SUZUKI

SERVICE MANUAL

MODEL

GT750

ENGINE

FOREWORD

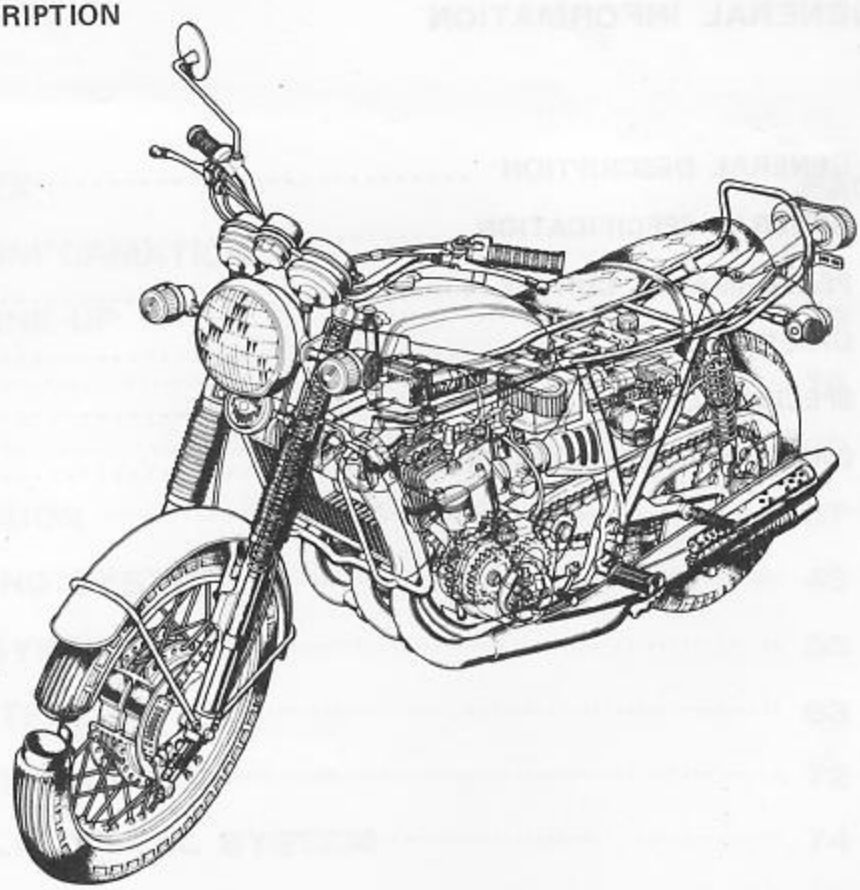
This service manual has been published as the guidance of Suzuki GT750 engine for proper service in the workshop.

This manual is constructed in sequence of Description, Specification, Operation, Trouble shooting, Removal, Inspection, Repair, Adjustment and Assembly for every chapter. In addition to these items, this manual also refers complementarily to a foundermental principle, reason for an adoption of the mechanism and its function as many as possible in order to have GT750 engine comprehended by all the mechanics.

Suzuki will be happy if this manual assists in providing prompt and well done repair work so that GT750 customers will receive reliable service.

Prepared by
SUZUKI MOTOR CO.,LTD.
Export Service Section
July, 1972
Printed in Japan

SECTION INDEX



SUZUKI GT750 is a high performance and large size sporty type motorcycle equipped with advanced new mechanisms which are to be described below.

This two-cycle engine has a three-cylinder construction of piston valve type having the total displacement of 738cm^3 (45.0 cu in). In order to improve the cooling efficiency and at the same time to display its full power, the engine adopts a water cooling system. On the other hand, to reduce the weight of engine for motorcycle application, the material for main components, such as cylinder block, cylinder head uses aluminum alloys.

A three big bore carburetor system (VM32 SC) is adopted, with each carburetor being used for each cylinder. This arrangement has made it possible to feed always an optimal mixture gas to combustion chambers over a wide range of engine speed, from low to high speed ranges. The exhaust pipe connects three exhaust mufflers with exhaust coupler tubes. Such a newly developed intake and exhaust gas system has given the engine a well balanced highly tuned performance.

The engine driven metering oil pump supplies oil to required locations of cylinders and crank shaft, as is so often the case as in SUZUKI CCI System. In the past, oil supplied returned to crank chamber was exhausting white smoke from exhaust muffler. To avoid this, a new mechanism called SRIS (SUZUKI Recycle Injection System) has been adopted in this machine.

An aluminum corrugated type radiator is adopted in the cooling system for weight reduction. The system is of the sealed pressure type. Combined with the use of "year's round anti-freeze & summer coolant", this system needs no additional supply of water except in the case of unusual leak. A motor driven cooling fan is installed, which operates whenever the water temperature rises due to unusually severe operation conditions of engine.

GENERAL SPECIFICATION

Dimensions and Weight	
Overall length	2215 mm (87.2 in)
Overall width	865 mm (34.0 in)
Overall height	1125 mm (44.3 in)
Wheelbase	1470 mm (57.8 in)
Ground clearance	140 mm (5.5 in)
Tires front	3.25–19 in 4PR
rear	4.00–18 in 4PR
Dry weight	214 kg (482 lb)
Performance	
Maximum speed	184–192 kph (115–120 mph)
Acceleration (0–400 m)	12.6 sec.
Braking distance	1.4 m (46.0 ft) @ 50 kph (30.0 mph)
Engine	
Type	2-cycle, water cooled, piston valve engine
Dimensions (L x W x H)	607 x 499 x 445 mm (26.3 x 19.7 x 17.5 in)
Weight	84 kg (38.2 lb)
Cylinder	Sleeved, aluminum, three
Bore x stroke	70 x 64 mm (2.76 x 2.52 in)
Piston displacement	738cc (45.0 cu-in)
Corrected compression ratio	6.7 : 1
Maximum horse power	67 hp/6,500 rpm
Maximum torque	7.7 kgm/(55.7 lb-ft)/5,500 rpm
Starter	Electric and kick
Cooling System	
Type	Water cooled, pressure forced circulation
Radiator	Corrugated fin and tube pressure type
Water pump	6 brade impeller centrifugal type
Thermostat	Wax pellet element type
Cooling solution capacity	4.5 ltr (1.2/1.0 gal, US/Imp)
Fuel System	
Carburetor	VM32SC, three
Air cleaner	Resin-processed, paper filter
Fuel tank capacity	17 ltr (4.5/3.7 gal, US/Imp)

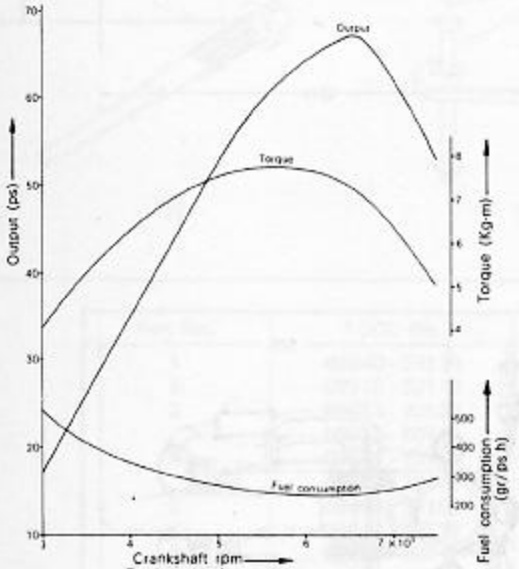
Lubrication System		
Engine		SUZUKI CCI
Gear box		Oil bath 2.2 ltr (4.7/3.9 pt, US/Imp)
Oil tank capacity		1.8 ltr (3.8/3.2 pt, US/Imp)
Ignition System		
Ignition system		Battery
Ignition timing		24° (R.L 3.63, C3.42 mm) B.T.D.C.
Spark plugs		NGK B-7ES or Nippon Denso W22ES
Transmission System		
Clutch		wet multi-disc
Gear box		5-speed constant mesh
Gear shifting		Left foot, lever operated return change
Primary reduction ratio (gear)		1.673 : 1 (82/49)
Final reduction ratio (chain)		3.133 : 1 (47/15)
Gear ratios	low	2.846 : 1 (37/13)
	second	1.736 : 1 (33/19)
	third	1.363 : 1 (30/22)
	fourth	1.125 : 1 (27/24)
	top	0.923 : 1 (24/26)
Overall reduction ratios		
	low	14.92 : 1
	second	9.09 : 1
	third	7.14 : 1
	fourth	5.89 : 1
	top	4.48 : 1
Suspension		
Front suspension		Telescopic fork with hydraulic damper
Rear suspension		Swinging arm with hydraulic damper
Steering		
Steering angle		40° (right & left)
Caster		63°
Trail		95 mm (3.74 in)
Turning radius		2.6 m (8.5 ft)
Brakes		
Front brake		Mechanical, 2 panel 4 leading shoes
Rear brake		Mechanical, leading trading shoes

Electrical Equipment	
Generator	Alternator 12V 280W
Starter	12V 500W
Cooling fan	12V 27.6W
Battery	12V 14AH
Head Lamp	12V 50/40W
Tail/brake lamp	12V 8/23W
Neutral indicator lamp	12V 1.5W
Turn signal indicator lamp	12V 1.5W
Speedometer lamp	12V 3W
Tachometer lamp	12V 3W
Turn signal lamp	12V 23W
Fuse	20A
Water temperature gauge	12V 2W

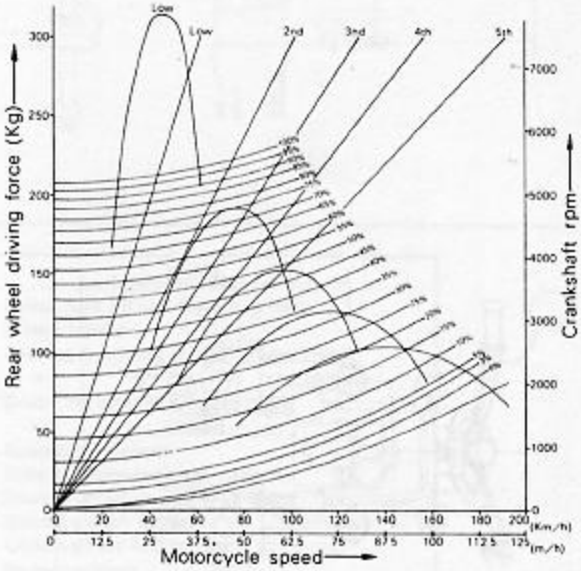
SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

You may find some slight differences between your motorcycle and this service guide.
This is because of differences of traffic regulations in different countries.

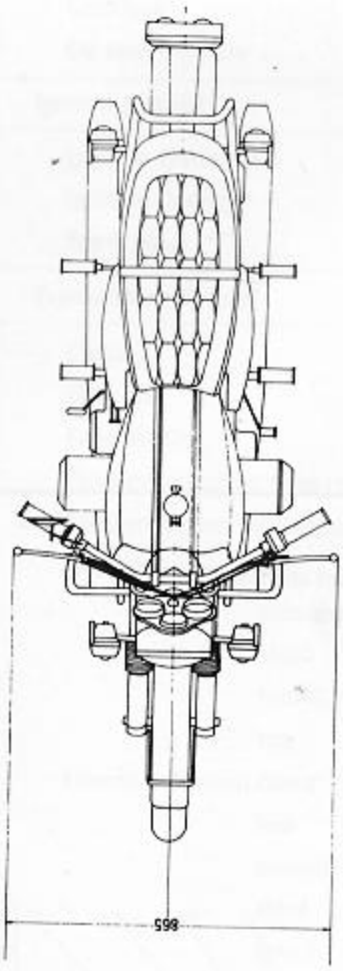
PERFORMANCE CURVES

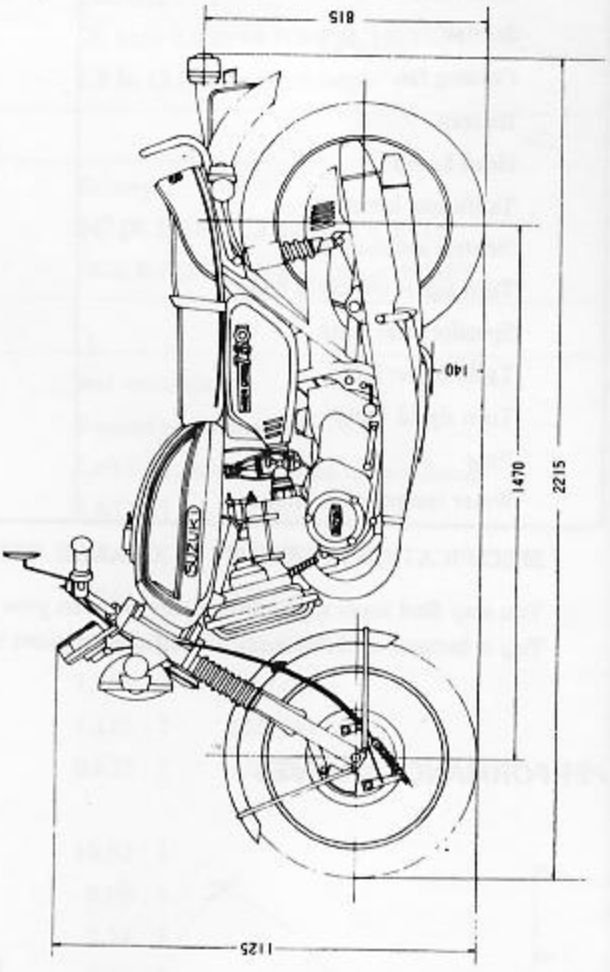


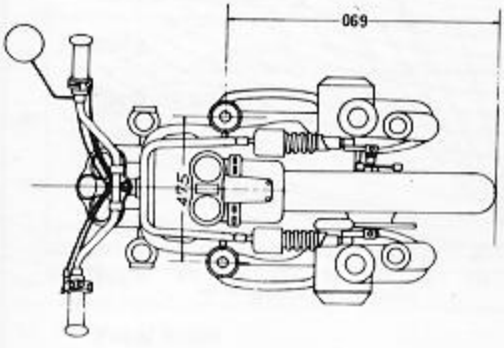
Engine performance curves

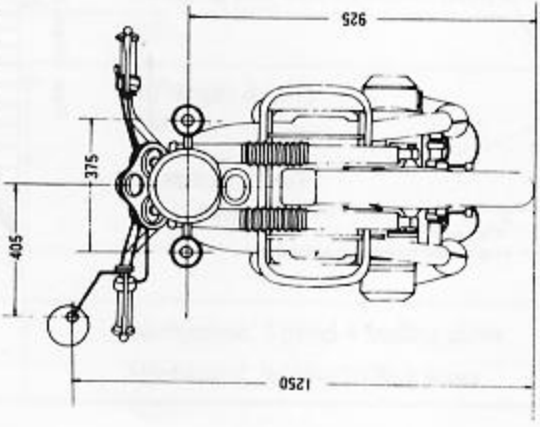


DIMENSIONS









SPECIAL TOOLS

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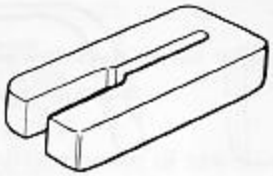

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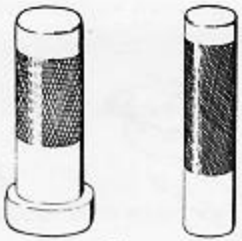

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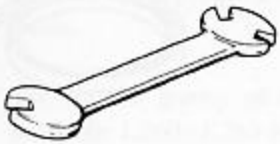

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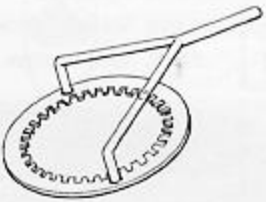

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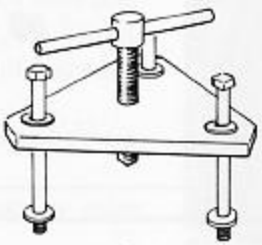

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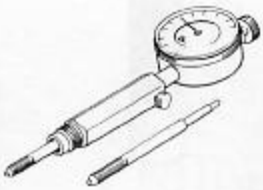
Ref. No.	TOOL No.	Name
1	09940 - 53110	Front fork oil seal installing tool
2	09910 - 20113	Piston holder
3	09913 - 70122	Bearing & oil seal installing tool (Big)
	09913 - 80110	" " " (Small)
4	09920 - 70111	Snap ring opener (Small)
	09920 - 70120	" " (Big)
5	09900 - 06103	Snap ring remover
6	09940 - 10122	Steering stem lock nut wrench
7	09940 - 60112	Spoke nipple wrench
8	09920 - 40111	Starter clutch holder
9	09920 - 53110	Clutch sleeve hub holder
10	09930 - 33110	Rotor remover
11	09920 - 13110	Starter clutch remover
12	09900 - 21802	Chain joint tool

GAUGE & SERVICE MATERIALS



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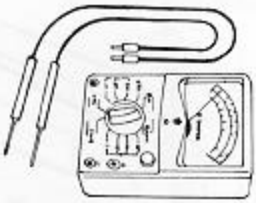

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Ref. No.	Part No.	Name	Applied for
1	09931 - 00111	Timing gauge	
2	09900 - 27002	Timing tester	
3	09900 - 25001	Pocket tester	
4	09900 - 28101	Electro tester	
5	99000 - 32040	Thread lock cement	1. Starter clutch hub set screw 2. Gear shifting cam guide set 3. Paul lifter set screw 4. Kick starter guide set screw 5. Gear shifting cam stopper plate set screw 6. Gear shifting arm stopper 7. Starter clutch nut
6	99000 - 32030	Suzuki lock super 103Q	Second drive gear
7	99000 - 25020	Suzuki super grease C	
8	14219 - 31000	Exhaust coupler seal	Exhaust coupler tube
9	99000 - 24130	Suzuki 7 on Bar's Leaks	Cooling system
10	99000 - 31030	Suzuki bond No.4	Crankcase

2. ENGINE TUNE-UP

Periodical inspection and maintenance are essential to maintain the best performance from engine as originally designed.

If any deficiency is encountered during operation of the motorcycle, it must be diagnosed immediately, and proper care should be taken by tuning up the engine.

The engine of GT750 incorporates a great number of new system and equipments which can only be taken care with special knowledge and proper care.
The procedures described in the following orders should be carefully studied to accomplish the correct engine tune-up.

Inspection & Adjustment

Battery

1. Check level of the electrolyte in the battery cells. The electrolyte should be at the level line on the battery case.
   If necessary, replenish the battery with distilled water.

2. The specific gravity of a full charged battery should be 1.260–1.280 at 20°C (68°F).
   When the battery specific gravity decreases less than 1.220, the battery should be changed. If the difference between each cell is more than 0.025 reading after fully charged, the battery should be inspected and replaced if necessary.

3. Check the battery terminals, clean and tighten if necessary.
   Check the battery case for cracks or other damages, and replace if necessary.

4. Check the battery breather pipe if its end is opened or clogged.

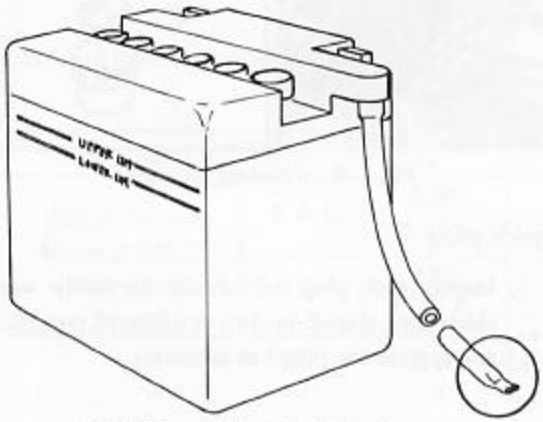

Fig. 2–1 Battery breather pipe

Engine oil (CCI oil) & Oil pump

1. Check the engine oil level in the oil tank. If the oil level is found below the oil level inspection eye, replenish SUZUKI CCI OIL or non-diluent (non-self mixing type) Two Stroke Oil with around SAE 30 wt.

Fig. 2–2 Oil level inspection eye

2. Check to see if air is present in the oil pump and pipe. Expel air if it is.
   For expelling air in the oil pump and pipe, refer to "Inspection & Repair" of OIL PUMP on page 50.

3. Adjust the oil pump lever ① with the cable adjuster ② so that the aligning marks ③ align when the punch mark ④ on the throttle valve comes on upper end of the hole on the carburetor body as the throttle grip gradually winds up. See Fig. 2–3.

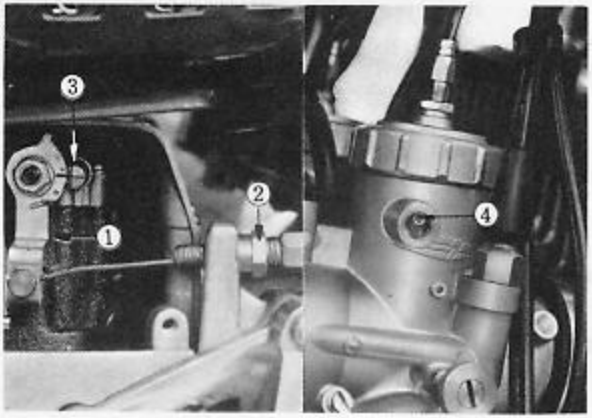

Fig. 2–3 Adjusting oil pump lever

Cooling System

1. Check the cooling system for leaks, weak hoses, loose hose clamps and correct coolant level. If the cooling solution level is under the level plate inside the inlet pipe when cool, replenish with distilled water.

2. Check the coolant for deterioration. Check if the transmission oil or gasoline is present in the coolant.

3. When refilling, use GOLDEN CRUISER 1200 Anti-freeze & Summer Coolant tested and guaranteed by Suzuki or equivalents in the market.
   GOLDEN CRUISER 1200 Anti-freeze & Summer Coolant is "year around" Ethylene-Glycol solution and serves approximately 2 years or 3,500 km (2,000 miles).
   See page 60 for details.

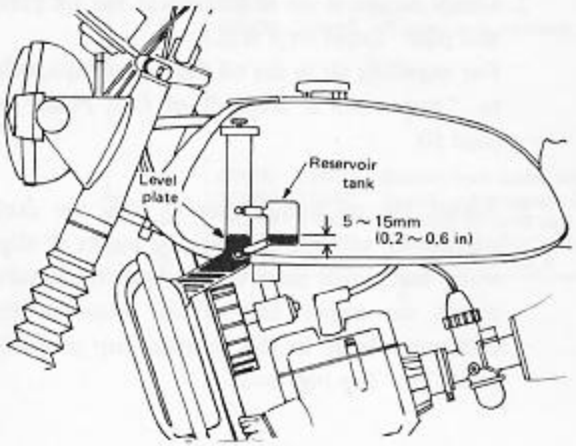

Fig. 2–4 Cooling solution level

Air cleaner

1. Clean the cleaner element with compressed air. Replace the element if damaged or excessively dirty.

2. Check to see if the cleaner is assembled properly after servicing.

Fig. 2–5 Cleaning air cleaner

Fuel cock

1. Check the fuel cock for clogging, and check to see if the diaphregm ① works properly.

2. Clean the fuel cock filter ②, and replace if necessary.

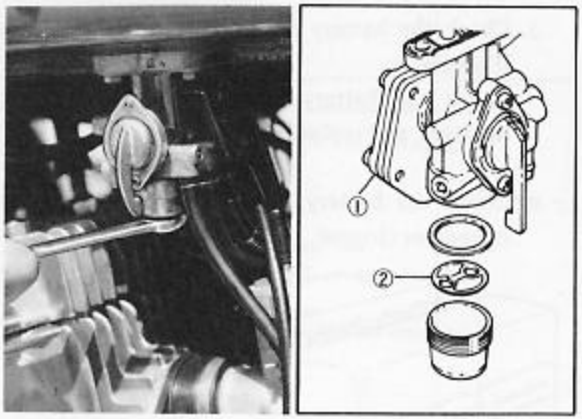

Fig. 2–6 Checking fuel cock

Spark plug

1. Inspect each plug individually for badly worn electrodes, glazed, broken or blistered porcelain, and replace the plug/s as necessary.

2. Clean the spark plugs throughly using a sand blast cleaner.

3. Inspect each plug for heat range. If excessive carbon deposits are observed on the insulator tip, replace with a hot range type spark plugs. If the plugs show burning white or rapid electrode wear, replace with a cold range type spark plugs.

4. Check the spark plug gap. The specified gap is 0.7–0.8 mm (0.027–0.031 in) for NGK and 0.6–0.7 mm (0.024–0.027 in) for ND makes.

Ignition timing

1. Adjust ignition timing with the timing gauge in accordance with the following table keeping in mind that the gauge stroke is not uniform because of the difference in inclination of spark plug hole at each cylinder.

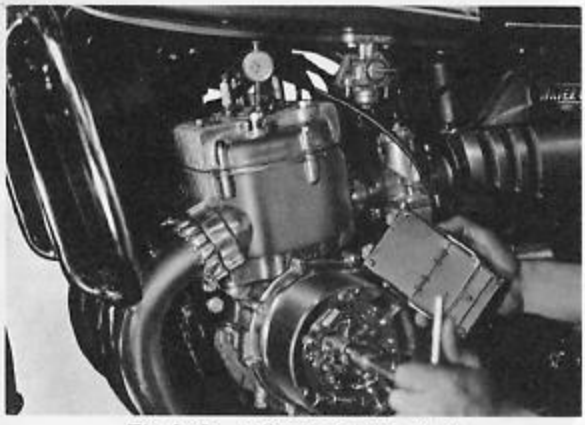

Fig. 2–7 Adjusting ignition timing

Standard ignition timing : 24°±2 (B T.D.C.)

2. Adjust also contact point gap to have 0.35 mm (0.014 in) at maximum opening.

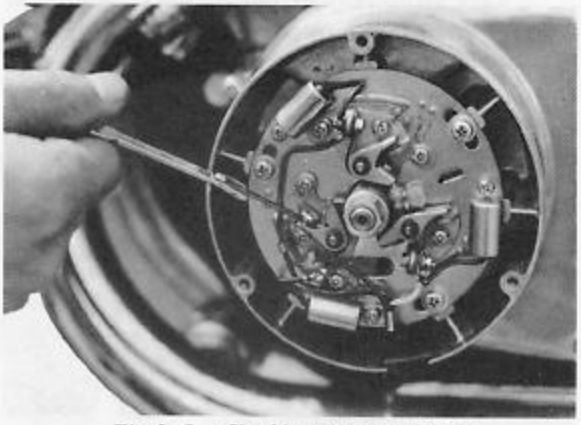

Fig. 2–8 Checking contact point gap

3. Check the contact points for wear or flatness of points surface.
   Check for defective condenser.

Carburetor

Adjust the carburetor in the following methods.

1. Turn the cable adjuster ① on the top of the carburetor to have a play of 2–3 mm (0.08–0.09 in) between the cable and cable adjuster.

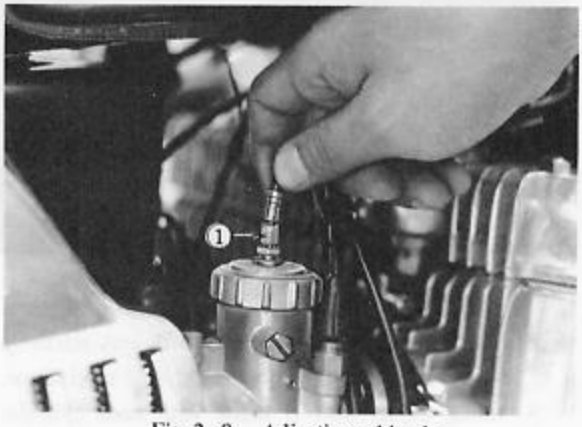

Fig. 2–9 Adjusting cable play

Crank angle (B.T.D.C.)		22°	23°	24°	25°	26°
Piston distance from B.T.D.C. mm (in)	R & L	3.20 (0.126)	3.35 (0.134)	3.64 (0.143)	3.94 (0.155)	4.25 (0.167)
	C	2.88 (0.113)	3.15 (0.124)	3.42 (0.136)	3.72 (0.146)	3.99 (0.157)

R & L : Right and left cylinder
C : Center cylinder

2. Removing aligning hole plug ① from mixing chamber body of each carburetor, then adjust three carburetors by turning the cable adjuster so that a punch mark ② on the side of throttle valve comes on upper surface of the hole with the throttle grip gradually wound up.

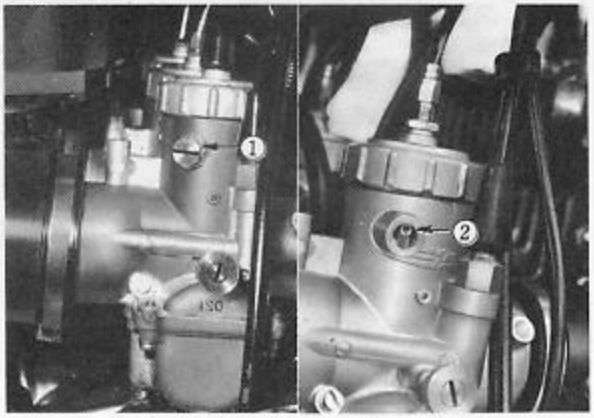

Fig. 2–10 Coordinating three carburetor

3. Screw pilot air adjusting screw of each carburetor all the way in and back it out 1½ turns.

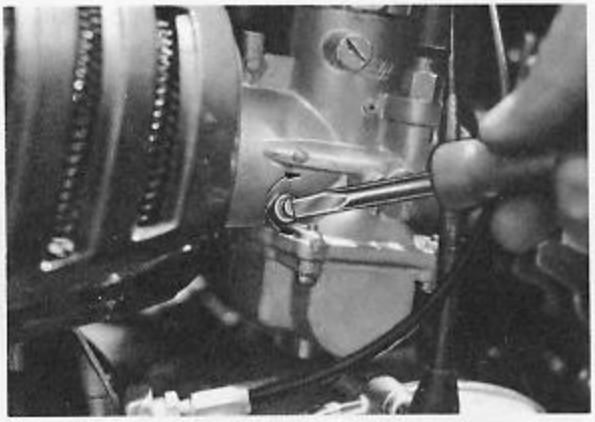

Fig. 2–11 Adjusting pilot air adjusting screw

4. Start the engine and after sufficient warm-up adjust idling speed with the throttle stop screw. Idling adjustment is made with each cylinder actuated one by one by so turning the related throttle valve stop screw as to have a tachometer reading of 1,000 rpm in each case.

Caution: In the case one cylinder firing, the related throttle valve stop screw should be screwed into a considerable extent to keep running.

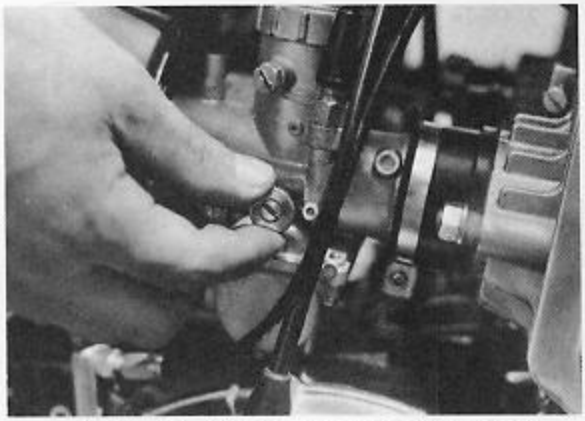

Fig. 2–12 Adjusting throttle valve stop screw

5. After adjusting the carburetor so that each cylinder has a speed of 1,000 rpm independently, equally turn the throttle stop screw of three carburetors backward to set an idling speed at 1,000 rpm with three cylinders firing.

6. Finally turn the throttle cable adjuster under throttle grip to have a play of 0.5–1 mm (0.02–0.04 in) on the throttle cable.

Transmission oil

1. Check for transmission oil level by removing the oil level screw ①.

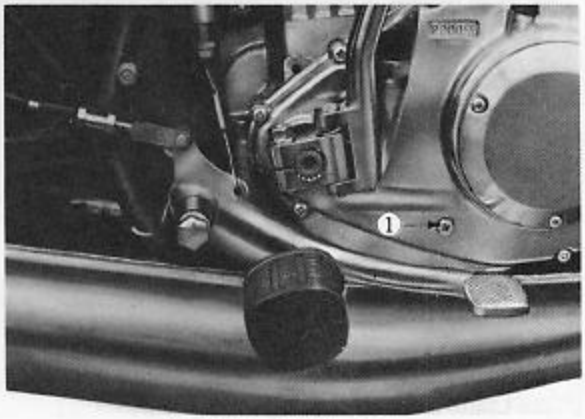

Fig. 2–13 Oil level screw

2. Replenish 20W/40 oil of superior quality if oil does not come out of the level screw hole when standing the motorcycle on its center stand.

3. Pour 2200 cc (0.58/0.48 gal US/Imp.) of transmission oil when changing oil.

Clutch

Check the clutch system for play by the following sequence.

1. Remove the clutch adjusting cap and the gasket from the clutch cover. Check for axial play of clutch release shaft ① when the release arm ② is at the lowest position, and adjust the play by loosening the release shaft double nuts ③ to be approximately 0.2 mm and tighten it again firmly.

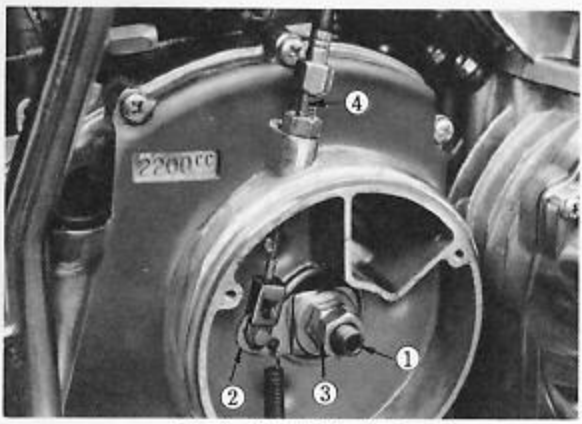

Fig. 2–14 Adjusting clutch

2. Adjust the clutch cable adjusters ④, ⑤ both at the clutch cover and the clutch lever to have ample play in the clutch cable.

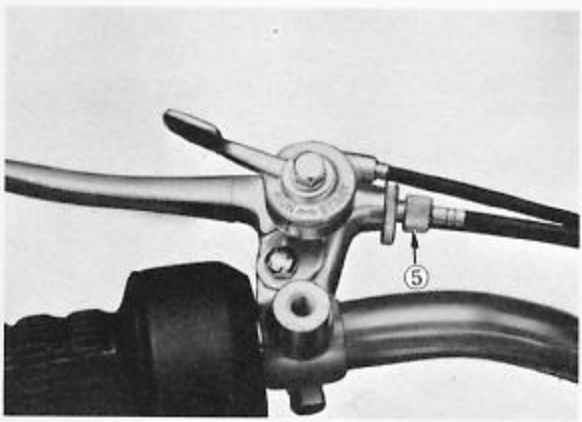

Fig. 2–15 Adjusting clutch cable adjuster

3. ENGINE

DESCRIPTION

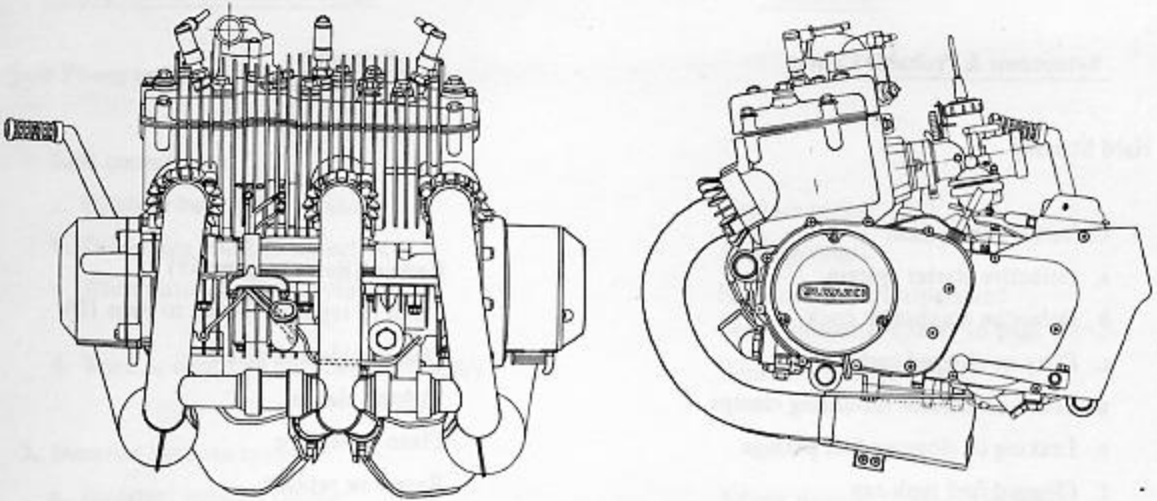

Fig. 3–1 Front and side view of GT750 engine

GT750 Engine is a water cooled, two cycle engine, and has a three-cylinder structure having piston valves. The cylinder head, made of aluminum alloy for weight reduction and high rate of heat radiation, has a dome type combustion chamber. The cylinder block is a one-piece cast structure with the coolant passages used for the cooling over the entire length of cylinder, and the block is made of an aluminum alloy with cast-in cylinder liners.

A fully counter-balanced 120° crankshaft is supported with four main bearings. Piston is also made of a light alloy and two keystone rings are fitted.

TROUBLE SHOOTING

Symptoms & Probable Causes	Remedies
Hard Starting	
1. Defective fuel system	
a. Defective starter system	Repair (Refer to page 65)
b. Defective diaphragm cock	Clean or replace (Refer to page 10)
c. Dirty or clogged carburetor	Disassemble and clean
d. Loose carburetor mounting clamps	Tighten clamps
e. Leaking or clogging fuel passage	Clean or replace
f. Clogged fuel tank cap	Repair or replace
2. Incorrect ignition system	
a. Burnt contact point/s	Replace point/s
b. Incorrect point gap	Adjust gap (Refer to page 92)
c. Incorrect spark plug gap	Adjust gap (Refer to page 93)
d. Incorrect ignition timing	Adjust timing (Refer to page 94)
e. Loose or defective spark plug/s and high tension cord/s	Tighten or replace
f. Defective ignition coil	Replace coil
g. Defective condenser/s	Replace condenser/s
h. Wet spark plug/s	Clean or replace plug/s (Refer to page 93)
3. Engine	
a. Worn pistons, piston rings & cylinders	Replace pistons, piston rings, and bore cylinders (Refer to page 26)
b. Worn crankshaft oil seal	Replace oil seal
c. Loose cylinder head	Tighten nuts (Refer to page 32)
4. Defective electric system	
a. Defective starter motor	Repair (Refer to page 80)
b. Discharged battery	Charge battery
c. Defective battery	Replace
d. Defective starter clutch	Repair or replace (Refer to page 78)

Symptoms & Probable Causes	Remedies
Low Power or Loss of Power	
1. Low compression	
a. Cylinder head gasket leaking	Replace gasket
b. Piston ring stuck or defective	Replace ring/s
c. Worn piston ring/s or cylinder/s	Replace piston/s, ring/s and bore cylinder/s (Refer to page 26~29)
d. Worn or defective crankshaft oil seal/s	Replace oil seal/s
2. Incorrect ignition system	
a. Incorrect ignition timing	Adjust timing (Refer to page 94)
b. Defective spark plug/s	Clean or replace
c. Defective contact point/s	Repair or replace
d. Defective condenser/s	Replace condenser/s
3. Insufficient fuel	
a. Clogged or maladjusted carburetor	Disassemble, clean & adjust (Refer to page 68)
b. Clogged diaphragm cock	Repair or replace (Refer to page 71)
c. Clogged fuel pipe/s	Clean pipe/s
4. Insufficient air intake	
a. Restricted air cleaner	Clean or replace element (Refer to page 10)
5. Overheating	
a. Insufficient cooling solution	Replenish (Refer to page 61)
b. Defective thermostat	Replace thermostat (Refer to page 57)
c. Worn or damaged water pump	Replace pump
d. Clogged or leaky radiator	Flush, repair or replace (Refer to page 55)
e. Incorrect ignition timing	Adjust timing (Refer to page 94)
f. Faulty cooling fan	Repair or replace
g. Clogged cooling system passage	Clean
h. Low grade engine oil	Change with proper oil
i. Clogged or obstructed radiator fins	Clean

Symptoms & Probable Causes	Remedies
Popping, Spitting & Detonation	
1. Ignition system	
a. Incorrect ignition timing	Adjust timing (Refer to page 94)
b. Loose wire and high tension cord	Check connection
c. Defective spark plug	Clean or replace
d. Incorrect heat range spark plug	Clean or replace (Refer to page 95)
e. Defective ignition coil and condenser	Replace
f. Burnt contact points	Dress or replace (Refer to page 92)
2. Air-fuel mixture	
a. Lean mixture	Clean and adjust carburetor (Refer to page 68)
b. Dirty carburetor	Clean carburetor
c. Clogged fuel pipe and cock	Clean or replace
d. Incorrect float level	Adjust (Refer to page 70)
e. Water in carburetor	Clean and check fuel tank
f. Loose carburetor mounting nut	Tighten
3. Cylinder head	
a. Excessive carbon deposit	Remove carbon
b. Clogged water passage in cylinder head	Clean water passage
c. Defective cylinder head gasket	Replace gasket
Rough Engine Idling	
1. Fuel system	
a. Unbalanced carburetor idling adjustment	Adjust and synchronize each carburetor (Refer to page 69)
b. Incorrect float level	Adjust (Refer to page 70)
c. Incorrect throttle wire play	Adjust wire play (Refer to page 70)
2. Engine	
a. Worn crankshaft oil seal	Overhaul engine and replace
b. Incorrect ignition timing	Adjust (Refer to page 94)
c. Defective cylinder gasket	Replace
d. Wet spark plug	Clean or replace

Symptoms & Probable Causes	Remedies
Engine Misfires at Accelerating	
1. Fuel system	
a. Water in fuel or clogged carburetor jets	Disassemble and clean carburetor
b. Clogged fuel pipe or cock	Clean or replace
c. Defective fuel cock diaphragm	Replace fuel cock
2. Ignition system	
a. Defective spark plug & incorrect gap	Replace & adjust (Refer to page 93)
b. Defective high tension cord	Replace
c. Burnt or defective contact point & condenser	Replace
d. Defective ignition coil	Replace
e. Incorrect ignition timing	Adjust (Refer to page 94)
3. Engine	
a. Worn crankshaft oil seal	Overhaul engine and replace
b. Defective cylinder head gasket	Replace

Engine Noise

Tracing the noise source of engine is a very difficult matter even for a skilled engineer. Naturally it seems impossible to specify the procedure to trace the source of engine noise. The best way would be to rely upon the judgement of a skilled man.
In the following we will describe a tracing procedure through which you might be able to trace the noise source more systematically to some extent.

In case of glinding and dragging noise:

1. When the clutch is off, the character of noise changes.	
a. Defective clutch system or too much play in clutch system	Adjust or replace (Refer to page 36)
b. Defective transmission gear system	Check or replace
c. Defective transmission bearing	Check or replace

Symptoms & Probable Causes	Remedies
2. The character of noise never changes whether clutch is on and off.	
a. Defective crankshaft bearing	Replace
b. Defective pump system	Check or replace
c. Defective starter clutch	Check or replace
d. Faulty ignition system	Check or replace
e. Failure in power train except clutch system	Check and repair
In case of knocking or slopping noise:	
1. Noise is generated over all the speed range.	
a. Scored piston onto cylinder	Hone cylinder and replace piston
b. Worn piston pin	Replace
2. Noise is generated during the engine deceleration from high speed range.	
a. Excessively worn piston	Replace
b. Worn connecting rod bearing	Replace
In case of rustling noise during idling:	
1. Insufficient oil in transmission case	Check
2. Insufficient lubrication for contact breaker cam etc.	Check
3. Check if the noise comes from the water pump located under engine case.	
Irregular clicking noise:	
1. Markedly worn piston ring	Replace
2. Broken piston rings	Replace
3. Piston ring caught at cylinder port	Glind off edge of port
Excessive Oil Consumption	
1. Oil leak	
a. Loose oil pipe & connector	Repair or tight
b. Loose check valve gasket	Tight or replace
c. Loose oil pump fitting screw	Tight
2. Oil pump	
a. Incorrect oil pump adjustment	Adjust control lever
b. Clogged check valve	Replace

(Refer to page 10)

ON FRAME SERVICE

The following maintenance procedure can be performed without dismounting engine from the frame.

Cylinder Head

Removal

1. Drain cooling system by loosening the water drain plug ①.

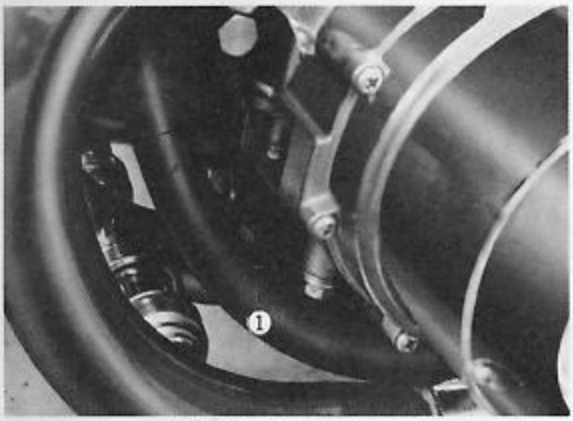

Fig. 3–2 Water drain plug

2. Disconnect fuel hose and fuel cock, and then fuel tank can be removed.

3. Disconnect radiator inlet hose.

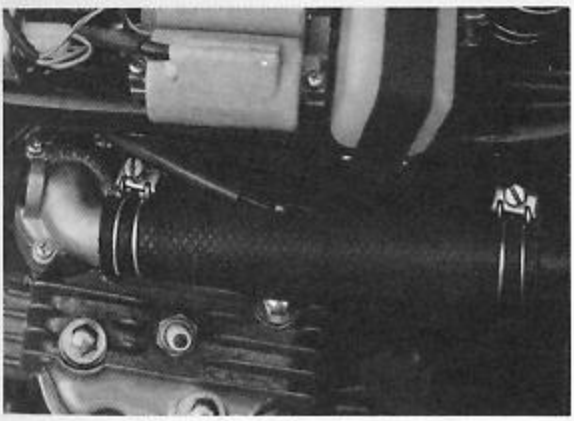

Fig. 3–3 Radiator inlet hose

4. Loosen water by-pass hose clamp.

5. Loosen cylinder head fitting bolts diagonally as shown in illustration to dismount the cylinder head.

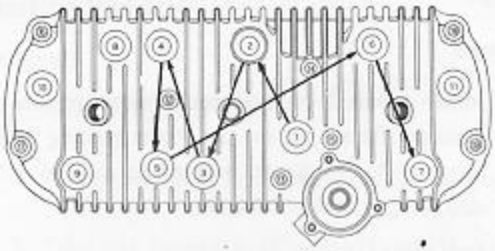

Fig. 3–4 Tightening order of cylinder head bolts

Cylinder

Removal

1. After removing cylinder head, loosen exhaust pipe clamps.

2. Loosen the carburetor fitting clamps and then remove carburetors.

3. Remove SRIS (SUZUKI Recycle Injection System) pipes ① from cylinder.

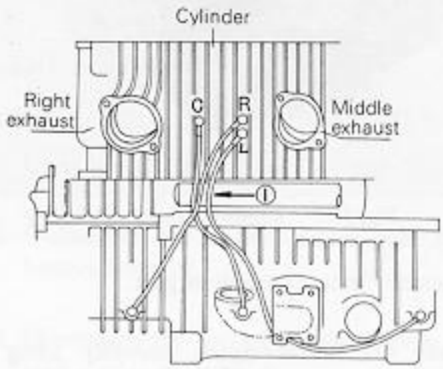

Fig. 3–5 SRIS pipes

4. Lift up cylinder after loosening cylinder set nut.

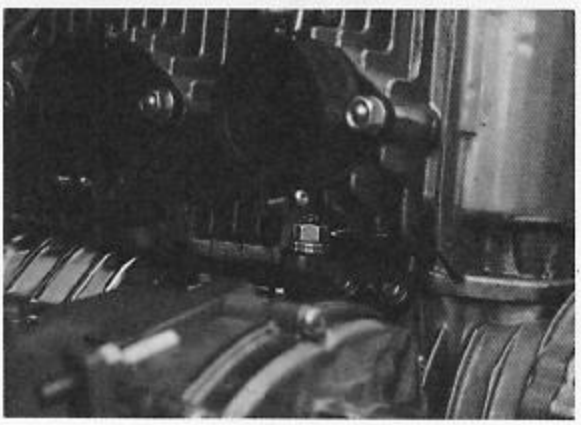

Fig. 3–6 Cylinder set nut

Piston

Removal

1. After removal of cylinder, remove piston pin circlips from piston pin hole placing waste cloth over crankcase preventing circlips from dropping into crankchamber.

2. Pull out piston pin, and then take off piston.

Starter Clutch

Removal

1. Remove starter clutch cover ①.

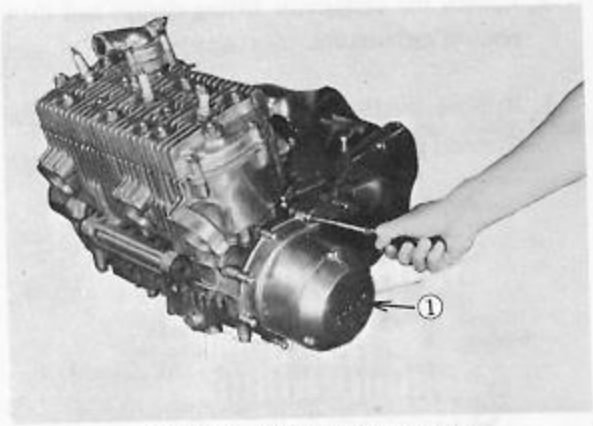

Fig. 3–7 Removing clutch cover

2. Remove water pump drive gear.

3. Take off starter clutch assembly using the Starter Clutch Remover ① (09920–53110) and Starter Clutch Holder ② (09920–40111).

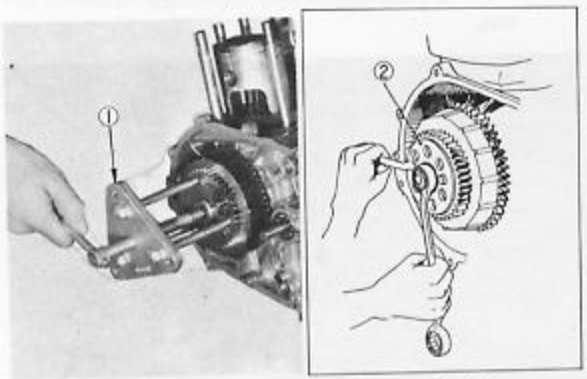

Fig. 3–8 Taking off starter clutch

Alternator

Removal

1. Remove alternator cover.

2. Take off brush holder ① holding it firmly with hands, keeping in mind that brushes may jump out of holder and accordingly wires may be cut off.

3. Remove starter ②.

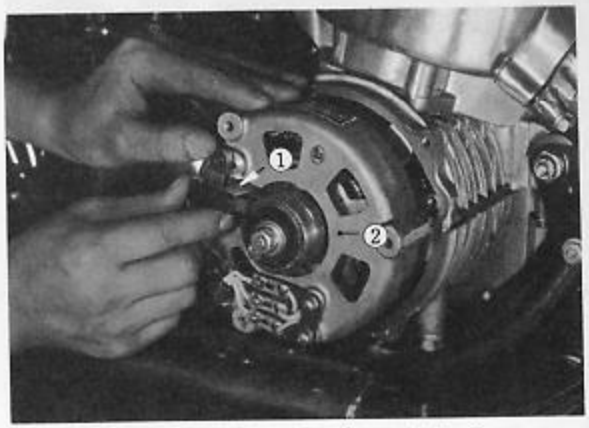

Fig. 3–9 Removing alternator brush

4. Remove rotor ① by using Rotor Remover ② (09930–33110).

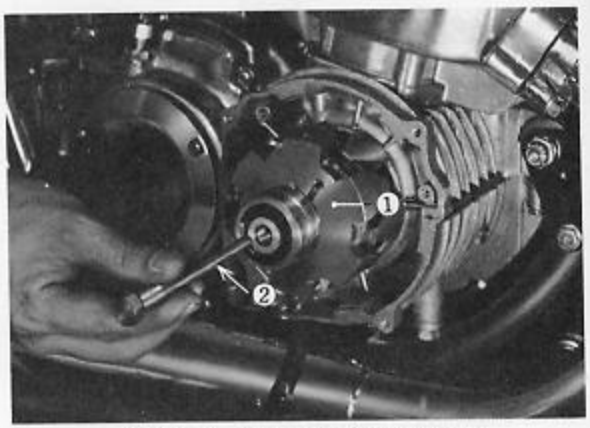

Fig. 3–10 Removing alternator rotor

Clutch

Removal

1. Remove clutch inspection cap and loosen clutch release shaft nuts ①, and then take off clutch lever ②.

2. Remove clutch cover ③.

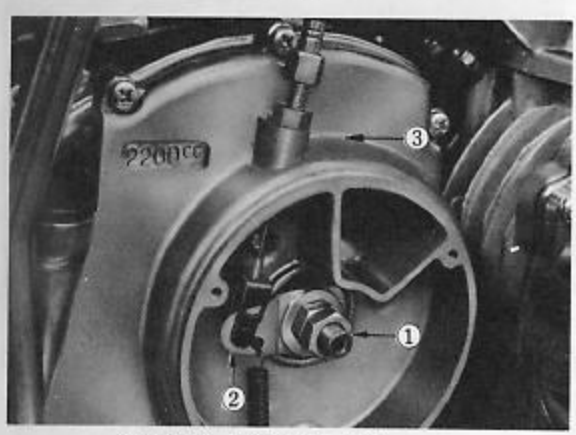

Fig. 3–11 Removing clutch cover

3. Remove clutch pressure disk ① and release shaft ②.

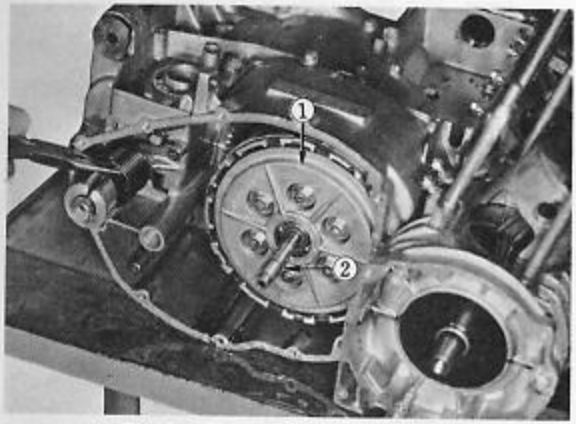

Fig. 3–12 Removing clutch disk

4. Remove clutch sleeve hub nut using Clutch Sleeve Hub Holder (09920–53110). Subsequent to the removal of clutch plates and sleeve hub, take off primary driven gear spacer ① and bushing ② by drawing with bolts ③, then remove the primary driven gear by sliding it backward.

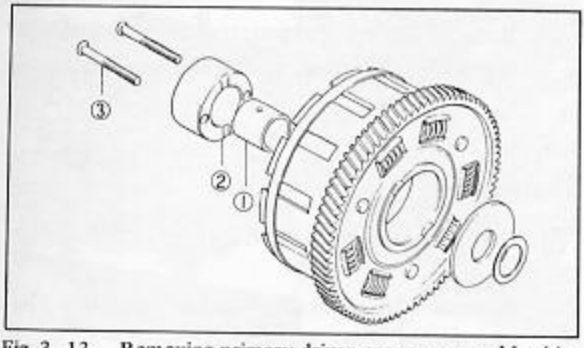

Fig. 3–13 Removing primary driven gear spacer and bushing

Starting Motor

Removal

1. Remove cylinder block.
2. Remove by-pass hose and starting motor cover.
3. Take off by-pass hose union ① and then draw starter motor backward.

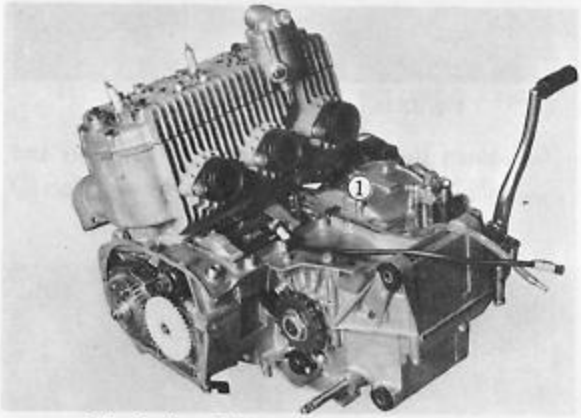

Fig. 3–14 Taking off by-pass hose union

MAJOR SERVICE

Removal

1. Drain the cooling system. See page 20.
2. Disconnect the starting motor wire from the battery terminal.
3. Disconnect the fuel pipes and unhook the fuel tank setting band ①, then remove the fuel tank by sliding it backward.

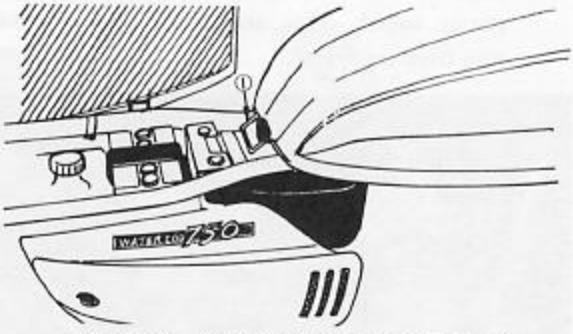

Fig. 3–15 Unhooking fuel tank setting band

4. Disconnect the radiator inlet hose. See Fig. 3–3.
5. Remove the cooling fan with its bracket.

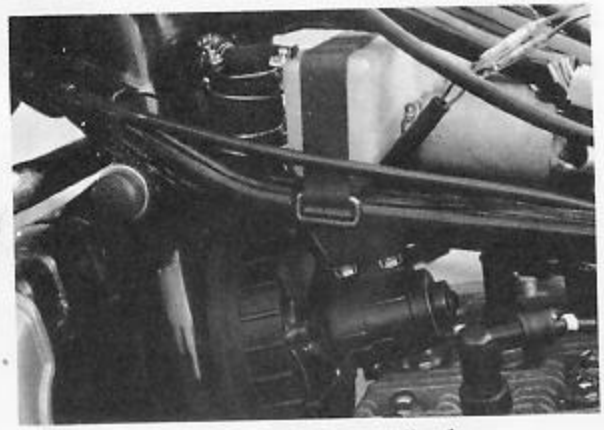

Fig. 3–16 Removing cooling fan

6. Loosen the exhaust pipe clamp set bolts and rear foot rests, then remove the mufflers ① and coupler tubes ②.

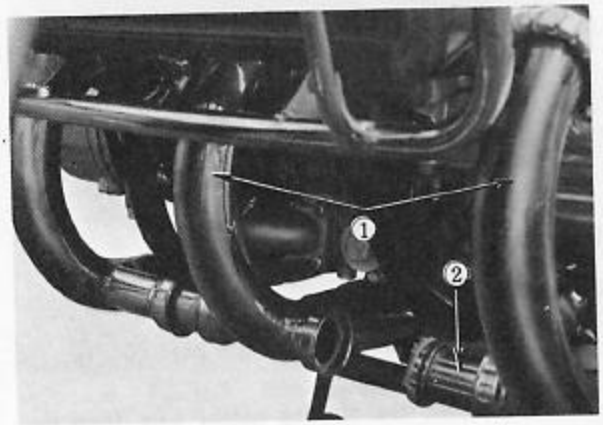

Fig. 3–17 Exhaust pipes & coupler tubes

7. Remove the frame left cover, and disconnect the alternator and the contact breaker couplers ①, ② from the coupler bracket, and also disconnect the starting motor lead ③ from the starter switch relay and the engine ground wire from the frame.

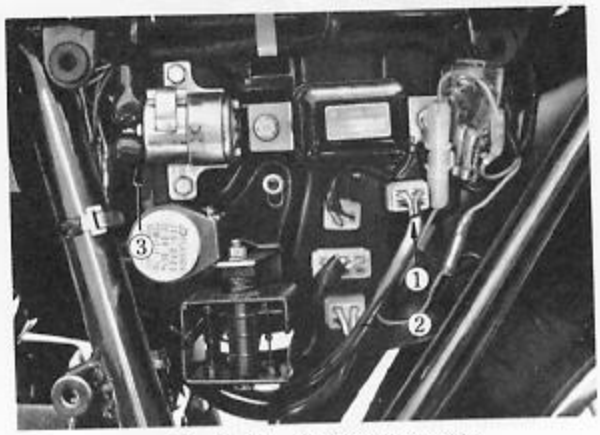

Fig. 3–18 Electric parts holder

8. Remove the air cleaner by loosening set bolts ① and carburetor clamps.

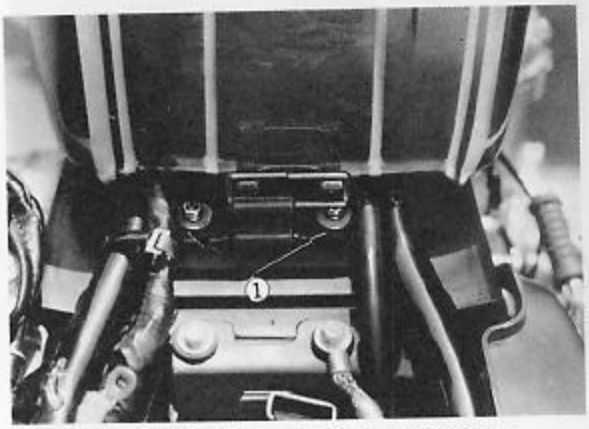

Fig. 3–19 Loosening air cleaner set bolts

9. Remove the left foot rest and gear shifting lever, and then remove the engine sprocket ① with the drive chain on it.

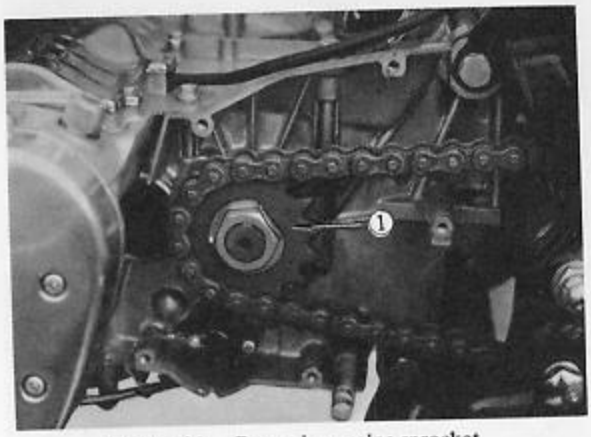

Fig. 3–20 Removing engine sprocket

10. Disconnect the clutch, oil pump, carburetor and tachometer cable.

11. Remove the right foot rest and brake pedal.

12. Remove the engine mounting bolts and mounting plates, then remove the engine from frame.

Disassembly

1. Drain the transmission oil.

2. Remove the contact breaker assembly by unscrewing three set screws.

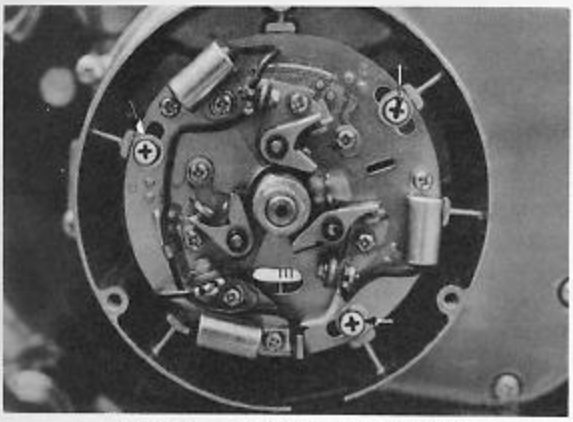

Fig. 3–21 Contact breaker assembly

3. Remove the starter clutch cover, and the water pump drive gear ① and starter idle gear ②, then remove the starter clutch with the Starter Clutch Remover (09920–53110). See page 21.

4. Extract the tachometer driven gear ③ with the sleeve on it, after loosening the set bolt ④.

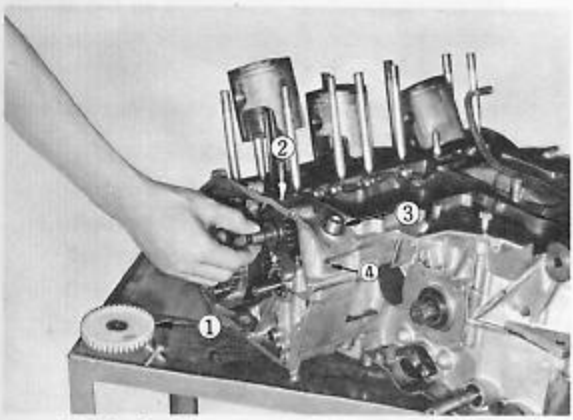

Fig. 3–22 Removing water pump driving parts

5. Remove the gear shifting switch ① and drive shaft oil seal retainer ②.

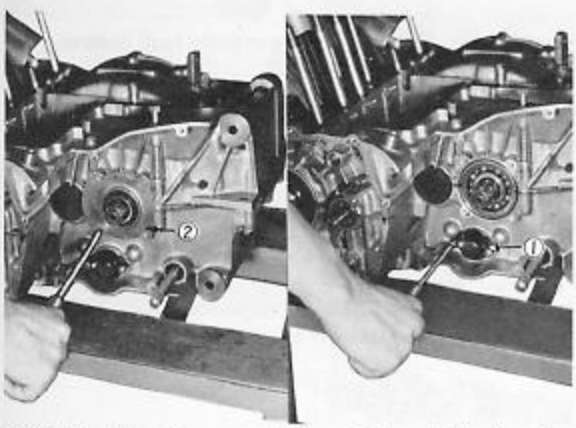

Fig. 3–23 Removing gear shifting switch and oil seal retainer

6. Remove the alternator housing assembly, and the rotor with the Rotor Remover (09930–33110). See Fig. 3–10.

7. Remove the by-pass hose from cylinder head, and loosen the cylinder head bolts in criss-cross style, and remove the cylinder head.
See page 20.

8. Remove the SRIS (SUZUKI Recycle Injection System) oil hoses from the cylinder and crankcase, and remove the cylinder by loosening the cylinder fitting nut at the lower part of cylinder block. See page 20.

9. Remove the piston pin circlips, and piston pins and remove pistons.

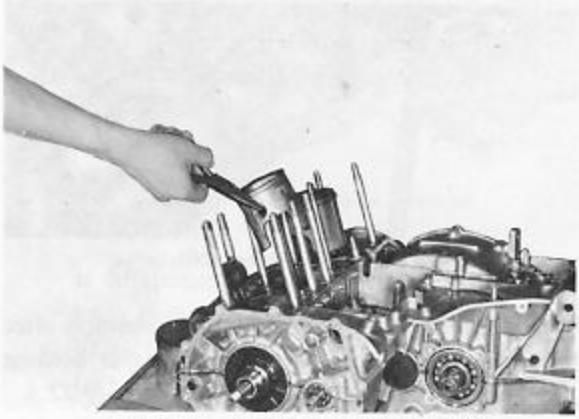

Fig. 3–24 Removing piston pin circlip

10. Remove the starting motor cover ①, and the water pump by-pass hose union (Fig.3–14), and slide the starting motor backwards to remove it.

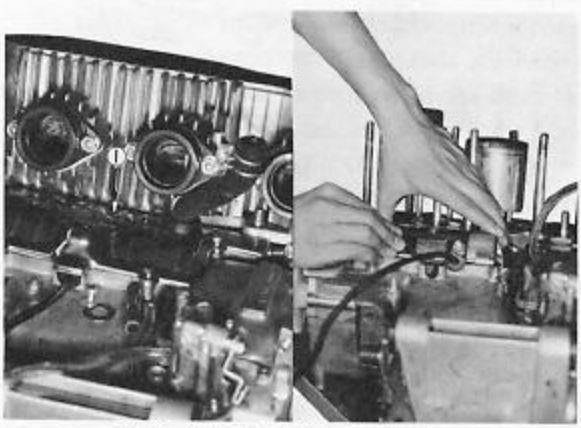

Fig. 3–25 Removing starting motor

11. Remove the oil pump cover, the oil pump and oil pipe comp..

12. Remove the clutch adjusting cap, then loosen and remove the clutch release shaft fitting nuts to take off the clutch release arm.
Remove the clutch cover, and the clutch pressure disk by removing six bolts, then take out the drive and driven plates.
Remove the clutch sleeve hub with the Clutch Sleeve Hub Holder (09920–53110).
See page 21.

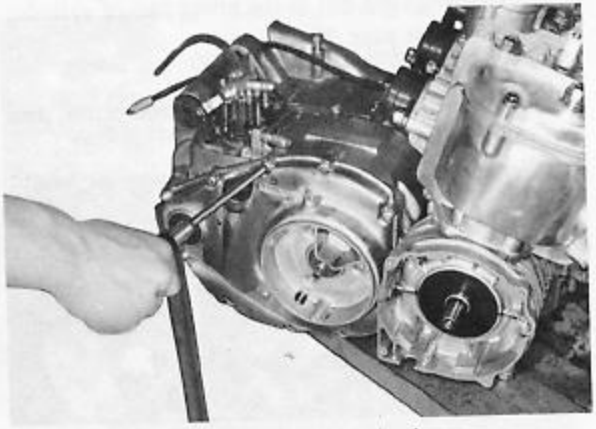

Fig. 3–26 Removing clutch cover

Remove the primary driven gear assembly after pulling out the primary driven gear bushing with two bolts screwed into it. See page 22.
Remove the transmission oil reservoir plate which is located on crankcase inside the clutch chamber.

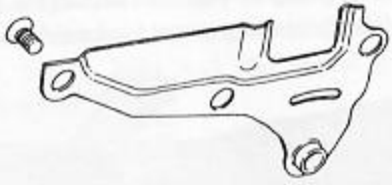

Fig. 3–27 Transmission oil reservoir

13. Remove the kick starter shaft spring guide, and the spring and its holder.

14. Loosen the crankcase fitting bolts in the reverse order of relieved (casted) numbers on the crankcase, and remove them all to open the crankcase.

15. Remove the shafts and gears.

Inspection & Repair

Clean out all disassembled engine parts completely, before starting the inspection and repair work. All locations with water leakage and defects should be checked carefully beforehand. Don't mix or change the originally mated parts of the pistons, piston rings and bearings.

Cylinder Head

1. Remove carbon deposists in combustion chamber with scraper or wire brush. Due care should be taken not to scratch the parting surface of cylinder head.

2. Check for any cracks in the head casting, also check for scratches or nicks on the parting surface. Replace the head, if necessary.

3. Check the flatness of parting surface using a feeler gauge ①. If warpage or distortion exceeding 0.04 mm (0.001") is found on the surface, repair the surface, or replace the cylinder head.

Note: When mesuring the flatness, mesure in six directions.

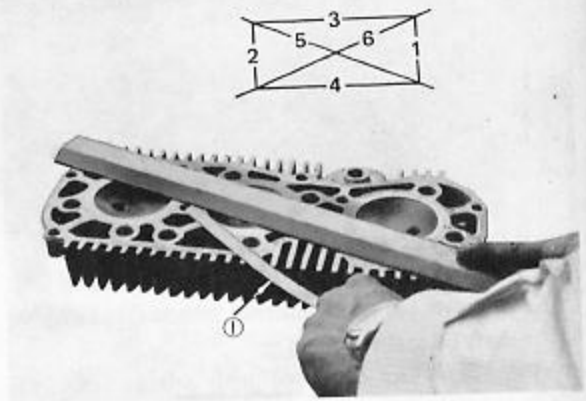

Fig. 3–28 Checking cylinder head flatness

Cylinder & Piston

1. Remove the carbon deposit in exhaust port, but ample care should be taken not to scratch the inner wall of cylinder.

2. Check any cracks in cylinder block, and then check any burrs and nicks on the parting gasket surface. Use special apparatus observe the minor defects, since they may not be found visually. The block should be pneumatically tested with the air pressure of 3 kg/cm^2, and it is acceptable if no leakage is found out.

3. Measure the cylinder block surface flatness on the gasket side in the same way as the cylinder head. If its warpage exceeds 0.05 mm (0.002") in magnitude, scrape off the surface or replace the block itself.

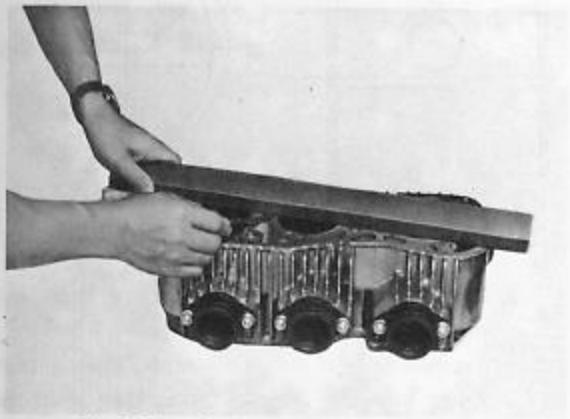

Fig. 3–29 Checking cylinder block flatness

4. Measure the out of roundness and taper wear of the cylinder bore with the cylinder gauge. Cylinder bore should be measured at upper, middle and lower points of the bore surface in both lateral and transverse directions with respect to the cylinder block center line as shown in the figure.

Fig. 3–30 Measuring cylinder bore for wear

Fig. 3–31 Directions to be measured

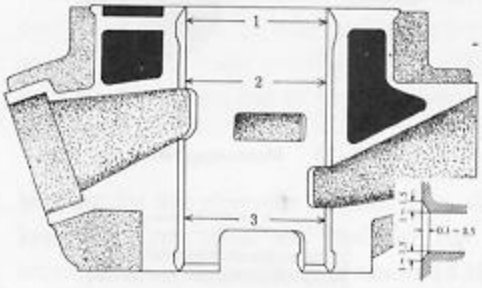

Fig. 3–32 Positions to be measured

If differences between the maximum and minimum bore diameters measured exceed 0.07 mm (0.0018"), rebore and polish off the cylinder by honing.

Cylinder bore (Standard):
70.000~70.015 mm (2.7559~2.7565")
Wear & taper limit: 0.07 mm (0.0018")

If reboring is needed, measure the bore diameter at the location of maximum wear, and then select oversize pistons. The amount of reboring needed should be determined by the diameter of oversize pistons used, and the cylinder bore clearance.

Piston diameter:
STD: 69.950~69.965 mm (2.7539~2.7545")
O/S 0.5:
70.450~70.465 mm (2.7736~2.7742")
O/S 1.0:
70.950~70.965 mm (2.7933~2.7939")
Piston bore clearance (Standard):
0.045~0.055 mm (0.0018~0.0022")

Note: When reboring, both intake and exhaust ports are to be chamfered as shown in Fig. 3-32.

Piston diameter should be measured always normal to the piston pin center line and at 32 mm (1.26") above the lowest end.

Fig. 3-33 Measuring piston diameter

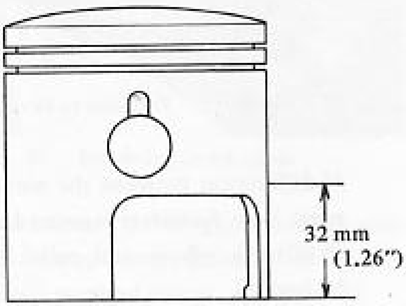

Fig. 3-34 Measuring point

Necessity of determining measuring points of piston and cylinder bore diameters

Reasons for having measuring points of both piston and cylinder bore diameters fixed are as follows:

(1) As shown in Fig. 3-32, the cylinder has inlet, scavenging, and exhaust ports bored on the cylinder surface. When a piston is subjected to reciprocating motion cylinder wall, amount of wear of cylinder is always larger in the neighborhood of the port, resulting in a kettle type elliptic shape when magnified. On the other hand, near the top position, the wall is exposed to higher temperatures and pressures from combustion gas which contribute to accelerated wear of the cylinder. Naturally the roundness and cylindricalness of the cylinder become needed and are to be measured at the top, middle, and bottom positions in both parallel and normal directions to the cylinder axis. This is needed to represent the shape of piston cylinder correctly.

(2) As shown in Fig. 3-35, piston has a taper in longitudinal direction and has an elliptic cross section. During engine operation, the piston is heated and expands. As the wall thickness increases, so does the expansion rate of piston. This taper is needed to obtain a true cylindrical form with roundness during engine operation, by machining as shown in the drawing.

I: Distance from the skirt bottom 32 mm (1.26")
II: Diameter at 90 to the pin boss
III: Diameter parallel with pin boss

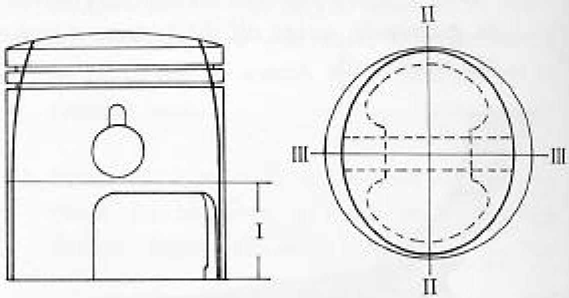

Fig. 3-35 Piston's out-of-round & tapering

5. Measure the clearance between cylinder and piston using piston feeler gauge.
   To measure the piston clearance, insert a feeler gauge into the cylinder bore, then insert the piston top into the bore with the feeler gauge fixed at 90° to the piston pin axis. Then pull out the gauge: this can be done more accurately using a spring scale. The allowable limit of tension force should be between 1 and 2 kg (2.2~4.4 lb).

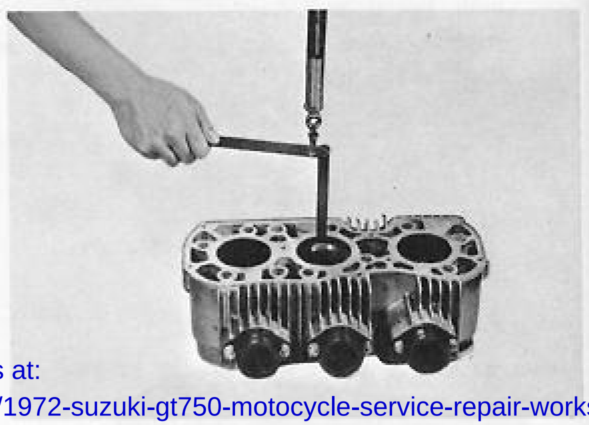

Fig. 3-36 Measuring cylinder clearance