SHOP MANUAL

HONDA ST50·70 CT70

FOREWORD

The purpose of this manual is to provide service with the necessary information for the correct maintenance and repair of the ST 50, ST 70 and CT 70.

This manual should be kept in a handy place for ready reference along with 50/65 shop Manual. If properly used, it will enable the service shops to better serve the owners and will also enjoy a reputation of providing reliable service.

All information, illustrations and specifications contained in this literature are based on the latest product information available at the time of publication. The right is reserved to make changes at any time without notice.

HONDA MOTOR CO., LTD.

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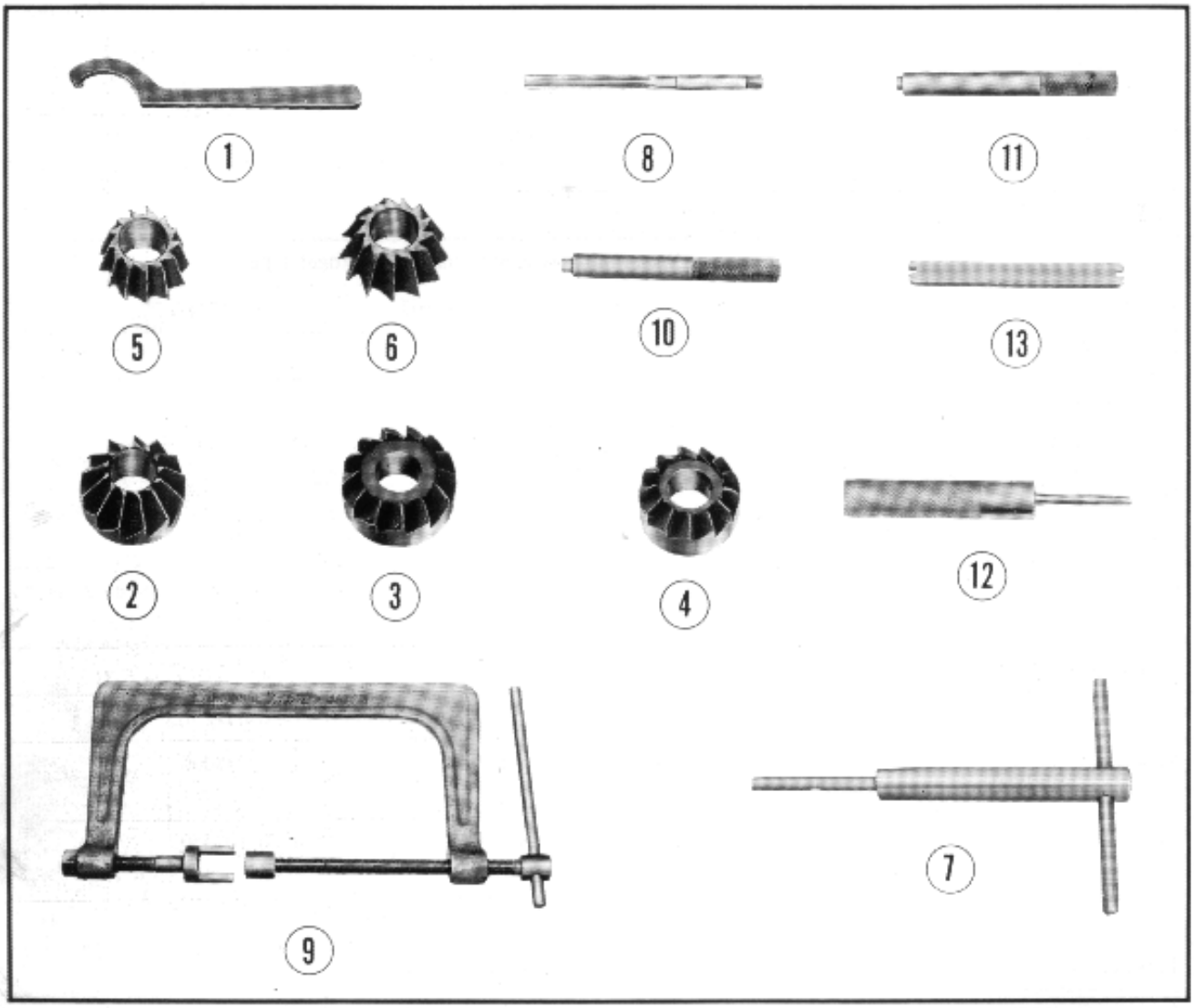
1. SPECIFICATIONS

1.1 Specifications

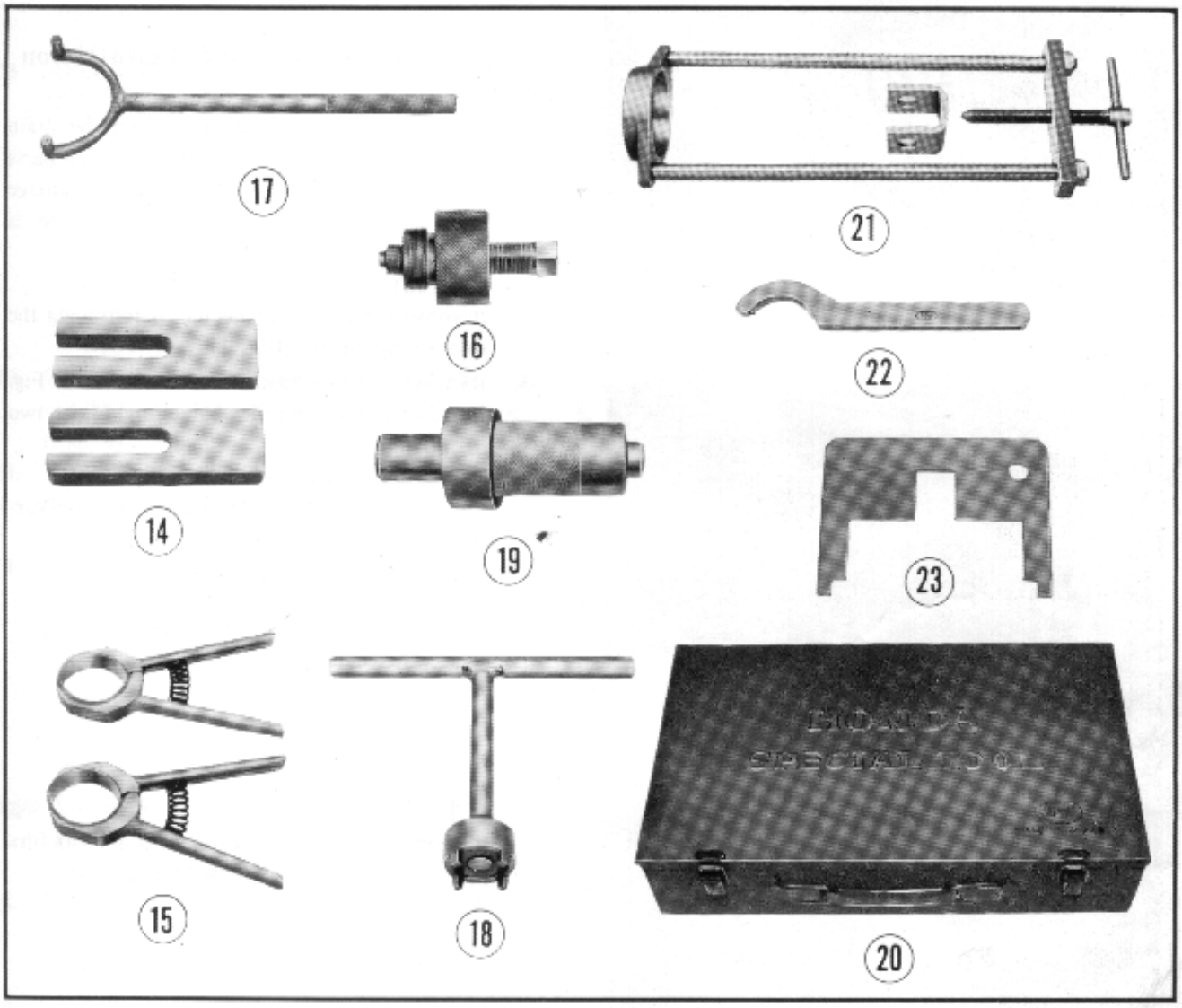
ITEMS	ST 50	ST 70	CT 70 (U.S.A. Type)
DIMENSION			
Overall Length		59.8 in. (1510 mm)	
Overall Width		22.8 in. (580 mm)	
Overall Height		37.8 in. (960 mm)	
Wheel Base		40.7 in. (1035 mm)	
Ground Clearance	6.5 in. (165 mm)		7.1 in. (180 mm)
Curb Weight	141.1 lb. (64 kg)		143.3 lb. (65 kg)
FRANE			
Type	HONDA ST 50 T-bone type	HONDA ST 70 T-bone type	HONDA CT 70 T-bone type
Suspension, F.		Teiescopic fork	
Suspension, R.		Swinging arm	
Tire Size, F.	3.50-10 (2 PR)		4.00-10 (2 PR)
Tire Size, R.	3.50-10 (2 PR)		4.00-10 (2 PR)
Brake		Internal expanding shoe	
Fuel Capacity		5.28 U.S. pt. 4.46 Imp. pt. (2.5 lit)	
Tire Pressure, F.	14.2 psi (1.0 kg/cm²)		15.6 psi~18.5 psi (1.1 kg/cm²~1.3 kg/cm²)
Tire Pressure, R.	17.0 psi (1.2 kg/cm²)		18.5 psi~21.3 psi (1.3 kg/cm²~1.5 kg/cm²)
Caster angle		65°	
Trail Length		2.3 in. (0.058 m)	
ENGINE			
Type		Air, cooled, 4-stroke O.H.C	
Cylinder Arrangement		Single, 80° inclined from vertical	
Bore and Stroke		1.85×1.63 in. (47×41.4 mm)	
Displacement		4.4 cu-in. (72 cc)	
Compression Ratio		8.8	
Carburetor		KEIHIN, piston valve type	
Valve Train		Chain driven over head camshaft	

ITEMS	ST 50	ST 70	CT 70 (U.S.A. Type)
Oil Capacity	1, 7 U.S. pt. 1, 4 Imp. pt. (0, 8 lit)		1, 5 U.S. pt. 1, 2 Imp. pt. (0, 7 lit)
Lubrication System	Forced and wet sump		
Engine Weight (included oil)	40, 8 lb (18, 5 kg)		
DRIVE TRAIN			
Clutch	Wet, multi-plate, automatic centrifugal type		
Transmission	Constant mesh, 3-speed		
Primary Reduction	3, 722		
Gear Ratio I	3, 364		
Gear Ratio II	1, 722		
Gear Ratio III	1, 190		
Final Reduction	2, 733		2, 533
Gear Shift Pattern	1-N-2-3	Left foot operated return system 1-N-2-3	Left foot operated return system N-1-2-3
PERFORMANCE			
Max. Speed	43, 0 mile/H (70 km/H)	47, 0 mile/H (75 km/H)	
Maximum Horsepower HP/rpm	4, 5/9000	5, 6/8000	5, 0/8000
Maximum Torque kg-m/rpm	0, 37/8000	0, 511/7000	0, 50/5500
Climbing Ability sin θ	0, 276	0, 309	
Turning circle	10, 50 ft. (3, 2 m)		
Braking Distance	Less than 21, 30 ft. (6, 5 m) at 21, 9 mile/H (35 km/H)	Less than 23, 00 ft. (7 m) at 21, 9 mile/H (35 km/H)	
ELECTRICAL			
Ignition	Flywheel magneto		
Starting system	Kick starter		
Alternater	Flywheel A.C. generater		
Battery Capacity	YUASA B60-6 6V 2AH		
Spark Plug	C-6 HS, U-24 FS (ND)	C-7 HS (NGK), U-24 FS (ND)	
Headlight bulb	6 V-15/15 W	6 V-25/25 W	
Tail/stop light bulb	6 V-5 W/18 W	6 V-3 W/10 W	6 V-5, 3 W/17 W

2. SPECIAL TOOLS



Ref. No.	Tool No.	Description	Remarks
	07000-09811	Special Tool Set for ST 50	
	07000-09801	Special Tool Set for ST 70 · CT 70	
1	07072-09801	Front Cushion Cover 37 m/m Sucker	
2	07001-25002	Valve Seat Cutter 90°	Commonly used with C70
	07001-09811	// // // (ST 50 only)	
3	07003-25002	Inlet Valve Seat Top Cutter	//
	07003-09811	// // // (ST 50 only)	
4	07004-25002	Exhaust Valve Seat Top Cutter	//
	07004-09811	// // // (ST 50 only)	
5	07005-25002	Inlet Valve Seat Interior Cutter	//
	07005-09811	// // // (ST 50 only)	
6	07006-25002	Exhaust Valve Seat Interior Cutter	//
	07006-09811	// // // (ST 50 only)	
7	07007-25002	Cutter Holder	//
8	07008-25002	Valve Guide Reamer 7 mm dia.	//
9	07031-25001	Valve Lifter	//
10	07046-25901	Valve Guide Driver	Commonly used with C72
11	07047-25901	Valve Guide Remover	//



Ref. No.	Tool No.	Description	Remarks
12	07053-09801	Front Cushion Pin Remover	
13	07081-09801	Tappet Adjust Wrench	
14	07033-25001	Piston Base (2 p. c. s)	Commonly used with C70
15	07032-25001	Piston Slider (2 p. c. s)	〃
16	07011-09801	Flywheel Puller	
17	07022-09801	Drive Sprocket Holder	
18	07086-25901	34 m/m Lock Nut Wrench	Commonly used with C72
19	07048-09801	Bearing Driver	
20	07790-25901	Tool Box	
21	07035-09801	Rear Cushion Dis/assembly Tool	
22	07071-25001	Main Switch Sucker	Commonly used with C70
23	07144-99955	Float Level Gauge	
	07997-05101	Valve Seat Cutter Case	

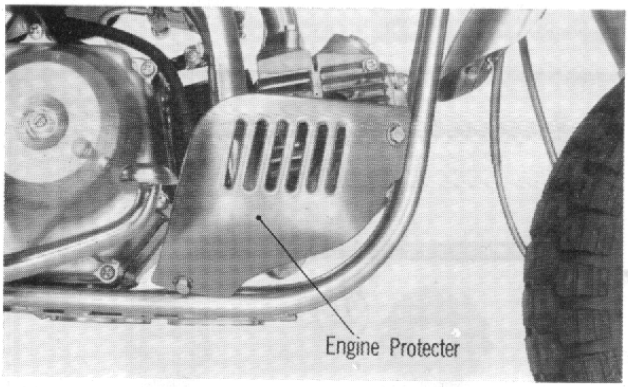


Fig. 1

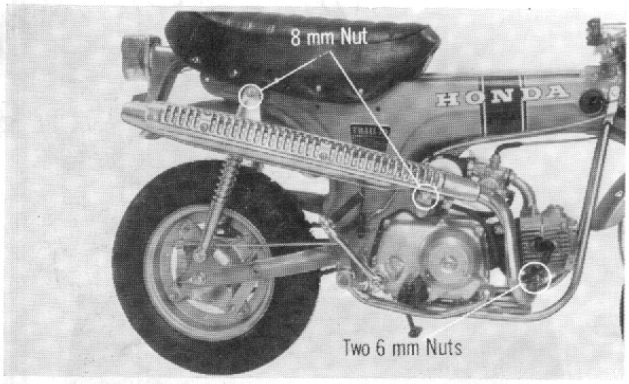


Fig. 2

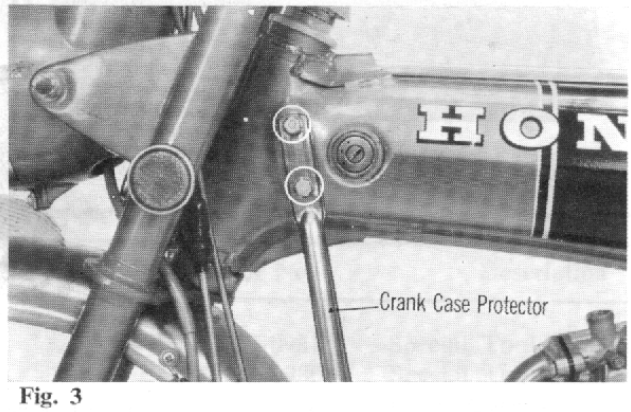


Fig. 3

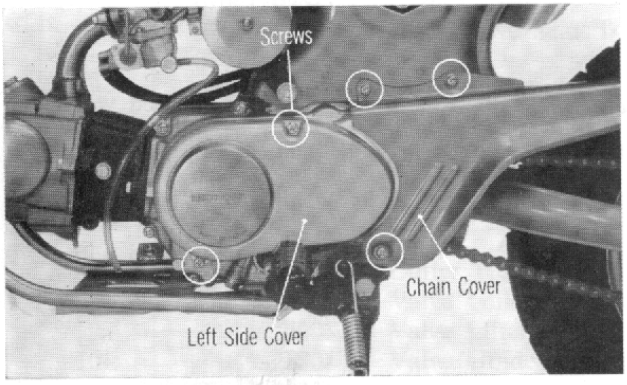


Fig. 4

3. ENGINE

3.1 Engine Removal and Installation

Engine Removal

1. Drain the engine oil by removing the drain plug and filler cap, if the engine internal parts are to be disassembled further. The drainage is made conveniently while the engine is warm.
2. (CT 70)
   Remove the engine protecter by removing the two fixing bolts. (Fig. 1)
3. Remove the two 8mm nuts as shown in Fig. 2 and detach the muffler by removing the two 6 mm fixing nuts.
4. Remove the spark plug.
5. Disconnect the throttle wire from the carburetor throttle valve.
6. (CT 70)
   Remove the crank case protector from the frame at the top by removing four bolts. (Fig. 3)
7. Remove the chain case cover by removing three screws.
8. Remove the left side cover by removing two screws. (Fig. 4)
9. Disconnect the drive chain at the joint.

10. (CT 70)
    Remove the crank case protector from the engine at the bottom by removing two bolts. (Fig. 5)
11. Remove the step bar by removing two bolts. (Fig. 5)

Fig. 5

12. Hook off the brake pedal spring at the top to simplify the job of removing the engine. (Fig. 6)
13. Remove the two 6 mm bolts and disconnect the inlet pipe from the cylinder head inlet flange.
14. Then the engine can be separated from the frame, by drawing out the two 8 mm engine mounting bolts. (Fig. 6)

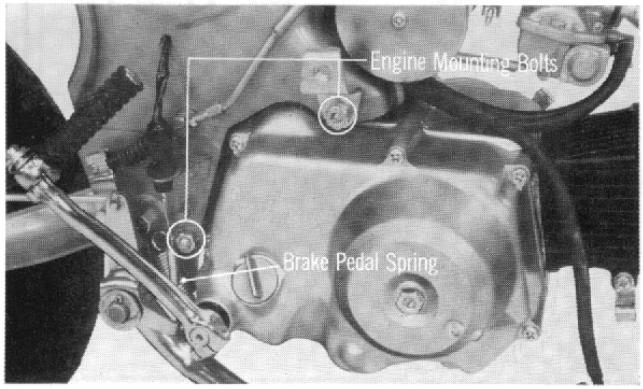


Fig. 6

Engine Installation

1. Perform the engine installation in the reverse order of the removal.
2. The drive chain should be so connected that the closed end of the link clip should be point toward the direction of the normal chain rotation.

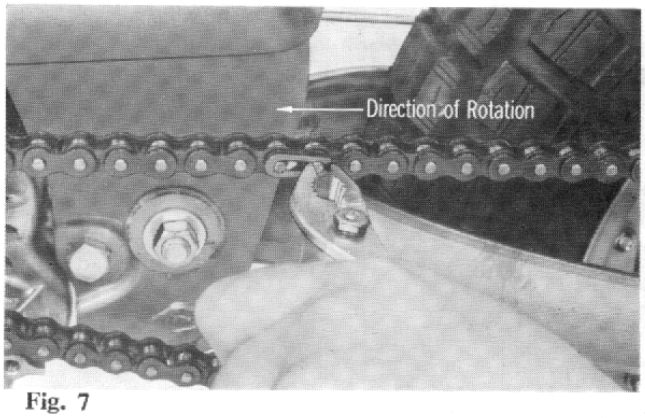


Fig. 7

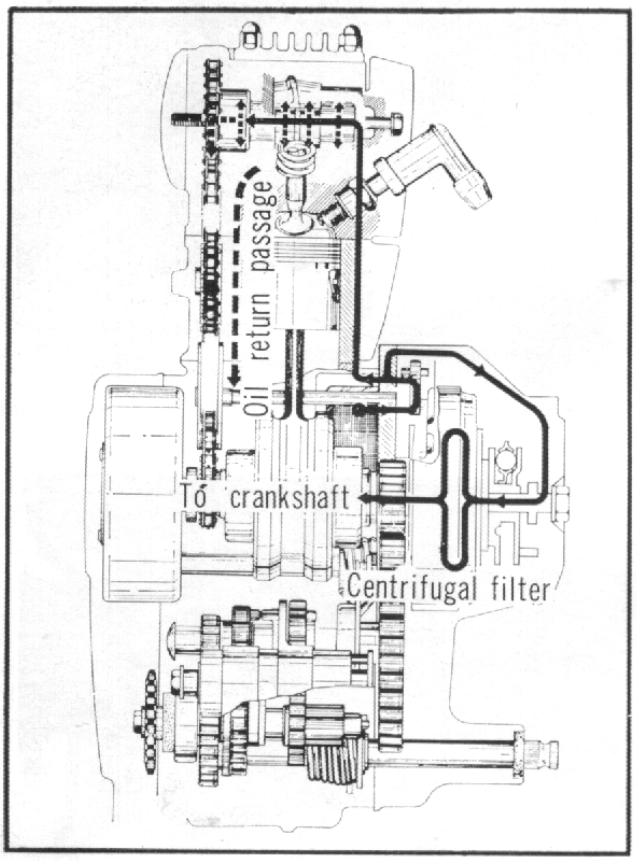


Fig. 8

3.2 Lubrication System (Oil Pump)

Description

The engine oil picked up by the trochoid pump is diverted into two routes. (Fig. 8)

Route one:

Oil is sent through the right crankcase→right crankcase cover→centrifugal filter→connecting rod large end rollers.

Route two:

Oil is sent through the cylinder stud bolt→rocker arm side cover→camshaft profiles and bearing→valve mechanism.

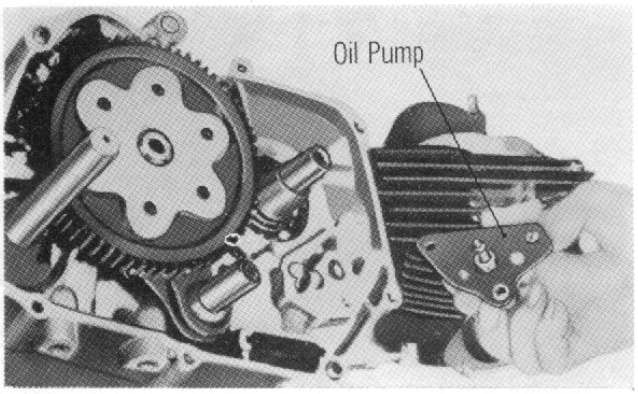


Fig. 9

Disassembly

1. Unscrew the right crankcase cover mounting screws and remove the cover.
2. Remove the clutch outer cover.
3. Unscrew and remove the 14 mm clutch lock nut and washer, and then remove the clutch assembly.
4. Loosen the three 6 mm oil pump mounting bolts and remove the oil pump assembly.
5. Loosen the three cross screws attaching the oil pump cover, the oil pump can then be disassembled **(Fig. 9)**.

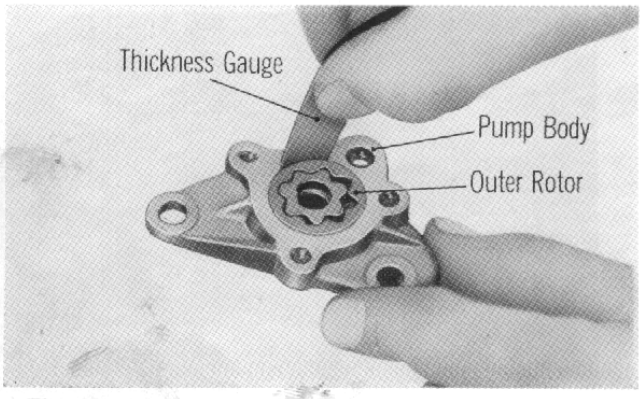


Fig. 10

Inspection

1. Turn the oil pump drive shaft by a hand and make sure that it turns smoothly.
2. Measuring the clearance between the outer rotor and the pump body.
   Insert the thickness gauge between the outer rotor and the pump body **(Fig. 10)**.

inch (mm)

Standard Value	Serviceable Limit
0.004~0.006 (0.10~0.15)	Replace if over 0.0079 (0.20)

3. Measuring the end clearance of the rotor. Place a straight edge across the pump housing and check the clearance of the rotor with a thickness gauge **(Fig. 11)**.

inch (mm)

Standard Value	Serviceable Limit
0.0008~0.0027 (0.02~0.07)	Replace if over 0.0047 (0.12)

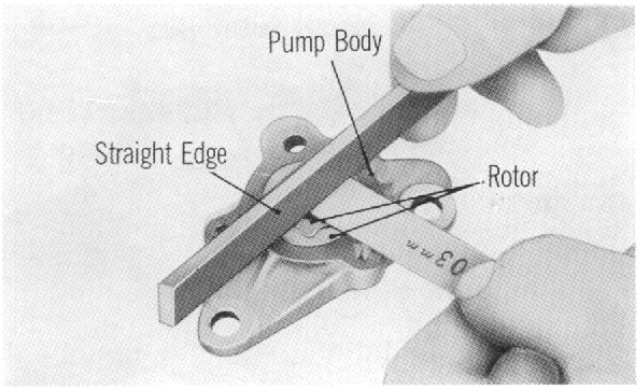
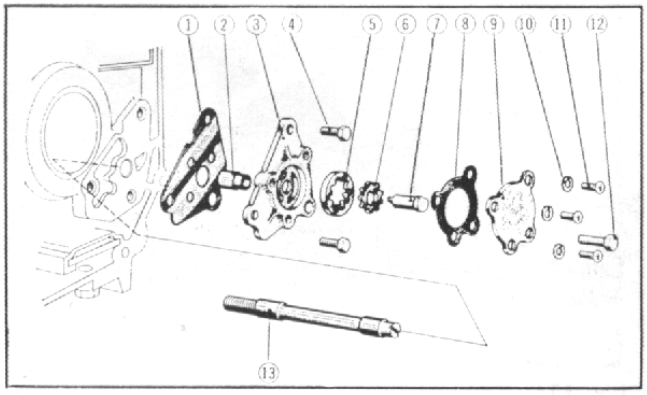


Fig. 11

Reassembly

Perform the reassembly in the reverse order of disassembly procedure, however, particular attention should be paid to the following items **(Fig. 12)**.

1. Make sure that the parts are thoroughly cleaned before assembly.
2. After completing the reassembly of the pump, check to make sure that the pump is operating smoothly by turning the shaft by a hand before mounting the pump in the crankcase.



① Oil pump body gasket ② Oil pump dowel pin
③ Oil pump body ④ 6 mm hex bolt
⑤ Oil pump outer rotor ⑥ Oil pump inner rotor
⑦ Oil pump drive shaft ⑧ Oil pump cover gasket
⑨ Oil pump cover ⑩ 5 mm spring washer
⑪ 5 mm cross screw ⑫ 6 mm hex bolt
⑬ Cam chain guide sprocket spindle

Fig. 12

5.3 Cylinder and Cylinder Head

Description

The cylinder head is made of aluminum alloy to improve the cooling effect. The cylinder is made of special cast iron which provides good wear characteristics without being affected by high temperature and pressure.

Disassembly

1. Drain the engine oil by removing the drain plug.
2. Unscrew the left crankcase cover mounting screws and remove the cover.
3. Loosen the 6mm hex bolt from the left cylinder head side cover, and remove the side cover. Also loosen the two cross screws and remove the right cylinder head side cover.
4. Remove the flywheel using the flywheel puller (Tool No. 07011-09801) and then remove the stator assembly **(Fig. 13)**.

   Note:

   1. **For convenient disassembly, set the piston at the compression top dead center (Refer to Reassembly in page 18).**

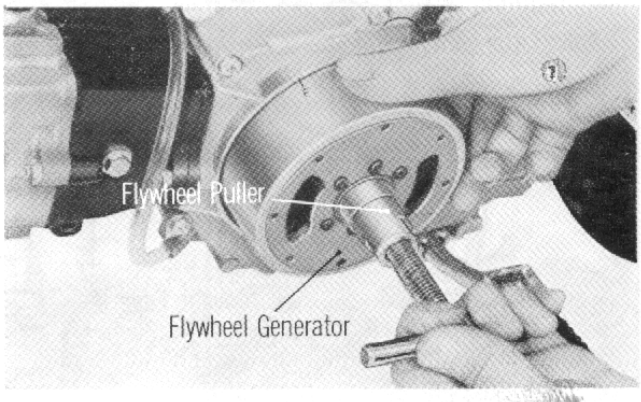


Fig. 13

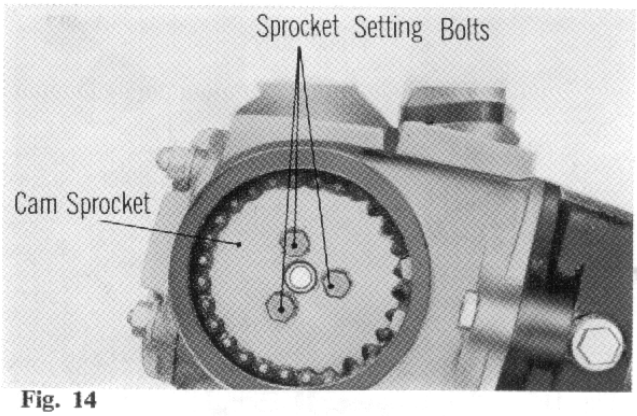


Fig. 14

5. Loosen the three cam sprocket mounting bolts and remove the cam sprocket from the camshaft (**Fig. 14**).

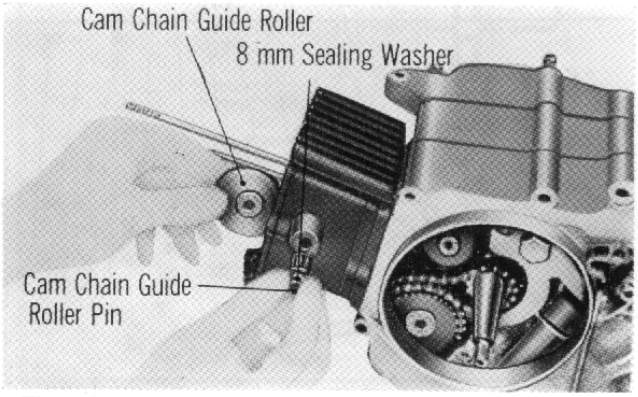


Fig. 15

6. Unscrew the four cylinder head hold-down nuts and 6 mm hex bolt and then separate the cylinder head from the cylinder.
7. Loosen the cam chain guide roller pin and remove the cam chain guide roller from the cylinder (**Fig. 15**).
8. Unscrew the cylinder mounting bolt (1 each) and remove the cylinder.
9. Disassemble the valve rocker arm and the camshaft from the cylinder head.
   Use the 6mm bolt for pulling out the rocker arm pin.

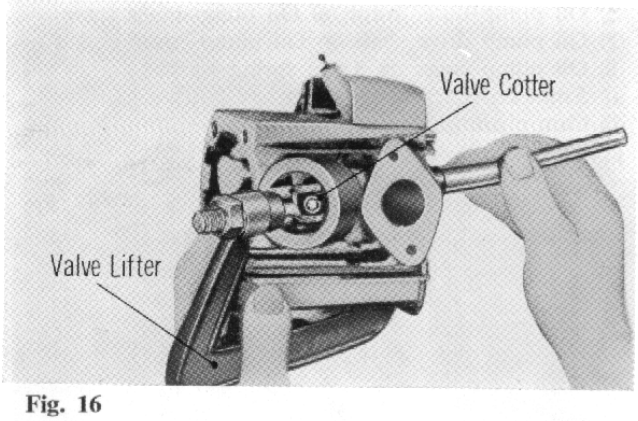


Fig. 16

10. Disassemble the valve by using the valve removal tool (Tool No. 07031–25001) (**Fig. 16**).

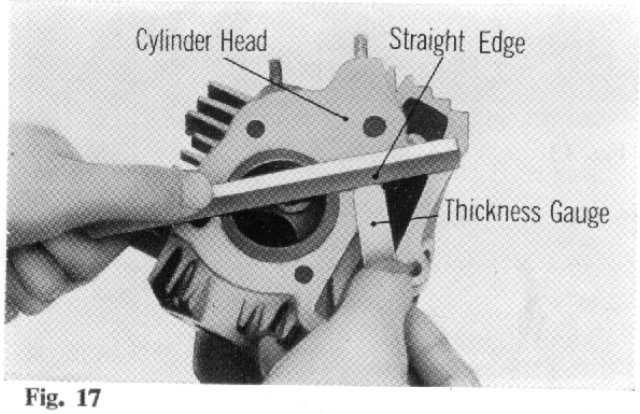


Fig. 17

Inspection

1. Inspecting the cylinder head machined gasket surface.

   Place a straight edge across the machined gasket surface and measure the clearance between the straight edge and the machined surface with a thickness gauge. If the clearance is greater than 0.002 in. (0.05 mm), the cylinder head should be repaired or replaced. (**Fig. 17**).

To perform the repair, place a sheet of fine grit emery paper on the flat surface, and rework the cylinder head. The condition of the machined surface can be checked by using prussian blue or red lead (**Fig. 18**).

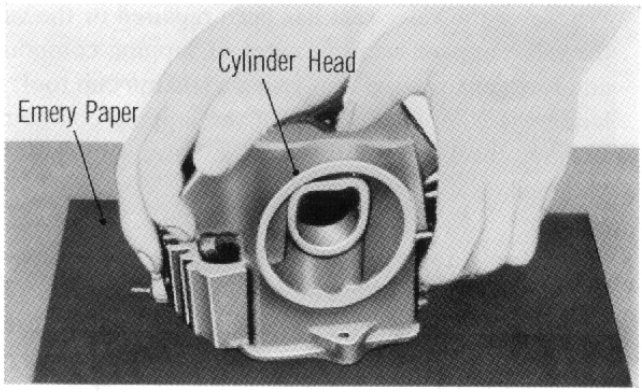


Fig. 18

2. Inspecting the valve seat
The standard width of the valve contact surface is 0.040–0.051 in. (1.0–1.3 mm).
When the contact surface becomes wider than 0.080 in. (2.0mm), the valve seat should be repaired with a seat cutter (included in the special tools). Valve seat is cut to the proper dimension using the valve seat top and interior cutters. Finally, the 90° seat cutter is used to repair the valve seat contact surface (**Fig. 19, 20**).

Valve Seat Outside Diameter inch. (mm)

	Inlet	Exhaust
ST 50	0.889 (22.5)	0.767 (19.5)
ST 70 CT 70	0.964 (24.5)	0.846 (21.5)

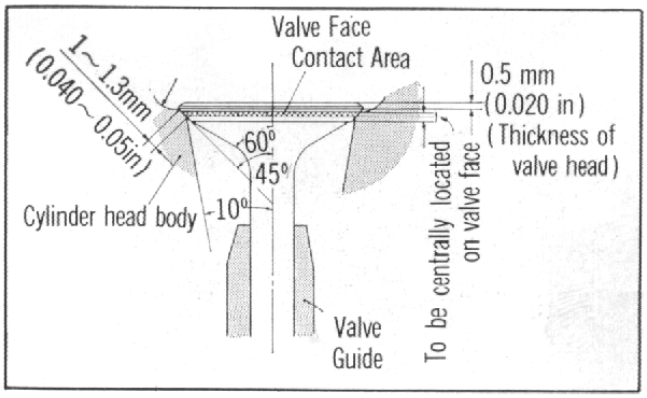


Fig. 19

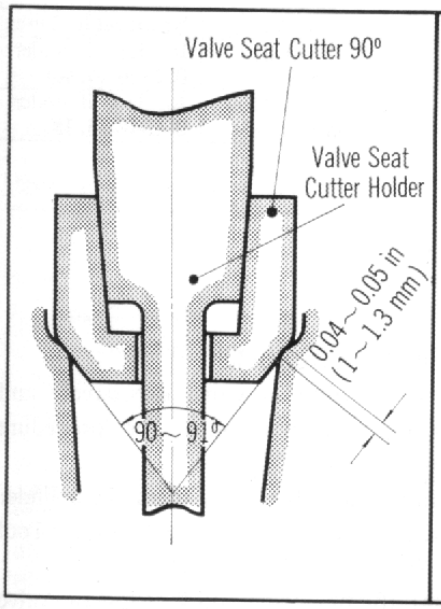


Fig. 20-1

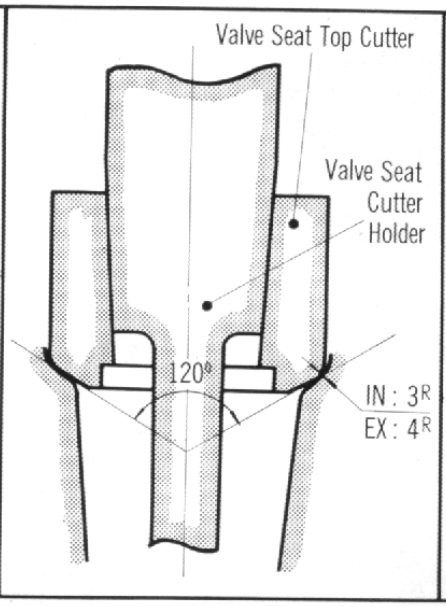


Fig. 20-2

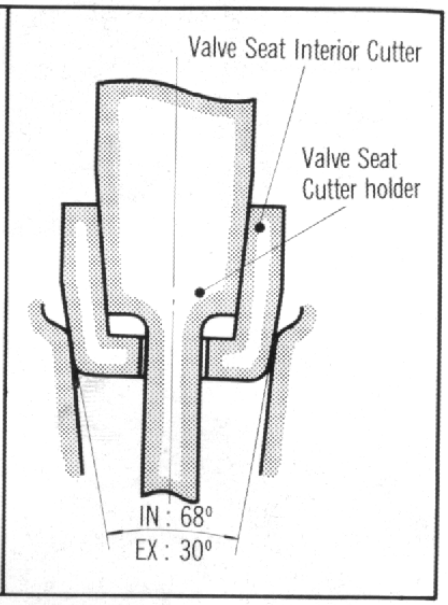


Fig. 20-3

Whenever the valve seat has been repaired or the valve replaced, the valve must be lapped to the seat. To lap the valve, apply a small amount of lapping compound to the valve contact surface and rotate the valve back and forth against the seat using a suction cup tool; lifting the valve off the seat occasionally. After the valve lapping is completed, wash off the lapping compound thoroughly from both the seat and face of the valve. Finally, check the seating of the valve with prussian blue or red lead to assure that a good seat has been obtained.

Note:

1. **Apply a small amount of oil to the valve stem when inserting the valve into the guide.**
2. **After the valve has been assembled into the cylinder head, check the sealing of the valve by pouring a small quantity of engine oil into the combustion chamber until the valve heads are covered and then apply compressed air at 28.4 psi (2 kg/cm²) alternately into the inlet and exhaust ports and check for any bubbles arising from around the valve seats. If there are no bubbles, the valves are seating properly.**

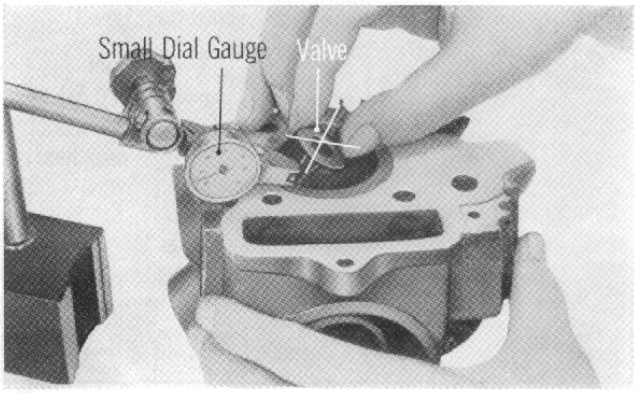


Fig. 21

3. Measuring the wear of the valve stem and valve guide.
   Place a dial gauge against the valve stem and move the valve sideways and fore and aft. The amount of wear in any direction will be indicated on the gauge (**Fig. 21**).

inch (mm)

Item	Standard Value	Serviceable Limit
Inlet	0.0004~0.0012 (0.01~0.03)	Replace if over 0.0032 (0.08)
Exhaust	0.0012~0.002 (0.03~0.05)	Replace if over 0.004 (0.10)

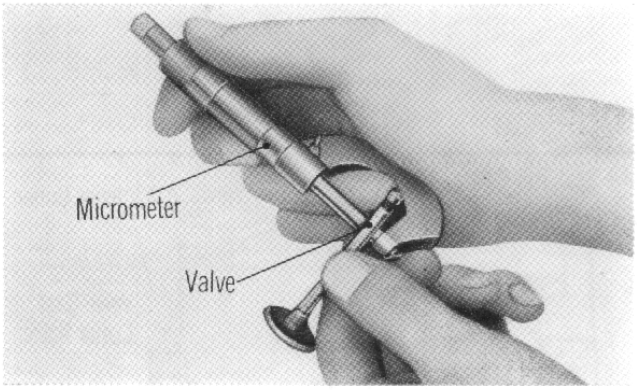


Fig. 22

4. Measuring the valve dimension
   The valve stem diameter is measured with a micrometer. (**Fig. 22**).

inch (mm)

Item	Standard Value	Serviceable Limit
Inlet	0.2148~0.2187 (5.455~5.465)	Replace if under 0.2126 (5.40)
Exhaust	0.2070~0.2109 (5.435~5.445)	Replace if under 0.2048 (5.38)

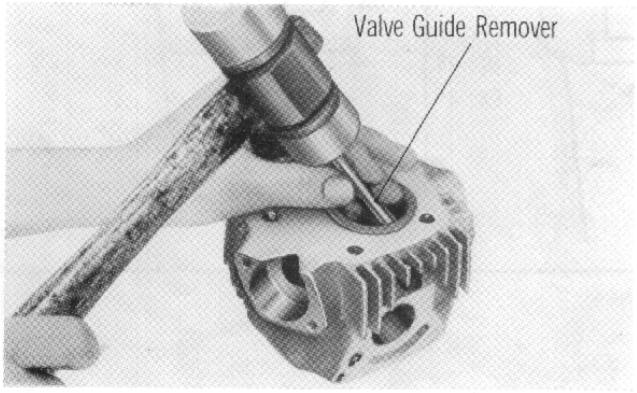


Fig. 23

5. Replacing the valve guide
   If the valve guide is worn excessively and requires replacement, follow the procedure as below.
   a. Remove the valve guide from the cylinder head using the valve guide remover (Tool No. 07047-25901) (**Fig. 23**).
   b. Install the new valve guide using the valve guide driver (Tool No. 07046-25901), and carefully drive the guide into the head. The replacement valve guide should be one that is of an oversize.

c. After the new valve guide has been installed, it must be reamed to the proper finish size using a guide reamer (Tool No. 07008–25002). Excercise care when using the reamer and apply small amount of oil occasionally to lubricate when the reamer starts to operate hard, pull out the reamer and remove the metal chip before continuing to ream.
The standard valve guide inside diameter is **0.2156-0.2159 in. (5.475-5.485 mm). (Fig. 24.).**

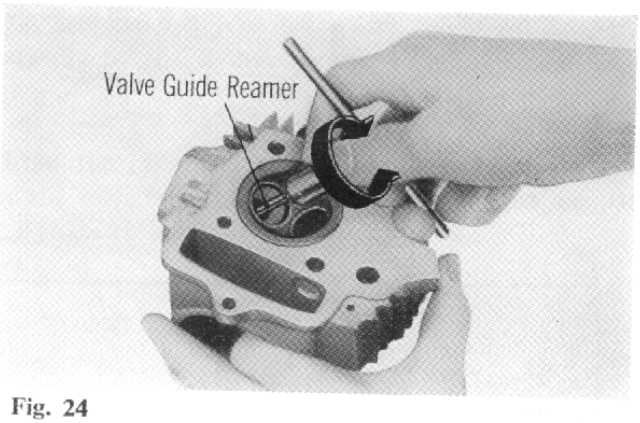


Fig. 24

6. Inspecting the valve spring
Measure the length of the valve spring free length with a vernier caliper. **(Fig. 25)**

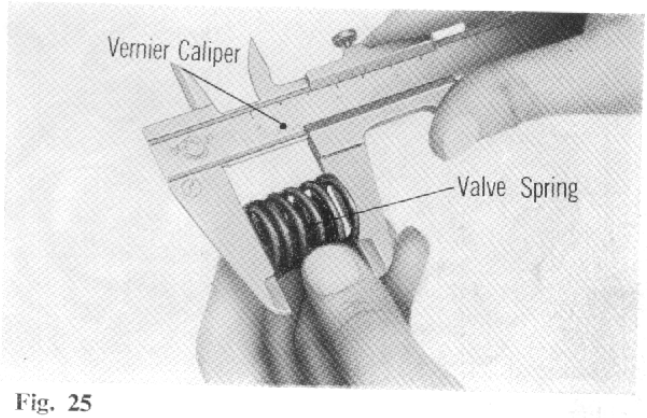


Fig. 25

inch (mm)

Item	Standard Valve	Serviceable Limit
Inner valve spring free length	0.988 (25.1)	Replace if under 0.941 (23.9)
Outer valve spring free length	1.106 (28.1)	Replace if under 1.059 (26.9)
Inner valve spring compression	5.37~6.03 lb/0.894 in (2.45~2.75 kg/22.7)	Replace if under 4.41 lb/0.894 in (2.0 kg/22.7)
Outer valve spring compression	14.66~17.09 lb/0.980 in (6.65~7.75 kg/24.9)	Replace if under 10.14 lb/0.980 in (4.6 kg/24.9)

7. Inspecting the camshaft
Measure the cam lift with a micrometer **(Fig. 26)**.

inch (mm)

Item	Standard Value	Serviceable Limit
Base circle	0.827 (21.0)	Replace if under 0.819 (20.8)
Cam lift (including the base circle)	1.0266 (26.076)	Replace if under 1.012 (25.8)

Valve Timing

Inlet opens	5° BTDC
Inlet closes	20° ATDC
Exhaust opens	25° BBDC
Exhaust closes	5° BTDC

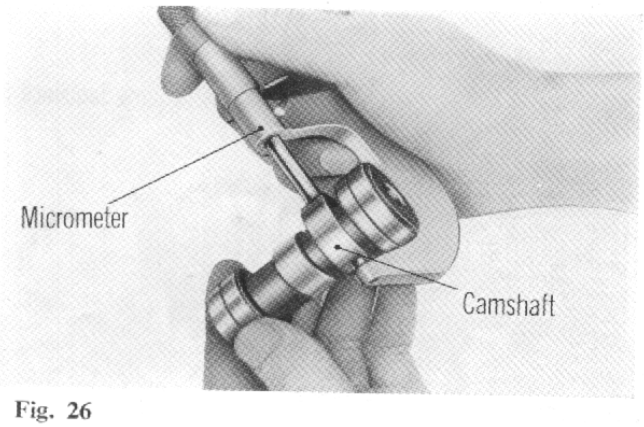


Fig. 26

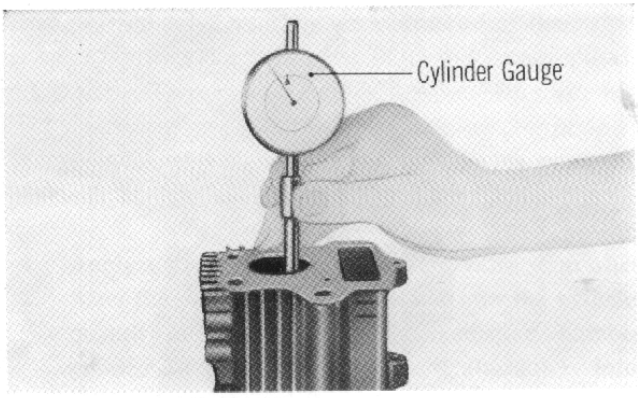


Fig. 27

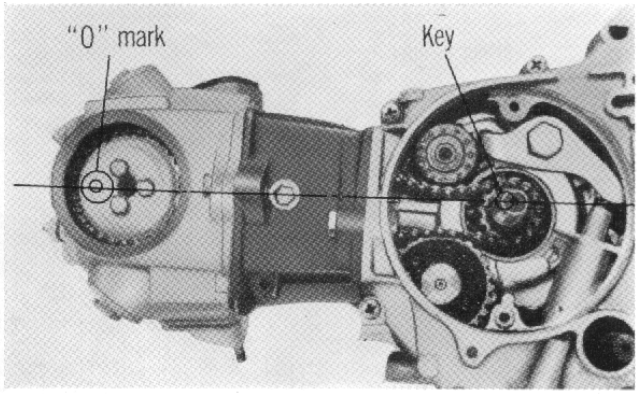


Fig. 28

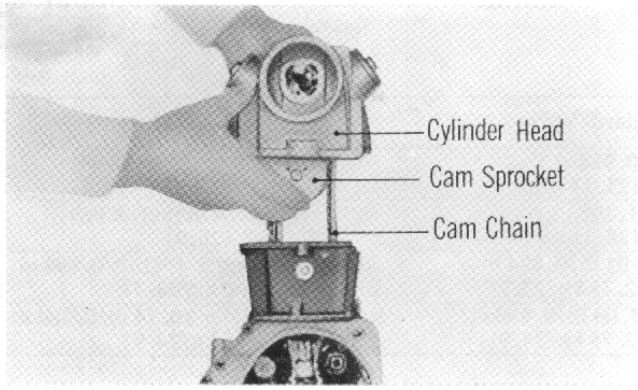


Fig. 29

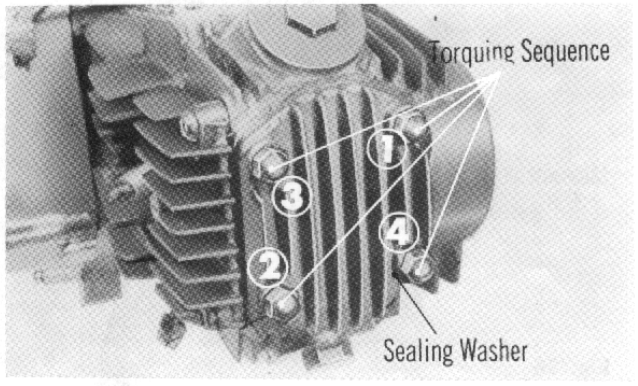


Fig. 30

8. Measuring the inside diameter of the cylinder
Use a cylinder gauge and measure the inside diameter of the cylinder at the top, center and bottom in both X and Y axes. If the cylinder is excessively worn, it should be either rebored or replaced with a new cylinder depending upon the extent of wear (**Fig. 27**).

inch (mm)

	Standard Value	Serviceable Limit
ST 50	1.5356~1.5360 (39.005~39.015)	1.539 (39.1)
ST 70 CT 70	1.8506~1.8510 (47.005~47.015)	1.854 (47.1)

Note:

When reboring the cylinder, it must be rebored to an oversize units of 0.010 in (0.25 mm) up to a maximum of 0.40 in (1.0mm) since the piston and the piston ring sets comes in those oversizes only.

Reassembly

Perform the reassembly in the reverse order of disassembly which was described in page 13 section 5.3 however, follow the procedure below for timing the valves.

Position the key of the left crankshaft so that it is pointing toward the cylinder head, and position the cam so that the "O" marking on the cam sprocket is at the topmost position (**Fig. 28**).

Note:

1. **When installing the cylinder head, the cam sprocket must be contained within the cylinder head (Fig. 29)**
2. **Make sure that the respective gaskets, dowel pins and rings have not been overlooked.**
3. **The position of the cylinder head nuts is ①, ②, and ③ for the blind nut, and ④ for the plain nut. Do not omit the sealing washer on the ④ position (Fig. 30).**
4. **When torquing down the cylinder head, tighten the nuts uniformly in a diagonal sequence as shown in the Fig. 30 and torque to the final specified torque value of 6.5-9 ft-lb (90-120 kg-cm).**

3.4 Cam Chain Tensioner

A constant force is applied to the cam chain automatically by the hydraulic and spring-operated cam chain tensioner. (**Fig. 31**)

Check valve inspection

Push the pushrod and check to see if oil is leaking from the check valve. If the oil is leaking ,it is probably due to dirt being lodged in the valve. Clean the valve by blowing out with compressed air. If the oil is dirty, it should be changed. Also check the guide rollers for wear.

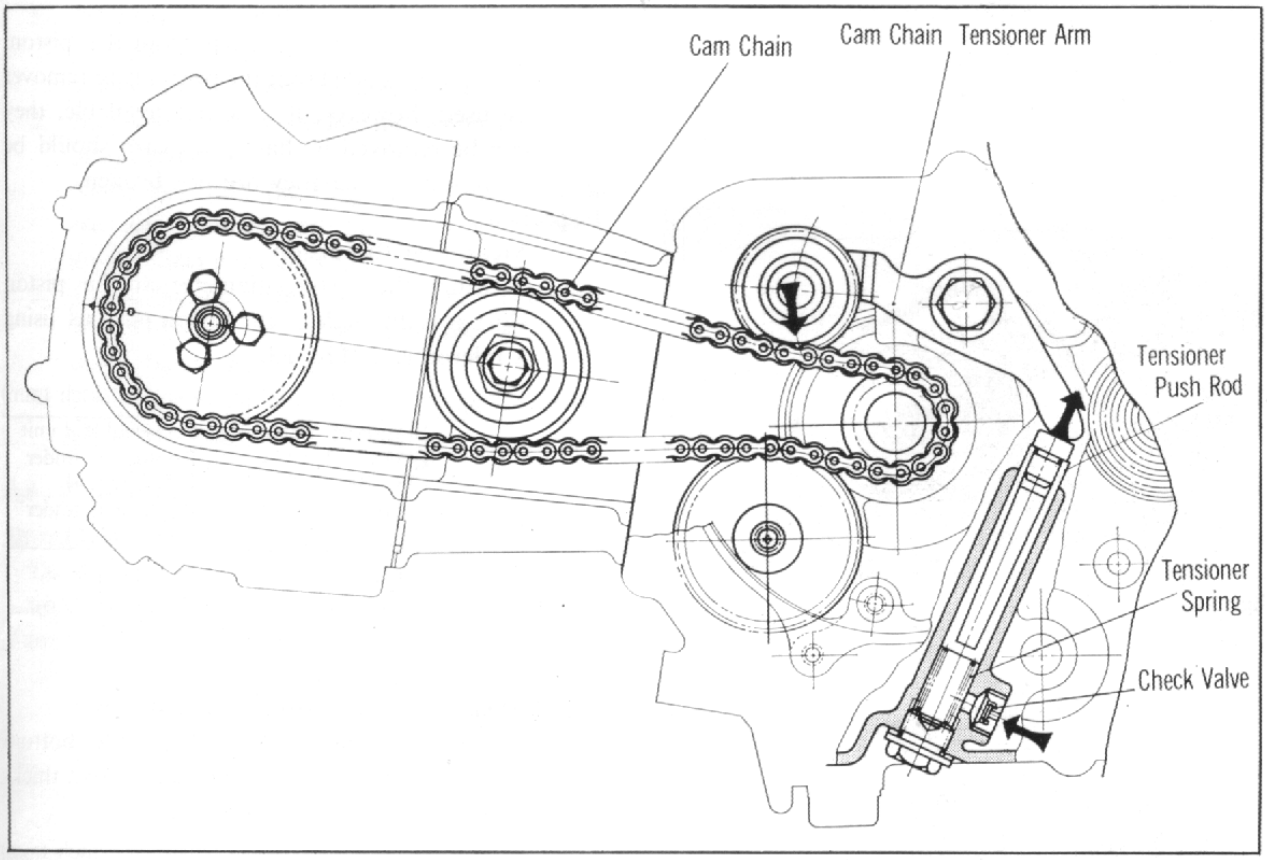


Fig. 31

3.5 Piston and Piston Rings

Description

The piston is made of special SAE 332 alminum alloy to minimize material deformation caused by high temperature and also because of its good wear resistant qualities. The piston rings specially should be highly resistant and therefore, they are hard chrome plated or wet honed to give it the desired characteristics.

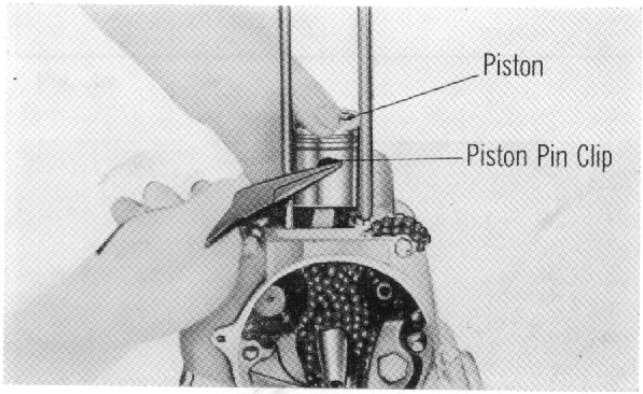


Fig. 32

Disassembly

1. The piston is disassembled from the connecting rod by first removing the piston pin clip and then the piston pin (**Fig. 32**).
   Note:
   When removing the piston pin clip, place a rag under the piston so that the clip will not fall into the crankcase if it should accidentally be dropped.
2. To remove the piston rings from the piston, it is recommended that the piston ring remover be used, however, if it is not available, they can be removed by hand, but care should be exercised so that they are not broken.

Inspection

1. Measuring the piston
   Measure the piston diameter at the piston skirt at right angle to the piston pin axis using a micrometer (**Fig. 33**).

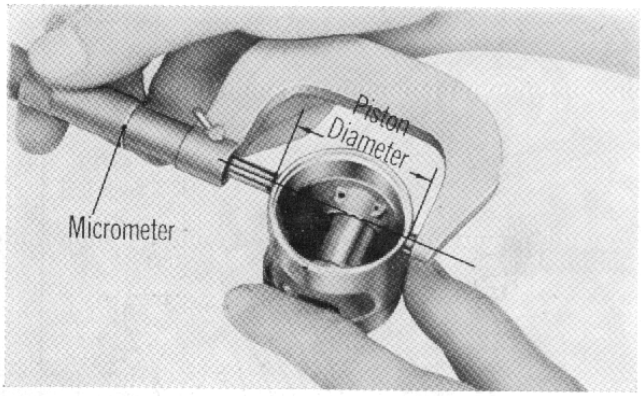


Fig. 33

inch (mm)

	Standard Value	Serviceable Limit
ST 50	1.5346~1.5354 (38.98~39.00)	Replace if under 1.531 (38.9)
ST 70 CT 70	1.8492~1.8500 (46.98~47.00)	Replace if under 1.847 (46.9)

2. Measuring the piston ring end gap
   Insert the piston ring into the cylinder bottom end and measure the ring end gap with a thickness gauge

inch (mm)

Item	Standard Value	Serviceable Limit
Top and second ring	0.0059~0.0138 (0.15~0.35)	Replace if over 0.0197 (0.5)
Oil ring	0.0059~0.01575 (0.15~0.40)	Replace if over 0.0197 (0.5)

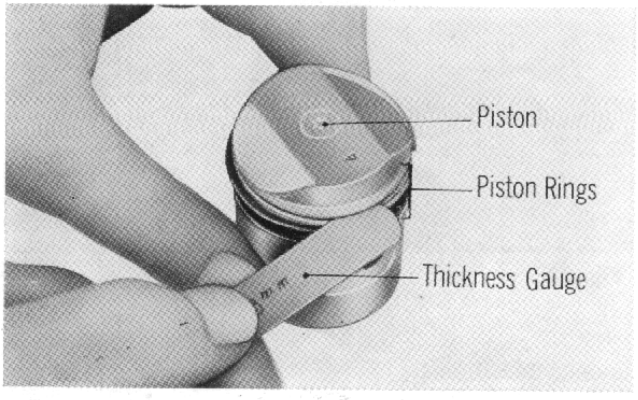


Fig. 34

3. Measuring the piston ring side clearance
   Measure the clearance between the piston ring and piston land with a thickness gauge (**Fig. 34**).

inch (mm)

Item	Standard Value	Serviceable Limit
Top and second rings	0.0006~0.0018 (0.015~0.045)	Replace if over 0.0047 (0.12)
Oil ring	0.0004~0.0018 (0.010~0.045)	Replace if over 0.0047 (0.12)

4. Piston and piston ring are available in four standard oversizes of 0.01 in (0.25mm) up to 0.04 in (1.0 mm) to match with the piston.

Reassembly

Perform the reassembly in the reverse order of disassembly as described in the section Disassembly in page 20.

Note :

1. **When assembling the piston to the connecting rod, make sure that the arrow mark on the piston head is pointing downward. (Fig. 35).**
2. **Apply oil when mounting the piston rings and piston pin.**
   Make sure that the rings moves smoothly in the ring groove, and that the ring end gaps do not form a straight line.
3. **Check the top surface of the ring. The rings should be so mounted that the R (or T) mark should face top.**
4. **Use a new piston pin clip when fixing the piston pin to the piston.**

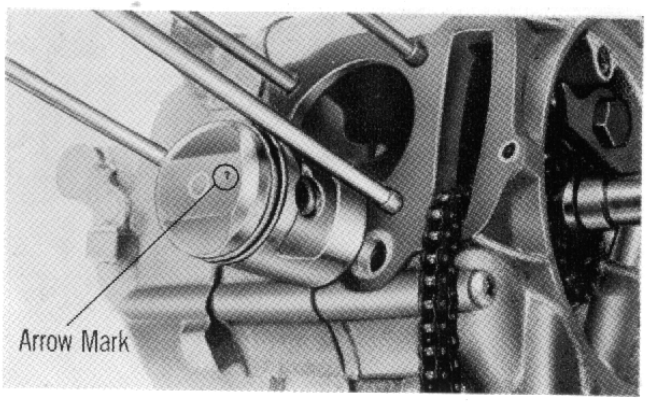


Fig. 35

3.6 Clutch

Description

The clutch is the conventional wet tow-dish clutch which is automatically operated according to the centrifugal force generated by the engine rotation.

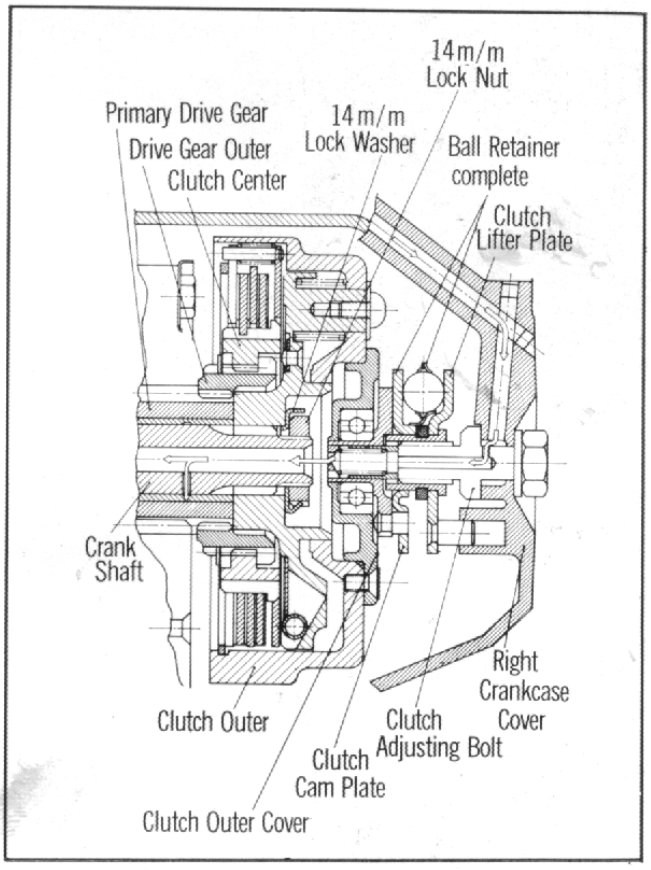


Fig. 36

Disassembly

1. Loosen the right crankcase cover retaining screws and remove the cover.
2. Remove the clutch outer cover.
3. Straighten the tab on the lock washer, and by using the clutch outer holder and lock nut wrench (Tool No. 07086-25901), loosen the lock nut and remove the clutch assembly (**Fig. 37**). The clutch then is disassembled.

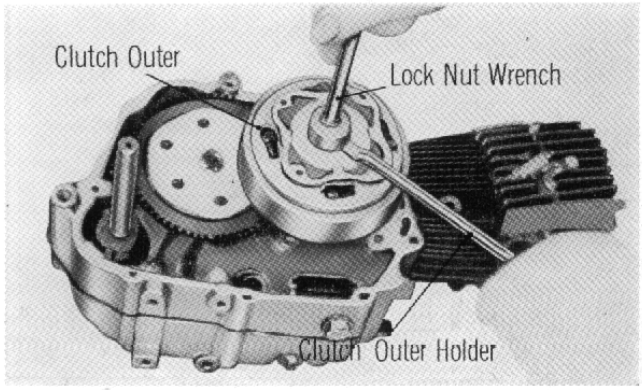
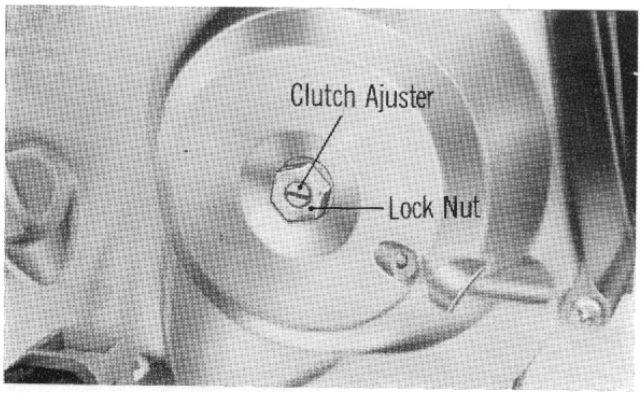


Fig. 37



① Clutch adjuster ② Lock not
Fig. 38

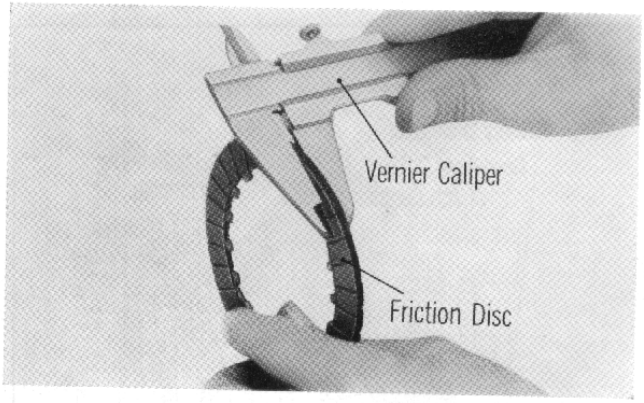


Fig. 39

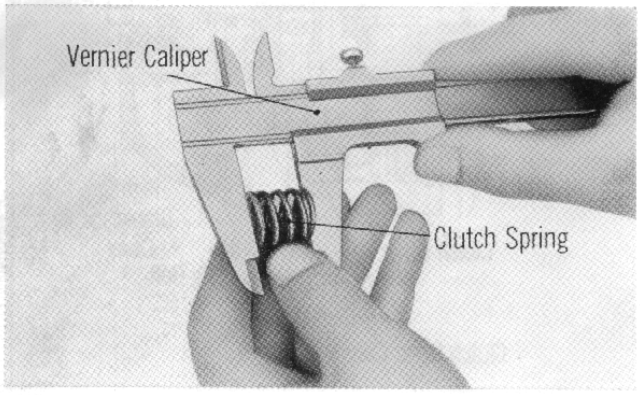


Fig. 40

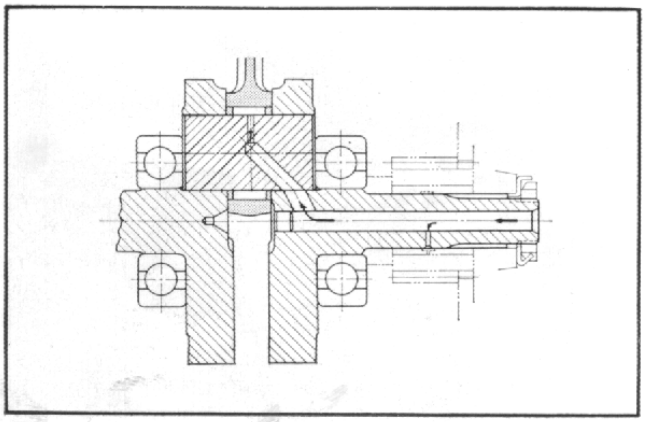


Fig. 41 Oil flow

Inspection And Adjustment

1. Clutch adjustment.
   a. Clutch must be adjusted with the engine shut off. Loosen the adjuster lock nut.
   b. Turn the adjuster clockwise about one turn; do not turn excessively.
   c. Next, slowly turn the adjuster counter-clockwise and stop when the adjuster to turn heavy.
   b. From this point, back off the adjuster in the clockwise direction 1/8 to 1/4 turn, and tighten the lock nut (**Fig. 38**).

   Check to make sure that the clutch operates properly after adjustment.
   - The engine should start easily with the kick starter without the clutch slipping.
   - When changing gear, the clutch slipping should be smooth and light, especially when shifting down in gear to the neutral position.
2. Measuring the friction disc
   Measure the thickness of the friction disc using a vernier caliper (**Fig. 39**).

inch (mm)

Item	Standard Value	Serviceable Limit
Thickness	0.138 (3.50)	Replace if under 0.122 (3.10)
Flatness	—	Replace if over 0.006 (0.15)

3. Inspecting the clutch spring
   Measure the free length of the spring using a vernier caliper (**Fig. 40**).

inch (mm)

	Item	Standard Value	Serviceable Limit
ST 50	Free length	0.976 (24.8)	Replace if under 0.937 (23.8)
ST 70 CT 70	Free length	0.843 (21.4)	Replace if under 0.803 (20.4)

Reassembly

Perform the reassembly in the reverse order of disassembly as described in page 21.

Note:

Bend the lock tub positively in the clutch lock nut slot.

3.7 Crankshaft

Description

The connecting rod is assembled on the crank pin. The bearing at the large end is lubricated by the pressurized oil which flows through the crankshaft (**Fig. 41**).

Disassembly

1. Remove the cylinder head and cylinder in accordance with the procedure described on page 13.
2. Remove the clutch assembly in accordance with the procedure described on page 21.
3. Remove the primary driven gear and the kick starter spring.
4. Remove the oil pump.
5. Remove the gear shift stopper and plate.
6. Loosen the left crankcase cover screws and then remove the cover, flywheel, stator and the cam chain.
7. Pull off the rubber plug and remove the gear shift drum stopper bolt.
8. Remove the final drive sprocket.
9. Remove the right crankcase.
10. Lift out the crankshaft assembly from the case.

Inspection

1. Measuring the crankshaft balance.
   Support the crankshaft on V-blocks at the bearings. Rotate the crankshaft and measure the amount of runout at both ends of the crankshaft using a dial gauge **(Fig. 42)**.

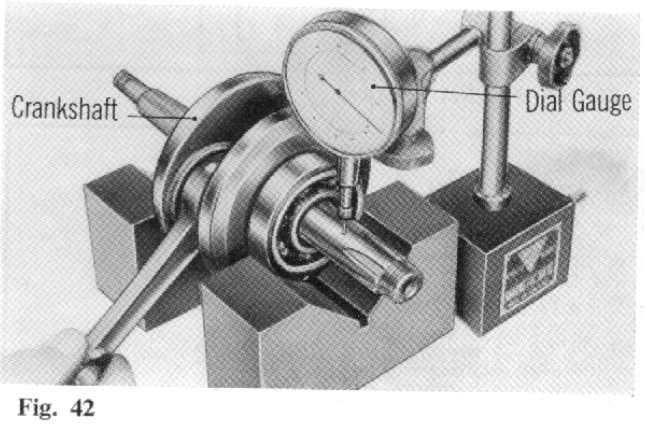


Fig. 42

inch (mm)

Item	Standard Value	Serviceable Limit
Left end, at 1.2 (30 mm) from the weight Right end, at 1.0 (25 mm) from the weight	0.0006 (0.015)	Replace or repair if over 0.002 (0.05)

2. Measuring the connecting rod side play.
   Measure the amount of connecting rod side play using a thickness gauge **(Fig. 43)**.

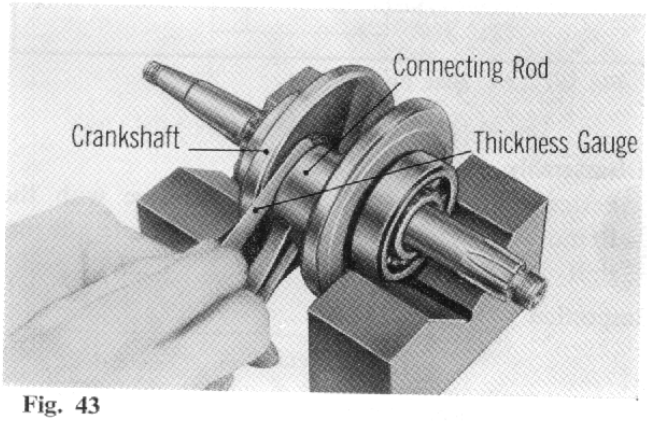


Fig. 43

inch (mm)

Standard Value	Serviceable Limit
0.004~0.014 (0.1~0.35)	Replace if over 0.0315 (0.80)

3. Measuring the radial clearance of the connecting rod large end bearing.
   Measure the amount of clearance at the connecting rod large end by using a dial gauge **(Fig. 44)**.

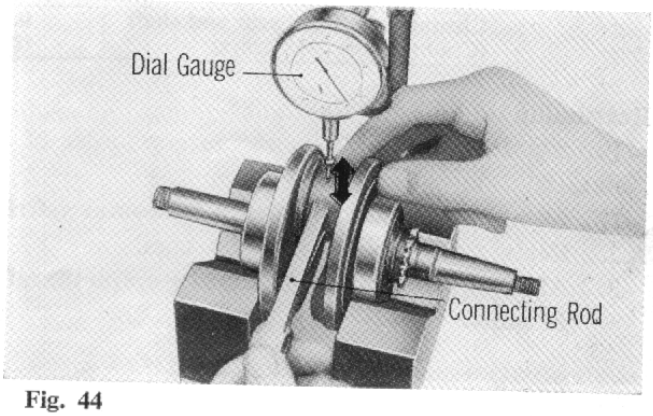


Fig. 44

inch (mm)

Standard Value	Serviceable Limit
0.0005 max. (0.12 max.)	Replace if over 0.002 (0.05)

Reassembly

Perform the reassembly in the reverse order of disassembly.

3.8 Description

The transmission incorporates the constant-mesh 3-speed gears.
The power train of the transmission is shown below.

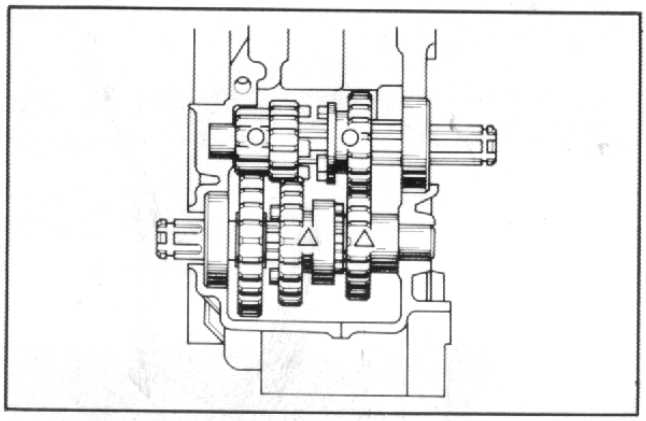


Fig. 45 Neutral position

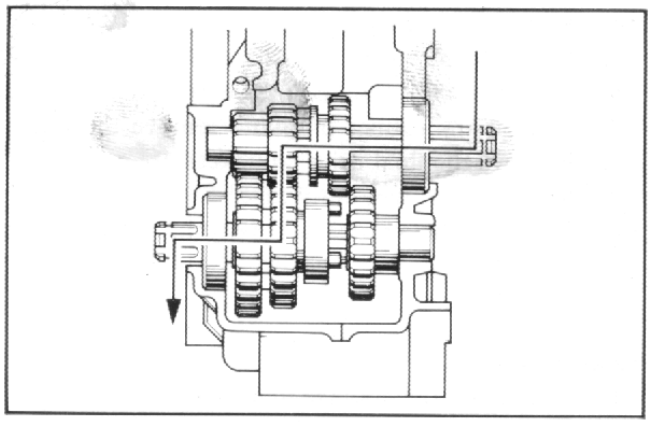


Fig. 47 Second gear position

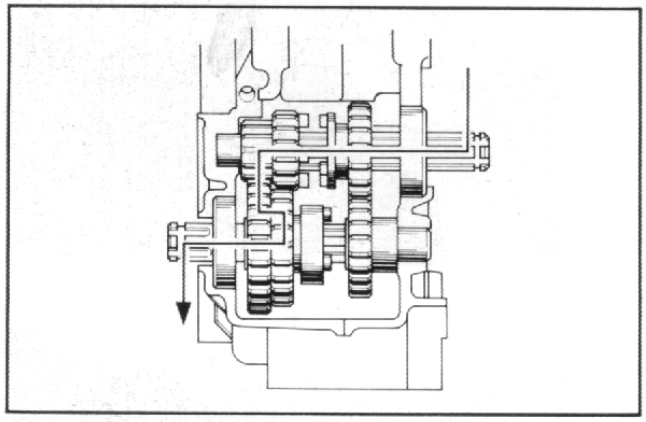


Fig. 46 Low gear position

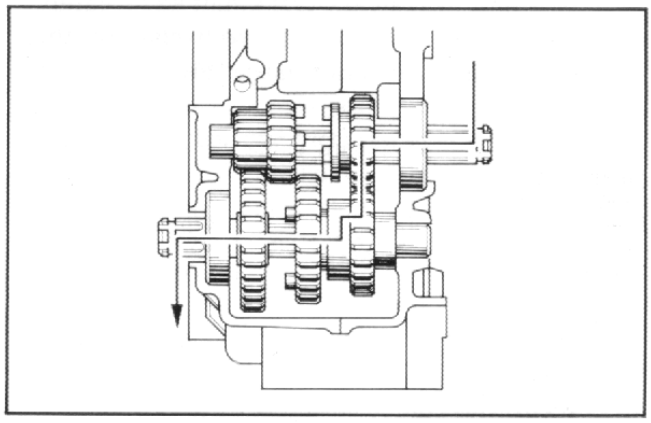


Fig. 48 Thid gear position

Disassembly

Perform the disassembly in accordance with the description in the section Crankshaft Disassembly. Remove the right crankcase and separate the mainshaft assembly, countershaft assembly and the gear shift fork assembly as a unit.

Inspection

inch (mm)

Item	Standard Value	Serviceable Limit
Gear backlash	0.0035~0.0070 (0.09~0.18)	Replace if over 0.010 (0.25)
Clearance between gear and shaft (mainshaft and gears)	0.001~0.0025 (0.02~0.06)	Replace if over 0.004 (0.1)
Clearance between gear and shaft (Countershaft and gears)	0.0013~0.0030 (0.032~0.077)	Replace if over 0.004 (0.1)

Reassembly

Perform the reassembly in the reverse order of disassembly.

Note:

1. **Note the right position of each component refering to Fig. 45~48.**
2. **Replace all circlips with new ones.**
3. **After combining the right crankcase with the left crankcase, check the transmission if it engages smoothly in gears.**

3.9 Gear Shift Mechanism

Description

The gear spindle arm which is connected to the gear shift spindle rotates the gear shift drum and this causes the gear shift fork to move left and right in the drum groove. The gear shift fork is controlled by the groove in the drum and this in turn causes the gears to slide and change gears.

Disassembly

1. Refer to the section on disassembly of the crankshaft assembly on page 22. By removing the right crankcase, the gear shift drum and the fork assembly can be removed together with the transmission gear as a complete unit.

Inspection

1. Measuring thickness of the gear shift fork ends.
   The thickness of the shift fork end is measured with a micrometer (**Fig. 49**).

inch (mm)

Item	Standard Value	Serviceable Limit
Right side	0.217~0.248 (5.5~6.3)	Replace if under 0.209 (5.3)
Left side	0.177~0.209 (4.5~5.3)	Replace if under 0.169 (4.3)

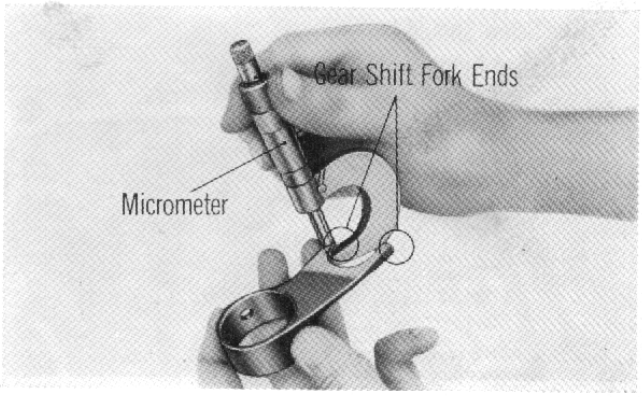


Fig. 49

2. Measuring the inside diameter of the gear shift fork.
   The inside diameter of the gear shift fork is measured with a cylinder gauge or an inside micrometer (**Fig. 50**).

inch (mm)

Standard Value	Serviceable Limit
1.3385~1.3395 (34.0~34.03)	Replace if over 1.347 (34.2)

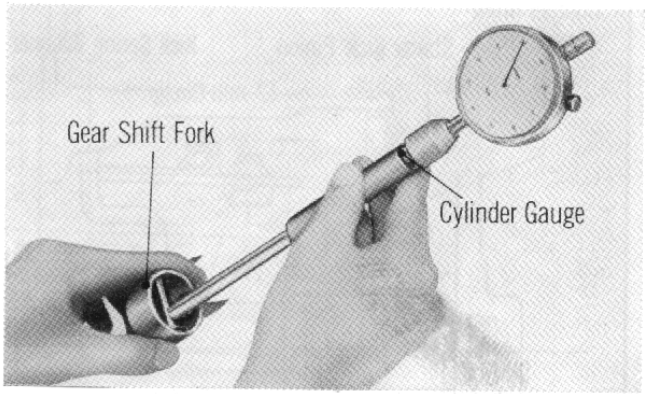


Fig. 50

3. Measuring the outside diameter of the gear shift drum
   The diameter is measured with a micrometer (**Fig. 51**).

inch (mm)

Standard Value	Serviceable Limit
1.3366~1.3377 (33.95~33.98)	Replace if under 1.335 (33.9)

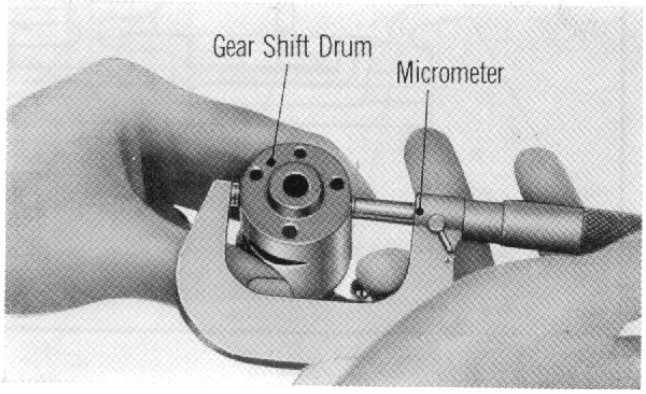


Fig. 51

4. Check the fork end for bending.

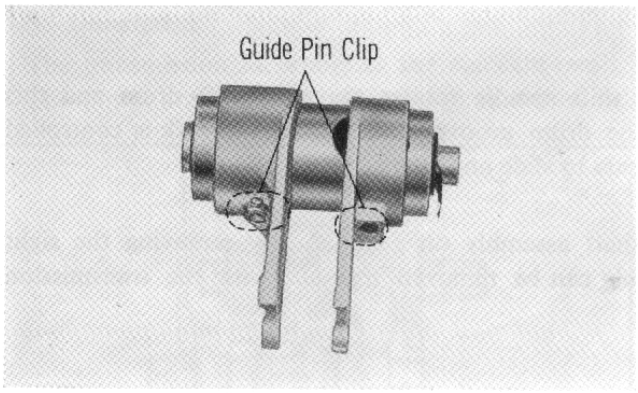


Fig. 52

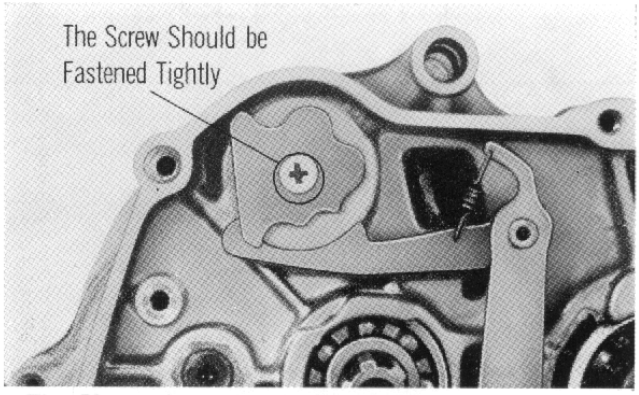


Fig. 53

Reassembly

Perform reassembly in the reverse order of disassembly, however, exercise care on the following points.

1. Make sure that the guide pin and guide pin clip are properly installed on the gear shift drum for both the right and left shift forks **(Fig. 52)**.
2. Apply screw locking agent to the stopper plate fixing screw lest the screw should loosen **(Fig. 53)**.
3. Make sure that the transmission engages in gears smoothly while proceeding the re-assembly work.

3.10 Kick Starter

Stepping on the kick starter will move the pinion, which is locked by the acme threads, to the left and meshed with the counter shaft low gear and transmits the force to the crank-shaft to start the engine. **(Fig. 54)**.

Instruction for assembly

1) After completing the assembly, do not forget to install the circlip, always use a new item.
2) Assemble the parts in the position shown in the figure below.

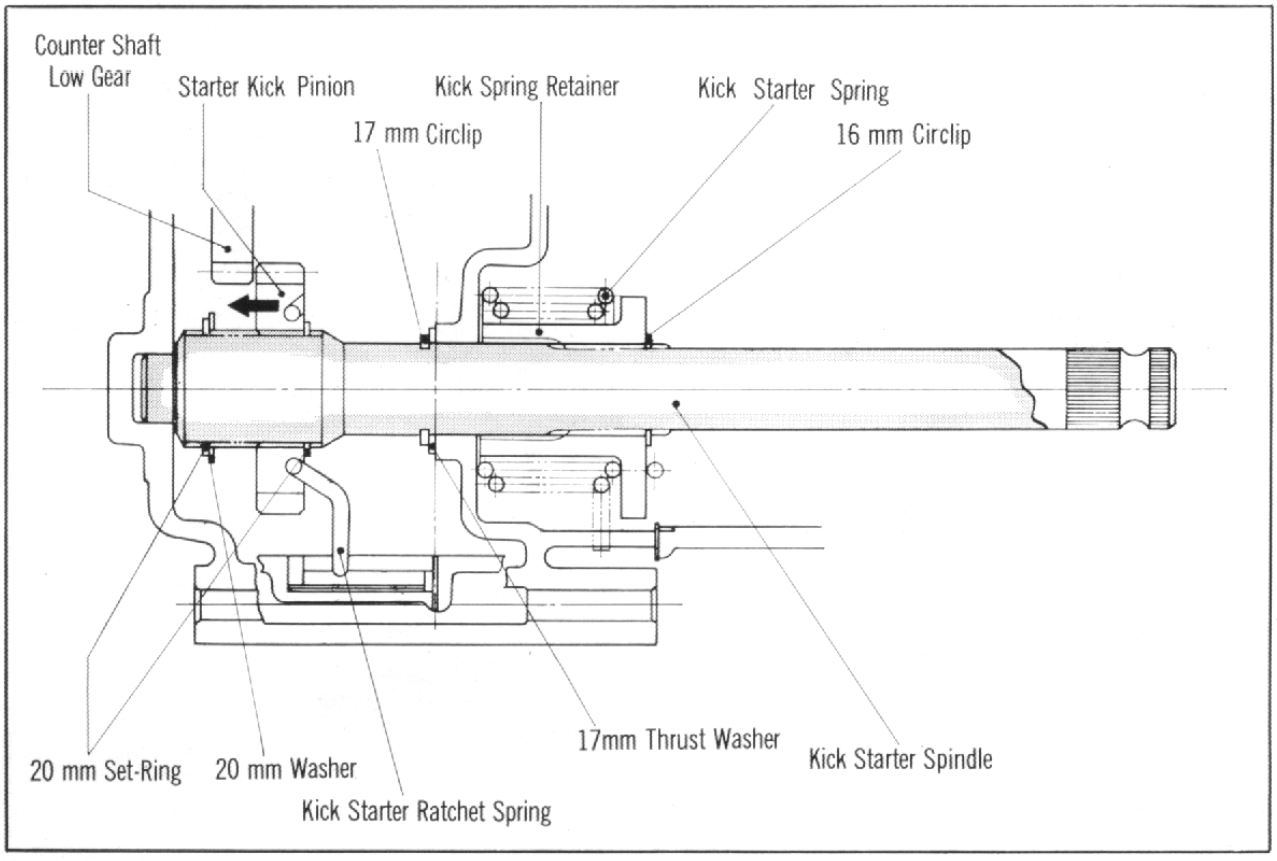


Fig. 54

3.11 Carburetor

The carburetor mixes the fuel and air taken into the engine in a correct proportion to produce a mixture and which is further atomized so that it is easily combustible. The construction of carburetor is quite the same as that of 50/65 except that it has a horizontal drought direction venturi unlike 50/65 series. For the further information of this carburetor, 50/65 shop manual should be refered to.

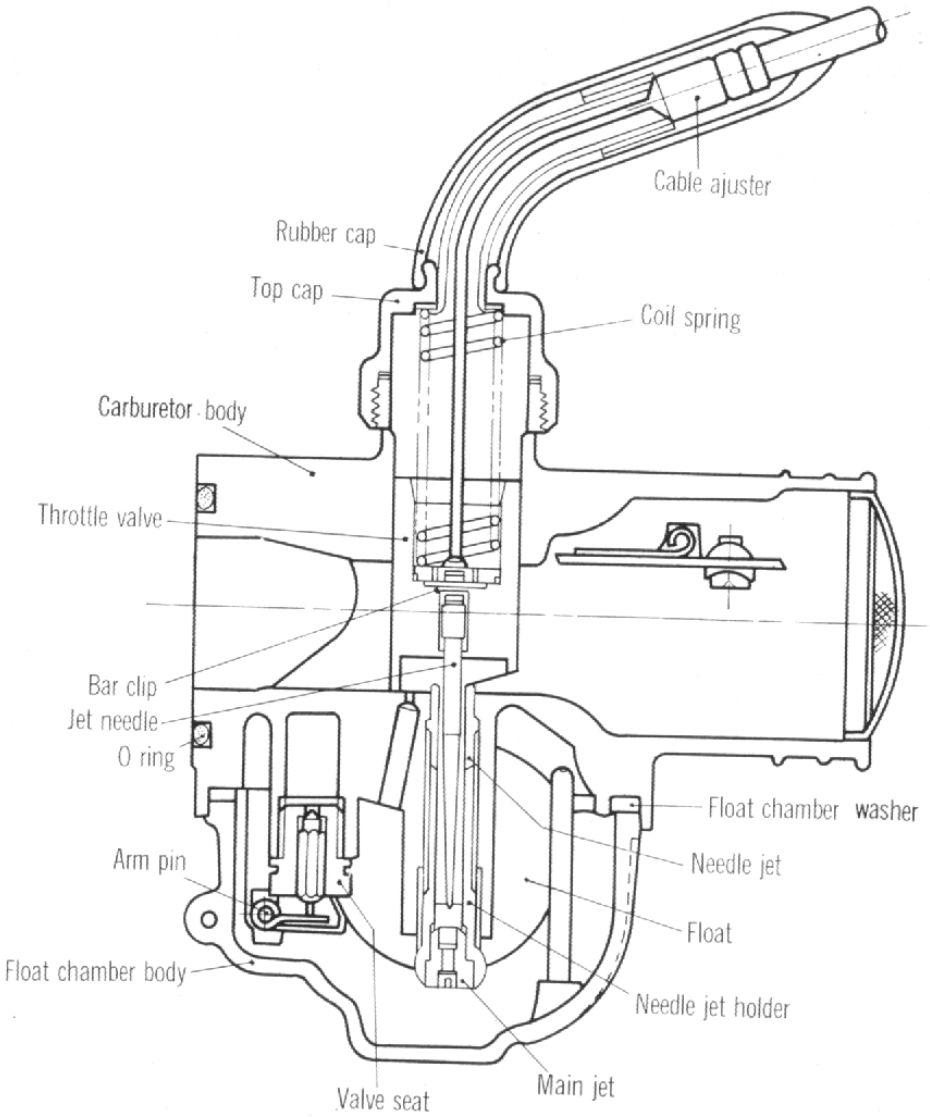


Fig. 55

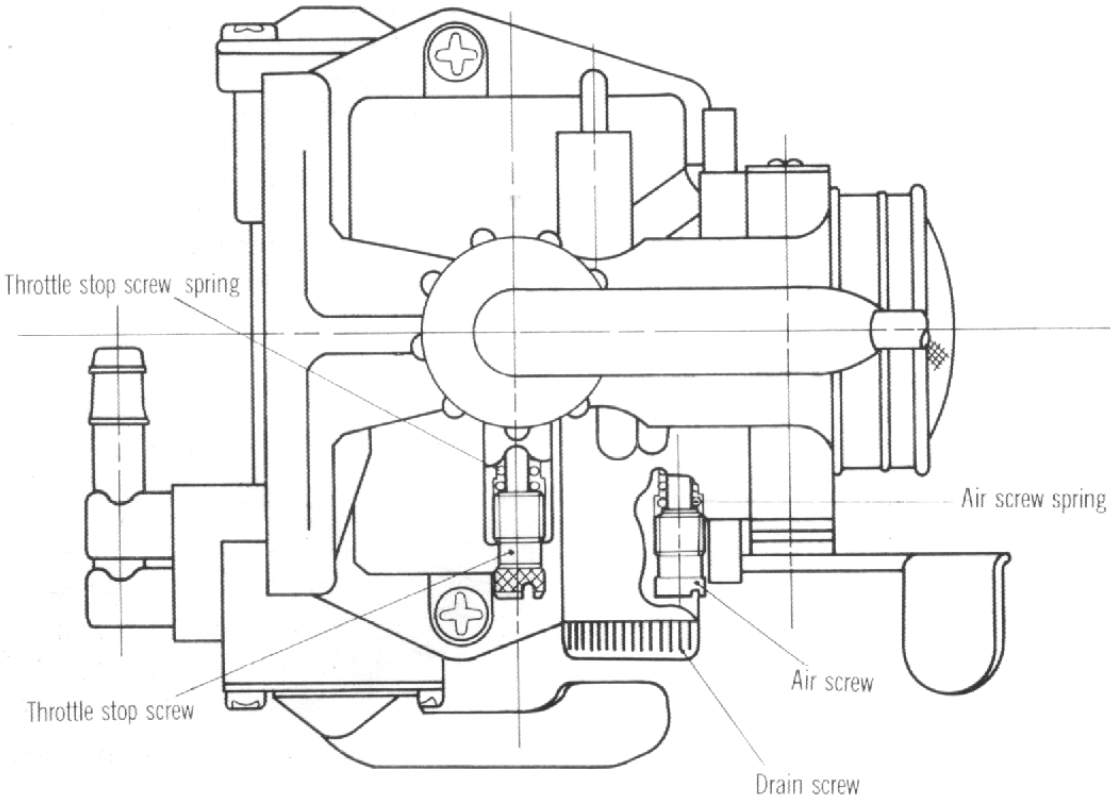


Fig. 56

The carburetor specification is summarized as below.

mm

Type		ST 50	ST 70	CT 70
Main Jet		#62	#65	#60
Air Jet		#150		
Air Bleed	AB_1	0.5 dia×2		0.6 dia×2
	AB_2	0.5 dia×2		
	AB_3	Nil		
	AB_4	0.5 dia×2		
	AB_5	0.5 dia×2		
Needle Jet		3°00′ 2.535ϕ (3 steps)	3°00′ 2.525ϕ (3 steps)	3°00′ 2.545ϕ (3 steps)
Air Screw		$1\frac{5}{8}\pm\frac{1}{8}$	$1\frac{1}{8}\pm\frac{1}{8}$	$1\frac{3}{4}\pm\frac{1}{8}$
Cutaway		#2.5 (width×depth) 1.2mm×0.2mm		
Carburetor type		1000-550	1000-533	
Slow Jet	AB_1	Nil		
	AB_2	#35	0.9 dia×2	
	AB_3		0.9 dia×2	
	AB_4		0.9 dia×2	

	ST 50	ST 70	CT 70
Valve Seat	1.0 dia		
Pilot Outlet	0.8 dia P=5.7		
Main Bore	13 dia		
Setting Mark	ST 5 B	ST 7 A	AT 70 A
Fuel Level	20		
Needle Jet Holder	5.0 dia		

3.12 Tightening Torque Limits

The tightening torque of major engine fastening points is specified in the following table.

Bolts And Nuts	Tightening Torque Lb. ft kg-cm	Bolts And Nuts	Tightening Torque Lb. ft kg-cm
R & L Crankcase	5.8~ 8.0 (80~110)	Shift drum stopper plate	6.5~ 9.4 (90~130)
Cam chain guide roller pin	5.1~ 9.4 (70~130)	Shift drum stopper	7.2~11.6 (100~160)
Cylinder head stud nut	6.5~ 8.7 (90~120)	Clutch nut	27.5~32.5 (380~450)
Cylinder side bolt	5.8~ 8.0 (80~110)	R. Crankcase cover	5.8~ 8.7 (80~120)
Cylinder head side bolt	7.2~10.8 (100~150)	Stater	5.8~ 8.7 (80~120)
Cam sprocket	3.6~ 6.5 (50~ 90)	Flywheel	23.9~27.5 (330~380)
Cylinder head R side cover	5.1~ 6.5 (70~ 90)	Drive sprocket	6.5~10.8 (90~150)
Cylinder head L side cover	5.8~ 8.7 (80~120)	L. Crankcase cover	5.8~ 8.0 (80~110)
Tappet adjustment	5.1~ 7.2 (70~100)	Drain cock bolt	18.1~25.3 (250~450)
Cam chain tensioner push rod	10.8~18.1 (150~250)	Spark plug	8.0~10.8 (110~150)
Oil pump	5.8~ 8.7 (80~120)	Carburetor	6.5~10.1 (90~140)
Shift drum side bolt	6.5~10.8 (90~150)		

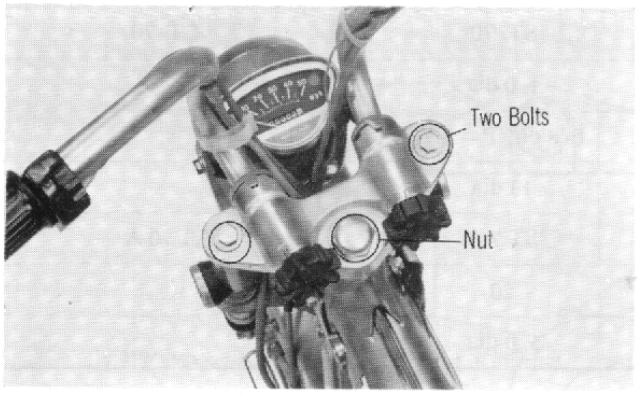


Fig. 57

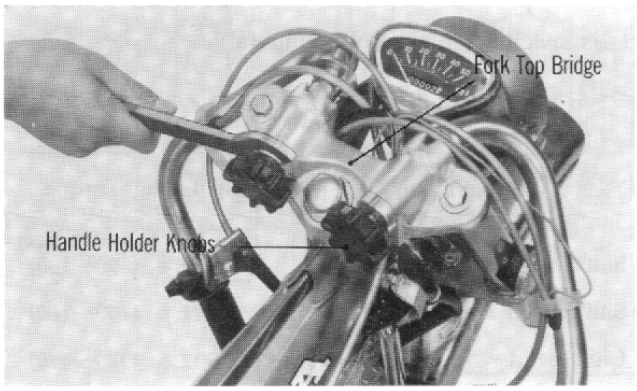


Fig. 58

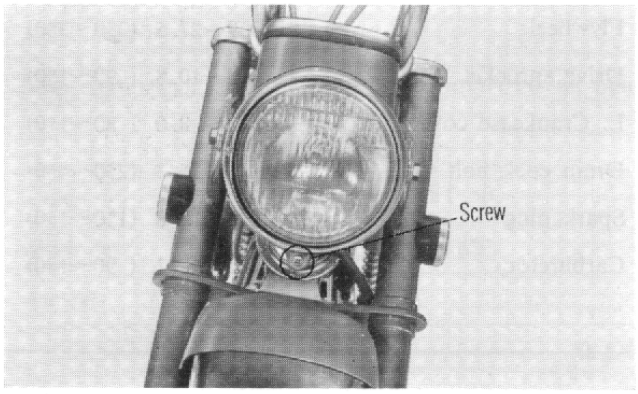


Fig. 59

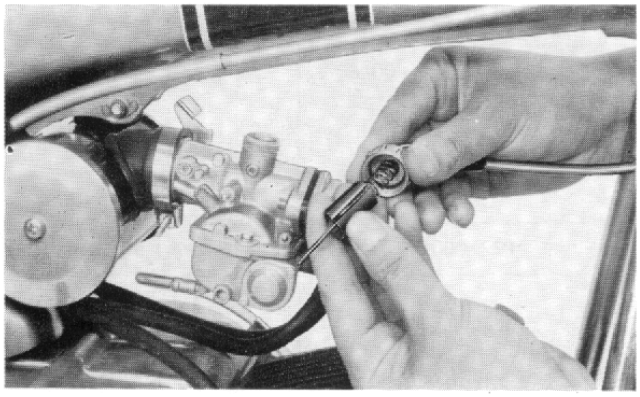


Fig. 60

4. FRAME

4.1 Handle

a. Handle Construction

The steering handle unit is made of steel pipe which is formed as a raised type. For easy handling and transportation, the steering handle is equipped with a fold down device and, further, it is so designed that the steering handle can be disassembled from the frame by removing two bolts, and a nut **(Fig. 57).**

The steering handle knob can be folded down by releasing two handle holder knobs as shown in Fig. 58.

b. Disassembly

(1) After releasing two handle holder knobs, remove two stopper nuts from the fork top bridge using the special tool. (07072-09801)

(2) Remove two bolts and 29 mm nut steering nut (Fig. 57)

4.2

(3) Remove the headlight assembly and disconnect all electrical leads after removing the head light cover by removing the screw at the bottom **(Fig. 59).**

(4) Uncouple the speedometer cable and disconnect the front brake cable.

(5) Disconnect the throttle cable by removing the carburetor cap and disengage the cable from the throttle valve **(Fig. 60).**

(6) Then the steering handle can be removed from the frame together with the steering bracket. **(Fig. 57)**

c. **Inspection**

(1) Inspect the throttle, and front brake cables for damage and breakage on both the inner cable and outer casing, and also for proper operation; apply grease before installation.

(2) Check the handle levers for proper operation.

(3) Inspect the handle pipe for bend and twist.

(4) Check all switches for proper function and the electrical leads for damaged covering.

d. **Reassembly**

(1) Reinstall all the wires, speedometer and leads on the specified locations and fix in place with handle fixing bolts and nuts.

(2) Reinstall the front brake cable, speedometer cable and throttle cable.

(3) Reconnect all connectors from the electrical leads and reinstall the headlight.

Noto:

When installing the steering handle, care should be taken not to pinch cables and leads.

4.2 Front Fork

The steering stem of this models incorporates ball bearing at the top and the bottom. It excels in steerability as well as in stability for both high and low speed. The steering stem is unitized with the frame and incorporates ball bearings which is installed on the frame head pipe. They serves a vital function since it is the rotating shaft of which the head pipe is the axis.

a. **Disassembly**

(1) Remove the steering handle according to the instruction in section "Handle."

(2) Remove the front wheel according to the instruction in section "Front Wheel"

(3) Remove the fork top bridge by unscrewing the steering head stem nut and two 8 mm bolts.

(4) Unscrew the steering head top nut by using the hook spanner (special spanner) (Tool No. 07072-09801) and slide the front fork out the bottom along with the front fender, head light casing and horn.

Caution:

When removing the front fork care should be taken not to drop and miss the ♯6 steel balls (Fig. 61).

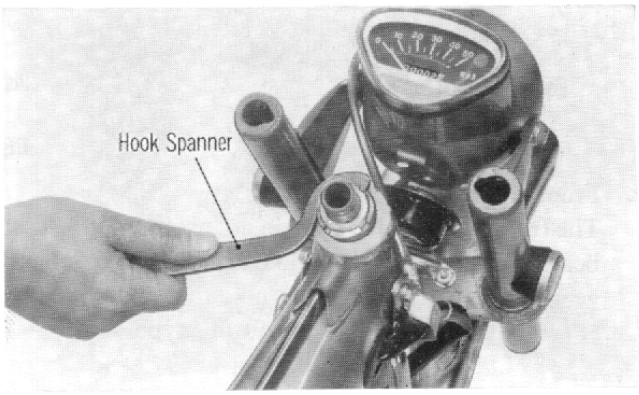


Fig. 61

b. **Inspection**

(1) Inspect the ♯6 steel balls for crack and wear. **(Fig. 62).**

(2) Inspect the steering stem for bend and twist.

(3) Inspect the steering bottom and top cone races and ball races, for scratch, wear and streaks.

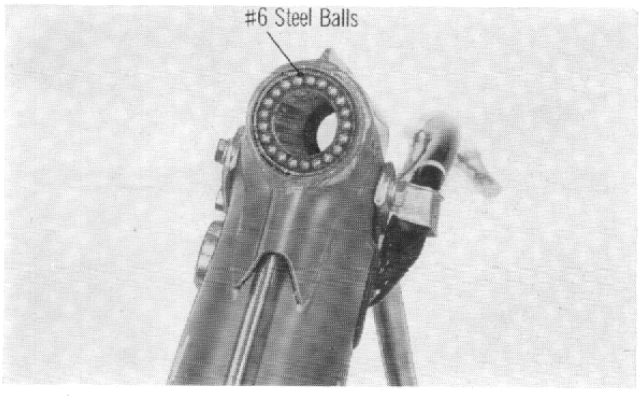


Fig. 62

c. Reassembly

(1) Wash the cone races, ball races and the steel balls, and pack with new grease. Use recommended fiber grease.

(2) In order to provide proper steerability, the steering stem nut should be torqued as follow.

1. Fasten the nut completely until it is locked.
2. Release the nut about 45 degrees unticlockwise.
3. Then fasten it with hand untill it is again locked.
4. Release it with hand a bit. Then proper steerability will be provided.

4.3 Front Cushion

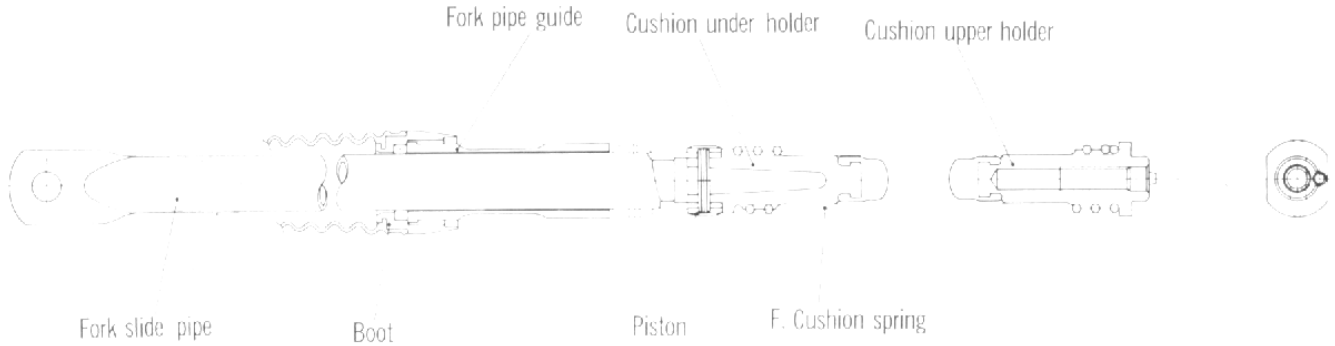


Fig. 63

a. Front Cushion Construction

The front wheel axle and axle nut assembles the cast aluminum hub consisting of two sets of 63010 radial ball bearings and an integral brake drum to the front brake panel which contains the brake shoes and speedometer gear. The front cushion, unlike the other types having a damper inside, has only a coil spring for cushion effect, considering the usage of this type.

Fig. 64

b. Disassembly

(1) Remove the front wheel in accordance with section "Front Wheel" in page 35.

(2) Remove the front fork top bridge in accordance with section "Handle" in page 30.

(3) Both front cushions can be pulled out from the bottom of the front cushion housing incorporated on the steering stem after releasing the front fork guide cap with a special tool (07072-09801). Fig. 64 shows the front cushion assembly.

(4) Fix the cushion upper holder with a vise as shown in Fig. 65 and hit the end of the cushion spring with a steel hammer through a driver in order to remove the spring from the upper holder. Excessive care should be taken not to damage the upper holder because it is made of aluminum alloy.

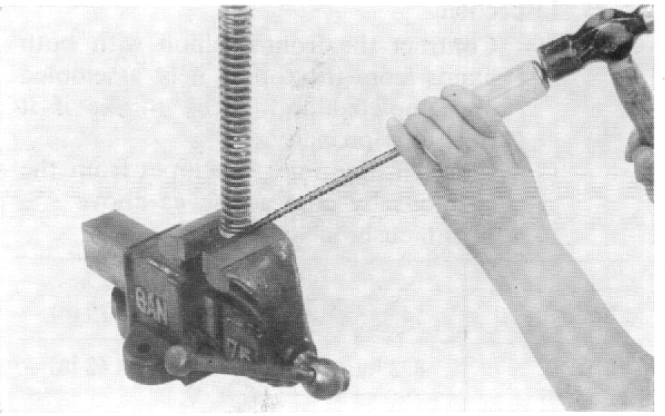


Fig. 65

(5) The under holder can be separated from the spring in the same way as the upper holder. When fixing the upper holder, the piston should be fixed with a vise.
The piston is rubber-coated on exterior so that care should be taken not to damage it when being fixed with a vise.

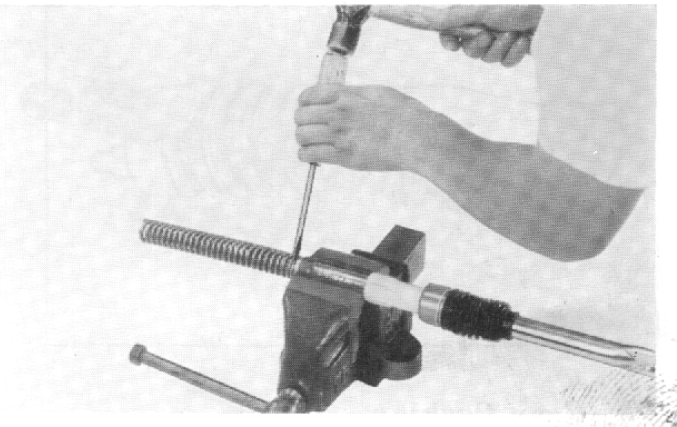


Fig. 66

(6) Pull out the pin which fixes the fork slide pipe, under holder and piston with a pin remover (Tool No. 07053-09801) as shown in Fig. 67.

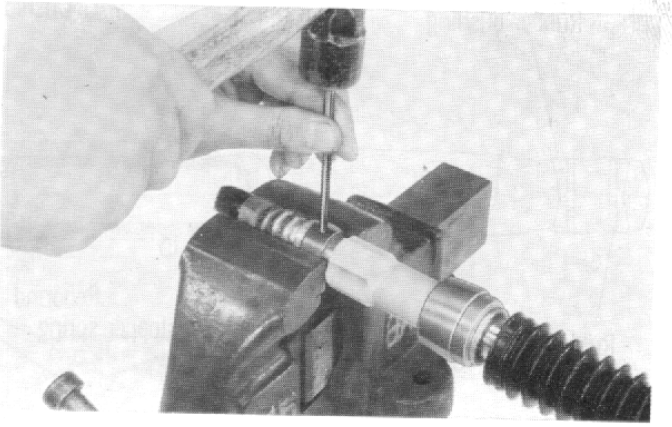


Fig. 67

(7) Fig. 68 shows the disassembled front cushion assembly.

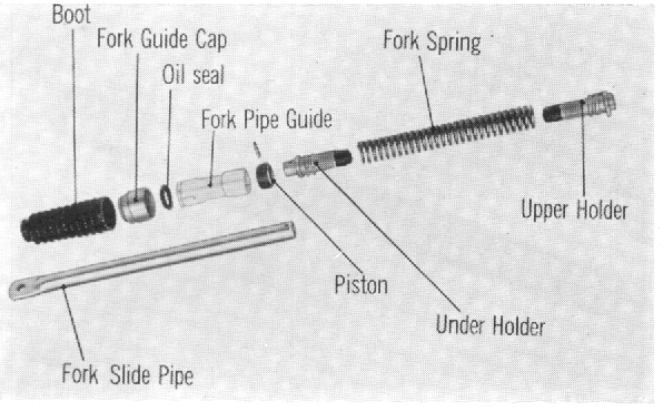


Fig. 68

c. Inspection

(1) Contract the front cushion with both hands from the top as it is assembled as completed and check to see if it functions properly.

(2) Check if any noise developes from the cushions by contracting as above.

(3) Front cushion spring.

	Standard Valve
Load	54 kg/20. 8 mm (118. 6 lb/2. 79 in)
Load	8. 2 kg/10. 8 mm (18. 1 lb/0. 43 in)
Free length	148. 5 mm

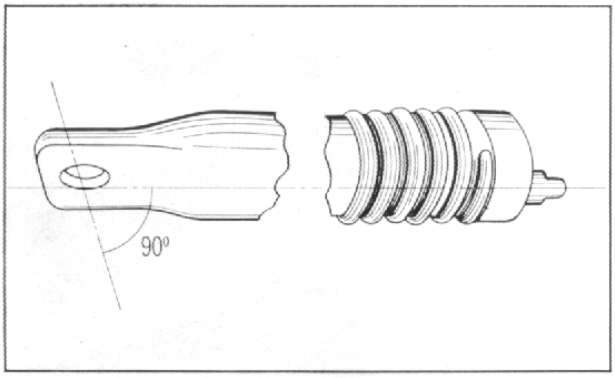


Fig. 69

d. Reassembly can be performed in the reverse order of the disassembly.

(Note)

(1) In assembling the front cushion, it must be so assembled that the lug on the upper holder be perpendicular to the flat part of the fork slide pipe. (Fig. 69)

(2) Apply grease inside the cuhsion housing spring, dust seal, upper and under holders.

(3) When replacing the spring with a new one, grease should be applied on the new parts as above.

(4) In assembling the spring to the upper holder, vinyl tape wounded around the holder apt to result in damage, rewind it with new tape if required.

4.4 Rear Cushion

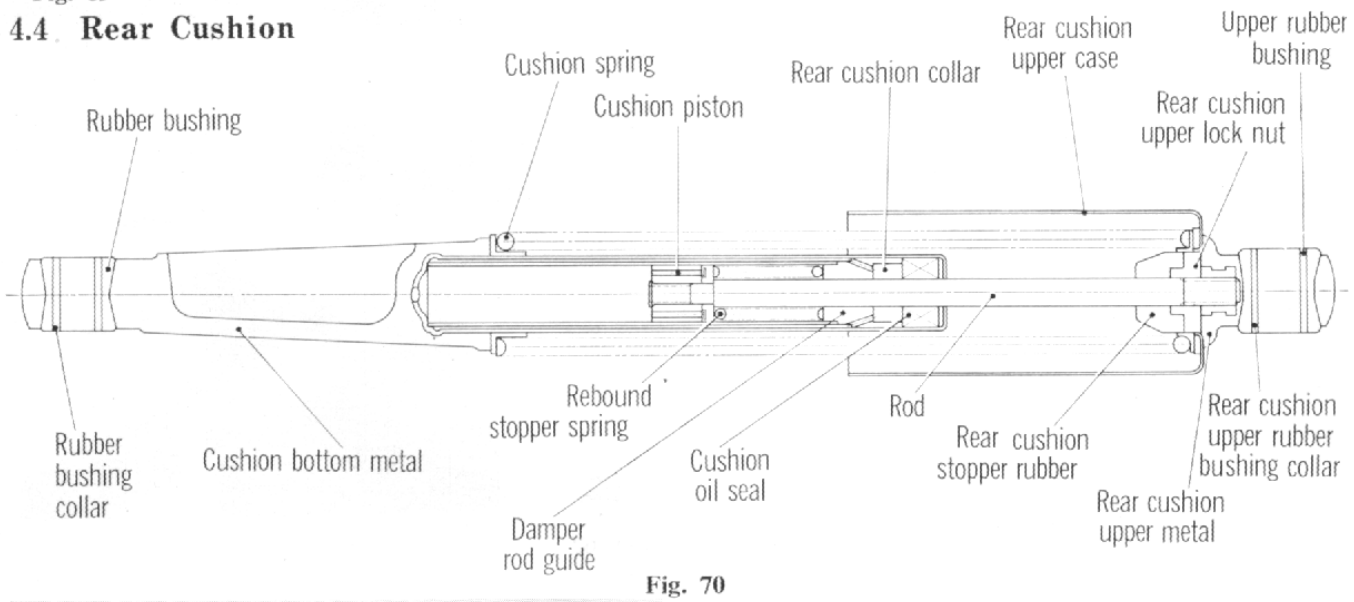


Fig. 70

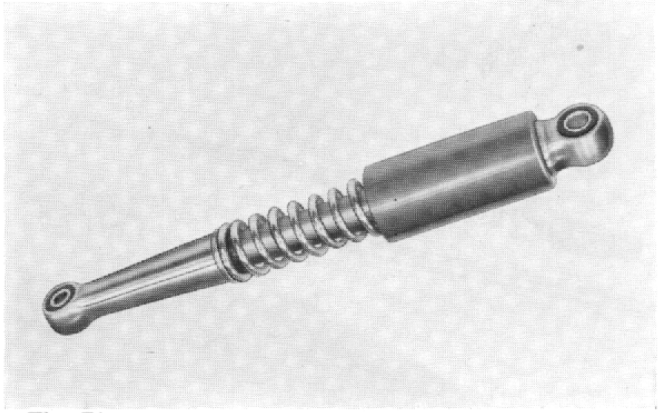


Fig. 71

a. Rear Cushion Construction

The rear cushion connects the frame with the rear fork and absorbs the shock from the rear wheel.

The coil spring having an ununiform pitch is housed in the metal lower case and the upper case which is made of steel pipe, absorbs the shock which comes from the road. The hydraulic damper dampens the reacting exension force. (Fig. 70, 71)

b. Dsiassembly

(1) Remove the rear cushion assembly by loosening the upper and lower cap nuts.

(2) Disassemble the rear cushion component parts with the special tool as shown in Fig. 72. (Tool No. 07035-09800)

c. Inspection

(1) Damping capacity of rear cushion damper 2.79 lb/in/sec. (25 kg/0.5m/sec)

(2) Rear cushion spring

	Standard Value
Free Length	8. 11 in. (205. 9mm)
Load	30. 9 lb/0. 43 in. (14 kg/11. 1 mm)
Load	138. 9 lb/1. 97 in. (63 kg/50 mm)
Load	220. 5 lb/2. 71 in. (100 kg/68. 8 mm)

d. Reassembly

After reassembly, operate the rear cushion with hand to assure that there is no binding between the spring and the case and no noise which comes from the cushion.

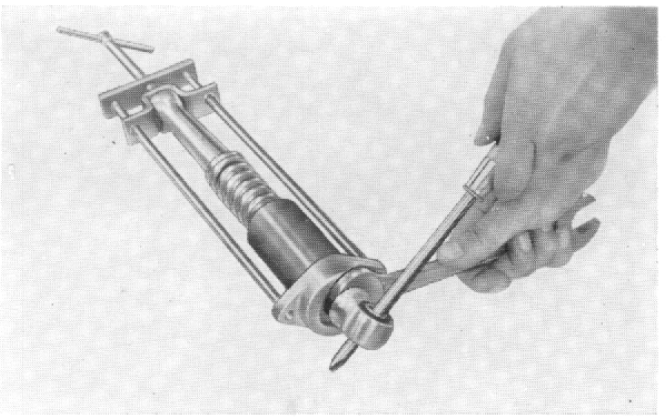


Fig. 72

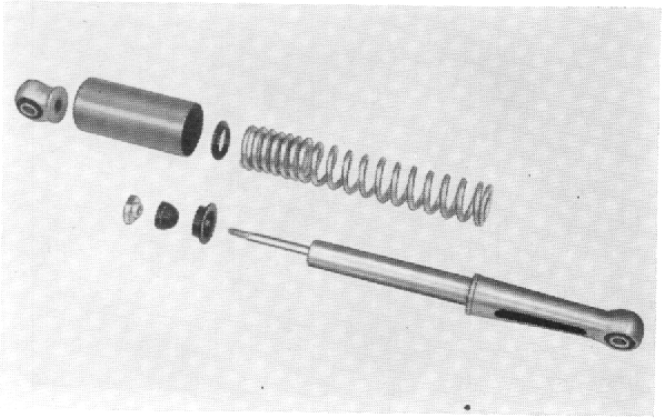


Fig. 73

4.5 Front Wheel

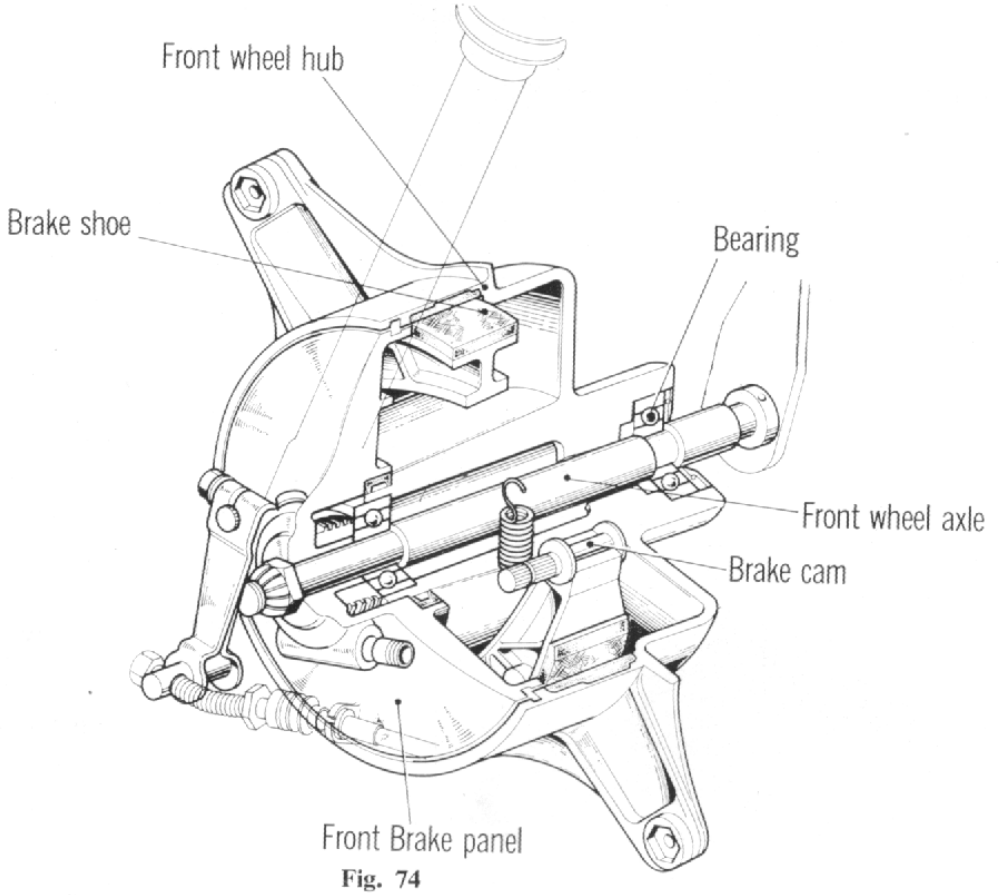


Fig. 74

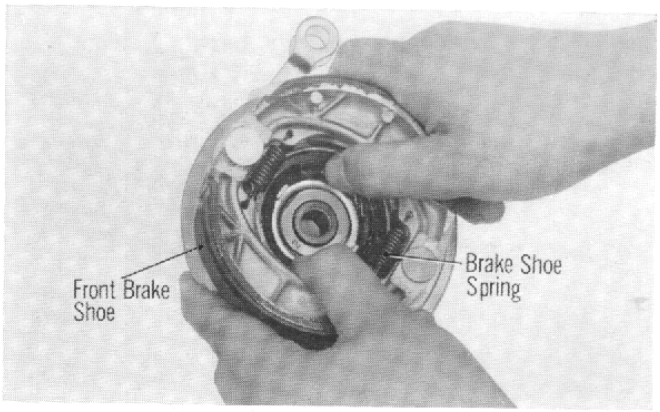


Fig. 75

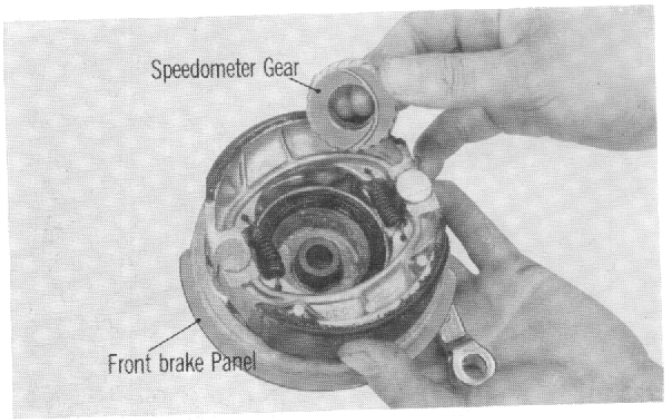


Fig. 76

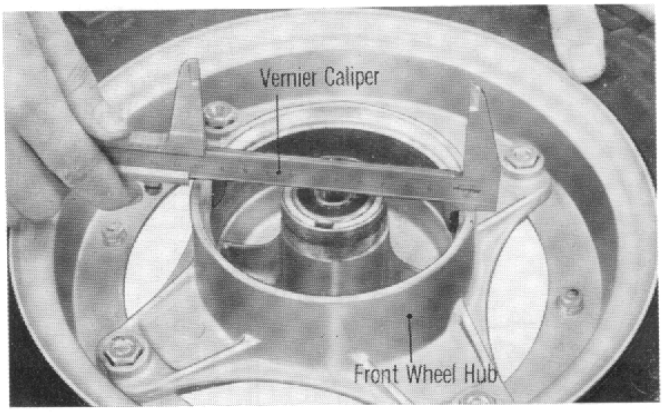


Fig. 77

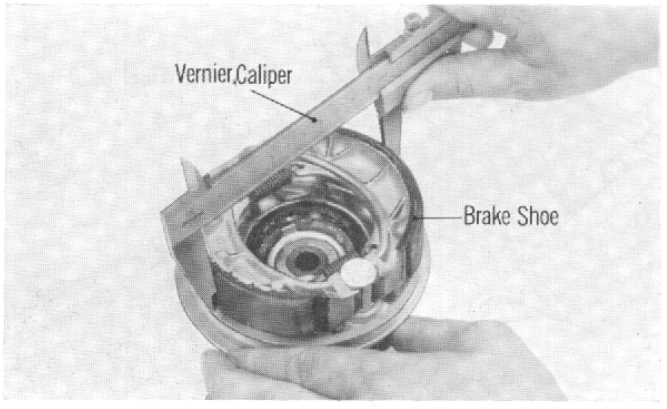


Fig. 78

a. Front Wheel Construction

The front wheel axle and the axle nut assemble the cast aluminum alloy hub with the cast brake drum and two 63010 ball bearings with the front brake panel consisting of brake shoes and a speedometer gear. Different from the other types of this model, which has wire spokes, a front wheel hub which is made of aluminum alloy cast, is directly connected with the combined type of rim. And a labyrinth is incorporated in the brake panel and the wheel hub to prevent entry of water and dust into the hub interior.

b. Disassembly

(1) Place an adequate stand under the engine to raise the front wheel.

(2) Remove the front brake cable and the speedometer cable.

(3) Remove the axle nut and pull out the front wheel axle shaft and the front brake panel can be removed as a unit.

(4) The brake shoe is fixed in place with the brake shoe spring; therefore spread the brake shoes apart and remove from the panel. (Fig. 75)

(5) Remove the front brake cam and the speedometer gear from the front brake panel.

(6) Remove the tire and tube from the rim using a tire lever and pull out the tube from the tire.

Caution:

When removing the front hub from the rim, be sure to deflate air first then remove it.

c. Inspction

(1) Check brake drum inside diameter. (Fig. 77)

inch (mm)

	Standard Value	Serviceable Limit
Inside Diameter	4.33 ± 0.08 (110 ± 0.2)	Replace if over 4.35 (110.5)

(2) Check brake shoe outside diameter. (Fig. 78)

inch (mm)

	Standard Value	Serviceable Limit
Outside Diameter	$4.291^{+0}_{-0.118}$ $\left(109.5^{+0}_{-0.3}\right)$	Replace if under 4.153 (105.5)

(3) Check front axle diameter for bend. (Fig. 79)

inch (mm)

	Standard Value	Serviceable Limit
Diameter	$0.400^{-0}_{-0.002}$ $\left(10^{-0}_{-0.050}\right)$	———
Bend	0.008 in (0.2)	Repair or replace if over 0.02 (0.5)

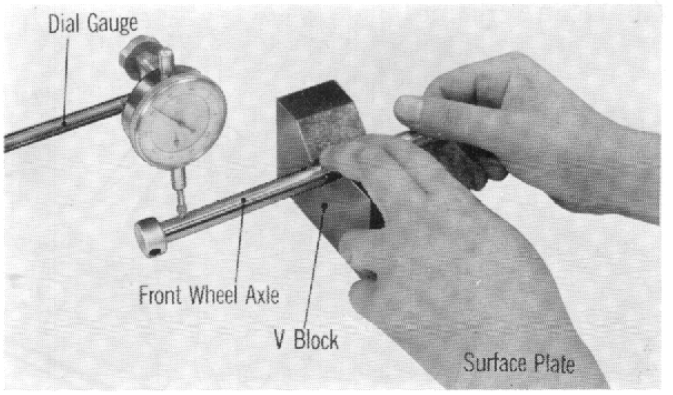


Fig. 79

c. Reassembly

(1) After reassembly of the tire, fill the tire with air to about 1/3 of the specified pressure and tap the tire all around with a soft faced hammer to eliminate any tube twist or pinching. (Fig. 80)

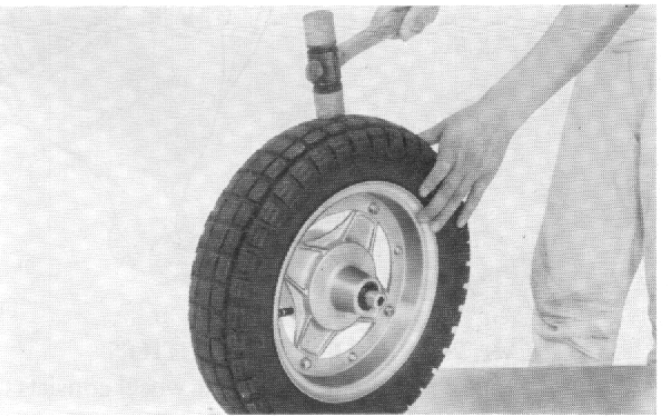


Fig. 80

The valve stem must be pointed toward the axle, improperly seated valve stem may cause air leak. (Fig. 81)

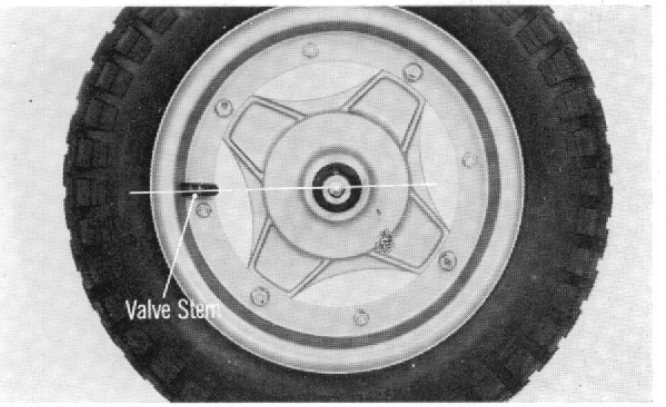


Fig. 81

(3) Wash the old grease from the wheel hub and the bearing, and pack with new grease. Also fill the hub with grease and install the distance collar, followed by installation of the 63010 ball bearings (Fig. 82) (tool No. 07048-09801)

(4) After installing the bearings, reassemble the front wheel and the brake shoe in the reverse order of disassembly.

(5) Install the brake cable and adjust the brake lever play.

TIRE AIR PRESSURE

Front air pressure 15.65~18.5 ld (1.1~1.3 kg/cm²)

Rear air pressure 18.5~21.3 ld (1.3~1.5 kg/cm²)

Fig. 82

4.6 Rear Wheel

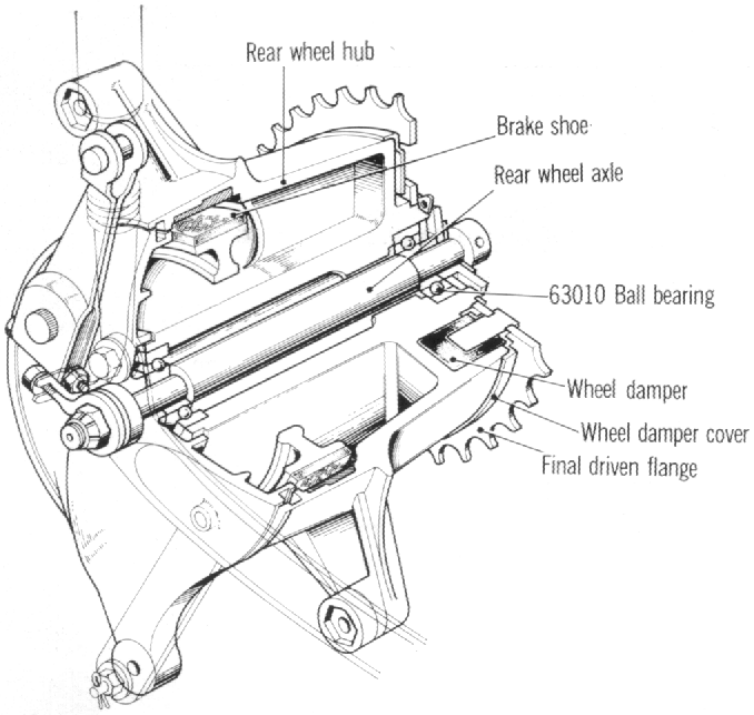


Fig. 83

a. REAR WHEEL CONSTRUCTION

Similar to the front wheel, the rear wheel consists of a cast aluminum alloy rear wheel hub incorporating ball bearings, and a brake panel. A tire size (ST 50/70 3.50-10-2PR, CT 70 4.00-10-2PR) is used with the combined type of the rim which is directly connected with the hub.

In addtion, the rear wheel hub and the final driven flange have been made into an integral component for lightness.

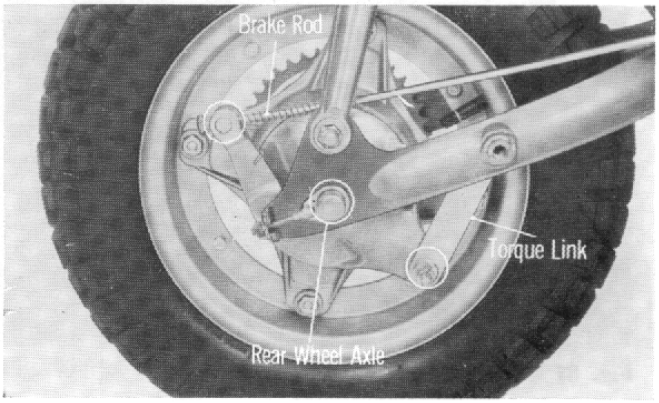


Fig. 84

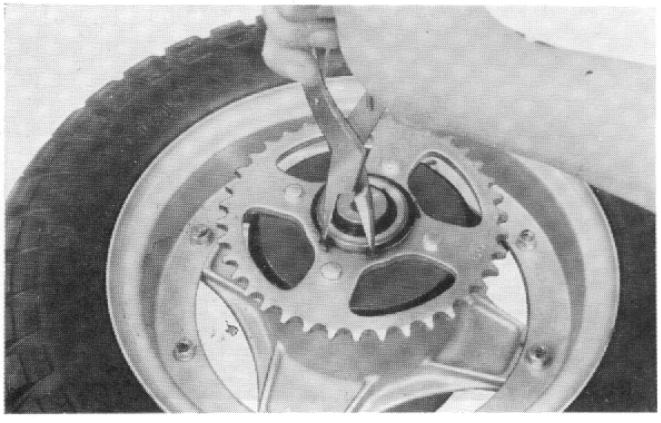


Fig. 85

b. Disassembly

(1) The disassembly of the rear wheel can be performed without removing the muffler.

(2) Disconnect the drive chain.

(3) Remove the brake adjusting nut and separate the brake rod from the rear brake arm.

(4) Separate the rear brake torque link from the brake panel.

(5) Remove the rear wheel axle by removing the axle nut and then rear wheel may be removed with the driven sprocket combined. (Fig. 84)

(6) Remove the snap ring with a snap ring plier to separate the driven sprocket from the hub. (Fig. 85)

c. Inspection

(1) In the same manner as the front wheel, the brake drum inside diameter and the brake shoe out side diameter should be checked to the same standard.

(2) Check the brake lining for wear in thickness.
Standard value; 0.1378 in. (3.5 mm)
Serviceable limit; Replace if under 0.0590 in. (1.5 mm) Fig. 86.

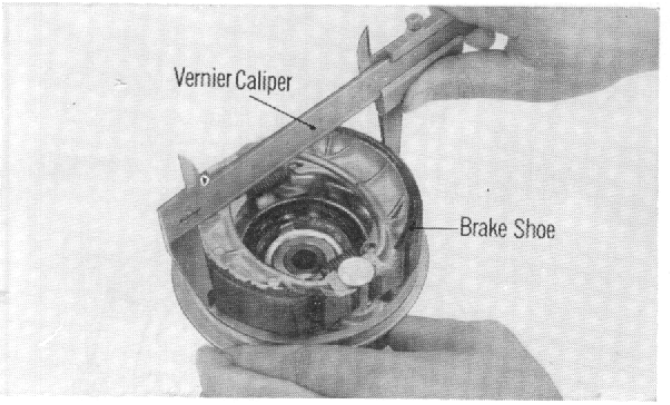


Fig. 86

(3) Check the rear axle diameter for wear and bend in the same manner as the front axle shaft. (Fig. 87)

inch (mm)

	Standard Value	Serviceable Limit
Axle Diameter	0.4704~0.4720 (11.957~11.984)	—
Bend	0.008 (0.2)	Repair or replace if over 0.02 (0.5)

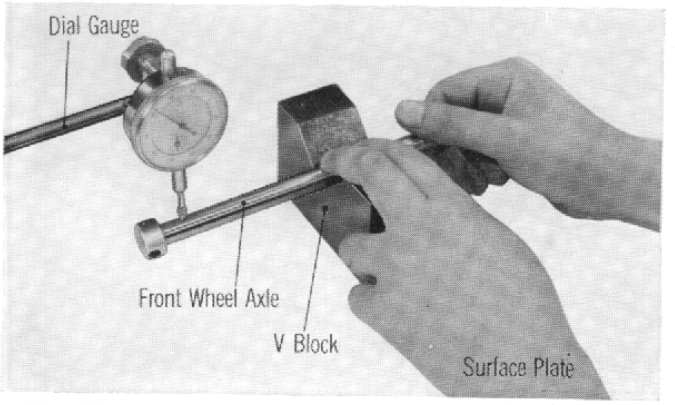


Fig. 87

(4) Wash and clean all ball bearings. Check the bearing for wear and for roughness by rotating the bearings. Replace any defective bearings if required.

(5) Check the brake shoe spring for loss of tension, check the oil seal for any damaged or deformed lips, and check the O ring for damages and loss of tension. Replace any defective parts if required. Inflate the tire and check for air leaks. Check the tire casing for imbedded nails, wires and other foreign objects. Use one or two spreaders to assist in the internal surface inspection of the tire. (Fig. 88)

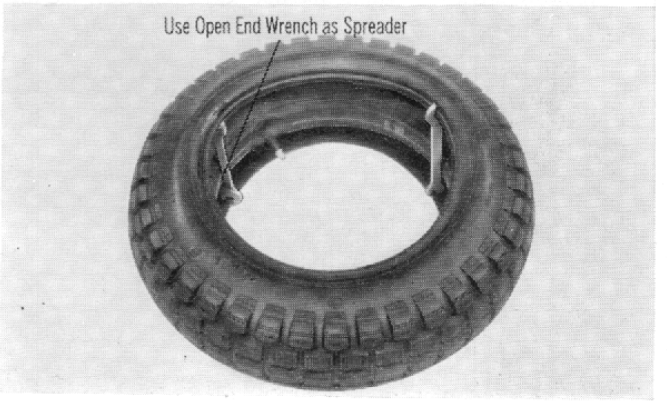


Fig. 88

d. Reassembly

(1) Install the tire and tube in the same manner as the front wheel.

(2) Reassembly the rear wheel to the frame and fix in place with the axle and the axle nut.

(4) Reinstall the rear brake rod and adjust the play with the adjusting nut.
Standard play of brake lever
0.787~1.181 in (2~3 cm)

(5) Inflate the tire to the specified air pressure. Normal condition:
Front: 15.7~18.5 lb
(1.1~1.3 kg/cm²)
Rear: 18.5~21.3 lb
(1.3~1.5 kg/cm²)

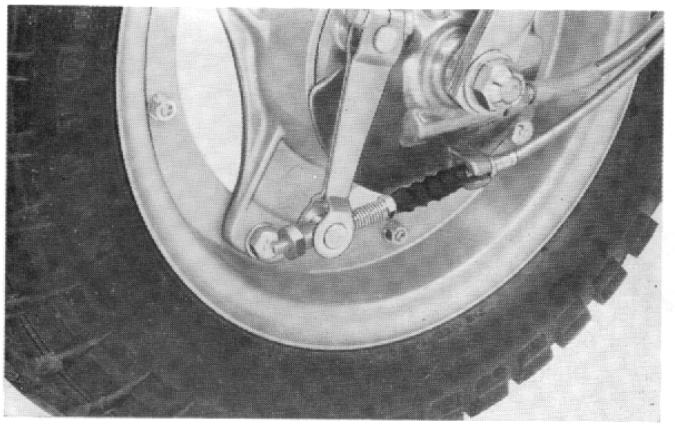


Fig. 89

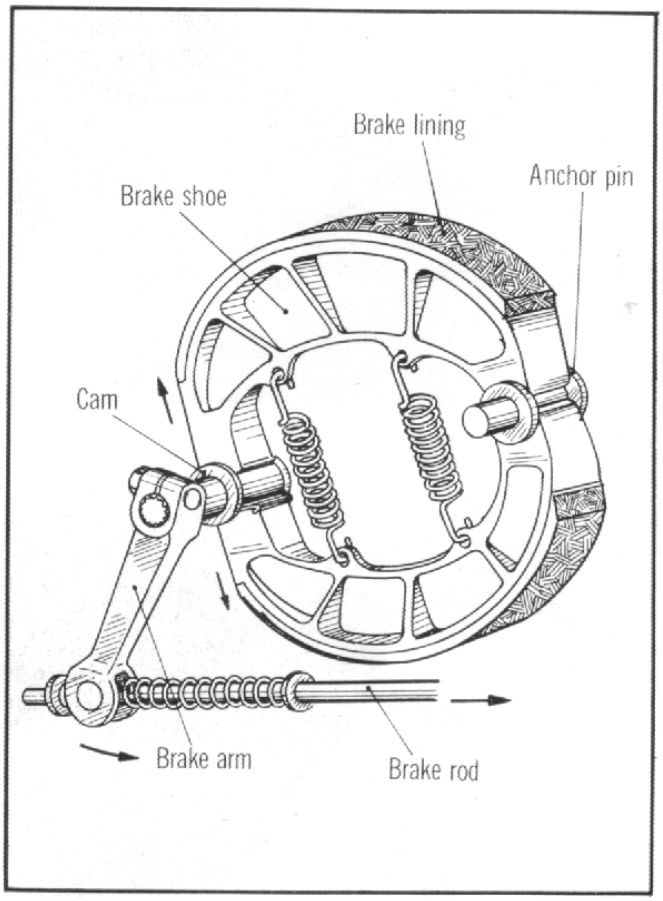


Fig. 90

4.7 Braking System

Reliability as well as durability of the braking system is an essential requirement for safe riding. The braking system which is adopted is an outward expanding type having 4.340 in (110 mm) diameter. The wheel hub is made of light weight alloy casting which excels in heat dissipating characteristic and the brake lining contact surface is a cast iron ring.

In operation, the action of the brake lever or the foot pedal forces the cam to be rotated, and this in turn forces the brake shoes, with the anchor pin as the pivot, to move outward and come in contact with the brake drum. Thus the lining on the brake shoes is forced against the brake drum, and the friction between the brake drum and brake shoes stops the rotating wheel. With the lever released, the brake shoes return to their original position by means of two springs which hold the shoes inward. (Fig. 90)

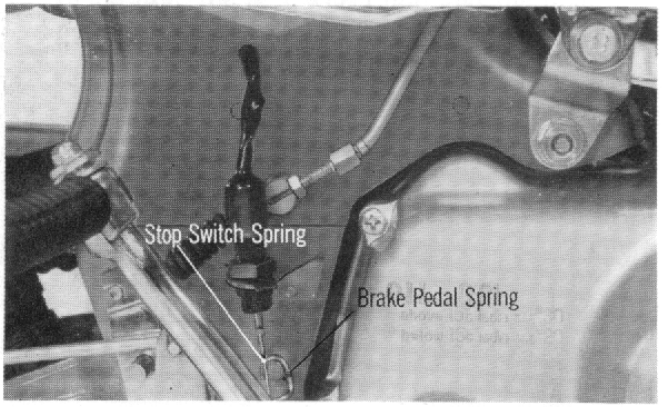


Fig. 91

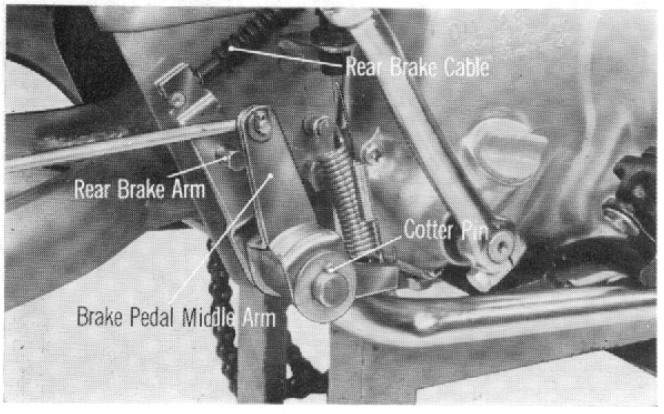


Fig. 92

a. Disassembly

(1) Remove the exhaust pipe and the muffler.

(2) Remove the brake rod from the brake arm by loosening the brake adjusting nut, then hook off the brake pedal spring and stop switch spring. (Fig. 91)

(3) Remove the drive chain cover.

(4) Disconnect the rear brake cable from the rear brake arm.

(5) Pull out the cotter pin.

(6) Extract the brake pedal middle arm, brake pedal and rear brake arm with a washer from the brake pivot pipe. **(Fig. 92).**

(7) Remove the step bar from the crankcase by removing the 8 mm hex. bolts. **(Fig 93)**.

b. Inspection

(1) Inspect the brake pedal spring for loss of tension and corrosion. If loss of tension or corrosion is excessive, the spring should be replaced.

(2) Check the brake pivot pipe for bend. If excessively bent, repair it by hitting with a hammer.

(3) Check the cotter pin for damage.

(4) Adjust the brake pedal play to 0.787~1.181 in. (2~3 cm)

(5) Check the brake pedal and step bar for deformitiy and repair or replace with new parts if necessary.

c. Reassembly

(1) Clean all parts and lubricate the brake pedal pivot pipe with grease before reassembly. Reinstall the rear brake arm, brake pedal middle arm and brake pedal to the pivot pipe.

(2) Hook the brake pedal spring, and stop switch spring on the specified position. Connect the rear brake cable to the rear brake arm.

(3) Reinstall the step bar on the crankcase with four 8 mm hex. bolts. **(Fig. 94)**.

(4) Reinstall the muffler.

(5) After connecting the rear brake, adjust the brake pedal play to 0.787~1.181 in. (2~3 cm)

4.8 Rear Fork

The rear fork is of a swing arm type which pivots on the rear fork pivot bolt. The rear end of the fork is supported by the frame through the rear cushions.

a. Disassembly

(1) Remove the rear wheel in accordance with section "Rear wheel".

(2) Disconnect the drive chain.

(3) Remove the 10 mm cap nuts fixing the rear cushion at the lower end.

(4) Remove the rear fork pivot bolt by loosening the rear fork pivot nut, then the rear fork can be removed from the frame. **(Fig. 95)**.

b. Inspection

(1) Check the pivot rubber bushing for damage or aging and also for looseness in the fork. Replace defective bushing if required. **(Fig. 96)**

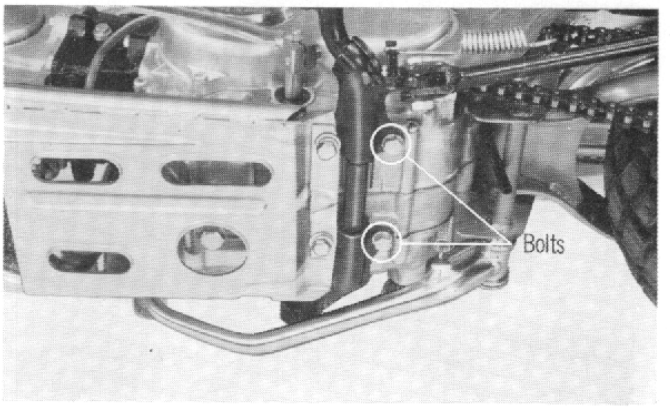


Fig. 93

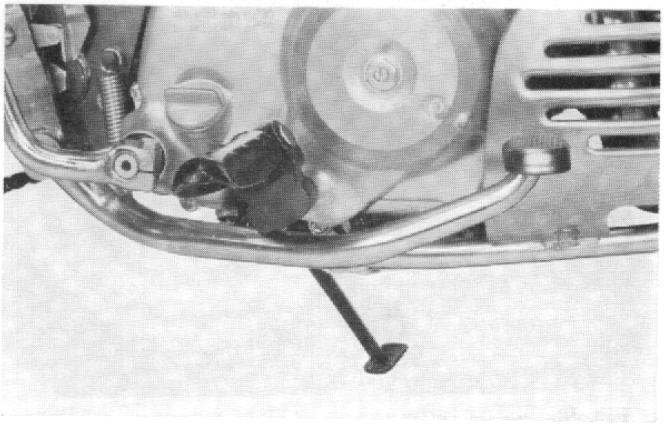


Fig. 94

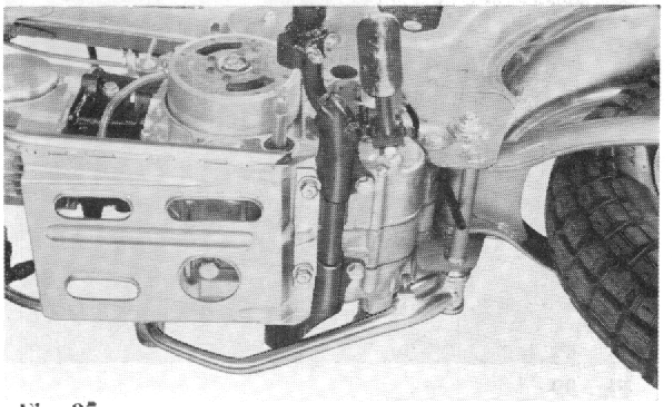


Fig. 95

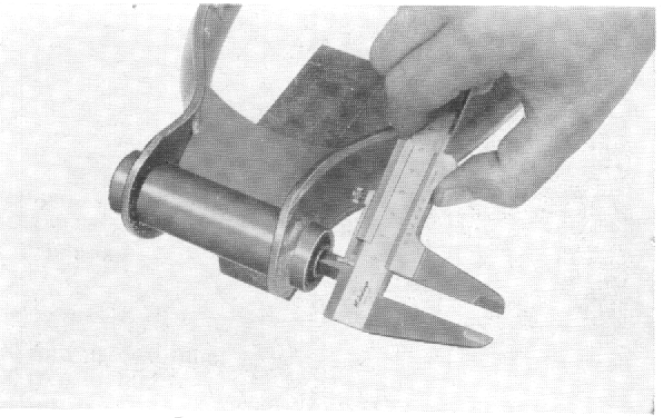


Fig. 96

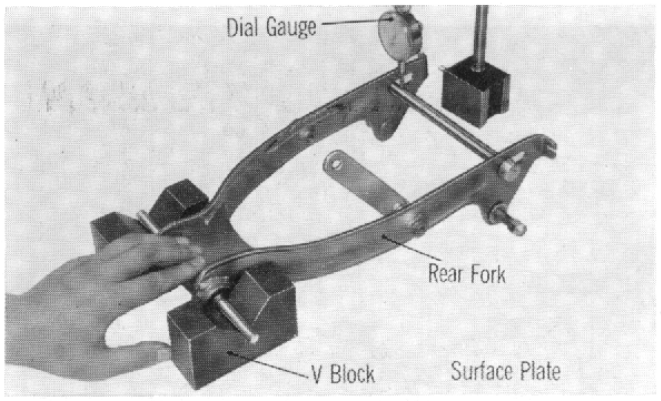


Fig. 97

(2) Check the rear fork for twist and deformation. If twist is over 0.040 in. (1 mm) or the part is defective, replace with a new part. **(Fig. 97)**

(3) After reassembly, check L and R chain tension adjuster, they should both be set to the same aligment marks. Improper adjustment will affect the steerability. (Fig. 99)

c. **Reassembly**

The reassembly of the rear fork will be performed in the reverse order of the disassembly.

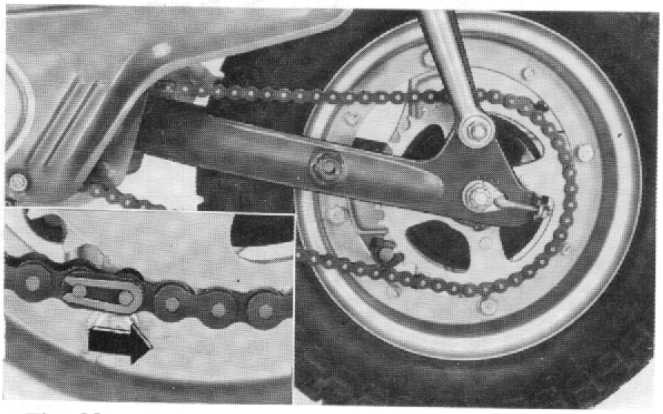


Fig. 98

4.9 Drive Chain

(1) The drive chain should be so connected that the closed end of the link clip should point toward the direction of the normal chain rotation.

(2) Inspect the drive chain for wear and damages. **(Fig. 98)**

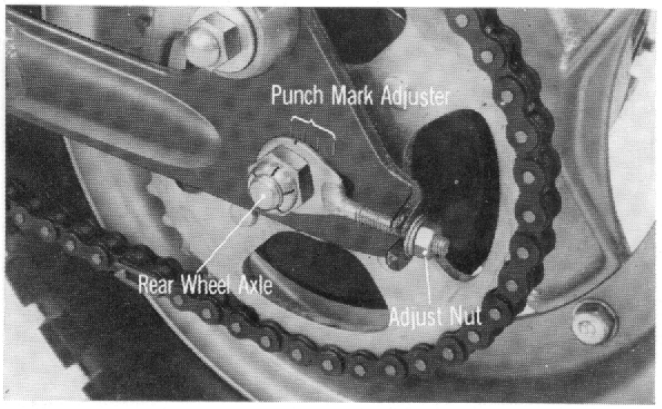


Fig. 99

(3) Whenever the drive chain has been removed or adjusted, the location of the alignment punch mark on the adjuster in respect to the marking on the rear fork must be the same on the both sides.

The chain slackness should be adjusted to 0.040~0.080 in. (1~2 cm.)

The chain must be replaced if it can be no more adjusted by the adjuster because it becomes excessively loose.

4.10 Air Cleaner

The air cleaner case is mounted on the engine hung from the frame. As an air cleaner element, foamed polyurethane is utilized, but in order to provide more effective filtering ability, this cleaner element is used with oil dipped.

(1) The air cleaner element can be removed by loosening the cap nut.
(2) A clogged air filter should be cleaned with gasoline and compressed air.
(3) Whenever the air filter element is replaced or cleaned, immerse it with oil specified as SAE 10 W 30 and then wring with hand lightly so that approximately 20 gr. of oil will be thus soaked.

Fig. 100

5. FLYWHEEL A. C. GENERATOR AND IGNITION COIL

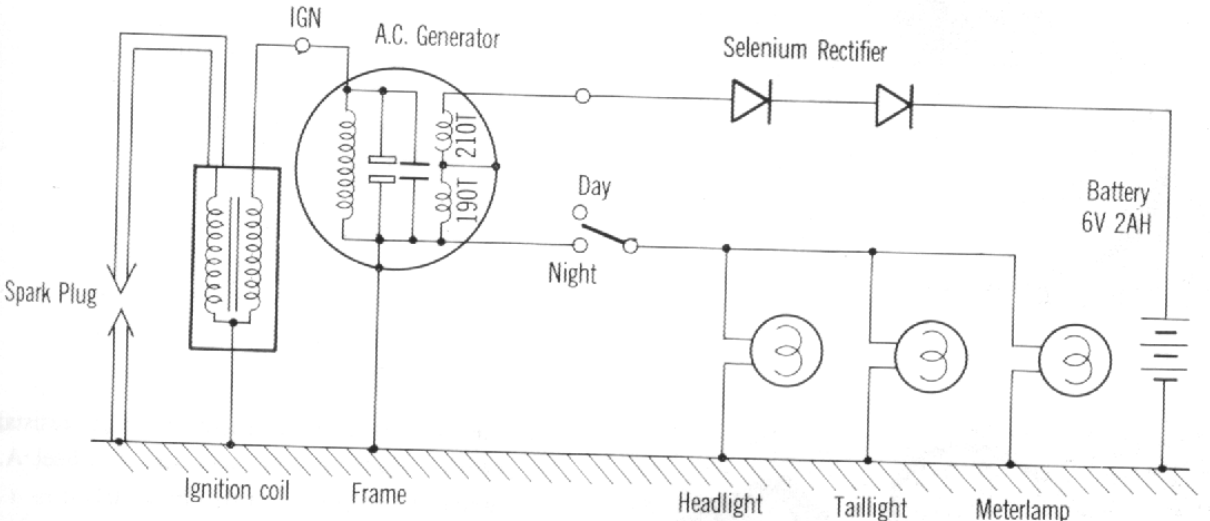


Fig. 101

5.1 A. C. Generator

(1) Direction of rotation
Left hand rotation when viewed from the installing postion.

(2) Charging performance
Selenium rectifier (half-wave rectification), 6 V, 2 AH battery used. (Terminal voltage 6. 5 V)
Charge starting at 1000 R.P.M. at day time.
Charge starting at 1000 R P.M. at night.

(3) Night operating load
Ignition coil+15 W+3 W+1. 5 W
Charging rate : 0. 4±0. 2 A at 4000 rpm
0. 7±0. 3 A at 8000 rpm

(4) Day operating load
Ignition
Charging rate : 1. 5±0. 3 A at 4000 rpm
2. 4±0. 3 A at 8000 rpm

Item	Specification
Sparking performances (assembled coil)	Over 6 mm with 3 needle spark gap, at 3000 rpm Over 8 mm with 3 needle sparkgap, at 8000 rpm~11, 000 rpm
Lighting performance	With 15 W+3 W+1. 5 W load connected over 5. 2 V at 2. 500 rpm below 9, 0 V at 8000 rpm
Charging performance Day operation Night operation	 Charge starting at below 1. 000 rpm at day time Charge starting at below 1. 000 rpm at night
Breaker	Contact pressure 750±100 g, point gap 0. 35±0. 05 mm (0. 020±0. 0020 in)
Governor	Advance 25° (constant)

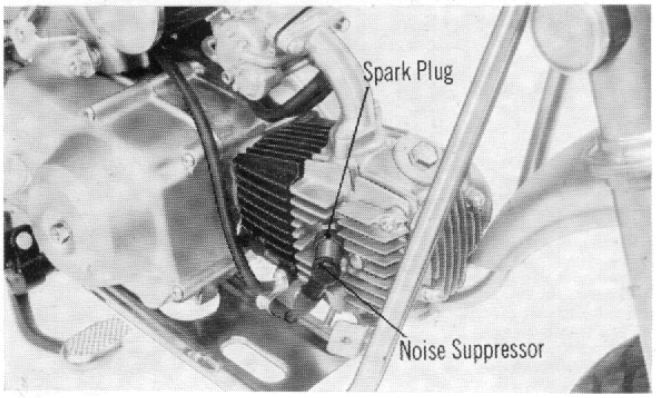


Fig. 102

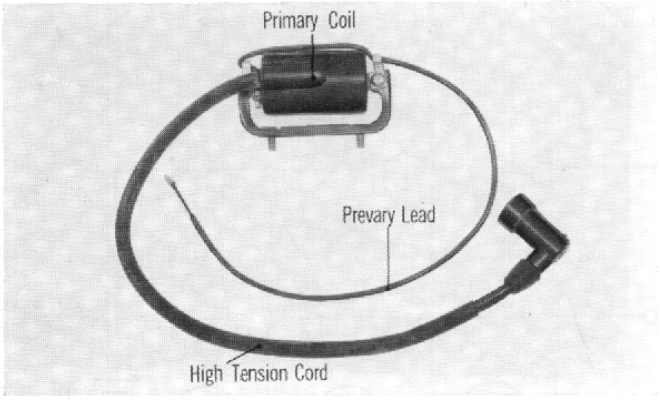


Fig. 103

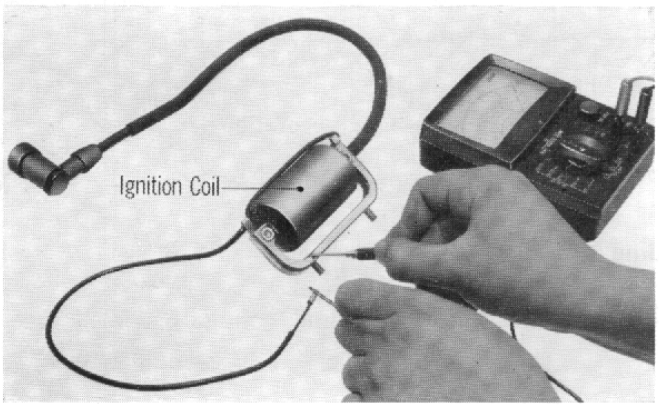


Fig. 104

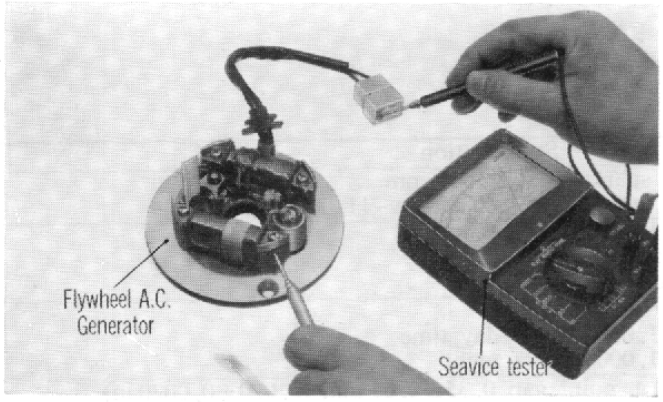


Fig. 105

5.2 Inspecting sparking performance

The flywheel A. C. generator and an externally mounted ignition coil is equipped. A simple method of determing serviceability of the ignition coil is made by the following methods.

(1) The most simple method is to remove the spark plug and perform the starting procedure with the spark plug grounded to the engine. When a strong spark of bluish white color is produced, it is an indication of satisfactory ignition coil and flywheel A. C. generator (Fig. 102).

If no or weak spark is produced, it is an indication of defective primary coil of either the ignition coil or flywheel A. C. generator.

(2) Another method is to measure the resistance of the ignition coil and the flywheel A. C. generator primary coil. (Fig. 104)

1. Primary coil: Resistance between primary black leads and case should be approximately 2.3~2.1 Ω.
2. Secondary coil: Resistance between high tension lead and ground should be approximately 9~11 Ω.

When the resistance measurement across the flywheel A. C. generator primary coil is approximately 1.3 Ω lower than the above value, the cause may be a short or grounding; an infinite resistance would indicate an open circuit.

Caution:

Resistance measurment of the primary coil must be made with the breaker points opened and the condenser lead wire disconnected because a leaky condenser will give an improper indication.

(3) Inspecting the selenium rectifier

a. Disconnect the lead wire from the rectifier terminal.

b. Measuring in the normal direction. Connect the ⊕ side of the tester "X" terminals and the white lead of the selenium rectifier with test lead, connect the ⊖ side of the tester "X" terminals and the red lead of the rectifier and then measure the resistance.
The selenium rectifier is in good condition in the normal direction if it measures less than 30Ω **(Fig. 106)**

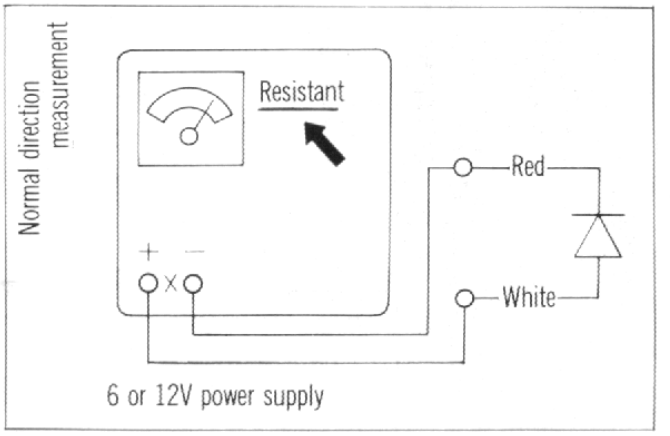


Fig. 106

c. Measuring in the reverse direction. Perform the measurement in the same manner as for the normal direction measurement but with the tester "X" terminals connected in reverse, the ⊖ connected to the white lead of the selenium rectifier and the ⊕ side to the red lead of the rectifier. The selenium rectifier is in good condition in the reverse direction if it measures over 2000Ω **(Fig. 107)**
When the above test is performed the tester must be so set that the internal resistance within the tester be 100 Ω

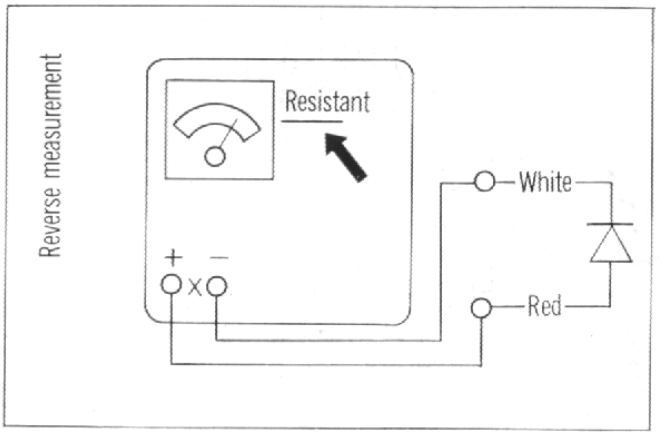
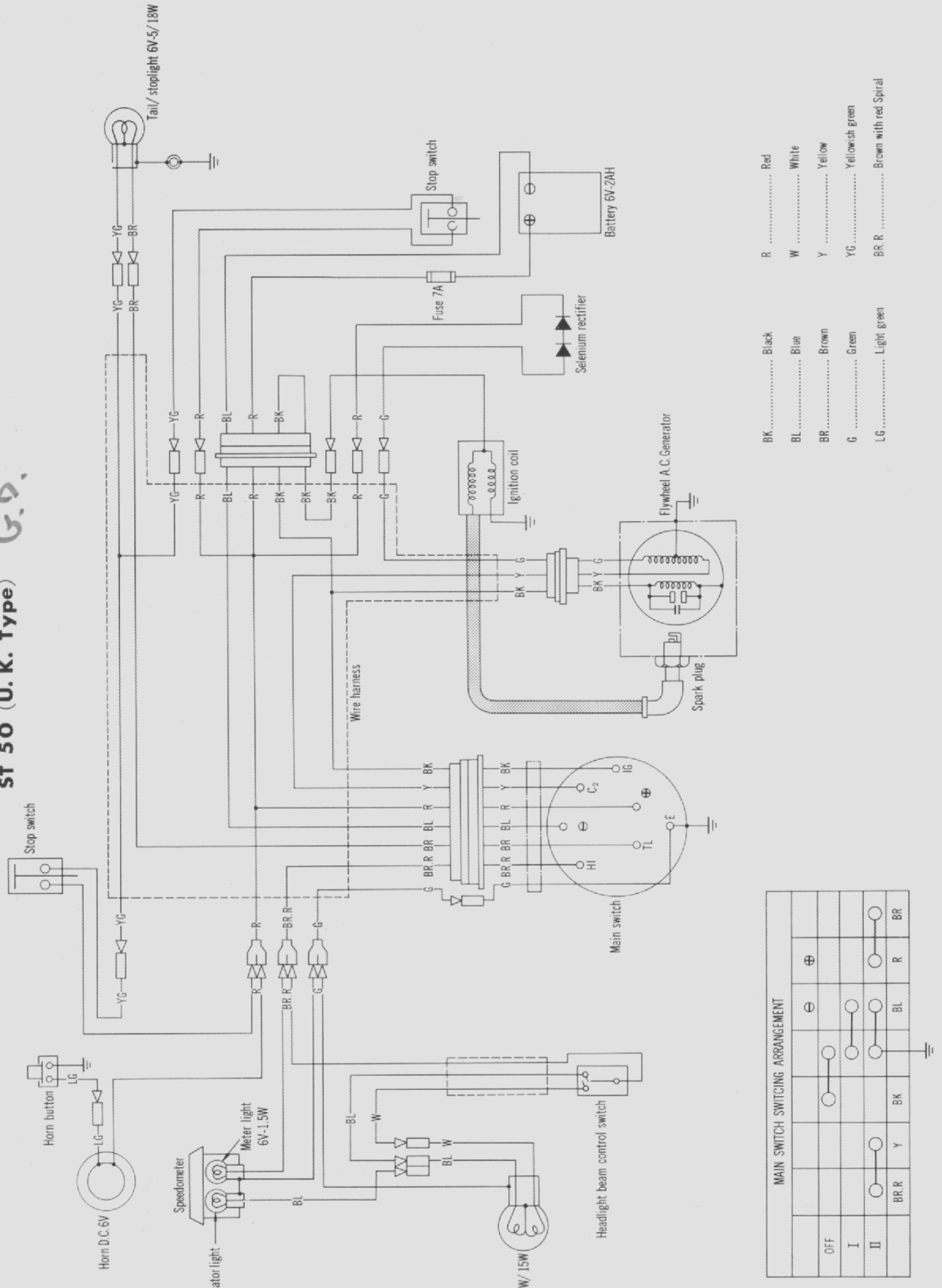


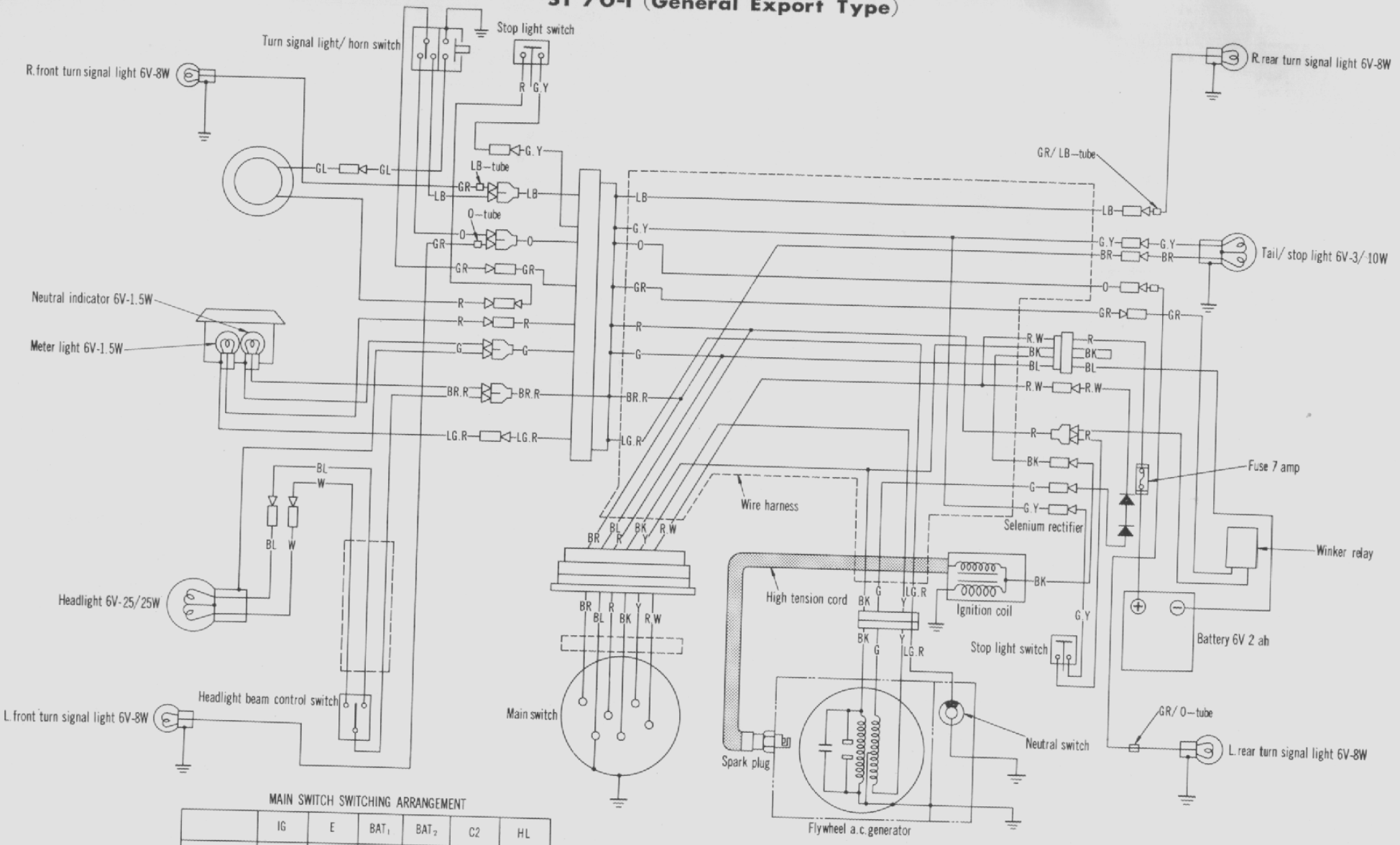
Fig. 107

(4) Checking the condition of the selenium rectifier as described above, the low resistance in the normal direction and a high resistance in the reverse direction indicates a good condition of the selenium rectifier.
Note:
The service tester will give a condition indication of the selenium rectifier, however, since the true characteristics will vary with the applied voltage and wave form, an electrical test should be performed by a specialist in accordance with the specification.

6. WIRING DIAGRAM



ST 70-I (General Export Type)

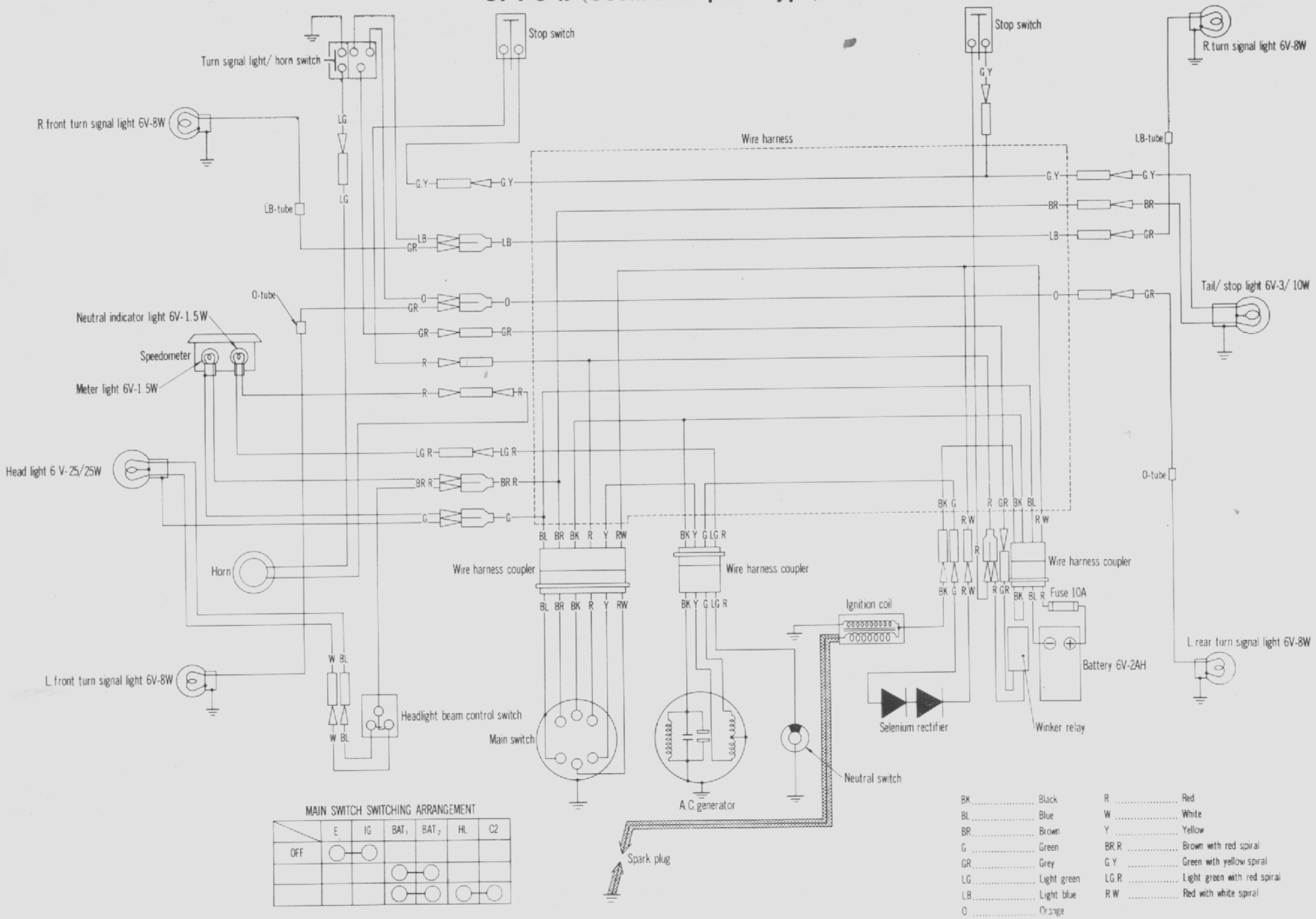


MAIN SWITCH SWITCHING ARRANGEMENT

	IG	E	BAT_1	BAT_2	C2	HL
OFF	○	○				
I			○	○		
II			○	○	○	○

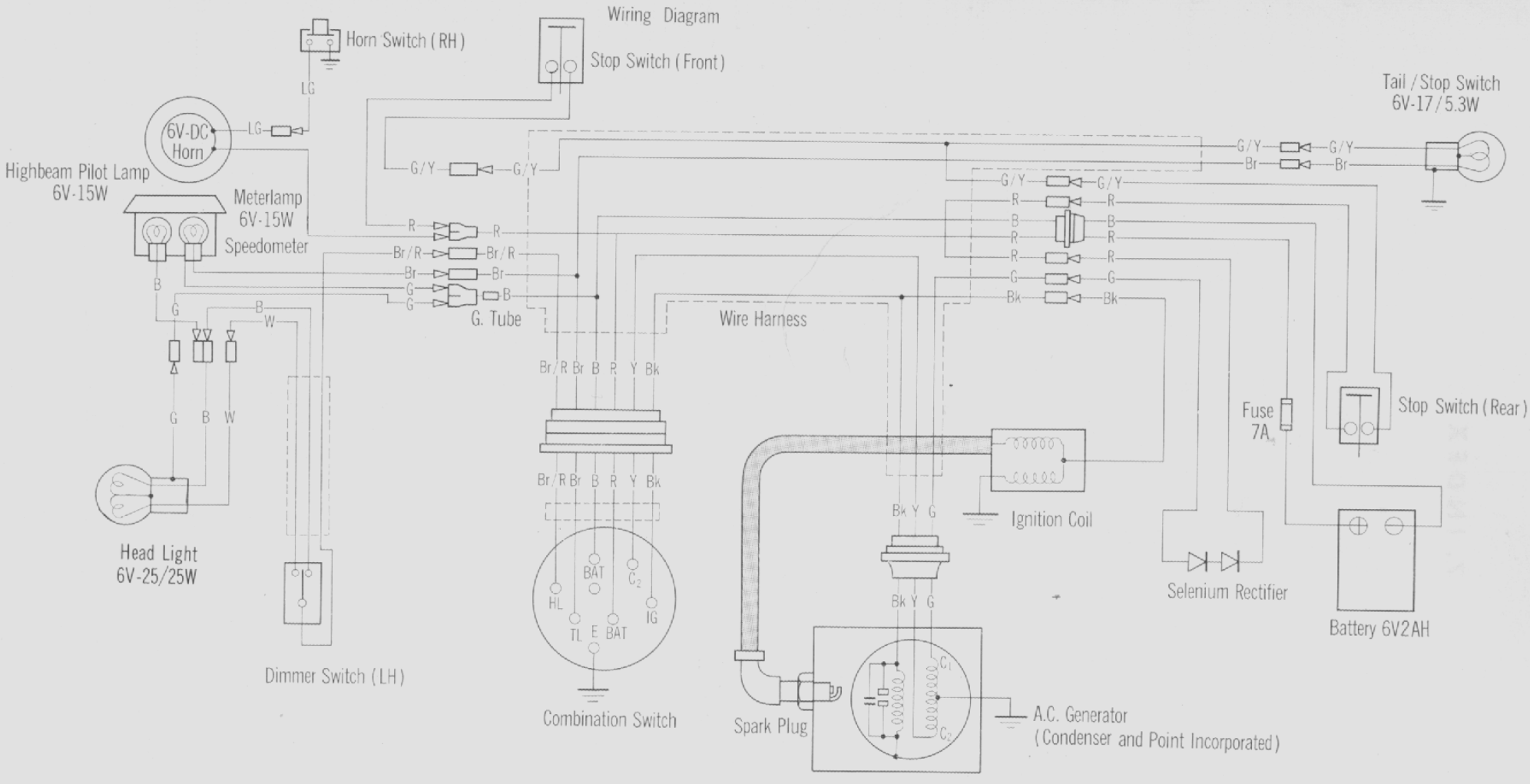
BK	Black
BL	Blue
BR	Brown
G	Green
GR	Gray
LB	Light blue
LG	Light green
O	Orange
R	Red
W	White
Y	Yellow

ST 70-II (Geenral Export Type)



CT 70 (U.S.A. Type)

Wiring Diagram



	Combination Switching diagram						
	HL	C_2	IG	E	BAT ⊖	BAT ⊕	TL
OFF			○—○				
I				○—○			
II	○—○			○—○		○—○	
Cord Color	BR/R	Y	BK		B	R	R

W	White	LB	Light Blue
B	Blue	LG	Light Green
O	Orange	Y/R	Yellow / Red
Y	Yellow	LG/R	Light Green / Red
Gr	Grey	B/R	Blue / Red
Bk	Black	Bk/W	Black / White
G	Green	Br/W	Brown / White
R	Red	Y. Tube	Yellow Tube
Br	Brown	LG. Tube	Light Green Tube
P	Pink	R. Tube	Red Tube
HCS	Headlight Control Switch		

7. INDEX