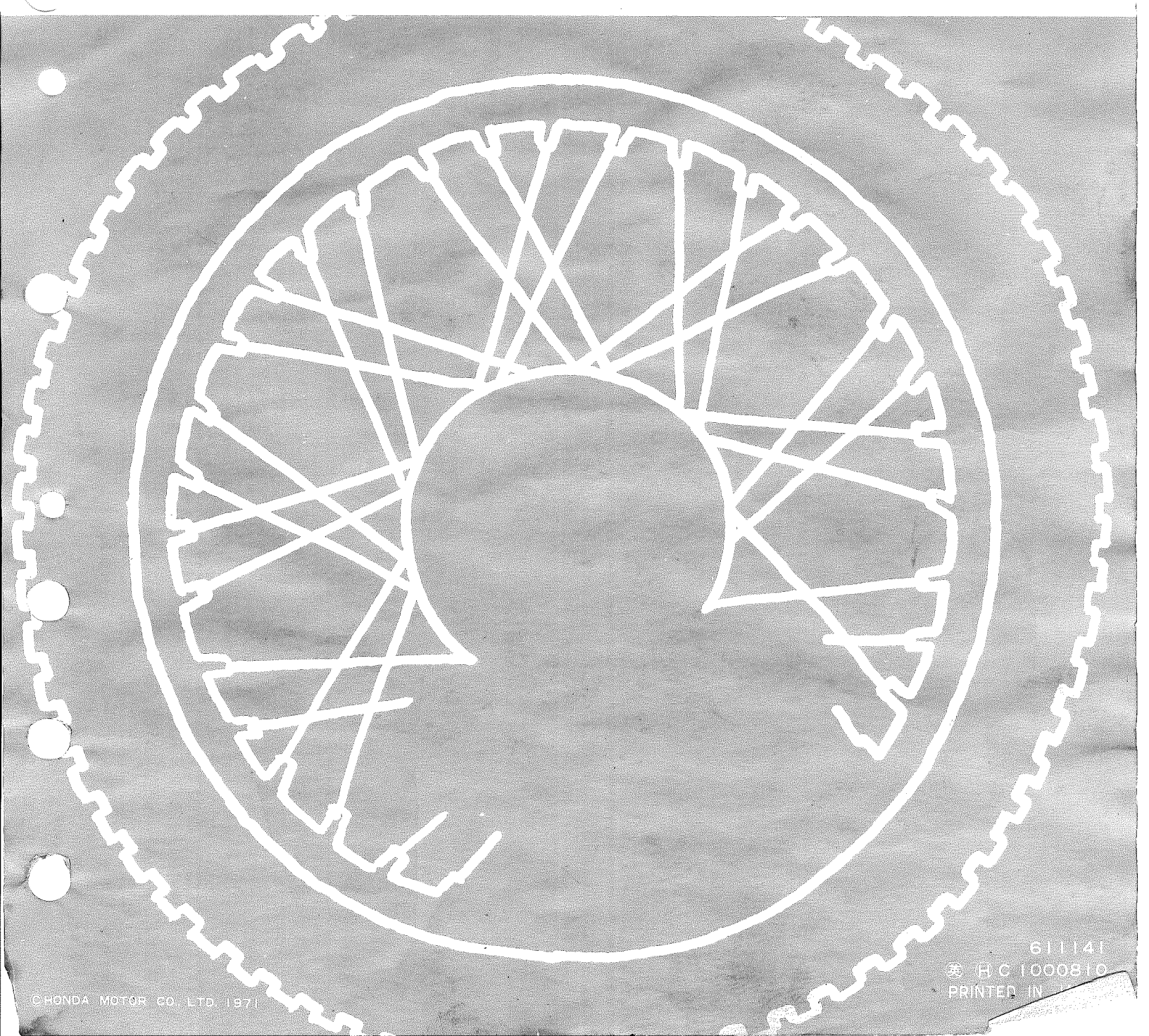
SHOP MANUAL

HONDA
QA 50



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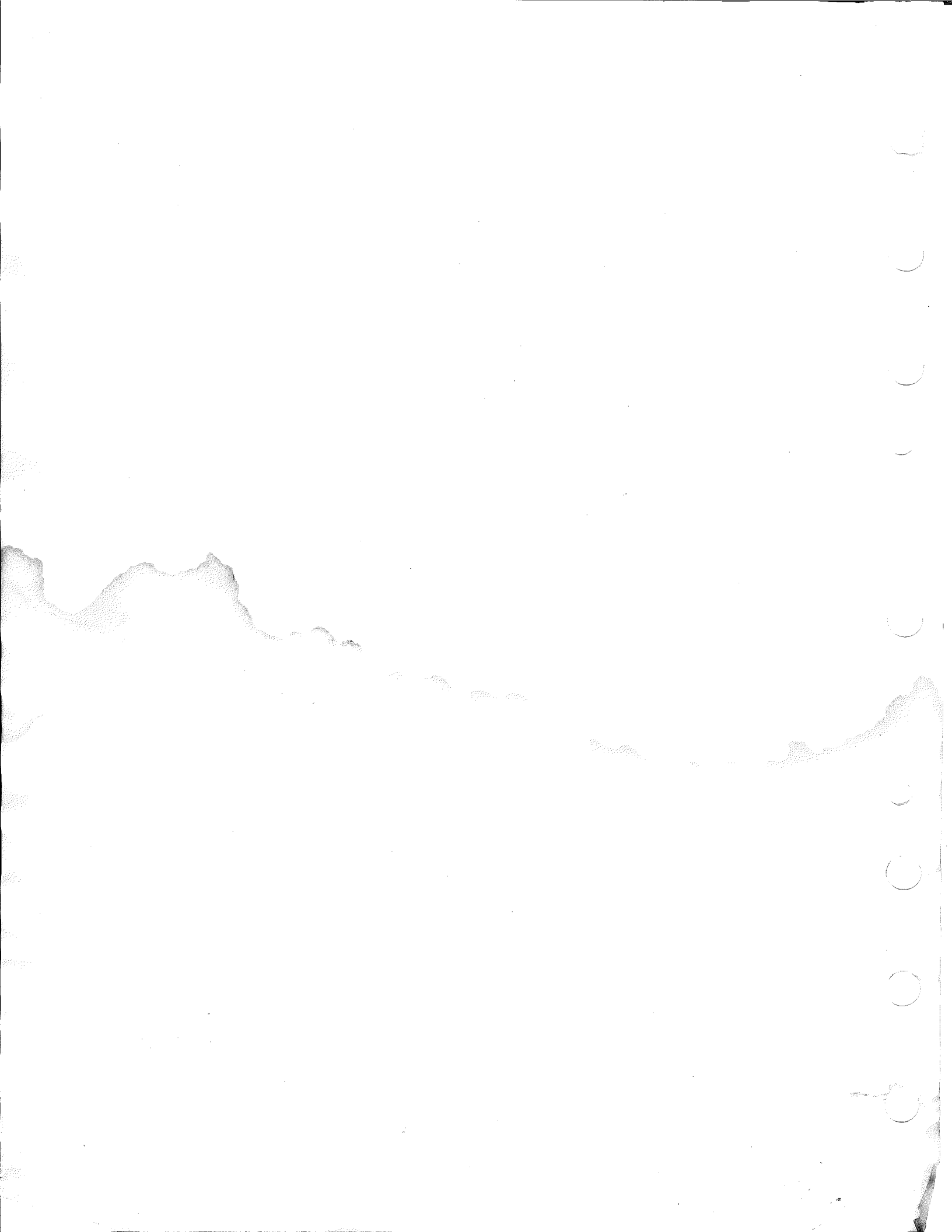
FOREWORD

This manual covers all necessary information for the correct servicing and maintenance of the Honda QA50.

This manual has been prepared in two major groups, maintenance operation and repair & overhaul for easy use by less-experienced service man as well as fully qualified service man.

Many photographs and drawings, we believe, will make it quickly for the service man to aid understanding.

It is recommended that this manual be properly used and it will enable to better serve the owners.



CONTENTS

III. OVERHAUL AND REPAIR

IV. WIRING DIAGRAM

I. TECHNICAL DATA

Item	Metric	English
DIMENSION		
Overall Length	1,210 mm	47.6 in.
Overall Width	610 mm	24.0 in.
Overall Height	840 mm	33.1 in.
Wheel Base	880 mm	34.6 in.
Seat Height	665 mm	26.2 in.
Foot Peg Height	200 mm	7.9 in.
Grand Clearance	135 mm	5.1 in.
Curb Weight	39 kg	86 lb.
Weight Distribution F/R	20 kg	41.9/44.1
FRAME		
Type	Back bone (pipe frame)	
F. Suspension, Travel	Telescopic fork, travel 70 mm 2.75 in.	
R. Suspension, Travel	Rigid	
F. Tire Size, Type	4.00 −5 (2 PR), tire air pressure 1.0 kg/cm², 14 psi	
R. Tire Size, Type	4.00 −5 (2 PR), tire air pressure 1.0 kg/cm², 14 psi	
F. Brake, Lining Area	Internal expanding shoe, lining area 25 sq. cm×2(3.87 sq. in×2)	
R. Brake, Lining Area	Internal expanding shoe, lining area 25 sq. cm×2(3.87 sq. in×2)	
Fuel Capacity	4.5 lit.	1.2 U.S. gal. 1.0 Imp. gal.
Caster Angle	66°	
Trail Length	25 mm	0.98 in.
ENGINE		
Type	Air-cooled, 4-stroke engine	
Cylinder Arrangement	Single cylinder, inclined 80° from vertical	
Bore and Stroke	4.2×35.6 mm	1.654×1.402 in
Displacement	49 cc	3.0 cu in.
Compression Ratio	8.5	
Carburetor, Venturi Dia.	Piston valve type, venturi dia. 9 mm	
Valve Train	Push rod type	
Maximum Horsepower	1.8 PS/5,000 rpm	
Maximum Torque	0.28 kg-m/3,000 rpm	2.0 lb-ft / 3 rpm
Oil Capacity	1.0 lit.	1.0 U.S. qt, 0.9 Imp. qt
Lubrication System	Wet sump	
Fuel Required	85 octane number or above	
Air Required	Wet polyurethane foam	
Valve Tappet Clearance	0.05 mm	0.002 in.
Engine Weight	13.5 kg	29.8 lb.
Air Screw Opening	1.3/8	
Idle Speed	1,400 rpm	
DRIVE TRAIN		
Clutch	Wet, multi-plate automatic	
Transmission	2-speed, constant mesh	
Primary Reduction	3.000	
Gear Ratio I	4.272	
// II	2.625	
Final Reduction	1.800, drive sprocket 15 T, driven sprocket 27 T	
Gear Shift Fattern	Left foot operated type	
ELECTRICAL		
Ignition	Flywheel magneto	
Starting System	Kick starter	
Alternator	Flywheel 0.3 kw/4,000 rpm	
Spark Plug	NGK C-7HS, ND U-22FS	

II. MAINTENANCE OPERATION

Maintenance operation refer to the periodic maintenance which is so vital in maintaining the motorcycle in good condition. Qutlined in this group are the maintenance operation procedures for engine, chassis and electrical equipment.

In order to safely ride the motorcycle and keep it in the best condition, daily and periodic inspections are required. The daily inspection that the owner performs prior to riding and the periodic inspection which is performed in specified intervals.

DAILY INSPECTION

The inspection below is to be performed, as usual by the rider prior to riding to assure safe driving.

Item	Description
Engine oil	Check level
Fuel tank	Check quantity of fuel 4.5 *l* (1.2 U.S. Gal., 1.0 Imp. gal.)
Front and rear brakes wheel	Lever play 20–30 mm (0.8–1.2 in.) Tire air pressure: Front 1.0 kg/cm² 14 psi) Rear 1.0 kg/cm² (14 psi)
Drive chain	Slack at the midpoint between the sprockets 10–20 mm (0.4–0.8 in.)

PERIODIC INSPECTION

The periodic inspections on the scheduled operating days shown in the chart will maintain full mini-bike performance and extend the service life of it.

MAINTENANCE SCHEDULE

MAINTENANCE SCHEDULE

Service Required		First	Second	Third	Thereafter Repeat Every		Page Reference
	Operating Days	5	30	60	30	60	
Check breaker points	Refer to page 4.			○		○	4
Adjust valve tappet clearance	Cold clearance of 0.05 mm (0.002 in) for both inlet and exhaust		○			○	4
Adjust ignition timing	Ignition at 28° BTDC, point gap 0.3–0.4 mm (0.012–0.016 in.)			○		○	5
Adjust clutch	Refer to page 5.		○			○	5
Adjust carburetor	Engine idle speed 1,400 rpm			○		○	5
Service spark plug	Spark plug gap: 0.6–0.7 mm (0.024–0.028 in.)			○		○	6
Change engine oil	Oil capacity: 1 liter (1.0 U.S. qt., 0.9 Imp. qt.)	○	○	○	○		6
Service air cleaner	Refer to page 7.		○	○	○		7
Check fuel tank and fuel lines	Refer to page 7.			○		○	7
Adjust front and rear brake	Both front and rear brake lever plays: 20–30 mm (0.8–1.2 in.)		○			○	7
Lubricate and adjust drive chain and sprockets	Refer to page 8. Drive chain play: 10–20mm (0.4–0.8 in.)		○		○		8
Check steering head bearing	Refer to page 8.			○			8
Check sequrity of important components	Refer to page 8.		○		○	○	8

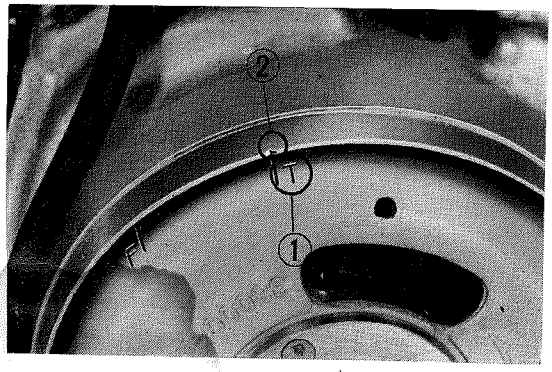


Fig. 1 "T" mark alignment
① "T" mark ② Timing index

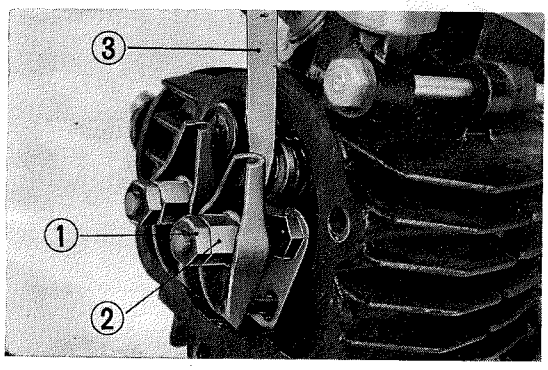


Fig. 2 Tappet adjustment
① Lock nuts ② Adjust screw ③ Thickness gauge

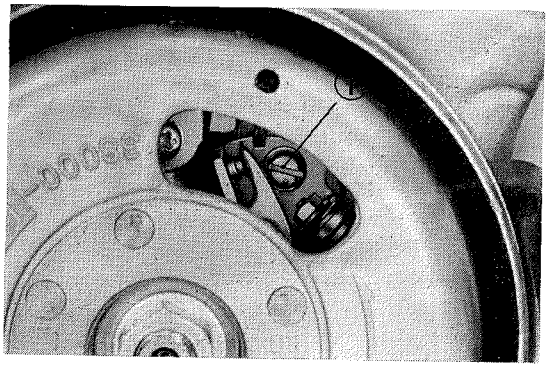


Fig. 3 Breaker point gap
① Breaker locking screw

ENGINE

TAPPET ADJUSTMENT

Inspection and adjustment must be performed while the engine is cold.

1. Unscrew and remove the cylinder head cover.
2. Remove the left crankcase cover.
3. Rotate the flywheel counterclockwise until the "T" mark on the flywheel is aligned with the timing index mark on the crankcase flange and the piston is the compression stroke. The piston in the compression stroke can be determined by feeling rocker arms for clearance. (Fig. 1)
4. Check tappet clearnces with a thickness gauge and if it is necessary to adjust, loosen the lock nut and adjust the tappet adjust screw. (Fig. 2)
   Tappet clearances: Intake 0.05 mm (0.002)
   Exhaust 0.05 mm (0.002)
5. When tightening the lock nut, exercise care so that the tappet clearance will not disturbed. Recheck the tappet clearance.

BREAKER POINT GAP

Inspect and adjust breaker point gap, before performing the ignition timing adjustment.

1. Remove the left crankcase cover.
2. Turn the flywheel counterclockwise to find the point where the breaker arm slipper is on the highest point of cam lobe.
3. Measure point gap using a thickness gauge. The gap should be **0.3–0.4 mm (0.012–0.016 in.)** (Fig. 3)
4. If it is necessary to adjust, loosen the breaker locking screw and move the breaker base in either clockwise or counterclockwise to obtain the standard point gap setting.
5. When the point contact surfaces are pitted or dirty, grind contacts with a point file or oil stone to remove transfer or contamination. If the metal build-up on the point is greater than **0.5 mm (0.02 in.)**, it should be replaced.

IGNITION TIMING ADJUSTMENT

1. Disconnect the primary lead from the breaker point, attach one end of the timing tester lead to the breaker point and the other tester lead to the engine as a ground. (Fig. 4)
2. Turn the flywheel in the counterclockwise and align the "F" mark to the index mark on the crankcase. If the timing light comes on, the ignition timing is correct.
3. If adjustment is necessary, loosen the contact breaker point screw, insert a screw driver into the slot and move the breaker plate. Turning the plate clockwise will retard the timing and counterclockwise will advance it. Tighten the screw after adjustment was made. (Fig. 5)

CLUTCH ADJUSTMENT

1. Adjust the clutch when the engine is shut off. Loosen the clutch adjuster lock nut.
2. Turn the clutch adjuster clockwise about one turn, then turn it slowly counterclockwise and stop when the screw starts to turn heavy.
3. From this point, back off the adjuster in the clockwise direction 1/4 to 1/3 turn, and then tighten the lock nut. (Fig. 6)
4. Check to make sure that the engine should be start easily with the kick starter without the clutch slipping and that the clutch operation should be smooth and light.

CARBURETOR IDLING ADJUSTMENT

1. Turn the throttle stop screw counterclockwise to the point where the engine idle speed is slow and smooth. (Fig. 7)
2. Turn the air screw slowly back and forth to obtain the point of the highest engine rpm. Standard air screw setting is 1.1/8 from full close position.
3. Readjust the throttle stop screw to the normal engine idle speed of **1,400 rpm.**

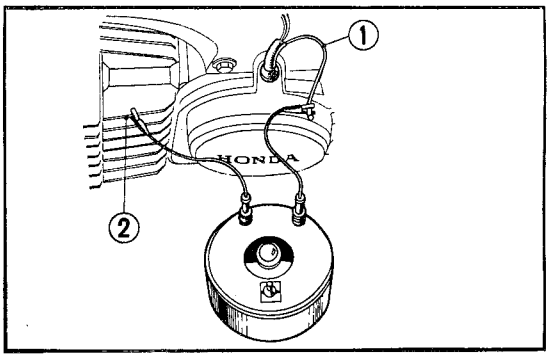


Fig. 4 Ignition timing adjustment
① Primary cord ② Ground to earth

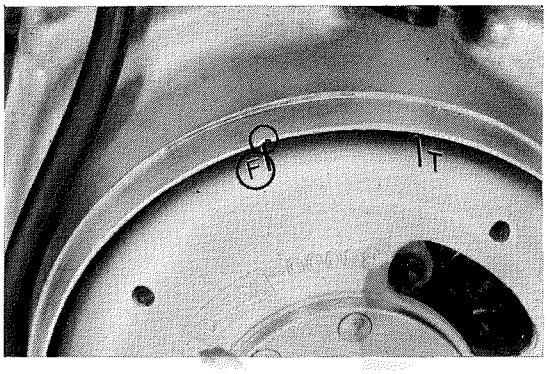


Fig. 5 ① "F" mark

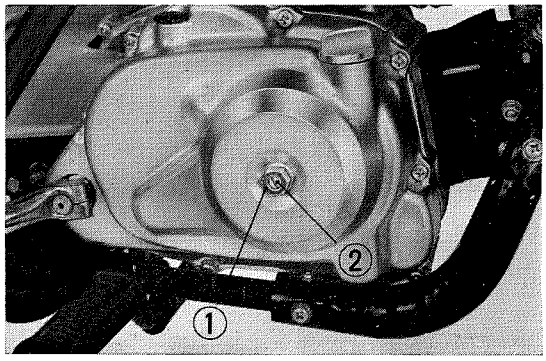


Fig. 6 Clutch adjustment
① Clutch adjuster lock nut ③ Clutch adjuster

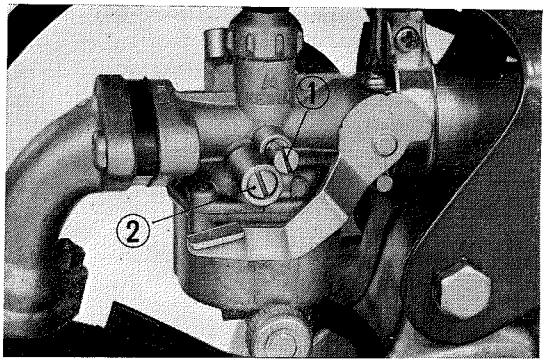


Fig. 7 Caburetor
① Throttle stop screw ③ Air screw

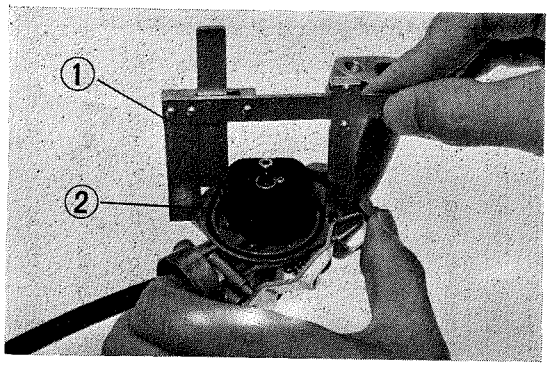


Fig. 8 Float level adjustment
① Float level gauge ② Float

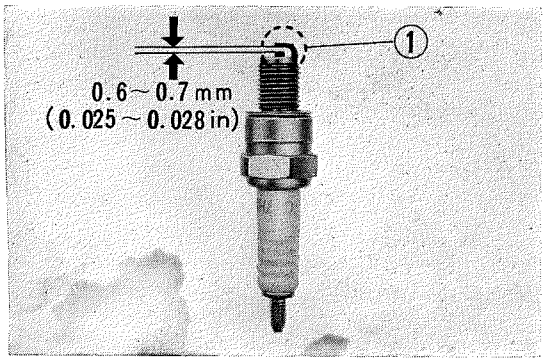


Fig. 9 ① Electrode

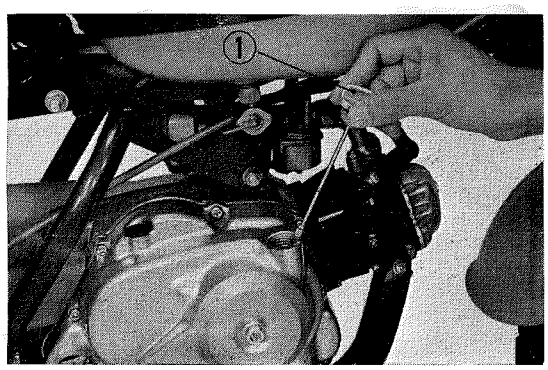


Fig. 10 ① Oil level gauge

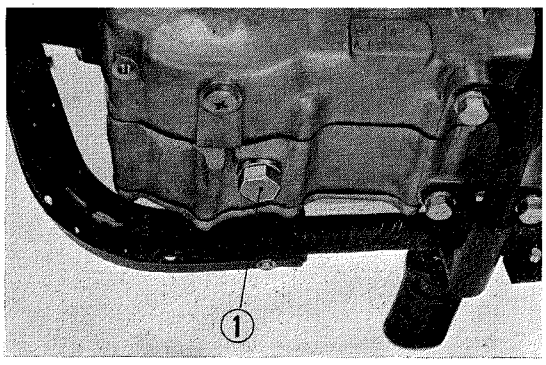


Fig. 11 ① Drain plug

CARBURETOR FLOAT LEVEL ADJUSTMENT

1. Set the carburetor on its side.
2. Raise the float arm lightly with the finger tip and locate the position of the arm where the float arm and float valve are either barely touching or provided with a clearance of **0.1 mm (0.003 in.).**
3. In this position, the height of the float arm should be **16.5 mm (0.65 in.)** when measured at the side of the float arm. If adjustment is necessary, carefully bend the float arm. (Fig. 8)

SPARK PLUG INSPECTION

Remove the spark plug with a spark plug wrench and visually check conditions of electrodes and insulator.

The standard spark plug equipped in the original engine is **C-7HS (NGK).**

1. If the spark plug is carboned up, sooty or has a hard deposit from the chemical fuel additivies, it should be cleaned with a spark plug cleaner or a wire brush.
2. Replace the spark plug if it insulator is cracked or chipped.
3. Check the gap between the electrodes with a thickness gauge and if necessary, adjust the ground electrode by bending. The standard clearance is **0.6–0.7 mm (0.025–0.028 in.).** (Fig. 9)
4. Check the plug gasket before installation, and replace if it is damaged.

ENGINE OIL CHANGE

The oil change is better performed while the engine is warm as this will expedite through draining of oil.

1. Remove the oil cap and remove the drain plug to drain oil. (Fig. 10–11)
2. When the oil is thoroughly drained, replace the drain plug.
   Fill with a brand name oil **SAE 10W-30** in the quantity of **1 lit (1.05 qt.)**. Check the level by placing the dip stick in its hole, but not screw it in. In this position, the level should be within the upper and lower marks.

CHASSIS

AIR CLEANER ELEMENT SERVICING

1. Unscrew the air cleaner tube fixing screw and remove the air cleaner from the carburetor. (Fig. 12)
2. Unscrew two air cleaner cover screws and separate the air cleaner cover.
3. Remove the air cleaner element.
4. Wash the element in solvent and then dry it.

Note:

Do not use gasoline to wash the filter element.

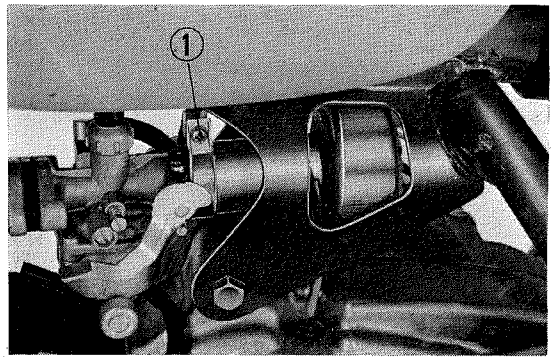


Fig. 12 Air cleaner
① Air cleaner tube fixing screw

FUEL TANK AND FUEL LINES CHECK

1. Check the fuel tank for leaks, scratch and dents. If it leaks or slightly damaged, repair and check the repaired tank with 5 psi air pressure.
2. Check the fuel lines for leads or clogging. If leaking or clogged, clean, repair or replace with new one.

BRAKE ADJUSTMENT

(Front and rear wheel)

Check the both front and rear brake free play at the end of the brake levers. The play should be **2–3 cm (3/4–1 1/8 in.).** (Fig. 13, 14) If it is not within this range, adjust it in the following procedure.

1. Turn the adjuster nut clockwise to reduce the play in the brake lever.

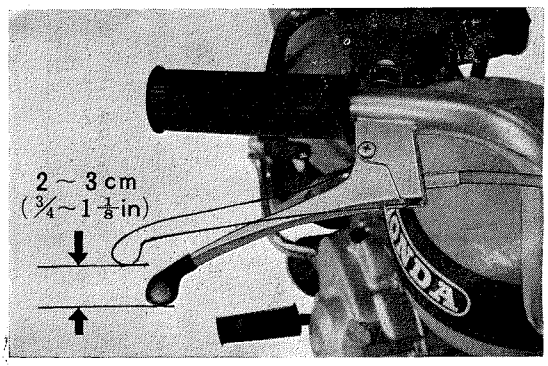


Fig. 13 Brake lever play

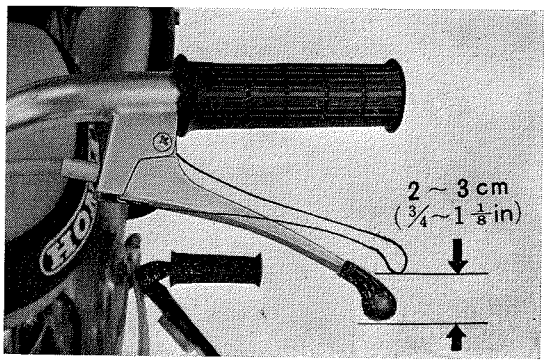


Fig. 14 Brake lever play

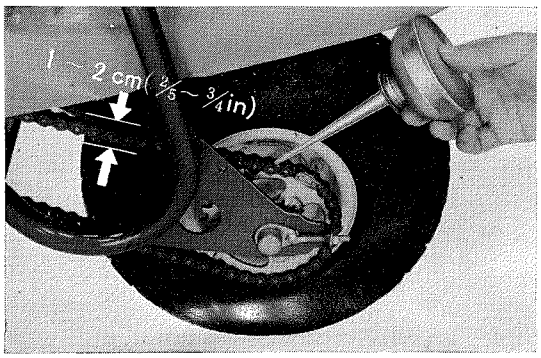


Fig. 15 Chain slack

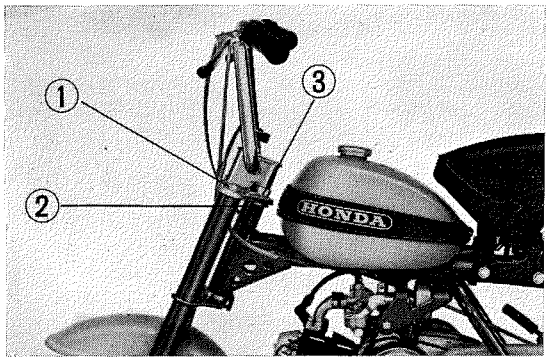


Fig. 16 ① Fork top bolt ② Cone race ③ Steering stem nut

DRIVE CHAIN ADJUSTMENT AND LUBRICATION

Adjust the chain slack to **1–2 cm (2/5–3/4 in.)** with adjuster nuts after the axle nut is loosened. (Fig. 15)

Note:

Both right and left adjuster nuts should be turned equal amounts.

When the drive chain is dirty excessively, wash in solvent with a stiff brush to take dirt and old grease off.

STEERING HEAD BEARING

Check the action of steering and make sure the steering stem nut and steering top cone race are tightened. If both are properly tightened, the steering assembly will turn to left or right under its own weight assisted only by a slight initial force. If there are any looseness of steering, tighten the stem nut, the cone race and two fork top bolts. (Fig. 16)

SECURITY OF IMPORTANT COMPONENTS

The tightness of the bolts and nuts will, after long period of use, become loose from vibration and loose of tension at the mounting points. To prevent troubles resulting from this cause, there is a need to perform retorquing of the main components. (Fig. 17)

① Steering stem nut
② Front fork top bolts
③ Seat stay bolts
④ Rear axle nut
⑤ Engine hanger bolts
⑥ Front axle nut

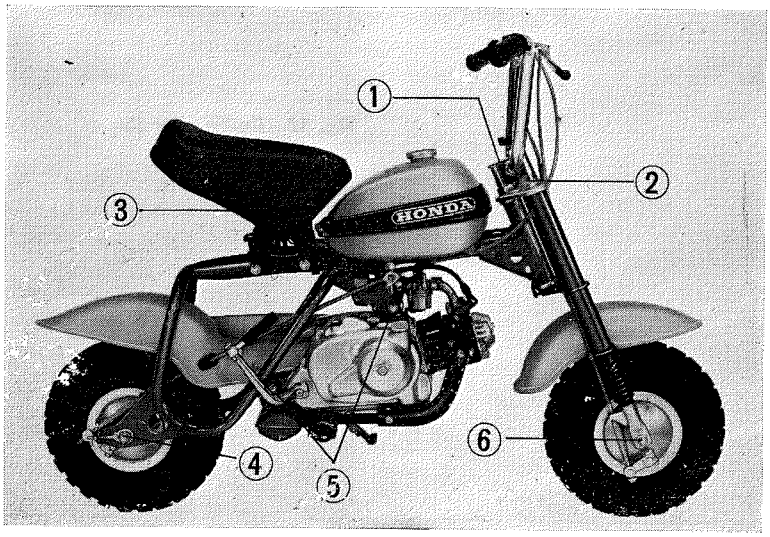
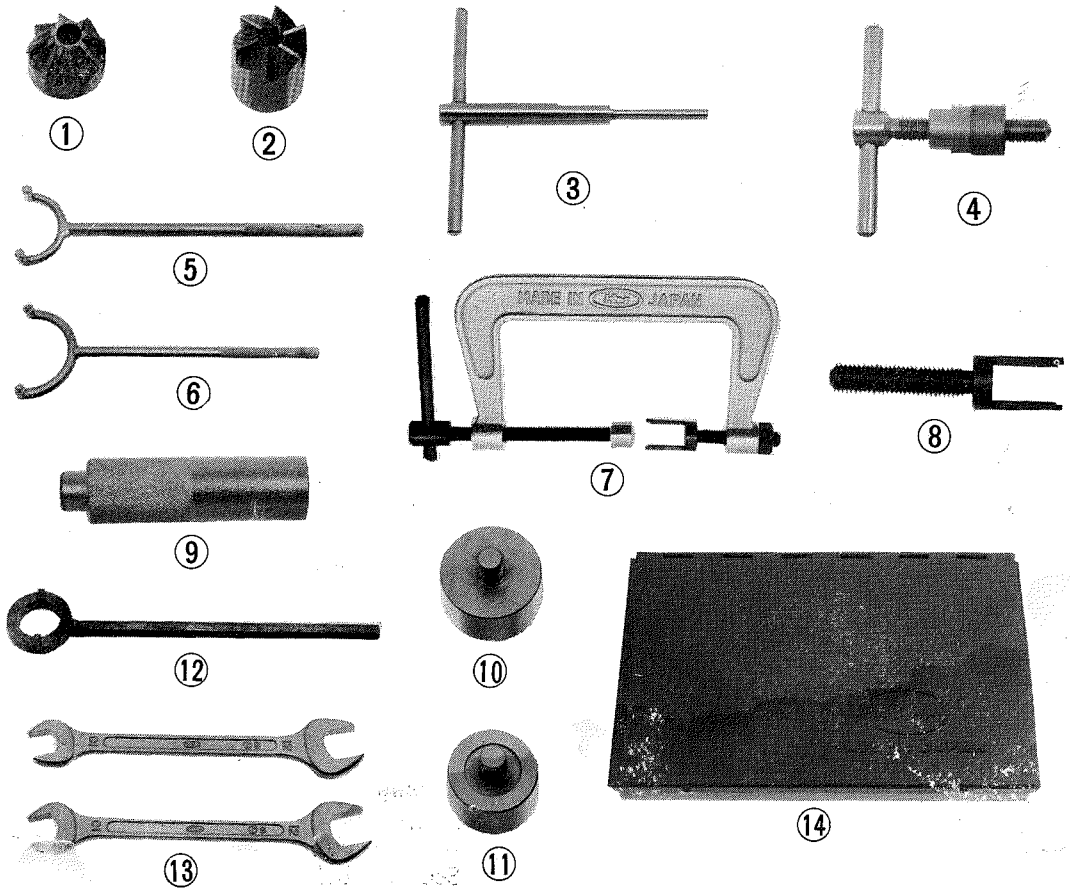


Fig. 17

III. OVERHAUL AND REPAIR

SPECIAL TOOLS



Ref. No.	Tool No.	Description
	07000-11401	QA50 Special tool set
1	07001-11401	*Valve seat cutter
2	07003-11401	*Valve seat cutter
3	07007-11401	*Valve seat cutter holder
4	07016-02301	Flywheel puller
5	07022-20001	Drive sprocket holder
6	07025-11401	*Flywheel and clutch outer holder
7	07031-20010	Valve spring compressor
8	07031-11401	*Valve spring compressor A.T.T.
9	07048-04401	Bearing driver
10	07048-04501	Front wheel oil seal driver
11	07054-04501	Rear wheel bearing driver
12	07053-11401	*Steering top cone race wrench
13	07783-99903	Tappet adjusting wrench, 10×12mm
14	07997-05101	Valve seat cutter case
	07790-99911	Tool case

* These tools are newly made for use, the others are common to all series.

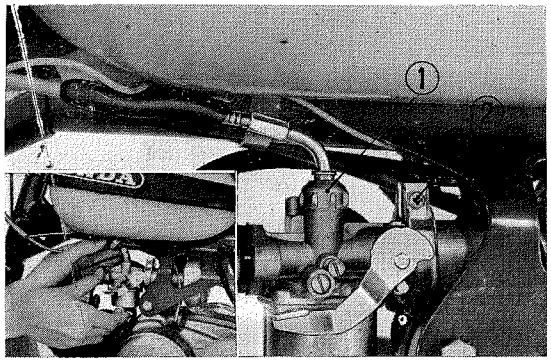


Fig. 18 ① Throttle cable lock nut ② Air cleaner case band screw

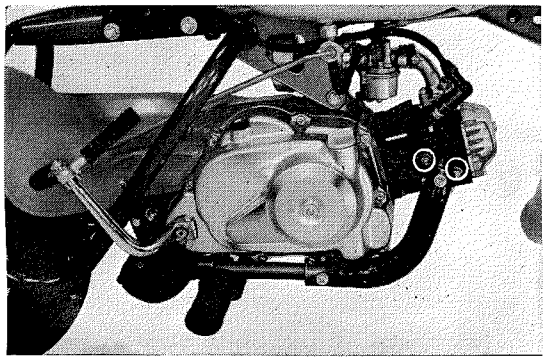


Fig. 19 Exhaust pipe & muffler removal

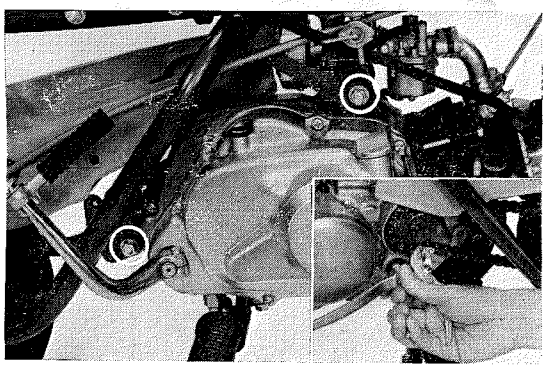


Fig. 20

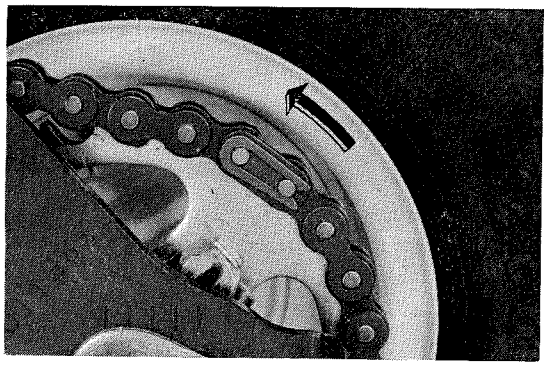


Fig. 21 Chain joint clip

ENGINE

ENGINE REMOVAL AND REINSTALLATION

Engine removal

1) Loosen the throttle cable lock nut and separate the throttle cable from the carburetor. (Fig. 18)
2) Unscrew an air cleaner case band screw and separate the air cleaner form the carburetor. (Fig. 18)
3) Unscrew two 6 mm nuts and two 6 mm bolts and then remove the exhaust pipe and muffler. (Fig. 19)
4) Remove the drive chain joint link and take the drive chain off of the engine sprocket. (Fig. 20)
5) Pull the spark plug cap and the high tension wire off of spark plug.
6) Disconnect the engine wire harness.
7) Place the wooden block under the engine to prevent it from falling. Unscrew two 8 mm nuts and remove two 8 mm spring and plain washers. Push out the rear engine mounting bolt. Holding the engine, carefully pull out the upper engine mounting bolt. (Fig. 20)

Engine reinstallation

1) Reinstall engine in the reverse order of removal.
2) To simplify installation, use the "T" handle screwdriver to hang the engine temporarily followed by installing the support bolt.
3) When connecting the drive chain, make sure that the chain joint clip is properly installed. (Fig. 21)

CYLINDER HEAD

TROUBLE DIAGNOSIS

Symptom	Causes	Remedies
Low or absence of cylinder pressure	1. No tappet clearance	1. Adjust clearance to 0.05 mm (0.02 in.)
	2. Pressure leak from the cylinder head gasket	2. Torque the four cylinder head mounting bolts uniformly
	3. Excessively worn piston and rings	3. Replace
	4. Poor sealing of the valve	4. Repair the valve seat and remove carbon
	5. Valve timing out of adjustment	5. Readjust
	6. Burnt valve	6. Replace
Excessive smoke at high engine speed	1. Excessively worn or damaged piston, cylinder, piston ring	Replace
	2. Excessively worn valve guide	
	3. Loose valve guide	
Engine overheats	1. Low oil level or poor quality oil	1. Add oil
	2. Dirty or fouled spark plug or improper heat range plug used	2. Clean or replace plug
	3. Breaker point gap improperly adjusted, dirty or burnt	3. Clean points, adjust to 0.3–0.4 mm (0.012–0.016 in.)
	4. Ignition timing out of adjustment	4. Adjust to 28°±1° BTDC
	5. Brake dragging	5. Adjust brake
	6. Lean fuel mixture	6. Adjust carburetor
	7. Excessive carbon accumulation in combustion chamber	7. Remove head and clean
	8. Piston and cylinder excessively worn	8. Replace

Disassembly

1. Unscrew two 6 mm bolts to remove the head cover.
2. Unscrew four 6 mm bolts to remove the cylinder head. (Fig. 22)
3. Remove two push rods.

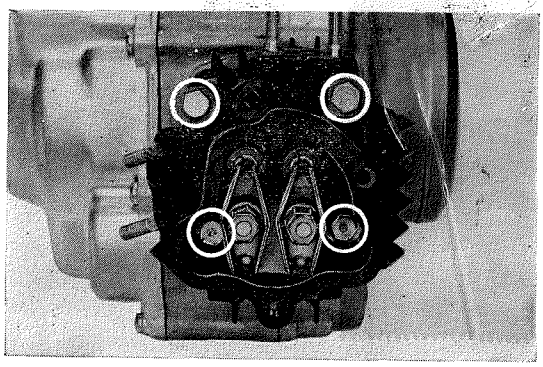


Fig. 22

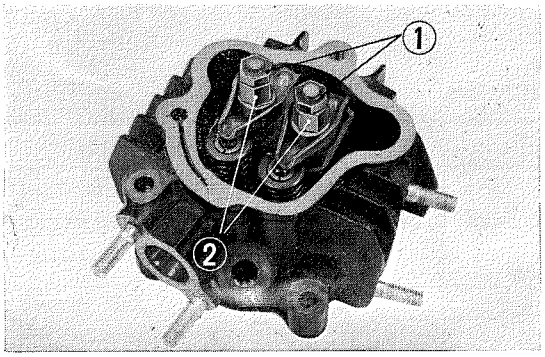


Fig. 23 ① Pivot adjuster nut ② Rocker arm pivot

4. Unscrew both pivot adjuster nuts and rocker arm pivots. (Fig. 23)

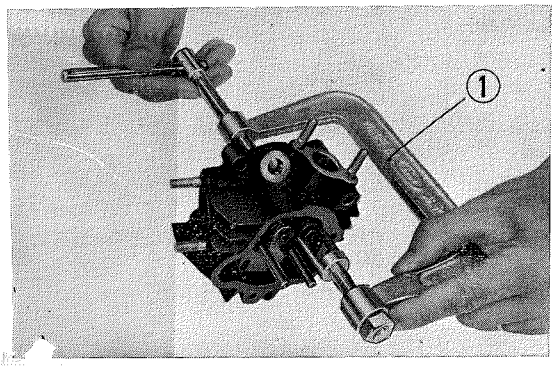


Fig. 24 Valuve spring removal
① Valve spring compressor

5. Remove the valve cotters, valve seat and valve spring using the valve spring compressor. (Fig. 24)

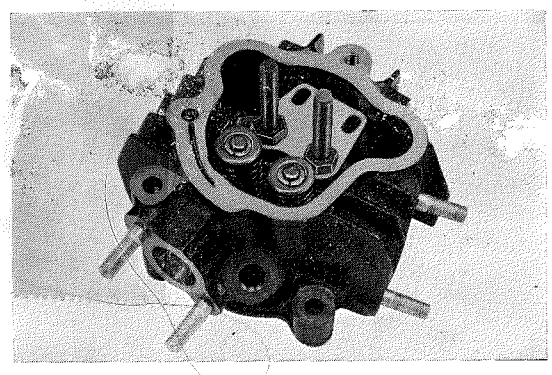


Fig. 25

Inspection and repair.

1. The cylinder head is exposed to the high pressure and temperature resulting from the combustion of the fuel mixture; further, when the head is unevenly torgued, it may develop cracks or warpage and will be the cause of defective sealing between the head and the cylinder and result in gas leak, air sucking and drop in compression. (Fig. 25)

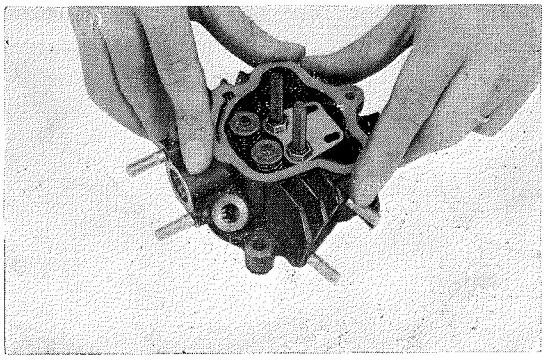


Fig. 26

2. The warpage of the cylinder head does not develop suddenly and it may be overlooked, therefore, caution should be exercised during reassembly, since the uneven torquing of the cylinder head is a very common fault.
To inspect for warpage of the cylinder head, apply a thin coat of bluing or red lead on a surface plate and work the mating surface of the cylinder head on the surface plate; the warpage can be determined by the transfer of the bluing on to the cylinder head. (Fig. 26)

3. To correct the warpage, fasten the sandpaper on the flat surface, place the cylinder head on it with fitting side down and polish by moving lightly by hand with circular motion until warpage is corrected. Use #200 sandpaper first and finish with #400 sandpaper. Inspect again with the bluing and wash the cylinder head carefully after sanding the fitting surface. (Fig. 27) Cylinder head combustion chamber height is **4.9 mm (0.19 in.)**

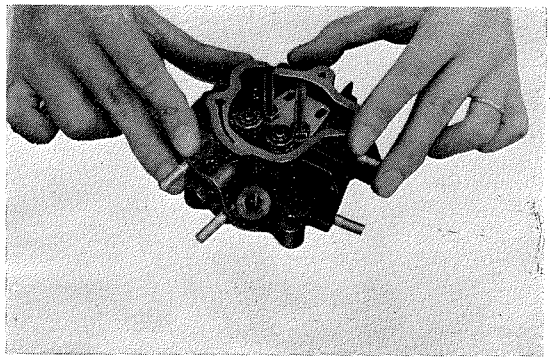


Fig. 27

4. Assemble the valve into the cylinder head so that the valves are well seated and fill the cylinder head combustion chamber with oil, inject a blast of air in from the inlet and exhaust ports and if any bubbles should appear, it is an indication that the valves seats are not completely sealed. (Fig. 28)

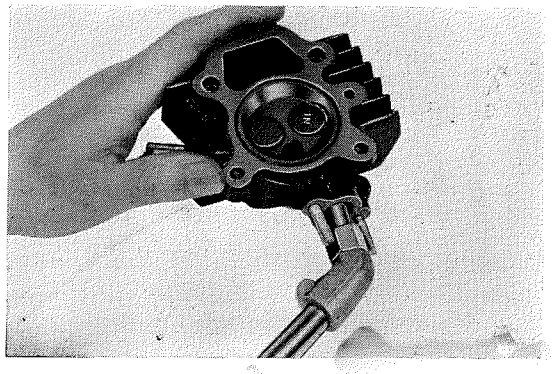


Fig. 28

5. Apply a thin coating of bluing or red lead evenly on the entire surface of the valve face, hold the valve firmly against the valve seat while rotating the valve. Inspect the valve seat for an uniform and continuous width of bluing.
   Standard value: **0.5–0.7 mm (0.019–0.027 in.)**
   The valve seat is recut with 60° cutter. (Fig. 29)

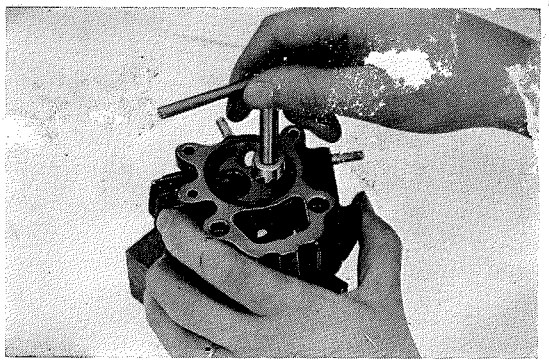


Fig. 29

6. Measure the valves using a dial gauge. (Fig. 30)

mm (in.)

	Standard value	Serviceable limit
Stem dia.	5.5 (0.217)	5.4 (0.213)
Total length	47 (1.850)	46.1 (1.815)
Head thickness	0.5 (0.020)	0.2 (0.007)

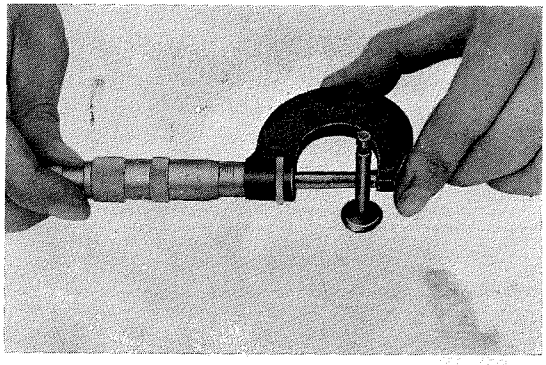


Fig. 30

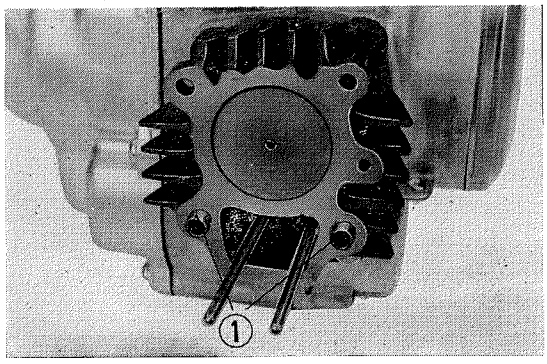


Fig. 31 ① Dowel pins

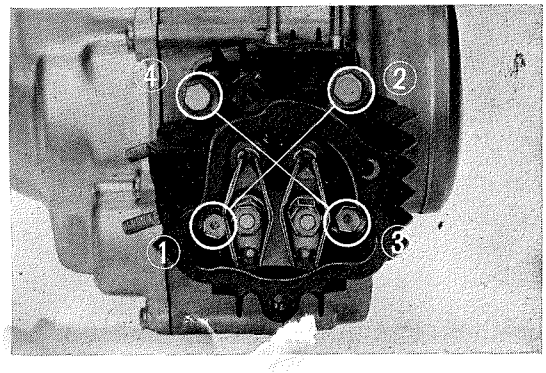


Fig. 32

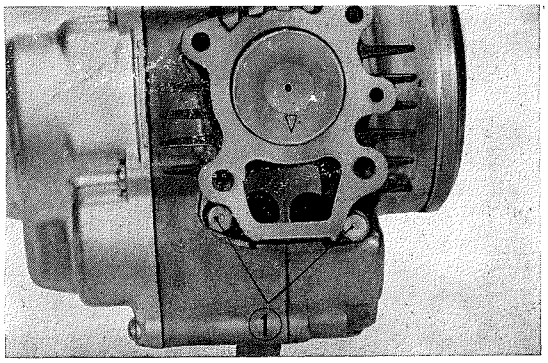


Fig. 33 ① Cylinder mounting bolt

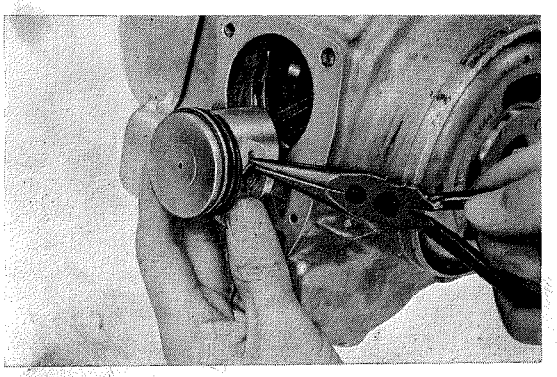


Fig. 34

7. Valve spring

mm (in.)

Item	Standard value	Serviceable limit
Free length	24.5 (0.965)	23 (0.906)

Reassembly

1. Clean all parts with solvent or kerosene.
2. Install the valves.
3. Install the cylinder head.

Note:

Make sure that the head gasket and two dowel pines are installed.

4. Torque the head bolts to **90–120 kg-cm (6.5–8.6 lb-ft).** (Fig. 32)

Note:

Torque in a diagonal pattern.

5. Install the cylinder head cover.

CYLINDER AND PISTON

Disassembly

1. Disassemble the cylinder head.
2. Unscrew two 6 mm cylinder mounting bolts to remove the cylinder. (Fig. 33)

3. Remove the piston pin clip and piston pin, and then separate the piston from the connecting rod. (Fig. 34)

Inspection

1. Inspect the condition of the cylinder bore. Measure diameter of the cylinder bore in both the X and Y directions at the top, center and bottom of the cylinder. (Fig. 35)

mm (in.)

Item	Standard value	Serviceable limit
Bore diameter	41.99–42.02 (1.653–1654)	42.1 (1.657)

If the cylinder bore is less than 42.1 mm, rebore and hone the cylinder, and replace the piston with oversize piston. The standard clearance between the piston and the cylinder should be **0.01–0.05 mm (0.0004–0.0020 in.)** at the piston skirt. The oversize piston are available in the oversize of 0.25, 0.50, 0.75 and 1.0 mm (0.010, 0.020, 0.030 and 0.040 in.)

2. Remove carbon deposit from the piston head and ring grooves, being careful not to damage or scratch the piston.

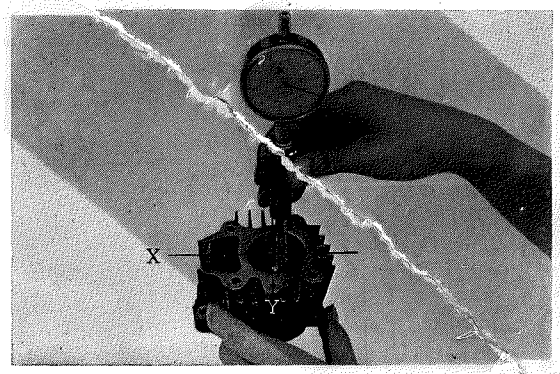


Fig. 35 Cylinder bore measurement

3. Piston diameter inspection.
Measure the piston at the skirt. (Fig. 36)

mm (in.)

Item	Standard value	Serviceable limit
Piston diameter	41.98–42.0 (1.652–1.654)	41.80 (1.645)

Replace if beyond the serviceable limit.

4. Measure the piston ring side clearance using a thickness gauge. Replace the piston ring or piston if beyond the serviceable limit.

mm (in.)

Item	Standard value	Serviceable limit
Piston ring side clearance	0.025–0.030 (0.0008–0.0011)	0.7 (0.0275)

5. Piston ring gap
Insert the piston ring into the cylinder so that it is normal to the cylinder axis and then measure the ring gap using a thickness gauge.

mm (in.)

Item	Standard value	Serviceable limit
Piston ring	0.15–0.35 (0.0059–0.0138)	0.5 max. (0.0197)

Replace if beyond the serviceable limit.

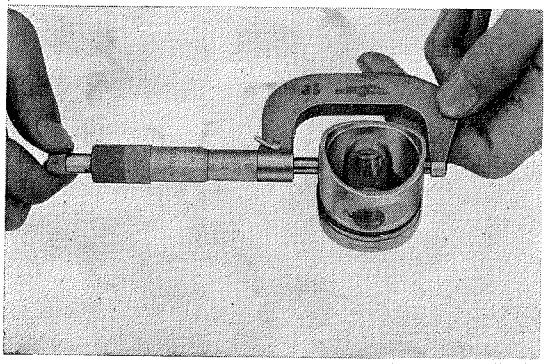


Fig. 36 Piston diameter measurement

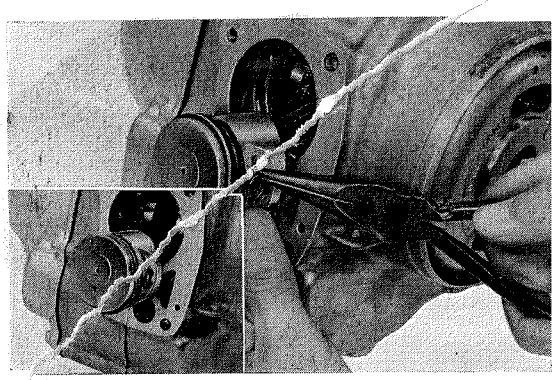


Fig. 37 Piston installation

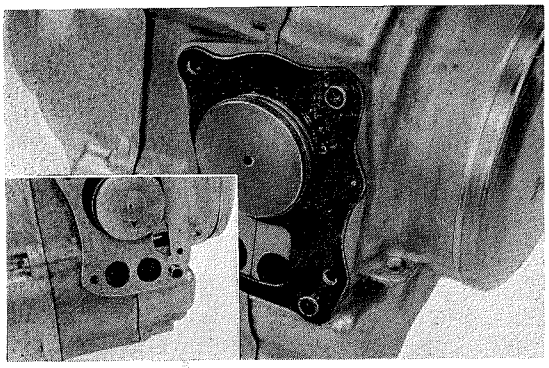


Fig. 38

Reassembly

1. Ass mble the piston ring on the piston.

Note:

The ring marking located adjacent to the ring gap should be toward the top. When installing new piston ring, make sure that the rings should roll smoothly.

2. Install the piston. (Fig. 37)

Note:

Install the piston so that the arrow marking on the piston head is toward the downward.

3. Install the piston pin clip.

Note:

Opening of the clip should not be aligned to the cutout in the clip groove.

4. Space the piston ring gaps equally apart (120°) and then install the cylinder.

Note:

Do not forget to install the gasket, two valve lifters and two dowel pins. (Fig. 38)

5. Install the cylinder head.

CLU[illegible]ND CAMSHAFT

TROUBLE DIAGNOSIS

Symtom	Causes	Remedies
Clutch slips	1. Improper adjustment of clutch (no free play)	Readjust
	2. Weakened clutch spring	Replace
	3. Worn or distorted pressure plate	Replace
	4. Distorted clutch plate	Replace
	5. Worn or distorted friction plate	Replace
Clutch disengage improparly	1. Improper adjustment of clutch (excessive play)	Readjust
	2. Uneven clutch spring tension	[illegible]
	3. Distorted clutch plate	Readjust

Disassembly

1. Remove the cylinder head and cylinder.
2. Unscrew eleven 6 mm screws to remove the right crankcase cover.
3. Unscrew three 5 mm screws to remove the clutch outer cover. (Fig. 39)

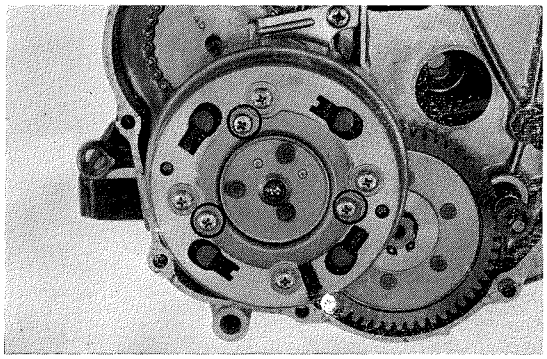


Fig. 39 Clutch outer cover removal

4. Flatten 14 mm lock washer. Holding the clutch with the clutch outer holder special tool, unscrew 14 mm lock nut and remove the clutch assembly. (Fig. 40)

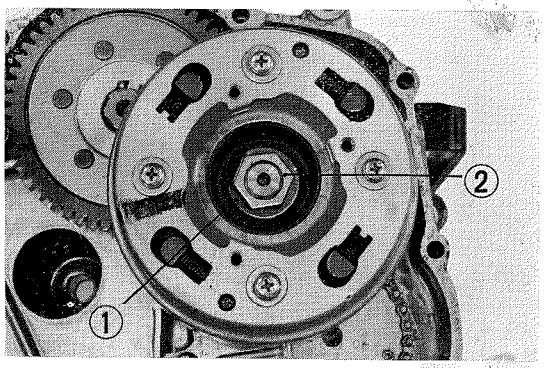


Fig. 40 ① 14mm. lock washer ② 14mm. lock nut

5. Take off the set-ring to remove three clutch plates, two clutch friction plates and two clutch damper springs. Unscrew four 5 mm screws to remove four clutch springs and drive plate. (Fig. 41)

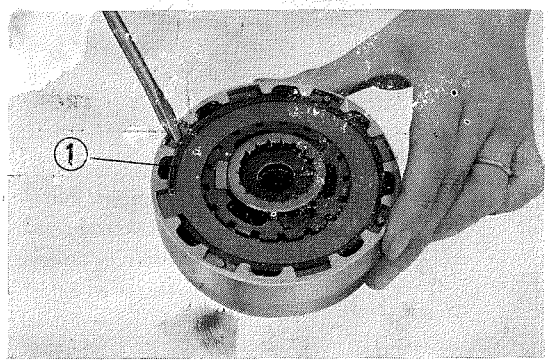


Fig. 41 ① Set-ring

6. Remove 6 mm circlip and take off the change pawl shaft flange, spring and washer. (Fig. 42)

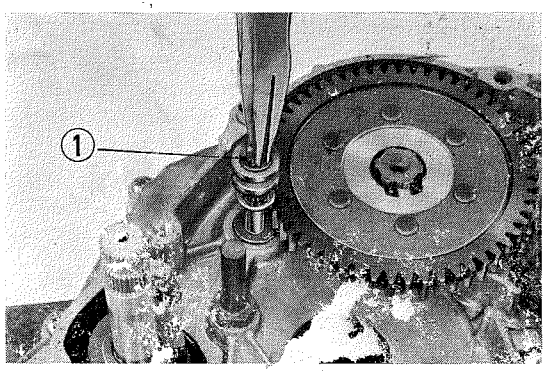


Fig. 42 ① 6mm. circlip

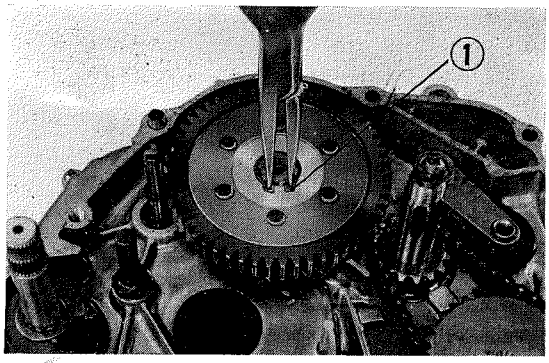


Fig. 43 ① 17mm. circlip

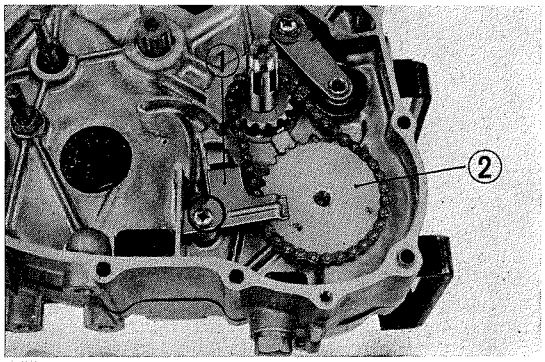


Fig. 44 ① Cam shaft set plate ② Cam shaft

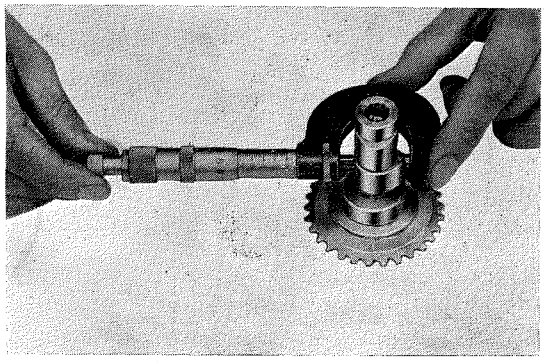


Fig. 45 Cam shaft checking

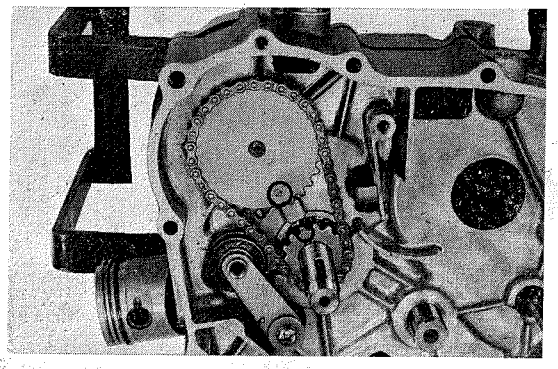


Fig. 46 Cam shaft installation

7. Remove 17 mm circlip to take off the primary driven gear. (Fig. 43)

8. Unscrew 6 mm screw to remove the cam shaft set plate and remove the camshaft together with the timing sprocket. (Fig. 44)

Inspection and repair

1) Clutch friction disc

mm (in.)

Item	Standard value	Serviceable limit
Thickness	3.5 (0.138)	3.1 (0.122)

Replace the friction disc if beyond the serviceable limit.

2) Inspect clutch plates for scratches and bending. Repair or replace bent or badly scored plate.

3) Inspect the cam shaft for scratch, worn and bending. If badly bending or worn, replace with new one. (Fig. 45)

Cam height: Inlet 21.66 mm (0.874 in.)
Exhaust 21.40 mm (0.843 in.)

Reassembly

1. Install the cam shaft with the timing sprocket. Turn the crankshaft so that the piston is at top-dead-center and then align the "O" mark on the cam sprocket to the punch mark on the timing sprocket. (Fig. 46)

Note:

Execise care not to drop the valve lifters.

2. Install the timing sprocket distance collar.
3. Install the primary driven gear.
4. Put the washer, spring and change pawl shaft flange, and install the circlip.
5. Install the right crankcase cover.

TRANSMISSION AND CRANKSHAFT TROUBLE DIAGNOSIS

Symptom	Causes	Remeaties
Gear does not shift in	1. Broken center gear change pawl	Replace
	2. Broken gear change pawl shaft	Replace
	3. Deformed gear shift fork	Repair or Replace
Change pedal does not return to its position	1. Broken or dislocated gear shift return spring	Repair or Replace
	2. Clutch lever or clutch lifter hit crankcase	Repair
Gear jumps out while running	1. Worn gear change pawl	Replace
	2. Worn gears on main and counter shaft	Replace
	3. Weakened gear change pawl spring	Replace

Disassembly

1. Remove the cylinder head, cylinder, right crankcase, clutch, primarly gear, camshaft and timing sprocket.
2. Remove the kick starter spring with screw driver and pull out the kick starter spring and retainer. (Fig. 47)

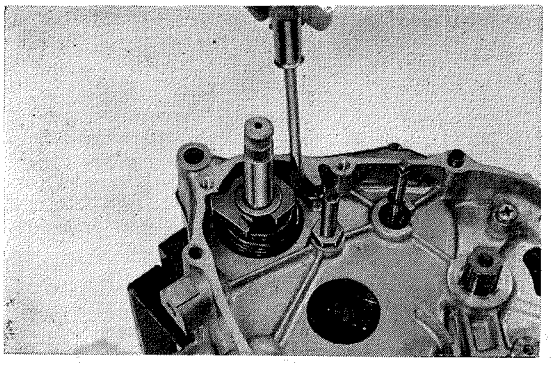


Fig. 47 Kick starter spring & retainer removal

3. Remove 20 mm circlip to remove the drive sprocket. (Fig. 48)

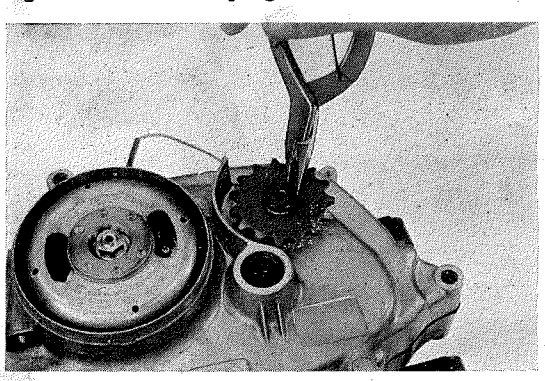


Fig. 48 Drive sprocket removal

4. Take off the dynamo cover, holding the flywheel with flywheel holder special tool and remove the flywheel with flywheel puller special tool. (Fig. 49)

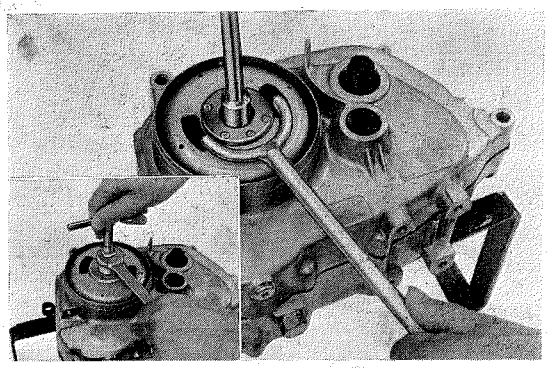


Fig. 49 Flywheel removal

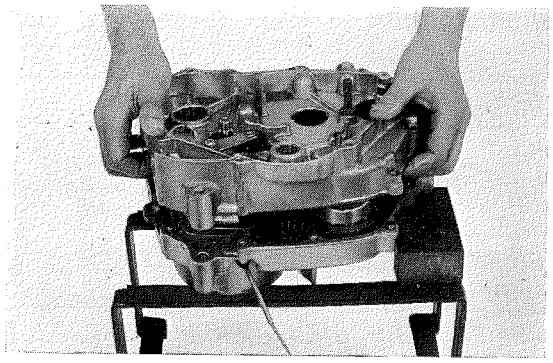


Fig. 50 R. crankcase cover removal

5. Unscrew four 4 mm screws and three 6 mm screws to separate the right crankcase cover. (Fig. 50)

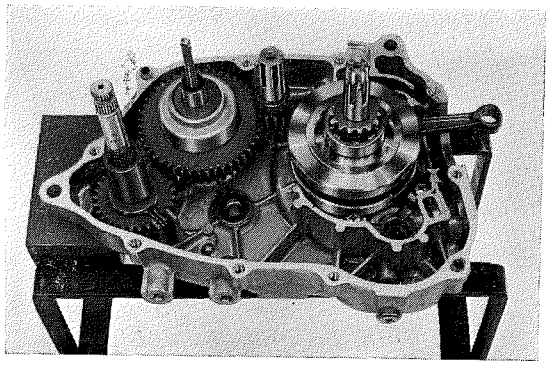


Fig. 51

6. The kick starter and spindle, main shaft and counter shaft gear assembly can be removed from the left crankcase. (Fig. 51)

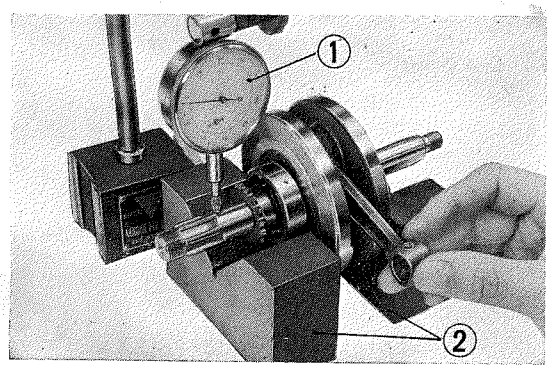


Fig. 52 Crankshaft runout measurement
① Dial gauge ② V. block

Inspection and repair

1. Measure the runout of the crankshaft. Support the crankshaft at bearing with V block, and check the amount of runout using a dial gauge. (Fig. 52)

mm (in.)

Item	Standard value	Serviceable limit
Right & left side	0.02 (0.00079)	0.5 (0.0197)

Replace if beyond the serviceable limit.

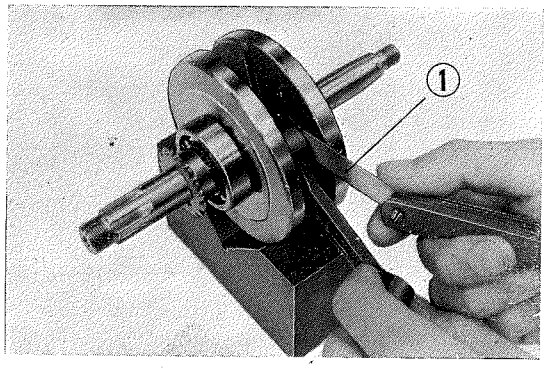


Fig. 53 ① Thickness gauge

2. Check the clearance of the connecting rod big end. (Fig. 53)

mm (in.)

Item	Standard value	Serviceable limit
Side clearan	0.10–0.35 (0.0039–0.0138)	0.8 (0.0315)
Radial clearance	0–0.1 (0–0.004)	0.8 (0.0315)

Replace if beyond the serviceable limit.

3. Measure the bearing looseness. (Fig.54)

mm (in.)

Item	Standard value	Serviceable limit
Bearing looseness	0.07 (0.0028)	1.2 (0.047)

Replace if beyond the serviceable limit.

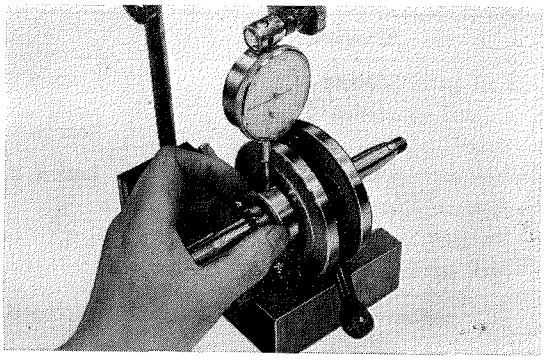


Fig. 54 Bearing looseness measurement

Reassembly

1. Assemble the kick starter and spindle, main shaft and counter shaft gears assembly in place on the left crankcase.
2. Install the crankshaft and then install the right crankcase.
3. Install the cam sprocket, primary driven gear, clutch and kick starter spring and retainer.
4. Install the right crankcase cover.
5. Install the flywheel and dynamo cover.
6. Install the cylinder and cylinder head.

CARBURETOR

TROUBLE DIAGNOSIS

Symtom	Causes	Remedies
Engine readily stalls (does not idle)	1. Clogged filler cap vent hole 2. Air leaking in at the connecting tube 3. Clogged air cleaner 4. Improper float level	1. Repair 2. Repair or replace 3. Service 4. Adjust
Poor idling (related symptoms) • Poor slow speed performance • Rough idling • Poor response to throttle snapping • Stalls during braking	1. Improper air screw adjustment 2. Improper throttle stop screw adjustment 3. Clogged pilot or slow jets	1. Adjust 2. Adjust 3. Clean or repair
Engine stalls during running	1. No fuel in the fuel tank 2. Clogged fuel cock	1. Check fuel flow by removing the fuel pipe 2. Clean
Excessive dark exhaust smoke during intermediate and high speed	1. Loose main jet, oversize jet 2. Worn jet needle 3. Drop off of jet needle	1. Tighten or replace 2. Replace jet needle and test 3. Repair
Dark exhaust gas After-fire of exhaust Excessive fuel consumption	1. Choke valve partially clossed 2. Poor grade fuel or oil mixed with fuel 3. Improperly adjusted air screw 4. Worn jet needle	1. Adjust 2. Select proper grade fuel 3. Adjust 4. Adjust or replace
Back-fire Poor acceleration	1. Improperly adjusted air screw 2. Blocked main air passage 3. Loose choke valve	1. Adjust 2. Clean 3. Tighten
Poor starting performan	1. Excessive use of choke 2. Carburetor flooding 3. Broken relief valve spring	1. Open choke valve during starting 2. Replace the choke valve assemble

Symptom	Causes	Remedies
Carburetor flooding (related symptoms) • Poor idling • Poor performance at all speed • Excessive fuel consumption • Hard starting • Poor acceleration	1. Clogged float valve 2. Scratched or damaged/valve or float valve seat 3. Leak in the float	1. Clean the valve seat 2. Replace 3. Replace
Poor intermediate speed performance (related symptoms) • Flat spot • Poor acceleration • Slow speed not possible • Excessive fuel consumption • Rough operation	1. Improperly set jet needle 2. Clogged slow or pilot jet 3. Clogged air vent pipe	1. Normally set to the third step varies one step for winter and summer 2. Clean or repair 3. Overflow pipe also serves as air vent Check for sharp bend or clogging
Poor high speed performance	1. Choke closed 2. Clogged air vent pipe 3. Loosened main jet, drop off or clogged 4. Jet needle drop off	1. Position choke lever to full 2. Clean or repair 3. Clean and tighten 4. Replace needle stop clip

Carburetor Setting Table

Venturi diameter	9.0 mm (0.354 in)	Throttle valve	CA #2.5
Main jet	#52		Cutaway 1.2×0.2 [1.0×0.2]
Air jet	#100	B. P.	0.8φ×5.0P
Air bleed	AB_1 0.5mm×2 AB_2 0.4mm×2	Slow jet	#35×#38
		Air screw	[1.38±1/8]
Needle jet	2.1mm×2.8mmR O.D. 4.8mm 3.5 protruding	Valve seat	0.6 mm dia.
		Float level	16.5 mm (0.65 in)
Jet needle	3 step (2.03mm)	Setting mark	Q 4B

CHASSIS

TROUBLE DIAGNOSIS

Symptom	Causes	Remedies
Steerability is extremely poor	1. Improper tire pressure	1. Both front and rear wheel: 1.0 kg/cm² (14 psi.)
	2. Loosened handle mounting bolt	2. Tighten
	3. Loosened front axle	3. Tighten
	4. Loosened ball race	4. Tighten
	5. Improperly fixed rear axle	5. Tighten
	6. Loosened front suspension pivot bolt	6. Tighten
	7. Loosened spokes	7. Tighten
	8. Loosened rim	8. Repair or replace
	9. Worn front wheel bearing	9. Replace
	10. Out of alignment of front and rear wheels	10. Repair
Unusual suspension noise	1. Lack of grease on pivot and front suspension bottom	1. Apply grease
	2. Loosened suspension mounting	2. Tighten
	3. Shock absorber case rubbing	3. Repair or replace
Ineffective braking	1. Improper adjustment of brake arm	1. Adjust
	2. Uneven contact and wear of broke lining	2. Repair or Replace
	3. Water, oil or grease on brake lining	3. Repair or Replace
	4. Malfunction of brake cable	4. Adjust, apply oil or replace
Unusual brake noise	1. Hardened brake lining	1. Repair or Replace
	2. Foreign object lodged in brake lining	2. Replace
Unusual vibrations occur when applying rear brake	1. Loosened rear axle shaft mounting nut	1. Tighten
	2. Unevenly worn brake lining	2. Repair or replace
Rear wheel does not turn when pedal is depressed	1. Rear brake dragging	1. Adjust
	2. Drive chain cut off or disconnected	2. Repair or replace
	3. Inoperative starter drive sprocket	3.
	(1) Weakened ratchet pawl spring	(1) Replace
	(2) Broken ratchet pawl	(2) Replace
	(3) Worn or broken pedal shaft internal gear	(3) Replace

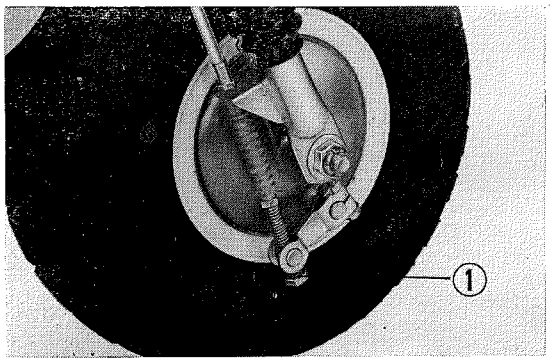


Fig. 55 Brake adjusting nut

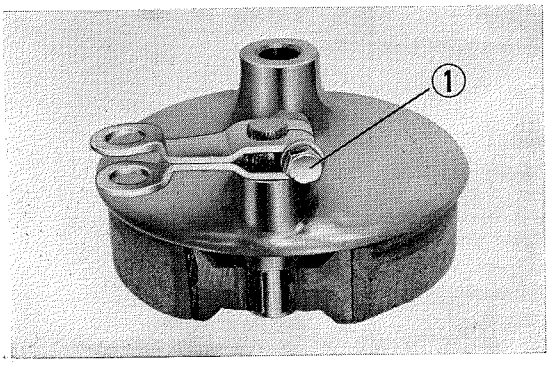


Fig. 56 ① 6mm. bolt

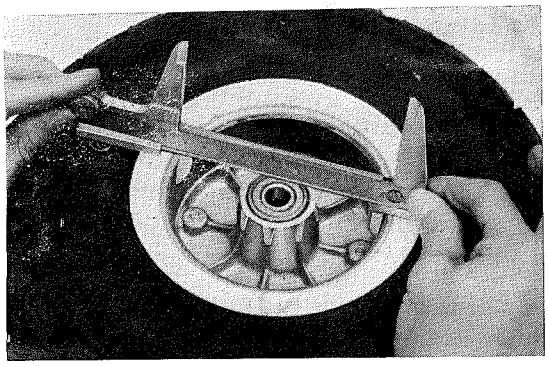


Fig. 57 Brake drum measurement

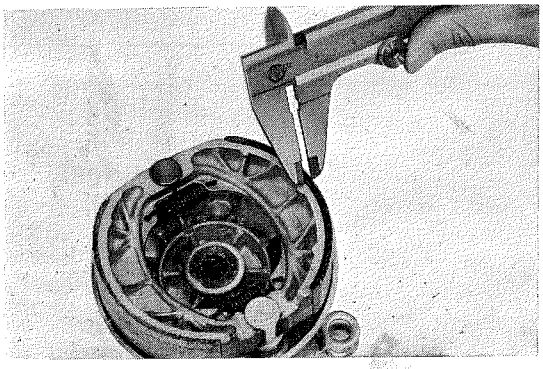


Fig. 58 Brake lining thickness measurement

FRONT WHEEL AND FRONT BRAKE

Disassembly

1. Place an appropriate stand under the engine.
2. Unscrew the front arm adjusting nut to disconnect the front brake cable. (Fig. 55)
3. Unscrew 12 mm front wheel axle shaft nut, pull out the front axle shaft and then drop the front wheel.
4. Unscrew 6 mm bolt to remove the brake arm, unhook the two brake shoe springs and then disassemble the brake shoes from the brake panel. (Fig. 56)

Inspection

1. Check for bend in the front axle shaft.
2. Check for wear the bearings (#6201, #6201R).
3. Check wear of brake drum using a caliper. (Fig. 57)

mm (in.)

Item	Standard value	Serviceable limit
Inside dia. of drum	109.8–111.2 (4.25–4.41)	112 (4.4094)

Replace if beyond the serviceable limit.

4. Check the brake panel for buckling and other damages. If damaged, replace with new one.
5. Check wear of brake lining. (Fig. 58)

mm (in.)

Item	Standard value	Serviceable limit
Lining thicknes	3.9–4.1 (0.1565–0.1614)	2 (0.07874)

Replace if beyond the serviceable limit.

6. Check the oil seal for damage, buckling and wear. If worn or damaged, replace with new one. (Fig. 59)
7. Check both exterior and interior of tire for damage, and imbedding of wire and nails. If worn or damaged, replace with new one. Correct tire pressure is **1.0 kg/cm² (14 psi.)** for front.
8. Check for air leaks around the valve stem and tube. If leaking, repair or replace with new one.

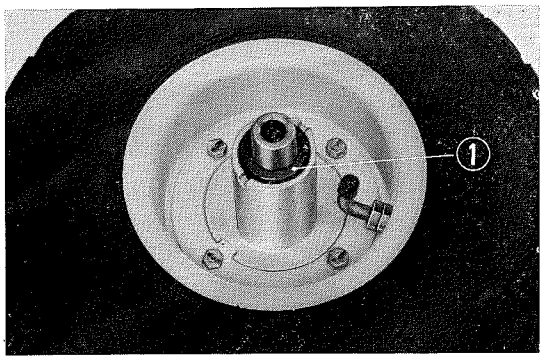


Fig. 59 ① Oil seal

Reassembly

1. Apply grease to the wheel ball bearings and the inside of the wheel hub. Assemble distance collar and ball bearings into the wheel hub. (Fig. 60)
2. Assemble the brake cam into the front brake panel, hook the brake shoe springs on to the brake shoes and then assemble the brake shoes on the brake panel.
3. Install the brake arm.
4. Assemble the brake panel on the front wheel.
5. Assemble the oil seal and side collar on the side of bearing retainer and then mount it on the front axle with a nut.
6. Connect the front brake cable to the brake arm and adjust the play in the brake lever.

Notes:

The play at the end of brake lever should be 2–3 cm (3/4–1.1/8 in.).

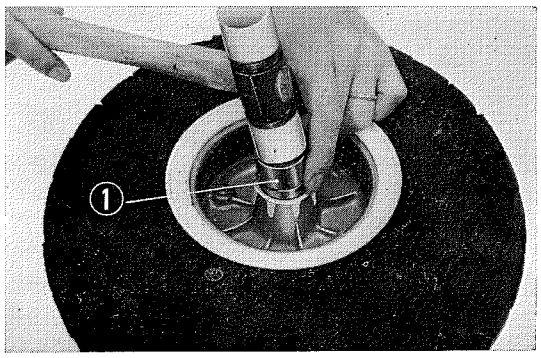


Fig. 60 Bearing installation
① Bearing driver

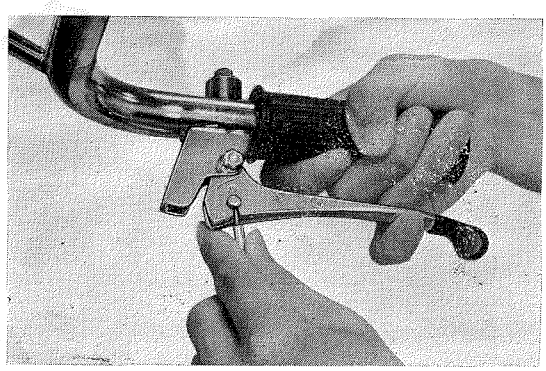


Fig. 61 Brake cable removal

STEERING UNIT AND FRONT FORK

Disassembly

1. Disconnect the front and rear brake cables from the brake levers. (Fig. 61)
2. Disconnect the throttle cable from the top of carburetor.
3. Disconnect the wire harness of engine stop switch from the ignition coil.
4. Unscrew the handle post knob and then remove the steering handlebar. (Fig. 62)

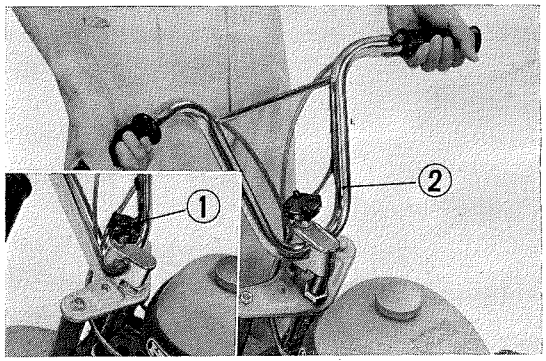


Fig. 62 Steering handlebar
① Handle post knob ② Handlebar

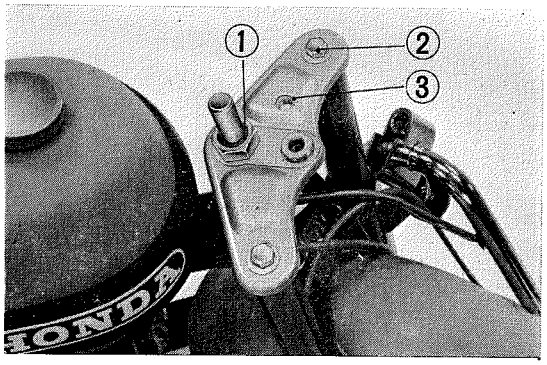


Fig. 63 ① Steering stem nut ② Fork top bolt ③ Fork top bridge

5. Unscrew the steering stem nut and two 10 mm bolts to remove the fork top bridge. (Fig. 63)
6. Remove the front wheel in accordance with section "Front Wheel".

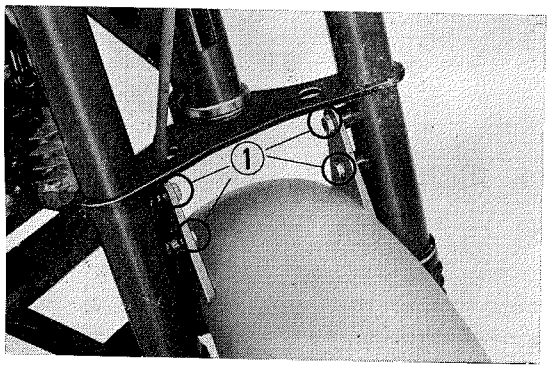


Fig. 64 ① 6mm. bolts

7. Unscrew four 6 mm bolts to remove the front fender from the front fork assembly. (Fig. 64)

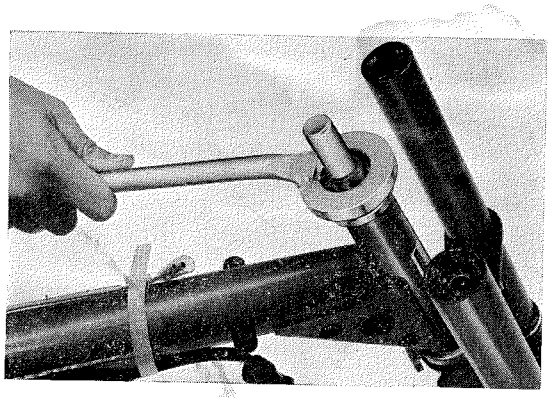


Fig. 65 Top cone race removal

8. Unscrew the steering top cone race with the special tool (Tool No. 07053-11401) and then drop the front fork assembly out the bottom. (Fig. 65)

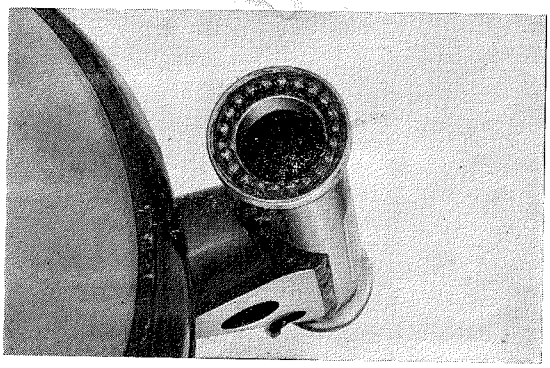


Fig. 66 Steering head bearing

Note:
Do not lose the steering head bearing located at the top and bottom of the steering head pipe. (Fig. 66)

9. Remove the fork bolt and pull out the cushion assembly from the fork pipe.

Inspection

1. Check the control cables for operation, action and damages. If the cables do not move smoothly, apply grease or replace with new one. If the outer cable is damaged, repair with the plastic tape or replace with new one.
2. Check the operation of the throttle grip. If the throttle grip does not move smoothly, apply grease to the throttle hinge. If worn, replace with new one.
3. Check the condition of the handle bar for bend and twist. If bent or twisted, straighten or replace with new one.
4. Inspect the steering head bearing for wear and cracks. If worn or damaged, replace with new one.
5. Inspect the steering top cone race, bottom cone race and other ball races for galling and wear condition. If worn, replace them with new one.
6. Check the steering stem for bend and twist. If slightly bent or twisted, replace with new one.
7. Inspect the thread for damage and deformation. If damaged, replace with new one.
8. Check the front fork spring for broken and its tension. If badly deformed or damaged, replace with new one.
9. Check the front fork pipe for bend or crack. If hadly damaged, replace with new one.
10. Check the front fork boot and stopper rubber for damage. If damaged, replace with new one.

REAR WHEEL AND REAR BRAKE

Disassembly

1. Place an appropriate stand under the engine.
2. Unscrew the brake adjust nut to remove the rear brake rod. (Fig. 68)
3. Unfasten the drive chain link and disconnect the chain. (Fig. 69)

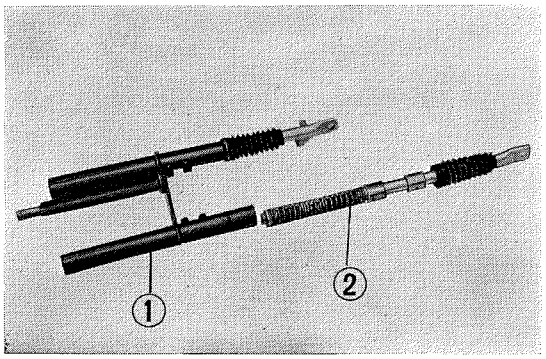


Fig. 67 Front cushion assembly
① Front fork pipe ② Front cushion spring

Reassembly

1. Insert the front cushion assembly into the front fork pipe.
2. Insert the stem of fork into the steering head Pipe, tighten it with the steering head top cone race and attach the fork top bridge to the fork pipe and stem.
3. Attach the front fender to the front fork.
4. Install the front wheel.
5. Install the handle bar on the fork top bridge.
6. Connect the wire harness and control cables.

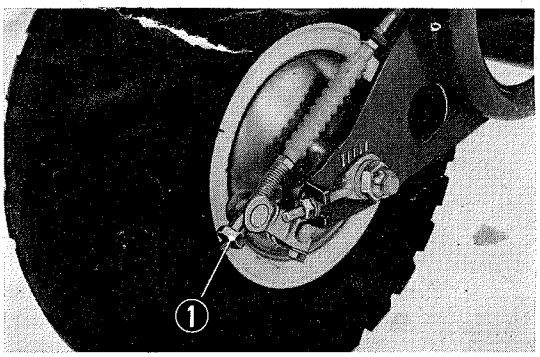


Fig. 68 Brake rod removal
① Adjust nut

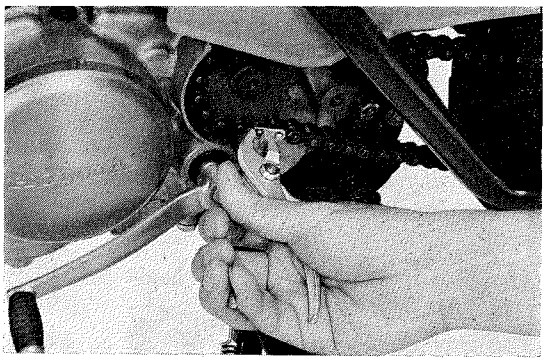


Fig. 69 Drive chain removal

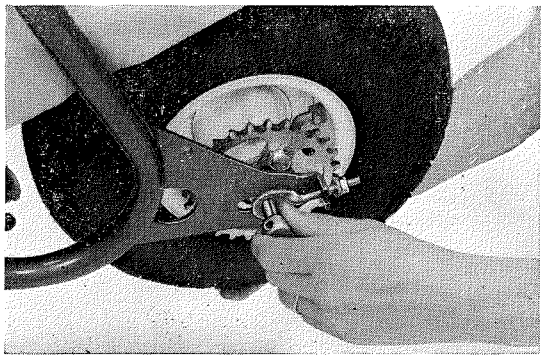


Fig. 70 Rear axle removal

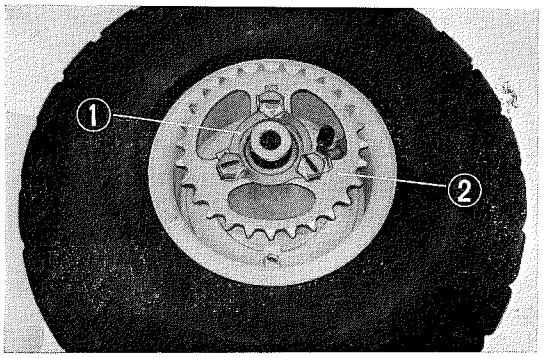


Fig. 71 Drive sprocket removal
① Tongued washer ② Drive sprocket

bolts. After tighten the bolts, bend the tab on tongued washer to lock it.

3. Mount the brake panel assembly on the rear wheel hub.
4. Assemble the oil seal and collar into the wheel hub and then install the rear wheel with the rear axle shaft.
5. Install and connect the drive chain. Adjust the chain slack of **1–2 cm (2/5–3/4 in.)**

Make sure the chain joint link cutout is pointing in the opposite direction to the direction of rotation and the chain adjuster indicator on both sides should be at identical position.

6. Connect the rear brake rod to the brake arm and then adjust the play in the brake lever and pedal.

Note:

The play in the brake pedal should be 2–3 cm (1/4–1.1/8 in.).

The play in the brake lever should be 1–2 cm (2/5–3/4 in.).

4. Loosen the nut from the rear axle and remove the rear axle. (Fig. 70)
5. Remove the rear wheel.
6. Disassemble the brake panel from the wheel hub. Unscrew 6 mm bolt to remove the brake arm from the brake panel, pull out the brake cam, disconnect the spring and then remove the brake shoes.
7. Straighten the tongued washer on the final driven sprocket, loosen the three final driven bolt and then remove the final driven sprocket. (Fig. 71)
8. Remove the oil seal, ball bearings and the rear wheel side collar from the rear wheel hub.

Inspection

1. Check for bend in the rear axle. If bent, repair or replace with new one.
2. Check bearing for wear. If worn, replace with new one.
3. Check wear of brake drum using a caliper.

mm (in.)

Item	Standard value	Serviceable limit
Drum inside dia.	109.8–110.2 (4.25–44.1)	212 (4.4094)

Replace if beyond the serviceable limit.

4. Check wear of brake lining.

mm (in.)

Item	Standard value	Serviceable limit
Lining thickness	3.9–4.1 (0.1565–0.1614)	2 (0.07874)

Replace if beyond the serviceable limit.

5. Check the brake panel for buckling and wear. If worn or damaged, replace with new one.
6. Check the tire for damage, and imbedding of wire and nail. If damaged or worn, replace with new one. The tire pressure should be **1.0 kg/cm² (14 psi).**
7. Check for air leaks around the valve stem and tube. If leaking, repair or replace with new one.

Reassembly

1. Apply grease to the wheel ball bearings and the inside of the wheel hub. Assemble the distance collar and ball bearings into the wheel hub.
2. Mount the final driven sprocket on the rear wheel hub, install the tongued washers and

FRAME BODY

Disassembly

1. Remove the engine in accordance with section "Engine removal and installation".
2. Remove the steering handle in accordance with section 'Steering unit'.
3. Unscrew two 8 mm nut to remove the seat. (Fig. 72)

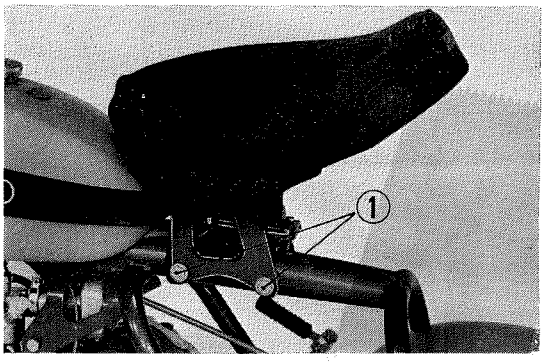


Fig. 72 Seat removal
① 8mm. nut

4. Position the fuel cock lever to STOP position, disconnect the fuel tube from carburetor, remove the fuel tank setting band and then remove the fuel tank. (Fig. 73)
5. Disassemble the air cleaner.
6. Remove the front wheel and front suspension in accordance with section "Front wheel steering unit and front fork".

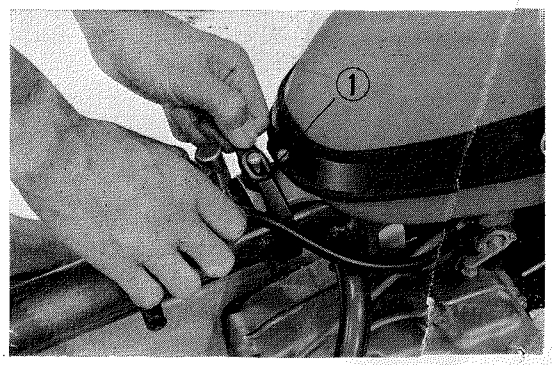


Fig. 73 Guel tank removal
① Guel tank setting band

7. Remove the rear wheel and rear brake in accordance with section "Rear wheel and rear brake", and then remove the rear fender. (Fig. 74)

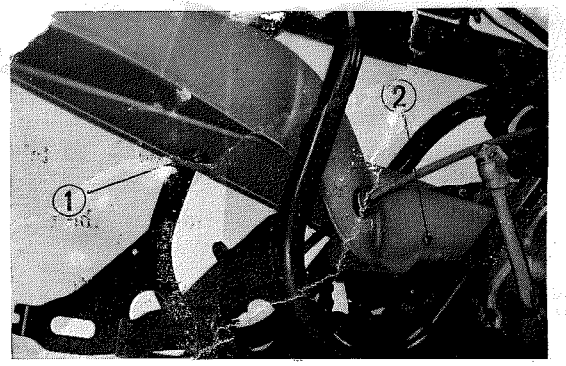


Fig. 74 Rear fender removal
① Rear fender ② Fender mounting screw

8. Disassemble the electrical system. (Fig. 75)

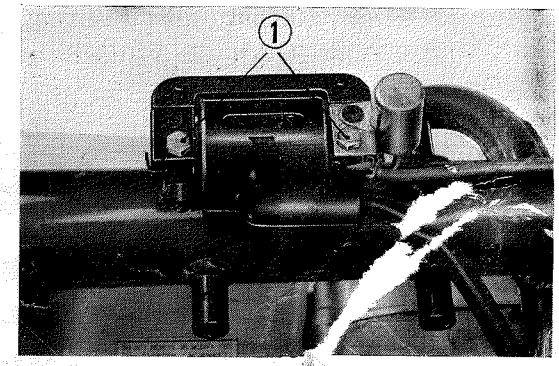


Fig. 75 ① Ignition coil setting bolt

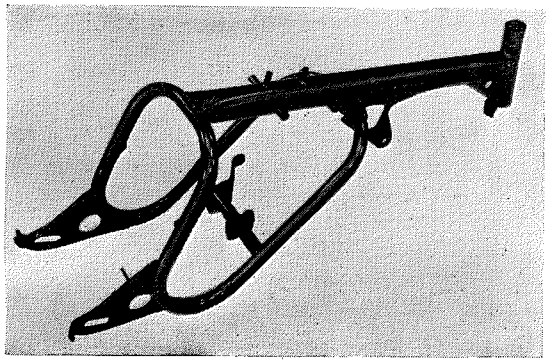


Fig. 76 Frame unit

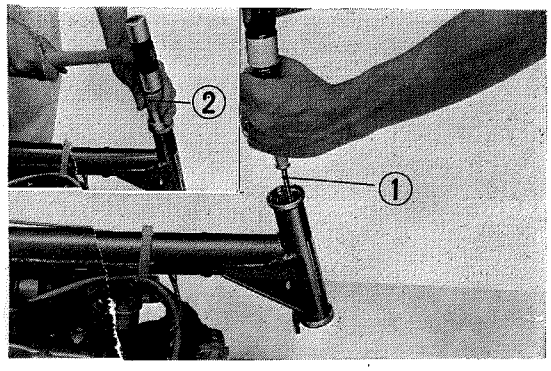


Fig. 77 Ball race removal
① Wooden drift ② Boll race driver

Inspection

1. Inspect the welded joints, crack, demage or twist to the pipe. Straighten the minor dent or twisting, weld the crack and paint the worn or scratched parts. Replace the twisted or badly dented frame with new one. (Fig. 76)
2. Inspect the top and bottom races for damage and wear.

Note:

The ball race can be driven out easily by using a wooden drift from the inside. When installing the race, drive it in straight and to the full depth. (Fig. 77)

3. Check the angle of head pipe for any damage. If damaged, repair or replace with new one.
4. Check for fuel tank leak, cock valve and fuel tube for clogging or damage. Flush out interior of the tank with clean gasoline.
5. Clean the air cleaner element by blowing off dust with compressed air or wash in soap water.
6. Check the muffler for cracks and deformation. If badly damaged, replace with new one.

Reassembly

Perform the assembly in the revearse order of disassembly.

Note:

Adjust the brakes, clutch and drive chain slack and check the steering operation.

IV. WIRING DIAGRAM