brake	Drum brake
Front tire size	80/90-21 48H
Rear tire size	140/90-15 M/C 70H

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	5° B.T.D.C. below 1 625 r/min and 30° B.T.D.C. above 4 000 r/min (W-MODEL)
	5° B.T.D.C. at 1200 r/min (X-MODEL)
Spark plug	NGK DPR8EA-9 or DENSO X24EPR-U9
Battery	12V 57.6 kC (16 Ah)/10HR
Generator	Three-phase A.C. generator
Fuse	25/10/10/10/10A
Headlight	12V 60/55W
Parking or city light	12V 3.4W E-02
	12V 4W ..... Others (except E-03, 28, 33)
Turn signal light	12V 21W
Running light (in front turn signal)	12V 5W ..... E-03, 28, 33 only
Brake light/Taillight	12V 21/5W
License plate light	12V 8W E-03, 28, 33
	12V 5W ..... Others
Neutral indicator light	12V 1.7W
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 3W
Oil pressure indicator light	12V 1.7W
Coolant temperature check light	12V 1.7W

CAPACITIES

Fuel tank, including reserve	11.0 L (2.9/2.4 US/Imp gal) E-33
	12.0 L (3.2/2.6 US/Imp gal) ..... Others
Reserve	3.0 L (0.8/0.7 US/Imp gal)
Engine oil, change	2 400 ml (2.5/2.1 US/Imp qt)
with filter change	2 800 ml (3.0/2.5 US/Imp qt)
overhaul	3 300 ml (3.5/2.9 US/Imp qt)
Final gear oil	200–220 ml (6.8/7.0–7.4/7.7 US/Imp oz)
Coolant (including reserve)	1 700 ml (1.8/1.5 US/Imp qt)
Front fork oil (each leg)	418 ml (14.1/14.7 US/Imp oz)

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	—
	EX.	26 (1.02)	—
Valve lift	IN.	8.5 (0.33)	—
	EX.	8.5 (0.33)	—
Valve clearance (when cold)	IN. & EX.	0.08—0.13 (0.003—0.005)	—
Valve guide to valve stem clearance	IN.	0.010—0.037 (0.0004—0.0015)	—
	EX.	0.036—0.057 (0.0012—0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500—5.512 (0.2165—0.2170)	—
Valve stem O.D.	IN.	5.475—5.490 (0.2156—0.2161)	—
	EX.	5.455—5.470 (0.2148—0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem end length	IN. & EX.	—	4.0 (0.16)
Valve seat width	IN. & EX.	0.9—1.1 (0.035—0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length	INNER	—	38.3 (1.51)
	OUTER	—	40.1 (1.58)
Valve spring tension	INNER	6.51—7.49 kg (14.35—16.51 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	12.09—13.91 kg (26.65—30.67 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954—35.994 (1.4155—1.4171)	35.660 (1.4039)
	EX.	36.919—36.959 (1.4535—1.4551)	36.620 (1.4417)

ITEM	STANDARD		LIMIT
Camshaft journal oil clearance	0.032—0.066 (0.0013—0.0026)		0.150 (0.0059)
Camshaft journal holder I.D.	No.1 Left side No.2 Right side	20.012—20.025 (0.7879—0.7884)	—
	No.1 Right side No.2 Left side	25.012—25.025 (0.9847—0.9852)	—
Camshaft journal O.D.	No.1 Left side No.2 Right side	19.959—19.980 (0.7858—0.7866)	—
	No.1 Right side No.2 Left side	24.959—24.980 (0.9826—0.9835)	—
Camshaft runout	—		0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000—12.018 (0.4724—0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.966—11.984 (0.4711—0.4718)	—
Cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	1 300—1 600 kPa (13—16 kg/cm², 185—228 psi)			1 100 kPa (11 kg/cm², 156 psi)
Compression pressure difference	—			200 kPa (2 kg/cm², 28 psi)
Piston to cylinder clearance	0.045—0.055 (0.0018—0.0022)			0.120 (0.0047)
Cylinder bore	83.000—83.015 (3.2677—3.2683)			83.085 (3.2711)
Piston diam.	82.950—82.965 (3.2657—3.2663) Measure at 15 mm (0.6 in) from the skirt end.			82.880 (3.2630)
Cylinder distortion	—			0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd	R	Approx. 11.8 (0.465)	9.4 (0.370)
Piston ring end gap	1st		0.20—0.35 (0.008—0.014)	0.70 (0.028)
	2nd		0.20—0.35 (0.008—0.014)	0.70 (0.028)
Piston ring groove clearance	1st		—	0.180 (0.007)
	2nd		—	0.150 (0.006)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01—1.03 (0.0398—0.0406)	———
	2nd	1.21—1.23 (0.0476—0.0484)	———
	Oil	2.51—2.53 (0.0988—0.0996)	———
Piston ring thickness	1st	0.970—0.990 (0.0382—0.0390)	———
	2nd	1.170—1.190 (0.0461—0.0469)	———
Piston pin bore	20.002—20.008 (0.7875—0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996—20.000 (0.7827—0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010—20.018 (0.7878—0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10—0.20 (0.004—0.008)	0.30 (0.012)
Conrod big end width	21.95—22.00 (0.864—0.866)	———
Crank pin width	22.10—22.15 (0.870—0.872)	———
Conrod big end oil clearance	0.024—0.042 (0.0009—0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982—41.000 (1.6135—1.6142)	———
Crankshaft journal oil clearance	0.020—0.050 (0.0008—0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965—47.980 (1.8884—1.8890)	———
Crankshaft thrust bearing thickness	1.925—2.175 (0.0758—0.0856)	———
Crankshaft thrust clearance	0.05—0.10 (0.002—0.004)	———
Crankshaft runout	———	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 x 32/29)	———
Oil pressure (at 60°C,140°F)	Above 350 kPa (3.5 kg/cm², 50 psi) Below 650 kPa (6.5 kg/cm², 92 psi) at 3 000 r/min.	———

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92—3.08 (0.115—0.121)	2.62 (0.103)
	No.2	3.45—3.55 (0.136—0.140)	3.15 (0.124)
Drive plate claw width	15.8—16.0 (0.622—0.630)		15.0 (0.591)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		34.0 (1.34)
Clutch master cylinder bore	14.000—14.043 (0.5512—0.5529)		—
Clutch master cylinder piston diam.	13.957—13.984 (0.5495—0.5506)		—
Clutch release cylinder bore	38.100—38.162 (1.5000—1.5024)		—
Clutch release cylinder piston diam.	38.042—38.075 (1.4977—1.4990)		—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		—
Secondary reduction ratio		1.133 (30/30 x 17/15)		—
Final reduction ratio		3.090 (34/11)		—
Gear ratios	Low	2.285 (32/14)		—
	2nd	1.631 (31/19)		—
	3rd	1.227 (27/22)		—
	4th	1.000 (25/25)		—
	Top	0.851 (23/27)		—
Shift fork to groove clearance		No.1	0.10—0.30 (0.004—0.012)	0.50 (0.020)
		No.2	0.10—0.30 (0.004—0.012)	0.50 (0.020)
Shift fork groove width		No.1	5.50—5.60 (0.217—0.220)	—
		No.2	4.50—4.60 (0.177—0.181)	—
Shift fork thickness		No.1	5.30—5.40 (0.209—0.213)	—
		No.2	4.30—4.40 (0.169—0.173)	—

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.05—0.32 (0.002—0.013)		———
Final bevel gear backlash	Drive side	0.03—0.064 (0.001—0.025)	———

CARBURETOR

ITEM	SPECIFICATION	
	E-02,04,25,34	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E9	←
Idle r/min.	1100 ± 100 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#107.5	#95
Jet needle (J.N.)	5F109-3rd	5C29-3rd
Needle jet (N.J.)	P-3	P-4
Throttle valve (Th.V.)	#115	←
Pilot jet (P.J.)	#42.5	#40
Pilot screw (P.S.)	(PRE-SET) 1¾ turns back	(PRE-SET) 1¼ turns back
Throttle cable play	3—6 mm (0.12—0.24 in)	←
Choke cable play	0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-03	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E1	←
Idle r/min.	1200 ± 50 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7M	P-2M
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play	3—6 mm (0.12—0.24 in)	←
Choke cable play	0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-18	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E2	←
Idle r/min.		1200 ± 50 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#107.5	#97.5
Jet needle	(J.N.)	5F107-3rd	5D48-3rd
Needle jet	(N.J.)	P-5	P-1
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#42.5	#40
Pilot screw	(P.S.)	(PRE-SET) 1-¼ turns back	(PRE-SET) 1-¾ turns back
Throttle cable play		3—6 mm (0.12—0.24 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-17,22	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38EA	←
Idle r/min.		1100 ± 100 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#107.5	#100
Jet needle	(J.N.)	5F109-3rd	5C29-3rd
Needle jet	(N.J.)	P-3	P-4
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#45	#40
Pilot screw	(P.S.)	(PRE-SET) 1½ turns back	(PRE-SET) 1⅝ turn back
Throttle cable play		3—6 mm (0.12—0.24 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-28	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E4	←
Idle r/min.		1200 ± 100 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#132.5	#127.5
Jet needle	(J.N.)	5D61-3rd	5D48-3rd
Needle jet	(N.J.)	P-7	P-2
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	#45	#40
Pilot screw	(P.S.)	(PRE-SET) 1⅛ turns back	(PRE-SET) 1¼ turns back
Throttle cable play		3—6 mm (0.12—0.24 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-33	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E5	←
Idle r/min.		1200 ± 50 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#132.5	#127.5
Jet needle	(J.N.)	5D35-1st	5D47-1st
Needle jet	(N.J.)	P-7M	P-2M
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	#45	#40
Pilot screw	(P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play		3—6 mm (0.12—0.24 in)	←
Choke cable play		0.5—1.0 mm (0.02—0.04 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-37	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38EB	←
Idle r/min.	1100 ± 100 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#107.5	#95
Jet needle (J.N.)	5F109-3rd	5C29-3rd
Needle jet (N.J.)	P-3	P-4
Throttle valve (Th.V.)	#115	←
Pilot jet (P.J.)	#42.5	#40
Pilot screw (P.S.)	(PRE-SET) 2.0 turns back	(PRE-SET) 1½ turns back
Throttle cable play	3—6 mm (0.12—0.24 in)	←
Choke cable play	0.5—1.0 mm (0.02—0.04 in)	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Firing order		1·2		
Spark plug		Type	N.G.K.: DPR8EA-9 ND: X24EPR-U9	
		Gap	0.8—0.9 (0.031—0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx. 50—200 Ω (G—Bl)		
Ignition coil resistance		Primary	2—6 Ω	⊕ tap—⊖ tap
		Secondary	15—40 kΩ	Plug cap—⊕ tap
Generator no-load voltage (When engine cold)		More than 75V (AC) at 5 000 r/min.		
Generator Max. output		250W at 5 000 r/min.		—
Regulated voltage		13.5—15.5 V at 5 000 r/min.		
Starter motor brush length		Limit: 9 (0.35)		N.D.
Commutator under-cut		Limit: 0.2 (0.008)		
Starter relay resistance		2—6 Ω		
Battery		Type designation	YB16B-A1	
		Capacity	12V57.6kC (16Ah)/10HR	
		Standard electrolyte S.G.	1.28 at 20°C (68°F)	
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Main	25 A		
	Power source	10 A		

WATTAGE

Unit:W

ITEM		SPECIFICATION	
		E-03,28,33	The others
Headlight	HI	60	←
	LO	55	←
Parking light			4
Brake light/Taillight		21/5	←
Turn signal light		21/5 (Front), 21 (Rear)	21
Speedometer light		3.4	←
Water temp. meter light		1.7	←
Turn signal indicator light		3	←
High beam indicator light		1.7	←
Neutral indicator light		1.7	←
Oil pressure indicator light		1.7	←
License light		8	5

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20—30 (0.8—1.2)		———
Rear brake pedal height	40 (1.6)		———
Brake lining thickness	Rear	———	1.5 (0.056)
Brake drum I.D.	Rear	———	180.7 (7.11)
Brake disc thickness	Front	5.0±0.2 (0.20±0.01)	4.5 (0.18)
Brake disc runout	———		0.30 (0.012)
Master cylinder bore	Front	12.700—12.743 (0.5000—0.5017)	———
Master cylinder piston diam.	Front	12.657—12.684 (0.4983—0.4993)	———
Brake caliper cylinder bore	Front	42.850—42.926 (1.6870—1.6900)	———
Brake caliper piston diam.	Front	42.770—42.820 (1.6839—1.6858)	———
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axle runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Wheel rim size	Front	J21 × 2.15	———
	Rear	J15M/C × MT3.00	———

ITEM	STANDARD		LIMIT
Tire size	Front	80/90-21 48H	———
	Rear	140/90-15 M/C 70H	———
Tire tread depth	Front	———	1.6 (0.06)
	Rear	———	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	———	
Front fork spring free length	———	348.3 (13.71)	
Front fork oil level	124.3 (4.89)	———	
Rear wheel travel	90 (3.5)	———	
Swingarm pivot shaft runout	———	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm²	psi	kPa	kg/cm²	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

FUEL + OIL + COOLANT

	ITEM SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		U.S.A. model
	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$ method) or 91 octane or higher rated by the Research Method.		Canada model
	Gasoline used should be graded 85-95 octane or higher. An unleaded gasoline is recommended.		Other models
Fuel tank including reserve	11.0 L (2.9/2.4 US/Imp gal)		California model only
	12.0 L (3.2/2.6 US/Imp gal)		Other models
reserve	3.0 L (0.8/0.7 US/Imp gal)		
Engine oil type	SAE 10W/40, API SF or SG		
Engine oil capacity	Change	2 400 ml (2.5/2.1 US/Imp qt)	
	Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
	Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	413 ml (14.0/14.5 US/Imp oz)		
Final bevel gear oil type	SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity	200—220 ml (6.8/7.0—7.4/7.7 US/Imp oz)		
Brake fluid type	DOT4		
Coolant capacity	1 700 ml (1.8/1.5 US/Imp qt)		

THERMOSTAT + RADIATOR + FAN

		ITEM STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	—
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	—
Radiator cap valve release pressure		1.1 ± 0.15 kg/cm² (15.6 ± 2.1 psi, 110 ± 15 kPa)	—
Electric fan thermo-switch operating temperature	ON	Approx. 105°C (221°F)	—
	OFF	Approx. 100°C (212°F)	—

VS800GLY/K1/K2/K3 ('00/'01/'02/'03-MODEL)

This section describes service data and service specifications which differ from those of the VS800GLX ('99-MODEL).

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SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	*	2 250 mm (88.6 in)
Overall width	*	885 mm (34.8 in)
Overall height	*	1 180 mm (46.5 in)
Wheelbase		1 560 mm (61.4 in)
Ground clearance		125 mm (4.9 in)
Seat height		700 mm (27.6 in)
Dry mass	*	202 kg (445 lbs) E-33
	*	201 kg (443 lbs) ..... Others

ENGINE

Type	Four-stroke, liquid-cooled, OHC, TSCC, 45° V-twin
Valve clearance (IN & EX)	0.08 – 0.13 mm (0.003 – 0.005 in)
Number of cylinders	2
Bore	83.0 mm (3.268 in)
Stroke	74.4 mm (2.929 in)
Displacement	805 cm^3 (49.1 cu. in)
Compression ratio	10.0 : 1
Carburetor, Front	MIKUNI BDS36SS, single
Rear	MIKUNI BS36SS, single
Air cleaner	Non-woven fabric element
Starter system	Electric starter motor
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	1.690 (71/42)
Gear ratios, Low	2.285 (32/14)
2nd	1.631 (31/19)
3rd	1.227 (27/22)
4th	1.000 (25/25)
Top	0.851 (23/27)
Secondary reduction ratio	1.133 (30/30 × 17/15)
Final reduction ratio	3.090 (34/11)
Drive system	Shaft drive

CHASSIS

Front suspension		Telescopic, coil spring, oil damped
Rear suspension		Swingarm, coil spring, oil dampad, spring preload 5-way adjustable
Front fork stroke		130 mm (5.1 in)
Rear wheel travel		90 mm (3.5 in)
Caster	*	32° 40'
Trail	*	138 mm (5.43 in)
Steering angle		40° (right & left)
Turning radius		2.9 m (9.5 ft)
Front brake		Disk brake
Rear brake		Drum brake
Front tire size	*	100/90-19 57H, tube type
Rear tire size		140/90-15 M/C 70H, tube type

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	5° B.T.D.C. at 1 200 r/min
Spark plug	NGK DPR8EA-9 or DENSO X24EPR-U9
Battery	12V 57.6 kC (16 Ah)/10HR
Generator	Three-phase A.C. generator
Fuse	25/10/10/10/10A
Headlight	12V 60/55W
Parking or city light	12V 3.4W E-02
	12V 4W ..... Others (except E-03, 28, 33)
Turn signal light	12V 21W
Running light (in front turn signal)	12V 5W E-03, 28, 33
Brake light/Taillight	12V 21/5W
License plate light	12V 8W E-03, 28, 33
	12V 5W ..... Others
Neutral indicator light	12V 1.7W
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 3W
Oil pressure indicator light	12V 1.7W
Coolant temperature check light	12V 1.7W
Speedometer light	12V 3W

CAPACITIES

Fuel tank, including reserve	11.0 L (2.9/2.4 US/Imp gal)	E-33
	12.0 L (3.2/2.6 US/Imp gal)	Others
Reserve	3.0 L (0.8/0.7 US/Imp gal)	
Engine oil, change	2 400 ml (2.5/2.1 US/Imp qt)	
with filter change	2 800 ml (3.0/2.5 US/Imp qt)	
overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Final gear oil	200 – 220 ml (6.8/7.0 – 7.4/7.7 US/Imp oz)	
Coolant (including reserve)	1 700 ml (1.8/1.5 US/Imp qt)	

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	———
	EX.	26 (1.02)	———
Valve lift	IN.	8.5 (0.33)	———
	EX.	8.5 (0.33)	———
Valve clearance (when cold)	IN. & EX.	0.08 – 0.13 (0.003 – 0.005)	———
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	———
	EX.	0.036 – 0.057 (0.0012 – 0.0022)	———
Valve stem deflection	IN. & EX.	———	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	———
Valve stem O.D.	IN.	5.475 – 5.490 (0.2156 – 0.2161)	———
	EX.	5.455 – 5.470 (0.2148 – 0.2154)	———
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve stem end length	IN. & EX.	———	4.0 (0.16)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.035 – 0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length	INNER	———	38.3 (1.51)
	OUTER	———	40.1 (1.58)
Valve spring tension	INNER	6.51 – 7.49 kg (14.35 – 16.51 lbs) at length 32.5 mm (1.28 in)	———
	OUTER	12.09 – 13.91 kg (26.65 – 30.67 lbs) at length 36.0 mm (1.42 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954-35.994 (1.4155-1.4171)	35.660 (1.4039)
	EX.	36.919-36.959 (1.4535-1.4551)	36.620 (1.4417)

ITEM	STANDARD		LIMIT
Camshaft journal oil clearance	0.032 – 0.066 (0.0013-0.0026)		0.150 (0.0059)
Camshaft journal holder I.D.	No.1 Left side No.2 Right side	20.012 – 20.025 (0.7879-0.7884)	————
	No.1 Right side No.2 Left side	25.012 – 25.025 (0.9847-0.9852)	————
Camshaft journal O.D.	No.1 Left side No.2 Right side	19.959 – 19.980 (0.7858-0.7866)	————
	No.1 Right side No.2 Left side	24.959 – 24.980 (0.9826-0.9835)	————
Camshaft runout	————		0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724-0.4731)	————
Rocker arm shaft O.D.	IN. & EX.	11.966 – 11.984 (0.4711-0.4718)	————
Cylinder head distortion	————		0.05 (0.002)
Cylinder head cover distortion	————		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	1 300 – 1 600 kPa (13 – 16 kg/cm² 185 – 228 psi)			1 100 kPa (11 kg/cm² 156 psi)
Compression pressure difference	————			200 kPa (2 kg/cm² 28 psi)
Piston to cylinder clearance	0.045 – 0.055 (0.0018 – 0.0022)			0.120 (0.0047)
Cylinder bore	83.000 – 83.015 (3.2677 – 3.2683)			83.085 (3.2711)
Piston diam.	82.950 – 82.965 (3.2657 – 3.2663) Measure at 15 mm (0.6 in) from the skirt end.			82.880 (3.2630)
Cylinder distortion	————			0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd	R	Approx. 11.8 (0.465)	9.4 (0.370)
Piston ring end gap	1st		0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)
	2nd		0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)
Piston ring groove clearance	1st		————	0.180 (0.007)
	2nd		————	0.150 (0.006)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01 – 1.03 (0.0398 – 0.0406)	————
	2nd	1.21 – 1.23 (0.0476 – 0.0484)	————
	Oil	2.51 – 2.53 (0.0988-0.0996)	————
Piston ring thickness	1st	0.970 – 0.990 (0.0382 – 0.0390)	————
	2nd	1.170 – 1.190 (0.0461 – 0.0469)	————
Piston pin bore	20.002 – 20.008 (0.7875 – 0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996 – 20.000 (0.7827 – 0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010 – 20.018 (0.7878 – 0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10 – 0.20 (0.004 – 0.008)	0.30 (0.012)
Conrod big end width	21.95 – 22.00 (0.864 – 0.866)	————
Crank pin width	22.10 – 22.15 (0.870 – 0.872)	————
Conrod big end oil clearance	0.024 – 0.042 (0.0009 – 0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982 – 41.000 (1.6135 – 1.6142)	————
Crankshaft journal oil clearance	0.020 – 0.050 (0.0008 – 0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965 – 47.980 (1.8884 – 1.8890)	————
Crankshaft thrust bearing thickness	1.925 – 2.175 (0.0758 – 0.0856)	————
Crankshaft thrust clearance	0.05 – 0.10 (0.002 – 0.004)	————
Crankshaft runout	————	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 × 32/29)	————
Oil pressure (at 60°C,140°F)	Above 350 kPa (3.5 kg/cm^2, 50 psi) Below 650 kPa (6.5 kg/cm^2, 92 psi) at 3 000 r/min.	————

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No.1	2.92 – 3.08 (0.115 – 0.121)	2.62 (0.103)
	No.2	3.45 – 3.55 (0.136 – 0.140)	3.15 (0.124)
Drive plate claw width	15.8 – 16.0 (0.622 – 0.630)		15.0 (0.591)
Driven plate distortion	———		0.10 (0.004)
Clutch spring free length	———		34.0 (1.34)
Clutch master cylinder bore	14.000 – 14.043 (0.5512 – 0.5529)		———
Clutch master cylinder piston diam.	13.957 – 13.984 (0.5495 – 0.5506)		———
Clutch release cylinder bore	38.100 – 38.162 (1.5000 – 1.5024)		———
Clutch release cylinder piston diam.	38.042 – 38.075 (1.4977 – 1.4990)		———

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		———
Secondary reduction ratio		1.133 (30/30 × 17/15)		———
Final reduction ratio		3.090 (34/11)		———
Gear ratios	Low	2.285 (32/14)		———
	2nd	1.631 (31/19)		———
	3rd	1.227 (27/22)		———
	4th	1.000 (25/25)		———
	Top	0.851 (23/27)		———
Shift fork to groove clearance		No.1	0.10 – 0.30 (0.004 – 0.012)	0.50 (0.020)
		No.2	0.10 – 0.30 (0.004 – 0.012)	0.50 (0.020)
Shift fork groove width		No.1	5.50 – 5.60 (0.217 – 0.220)	———
		No.2	4.50 – 4.60 (0.177 – 0.181)	———
Shift fork thickness		No.1	5.30 – 5.40 (0.209 – 0.213)	———
		No.2	4.30 – 4.40 (0.169 – 0.173)	———

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.05 – 0.32 (0.002 – 0.013)		———
Final bevel gear backlash	Drive side	0.03 – 0.064 (0.001 – 0.025)	———

CARBURETOR

ITEM	SPECIFICATION	
	E-02, 04, 25, 34	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E9	←
Idle r/min.	1 100 ± 100 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#107.5	#95
Jet needle (J.N.)	5F109-3rd	5C29-3rd
Needle jet (N.J.)	P-3	P-4
Throttle valve (Th.V.)	#115	←
Pilot jet (P.J.)	#42.5	#40
Pilot screw (P.S.)	(PRE-SET) 1¾ turns back	(PRE-SET) 1¼ turns back
Throttle cable play	2 – 4 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-03	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38E1	←
Idle r/min.	1 200 ± 50 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	# 132.5	# 127.5
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7M	P-2M
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play	2 – 4 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-18	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E2	←
Idle r/min.		1 200 ± 50 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#107.5	#97.5
Jet needle	(J.N.)	5F107-3rd	5D48-3rd
Needle jet	(N.J.)	P-5	P-1
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#42.5	#40
Pilot screw	(P.S.)	(PRE-SET) 1-¼ turns back	(PRE-SET) 1-¾ turns back
Throttle cable play		2 – 4 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-17, 22	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38EA	←
Idle r/min.		1 100 ± 100 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#107.5	#100
Jet needle	(J.N.)	5F109-3rd	5C29-3rd
Needle jet	(N.J.)	P-3	P-4
Throttle valve	(Th.V.)	#115	←
Pilot jet	(P.J.)	#45	#40
Pilot screw	(P.S.)	(PRE-SET) 1½ turns back	(PRE-SET) 1⅝ turns back
Throttle cable play		2 – 4 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-28	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E4	←
Idle r/min.		1 200 ± 100 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	#132.5	#127.5
Jet needle	(J.N.)	5D61-3rd	5D48-3rd
Needle jet	(N.J.)	P-7	P-2
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	#45	#40
Pilot screw	(P.S.)	(PRE-SET) 1⅛ turns back	(PRE-SET) 1¼ turns back
Throttle cable play		2 – 4 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM		SPECIFICATION	
		E-33	
Carburetor type		MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size		36 mm	←
I.D. No.		38E5	←
Idle r/min.		1 200 ± 50 r/min.	←
Float height		27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet	(M.J.)	# 132.5	# 127.5
Jet needle	(J.N.)	5D35-1st	5D47-1st
Needle jet	(N.J.)	P-7M	P-2M
Throttle valve	(Th.V.)	#125	#110
Pilot jet	(P.J.)	#45	#40
Pilot screw	(P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play		2 – 4 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-37, P-37	
Carburetor type	MIKUNI BS36SS (No.1)	MIKUNI BDS36SS (No.2)
Bore size	36 mm	←
I.D. No.	38EB	←
Idle r/min.	1 100 ± 100 r/min.	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#107.5	#95
Jet needle (J.N.)	5F109-3rd	5C29-3rd
Needle jet (N.J.)	P-3	P-4
Throttle valve (Th.V.)	#115	←
Pilot jet (P.J.)	#42.5	#40
Pilot screw (P.S.)	(PRE-SET) 2.0 turns back	(PRE-SET) 1½ turns back
Throttle cable play	2 – 4 mm (0.08 – 0.16 in)	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Ignition timing		5° B.T.D.C. at 1 200 r/min.		
Firing order		1·2		
Spark plug		Type	N.G.K.: DPR8EA-9 ND: X24EPR-U9	
		Gap	0.8 – 0.9 (0.031 – 0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx. 50 – 200 Ω (G – Bl)		
Ignition coil resistance		Primary	2 – 6 Ω	⊕ tap – tap
		Secondary	15 – 40 kΩ	Plug cap – ⊕ tap
Generator no-load voltage (When engine cold)		More than 75V (AC) at 5 000 r/min.		
Generator Max. output		250 W at 5 000 r/min.		———
Regulated voltage		13.5 – 15.5 V at 5 000 r/min.		
Starter motor brush length		Limit: 9 (0.35)		N.D.
Commutator under-cut		Limit: 0.2 (0.008)		
Starter relay resistance		2 – 6 Ω		
Battery		Type designation	YB16B-A1	
		Capacity	12 V 57.6 kC (16Ah)/10HR	
		Standard electrolyte S.G.	1.28 at 20°C (68°F)	
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Main	25 A		
	Power source	10 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION		
		E-02	E-03, 28, 33	The others
Headlight	HI	60	←	←
	LO	55	←	←
Parking light		3.4		4
Brake light/Taillight		21/5	←	←
Turn signal light		21	21/5 (Front), 21 (Rear)	21
Speedometer light		3.4	←	←
Water temp. meter light		1.7	←	←
Turn signal indicator light		3	←	←
High beam indicator light		1.7	←	←
Neutral indicator light		1.7	←	←
Oil pressure indicator light		1.7	←	←
License light		5	8	5

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		———
Rear brake pedal height	40 (1.6)		———
Brake lining thickness	Rear	———	1.5 (0.056)
Brake drum I.D.	Rear	———	180.7 (7.11)
Brake disc thickness	Front	5.0 ± 0.2 (0.20 ± 0.01)	4.5 (0.18)
Brake disc runout	———		0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	———
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4993)	———
Brake caliper cylinder bore	Front	42.850 – 42.926 (1.6870 – 1.6900)	———
Brake caliper piston diam.	Front	42.770 – 42.820 (1.6839 – 1.6858)	———
Wheel rim runout	Axial	———	2.0 (0.08)
	Radial	———	2.0 (0.08)
Wheel axle runout	Front	———	0.25 (0.010)
	Rear	———	0.25 (0.010)
Wheel rim size	Front	*J19 × 2.15	———
	Rear	J15M/C × MT3.00	———

ITEM	STANDARD		LIMIT
Tire size	Front	*100/90-19 M/C 57H	————
	Rear	140/90-15 M/C 70H	————
Tire tread depth	Front	————	1.6 (0.06)
	Rear	————	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	————	
Front fork spring free length	————	348.3 (13.71)	
Front fork oil level	124.3 (4.89)	————	
Rear wheel travel	90 (3.5)	————	
Swingarm pivot shaft runout	————	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm^2	psi	kPa	kg/cm^2	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

FUEL + OIL + COOLANT

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		U.S.A. and Canada
	Gasoline used should be graded 91 octane or higher. An unleaded gasoline is recommended.		Other models
Fuel tank including reserve	11.0 L (2.9/2.4 US/Imp gal)		California model only
	12.0 L (3.2/2.6 US/Imp gal)		Other models
reserve	3.0 L (0.8/0.7 US/Imp gal)		
Engine oil type	SAE 10W/40, API SF or SG		
Engine oil capacity	Change	2 400 ml (2.5/2.1 US/Imp qt)	
	Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
	Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type	Fork oil #10		
Front fork oil capacity (each leg)	413 ml (14.0/14.5 US/Imp oz)		
Final bevel gear oil type	SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity	200 – 220 ml (6.8/7.0 – 7.4/7.7 US/Imp oz)		
Brake fluid type	DOT 4		
Coolant capacity	1 700 ml (1.8/1.5 US/Imp qt)		

THERMOSTAT + RADIATOR + FAN

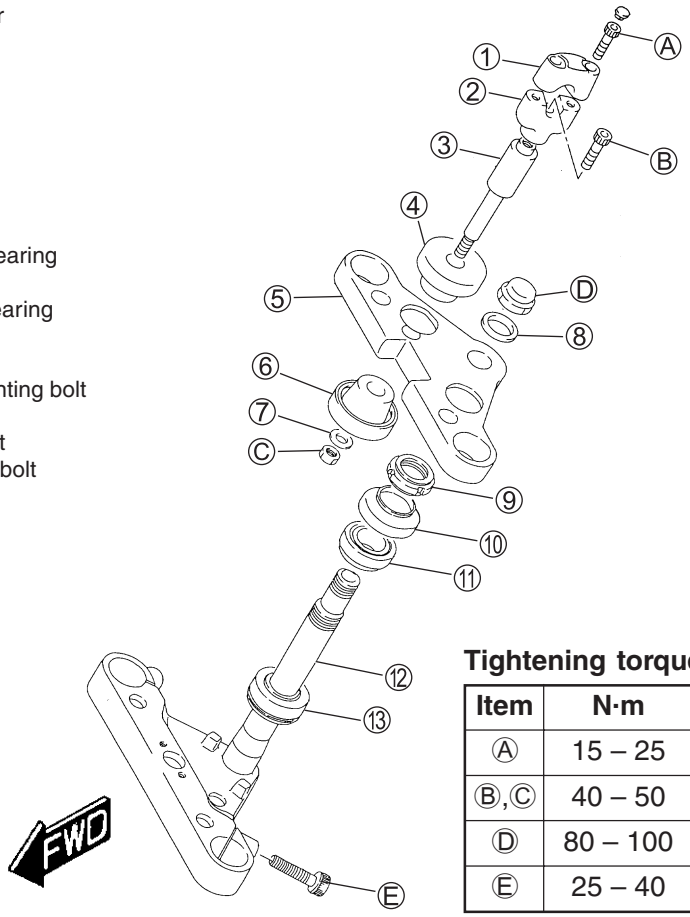
ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5°C (167 ± 2.7°F)	———
Thermostat valve lift		Over 6 mm (0.24 in) at 90°C (194°F)	———
Radiator cap valve release pressure		1.1 ± 0.15 kg/cm^2 (15.6 ± 2.1 psi, 110 ± 15 kPa)	———
Electric fan thermo-switch operating temperature	ON	Approx. 105°C (221°F)	———
	OFF	Approx. 100°C (212°F)	———

STEERING STEM

CONSTRUCTION

① Handlebar upper holder
② Handlebar lower holder
③ Handle stay
④ Bush
⑤ Steering stem head
⑥ Bush
⑦ Washer
⑧ Washer
⑨ Steering stem nut
⑩ Dust seal
⑪ Steering stem upper bearing
⑫ Steering stem
⑬ Steering stem lower bearing

Ⓐ Handlebar clamp bolt
Ⓑ Handlebar holder mounting bolt
Ⓒ Handlebar holder nut
Ⓓ Steering stem head nut
Ⓔ Front fork lower clamp bolt

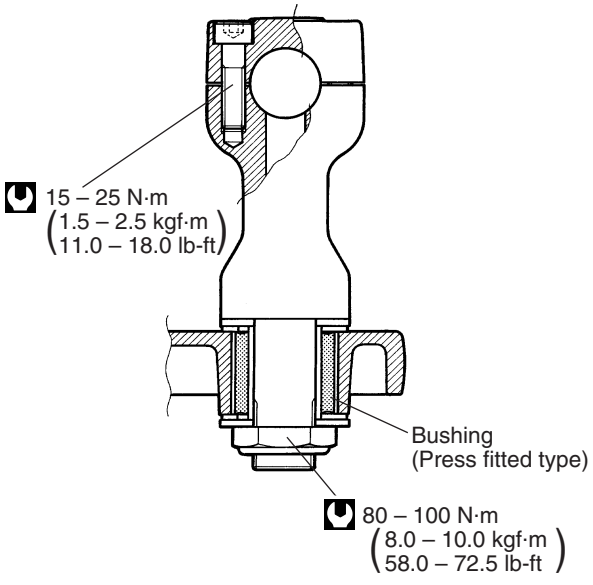


Tightening torque

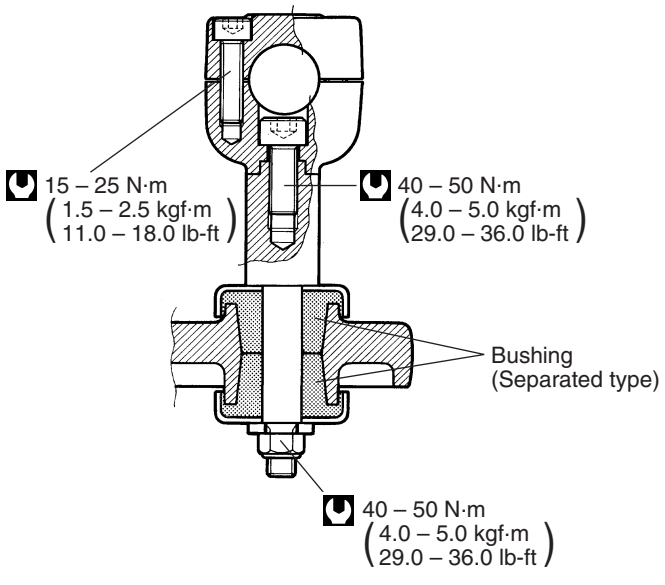
Item	N·m	kgf·m	lb-ft
Ⓐ	15 – 25	1.5 – 2.5	11.0 – 18.0
Ⓑ,Ⓒ	40 – 50	4.0 – 5.0	29.0 – 36.0
Ⓓ	80 – 100	8.0 – 10.0	58.0 – 72.5
Ⓔ	25 – 40	2.5 – 4.0	18.0 – 29.0

HANDLEBAR HOLDER

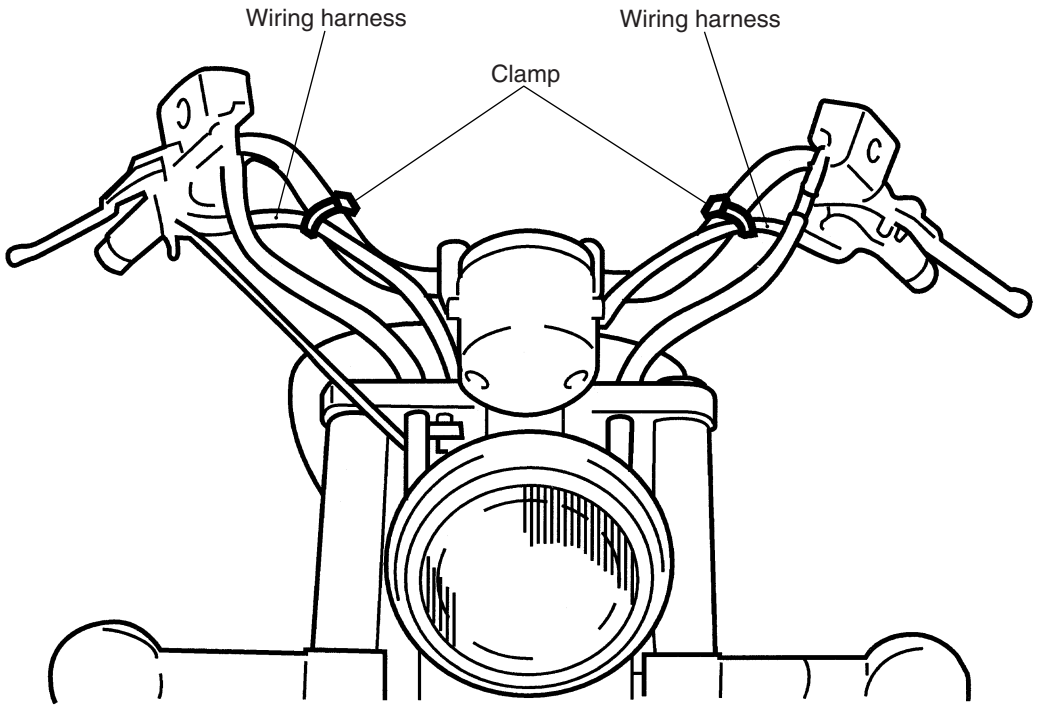
X ('99) MODEL



Y (2000) MODEL



CABLE ROUTING



VS800GLK4 ('04-MODEL)

This chapter describes service data, service specifications and servicing procedures which differ from those of the VS800GLK3 ('03-MODEL).

NOTE:
Please refer to the chapter 1 through 21 for details which are not given in this chapter.

CONTENTS

SPECIFICATIONS 22- 2
SERVICE DATA 22- 3
WIRING DIAGRAM 22-12

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 250 mm (88.6 in)
Overall width	885 mm (34.8 in)
Overall height	1 180 mm (46.5 in)
Wheelbase	1 560 mm (61.4 in)
Ground clearance	125 mm (4.9 in)
Seat height	700 mm (27.6 in)
Dry mass	202 kg (445 lbs) E-33
	201 kg (443 lbs) ..... Others

ENGINE

Type	Four-stroke, liquid-cooled, OHC, 45° V-twin
Number of cylinders	2
Bore	83.0 mm (3.268 in)
Stroke	74.4 mm (2.929 in)
Displacement	805 cm^3 (49.1 cu in)
Compression ratio	10.0 : 1
Carburetor, front	MIKUNI BDS36
rear	MIKUNI BS36
Air cleaner	Non-woven fabric element
Starter system	Electric
Lubrication system	Wet sump
Idle speed	1 200 ± 50 r/min E-03, 28, 33

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	1.690 (71/42)
Gear ratios, Low	2.285 (32/14)
2nd	1.631 (31/19)
3rd	1.227 (27/22)
4th	1.000 (25/25)
Top	0.851 (23/27)
Secondary reduction ratio	1.133 (30/30 × 17/15)
Final reduction ratio	3.090 (34/11)
Drive system	Shaft drive

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Swingarm, coil spring, oil damped
Front suspension stroke	130 mm (5.1 in)
Rear wheel travel	90 mm (3.5 in)
Caster	32° 40'
Trail	138 mm (5.43 in)
Steering angle	40° (right & left)
Turning radius	2.9 m (9.5 ft)
Front brake	Disk brake
Rear brake	Drum brake
Front tire size	100/90-19 M/C 57H, tube type or 100/90-19 57H, tube type
Rear tire size	140/90-15 M/C 70H, tube type or 140/90-15 70H, tube type

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	5° B.T.D.C. at 1 200 r/min
Spark plug	NGK DPR8EA-9 or DENSO X24EPR-U9
Battery	12 V 57.6 kC (16 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	25/10/10/10/10 A
Headlight	12 V 60/55 W
Turn signal light	12 V 21 W
Running light (in front turn signal)	12 V 5 W
Brake light/Taillight	12 V 21/5 W
License plate light	12 V 8 W
Neutral indicator light	12 V 1.7 W
High beam indicator light	12 V 1.7 W
Turn signal indicator light	12 V 3 W
Oil pressure indicator light	12 V 1.7 W
Coolant temperature check light	12 V 1.7 W
Speedometer light	12 V 3 W

CAPACITIES

Fuel tank, including reserve	11.0 L (2.9/2.4 US/Imp gal) E-33
	12.0 L (3.2/2.6 US/Imp gal) ..... Others
reserve	3.0 L (0.8/0.7 US/Imp gal)
Engine oil, change	2 400 ml (2.5/2.1 US/Imp qt)
with filter change	2 800 ml (3.0/2.5 US/Imp qt)
overhaul	3 300 ml (3.5/2.9 US/Imp qt)
Final gear oil	200 – 220 ml (6.8/7.0 – 7.4/7.7 US Imp oz)
Coolant (including reserve)	1 700 ml (1.8/1.5 US/Imp qt)

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	—
	EX.	26 (1.02)	—
Valve lift	IN.	8.5 (0.33)	—
	EX.	8.5 (0.33)	—
Valve clearance (when cold)	IN. & EX.	0.08 – 0.13 (0.003 – 0.005)	—
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	—
	EX.	0.036 – 0.057 (0.0012 – 0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	—
Valve stem O.D.	IN.	5.475 – 5.490 (0.2156 – 0.2161)	—
	EX.	5.455 – 5.470 (0.2148 – 0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem and length	IN. & EX.	—	4.0 (0.16)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.035 – 0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length	INNER	—	38.3 (1.51)
	OUTER	—	40.1 (1.58)
Valve spring tension	INNER	6.51 – 7.49 kg (14.35 – 16.51 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	12.09 – 13.91 kg (26.65 – 30.67 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954 – 35.994 (1.4155 – 1.4171)	35.660 (1.4039)
	EX.	36.919 – 36.959 (1.4535 – 1.4551)	36.620 (1.4417)

ITEM	STANDARD		LIMIT
Camshaft journal oil clearance	0.032 – 0.066 (0.0013 – 0.0026)		0.150 (0.0060)
Camshaft journal holder I.D.	No. 1 Left side No. 2 Right side	20.012 – 20.025 (0.7879 – 0.7884)	—
	No. 1 Right side No. 2 Left side	25.012 – 25.025 (0.9847 – 0.9852)	—
Camshaft journal O.D.	No. 1 Left side No. 2 Right side	19.959 – 19.980 (0.7858 – 0.7866)	—
	No. 1 Right side No. 2 Left side	24.959 – 24.980 (0.9826 – 0.9835)	—
Camshaft runout	—		0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.966 – 11.984 (0.4711 – 0.4718)	—
Cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	1 300 – 1 600 kPa (13 – 16 kgf/cm^2, 185 – 228 psi)			1 100 kPa (11 kgf/cm^2, 156 psi)
Compression pressure difference	—			200 kPa (2 kgf/cm^2, 28 psi)
Piston to cylinder clearance	0.045 – 0.055 (0.0018 – 0.0022)			0.120 (0.0047)
Cylinder bore	83.000 – 83.015 (3.2677 – 3.2683)			83.085 (3.2711)
Piston diam.	82.950 – 82.965 (3.2657 – 3.2663) Measure at 15 mm (0.6 in) from the skirt end.			82.880 (3.2630)
Cylinder distortion	—			0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd	R	Approx. 11.8 (0.465)	9.4 (0.370)
Piston ring end gap	1st		0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)
	2nd		0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)
Piston ring to groove clearance	1st		—	0.180 (0.007)
	2nd		—	0.150 (0.006)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01 – 1.03 (0.0398 – 0.0406)	—
	2nd	1.21 – 1.23 (0.0476 – 0.0484)	—
	Oil	2.51 – 2.53 (0.0988 – 0.0996)	—
Piston ring thickness	1st	0.970 – 0.990 (0.0382 – 0.0390)	—
	2nd	1.170 – 1.190 (0.0461 – 0.0469)	—
Piston pin bore	20.002 – 20.008 (0.7875 – 0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996 – 20.000 (0.7827 – 0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010 – 20.018 (0.7878 – 0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10 – 0.20 (0.004 – 0.008)	0.30 (0.012)
Conrod big end width	21.95 – 22.00 (0.864 – 0.866	—
Crank pin width	22.10 – 22.15 (0.870 – 0.872)	—
Conrod big end oil clearance	0.024 – 0.042 (0.0009 – 0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982 – 41.000 (1.6135 – 1.6142)	—
Crankshaft journal oil clearance	0.020 – 0.050 (0.0008 – 0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965 – 47.980 (1.8884 – 1.8890)	—
Crankshaft thrust bearing thickness	1.925 – 2.175 (0.0758 – 0.0856)	—
Crankshaft thrust clearance	0.05 – 0.10 (0.002 – 0.004)	—
Crankshaft runout	—	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 × 32/29)	—
Oil pressure (at 60 °C, 140 °F)	Above 350 kPa (3.5 kg/cm^2, 50 psi) Below 650 kPa (6.5 kg/cm^2, 92 psi) at 3 000 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No. 1	2.92 – 3.08 (0.115 – 0.121)	2.62 (0.103)
	No. 2	3.45 – 3.55 (0.136 – 0.140)	3.15 (0.124)
Drive plate claw width	15.8 – 16.0 (0.622 – 0.630)		15.0 (0.591)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		34.0 (1.34)
Clutch master cylinder bore	14.000 – 14.043 (0.5512 – 0.5529)		—
Clutch master cylinder piston diam.	13.957 – 13.984 (0.5495 – 0.5506)		—
Clutch release cylinder bore	38.100 – 38.162 (1.5000 – 1.5024)		—
Clutch release cylinder piston diam.	38.042 – 38.075 (1.4977 – 1.4990)		—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		—
Secondary reduction ratio		1.133 (30/30 × 17/15)		—
Final reduction ratio		3.090 (34/11)		—
Gear ratios	Low	2.285 (32/14)		—
	2nd	1.631 (31/19)		—
	3rd	1.227 (27/22)		—
	4th	1.000 (25/25)		—
	Top	0.851 (23/27)		—
Shift fork to groove clearance		No. 1	0.10 – 0.30 (0.004 – 0.012)	0.50 (0.020)
		No. 2	0.10 – 0.30 (0.004 – 0.012)	0.50 (0.020)
Shift fork groove width		No. 1	5.50 – 5.60 (0.217 – 0.220)	—
		No. 2	4.50 – 4.60 (0.177 – 0.181)	—
Shift fork thickness		No. 1	5.30 – 5.40 (0.209 – 0.213)	—
		No. 2	4.30 – 4.40 (0.169 – 0.173)	—

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.05 – 0.32 (0.002 – 0.013)		—
Final bevel gear backlash	Drive side	0.03 – 0.64 (0.001 – 0.025)	—

CARBURETOR

ITEM	SPECIFICATION	
	E-03	
Carburetor type	MIKUNI BS36SS (No. 1)	MIKUNI BDS36SS (No. 2)
Bore size	36 mm	←
I.D. No.	38E1	←
Idle r/min	1 200 ± 50 r/min	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7M	P-2M
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-28	
Carburetor type	MIKUNI BS36SS (No. 1)	MIKUNI BDS36SS (No. 2)
Bore size	36 mm	←
I.D. No.	38E4	←
Idle r/min	1 200 ± 100 r/min	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Jet needle (J.N.)	5D61-3rd	5D48-3rd
Needle jet (N.J.)	P-7	P-2
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET) 1 and 1/8 turns back	(PRE-SET) 1 and 1/4 turns back
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-33	
Carburetor type	MIKUNI BS36SS (No. 1)	MIKUNI BDS36SS (No. 2)
Bore size	36 mm	←
I.D. No.	38E5	←
Idle r/min	1 200 ± 50 r/min	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7M	P-2M
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Firing order		1·2		
Spark plug		Type	N.G.K.: DPR8EA-9 N.D.: X24EPR-U9	
		Gap	0.8 – 0.9 (0.031 – 0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx. 50 – 200 Ω (G – Bl)		
Ignition coil resistance		Primary	2 – 6 Ω	⊕ tap – ⊖ tap
		Secondary	15 – 40 kΩ	Plug cap – ⊕ tap
Generator no-load voltage (When engine cold)		More than 75 V (AC) at 5 000 r/min		
Generator Max. output		250 W at 5 000 r/min		—
Regulated voltage		13.5 – 15.5 V at 5 000 r/min		
Starter motor brush length		Limit: 9.0 (0.35)		N.D.
Commutator under-cut		Limit: 0.2 (0.008)		
Starter relay resistance		2 – 6 Ω		
Battery		Type designation	YB16B-A1	
		Capacity	12 V 57.6 kC (16 Ah)/10 HR	
		Standard electrolyte S.G.	1.28 at 20 °C (68 °F)	
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Main	25 A		
	Power source	10 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Parking light		3.4
Brake light/Taillight		21/5
Turn signal light		21/5 (Front), 21 (Rear)
Speedometer light		3.4
Water temp. meter light		1.7
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		1.7
Oil pressure indicator light		1.7
License light		8

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		—
Rear brake pedal height	40 (1.6)		—
Brake lining thickness	Rear	—	1.5 (0.056)
Brake drum I.D.	Rear	—	180.7 (7.11)
Brake disc thickness	Front	5.0 ± 0.2 (0.20 ± 0.01)	4.5 (0.18)
Brake disc runout	—		0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4993)	—
Brake caliper cylinder bore	Front	42.850 – 42.926 (1.6870 – 1.6900)	—
Brake caliper piston diam.	Front	42.770 – 42.820 (1.6839 – 1.6858)	—
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)
Wheel rim size	Front	J19 × 2.15	—
	Rear	J15M/C × MT3.00	—

ITEM	STANDARD		LIMIT
Tire size	Front	100/90-19 57H, 100/90-19M/C 57H	—
	Rear	140/90-15 70H, 140/90-15M/C 70H	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	—	
Front fork spring free length	—	348.3 (13.71)	
Front fork oil level	124.3 (4.89)	—	
Rear wheel travel	90 (3.5)	—	
Swingarm pivot shaft runout	—	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm^2	psi	kPa	kg/cm^2	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

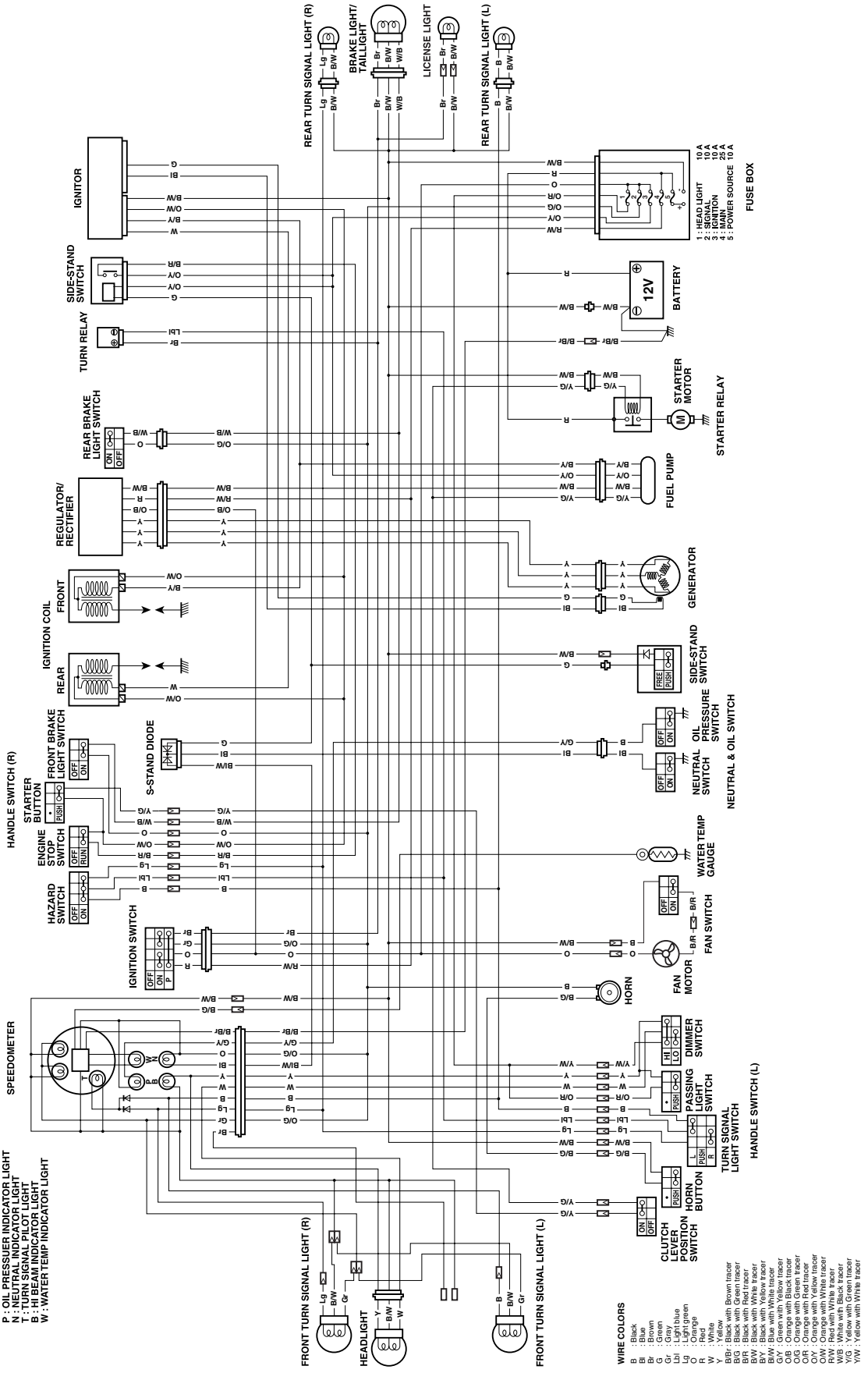
FUEL + OIL + COOLANT

ITEM		SPECIFICATION		NOTE
Fuel type		Use only unleaded gasoline of at least 87 pump octane or 91 octane (R/2 + M/2) or higher rated by the Research Method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		E-03, 28, 33
Fuel tank including	reserve	11.0 L (2.9/2.4 US/lmp gal)		E-33
		12.0 L (3.2/2.6 US/lmp gal)		Others
	reserve	3.0 L (0.8/0.7 US/lmp gal)		
Engine oil type		SAE 10W-40, API SF or SG		
Engine oil capacity		Change	2 400 ml (2.5/2.1 US/lmp qt)	
		Filter change	2 800 ml (3.0/2.5 US/lmp qt)	
		Overhaul	3 300 ml (3.5/2.9 US/lmp qt)	
Front fork oil type		Fork oil #10		
Front fork oil capacity (each leg)		413 ml (14.0/14.5 US/lmp oz)		
Final bevel gear oil type		SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity		200 – 220 ml (6.8/7.0 – 7.4/7.7 US/lmp oz)		
Brake fluid type		DOT 4		
Coolant capacity		1 700 ml (1.8/1.5 US/lmp qt)		

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5 °C (167 ± 2.7 °F)	—
Thermostat valve lift		Over 6 mm (0.24 in) at 90 °C (194 °F)	—
Radiator cap valve release pressure		1.1 ± 0.15 kg/cm^2 (15.6 ± 2.1 psi, 110 ± 15 kPa)	—
Electric fan thermo-switch operating temperature	ON	Approx. 105 °C (221 °F)	—
	OFF	Approx. 100 °C (212 °F)	—

WIRING DIAGRAM



VS800K5 ('05-MODEL)

This chapter describes service data, service specifications and servicing procedures which differ from those of the VS800GLK4 ('04-MODEL)

NOTE:
Please refer to chapters 1 through 22 for details which are not given in this chapter.

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NOTE:
Asterisk mark (*) indicates the new K5-model specification.

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length		2 250 mm (88.6 in)
Overall width	*	765 mm (30.1 in)
Overall height	*	1 125 mm (44.3 in)
Wheelbase		1 560 mm (61.4 in)
Ground clearance		125 mm (4.9 in)
Seat height		700 mm (27.6 in)
Dry mass		202 kg (445 lbs) E-33
		201 kg (443 lbs) ..... Others

ENGINE

Type	Four-stroke, liquid-cooled, OHC, 45° V-twin
Number of cylinders	2
Bore	83.0 mm (3.268 in)
Stroke	74.4 mm (2.929 in)
Displacement	805 cm^3 (49.1 cu in)
Compression ratio	10.0 : 1
Carburetor, front	MIKUNI BDS36
rear	MIKUNI BS36
Air cleaner	Non-woven fabric element
Starter system	Electric
Lubrication system	Wet sump
Idle speed	1 200 ± 50 r/min

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	1.690 (71/42)
Gear ratios, Low	2.285 (32/14)
2nd	1.631 (31/19)
3rd	1.227 (27/22)
4th	1.000 (25/25)
Top	0.851 (23/27)
Secondary reduction ratio	1.133 (30/30 × 17/15)
Final reduction ratio	3.090 (34/11)
Drive system	Shaft drive

CHASSIS

Front suspension		Telescopic, coil spring, oil damped
Rear suspension		Swingarm, coil spring, oil damped
Front suspension stroke		130 mm (5.1 in)
Rear wheel travel		90 mm (3.5 in)
Caster		32° 40'
Trail		138 mm (5.43 in)
Steering angle		40° (right & left)
Turning radius		2.9 m (9.5 ft)
Front brake		Disc brake
Rear brake		Drum brake
Front tire size	*	100/90-19 M/C 57H, tube type
Rear tire size	*	140/90-15 M/C 70H, tube type

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	5° B.T.D.C. at 1 200 r/min
Spark plug	NGK DPR8EA-9 or DENSO X24EPR-U9
Battery	12 V 57.6 kC (16 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	25/10/10/10/10 A
Headlight	12 V 60/55 W
Turn signal light	12 V 21 W
Running light (in front turn signal)	12 V 5 W
Brake light/Taillight	12 V 21/5 W
License plate light	12 V 8 W
Neutral indicator light	12 V 1.7 W
High beam indicator light	12 V 1.7 W
Turn signal indicator light	12 V 3 W
Oil pressure indicator light	12 V 1.7 W
Coolant temperature check light	12 V 1.7 W
Speedometer light	12 V 3 W

CAPACITIES

Fuel tank, including reserve		11.0 L (2.9/2.4 US/Imp gal) E-33
		12.0 L (3.2/2.6 US/Imp gal) ..... Others
reserve		3.0 L (0.8/0.7 US/Imp qt)
Engine oil, change		2 400 ml (2.5/2.1 US/Imp qt)
with filter change		2 800 ml (3.0/2.5 US/Imp qt)
overhaul		3 300 ml (3.5/2.9 US/Imp qt)
Final gear oil		200 – 220 ml (6.8/7.0 – 7.4/7.7 US Imp oz)
Coolant (including reserve)		1.7 L (1.8/1.5 US/Imp qt)

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	—
	EX.	26 (1.02)	—
Valve lift	IN.	8.5 (0.33)	—
	EX.	8.5 (0.33)	—
Valve clearance (when cold)	IN. & EX.	0.08 – 0.13 (0.003 – 0.005)	—
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	—
	EX.	0.036 – 0.057 (0.0012 – 0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	—
Valve stem O.D.	IN.	5.475 – 5.490 (0.2156 – 0.2161)	—
	EX.	5.455 – 5.470 (0.2148 – 0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem and length	IN. & EX.	—	4.0 (0.16)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.035 – 0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length	INNER	—	38.3 (1.51)
	OUTER	—	40.1 (1.58)
Valve spring tension	INNER	64 – 73 N (6.51 – 7.49 kgf, 14.35 – 16.51 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	119 – 136 N (12.09 – 13.91 kgf, 26.65 – 30.67 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954 – 35.994 (1.4155 – 1.4171)	35.660 (1.4039)
	EX.	36.919 – 36.959 (1.4535 – 1.4551)	36.620 (1.4417)

ITEM	STANDARD		LIMIT
Camshaft journal oil clearance	0.032 – 0.066 (0.0013 – 0.0026)		0.150 (0.0060)
Camshaft journal holder I.D.	No. 1 Left side No. 2 Right side	20.012 – 20.025 (0.7879 – 0.7884)	—
	No. 1 Right side No. 2 Left side	25.012 – 25.025 (0.9847 – 0.9852)	—
Camshaft journal O.D.	No. 1 Left side No. 2 Right side	19.959 – 19.980 (0.7858 – 0.7866)	—
	No. 1 Right side No. 2 Left side	24.959 – 24.980 (0.9826 – 0.9835)	—
Camshaft runout	—		0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.966 – 11.984 (0.4711 – 0.4718)	—
Cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	1 300 – 1 600 kPa (13 – 16 kgf/cm^2, 185 – 228 psi)			1 100 kPa (11 kgf/cm^2, 156 psi)
Compression pressure difference	—			200 kPa (2 kgf/cm^2, 28 psi)
Piston to cylinder clearance	0.045 – 0.055 (0.0018 – 0.0022)			0.120 (0.0047)
Cylinder bore	83.000 – 83.015 (3.2677 – 3.2683)			83.085 (3.2711)
Piston diam.	82.950 – 82.965 (3.2657 – 3.2663) Measure at 15 mm (0.6 in) from the skirt end.			82.880 (3.2630)
Cylinder distortion	—			0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd	R	Approx. 11.8 (0.465)	9.4 (0.370)
Piston ring end gap	1st		0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)
	2nd		0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)
Piston ring to groove clearance	1st		—	0.180 (0.007)
	2nd		—	0.150 (0.006)

ITEM	STANDARD		LIMIT
Piston ring groove width	1st	1.01 – 1.03 (0.0398 – 0.0406)	—
	2nd	1.21 – 1.23 (0.0476 – 0.0484)	—
	Oil	2.51 – 2.53 (0.0988 – 0.0996)	—
Piston ring thickness	1st	0.970 – 0.990 (0.0382 – 0.0390)	—
	2nd	1.170 – 1.190 (0.0461 – 0.0469)	—
Piston pin bore	20.002 – 20.008 (0.7875 – 0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996 – 20.000 (0.7827 – 0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010 – 20.018 (0.7878 – 0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10 – 0.20 (0.004 – 0.008)	0.30 (0.012)
Conrod big end width	21.95 – 22.00 (0.864 – 0.866)	—
Crank pin width	22.10 – 22.15 (0.870 – 0.872)	—
Conrod big end oil clearance	0.024 – 0.042 (0.0009 – 0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982 – 41.000 (1.6135 – 1.6142)	—
Crankshaft journal oil clearance	0.020 – 0.050 (0.0008 – 0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965 – 47.980 (1.8884 – 1.8890)	—
Crankshaft thrust bearing thickness	1.925 – 2.175 (0.0758 – 0.0856)	—
Crankshaft thrust clearance	0.05 – 0.10 (0.002 – 0.004)	—
Crankshaft runout	—	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 × 32/29)	—
Oil pressure (at 60 °C, 140 °F)	Above 350 kPa (3.5 kg/cm^2, 50 psi) Below 650 kPa (6.5 kg/cm^2, 92 psi) at 3 000 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No. 1	2.92 – 3.08 (0.115 – 0.121)	2.62 (0.103)
	No. 2	3.45 – 3.55 (0.136 – 0.140)	3.15 (0.124)
Drive plate claw width	15.8 – 16.0 (0.622 – 0.630)		15.0 (0.591)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		34.0 (1.34)
Clutch master cylinder bore	14.000 – 14.043 (0.5512 – 0.5529)		—
Clutch master cylinder piston diam.	13.957 – 13.984 (0.5495 – 0.5506)		—
Clutch release cylinder bore	38.100 – 38.162 (1.5000 – 1.5024)		—
Clutch release cylinder piston diam.	38.042 – 38.075 (1.4977 – 1.4990)		—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		—
Secondary reduction ratio		1.133 (30/30 × 17/15)		—
Final reduction ratio		3.090 (34/11)		—
Gear ratios	Low	2.285 (32/14)		—
	2nd	1.631 (31/19)		—
	3rd	1.227 (27/22)		—
	4th	1.000 (25/25)		—
	Top	0.851 (23/27)		—
Shift fork to groove clearance		No. 1	0.10 – 0.30 (0.004 – 0.012)	0.50 (0.020)
		No. 2	0.10 – 0.30 (0.004 – 0.012)	0.50 (0.020)
Shift fork groove width		No. 1	5.50 – 5.60 (0.217 – 0.220)	—
		No. 2	4.50 – 4.60 (0.177 – 0.181)	—
Shift fork thickness		No. 1	5.30 – 5.40 (0.209 – 0.213)	—
		No. 2	4.30 – 4.40 (0.169 – 0.173)	—

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.05 – 0.32 (0.002 – 0.013)		—
Final bevel gear backlash	Drive side	0.03 – 0.64 (0.001 – 0.025)	—

CARBURETOR

ITEM	SPECIFICATION	
	E-03, 28	
Carburetor type	MIKUNI BS36SS (No. 1)	MIKUNI BDS36SS (No. 2)
Bore size	36 mm	←
I.D. No.	38E1	←
Idle r/min	1 200 ± 50 r/min	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7M	P-2M
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-33	
Carburetor type	MIKUNI BS36SS (No. 1)	MIKUNI BDS36SS (No. 2)
Bore size	36 mm	←
I.D. No.	38E5	←
Idle r/min	1 200 ± 50 r/min	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7M	P-2M
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	←

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Firing order		1·2		
Spark plug		Type	N.G.K.: DPR8EA-9 N.D.: X24EPR-U9	
		Gap	0.8 – 0.9 (0.031 – 0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx. 50 – 200 Ω (G – Bl)		
Ignition coil resistance		Primary	* 1.8 – 2.6 Ω	⊕ tap – ⊖ tap
		Secondary	* 16 – 26 kΩ	Plug cap – ⊕ tap
Generator no-load voltage (When engine cold)		More than 75 V (AC) at 5 000 r/min		
Generator Max. output		250 W at 5 000 r/min		—
Regulated voltage		13.5 – 15.5 V at 5 000 r/min		
Starter motor brush length		Limit: 9.0 (0.35)		N.D.
Commutator under-cut		Limit: 0.2 (0.008)		
Starter relay resistance		2 – 6 Ω		
Battery		Type designation	YB16B-A1	
		Capacity	12 V 57.6 kC (16 Ah)/10 HR	
		Standard electrolyte S.G.	1.28 at 20 °C (68 °F)	
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Main	25 A		
	Power source	10 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Parking light		3.4
Brake light/Taillight		21/5
Turn signal light		21/5 (Front), 21 (Rear)
Speedometer light		3.4
Water temp. meter light		1.7
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		1.7
Oil pressure indicator light		1.7
License light		8

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		—
Rear brake pedal height	40 (1.6)		—
Brake lining thickness	Rear	—	1.5 (0.056)
Brake drum I.D.	Rear	—	180.7 (7.11)
Brake disc thickness	Front	5.0 ± 0.2 (0.20 ± 0.01)	4.5 (0.18)
Brake disc runout	—		0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4993)	—
Brake caliper cylinder bore	Front	42.850 – 42.926 (1.6870 – 1.6900)	—
Brake caliper piston diam.	Front	42.770 – 42.820 (1.6839 – 1.6858)	—
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)
Wheel rim size	Front	J19 × 2.15	—
	Rear	J15M/C × MT3.00	—

ITEM	STANDARD		LIMIT
Tire size	Front	100/90-19 57H, 100/90-19M/C 57H	—
	Rear	140/90-15 70H, 140/90-15M/C 70H	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	—	
Front fork spring free length	363.3 (14.3)	356 (14.0)	
Front fork oil level	118 (4.73)	—	
Front fork inner tube O.D.	39 (1.5)	—	
Rear wheel travel	90 (3.5)	—	
Swingarm pivot shaft runout	—	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kgf/cm^2	psi	kPa	kgf/cm^2	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

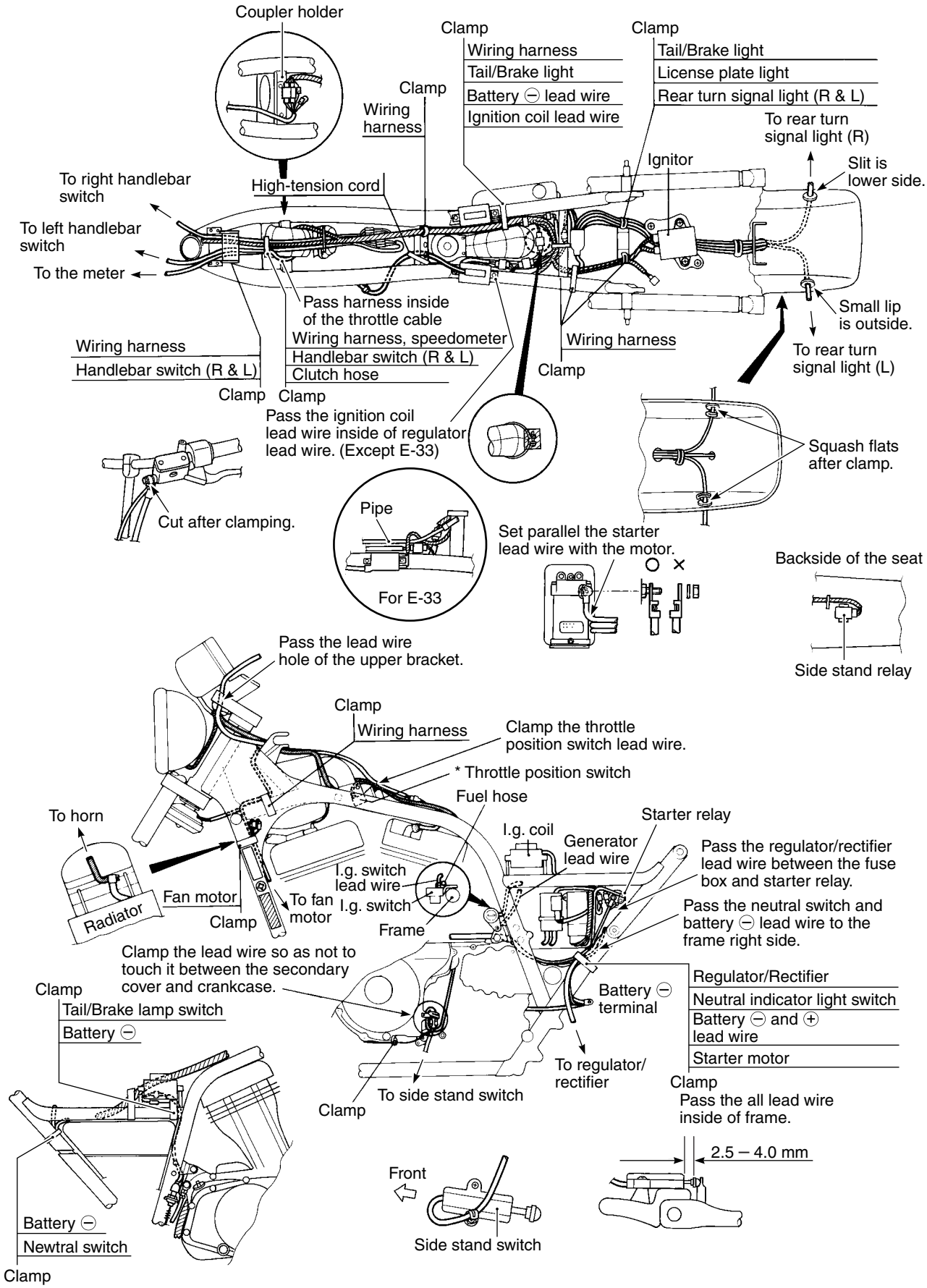
FUEL + OIL + COOLANT

ITEM		SPECIFICATION		NOTE
Fuel type		Use only unleaded gasoline of at least 87 pump octane or 91 octane (R/2 + M/2) or higher rated by the Research Method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		E-03, 28, 33
Fuel tank capacity	including reserve	11.0 L (2.9/2.4 US/Imp gal)		E-33
		12.0 L (3.2/2.6 US/Imp gal)		Others
	reserve	3.0 L (0.8/0.7 US/Imp gal)		
Engine oil type		SAE 10W-40, API SF or SG		
Engine oil capacity		Change	2 400 ml (2.5/2.1 US/Imp qt)	
		Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
		Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type		Fork oil #10		
Front fork oil capacity (each leg)		418 ml (14.1/14.7 US/Imp oz)		
Final bevel gear oil type		SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity		200 – 220 ml (6.8/7.0 – 7.4/7.7 US/Imp oz)		
Brake fluid type		DOT 4		
Coolant capacity		1 700 ml (1.8/1.5 US/Imp qt)		

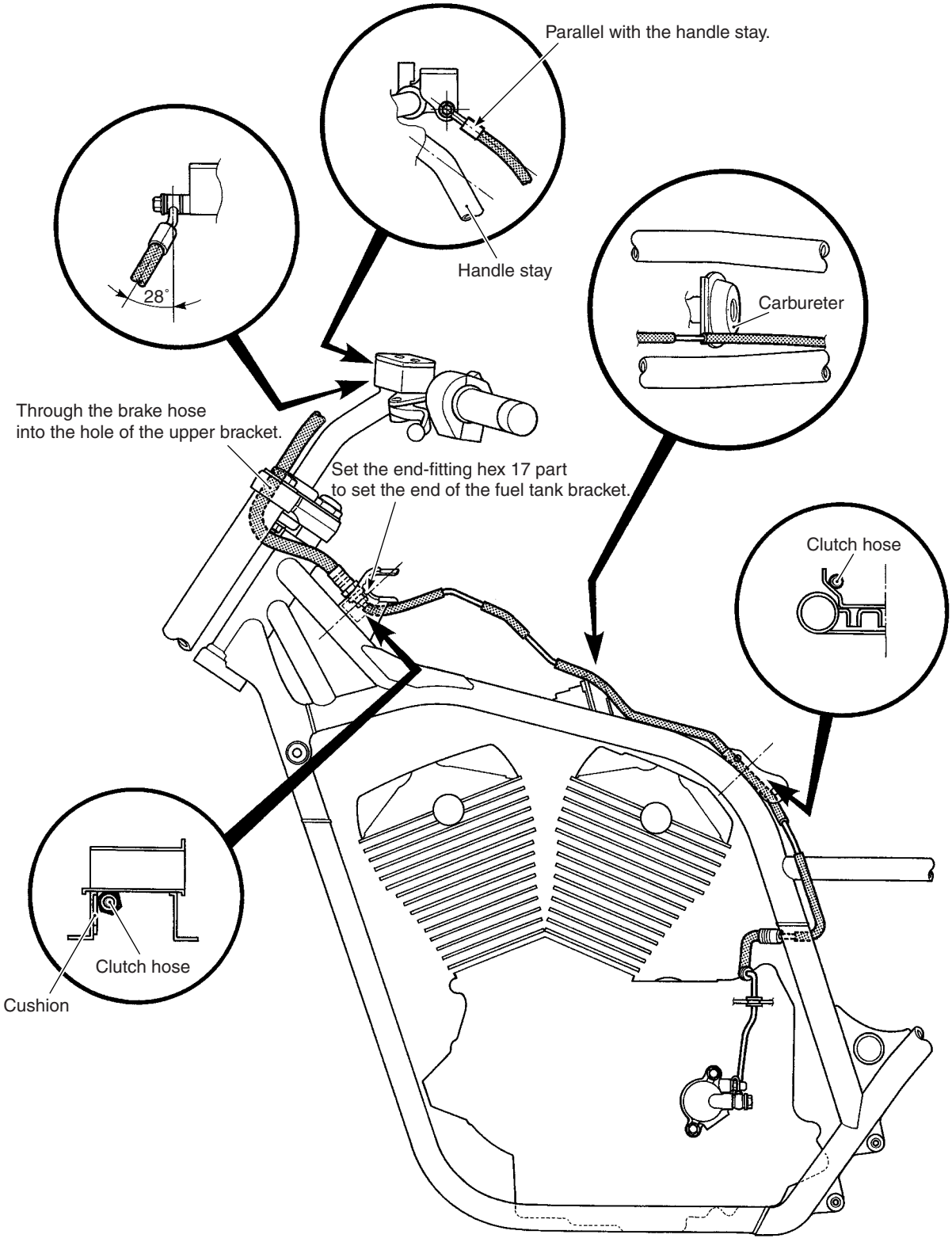
THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5 °C (167 ± 2.7 °F)	—
Thermostat valve lift		Over 6 mm (0.24 in) at 90 °C (194 °F)	—
Radiator cap valve release pressure		110 ± 15 kPa (1.1 ± 0.15 kgf/cm^2, 15.6 ± 2.1 psi)	—
Electric fan thermo-switch operating temperature	ON	Approx. 105 °C (221 °F)	—
	OFF	Approx. 100 °C (212 °F)	—

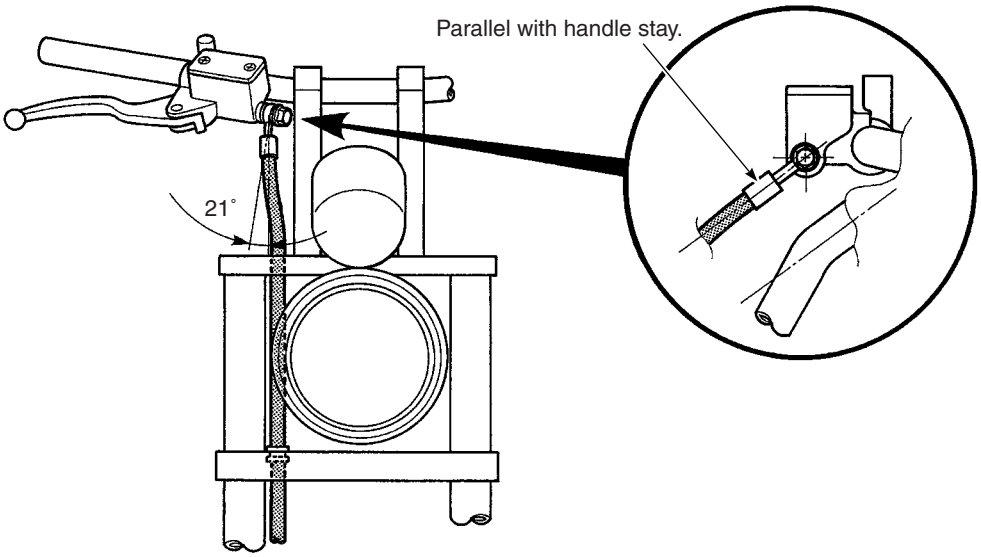
WIRING HARNESS ROUTING



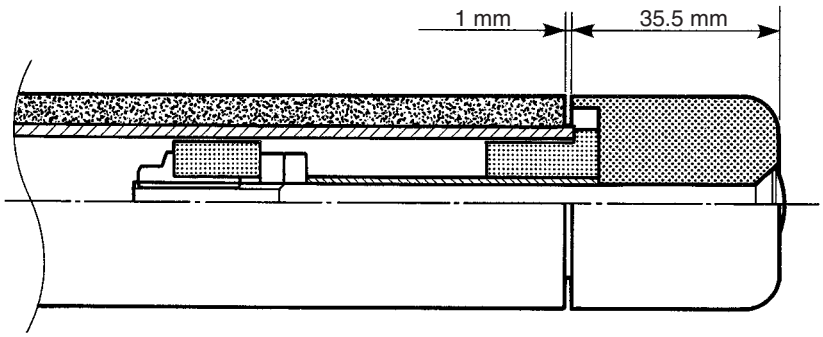
CLUTCH HOSE ROUTING



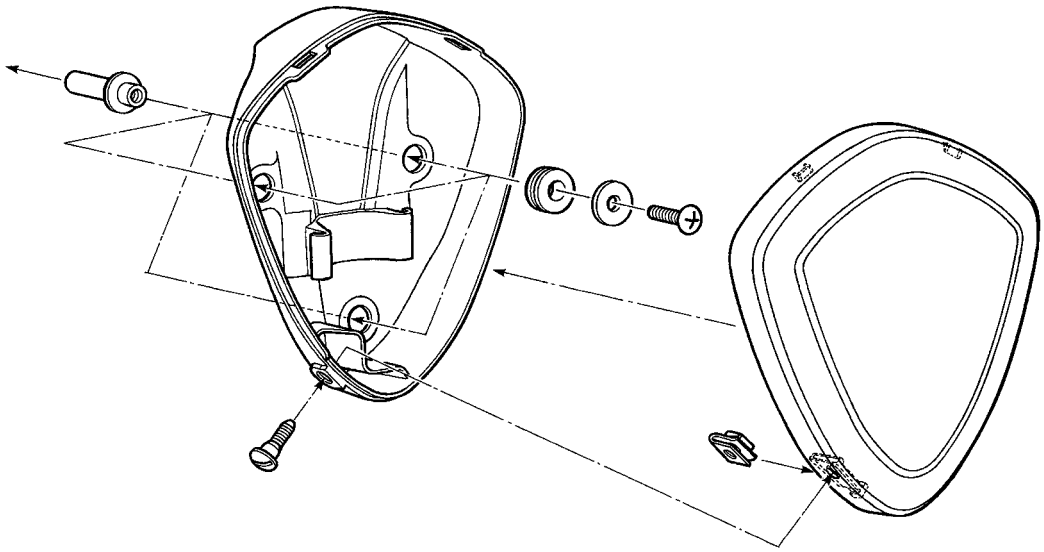
FRONT BRAKE HOSE ROUTING



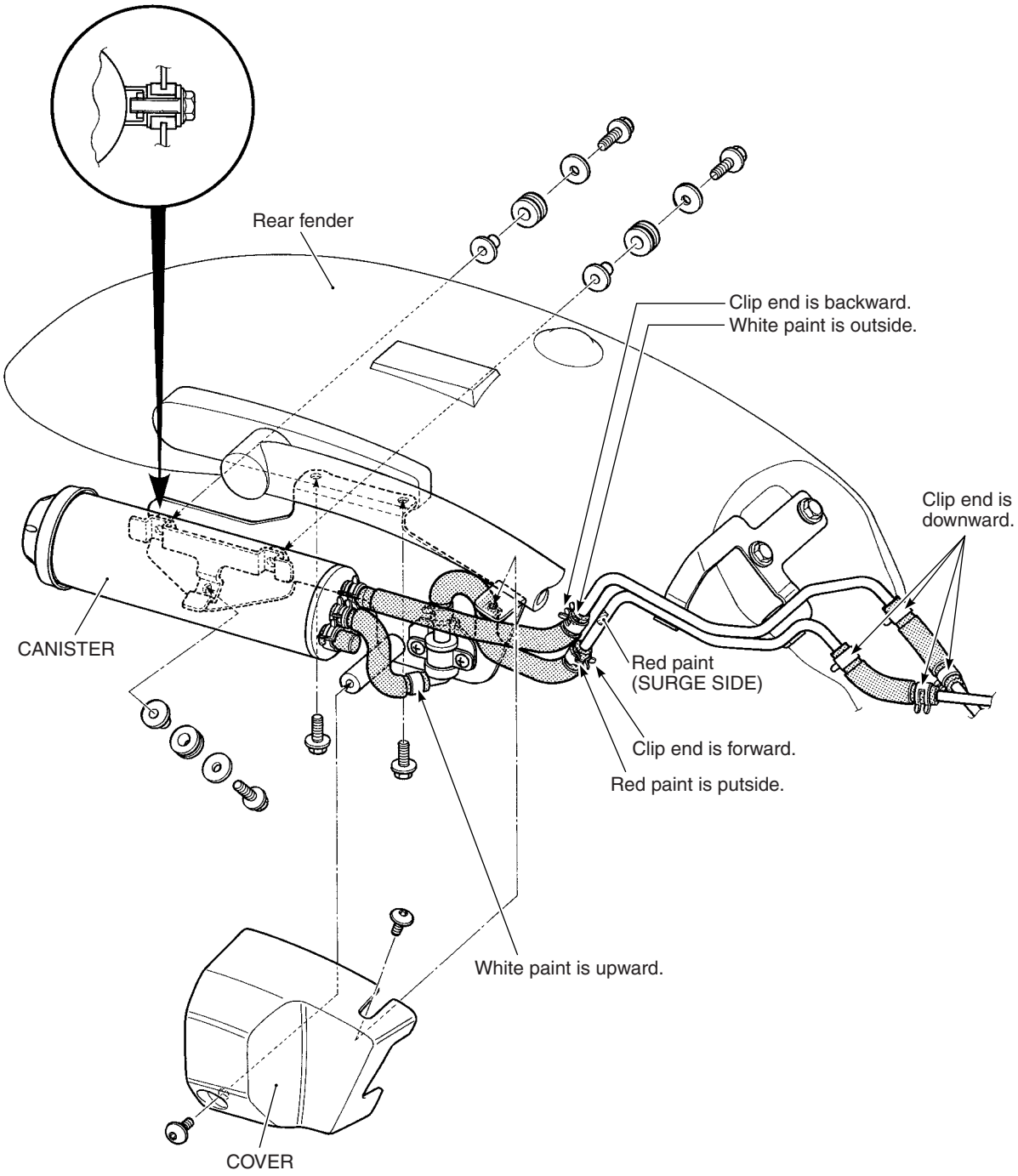
HANDLE BALANCER INSTALLATION



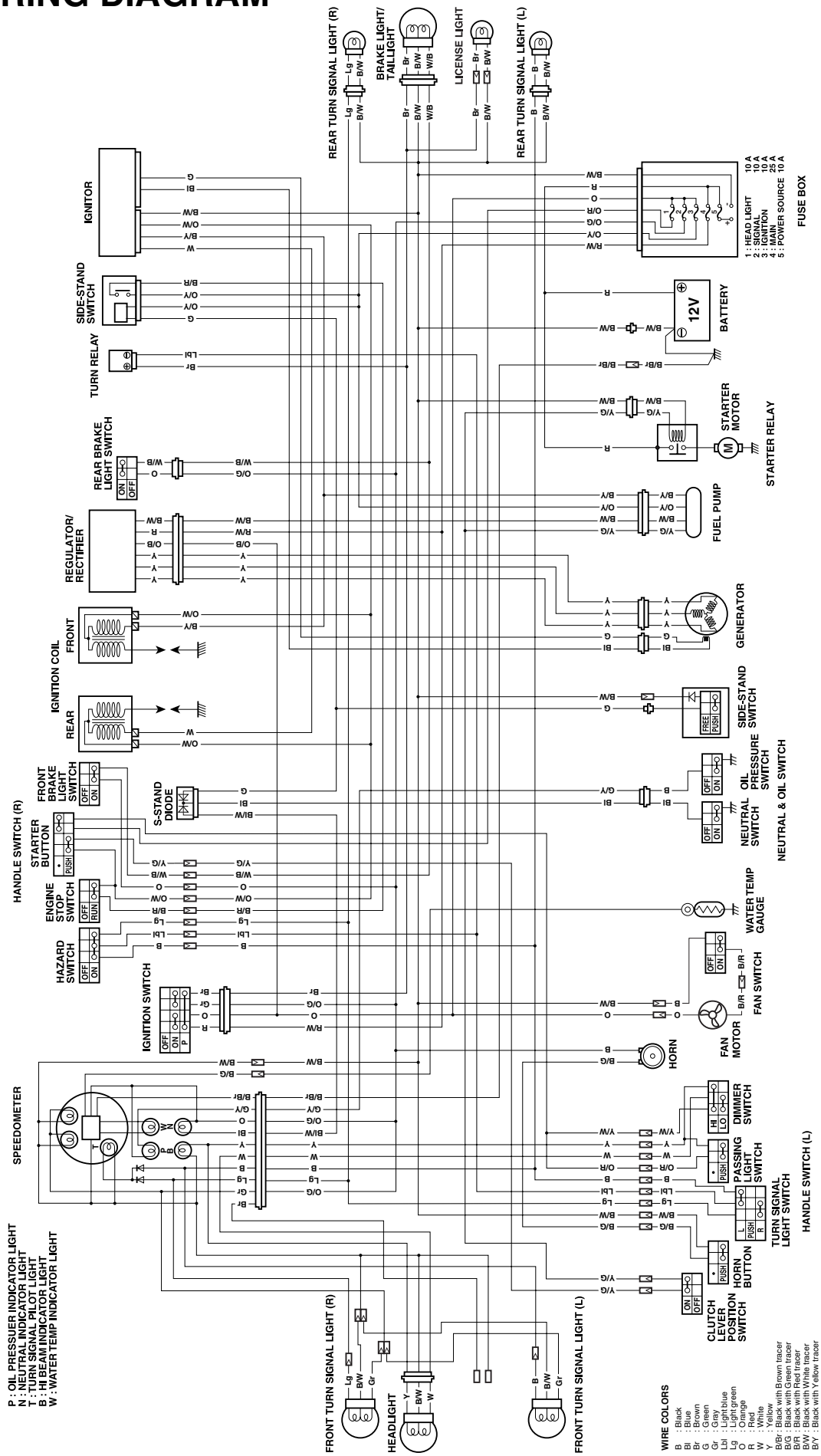
TOOL HOLDER INSTALLATION



EVAPORATIVE EMISSION CONTROL SYSTEM (FOR E-33)



WIRING DIAGRAM



VS800K6 ('06-MODEL)

This chapter describes service data, service specifications and servicing procedures which differ from those of the VS800K5 ('05-MODEL)

NOTE:
Please refer to chapters 1 through 23 for details which are not given in this chapter.

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NOTE:
Asterisk mark (*) indicates the New K6-model service data.

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 250 mm (88.6 in)
Overall width	765 mm (30.1 in)
Overall height	1 125 mm (44.3 in)
Wheelbase	1 560 mm (61.4 in)
Ground clearance	125 mm (4.9 in)
Seat height	700 mm (27.6 in)
Dry mass	202 kg (445 lbs) E-33
	201 kg (443 lbs) .....Others

ENGINE

Type	Four-stroke, liquid-cooled, OHC, 45° V-twin
Number of cylinders	2
Bore	83.0 mm (3.268 in)
Stroke	74.4 mm (2.929 in)
Displacement	805 cm^3 (49.1 cu in)
Compression ratio	10.0 : 1
Carburetor, front	MIKUNI BDS36
rear	MIKUNI BS36
Air cleaner	Non-woven fabric element
Starter system	Electric
Lubrication system	Wet sump
Idle speed	1 200 ± 50 r/min

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	1.690 (71/42)
Gear ratios, Low	2.285 (32/14)
2nd	1.631 (31/19)
3rd	1.227 (27/22)
4th	1.000 (25/25)
Top	0.851 (23/27)
Secondary reduction ratio	1.133 (30/30 × 17/15)
Final reduction ratio	3.090 (34/11)
Drive system	Shaft drive

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Swingarm, coil spring, oil damped
Front suspension stroke	130 mm (5.1 in)
Rear wheel travel	90 mm (3.5 in)
Caster	32° 40'
Trail	138 mm (5.43 in)
Steering angle	40° (right & left)
Turning radius	2.9 m (9.5 ft)
Front brake	Disc brake
Rear brake	Drum brake
Front tire size	100/90-19 M/C 57H, tube type
Rear tire size	140/90-15 M/C 70H, tube type

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	5° B.T.D.C. at 1 200 r/min
Spark plug	NGK DPR8EA-9 or DENSO X24EPR-U9
Battery	12 V 57.6 kC (16 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	25/10/10/10/10 A
Headlight	12 V 60/55 W
Turn signal light	12 V 21 W
Running light (in front turn signal)	12 V 5 W
Brake light/Taillight	12 V 21/5 W
License plate light	12 V 8 W
Neutral indicator light	12 V 1.7 W
High beam indicator light	12 V 1.7 W
Turn signal indicator light	12 V 3 W
Oil pressure indicator light	12 V 1.7 W
Coolant temperature check light	12 V 1.7 W
Speedometer light	12 V 3 W

CAPACITIES

Fuel tank, including reserve	11.0 L (2.9/2.4 US/Imp gal) E-33
	12.0 L (3.2/2.6 US/Imp gal) .....Others
reserve	3.0 L (0.8/0.7 US/Imp gal)
Engine oil, change	2 400 ml (2.5/2.1 US/Imp qt)
with filter change	2 800 ml (3.0/2.5 US/Imp qt)
overhaul	3 300 ml (3.5/2.9 US/Imp qt)
Final gear oil	200 – 220 ml (6.8/7.0 – 7.4/7.7 US Imp oz)
Coolant	1.7 L (1.8/1.5 US/Imp qt)

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	—
	EX.	26 (1.02)	—
Valve lift	IN.	8.5 (0.33)	—
	EX.	8.5 (0.33)	—
Valve clearance (when cold)	IN. & EX.	0.08 – 0.13 (0.003 – 0.005)	—
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	—
	EX.	0.036 – 0.057 (0.0012 – 0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	—
Valve stem O.D.	IN.	5.475 – 5.490 (0.2156 – 0.2161)	—
	EX.	5.455 – 5.470 (0.2148 – 0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem and length	IN. & EX.	—	4.0 (0.16)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.035 – 0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length	INNER	—	38.3 (1.51)
	OUTER	—	40.1 (1.58)
Valve spring tension	INNER	64 – 73 N (6.51 – 7.49 kgf, 14.35 – 16.51 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	119 – 136 N (12.09 – 13.91 kgf, 26.65 – 30.67 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954 – 35.994 (1.4155 – 1.4171)	35.660 (1.4039)
	EX.	36.919 – 36.959 (1.4535 – 1.4551)	36.620 (1.4417)
Camshaft journal oil clearance	0.032 – 0.066 (0.0013 – 0.0026)		0.150 (0.0060)
Camshaft journal holder I.D.	No. 1 Left side No. 2 Right side	20.012 – 20.025 (0.7879 – 0.7884)	—
	No. 1 Right side No. 2 Left side	25.012 – 25.025 (0.9847 – 0.9852)	—
Camshaft journal O.D.	No. 1 Left side No. 2 Right side	19.959 – 19.980 (0.7858 – 0.7866)	—
	No. 1 Right side No. 2 Left side	24.959 – 24.980 (0.9826 – 0.9835)	—
Camshaft runout	—		0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.966 – 11.984 (0.4711 – 0.4718)	—
Cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	1 300 – 1 600 kPa (13 – 16 kgf/cm^2, 185 – 228 psi)			1 100 kPa (11 kgf/cm^2, 156 psi)
Compression pressure difference	—			200 kPa (2 kgf/cm^2, 28 psi)
Piston to cylinder clearance	0.045 – 0.055 (0.0018 – 0.0022)			0.120 (0.0047)
Cylinder bore	83.000 – 83.015 (3.2677 – 3.2683)			83.085 (3.2711)
Piston diam.	82.950 – 82.965 (3.2657 – 3.2663) Measure at 15 mm (0.6 in) from the skirt end.			82.880 (3.2630)
Cylinder distortion	—			0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd	R	Approx. 11.8 (0.465)	9.4 (0.370)
Piston ring end gap	1st		0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)
	2nd		0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)

ITEM	STANDARD		LIMIT
Piston ring to groove clearance	1st	—	0.180 (0.007)
	2nd	—	0.150 (0.006)
Piston ring groove width	1st	1.01 – 1.03 (0.0398 – 0.0406)	—
	2nd	1.21 – 1.23 (0.0476 – 0.0484)	—
	Oil	2.51 – 2.53 (0.0988 – 0.0996)	—
Piston ring thickness	1st	0.970 – 0.990 (0.0382 – 0.0390)	—
	2nd	1.170 – 1.190 (0.0461 – 0.0469)	—
Piston pin bore	20.002 – 20.008 (0.7875 – 0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996 – 20.000 (0.7827 – 0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010 – 20.018 (0.7878 – 0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10 – 0.20 (0.004 – 0.008)	0.30 (0.012)
Conrod big end width	21.95 – 22.00 (0.864 – 0.866)	—
Crank pin width	22.10 – 22.15 (0.870 – 0.872)	—
Conrod big end oil clearance	0.024 – 0.042 (0.0009 – 0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982 – 41.000 (1.6135 – 1.6142)	—
Crankshaft journal oil clearance	0.020 – 0.050 (0.0008 – 0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965 – 47.980 (1.8884 – 1.8890)	—
Crankshaft thrust bearing thickness	1.925 – 2.175 (0.0758 – 0.0856)	—
Crankshaft thrust clearance	0.05 – 0.10 (0.002 – 0.004)	—
Crankshaft runout	—	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 × 32/29)	—
Oil pressure (at 60 °C, 140 °F)	Above 350 kPa (3.5 kg/cm^2, 50 psi) Below 650 kPa (6.5 kg/cm^2, 92 psi) at 3 000 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No. 1	2.92 – 3.08 (0.115 – 0.121)	2.62 (0.103)
	No. 2	3.45 – 3.55 (0.136 – 0.140)	3.15 (0.124)
Drive plate claw width	15.8 – 16.0 (0.622 – 0.630)		15.0 (0.591)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		34.0 (1.34)
Clutch master cylinder bore	14.000 – 14.043 (0.5512 – 0.5529)		—
Clutch master cylinder piston diam.	13.957 – 13.984 (0.5495 – 0.5506)		—
Clutch release cylinder bore	38.100 – 38.162 (1.5000 – 1.5024)		—
Clutch release cylinder piston diam.	38.042 – 38.075 (1.4977 – 1.4990)		—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		—
Secondary reduction ratio		1.133 (30/30 × 17/15)		—
Final reduction ratio		3.090 (34/11)		—
Gear ratios	Low	2.285 (32/14)		—
	2nd	1.631 (31/19)		—
	3rd	1.227 (27/22)		—
	4th	1.000 (25/25)		—
	Top	0.851 (23/27)		—
Shift fork to groove clearance		No. 1	0.10 – 0.30 (0.004 – 0.012)	0.50 (0.020)
		No. 2	0.10 – 0.30 (0.004 – 0.012)	0.50 (0.020)
Shift fork groove width		No. 1	5.50 – 5.60 (0.217 – 0.220)	—
		No. 2	4.50 – 4.60 (0.177 – 0.181)	—
Shift fork thickness		No. 1	5.30 – 5.40 (0.209 – 0.213)	—
		No. 2	4.30 – 4.40 (0.169 – 0.173)	—

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.05 – 0.32 (0.002 – 0.013)		—
Final bevel gear backlash	Drive side	0.03 – 0.64 (0.001 – 0.025)	—

CARBURETOR

ITEM	SPECIFICATION	
	E-03, 28	
Carburetor type	MIKUNI BS36SS (No. 1)	MIKUNI BDS36SS (No. 2)
Bore size	36 mm	←
I.D. No.	38E1	←
Idle r/min	1 200 ± 50 r/min	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7M	P-2M
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-33	
Carburetor type	MIKUNI BS36SS (No. 1)	MIKUNI BDS36SS (No. 2)
Bore size	36 mm	←
I.D. No.	38E5	←
Idle r/min	1 200 ± 50 r/min	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7M	P-2M
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	←

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5 °C (167 ± 2.7 °F)	—
Thermostat valve lift		Over 6 mm (0.24 in) at 90 °C (194 °F)	—
Radiator cap valve release pressure		110 ± 15 kPa (1.1 ± 0.15 kgf/cm^2, 15.6 ± 2.1 psi)	—
Electric fan thermo-switch operating temperature	ON	Approx. 105 °C (221 °F)	—
	OFF	Approx. 100 °C (212 °F)	—

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Firing order		1·2		
Spark plug		Type	N.G.K.: DPR8EA-9 N.D.: X24EPR-U9	
		Gap	0.8 – 0.9 (0.031 – 0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx. 50 – 200 Ω (G – Bl)		
Ignition coil resistance		Primary	1.8 – 2.6 Ω	⊕ tap – ⊖ tap
		Secondary	16 – 26 kΩ	Plug cap – ⊕ tap
Generator no-load voltage (When engine cold)		More than 75 V (AC) at 5 000 r/min		
Generator Max. output		250 W at 5 000 r/min		—
Regulated voltage		13.5 – 15.5 V at 5 000 r/min		
Starter motor brush length		Limit: 9.0 (0.35)		N.D.
Commutator under-cut		Limit: 0.2 (0.008)		
Starter relay resistance		2 – 6 Ω		
Battery		Type designation	YB16B-A1	
		Capacity	12 V 57.6 kC (16 Ah)/10 HR	
		Standard electrolyte S.G.	1.28 at 20 °C (68 °F)	
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Main	25 A		
	Power source	10 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Parking light		3.4
Brake light/Taillight		21/5
Turn signal light		21/5 (Front), 21 (Rear)
Speedometer light		3
Water temp. meter light		1.7
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		1.7
Oil pressure indicator light		1.7
License light		8

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		—
Rear brake pedal height	40 (1.6)		—
Brake lining thickness	Rear	—	1.5 (0.056)
Brake drum I.D.	Rear	—	180.7 (7.11)
Brake disc thickness	Front	5.0 ± 0.2 (0.20 ± 0.01)	4.5 (0.18)
Brake disc runout	—		0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4993)	—
Brake caliper cylinder bore	Front	42.850 – 42.926 (1.6870 – 1.6900)	—
Brake caliper piston diam.	Front	42.770 – 42.820 (1.6839 – 1.6858)	—
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)
Wheel rim size	Front	J19 × 2.15	—
	Rear	J15M/C × MT3.00	—

ITEM	STANDARD		LIMIT
Tire size	Front	100/90-19M/C 57H	—
	Rear	140/90-15M/C 70H	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	—	
Front fork spring free length	363.3 (14.3)	356 (14.0)	
Front fork oil level	118 (4.6)	—	
Front fork inner tube O.D.	39 (1.5)	—	
Rear wheel travel	90 (3.5)	—	
Swingarm pivot shaft runout	—	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kgf/cm^2	psi	kPa	kgf/cm^2	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

FUEL + OIL + COOLANT

ITEM		SPECIFICATION		NOTE
Fuel type		Use only unleaded gasoline of at least 87 pump octane or 91 octane (R/2 + M/2) or higher rated by the Research Method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		
Fuel tank capacity	including reserve	11.0 L (2.9/2.4 US/Imp gal)		E-33
	including reserve	12.0 L (3.2/2.6 US/Imp gal)		Others
	reserve	3.0 L (0.8/0.7 US/Imp gal)		
Engine oil type		* SAE 10W-40, API SF/SG or SH/SJ with JASO MA		
Engine oil capacity		Change	2 400 ml (2.5/2.1 US/Imp qt)	
		Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
		Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type		Fork oil #10		
Front fork oil capacity (each leg)		418 ml (14.1/14.7 US/Imp oz)		
Final bevel gear oil type		SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity		200 – 220 ml (6.8/7.0 – 7.4/7.7 US/Imp oz)		
Brake fluid type		DOT 4		
Coolant capacity		1 700 ml (1.8/1.5 US/Imp qt)		

REGULATOR/RECTIFIER

• Remove the regulator/rectifier.

Measure the voltage between the terminals using the multi circuit tester as indicated in the table below. If the voltage is not within the specified value, replace the regulator/rectifier with a new one.

TOOL 09900-25008: Multi-circuit tester set

Tester knob indication: Diode test (⊣◄)

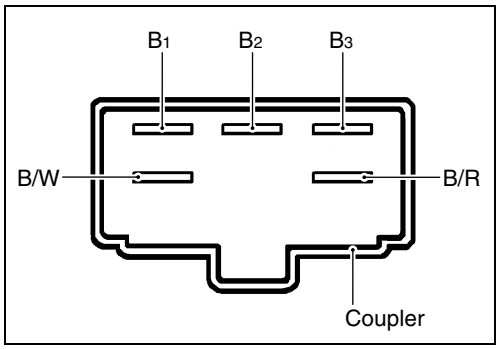
Unit: V

⊖ Probe of tester to: / ⊕ Probe of tester to:	B1	B2	B3	B/W	B/R
B1		∗	∗	0.3 – 0.6	∗
B2	∗		∗	0.3 – 0.6	∗
B3	∗	∗		0.3 – 0.6	∗
B/W	∗	∗	∗		∗
B/R	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.4 – 0.7	

∗1.4 V and more (tester's battery voltage)

NOTE:

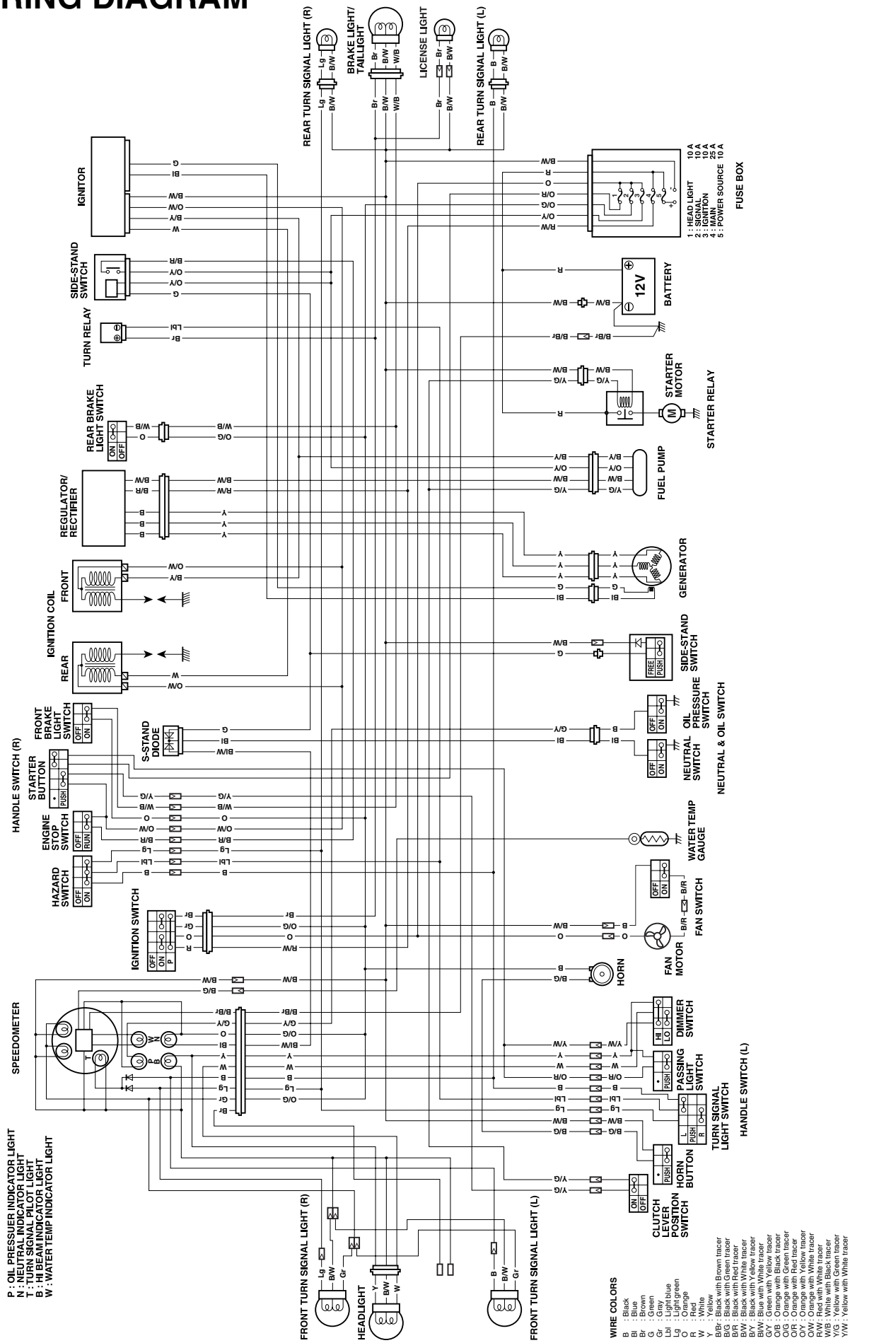
If the tester reads 1.4 V and below when the tester probes are not connected, replace the battery.



WIRE COLOR

B: Black
B/R: Black with Red tracer
B/W: Black with White tracer

WIRING DIAGRAM



VS800K7 ('07-MODEL)

This chapter describes service data, service specifications and servicing procedures which differ from those of the VS800K6 ('06-MODEL)

Please refer to chapters 1 through 24 for details which are not given in this chapter.

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SERVICE DATA..... 25-3

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 250 mm (88.6 in)
Overall width	765 mm (30.1 in)
Overall height	1 125 mm (44.3 in)
Wheelbase	1 560 mm (61.4 in)
Ground clearance	125 mm (4.9 in)
Seat height	700 mm (27.6 in)
Dry mass	202 kg (445 lbs) .....E-33 201 kg (443 lbs) .....Others

ENGINE

Type	Four-stroke, liquid-cooled, OHC, 45° V-twin
Number of cylinders	2
Bore	83.0 mm (3.268 in)
Stroke	74.4 mm (2.929 in)
Displacement	805 cm^3 (49.1 cu in)
Compression ratio	10.0 : 1
Carburetor, front	MIKUNI BDS36
rear	MIKUNI BS36
Air cleaner	Non-woven fabric element
Starter system	Electric
Lubrication system	Wet sump
Idle speed	1 200 ± 50 r/min

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	1.690 (71/42)
Gear ratios, Low	2.285 (32/14)
2nd	1.631 (31/19)
3rd	1.227 (27/22)
4th	1.000 (25/25)
Top	0.851 (23/27)
Secondary reduction ratio	1.133 (30/30 × 17/15)
Final reduction ratio	3.090 (34/11)
Drive system	Shaft drive

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Swingarm, coil spring, oil damped
Front suspension stroke	130 mm (5.1 in)
Rear wheel travel	90 mm (3.5 in)
Caster	32° 40'
Trail	138 mm (5.43 in)
Steering angle	40° (right & left)
Turning radius	2.9 m (9.5 ft)
Front brake	Disc brake
Rear brake	Drum brake
Front tire size	100/90-19 M/C 57H, tube type
Rear tire size	140/90-15 M/C 70H, tube type

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	5° B.T.D.C. at 1 200 r/min
Spark plug	NGK DPR8EA-9 or DENSO X24EPR-U9
Battery	12 V 57.6 kC (16 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	25/10/10/10/10 A
Headlight	12 V 60/55 W
Turn signal light	12 V 21 W
Running light (in front turn signal)	12 V 5 W
Brake light/Taillight	12 V 21/5 W
License plate light	12 V 8 W
Neutral indicator light	12 V 1.7 W
High beam indicator light	12 V 1.7 W
Turn signal indicator light	12 V 3 W
Oil pressure indicator light	12 V 1.7 W
Coolant temperature check light	12 V 1.7 W
Speedometer light	12 V 3 W

CAPACITIES

Fuel tank, including reserve	11.0 L (2.9/2.4 US/Imp gal) .....E-33 12.0 L (3.2/2.6 US/Imp gal) .....Others
reserve	3.0 L (0.8/0.7 US/Imp gal)
Engine oil, change	2 400 ml (2.5/2.1 US/Imp qt)
with filter change	2 800 ml (3.0/2.5 US/Imp qt)
overhaul	3 300 ml (3.5/2.9 US/Imp qt)
Final gear oil	200 – 220 ml (6.8/7.0 – 7.4/7.7 US Imp oz)
Coolant	1.7 L (1.8/1.5 US/Imp qt)

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	30 (1.18)	—
	EX.	26 (1.02)	—
Valve lift	IN.	8.5 (0.33)	—
	EX.	8.5 (0.33)	—
Valve clearance (when cold)	IN. & EX.	0.08 – 0.13 (0.003 – 0.005)	—
Valve guide to valve stem clearance	IN.	0.010 – 0.037 (0.0004 – 0.0015)	—
	EX.	0.036 – 0.057 (0.0012 – 0.0022)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	5.500 – 5.512 (0.2165 – 0.2170)	—
Valve stem O.D.	IN.	5.475 – 5.490 (0.2156 – 0.2161)	—
	EX.	5.455 – 5.470 (0.2148 – 0.2154)	—
Valve stem runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.5 (0.02)
Valve stem and length	IN. & EX.	—	4.0 (0.16)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.035 – 0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length	INNER	—	38.3 (1.51)
	OUTER	—	40.1 (1.58)
Valve spring tension	INNER	64 – 73 N (6.51 – 7.49 kgf, 14.35 – 16.51 lbs) at length 32.5 mm (1.28 in)	—
	OUTER	119 – 136 N (12.09 – 13.91 kgf, 26.65 – 30.67 lbs) at length 36.0 mm (1.42 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.954 – 35.994 (1.4155 – 1.4171)	35.660 (1.4039)
	EX.	36.919 – 36.959 (1.4535 – 1.4551)	36.620 (1.4417)
Camshaft journal oil clearance	0.032 – 0.066 (0.0013 – 0.0026)		0.150 (0.0060)
Camshaft journal holder I.D.	No. 1 Left side No. 2 Right side	20.012 – 20.025 (0.7879 – 0.7884)	—
	No. 1 Right side No. 2 Left side	25.012 – 25.025 (0.9847 – 0.9852)	—
Camshaft journal O.D.	No. 1 Left side No. 2 Right side	19.959 – 19.980 (0.7858 – 0.7866)	—
	No. 1 Right side No. 2 Left side	24.959 – 24.980 (0.9826 – 0.9835)	—
Camshaft runout	—		0.10 (0.004)
Rocker arm I.D.	IN. & EX.	12.000 – 12.018 (0.4724 – 0.4731)	—
Rocker arm shaft O.D.	IN. & EX.	11.966 – 11.984 (0.4711 – 0.4718)	—
Cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	1 300 – 1 600 kPa (13 – 16 kgf/cm^2, 185 – 228 psi)			1 100 kPa (11 kgf/cm^2, 156 psi)
Compression pressure difference	—			200 kPa (2 kgf/cm^2, 28 psi)
Piston to cylinder clearance	0.045 – 0.055 (0.0018 – 0.0022)			0.120 (0.0047)
Cylinder bore	83.000 – 83.015 (3.2677 – 3.2683)			83.085 (3.2711)
Piston diam.	82.950 – 82.965 (3.2657 – 3.2663) Measure at 15 mm (0.6 in) from the skirt end.			82.880 (3.2630)
Cylinder distortion	—			0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 10.5 (0.413)	8.4 (0.331)
	2nd	R	Approx. 11.8 (0.465)	9.4 (0.370)
Piston ring end gap	1st		0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)
	2nd		0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)

ITEM	STANDARD		LIMIT
Piston ring to groove clearance	1st	—	0.180 (0.007)
	2nd	—	0.150 (0.006)
Piston ring groove width	1st	1.01 – 1.03 (0.0398 – 0.0406)	—
	2nd	1.21 – 1.23 (0.0476 – 0.0484)	—
	Oil	2.51 – 2.53 (0.0988 – 0.0996)	—
Piston ring thickness	1st	0.970 – 0.990 (0.0382 – 0.0390)	—
	2nd	1.170 – 1.190 (0.0461 – 0.0469)	—
Piston pin bore	20.002 – 20.008 (0.7875 – 0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996 – 20.000 (0.7827 – 0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010 – 20.018 (0.7878 – 0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.10 – 0.20 (0.004 – 0.008)	0.30 (0.012)
Conrod big end width	21.95 – 22.00 (0.864 – 0.866)	—
Crank pin width	22.10 – 22.15 (0.870 – 0.872)	—
Conrod big end oil clearance	0.024 – 0.042 (0.0009 – 0.0017)	0.080 (0.0031)
Crank pin O.D.	40.982 – 41.000 (1.6135 – 1.6142)	—
Crankshaft journal oil clearance	0.020 – 0.050 (0.0008 – 0.0020)	0.080 (0.0031)
Crankshaft journal O.D.	47.965 – 47.980 (1.8884 – 1.8890)	—
Crankshaft thrust bearing thickness	1.925 – 2.175 (0.0758 – 0.0856)	—
Crankshaft thrust clearance	0.05 – 0.10 (0.002 – 0.004)	—
Crankshaft runout	—	0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pump reduction ratio	1.859 (71/42 × 32/29)	—
Oil pressure (at 60 °C, 140 °F)	Above 350 kPa (3.5 kg/cm^2, 50 psi) Below 650 kPa (6.5 kg/cm^2, 92 psi) at 3 000 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Drive plate thickness	No. 1	2.92 – 3.08 (0.115 – 0.121)	2.62 (0.103)
	No. 2	3.45 – 3.55 (0.136 – 0.140)	3.15 (0.124)
Drive plate claw width	15.8 – 16.0 (0.622 – 0.630)		15.0 (0.591)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	—		34.0 (1.34)
Clutch master cylinder bore	14.000 – 14.043 (0.5512 – 0.5529)		—
Clutch master cylinder piston diam.	13.957 – 13.984 (0.5495 – 0.5506)		—
Clutch release cylinder bore	38.100 – 38.162 (1.5000 – 1.5024)		—
Clutch release cylinder piston diam.	38.042 – 38.075 (1.4977 – 1.4990)		—

TRANSMISSION

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		1.690 (71/42)		—
Secondary reduction ratio		1.133 (30/30 × 17/15)		—
Final reduction ratio		3.090 (34/11)		—
Gear ratios	Low	2.285 (32/14)		—
	2nd	1.631 (31/19)		—
	3rd	1.227 (27/22)		—
	4th	1.000 (25/25)		—
	Top	0.851 (23/27)		—
Shift fork to groove clearance		No. 1	0.10 – 0.30 (0.004 – 0.012)	0.50 (0.020)
		No. 2	0.10 – 0.30 (0.004 – 0.012)	0.50 (0.020)
Shift fork groove width		No. 1	5.50 – 5.60 (0.217 – 0.220)	—
		No. 2	4.50 – 4.60 (0.177 – 0.181)	—
Shift fork thickness		No. 1	5.30 – 5.40 (0.209 – 0.213)	—
		No. 2	4.30 – 4.40 (0.169 – 0.173)	—

SHAFT DRIVE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Secondary bevel gear backlash	0.05 – 0.32 (0.002 – 0.013)		—
Final bevel gear backlash	Drive side	0.03 – 0.64 (0.001 – 0.025)	—

CARBURETOR

ITEM	SPECIFICATION	
	E-03, 28	
Carburetor type	MIKUNI BS36SS (No. 1)	MIKUNI BDS36SS (No. 2)
Bore size	36 mm	←
I.D. No.	38E1	←
Idle r/min	1 200 ± 50 r/min	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7M	P-2M
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM	SPECIFICATION	
	E-33	
Carburetor type	MIKUNI BS36SS (No. 1)	MIKUNI BDS36SS (No. 2)
Bore size	36 mm	←
I.D. No.	38E5	←
Idle r/min	1 200 ± 50 r/min	←
Float height	27.7 ± 1.0 mm (1.09 ± 0.04 in)	9.1 ± 1.0 mm (0.36 ± 0.04 in)
Main jet (M.J.)	#132.5	#127.5
Jet needle (J.N.)	5D35-1st	5D47-1st
Needle jet (N.J.)	P-7M	P-2M
Throttle valve (Th.V.)	#125	#110
Pilot jet (P.J.)	#45	#40
Pilot screw (P.S.)	(PRE-SET)	(PRE-SET)
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	←

THERMOSTAT + RADIATOR + FAN

ITEM		STANDARD	LIMIT
Thermostat valve opening temperature		75.0 ± 1.5 °C (167 ± 2.7 °F)	—
Thermostat valve lift		Over 6 mm (0.24 in) at 90 °C (194 °F)	—
Radiator cap valve release pressure		110 ± 15 kPa (1.1 ± 0.15 kgf/cm^2, 15.6 ± 2.1 psi)	—
Electric fan thermo-switch operating temperature	ON	Approx. 105 °C (221 °F)	—
	OFF	Approx. 100 °C (212 °F)	—

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Firing order		1·2		
Spark plug		Type	N.G.K.: DPR8EA-9 N.D.: X24EPR-U9	
		Gap	0.8 – 0.9 (0.031 – 0.035)	
Spark performance		Over 8 (0.3) at 1 atm.		
Signal coil resistance		Approx. 50 – 200 Ω (G – Bl)		
Ignition coil resistance		Primary	1.8 – 2.6 Ω	⊕ tap – ⊖ tap
		Secondary	16 – 26 kΩ	Plug cap – ⊕ tap
Generator no-load voltage (When engine cold)		More than 75 V (AC) at 5 000 r/min		
Generator Max. output		250 W at 5 000 r/min		—
Regulated voltage		13.5 – 15.5 V at 5 000 r/min		
Starter motor brush length		Limit: 9.0 (0.35)		N.D.
Commutator under-cut		Limit: 0.2 (0.008)		
Starter relay resistance		2 – 6 Ω		
Battery		Type designation	YB16B-A1	
		Capacity	12 V 57.6 kC (16 Ah)/10 HR	
		Standard electrolyte S.G.	1.28 at 20 °C (68 °F)	
Fuse size	Headlight	10 A		
	Signal	10 A		
	Ignition	10 A		
	Main	25 A		
	Power source	10 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	60
	LO	55
Parking light		3.4
Brake light/Taillight		21/5
Turn signal light		21/5 (Front), 21 (Rear)
Speedometer light		3
Water temp. meter light		1.7
Turn signal indicator light		3
High beam indicator light		1.7
Neutral indicator light		1.7
Oil pressure indicator light		1.7
License light		8

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		—
Rear brake pedal height	40 (1.6)		—
Brake lining thickness	Rear	—	1.5 (0.056)
Brake drum I.D.	Rear	—	180.7 (7.11)
Brake disc thickness	Front	5.0 ± 0.2 (0.20 ± 0.01)	4.5 (0.18)
Brake disc runout	—		0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4993)	—
Brake caliper cylinder bore	Front	42.850 – 42.926 (1.6870 – 1.6900)	—
Brake caliper piston diam.	Front	42.770 – 42.820 (1.6839 – 1.6858)	—
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)
Wheel rim size	Front	J19 × 2.15	—
	Rear	J15M/C × MT3.00	—

ITEM	STANDARD		LIMIT
Tire size	Front	100/90-19M/C 57H	—
	Rear	140/90-15M/C 70H	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT	NOTE
Front fork stroke	130 (5.12)	—	
Front fork spring free length	363.3 (14.3)	356 (14.0)	
Front fork oil level	118 (4.6)	—	
Front fork inner tube O.D.	39 (1.5)	—	
Rear wheel travel	90 (3.5)	—	
Swingarm pivot shaft runout	—	0.30 (0.012)	

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kgf/cm^2	psi	kPa	kgf/cm^2	psi
FRONT	200	2.00	29	225	2.25	33
REAR	225	2.25	33	250	2.50	36

FUEL + OIL + COOLANT

ITEM		SPECIFICATION		NOTE
Fuel type		Use only unleaded gasoline of at least 87 pump octane or 91 octane (R/2 + M/2) or higher rated by the Research Method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		
Fuel tank capacity	including reserve	11.0 L (2.9/2.4 US/Imp gal)		E-33
	including reserve	12.0 L (3.2/2.6 US/Imp gal)		Others
	reserve	3.0 L (0.8/0.7 US/Imp gal)		
Engine oil type		* SAE 10W-40, API SF/SG or SH/SJ with JASO MA		
Engine oil capacity		Change	2 400 ml (2.5/2.1 US/Imp qt)	
		Filter change	2 800 ml (3.0/2.5 US/Imp qt)	
		Overhaul	3 300 ml (3.5/2.9 US/Imp qt)	
Front fork oil type		Fork oil #10		
Front fork oil capacity (each leg)		418 ml (14.1/14.7 US/Imp oz)		
Final bevel gear oil type		SAE 90 hypoid gear oil with GL-5 under API classification		
Final bevel gear oil capacity		200 – 220 ml (6.8/7.0 – 7.4/7.7 US/Imp oz)		
Brake fluid type		DOT 4		
Coolant capacity		1 700 ml (1.8/1.5 US/Imp qt)		

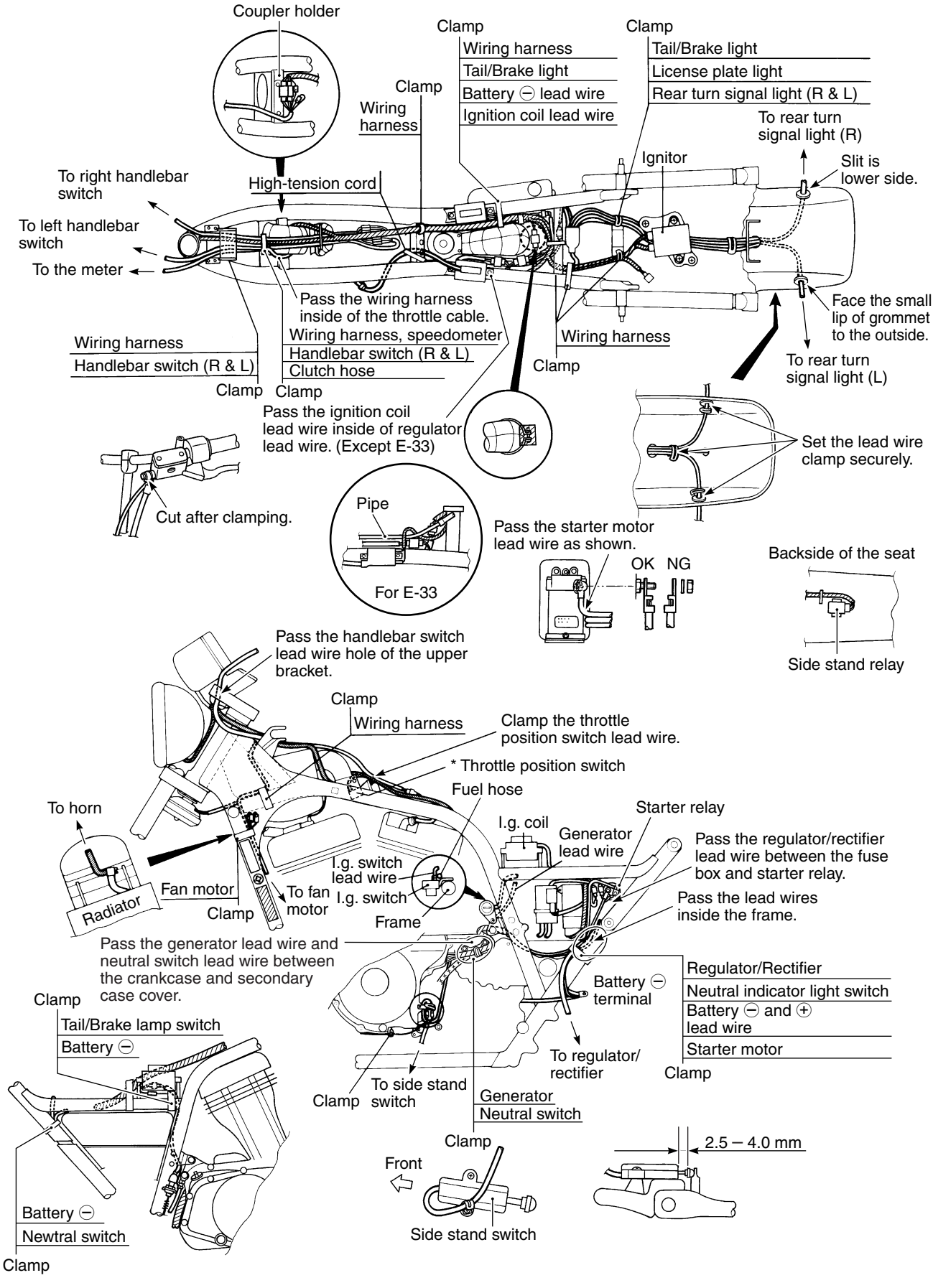
VS800K8 ('08-MODEL)

NOTE:
The specifications and service data are the same as the K7-MODEL.

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WIRING HARNESS ROUTING



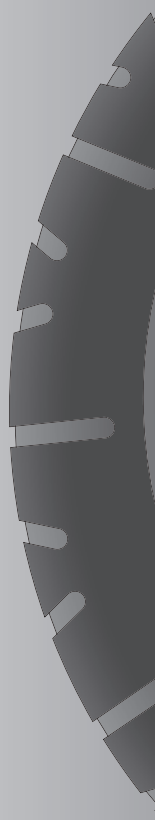
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