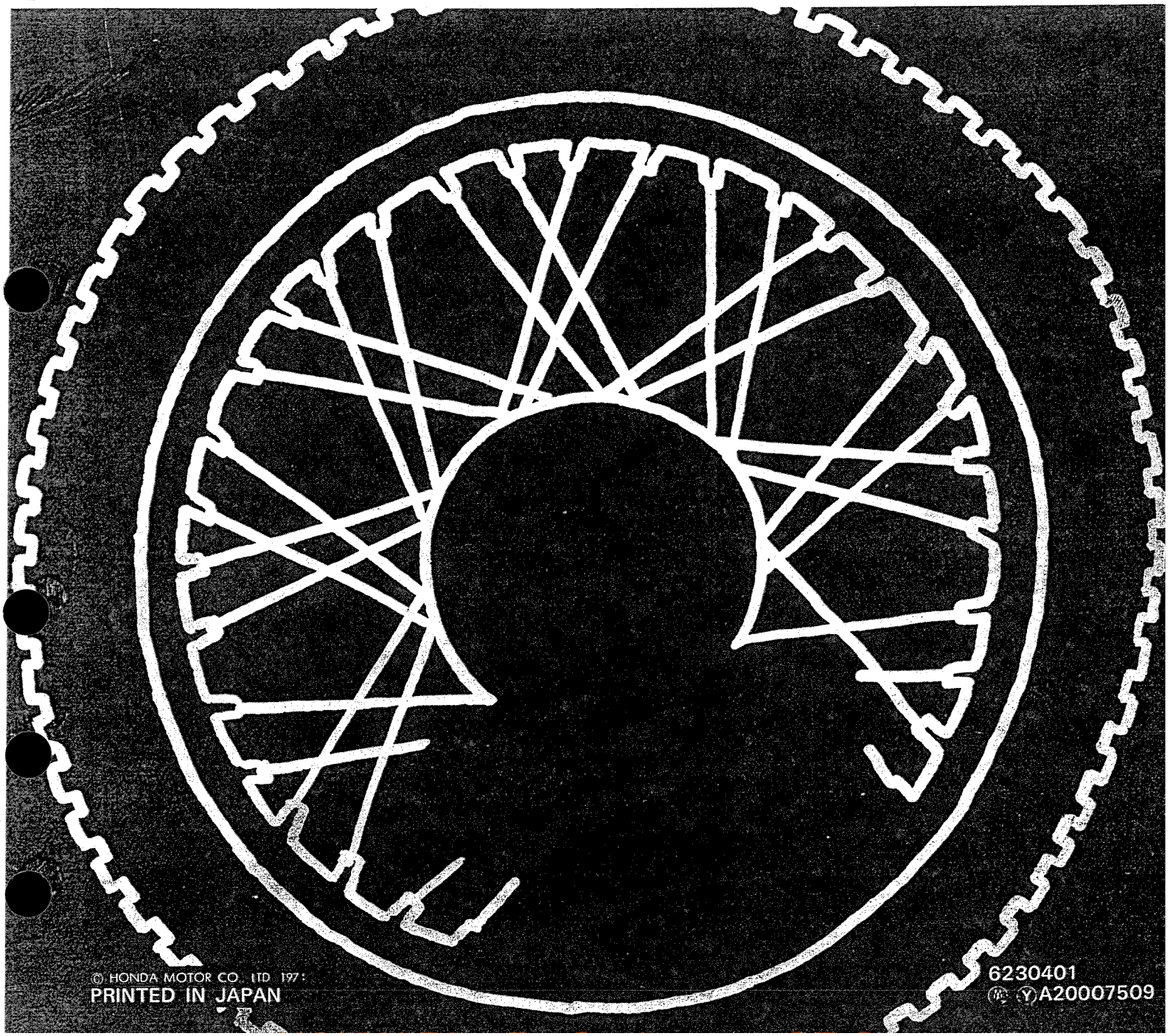
SHOP MANUAL

HONDA

125・175

CB125・175
CL125・175



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FOREWORD

This Shop Manual is a servicing guide for the CB125, CL125, CB175 and CL175.

The Manual has been prepared using the CB175 and CL175 as the basic models, however, the information contained will apply equally well to all models. There are minor differences among the models, primarily in the engines; these differences have been specificially noted for the CB125 and CL125.

This Shop Manual is applicable to all model serial numbers shown below and subsequent.

CB125K1	Engine No. 2000011~
	Frame No. 2000000~
CB125K2 (General Export Type)	
	Engine No. 3000001~
	Frame No. 3000001~
CB125K3 (General Export Type)	
	Engine No. 4000001~
	Frame No. 4000001~
CL125K1	Engine No. 2000001~
	Frame No. 2000001~
CL125K3 (General Export Type)	
	Engine No. 4000001~
	Frame No. 4000001~
CB175	Engine No. 1000001~
	Frame No. 1000001~
CB175K3	Engine No. 4000001~
	Frame No. 4000001~
CB175K4	Engine No. 5000001~
	Frame No. 5000001~
CL175	Engine No. 1000001~
	Frame No. 1000001~
CL175K3	Engine No. 4000001~
	Frame No. 4000001~
CL175K4	Engine No. 5000001~
	Frame No. 5000001~

To ensure proper servicing, the special tools must be used and all repairs made to the specified tolerances.

The information peculiar to CB/CL125, 175 revised models is compiled at the back of this publication as a supplement.

June 25, 1974

HONDA MOTOR CO., LTD.

Service Publication Office

FEATURES

ENGINE

1. **Chain driven overhead camshaft**
   Assures quieter operation, due to the silent chain drive, and a more efficient higher speed engine resulting from the elimination of power loss.
2. **Dual oil filtering system**
   Provides only highly cleaned oil to lubricate the moving parts of the engine to greatly extend the trouble free engine life.
3. **Constant-meshed transmission gears**
   Make possible smooth and effortless gear change.
4. **Variable venturi carburetor**
   Provides economical operation and greater power output at all speeds.

FRAME

1. The frame main unit is made of welded high strength steel tubing of backbone design for lightness and rugged service.
2. Front wheel is mounted on an oil dampened telescoping fork which provides superb handling and good stability. Rear wheel is on a swing arm pivoted about plain bearings for increase rigidity and suspended on cushions provided with three stage load adjustments.
3. The CL models have a wide raised handle mounted on rubber for comfort. Semi-raised handle is mounted on the CB models.
4. Block tread pattern tire is installed on the rear wheel of the CL models for good road holding on bad roads.
5. All lights are used throughout for greater safety, and their operating switches are all mounted on the handle bar where they are accessible without moving the hands.
6. Front wheel brake is of the two leadings type for greatest braking efficiency.
7. All protruding parts are designed with generous radius and sharp corners have been eliminated to prevent injuries to the rider.

CONTENTS

1. SPECIFICATIONS

CB175 (U.S.A. Type)

mm (in)

Item	K 0	K 3	K 4
DIMENSION			
Overall length	1,975 (77.8)	1,990 (78.35)	1,975 (77.8)
Overall width	745 (29.3)	Same as left	Same as left
Overall height	1,015 (40.0)	1,040 (40.94)	1,015 (40.0)
Wheel base	1,275 (50.2)	1,280 (50.39)	1,275 (50.2)
Seat height	——	770 (30.32)	Same as left
Ground clearance	145 (5.7)	167 (6.57)	Same as left
Dry weight	129 kg (284 lbs)	Curb weight 127 kg (271 lbs)	Curb weight 136 kg (299 lbs)
FRAME			
Type	Backbone	Semi double cradle tubler type	Same as left
F. suspension, travel	Telescopic fork	Same as left	Same as left
R. suspension, travel	Swing arm type	Same as left	Same as left
F. tire size, type	2.50–18 (4 PR)	2.75–18–4	Same as left
R. tire size, type	2.75–18 (4 PR)	3.00–18–4	Same as left
F. brake	Internal expanding shoe	Same as left	Same as left
R. brake	Internal expanding shoe	Same as left	Same as left
Fuel capacity	10.5 lit (2.8 US gal., 2.3 Imp. gal.)	Same as left	10.0 lit. (2.6 US gal., 2.2 Imp. gal.)
Fuel reserve capacity	——	2.5 lit. (5.28 US pt, 4.46 Imp. pt)	Same as left
Caster angle	64°	Same as left	Same as left
Trail length	86 (3.38)	Same as left	Same as left
ENGINE			
Type	Air cooled 4 stroke cycle	Same as left	Same as left
Cylinder arrangement	Twin, 30° inclined from vertical	Twin parallel 8° inclined from vertical	Same as left
Bore and stroke	52×41 (2.047×1.615)	Same as left	Same as left
Displacement	174 cc (10.65 cu-in)	Same as left	Same as left
Compression ratio	9.0 : 1	Same as left	Same as left
Valve train	Chain driven overhead camshaft	Same as left	Same as left
Maximum horsepower	20.0 PS 10,000 rpm	Same as left	Same as left
Maximum torque	1.5 kg-m (10.8 ft. lbs)	Same as left	Same as left
Oil capacity	1.5 lit. (3.2 US pts, 2.7 Imp. pts)	Same as left	Same as left
Lubrication system	Forced pressure & wet sump	Same as left	Same as left

mm (in)

Item		K 0	K 3	K 4
Intake valve	Opens	10°	10°	Same as left
	Closes	40°	30°	Same as left
Exhaust valve	Opens	40°	40°	Same as left
	Closes	10°	10°	Same as left
Valve tappet clearance		0.05 (0.002)	Same as left	Same as left
Idle speed		1,200 rpm	Same as left	Same as left
DRIVE TRAIN				
Clutch		Multiple wet plates	Same as left	Same as left
Transmission		Constant meshed gears	Same as left	Same as left
Primary reduction		3.700	Same as left	Same as left
Gear ratio I		2.769	Same as left	Same as left
Gear ratio II		1.882	Same as left	Same as left
Gear ratio III		1.450	Same as left	Same as left
Gear ratio IV		1.173	Same as left	Same as left
Gear ratio V		1.000	Same as left	Same as left
Final reduction		2.500	2.470	Same as left
Gear shift pattern		Left food operated return type	Same as left	Same as left
ELECTRICAL				
Ignition		Battery and ignition coil	Same as left	Same as left
Starting system		Motor and kick	Same as left	Same as left
Alternator		A.C. generator rotor type	Same as left	Same as left
Battery capacity		12V–9AH	Same as left	Same as left
Spark plug		D–8HS, X–22FS	D–8HS	Same as left

CL175 (U.S.A. Type)

mm (in)

Item	K 0	K 3	K 4
DIMENSION			
Overall length	1,975 (77.8)	1,990 (78.3)	Same as left
Overall width	745 (29.3)	820 (32.3)	Same as left
Overall height	1,015 (40.0)	1,080 (42.5)	Same as left
Wheel base	1,275 (50.2)	1,290 (50.8)	Same as left
Seat height	——	790 (31.1)	Same as left
Ground clearance	145 (5.7)	200 (7.8)	Same as left
Dry weight	129 kg (284 lbs)	Curb weight 124 kg (273.4 lbs)	Curb weight 136 kg (300 lbs)
FRAME			
Type	Backbone	Semi-double cradle tubler type	Same as left
F. suspension, travel	Telescopic fork	Same as left	Same as left
R. suspension, travel	Swing arm	Same as left	Same as left
F. tire size, type	2.50–18 (4 PR)	3.00–19–4	Same as left
R. tire size, type	2.75–18 (4 PR)	3.00–18–4	Same as left
F. brake	Internal expanding shoe	Same as left	Same as left
R. brake	Internal expanding shoe	Same as left	Same as left
Fuel capacity	9.5 lit. (2.5 US gal., 2.1 Imp. gal.)	9.0 lit. (2.38 US gal., 1.98 Imp. gal.)	Same as left
Fuel reserve capacity		1.5 lit. (3.17 US pt, 2.64 Imp. pt)	Same as left
Caster angle	64°	Same as left	Same as left
Trail length	86 (3.38)	90 (3.5)	Same as left
ENGINE			
Type	Air cooled 4 stroke cycle	Same as left	Same as left
Cylinder arrangement	Twin, 30° inclined from vertical	Twin parallel 8° inclined from vertical	Same as left
Bore and stroke	52×41 (2.047×1.615)	Same as left	Same as left
Displacement	174 cc (10.65 cu-in)	Same as left	Same as left
Compression ratio	9.0 : 1	Same as left	Same as left
Valve train	Chain driven overhead camshaft	Same as left	Same as left
Maximum horsepower	20 PS 10,000 rpm	Same as left	Same as left
Maximum torque	1.5 kg-m (10.8 ft. lbs) 8,500 rpm	Same as left	Same as left
Oil capacity	1.5 lit. (3.2 US pts, 2.7 Imp. pts)	Same as left	Same as left
Lubrication system	Forced pressure & wet sump	Same as left	Same as left

mm (in)

Item		K 0	K 3	K 4
Intake valve	Opens	10°	10°	Same as left
	Closes	40°	30°	Same as left
Exhaust valve	Opens	40°	40°	Same as left
	Closes	10°	10°	Same as left
Valve tappet clearance		0.05 (0.002)	Same as left	Same as left
Idle speed		1,200 rpm	Same as left	Same as left
DRIVE TRAIN				
Clutch		Multiple wet plates	Same as left	Same as left
Transmission		Constant meshed gears	Same as left	Same as left
Primary reduction		3.700	3.700	Same as left
Gear ratio I		2.769	Same as left	Same as left
Gear ratio II		1.882	Same as left	Same as left
Gear ratio III		1.450	Same as left	Same as left
Gear ratio IV		1.173	Same as left	Same as left
Gear ratio V		1.000	Same as left	Same as left
Final reduction		2.375	Same as left	Same as left
Gear shift pattern		Left foot operated return type	Same as left	Same as left
ELECTRICAL				
Ignition		Battery and ignition coil	Same as left	Same as left
Starting system		Motor and kick	Same as left	Same as left
Alternator		A.C. generator rotor type	Same as left	Same as left
Battery capacity		12V–9AH	Same as lest	Same as left
Spark plug		D–8HS, X–22FS	D–8HS	Same as left

CB125

mm (in)

Item	K 0	K 2	K 3
DIMENSION			
Overall length	1,975 (77.8)	Same as left	1,980 (77.95)
Overall width	745 (29.3)	Same as left	Same as left
Overall height	990 (39.0)	Same as left	1,040 (40.94)
Wheel base	1,275 (50.2)	Same as left	1,280 (50.39)
Seat height	——	780 (30.7)	790 (31.10)
Ground clearance	145 (5.7)	Same as left	140 (5.51)
Dry weight	115 kg (253.6 lbs)	Curb weight 118 kg (260.2 lbs)	Curb weight 119 kg (262.4 lbs)
FRAME			
Type	Backbone pipe frame	Same as left	Semi double cradle tubler type
F. suspension, travel	Telescopic fork	Same as left	Same as left
R. suspension, travel	Swing arm type	Same as left	Same as left
F. tire size, type	2.50–18–4	Same as left	Same as left
R. tire size, type	2.75–18–4	Same as left	Same as left
F. brake	Internal expanding shoe	Same as left	Same as left
R. brake	Internal expanding shoe	Same as left	Same as left
Fuel capacity	10.5 lit. (2.8 US gal., 2.8 Imp. gal.)	10.0 lit. (2.6 US gal., 2.2 Imp. gal.)	Same as left
Fuel reserve capacity	——	2.5 lit. (5.3 US pt, 4.4 Imp. pt)	Same as left
Caster angle	64°	Same as left	Same as left
Trail length	86 (3.39)	Same as left	Same as left
ENGINE			
Type	Air cooled 4 stroke cycle	Same as left	Same as left
Cylinder arrangement	Twin, 30° inclined from vertical	Same as left	Swin parallel, 8° inclined from vertical
Bore and stroke	44×41 (1.732×1.615)	Same as left	Same as left
Displacement	124 cc (7.59 cu-in)	Same as left	Same as left
Compression ratio	9.4 : 1	Same as left	Same as left
Valve train	Chain driven overhead camshaft	Same as left	Same as left
Maximum horsepower	15 PS/11,000 rpm	Same as left	15 PS/10,000 rpm
Maximum torque	1.05 kg-m (7.59 ft lbs) 9,000 rpm	Same as left	10.5 kg-m (7.59 ft. lbs) 8,500 rpm
Oil capacity	1 2 lit. (2.5 US pts, 2.1 Imp. pts)	Same as left	Same as left
Lubrication system	Forced pressure & wet sump	Same as left	Same as left

mm (in)

Item		K 0	K 2	K 3
Intake valve	Opens	5°	Same as left	Same as left
	Closes	30°	Same as left	Same as left
Exhaust valve	Opens	35°	Same as left	Same as left
	Closes	5°	Same as left	Same as left
Valve tappet clearance		0.05 (0.002)	Same as left	Same as left
Idle speed		1,200 rpm	Same as left	Same as left
DRIVE TRAIN				
Clutch		Multiple wet plates	Same as left	Same as left
Transmission		Constant meshed gears	Same as left	Same as left
Primary reduction		3.875	Same as left	Same as left
Gear ratio I		2.615	Same as left	Same as left
Gear ratio II		1.611	1.667	Same as left
Gear ratio III		1.190	1.286	Same as left
Gear ratio IV		0.917	1.043	Same as left
Gear ratio V		——	0.880	Same as left
Final reduction		2.867	3.133	Same as left
Gear shift pattern		Left foot operated return type	Same as left	Same as left
ELECTRICAL				
Ignition		Battery and ignition coil	Same as left	Same as left
Starting system		Motor and kick	Same as left	Same as left
Alternator		A.C. generator rotor type	Same as left	Same as left
Battery capacity		6V–6AH	6V–12AH	Same as left
Spark plug		D–8HS, X–24FS	D–8HS	Same as left

CL125

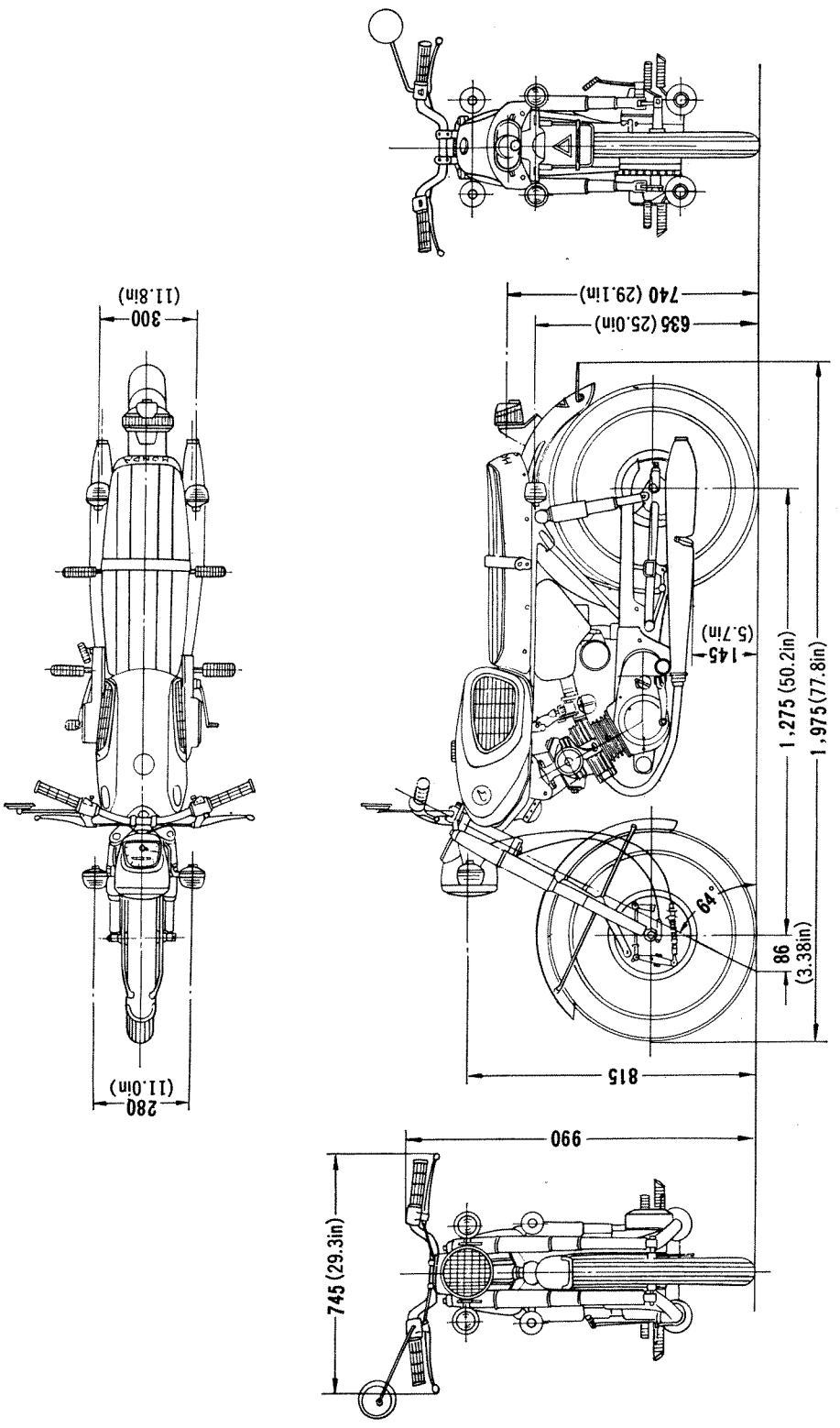
mm (in)

Item	K 0	K 2	K 3
DIMENSION			
Overall length	1,930 (76.0)	Same as left	Same as left
Overall width	830 (32.7)	Same as left	810 (31.89)
Overall height	1,040 (41.0)	1,035 (40.6)	1,030 (40.55)
Wheel base	1,270 (50.0)	Same as left	1,230 (50.39)
Seat height	——	——	——
Ground clearance	150 (5.9)	Same as left	155 (6.1)
Dry weight	117 kg (258 lbs)	Curb weight 115 kg (253.6 lbs)	Same as left
FRAME			
Type	Backbone pipe frame	Same as left	Semi double cradle tubler type
F. suspension, travel	Telescopic fork	Same as left	Same as left
R. suspension, travel	Swing arm type	Same as left	Same as left
F. tire size, type	2.75–18–4	Same as left	Same as left
R. tire size, type	3.00–18–4	Same as left	Same as left
F. brake	Internal expanding shoe	Same as left	Same as left
R. brake	Internal expanding shoe	Same as left	Same as left
Fuel capacity	10.5 lit. (2.8 US gal., 2.3 Imp. gal.)	9.5 lit. (2.5 US gal., 2.1 Imp. gal.)	Same as left
Fuel reserve capacity	——	——	——
Caster angle	64°	Same as left	Same as left
Trail length	86 (3.38)	Same as left	Same as left
ENGINE			
Type	Air cooled 4 stroke cycle	Same as left	Same as left
Cylinder arrangement	Twin, 30° inclined from vertical	Same as left	Twin parallel, 8° inclined from vertical
Bore and stroke	44×41 (1.732×1.615)	Same as left	Same as left
Displacement	124 cc (7.59 cu-in)	Same as left	Same as left
Compression ratio	9.4 : 1	Same as left	Same as left
Valve train	Chain driven overhead camshaft	Same as left	Same as left
Maximum horsepower	14 PS/10,000 rpm	Same as left	Same as left
Maximum torque	1.06 kg-m (7.67 ft. lbs) 8,500 rpm	Same as left	Same as left
Oil capacity	1.2 lit. (2.5 US pts, 2.1 Imp. pts)	Same as left	Same as left
Lubrication system	Pressure & wet sump	Same as left	Same as left

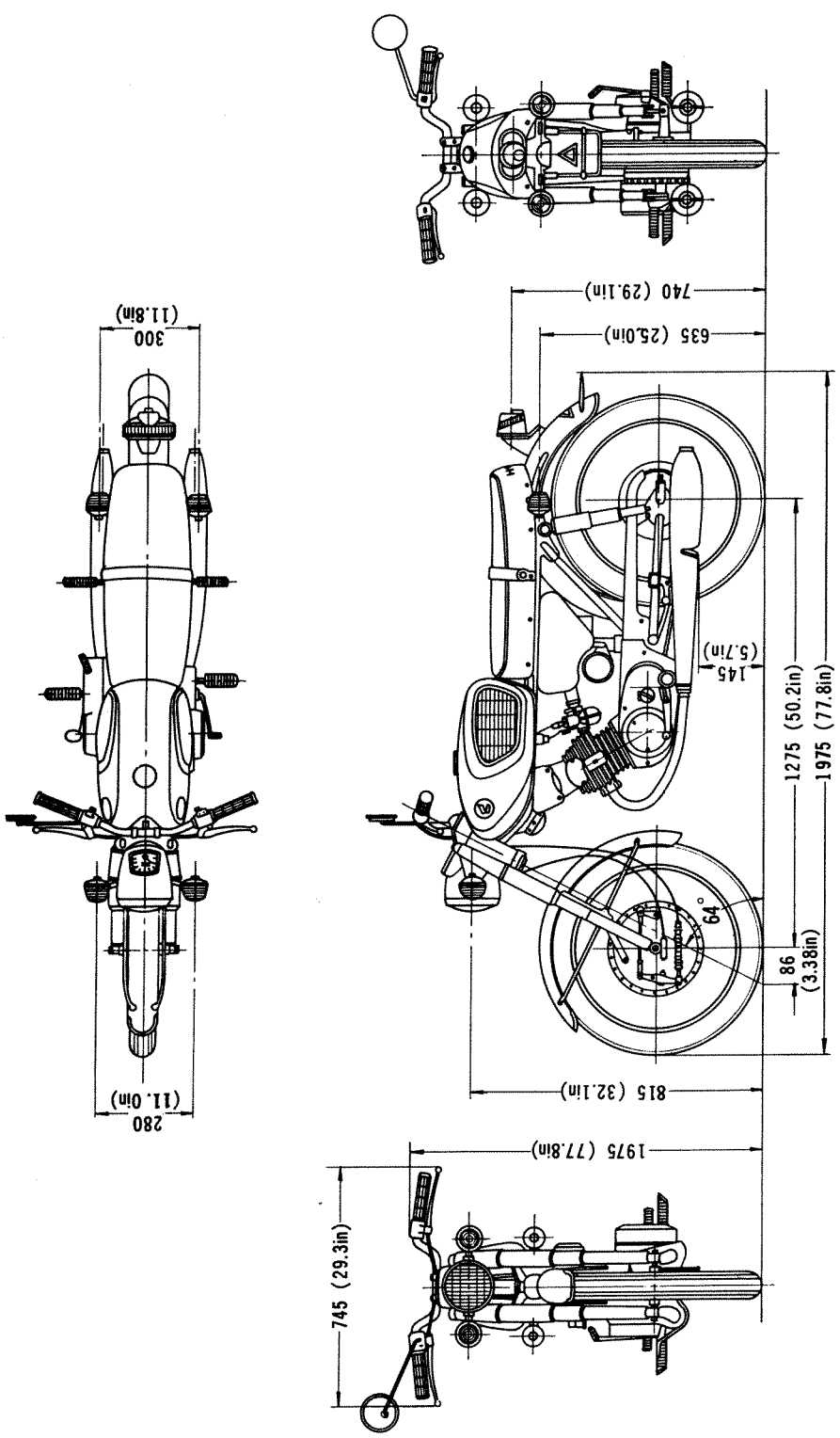
mm (in)

Item		K 0	K 2	K 3
Intake valve	Opens	5°	Same as left	Same as left
	Closes	30°	Same as left	Same as left
Exhaust valve	Opens	35°	Same as left	Same as left
	Closes	5°	Same as left	Same as left
Valve tappet clearance		0.05 (0.002)	Same as left	Same as left
Idle speed		1,200 rpm	Same as left	Same as left
DRIVE TRAIN				
Clutch		Multiple wet plates	Same as left	Same as left
Transmission		Constant meshed gears	Same as left	Same as left
Primary reduction		3.875	Same as left	Same as left
Gear ratio I		2.615	Same as left	Same as left
Gear ratio II		1.611	Same as left	Same as left
Gear ratio III		1.190	Same as left	Same as left
Gear ratio IV		0.917	0.880	Same as left
Gear ratio V		——	——	——
Final reduction		3.000	3.133	Same as left
Gear shift pattern		Left foot operated return type	Same as left	Same as left
ELECTRICAL				
Ignition		Battery and ignition coil	Same as left	Same as left
Starting system		Motor and kick	Same as left	Same as left
Alternator		A.C. generator rotor type	Same as left	Same as left
Battery capacity		6V–6AH	Same as left	Same as left
Spark plug		D–8HS, X–24FS	Same as left	Same as left

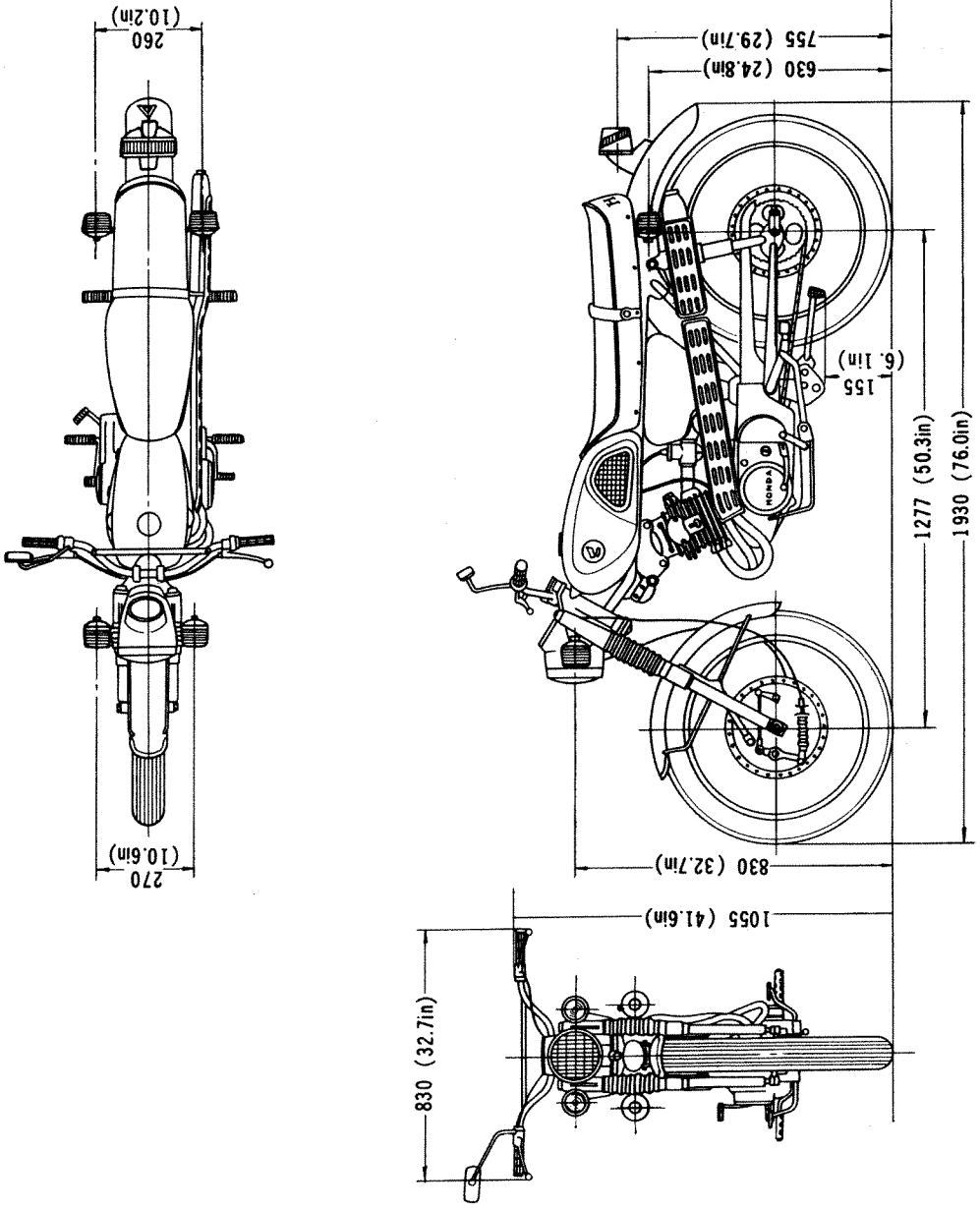
CB125 DIMENSIONAL DRAWING



CB175 DIMENSIONAL DRAWING



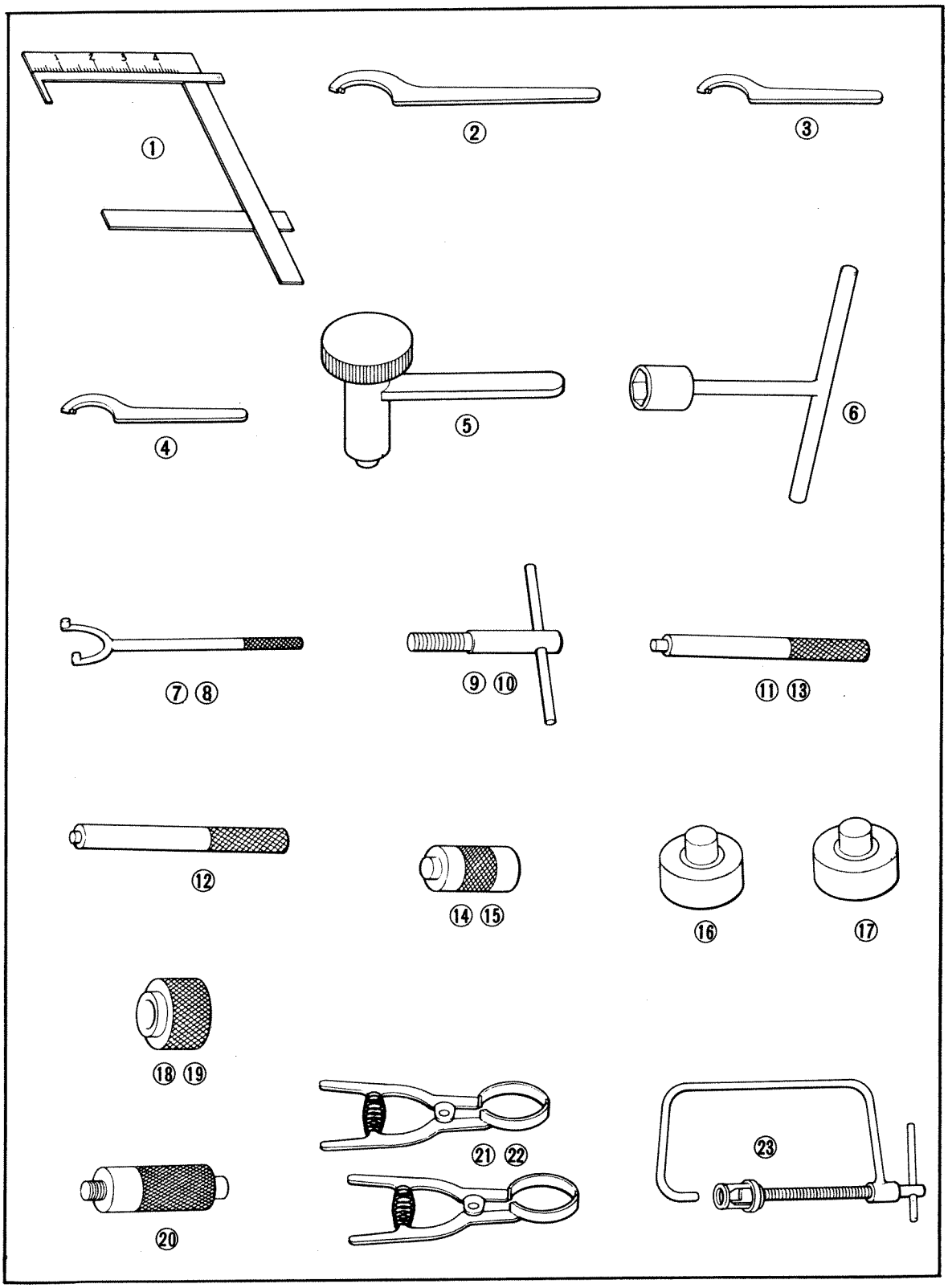
CL175 DIMENSIONAL DRAWING



2. SPECIAL TOOLS

CB125 • 175 ENGINE

No.	Tool No.	Tool Description	Q'ty	CB/CL 125	CB/CL 175	Remarks
①	07401–0010000	Gauge, float level	1	○	○	
②	07902–2000000	Spanner, pin 48 mm	1		○	
③	07902–2400000	Spanner, pin 46 mm	1	○		
④	07902–2500000	Spanner, pin switch	1	○		Main switch
⑤	07908–0010000	Wrench, tappet adjusting	1	○	○	
⑥	07916–2400000	Wrench, lock nut 16 mm	1	○	○	
⑦	07922–2000000	Holder, drive sprocket	1	○		
⑧	07922–2350000	Holder, drive sprocket	1		○	
⑨	07933–2000000	Puller, rotor	1	○		Dynamo
⑩	07933–2160000	Puller, rotor	1		○	Dynamo
⑪	07942–2160100	Driver, valve guide	1		○	
⑫	07942–3290100	Remover, valve guide	1	○	○	
⑬	07942–3290200	Driver, valve guide	1	○		
⑭	07945–2160000	Driver, bearing	1		○	
⑮	07945–2400000	Driver, bearing	1	○		
⑯	07946–2860100	Driver, bearing	1	○		Front wheel
⑰	07946–2860200	Driver, bearing	1	○		Rear wheel
⑱	07947–2300100	Guide, fork seal	1	○		Front fork
⑲	07947–3550000	Guide, fork seal	1		○	Front fork
⑳	07949–2860000	Handle, bearing driver	1	○		
㉑	07954–2000000	Compressor, piston ring	1	○		
㉒	07954–2350000	Compressor, piston ring	1		○	
㉓	07957–3290000	Compressor, valve spring	1	○	○	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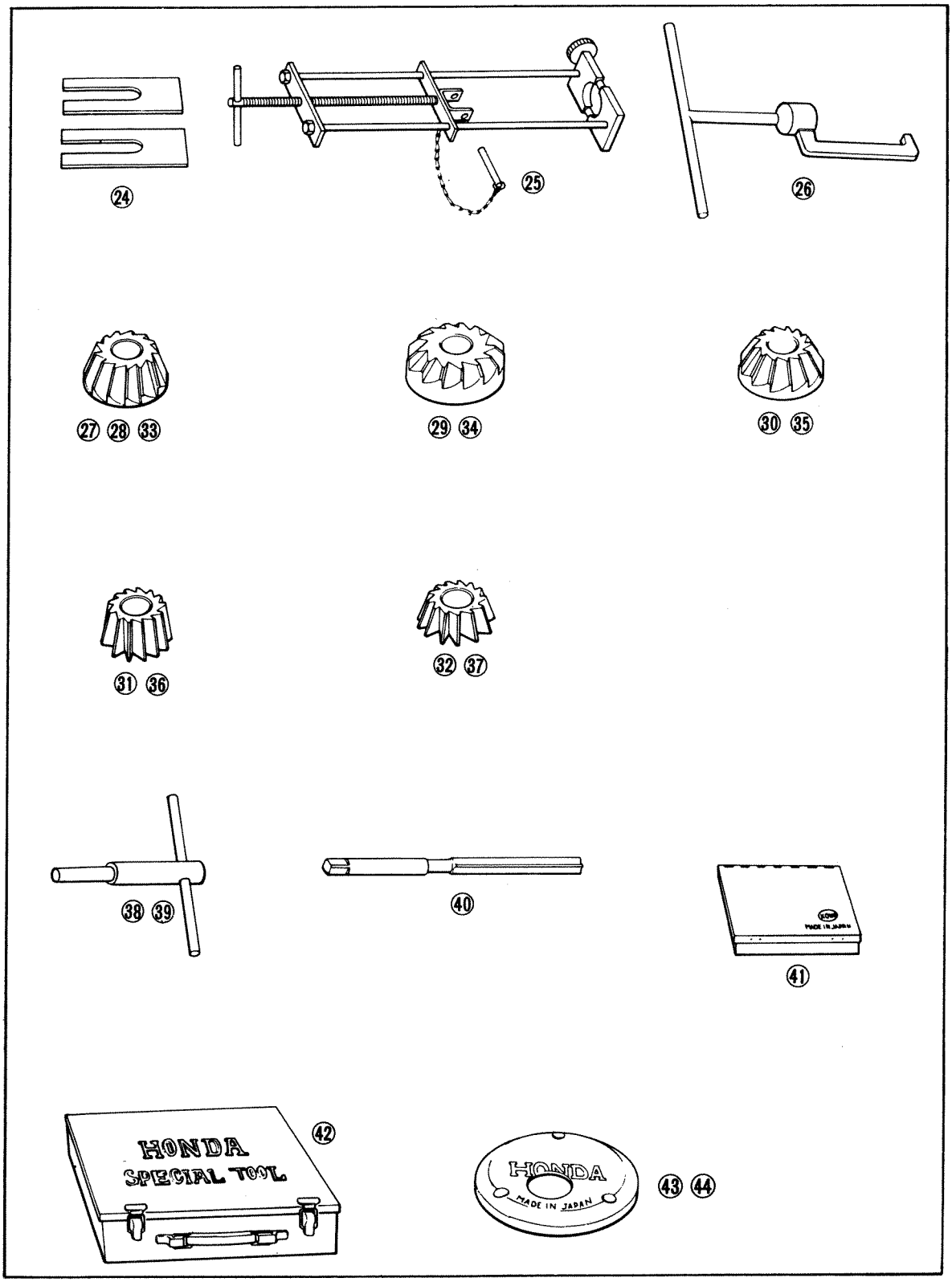
CB125 • 175 FRAME

No.	Tool No.	Tool Description	Q'ty	CB/CL 125	CB/CL 175	Remarks
㉔	07958–2500000	Base, piston	1	○	○	
㉕	07959–3290000	Compressor, shock absorber	1	○	○	
㉖	07973–2300000	Slider, spring	1	○		
㉗	07980–2400100	Cutter, 90° (IN)	1	○		
㉘	07980–2400200	Cutter, 90° (EX)	1	○		
㉙	07980–2400300	Cutter, flat	1	○		
㉚	07980–2400400	Cutter, flat	1	○		
㉛	07980–2160500	Cutter, interior (IN)	1	○		
㉜	07980–2160600	Cutter, interior (EX)	1	○		
㉝	07980–2350100	Cutter, 90°	1		○	
㉞	07980–2350300	Cutter, flat (IN)	1		○	
㉟	07980–2350400	Cutter, flat (EX)	1		○	
㊱	07980–2350500	Cutter, interior (IN)	1		○	
㊲	07980–2350600	Cutter, interior (EX)	1		○	
㊳	07981–2160000	Holder, seat cutter	1	○		
㊴	07981–2350000	Holder, seat cutter	1		○	
㊵	07984–2000000	Reamer, valve guide	1	○	○	
㊶	07797–0510100	Case, seat cutter	1	○	○	
㊷	07797–2920300	Case, special tool	1	○	○	
㊸	07999–2460000	Cover, timing inspection	1	○		
㊹	07999–2350000	Cover, timing inspection	1		○	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HONDA
SPECIAL TOOL
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HONDA
MADE IN JAPAN
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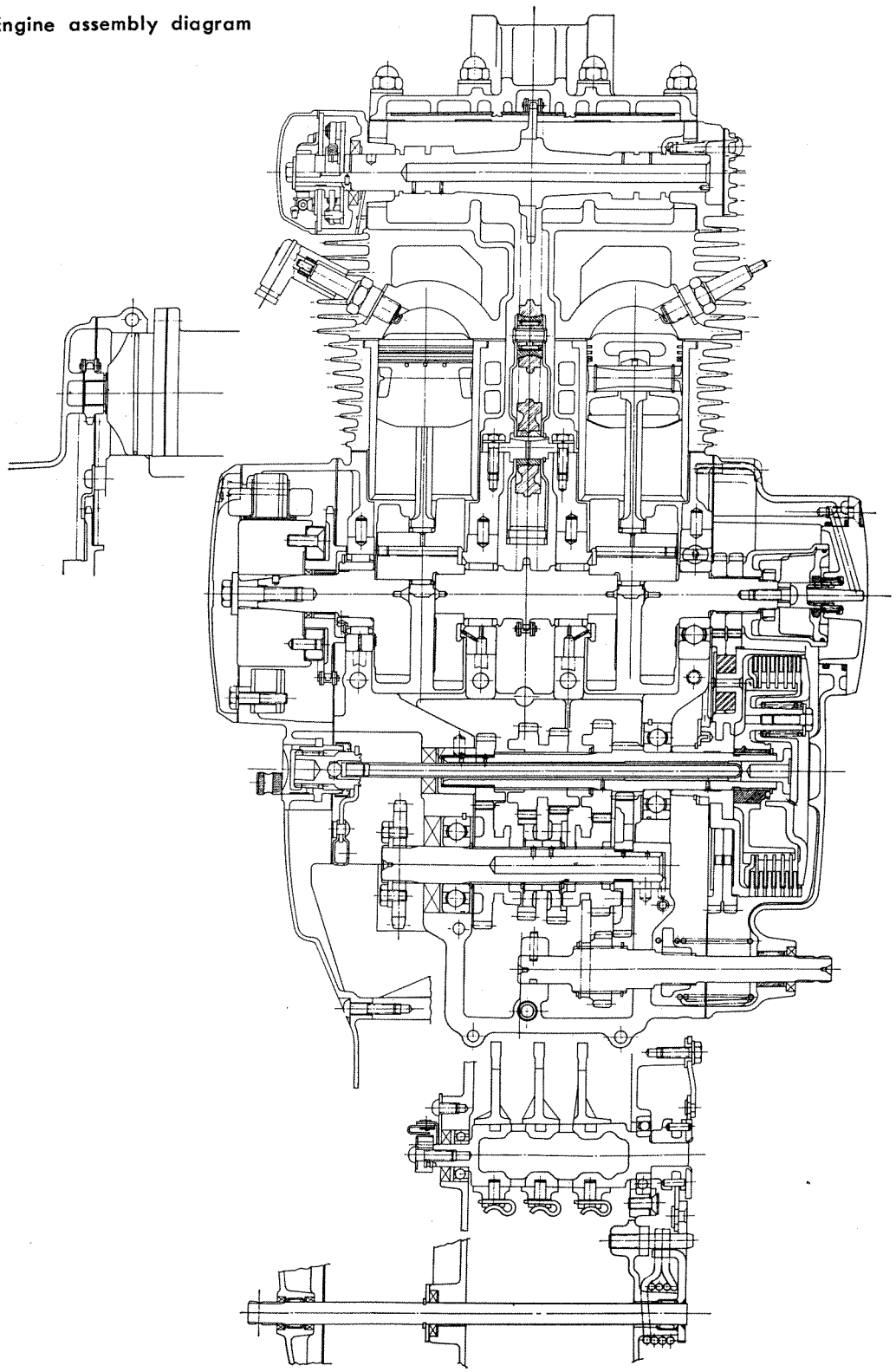
3. ENGINE CB/CL175

Engine assembly diagram



3.1 ENGINE REMOVAL AND INSTALLATION

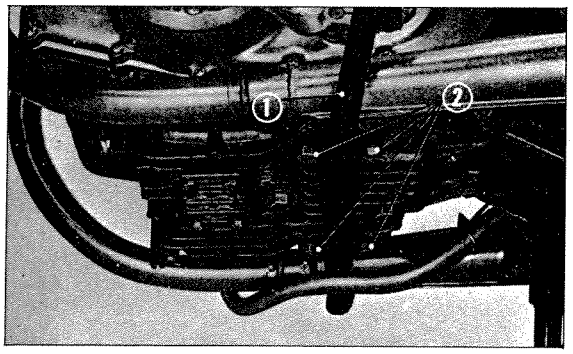
A. Engine Construction

All of the models incorporate the O.H.C. design, driven from the center of the engine by a lightweight chain. This provides the engine with high speed and high power output due to the elimination of the reciprocating movements mechanical losses, and reduction in weight. Further the chain is always maintained in a constant tension by the spring operated automatic tensioner to assure quiet operation and precise valve timing at all speeds.

The lubrication system utilizes a plunger type oil pump, driven through the transmission main shaft to provide lubrication under pressure to all of the primary moving parts of the engine and in conjunction, a screen and a centrifugal filter are incorporated in the system to assure that only highly purified oil is circulated within the engine to minimize the parts wear and attributing to the extended engine life.

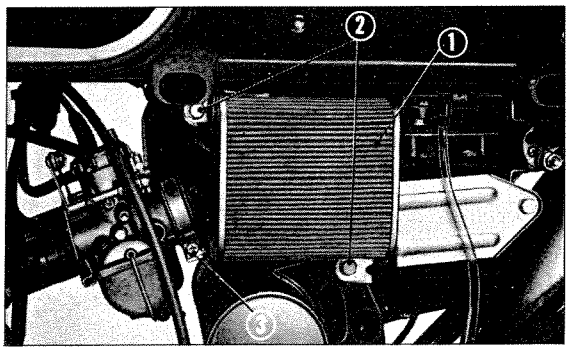
B. Engine removal (CB 175 and CL 175)

1. Shut off the fuel cock at the fuel tank.
2. Remove the step bar ① by unscrewing the two 8 mm nuts and 8×25 bolts ② (8 mm bolts for CL 175). **(Fig. 3-1)**
   Remove the 6 mm nuts from the cylinder head and 8×36 bolt, and then the muffler can be separated. (CL 175 : Remove the 6 mm nuts from the cylinder head and 8 mm nut and 6 mm bolt.)
3. Remove the air cleaner cover.
4. Remove the air cleaner ① by unscrewing the two 6×12 bolts ② and the 5×16 cross screw ③. **(Fig. 3-2)**
5. Remove the left crankcase rear cover and disconnect the clutch cable ① lower end from the clutch lifter thread ②. **(Fig. 3-3)**
6. Rotate the rear wheel to position the chain joint adjacent to the drive sprocket and disconnect the drive chain ②. **(Fig. 3-4)**



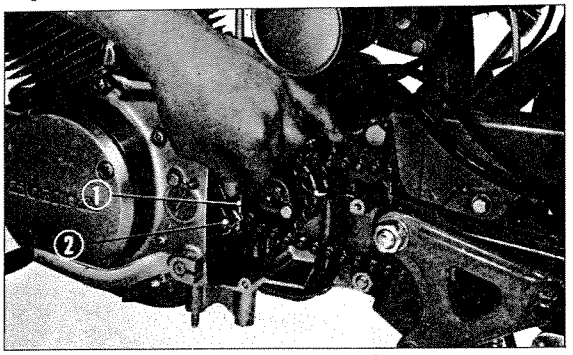
① Step bar ② 8mm bolts and nuts.

Fig. 3-1. Removing the step bar



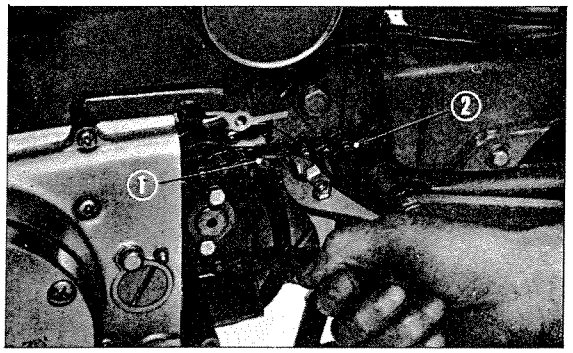
① Air cleaner ② 6×12 hex. bolt ③ 5×16 cross screw

Fig. 3-2. Removing the air cleaner



① Clutch cable ② Clutch lifter thread

Fig. 3-3. Disconnecting the clutch cable



① Joint clip ② Drive chain

Fig. 3-4. Disconnecting the drive chain

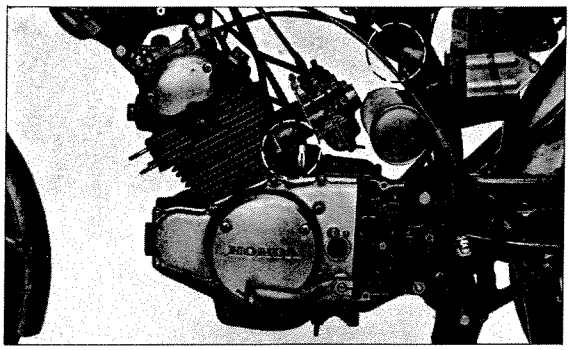
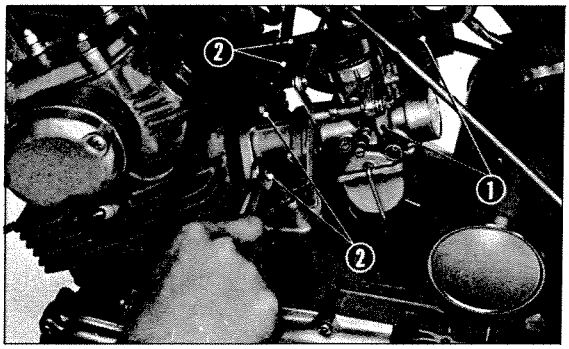
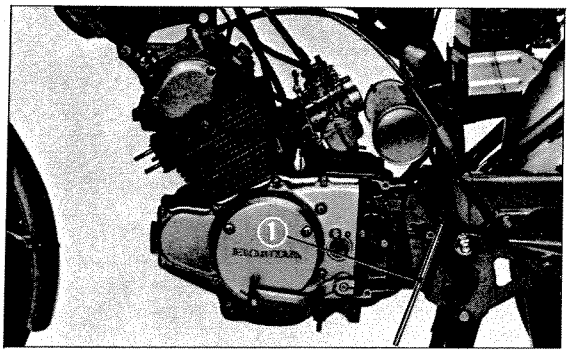


Fig. 3–5. Disconnecting the electrical leads



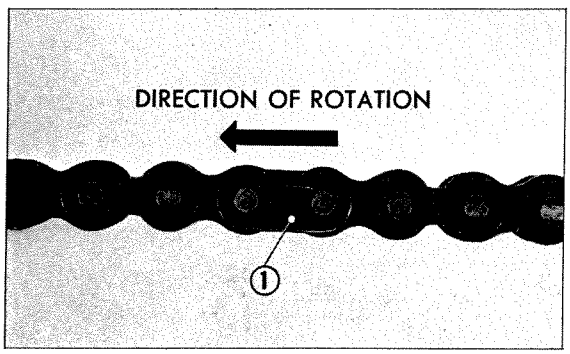
① Carburetors ② 6mm hex. bolts

Fig. 3–6. Removing the carburetors



① T-handle cross screw driver

Fig. 3–7. Installing the engine



① Joint clip

Fig. 3–8. Joint clip installation

7. Disconnect the high tension terminals from the spark plug. Remove the starting motor cable, and then disconnect all leads. **(Fig. 3–5)**
8. Remove the carburetor ①. **(Fig. 3–6)**

(Note)

Separate the fuel tank to facilitate the removal of the 6 mm bolts.

9. Remove the engine mounting bolts and the engine can be freed from the frame.

C. Reassembly

1. Perform the engine installation in the reverse order of removal described in Section 3.1 B.
2. The engine installation can be made easier by temporarily hanging the engine on the frame by the use of the T-handle cross screw driver ① followed by the installation of the engine mounting bolts. **(Fig. 3–7)**

(Note)

When reconnecting the drive chain the joint clip should be installed with the opening facing opposite to the direction of the normal drive chain. **(Fig. 3–8)**

3. Adjust the chain tension so that there will be 1 to 2 cm (0.40~0.80 in) slack at midpoint between the sprockets.

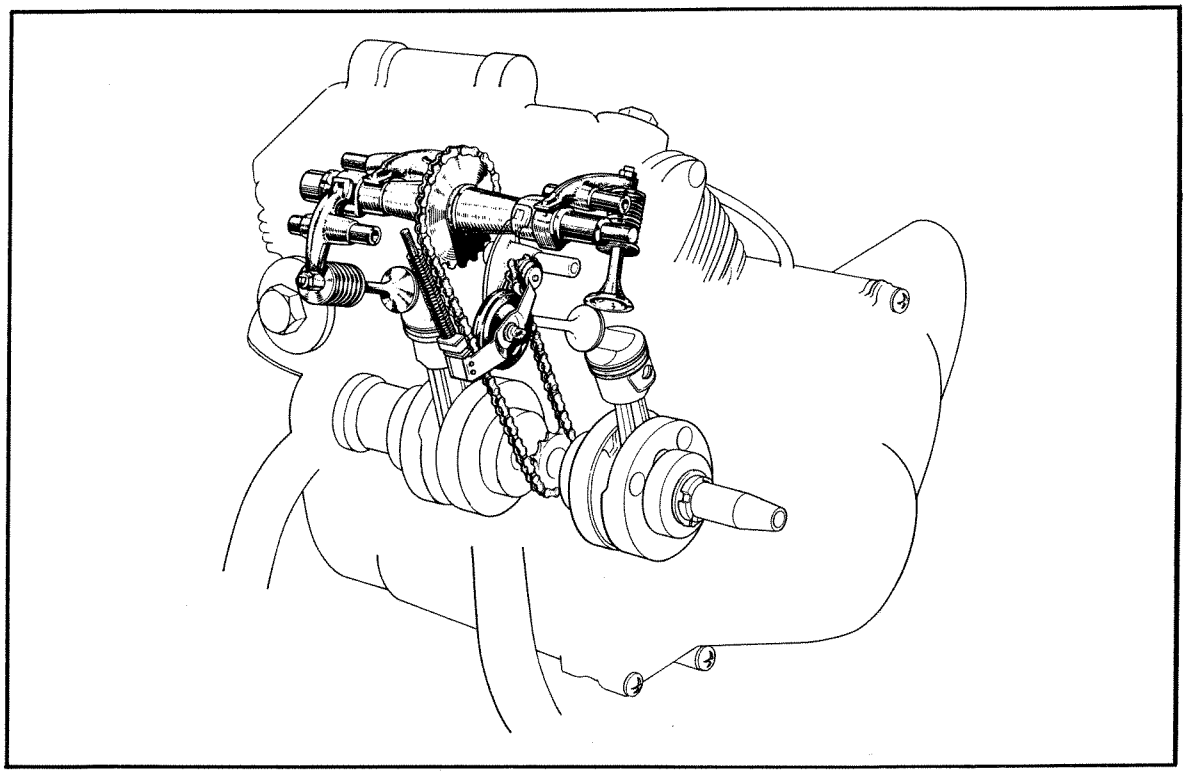


Fig. 3–9. Valve mechanism

3.2 CYLINDER HEAD AND CYLINDER

1. CYLINDER HEAD

A. Construction

The cylinder head is a cast aluminium twin construction of a semi-spherical combustion chamber with a squish area for better combustion efficiency. The single piece overhead camshaft, rocker arm and valve mechanism are all incorporated in the valve chamber above the combustion chamber. **(Fig. 3–9, 3–10)**

Contact breaker assembly is mounted on the left end of the camshaft.

Cylinder head cover incorporates a breather passage to prevent the pressure build up.

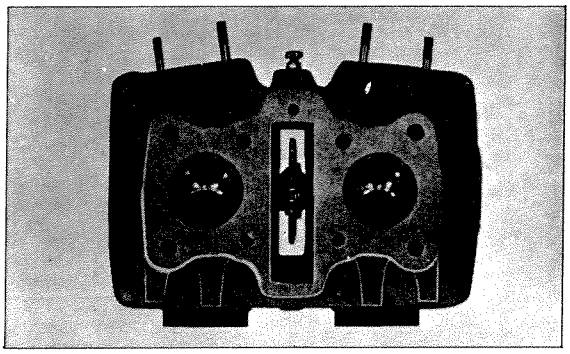
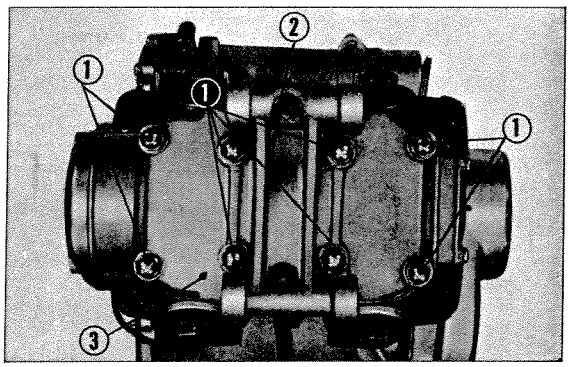


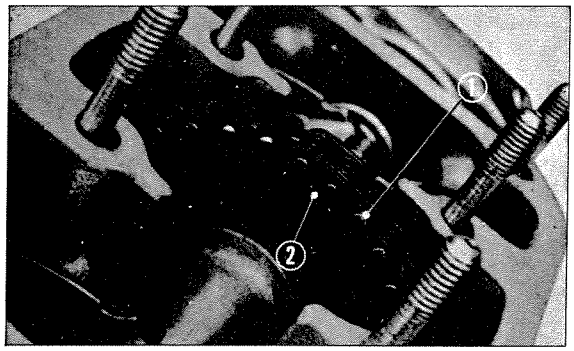
Fig. 3–10. Cylinder head combustion chamber

B. Disassembly

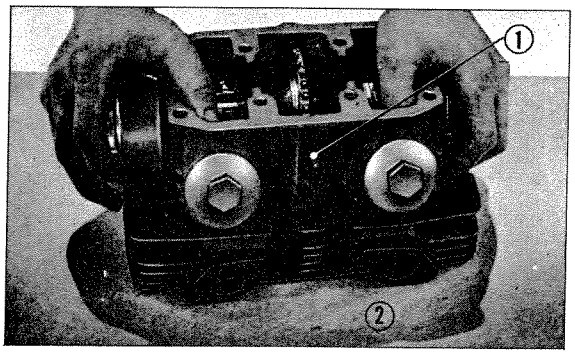
1. Drain oil from the engine.
2. Remove the kick starter pedal, right crankcase cover and cylinder head side cover.
3. Remove the gear change pedal, left crankcase cover, point cover and breaker assembly.
4. Remove the eight 8 mm blind nuts ① and 6×45 hex. bolt ② and then remove the cylinder head cover ③. **(Fig. 3–11)**
5. Rotate the crankshaft so that the cam chain joint clip ② is toward the top of the cam sprocket and then disconnect the cam chain ①. **(Fig. 3–12)** Attach a wire to both ends of the chain before disconnecting, this will simplify the assembly task later.
6. Separate the cylinder head



① 8 mm bind nut ② 6×45 hex bolt
③ Cylinder head cover
Fig. 3–11. Removing the cylinder head cover



① Cam chain ② Joint clip
Fig. 3-12. Disconnecting the cam chain



① Cylinder head ② Bluing or red lead
Fig. 3-13. Checking the cylinder head for warpage

C. Inspection

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 torqued, it may develop cracks or warpage and will cause defective sealing between the head and the cylinder resulting in gas leak, air sucking with consequent drop in compression.

   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. 3-13)**

   To correct the warpage, lap the cylinder head on the surface plate with a #200 sandpaper, finally finish by using a #400 sandpaper, and then inspect again with the bluing.
2. Inspect the combustion chamber, inlet and exhaust ports for cracks.
3. Inspect the valve guide and valve stem. Check the valve guide diameter at the top, center and bottom in both the X and Y axis, using a precision cylinder gauge. Check the valve stem with micrometer.

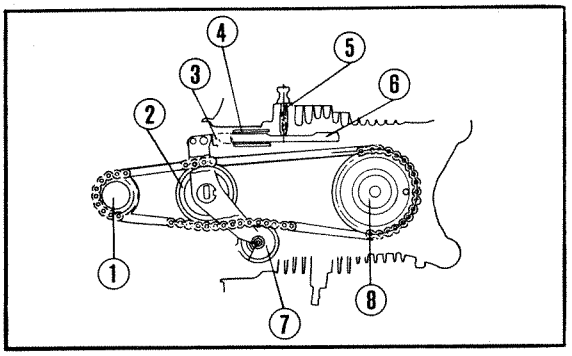
   If the valve guide inside diameter is beyond serviceable limit, it may be repaired by using a reamer (Tool No. 07008-00101) and replacing the valve with one of an oversize.

	Item	Standard Value	Serviceable Limit
Inlet valve	Outside diameter	5.48~5.49 mm (0.2158~0.2162 in)	Replace if under 5.46 mm (0.215 in)
	Contact face runout	with in 0.02 mm (0.0008 in)	
Inlet valve guide	Inside diameter •	5.5~5.515 mm (0.2165~0.2171 in)	Replace if over 5.555 mm (0.219 in)
	Outside diameter •	10.055~10.065 mm (0.3959~0.3963 in)	
	Interference fit •	0.04~0.065 mm (0.0016~0.0026 in)	
	Inlet valve clearance	0.01~0.035 mm (0.0004~0.0014 in)	Replace if over 0.08 mm (0.028 in)
Exhaust valve	Outside diameter	5.46~5.47 mm (0.2150~0.2154 in)	Replace if under 5.44 mm (0.214 in)
	Contact face runout	with in 0.02 mm (0.0008 in)	
Exhaust valve guide	Inside diameter •	5.5~5.515 mm (0.2165~0.2171 in)	Replace if over 5.555 mm (0.219 in)
	Outside diameter •	10.055~10.065 mm (0.3959~0.3963 in)	
	Interference fit •	0.04~0.065 mm (0.0016~0.0026 in)	
	Exhaust valve clearance	0.03~0.055 mm (0.0012~0.0022 in)	Replace if over 0.1 mm (0.0039 in)

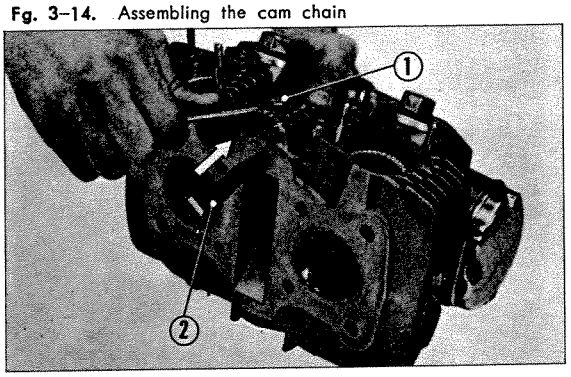
4. When replacement of the valve guide becomes necessary, remove and replace with an oversize guide, use the valve guide remover (Tool No. 07047–04001) and the valve guide driver (Tool No. 07046–21601) for replacement operation. After installing the valve guide, use a reamer to obtain the proper valve clearance.

D. Reassembly

1. Clean and inspect the cylinder head interior and exterior for cracks, damage and warpage, also inspect the head gasket, valves, valve guide and spring for satisfactory condition. Perform the head assembly in the reverse order of disassembly.
2. When installing the cylinder head to the cylinder, the cam chain should be assembled as shown in **Fig. 3–14** and attention should be given to the proper valve timing. Align the "T" timing mark on the generator to the timing index mark (the piston is at top-dead-center), position the camshaft sprocket so that the "O" mark on the face of the sprocket is at the top, and then assemble the cam chain. The joint clip must be installed with the opening facing in the opposite direction to the normal chain movement.
3. If the cam chain tensioner pushbar is not completely pushed in, the cam chain cannot be connected. **(Fig. 3–15)**



① Center crankshaft ② Cam chain guide roller
③ Tensioner push rubber ④ Cam chain tensioner spring
⑤ Tensioner set bolt ⑥ Tensioner push bar
⑦ Cam chain tensioner ⑧ Cam shaft
Fg. 3–14. Assembling the cam chain



① Tensioner set bolt ② Tensioner push bar
Fig. 3–15. Pushing in the tension push bar

4. The cylinder head should be tightened uniformly with the torque wrench in the sequence shown in **Fig. 3–16.** [Torque : 160~210 Kg. cm (11.6~15.2 ft. lb)]

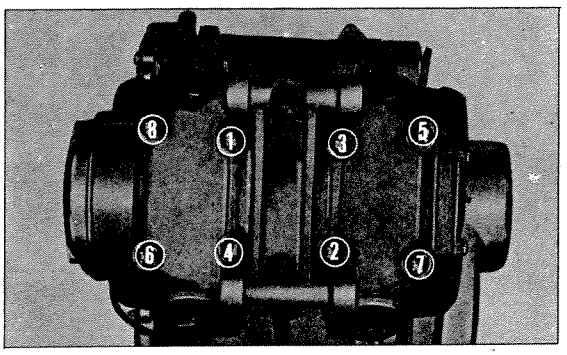


Fig. 3–16. Tightening sequence of the cylinder head

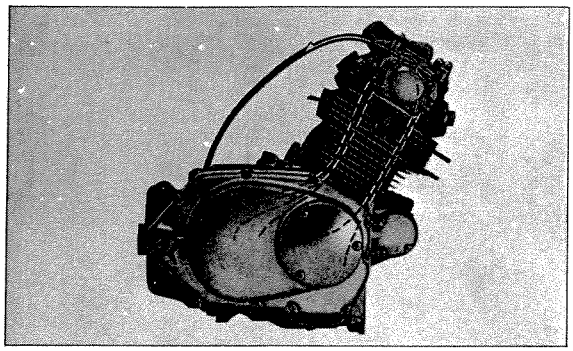


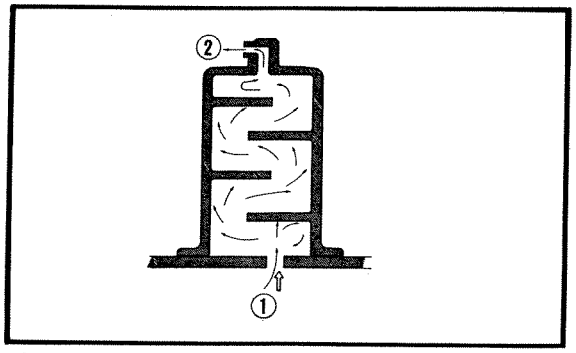
Fig. 3-17. Breather chamber

2. CYLINDER HEAD COVER AND BREATHER

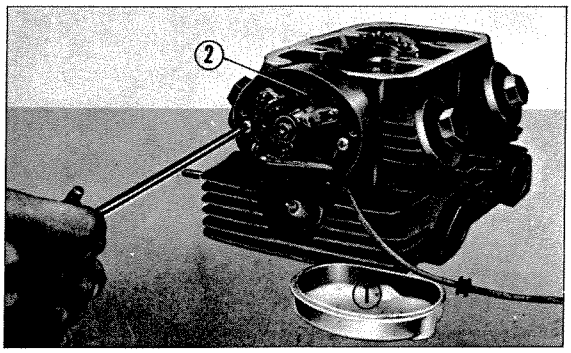
A. Description

A breather chamber is incorporated in the head cover which provide constant pressure within the crankcase. Further, the oil is separated from the gas which is exhaust.

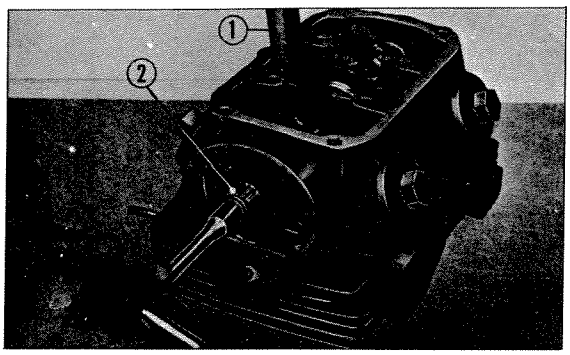
As the oil laden oil vapor passes through the breather passage, the oil is separated from the gas by centrifugal force and flows down the oil passage where it is collected. **(Fig. 3-17, 3-18)**



① From crankcase ② Exhaust gas
Fig. 3-18. Principle of breather



① Contact breaker cover ② Contact breaker assembly
Fig. 3-19. Removing the contact breaker assembly



① Wooden block stopper ② Spark advancer
Fig. 3-20. Removing the spark advancer

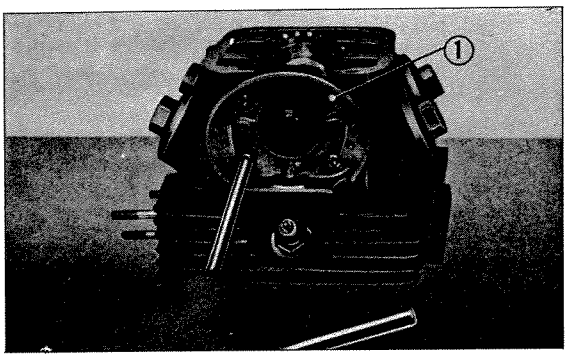
B. Disassembly of the spark advancer

1. Remove the contact breaker cover ①, contact breaker assembly ② and then remove the spark advancer from the camshaft. **(Fig. 3-19)**

(Note)

A wooden stopper block ① should be used to key the camshaft ② from turning. **(Fig. 3-20)**

2. The contact breaker point base can be removed by loosening the four mounting screws. **(Fig. 3–21)**
3. The spark advancer center piece serves as a bushing for the camshaft. It is oiled by the oil vapor and does not require special lubrication.
4. Perform the assembly is the reverse order of disassembly.
5. The cutout on the contact breaker point base should be aligned so that it is at the top.



① Contact breaker point base
Fig. 3–21. Removing the contact breaker point base

3. CAMSHAFT

A. Construction

A single piece camshaft contains both inlet and exhaust cams together with the sprocket which is mounted in the center of the camshaft.

The cam sprocket is driven by the crankshaft at ½ the speed of the crankshaft. **(Fig. 3–22)**

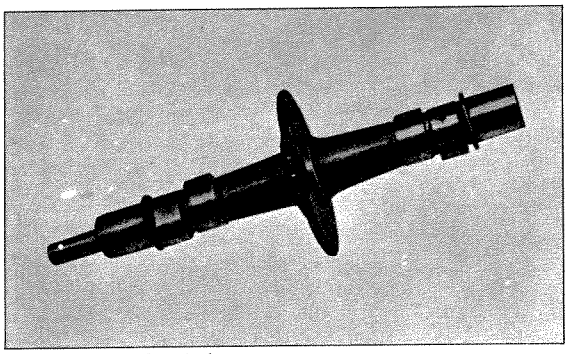
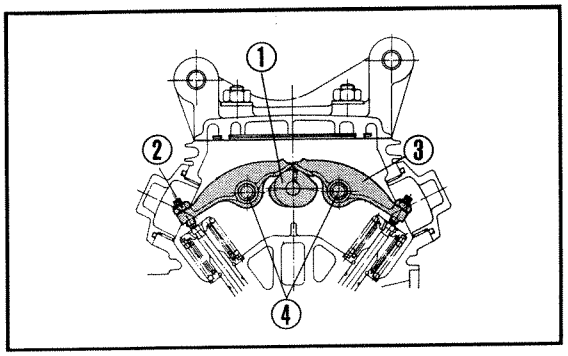
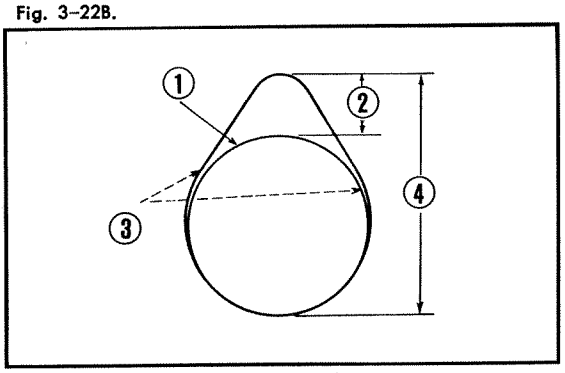


Fig. 3–22A. Camshaft

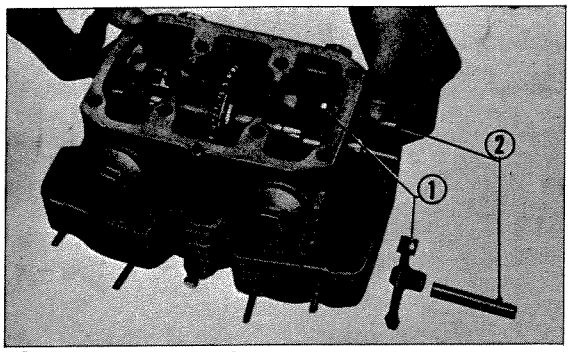


① Camshaft ② Tappet adjusting nut ③ Rocker arm
④ Rocker arm shaft
Fig. 3–22B.

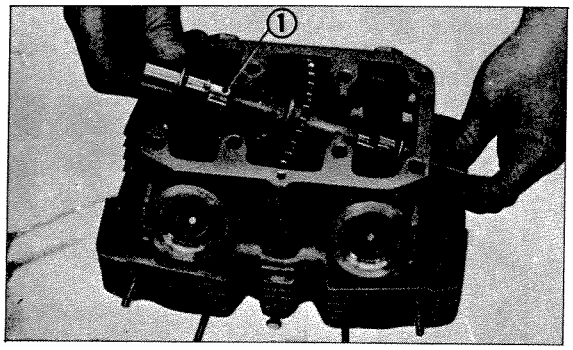
The cam is provided with a long gradual rise to prevent abrupt rise and drop of the valve, thus assuring a quieter valve operation. **(Fig. 3–23)**



① Base circle ② Max cam lift ③ Buffer curve
④ Cam height
Fig. 3–23. Cam contour



① Valve rocker arm ② Rocker arm shaft
Fig. 3–24. Removing the valve rocker arm



① Camshaft
Fig. 3–25. Removing the camshaft

B. Disassembly

1. Remove the cylinder head in accordance with Section 3.2.1. B.
2. Remove the left and right cylinder head side covers, contact breaker assembly, spark advancer and tappet adjusting hole cap. Rotate the camshaft so that both rocker arms are resting on the heel of the cam, in this position, disassemble the rocker arms from the head by removing the rocker arm shafts. **(Fig. 3–24)**
3. Remove the camshaft from the cylinder head. **(Fig. 3–25)**

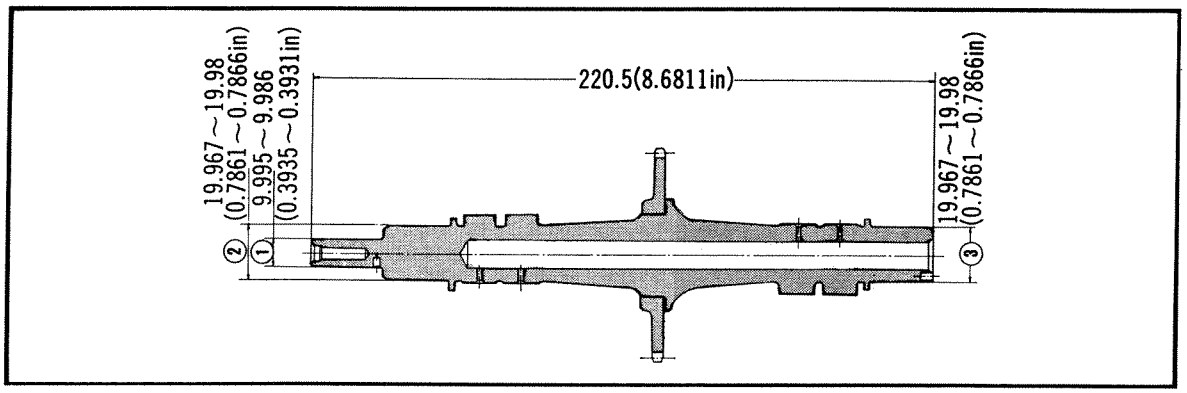


Fig. 3–26. Camshaft

C. Inspection

1. Camshaft **(Fig. 3–26)**

Item		Standard Value	Serviceable Limit
Right end diameter ③		19.967～19.98 mm (0.7861～0.7866 in)	Replace if under 19.947 mm (0.7853 in)
Left side diameter ②		19.967～19.98 mm (0.7861～0.7866 in)	Replace if under 19.947 mm (0.7853 in)
Cam base circle		21.0 mm (0.827 in)	
Cam height	IN	25.057 mm (0.9865 in)	
	EX	24.871 mm (0.9792 in)	

D. Reassembly

1. Screw out the tappet adjusting screw and assemble the rocker arm into the cylinder head in the reverse order of disassembly.
2. Adjust the tappet clearance to 0.05 mm (0.0020 in) with a cold engine.

(Note) Repair or replace the camshaft if the cam is scored or worn exessively.

4. ROCKER ARM

A. Construction

The function of the rocker arm is to transpose the rotary motion of the camshaft to a reciprocating motion for actuating the valve. The rocker arm is made rigid to prevent deflection and the end which contacts the cam is finished smooth after surface hardened to minimize wear. The end which operates the valve is provided with a tappet adjusting screw that contacts the valve. **(Fig. 3-27)**

B. Disassembly

1. Disassemble the rocker arm in accordance with Section 3.2.3. B.

C. Inspection

1. Rocker arm

Item	Standard Value	Serviceable Limit
Slipper surface wear	——	Replace if over 0.3mm (0.012 in)
Shaft bore dia	10.0~10.015 mm (0.3937~0.3943 in)	Replace if over 10.1 mm (0.40 in)

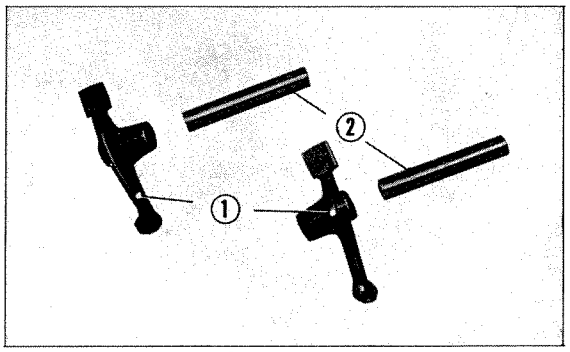
2. Rocker arm shaft

Item	Standard Value	Serviceable Limit
Outside dia	9.972~9.987 mm (0.3926~0.3933 in)	Replace if under 9.92 mm (0.3934 in)
Clearance	0.013~0.043 mm (0.0005~0.0017 in)	Replace if over 0.08 mm (0.0031 in)

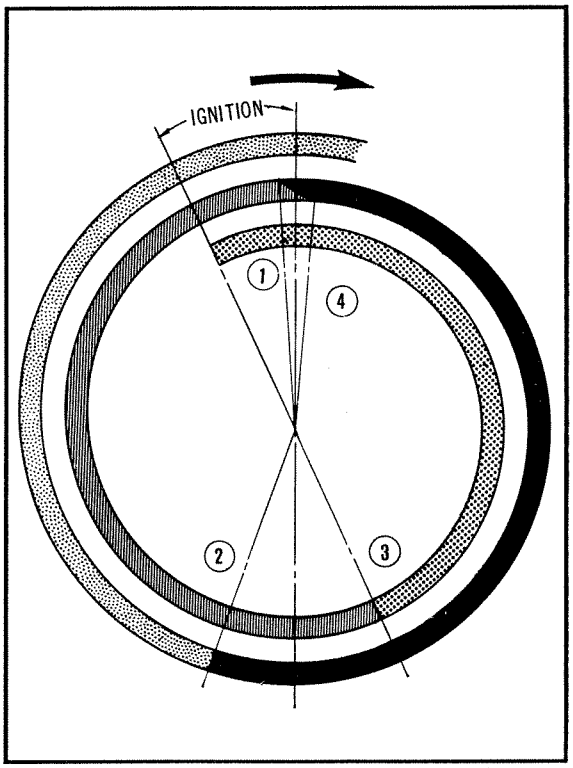
3. Check for proper tappet clearance, (both inlet and exhaust) should be 0.05 mm (0.002 in), too small a clearance will affect the engine causing compression leak and results in hard starting.
4. Check for proper valve timing. **(Fig. 3-28-1)** (Refer to page 22)
5. Check to see that the cam chain is not stretched.

D. Reassembly

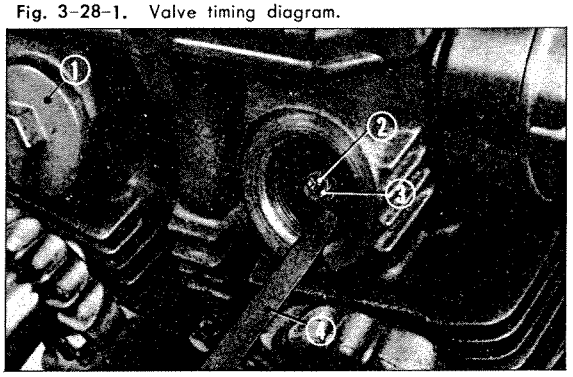
1. Inspect the rocker arm contact surface and repair or replace if there is scoring or excessive wear.
2. If the rocker arm had been disassembled, the tappet clearance should be readjusted. Make the adjustment by positioning the piston on top-dead-center of the compression stroke, this will free all of the valves. Align the "T" timing mark on the generator rotor to the timing index arrow mark on the stator.
3. Check the valve tappet clearance with the thickness gauge. **(Fig. 3-28-2)**



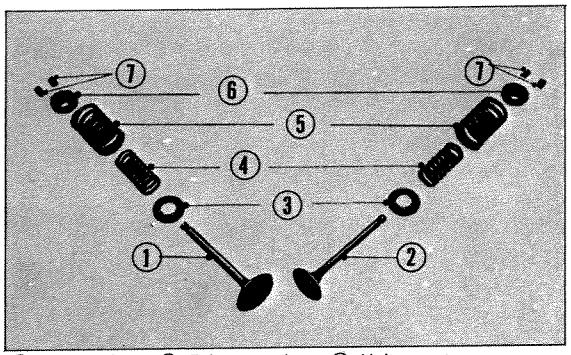
① Valve rocker arm ② Rocker arm shaft
Fig. 3-27. Rocker arm and rocker arm shaft.



① Inlet valve opens 10° ② Inlet valve closes 40°
③ Exhaust valve opens 40° ④ Exhaust valve closes 10°
Fig. 3-28-1. Valve timing diagram.

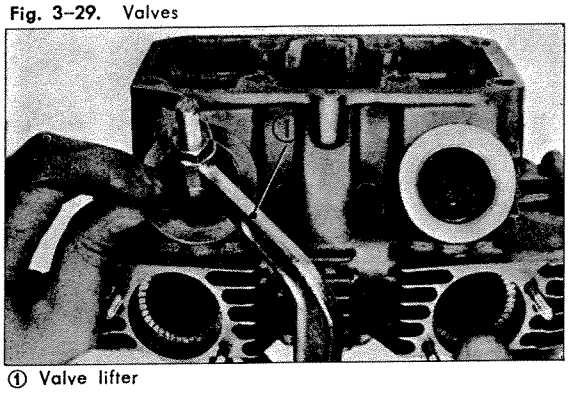


① Cylinder head cap ② Adjusting screw
③ Lock nut ④ Thickness gauge
Fig. 3-28-2. Checking the valve tappet clearance



① Inlet valve ② Exhaust valve ③ Valve spring seat
④ Inner valve spring ⑤ Outer valve spring
⑥ Valve spring retainer ⑦ Valve cotter

Fig. 3–29. Valves



① Valve lifter

Fig. 3–30. Removing the valve

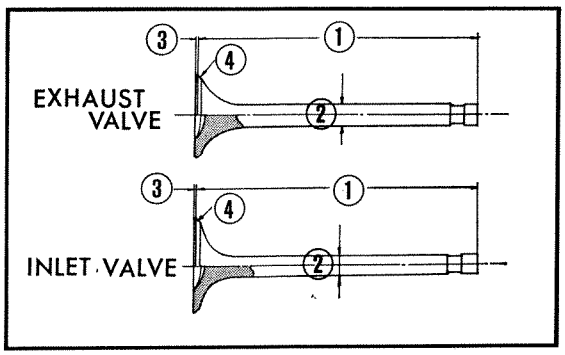


Fig. 3–31. Inlet and exhast valves

5. VALVE

A. Description

The valves control the volume of inlet gas and also the exhaust gas entering and leaving the cylinder.

The diameter of the exhaust valve head is made smaller for better heat radiation. Inlet valve is made large for greater volumetric efficiency.

Double spring feature prevents the valves from floating during high speed operation. **(Fig. 3–29)**

B. Disassembly

1. Remove the cylinder head in accordance with Section 3.2 1 B.
2. Disassemble the rocker arm from the cylinder head by pulling out the rocker arm shaft.
3. Compress the valve spring with the valve lifter ① (Tool No. 07957–3290000) and after removing the valve cotter, valve spring and the retainer, the valve can be removed. **(Fig. 3–30)**

C. Inspection

1. Exhaust valve **(Fig. 3–31)**

Item	Standard Value	Serviceable Limit
Length ①	72.15~72.45 mm (2.8405~2.8524 in)	Replace if under 71.75 mm (2.8248 in)
Stem dia ②	5.46~5.47 mm (0.2150~0.2154 in)	Replace if under 5.44 mm (0.2142 in)
Head thickness ③	0.55~0.85 mm (0.0217~0.0335 in)	Replace if under 0.3 mm (0.0118 in)
Concentricity of valve face ④	Within 0.03 mm (0.0012 in)	

2. Inlet valve

Item	Standard Value	Serviceable Limit
Length ①	73.35 ~ 73.65 mm (2.8878~2.8996 in)	Replace if under 72.95 mm (2.8720 in)
Stem dia ②	5.48~5.49 mm (0.2158~0.2162 in)	Replace if under 5.46 mm (0.125 in)
Head thickness ③	0.35~0.65 mm (0.0138~0.0256 in)	Replace if under 0.2 mm (0.0083 in)
Concentricity of valve face ④	Within 0.03 mm (0.0012 in)	

3. Valve spring measurement

Outer valve spring

Item	Standard Value	Serviceable Limit
Free length	31.8 mm (1.2520 in)	Replace if under 30.6 mm (1.2047 in)
Spring pressure	29.5 mm/7.5~8.3kg 1.1614 in/16.538~ 18.302 lbs)	—
	23.3mm/29.4~32.6kg (0.9173 in/64.827~ 71.883 lbs)	—

Inner valve spring

Item	Standard Value	Serviceable Limit
Free length	30.2 mm (1.1890 in)	Replace if under 29.7 mm (1.1693 in)
Spring pressure	26.2mm/4.08~4.52kg (1.0315 in/8.996~ 9.967 lbs)	—
	20.3mm/10.9~12.1kg (0.7992 in/24.035~ 26.681 lbs)	—

D. Reassembly

1. Before the valve is assembled, the valve contact surface should be inspected for wear, pitting, or carbon. After cleaning, oil the valve stem, and the valve should be inserted from the combustion chamber side.
2. The valve outer and inner valve springs and retainers should be fitted from the cap hole of the tappet adjusting hole and compressed by using the valve lifter (Tool No. 07957–3290000). Secure with the valve cotters.

6. VALVE SEAT

A. Description

The valve seat is repaired with three types of cutter.

The relative location and the width of the valve seat contact area is accomplished with the seat top cutter and seat bottom cutters while the refacing of the valve contact area is performed by the 90° cutter. **(Fig. 3–32)**

Valve seat cutters

Description	Tool No.
Valve seat cutter 90°	07980–2350100
Flat surface seat cutter (IN)	07980–2350300
Flat surface seat cutter (EX)	07980–2350400
Interior seat cutter (IN)	07980–2350500
Interior seat cutter (EX)	07980–2350600

Valve lapping operation is performed last, this is to obtain a leak proof seal between the valve and the valve seat. Place a liberal amount of lapping compound on the valve face and lap the valves, applying a slight pressure while rotating the valve back and forth with a suction cup lapping tool. Wash off the compound thoroughly and inspect the valve seat with bluing. **(Fig. 3–33)**

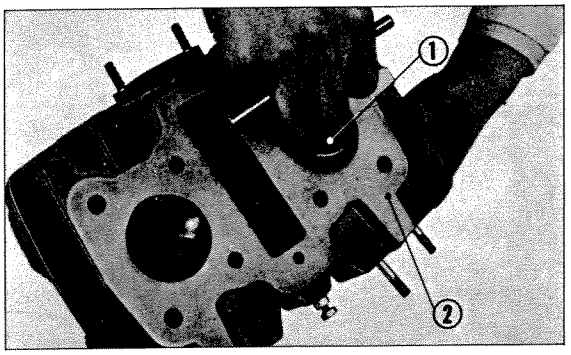
(Note)

(a) When the valve stem is greatly worn, the valve guide is usually also worn. Hence, when a valve is replaced, it also is desirable to replace the valve guide. Since the guide is press fitted, it is recommended that they be replaced with an over-size guide.

(b) When the valve is assembled, the compound which was used during lapping should be completely removed.

B. Inspection

1. A valve seat in good condition should have a full surface contact with the valve face.
   Standard value : 1.0 mm (0.04 in)
   Serviceable limit : in excess of 2 mm (0.08 in)
2. 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 valve seats are not completely sealed.



① Valve seat cutter ② Cylinder head
Fig. 3–32. Reworking the valve seat

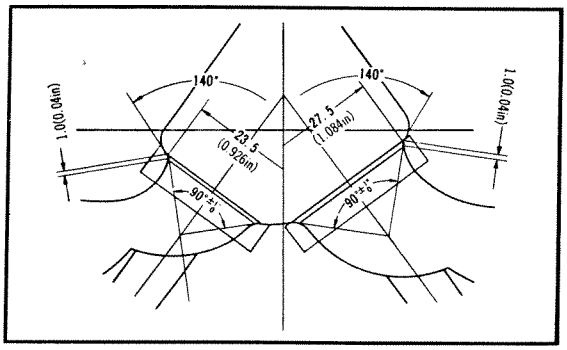


Fig. 3–33. Valve seat detail

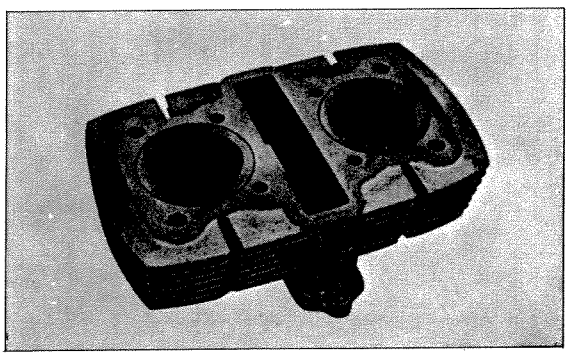
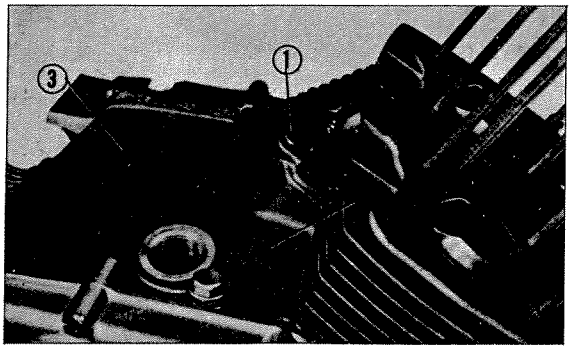
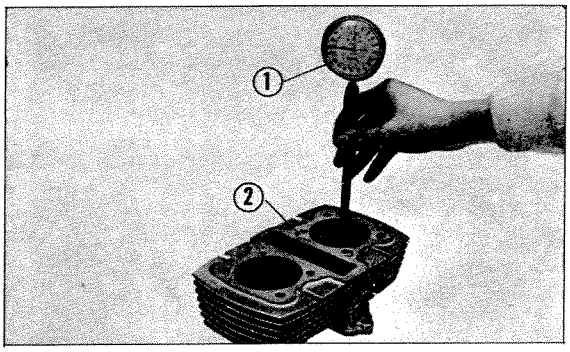


Fig. 3–34. Cylinder



① 6 mm hex bolt ② Cylinder ③ Upper crankcase
Fig. 3-35. Removing the cylinder



① Cylinder gauge ② Cylinder
Fig. 3-36. Measuring the cylinder bore

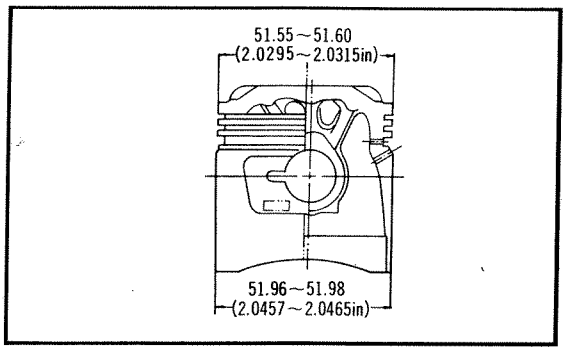
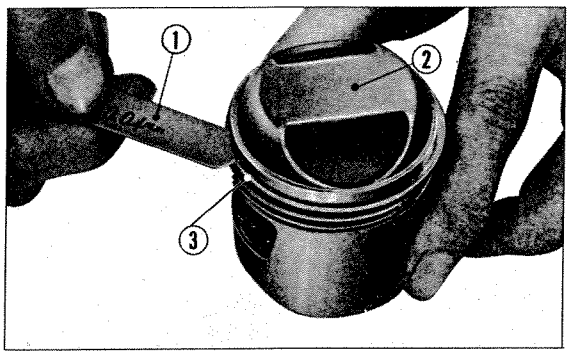


Fig. 3-37. Piston



① Thickness gauge ② Piston ③ Piston ring
Fig. 3-38. Measuring the piston ring side clearance

7. CYLINDER

A. Construction

The cylinder sleeve is made of special hard steel alloy and is press fitted into the lightweight cast aluminum body. A compartment is provided between the cylinder bores to accomodate the cam chain and tensioner. **(Fig. 3-34)**

B. Disassembly

1. Remove the cylinder head in accordance with Section 3.2.1. B.
2. Remove the 6 mm hex. bolt ① and then remove the cylinder ② from crankcase ③. **(Fig. 3-35)**

C. Inspection

1. Measure the cylinder bore, taper, out-of-round with a precision cylinder gauge.
   Take the measurement at the top, middle and bottom in both the X and Y axis. **(Fig. 3-36)**

Item	Standard Value	Serviceable Limit
Cylinder bore	52.00~52.01 mm (1.969~1.9694 in)	Repair if over 52.1 mm (2.0512 in)
Cylinder taper	0.005 mm (0.0002 in)	Repair if over 0.05 mm (0.0020 in)
Cylinder out of round	0.005 mm (0.0002 in)	Repair if over 0.05 mm (0.0020 in)

2. The clearance between the piston and cylinder will greatly affect the engine performance. Because the piston is elliptical, the clearance is controlled very closely. The clearance are not the same, however, if any area is greater than 0.1 mm (0.004 in), the cylinder should be rebored and fitted with an oversize piston.
   Oversize pistons are available in 0.25, 0.50, 0.75 and 1.00 mm (0.01, 0.02, 0.03 and 0.04 in) size.
3. When removing carbon deposits from the piston top and ring grooves, care should be exercised so as to not cause any scratches or damages to the piston.
4. Measure the piston perpendicular to the piston pin hole. **(Fig. 3-37)**

Item		Standard Value	Serviceable Limit
Outside dia	Top	51.55~51.60 mm (2.030~2.031 in)	
	Skirt	51.96~51.98 mm (2.046~2.047 in)	

5. Measure the piston ring side clearance with a thickness gauge. **(Fig. 3-38)**

Item		Standard Value	Serviceable Limit
Piston ring side clearance	Top	0.025~0.055 mm (0.001~0.0022 in)	Replace if over 0.1 mm (0.004 in)
	Second	0.015~0.045 mm (0.0006~0.0018 in)	Replace if over 0.1 mm (0.004 in)
	Oil	0.01~0.045 mm (0.0004~0.0018 in)	Replace if over 0.1 mm (0.004 in)

6. Piston ring groove

Item		Standard Value	Serviceable Limit
Bottom dia		45.9~46.0 mm (1.707~1.811 in)	
Groove width	Top Second	1.205~1.220mm (0.047~0.048 in)	Replace if over 1.3 mm (0.0512 in)
	Oil	2.50~2.52 mm (0 098~0.099 in)	Replace if over 2.6 mm (0.1024 in)

7. Piston rings

Measure the ring end gap by inserting the piston ring into the cylinder so that the ring is at right angle to the cylinder axis. **(Fig. 3–39)**

Item		Standard Value	Serviceable Limit
Ring thickness	Top	1.165~1.180 mm (0.046~0.0464 in)	Replace if under 1.125 mm (0.0443 in)
	Second	1.175~1.190 mm (0.046~0.047 in)	Replace if under 1.135 mm (0.0447 in)
	Oil	2.475~2.490 mm (0.097~0.098 in)	Replace if under 2.43 mm (0.095 7in)
Ring closing force	Top Second	0.52~0.78 kg (1.15~1.72 lbs)	Replace if under 0.42 kg (0.926 lbs)
	Oil	0.72~10.08 kg (1.59~2.22 lbs)	Replace if under 0.53 kg (1.169 lbs)
Ring end gap		0.15~0.40 mm (0.006~0.016 in)	Replace if over 0.8 mm (0.0315 in)

8. Check the gaskets for damage. Replace if any damage exists.

(Note)

1. Oversize piston rings are available in four sizes; 0.25, 0.50, 0.75 and 1.00 mm (0.01, 0.02, 0.03 and 0.04 in).
2. When making piston ring end gap measurement, insert the ring carefully into the cylinder to prevent scratches or gouges to the cylinder wall.

D. Reassembly

1. After assuring that there are no damages or excessive wear to the cylinder, assemble the cylinder in the reverse order of disassembly.
2. Make sure that the cylinder gasket and the two dowel pins are installed.
3. During the installation of the cylinder ①, use piston bases ② to prevent piston movement, also use a ring compressor ③ to prevent ring damages. **(Fig. 3–40)**
4. Assemble the cylinder head and cover unit.

(Note)

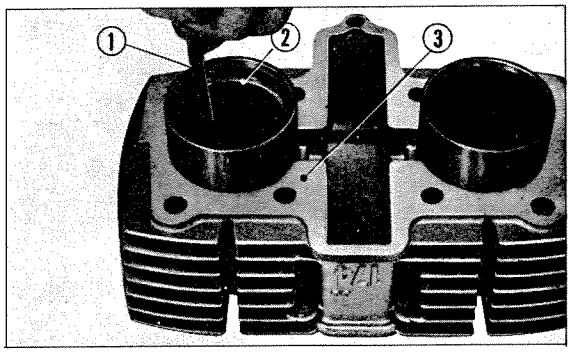
Check to make sure that the gaskets are properly in place.

3.3 LEFT CRANKCASE COVER

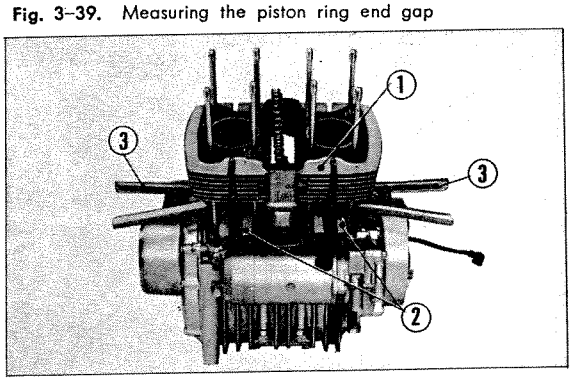
1. LEFT CRANKCASE COVER

A. Construction

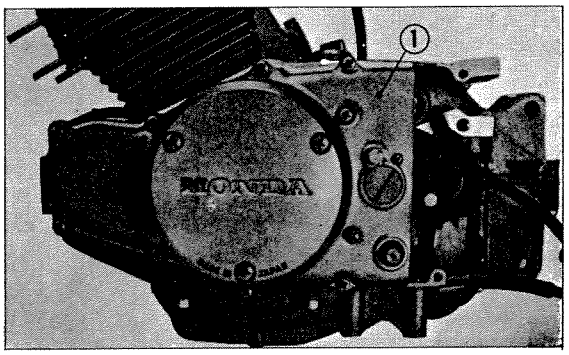
The purpose of the crankcase is to protect the vital components of the engine. The left crankcase houses the A.C generator stator. **(Fig. 3–41, 3–42)**



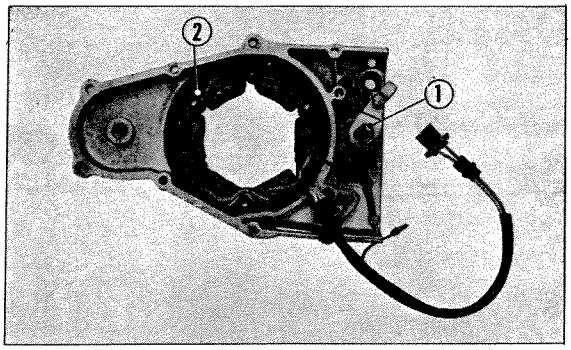
① Thickness gauge ② Piston ring ③ Cylinder
Fig. 3–39. Measuring the piston ring end gap



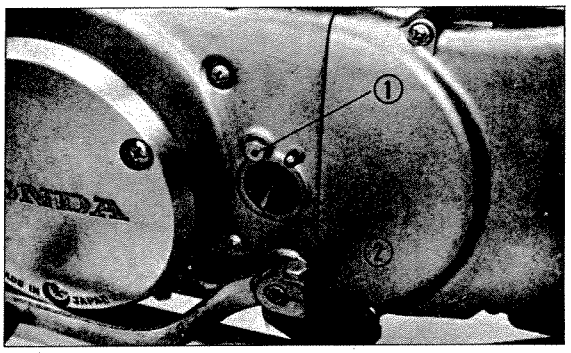
① Cylinder ② Piston base ③ Piston ring compressor
Fig. 3–40. Installing the cylinder



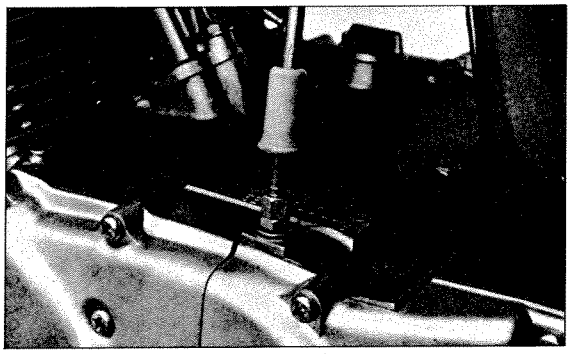
① Left crankcase cover
Fig. 3–41. Left crankcase cover



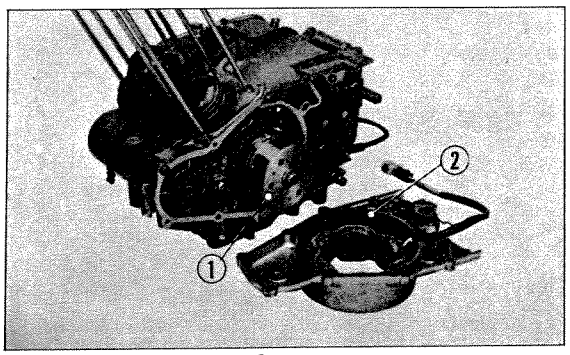
① Clutch lifter thread ② A.C. generator stator
Fig. 3–42. Stator housed in the left crankcase cover



① Clutch adjuster locking bolt ② Clutch adjuster
Fig. 3–43.



① Clutch cable lower adjuster ② Locking nut
Fig. 3–44



① A.C. generator rotor ② A.C. generator stator
Fig. 3–45. A.C. generator rotor and stator

B. Disassembly

1. Drain the oil from the crankcase.
2. Remove the gear change pedal.
3. After removing the mounting screws, the left crankcase cover can be separated from the crankcase.

C. Reassembly

1. Perform the assembly in the reverse order of disassembly. Make sure that the gaskets are not damaged or misaligned and that the clutch action is normal.
2. Perform clutch adjustment. **(Fig. 3–43, 3–44)**

2. A.C GENERATOR

A. Construction

The detailed description of the A.C. generator is given in the Electrical Section.

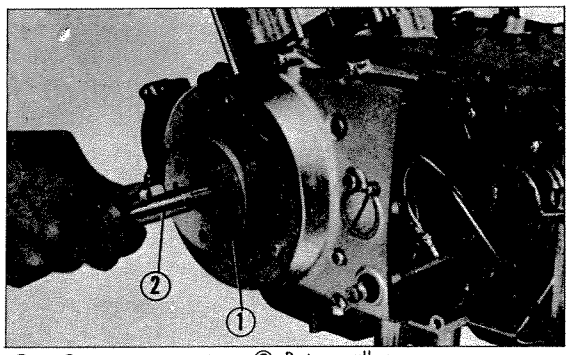
The A.C. generator is mounted in the left crank case cover. **(Fig. 3–45)**

B. Disassembly

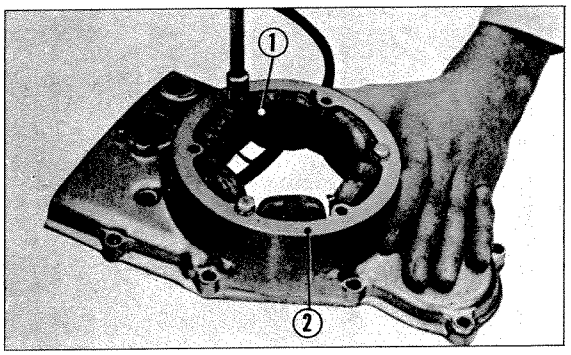
1. It is not necessary to remove the engine to disassemble the A.C. generator.

   (In this section, operation is explained with the engine dismounted.)

2. Unloosen the three screws and remove the dynamo cover.
3. Remove the rotor mounting bolt and remove the rotor ① with the use of the generator rotor puller ②. (Tool No. 07933-2160000) **(Fig. 3-46)**
4. Unloosen the screws and remove the left crankcase cover and the stator ① from the left crankcase cover ②. **(Fig. 3-47)**



① A.C. generator rotor ② Rotor puller
Fig. 3-46. Removing the A.C. generator rotor



① A.C generator stator ② L. Crankcase cover
Fig. 3-47. Removing the A.C. generator stator

C. Reassembly

1. Assemble the A.C. generator in the reverse order of removal.

(Note)

Make sure that the pin is installed during mounting of the rotor.

3. STARTING SPROCKET AND CLUTCH (CB175)

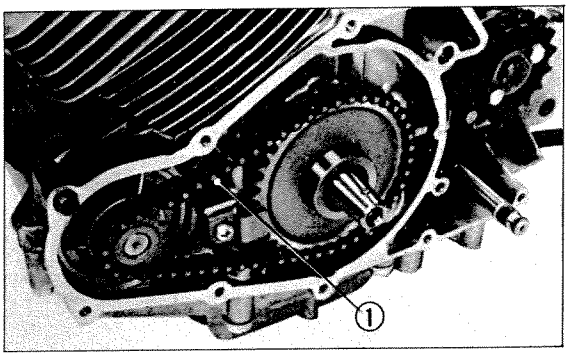
A. Construction

The starter armature speed is reduced by a series of gears enclosed within the starter housing. The chain further reduces the speed and provides high torque to turn over the crankshaft for each starting. To prevent the starter from being motorized after the engine starts, an overrunning clutch is incorporated into the A.C. generator rotor. Refer to the electrical section for details.

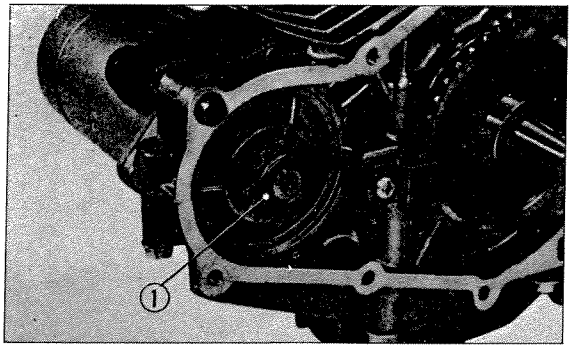
B. Disassembly and reassembly of the starting clutch

1. Remove the A.C. generator in accordance with section 3.3.2. B.
2. Remove three screws and remove the starting clutch.
3. Reassemble the starting clutch and A.C. generator in the reverse order of disassembly.

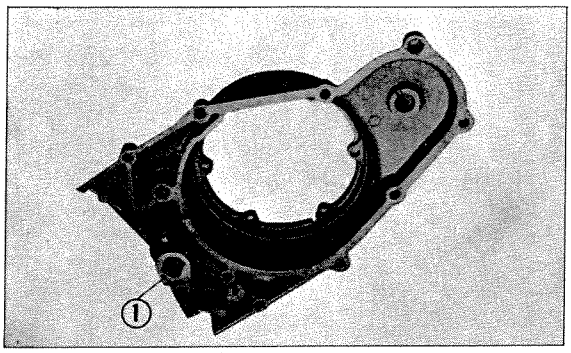
   Check to assure smoother roller operation.
   Check condition of side plate and guide.
   Check for the weak or broken clutch roller spring.



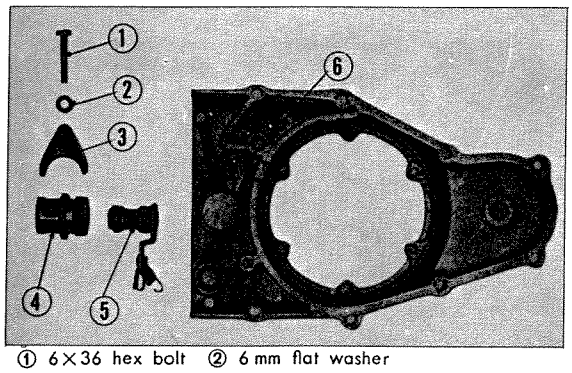
① Starting chain
Fig. 3-48. Removing the starting chain



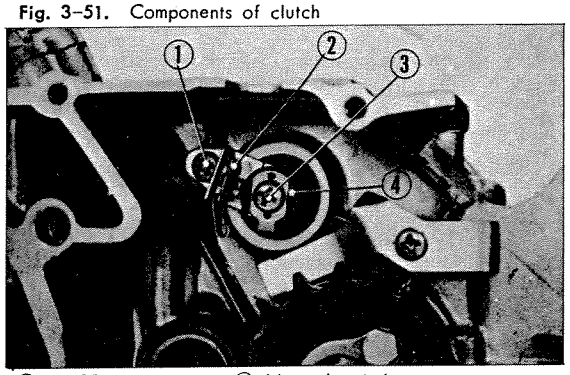
① Starting motor sprocket
Fig. 3–49. Starting motor sprocket



① Clutch lifter thread
Fig. 3–50. Clutch adjuster



① 6×36 hex bolt ② 6 mm flat washer
③ Adjuster fixing piece ④ Clutch adjuster
⑤ Clutch lifter thread ⑥ Left crankcase cover
Fig. 3–51. Components of clutch



① 6×12 cross screw ② Neutral switch stator
③ 6×20 cross screw ④ Neutral switch rotor
Fig. 3–52. Removing the neutral switch rotor

C. Disassembly and reassembly of the starting sprocket

1. After the removal of the A.C. generator and starting clutch is completed, remove the starting chain ① by disconnecting at the joint clip. **(Fig. 3–48)**
2. Remove the starting sprocket plate set and remove the starting sproket.
3. Starting motor sprocket is easily removabie from the serrated shaft. **(Fig. 3–49)**

(Note)

The starting chain joint clip must be installed with the open end opposite to normal direction of chain movement.

4. CLUTCH ADJUSTER AND NEUTRAL SWITCH ROTOR

A. Operation of clutch adjuster

The function of the clutch is to temporarily disengage the transmitting of the power between the engine and the transmission during the period of gear change. Clutch is operated by the handle lever through a cable to apply pressure which overrides the clutch springs. The clutch adjuster is set to provide the proper clutch action. **(Fig. 3–50, 3–51)**

B. Disassembly and reassembly of the clutch adjuster

1. Remove the crankcase cover in accordance with Section 3.3.1 B.
2. Remove the 6×36 bolts from the adjuster fixing plate and then remove the clutch lever spring to separate the clutch apjuster.
3. Apply grease to the clutch adjuster before assembly, use grease type HD multipurpose NLGI No. 2.

C. Disassembly and reassembly of the neutral switch rotor

1. Remove the left crankcase cover.
2. Loosen the 6×12 screw ① and remove the neutral switch stator ②. **(Fig. 3–52)**
3. Unscrew the 6×20 screw ③ and remove the neutral switch rotor ④ from the gear shift drum. **(Fig. 3–52)**
4. Fit the neutral switch rotor groove to the gear shift drum key and perform the assembly in the reverse order of disassembly.

3.4 RIGHT CRANKCASE COVER ASSEMBLY

1. RIGHT CRANKCASE COVER

A. Construction

The right crankcase cover ① and the left crankcase cover, house the engine primary components. The oil filter cover ② is fitted to the case cover and provides the passage for lubricating oil in both directions. **(Fig. 3-53)**

B. Disassembly

1. Remove the kick starter arm from the kick pinion shaft.
2. By removing the ten screws securing the case cover, the right crankcase cover can be removed. **(Fig. 3-54)**
3. After unscrewing the three 6×16 screws, the filter cover can be removed.

(Caution)

During operation, attention should be given to the two 74.5×3 "O" rings fitted to the filter cover to assure that there are no oil leaks.

C. Reassembly

1. Before performing the assembly, inspect the crankcase and oil filter covers for cracks and also for any damages to the mating surfaces since they will cause oil leaks.
2. Clean the O rings ① and inspect for any damages· replace if necessary. **(Fig. 3-55)**
3. After installation of the screws, tighten them uniformly to prevent the covers from warping and consequent oil leaks.

2. CLUTCH

A. Description and operation

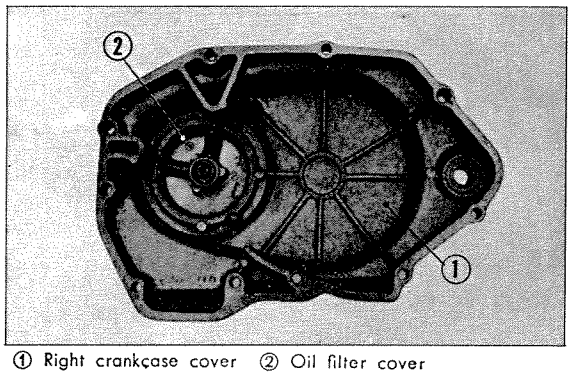
The function of the clutch is to temporarily disengage the transmitting of the rotary motion between the engine and the transmission during the gear change and then after the gear change, permit a smooth power transition. The condition of the clutch will have a varying effect on the efficiency of the power transmission. **(Fig. 3-56)**

The clutch mechanism is of a conventional wet type multiple disc operated by the clutch lifter thread connected by a cable to the clutch lever.

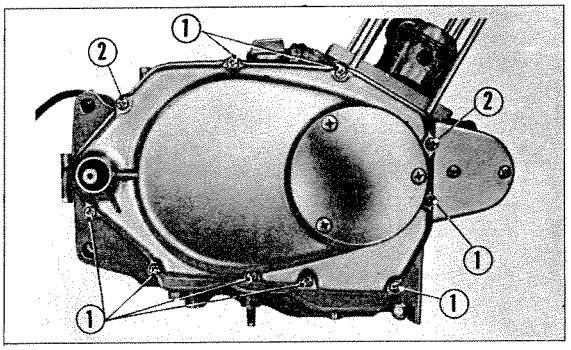
When the right crankcase cover is removed, the clutch complete is exposed. To the clutch outer complete, the clutch spring driving the clutch pressure plate is installed. The clutch plate is installed with the clutch friction disc between the clutch center with four 6×20 hex bolts.

The clutch plate has teeth cut on the inside. These teeth are engaged with teeth cut on the outside of the clutch center. The clutch center is coupled to the transmission main shaft by spline. Hence, it and the transmission main shaft are essentially a single unit. The clutch plate, clutch center, and clutch pressure plate rotate.

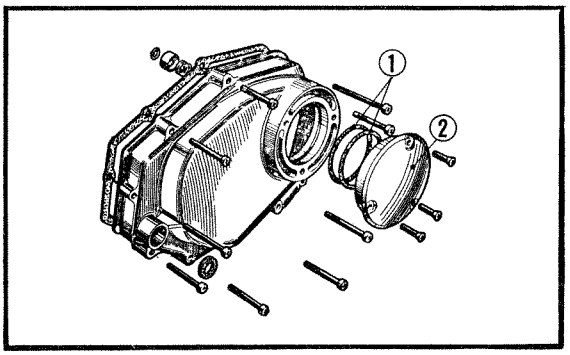
On the other hand, to the groove cut on the exterior circumference of the clutch outer, the clutch friction disc is coupled by the collar entering the groove ; freewheeling rotation with the transmission main shaft is obtained. Hence, while the clutch is connected, the clutch outer center, six clutch plates, six clutch friction discs, and clutch pressure plate are essentially a single unit through friction exerted by



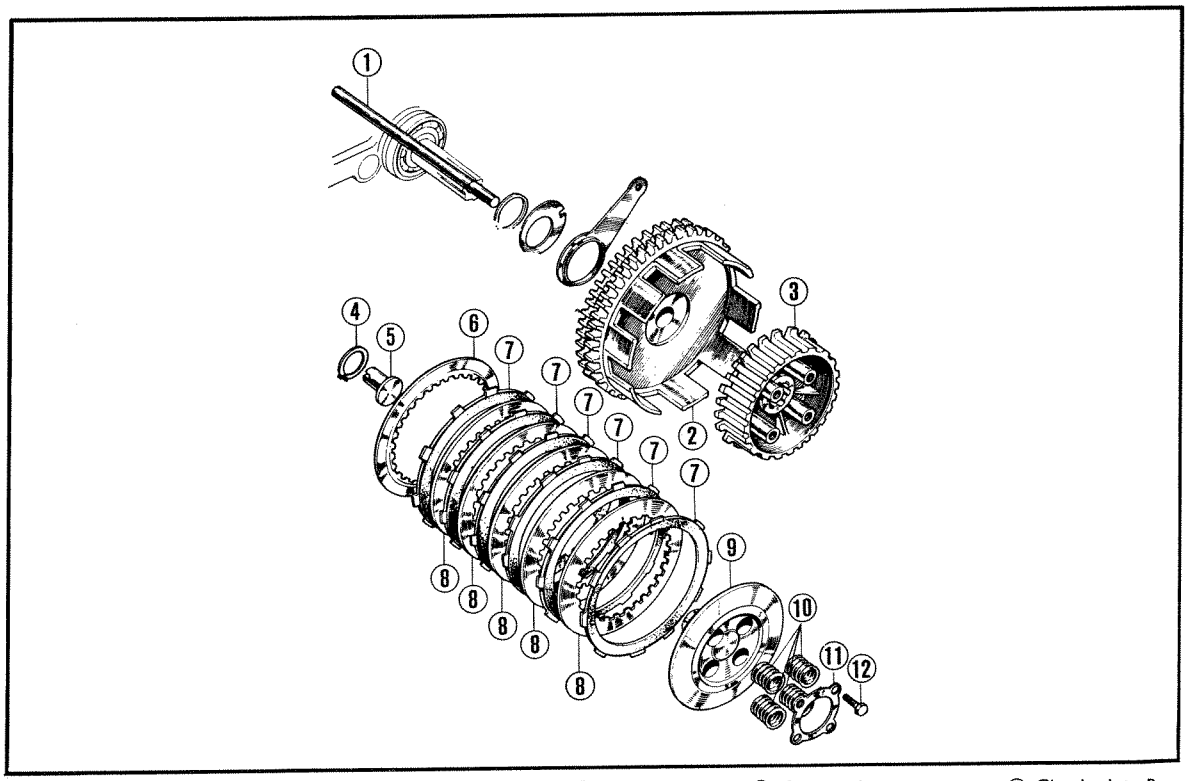
① Right crankcase cover ② Oil filter cover
Fig. 3-53. Right crankcase cover



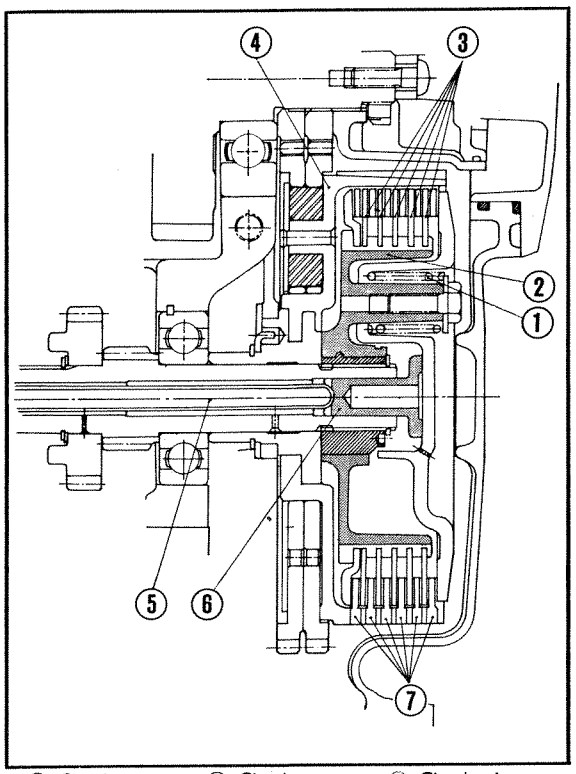
① 6×32 screws ② 6×45 screws
Fig. 3-54. Right crankcase cover screws



① O ring ② Oil filter cover
Fig. 3-55. O ring and oil filter cover



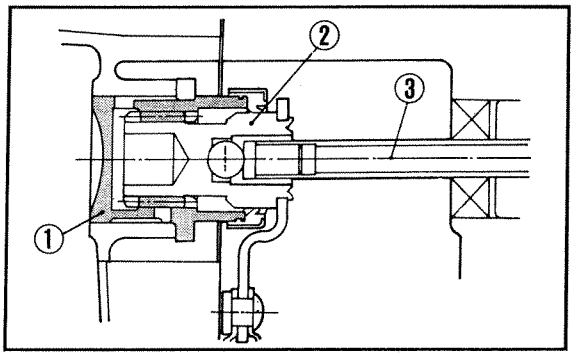
① Clutch rod ② Clutch outer compiete ③ Clutch center ④ 20 mm set ring ⑤ Clutch lifter joint piece ⑥ Clutch plate B
⑦ Clutch friction disc ⑧ Clutch plate ⑨ Clutch pressure plate ⑩ Clutch spring ⑪ Clutch spring retaining plate
⑫ 6×20 hex bolt. **Fig. 3–56.** Clutch



① Clutch spring ② Clutch center ③ Clutch plate
④ Clutch outer ⑤ Clutch lifter rod
⑥ Clutch lifter joint piece ⑦ Clutch friction disc
Fig. 3–57. Sectional view of clutch

the clutch spring ; rotation of the crankshaft is transmitted to transmission system.

When the clutch lever is gripped, the clutch adjuster rotates clockwise, the adjustment thread is pushed out by the square-headed thread in the clutch adjuster fitted to the left crankcase cover ; this is pushed out by the clutch joint through the clutch rod. The clutch spring is compressed and the six clutch friction discs and six clutch plates become disengaged. Hence, the rotary motion of six clutch plates and six clutch discs is not transmitted to the clutch center. **(Fig. 3–57, 3–58)**



① Clutch adjuster ② Clutch lifter thread
③ Clutch lifter rod
Fig. 3–58. Sectional view of clutch adjusting thread

B. Disassembly

1. Remove the right crankcase cover.
2. Unscrew the four clutch pressure plate retainer bolts and remove the friction disc and clutch plates.

3. Remove the oil filter rotor lock nut and then the oil filter retaining lock nut to pull the rotor off the crankshaft.
4. Remove the 20 mm set ring ① and remove the clutch center ②. **(Fig. 3-59)**
5. Unscrew the oil pump body mounting nuts and separate the oil pump from the crankcase.
6. Remove the oil pump assembly together with the clutch outer cover. **(Fig. 3-60)**

(Caution)

Pull off the clutch unit parallel to the shaft exercising care so that the shaft is not damaged.

C. Inspection

1. Clutch spring

Item	Standard Value	Serviceable Limit
Free length	31.05 mm (1.2224 in)	Replace if under 30.3 mm (1.1929 in)
Load	22.5mm/15.9~18.1kg (0.8858 in/ 35.060~39.911 lbs)	——

(Note)

Use coil spring tester (Tool No. 07134-99901) for testing the valve spring tension.

2. Friction disc

Item	Standard Value	Serviceable Limit
Thickness	2.92~3.08 mm (0.115~0.121 in)	Replace if under 2.5 mm (0.0984 in)
Warpage	Within 0.2 mm (0.0079 in)	Replace if over 0.5 mm (0.0196 in)

3. Clutch plate **(Fig. 3-61)**

Item	Standard Value	Serviceable Limit
Thickness	3.0 mm (0.118 in)	Replace if under 2.9 mm (0.114 in)
Warpage		Replace if over 0.5 mm (0.0196 in)

4. Primary drive gear

Item	Standard Value	Serviceable Limit
Chordel distance across 3 teeth	15.769~15.790 mm (0.6208~0.6185 in)	Replace if under 15.739 mm

D. Reassembly

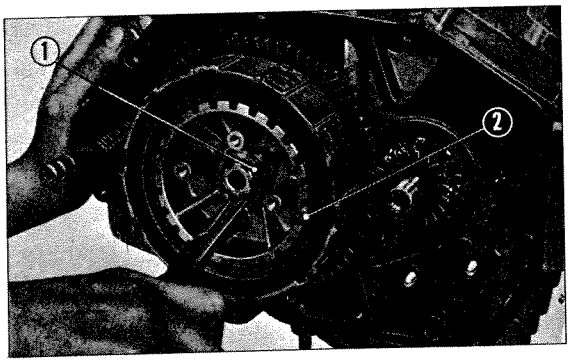
1. Reassemble the clutch in the reverse order of disassembly.

3.5 OIL PUMP, FILTER AND SEPARATOR

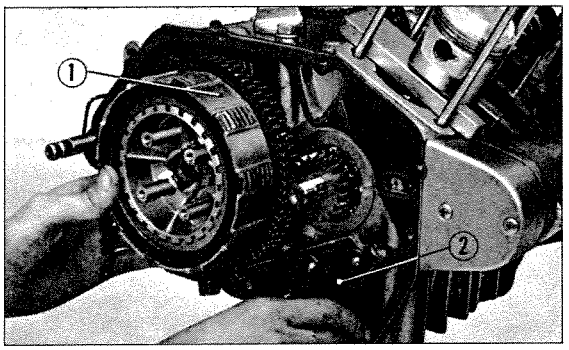
1. OIL PUMP

A. Description

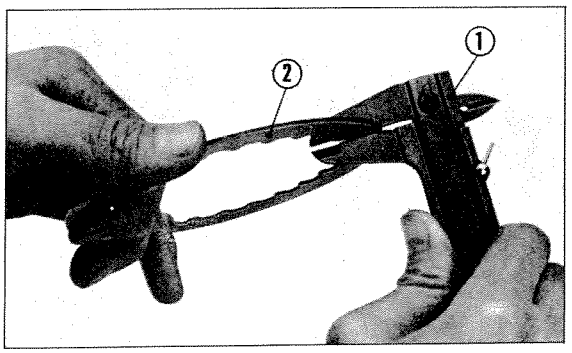
The oil pump is a plunger type, operated by a connecting rod through an eccentric cam on the transmission main shaft. **(Fig. 3-62)**



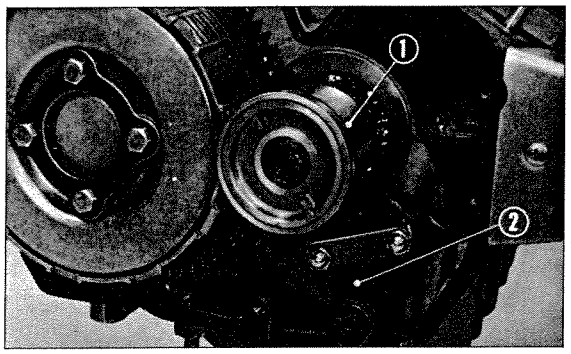
① 20 mm set ring ② Clutch center
Fig. 3-59. Removing the 20 mm set-ring



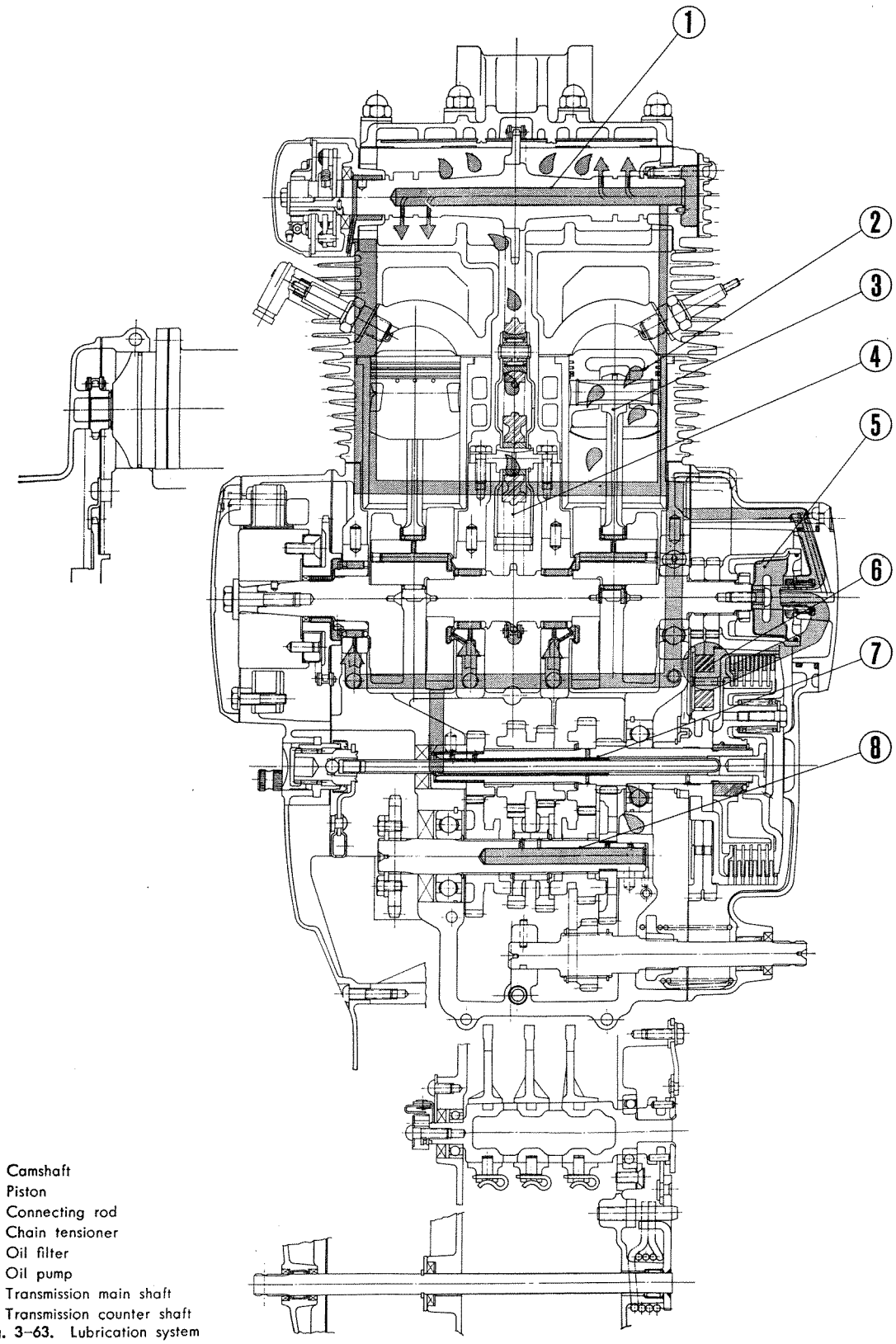
① Clutch outer ② Oil pump assembly
Fig. 3-60. Removing the clutch outer and pump body



① Vernier calipers ② Clutch plate
Fig. 3-61. Measuring the clutch plate thickness



① Oil filter rotor ② Oil pump
Fig. 3-62. Oil pump and centrifugal filter



① Camshaft
② Piston
③ Connecting rod
④ Chain tensioner
⑤ Oil filter
⑥ Oil pump
⑦ Transmission main shaft
⑧ Transmission counter shaft

Fig. 3-63. Lubrication system

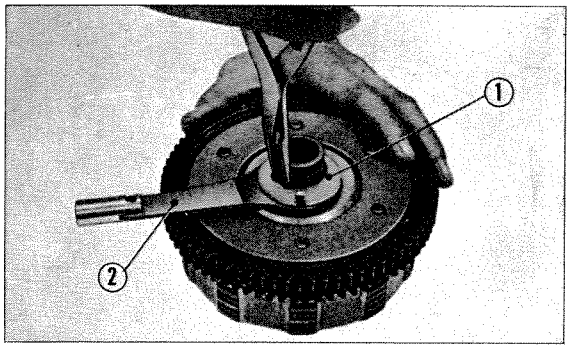
○ Lubrication system (Fig. 3–63)

The oil is picked up from the crankcase sump and routed through the oil passage to the oil filter where the impurities are removed by the centrifugally operating oil filter. The clean oil is then pressure fed through the upper crankcase to all the crankshaft bearing. The oil is separated into two routes, one is fed to the roller bearing and the other enters the crankshaft to lubricate the connecting rod large end through the holes drilled in the crankshaft journals. The connecting rod small end is lubricated by oil mist.

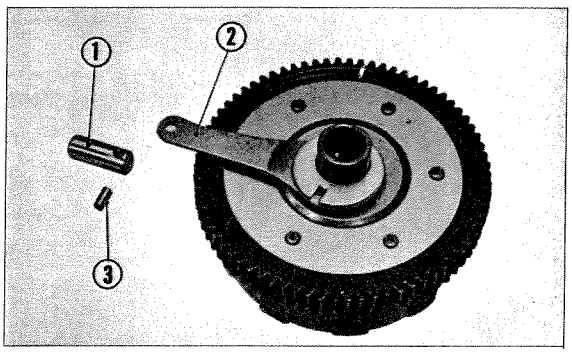
The oil from the upper crankcase oil passage is separated into two paths, one of the paths delivers oil to the top of the cylinder head through the cylinder stud bolts. This oil is fed into the camshaft from the rocker arm and lubricated. The oil lubricates the cam chain on its way down to the sump. The other oil path feeds the oil through the oil passage in the crankcase and enters the transmission to lubricate the free gears. The other gears and bearings are lubricated by oil droplets and mists.

B. Disassemble

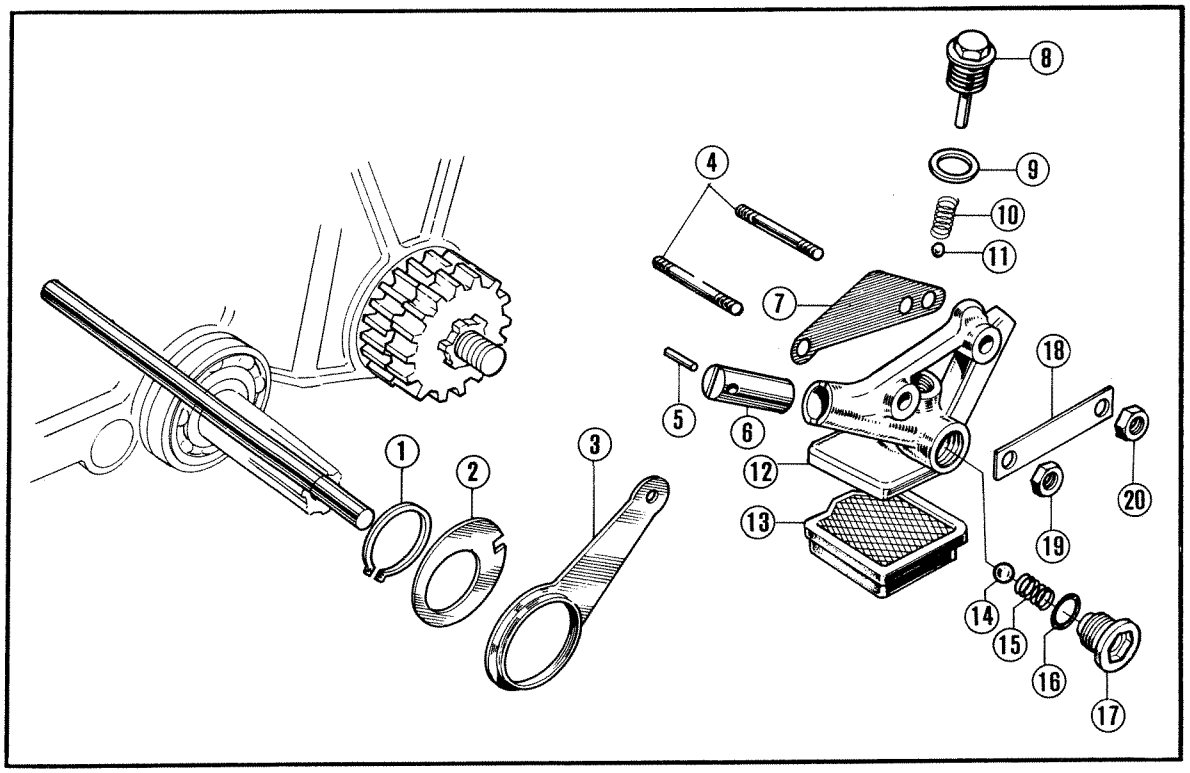
1. Remove the right crankcase.
2. Remove the oil filter.
3. Remove the right primary drive gear.
4. Separate the pump body together with the clutch.
5. By removing the 26 mm circlip, ① the pump rod ② can be separated from the clutch outer. **(Fig. 3–64)**
6. Extract the pump plunger pin ③ and remove the plunger ① at the tip of the pump rod. **(Fig. 3–65)**



① 26 mm circlip ② Pump rod
Fig. 3–64. Removing the pump rod



① Pump plunger ② Pump rod ③ Pump plunger pin
Fig. 3–65. Removing the plunger



① 26 mm circlip ② Pump rod side washer ③ Pump rod ④ 6×36 stud ⑤ Plunger pump pin ⑥ Plunger ⑦ Pump body gasket ⑧ Suction valve bolt ⑨ Suction valve bolt packing ⑩ Suction valve spring ⑪ 5/16″ steel ball ⑫ Oil pump body ⑬ Pump filter screen ⑭ 5/16″ steel ball ⑮ Valve spring ⑯ 11.5×2 O ring ⑰ Outlet valve guide ⑱ Pump lock washer ⑲⑳ 6 mm hex nut.

Fig. 3–66. Pump component parts

7. Component parts of oil pump. **(Fig. 3–66)**

C. Inspection

1. The normal capacity of the oil pump is 3600cc/minute at 10,000 rpm; if the capacity falls below 3400 cc, there is a danger of developing engine seizure, therefore the pump should be repaired or replaced.
2. Clearance of component parts

Item	Standard Value	Serviceable Limit
Plunger to housing	0.025～0.063 mm (0.001～0.0025 in)	Replace if over 0.17 mm (0.0067 in)

D. Reassembly

1. Assemble the pump in the reverse order of disassembly.

(Note)

a. Proper operation ot the oil pump can be checked by loosening the left rear cylinder head cap nut. If oil seeps out, the lubrication is normal.

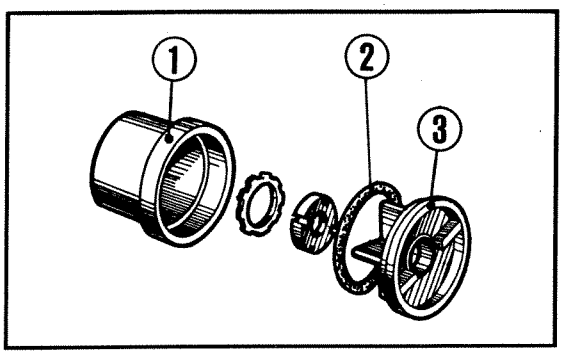
b. If there is absence of oil, check the following points :
   (a) Proper assembly of the pump.
   (b) Condition of gaskets.
   (c) Excessive clearance of punger.
   (d) Malfunction of the steel ball valve.
   (e) Clogged screw.
   (f) Clogged filter or oil passages.

2. OIL FILTER

A. Description

The engine oil is doubly filtered through the centrifugal filter and the mesh screen filter to assure clean supply of oil to the engine. **(Fig. 3–67)**

The screen filter is on the pump inlet side and the centrifugal filter is on the outlet side.

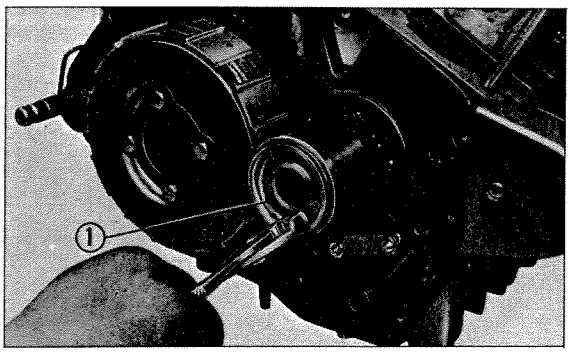


① Oil filter rotor ② 46×2 Oring ③ Oil filter cap
Fig. 3–67. Oil filter

B. Disassembly

Remove the right crankcase cover in accordance with Section 3.4. B. For cleaning of the centrifugal oil filter, only the removal of the oil filter cover is required.

1. Grasp the rib of the oil filter cap ① with a plier and draw straight out. **(Fig. 3–68)**
2. Use a screwdriver and unlock the lock washer.
3. Remove the mounting nut with a special tool.
4. Pull off the oil filter rotor.



① Oil filter cap
Fig. 3–68. Removing the oil filter cap

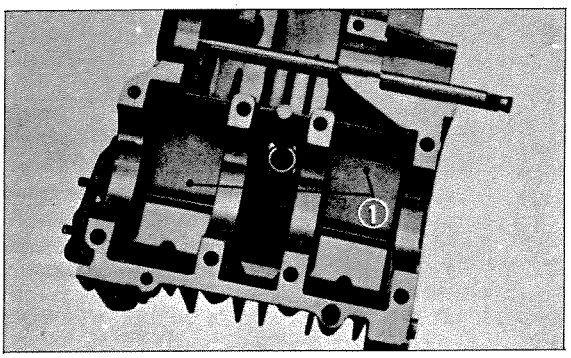
C. Reassembly

1. After cleaning of all the parts, perform the reassembly in the reverse order of disassebly.
2. Make sure that the 16 mm mounting nut is properly torqued and filter cap well seated.

3. OIL SEPARATOR

A. Operation

The oil separator ① is located in the forward section of the lower crankcase, directly below the crankshaft. Its primary function is to control the oil splashed by crankshaft counter weights, prevents oil penetration and controls the oil temperature. **(Fig. 3–69)**



① Oil separator
Fig. 3–69. Lower crankcase

3.6 CRANKCASE

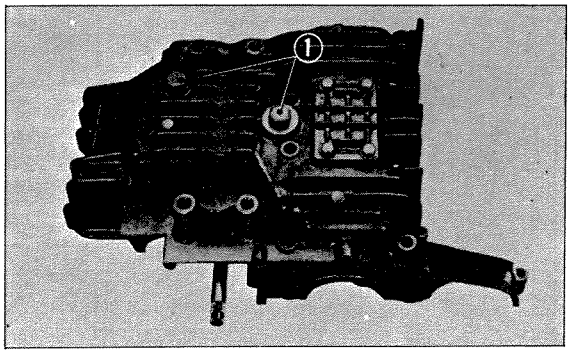
A. Description

The upper and lower crankcases are constructed of lightweight aluminum alloy and can be separated at the center lines of the crankshaft, transmission shaft, and the kick starter spindle.

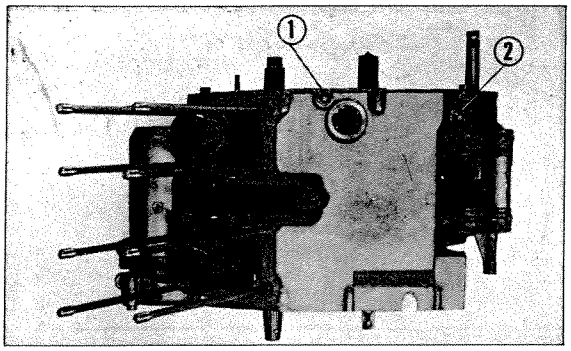
In addition, the starting motor is mounted at the front section of the CB175 crankcase.

In the upper surface of the upper crankcase, the cylinder stud bolts are inserted.

The lower crankcase is equipped with the oil separator, lower crankcase cover, and two drain plugs. **(Fig. 3–70)**



① Drain plug
Fig. 3–70. Drain plugs



① 8mm bolt ② 6mm bolt

Fig. 3-71A. Crankcase bolt

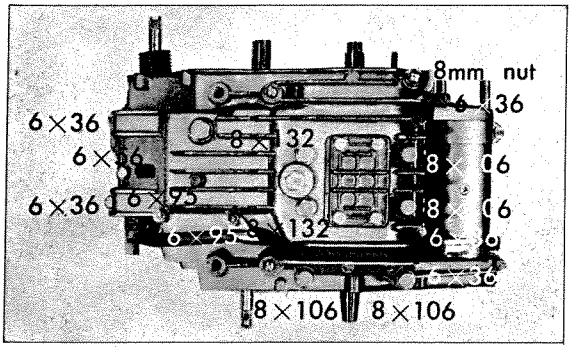
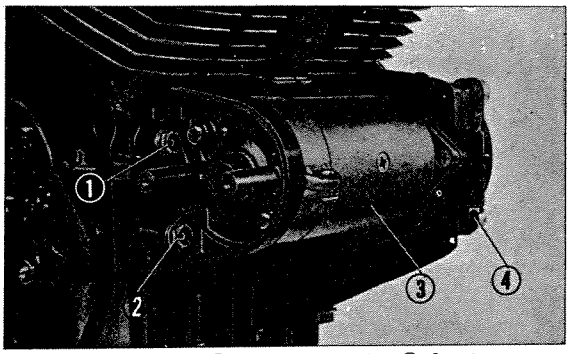


Fig. 3-71B. Bolts and nuts on the lower crankcase



① 6×20 hex bolt ② 6×28 hex bolt ③ Starting motor
④ 4×36 hex bolt

Fig. 3-72. Removing the staritng motor

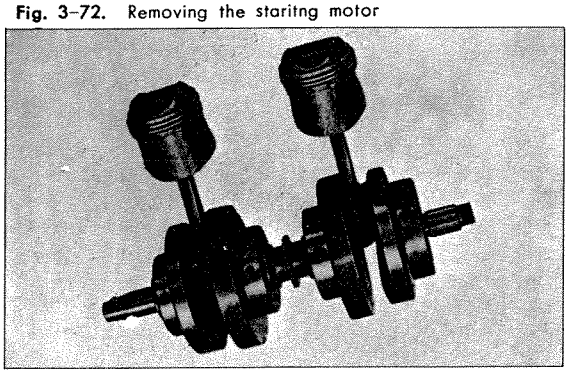


Fig. 3-73A. Crankshaft.

B. Disassembly

1. Drain oil in the crankcase.
2. Remove the cylinder head and cylinder.
3. Separate the left crankcase cover and AC generator.
4. Separate the right crankcase cover, oil filter, clutch and oil pump.
5. Remove 8 mm nut and 6 mm nut from the stud bolts at the upper part of the upper crankcase. **(Fig. 3-71-A)**
6. Remove 8 mm nut, 6 mm bolts and 8 mm bolts from the lower crankcase. **(Fig. 3-71-B)**
7. Remove the two 5×12 cross screws and starting motor side cover, and then remove the 6×20 and 6×28 bolts on the right hand side of the crankcase which mount the starting motor. **(Fig. 3-72)**
8. By removing the 6×35 bolt on the left hand side at the starting motor which is supported by the crankcase, the starting motor can be removed.
9. While the key on the gear shift arm is released from the shift drum, dismount the motor.

C. Inspection

1. Check for damages especially around the machined mating surfaces since even a small defect will cause oil leaks.

   The mating surfaces should be flat to within 0.05 mm (0.002 in). Measure with a thickness gauge on surface plate.

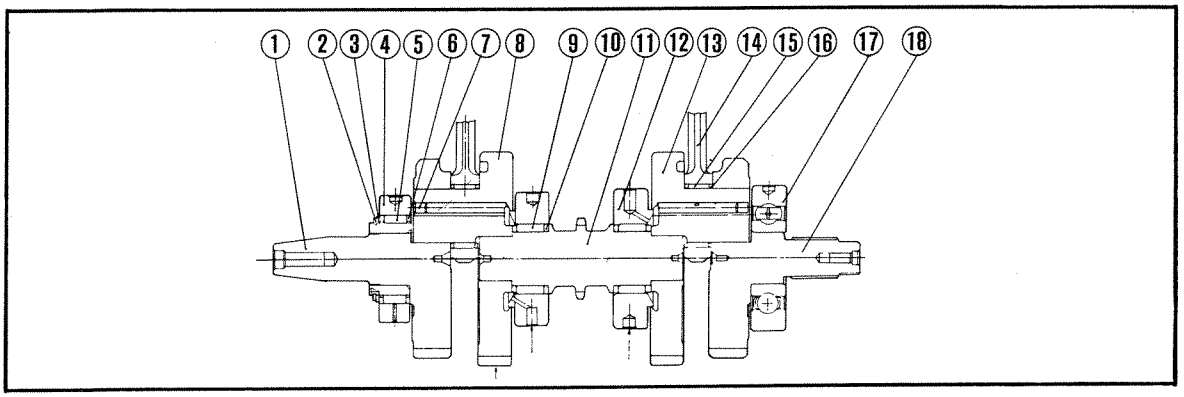
D. Reassembly

1. Assembly should be performed with attention paid to the following points
   - Clean the crankcase and inspect the mating surfaces of the crankcase for sign of leaks, scratches and other damages.
   - Apply liquid gasket to the mating surfaces of the case ; assemble after drying.

3.7 CRANKSHAFT, CONNECTING RODS, AND PISTONS

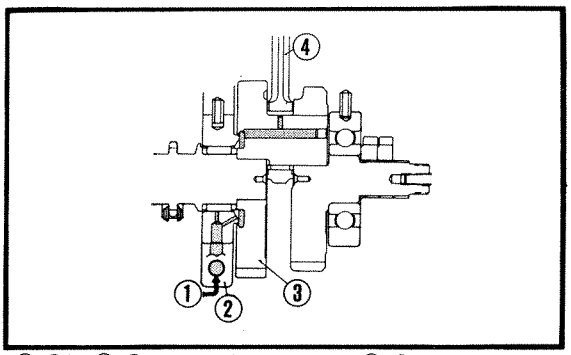
A. Construction

The crankshaft journals are made of high carbon steel and the counterweights are of nickel-chrome-molybdenum steel, assembled by press fitting. Crankshaft is supported by three roller bearings and one ball bearing which takes the thrust load and are fixed in place by dowel pins. Sprocket to drive the cam chain is machined on the center shaft. **(Fig. 3-73A, B)**



① Left crankshaft ② 35 mm circlip ③ 35 mm side washer ④ L. main bearing outer ring ⑤ 4×10 roller
⑥ L. main bearing roller retainer ⑦ 5 mm sealing washer ⑧ Left center crank weight ⑨ 4×13 roller
⑩ Center bearing roller retainer ⑪ Center crank shaft ⑫ R center crank outer ring ⑬ Right center crank weight
⑭ Connecting rod ⑮ 2.5×10 roller ⑯ Connecting rod roller retainer ⑰ 6305 SHS ball bearing ⑱ Right crankshaft
Fig. 3–73B. Crankshaft complete sectional diagram

The oil outlet passage in the upper crankcase is aligned to the oil annular groove in the crank counterweight. Oil is forced into the crankpin by centrifugal force to lubricate the connecting rod bearing. There is also a separate oil route to lubricate the main bearings. **(Fig. 3–74)**



① Oil ② Center crank outer ring ③ Crank weignt
④ Connecting rod
Fig. 3–74. Crankshaft lubricating passage

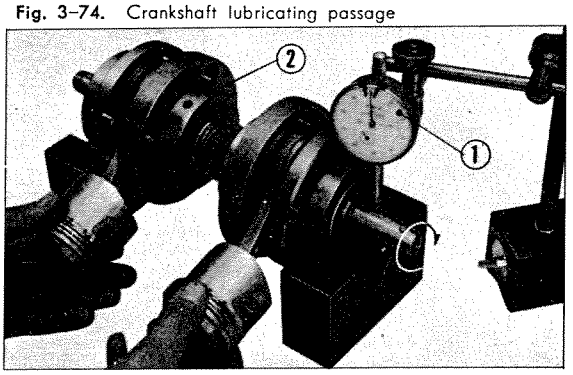
B. Disassembly

1. Drain oil from the crankcase.
2. Separate the cylinder head and cylinder.
3. Separate the left and right crankcase cover.
4. Separate the AC generator and clutch oil pump.
5. Disassemble the crankcase in accordance with section 3.6B.

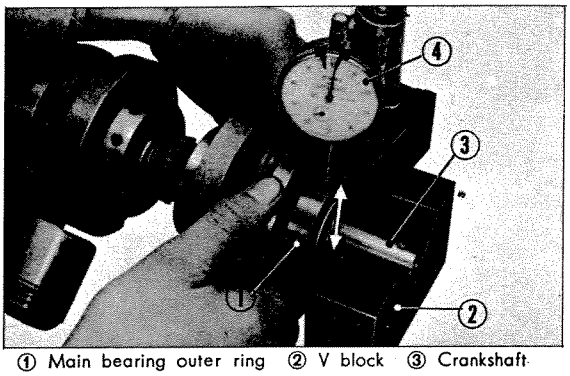
C. Inspection

1. Support the crankshaft on V blocks at both bearings and measure the amount of runout. **(Fig. 3–75)**

Item		Standard Value	Serviceable Limit
Total runout	Left bearing web side at 30 mm (1.3 in)	0.02 mm (0.0008 in)	Replace or repair if over 0.08 mm (0.0032 in)
	Right bearing web side at 30 mm (1.3 in)	0.02 mm (0.0008 in)	Replace or repair if over 0.08 mm (0.0032 in)

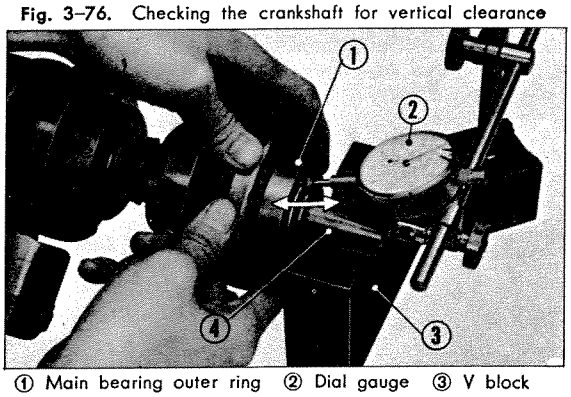


① Dial gauge ② Crankshaft complete
Fig. 3–75. Measuring the shaft runout



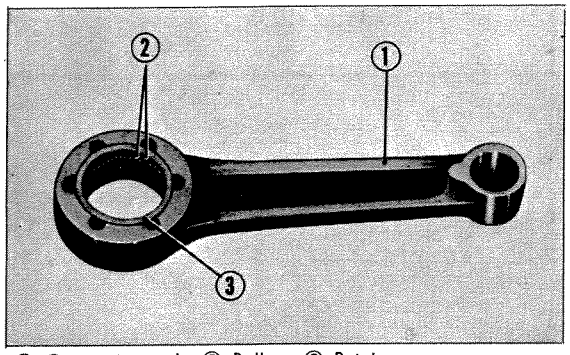
① Main bearing outer ring ② V block ③ Crankshaft
④ Dial gauge

Fig. 3–76. Checking the crankshaft for vertical clearance



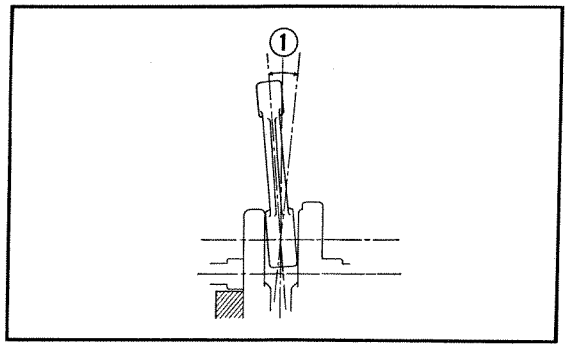
① Main bearing outer ring ② Dial gauge ③ V block
④ Crankshaft

Fig. 3–77. Checking the crankshaft for side clearance



① Connecting rod ② Roller ③ Retainer

Fig. 3–78.



① Max deflection

Fig. 3–79. Checking deflection at the piston end of the connecting rod

2. The clearance in the bearing is measured by fixing the crankshaft on centers and moving the bearing in the axial and vertical direction. **(Fig. 3–76, 3–77)**

Item	Standard Value	Serviceable Limit
Axial clearance	Within 0.05 mm (0.0020 in)	Replace if over 0.1 mm (0.0040 in)
Clearance normal to axis	0.012~0.02 mm (0.0005~0.0008 in)	Replace if over 0.05 mm (0.0020 in)

When the clearance in the axial direction becomes excessive, the crankshaft will move from side when engine is running and produce undesireable noises as well as causing uneven wear to the cylinder, piston and the timing gear.

2. CONNECTING RODS

A. Description

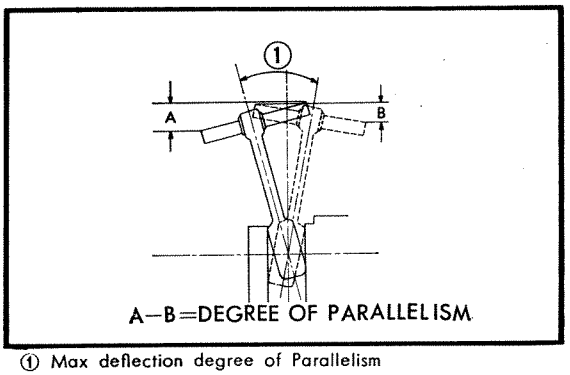
The connecting rods are of molybdenum steel ana have an H–shaped section ; the roller bearings at the crankshaft end. The crankshaft is polished after case hardening and mounts the roller without race. The roller (2.5×10) is held by the roller retainer made of special aluminum alloy. Staggered rollers are used in order to increase the load capacity. **(Fig. 3–78)**

B. Inspection

1. Measurement of deflection at the piston end of the connecting rod. **(Fig. 3–79)**

Item	Standard Value	Serviceable Limit
Deflection		Replace if over 3.0 mm (0.1181 in)

2. Measurement to determine if the connecting rod ends are correctly aligned and parallel is obtained by measuring the difference of inclination of points 50 mm (2.0 in) away from the center when a 100 mm (4.0 in) bar with the same thickness as the piston pin diameter is inserted into the bore of the piston end and twisted to the right and left, and when the bar is rotated 90° and again twisted to the right and left. **(Fig. 3-80)**

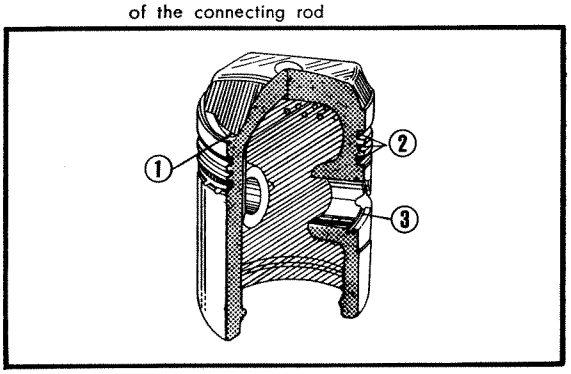


① Max deflection degree of Parallelism
Fig. 3-80. Checking level of parallel at the piston end of the connecting rod

3. PISTON

A. Description

The piston is made from select material, an aluminum casting. This material is light and suitable for high speed, in addition to having good heat conducting property to dissipate the heat rapidly. Furthermore, the coefficient of heat expansion is small thus minimizing the warpage at elevated temperature and permitting a small piston to cylinder clearance design. The shape of the piston is an elliptical taper. The head of the piston, compared to the skirt, is exposed to higher temperature and since the expansion is greater, it is taperingly smaller toward the top. The tapering of the piston also tends to lessen the piston slap when the throttle is lightly snapped without the engine being loaded. **(Fig. 3-81)**



① Valve escape ② Piston ring grooves ③ Piston pin hole
Fig. 3-81. Piston

The piston employs a four step taper. The piston pin boss area is made thicker thereby resulting in greater expansion at high temperature. For this reason, the diameter of the piston skirt is made smaller in the direction of the piston pin so that at the high oprating temperature, the piston will expand into a true circular shape. The skirt is constantly provided with flexibility to assure that no deformation will result even from extended continuous driving.

The piston pin is offset 1 mm (0.04 in) from the piston centerline in the direction of the inlet side so that when the piston approaches the top dead center of the compression stroke, the side load from the cylinder moves from the right side to the left. With a "O" offset, the point will move to align with the top-dead-center of the compression stroke.

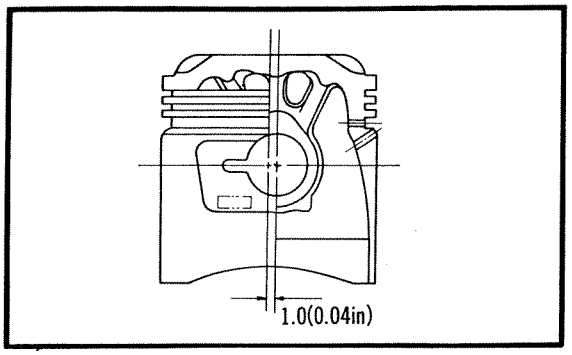
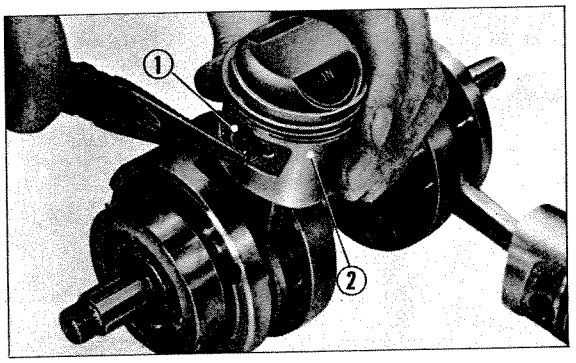


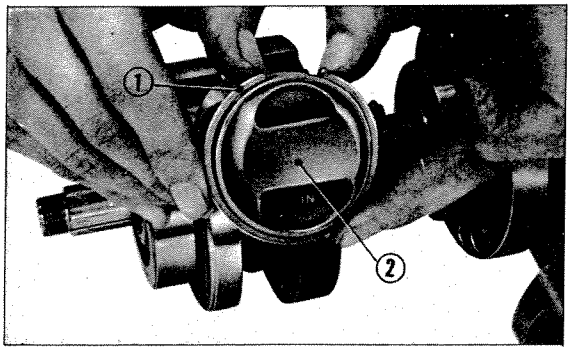
Fig. 3-82. Piston offset

B. Disassembly

1. Remove the piston pin clip and push out the piston pin. **(Fig. 3-83)**



① Piston pin clip ② Piston
Fig. 3-83. Removing the piston pin



① Piston ring ② Piston
Fig. 3–84. Removing the piston ring

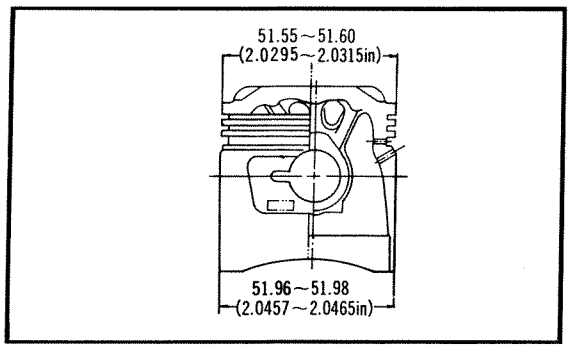
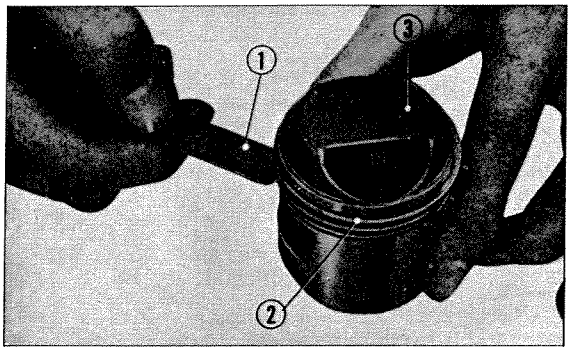
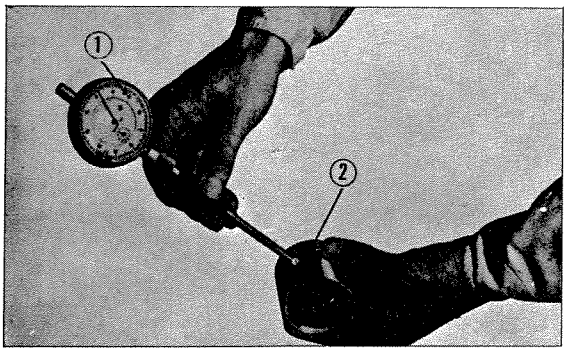


Fig. 3–85. Measuring the piston outside diameter



① Thickness gauge ② Piston ring ③ Piston
Fig. 3–86. Measuring the ring groove clearance



① Cylinder gauge ② Piston
Fig. 3–87. Measuring piston pin hole

2. Remove the piston rings from the piston by using a piston ring tool (special tool). If the tool is not available, the rings may be removed by hand, spreading the rings at the ring opening with both hands. During the process, the ring should not be twisted or expanded more than necessary as it will cause the ring to break. **(Fig. 3–84)**

C. Inspection

1. Before inspection, carbon adhering to the piston head or ring groove should be removed, using care not to scratch the piston.

(Note)

Sandpaper should not be used for removing carbon, use a carbon scraper.

2. Piston outside diameter **(Fig. 3–85)**

Item	Standard Value
Head diameter	51.55~51.60 mm (2.0295~2.0314 in)
Major diameter	51.96~51.98 mm (2.0457~2.0465 in)

3. Ring groove clearance when a new piston ring is fitted. **(Fig. 3–86)**

Item	Standard Value	Serviceable Limit
Top ring	0.025~0.055 mm (0.001~0.00 in)	Replace if over 0.1 mm (0.004 in)
Second ring	0.015~0.045 mm (0.0006~0.0018 in)	Replace if over 0.1 mm (0.004 in)
Oil ring	0.010~0.045 mm (0.0004~0.0018 in)	Replace if over 0.1 mm (0.004 in)

4. Piston pin hole **(Fig. 3–87)**

Item	Standard Value	Serviceable Limit
Bore	14.002~14.008 mm (0.551~0.552 in)	Replace if over 14.05 mm (0.5532 in)

5. For oversize pistons, there are three at intervals of 0.25 mm (0.01 in).

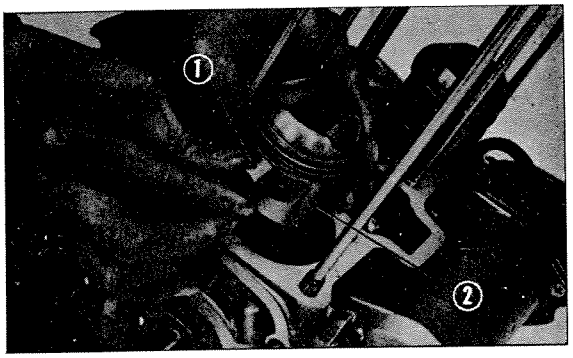
D. Reassembly

1. Assemble the piston on the connecting rod, only a slight pressure should be required to install the piston pin. Install the piston pin retaining clip at both ends. **(Fig. 3–88)**

(Note)

(a) The top of the piston is marked with "IN" to one side. Piston must be installed with this mark toward the inlet side.

(b) Use the new piston in clips.



① Piston pin ② Piston
Fig. 3–88. Assembling the piston

4. PISTON RINGS

A. Construction

The piston rings perform a vital function of forming a seal between the piston and cylinder, controlling the lubrication of the cylinder wall and dissipating the heat from the piston. This serves to develop greater power output.

The rings are made of special cast iron for strength, wear resistance, heat resistance and good heat conducting qualities. Rings are given parkerizing treatment for added strength.

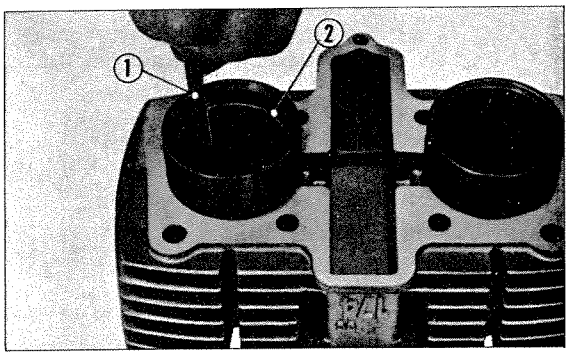
Top two rings are compression rings to prevent gas leak, these two rings are made with a slight tapered surface where it contacts the cylinder wall to expedite wearing-in, top ring outer surface is hard chrome plated for extra wear.

The oil ring is grooved for oil scraping

B. Inspection

1. When the piston ring has been removed, it should be fitted with the gap approximately 15 mm (0.6 in) from skirt of the cylinder at a right angle to the center line. Measurement of the gap should be made with a thickness gauge. **(Fig. 3–89)**

Item	Standard Value	Serviceable Limit
Top ring	0.15~0.4 mm (0.006~0.018 in)	Replace if over 0.8 mm (0.0315 in)
Second ring	0.15~0.4 mm (0.006~0.016 in)	Replace if over 0.8 mm (0.0315 in)
Oil ring	0.15~0.4 mm (0.006~0.016 in)	Replace if over 0.8 mm (0.0315 in)



① Thickness gauge ② Piston ring
Fig. 3–89. Measuring the piston ring gap

2. Tension of the piston ring is measured with a tension measuring instrument.

Item	Standard Value	Serviceable Limit
Top, Second ring	0.52~0.78 kg (0.020~0.030 lb)	Replace if under 0.42 kg (0.926 lb)
Oil ring	0.72~10.08 kg (0.028~0.397 lb)	Replace if under 0.53 kg (1.169 lb)

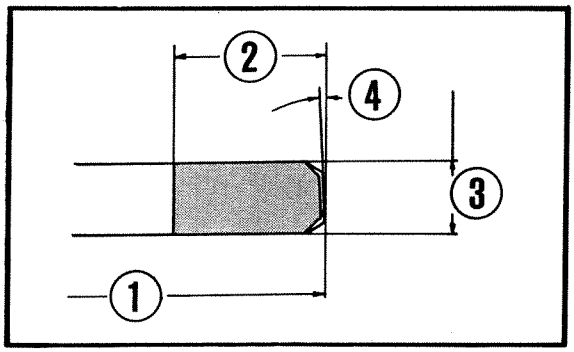


Fig. 3-90A. Piston ring (Top)

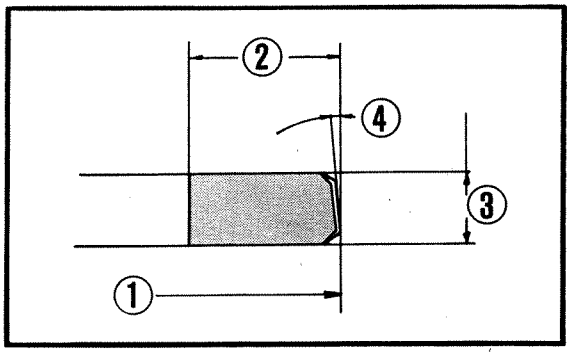


Fig. 3-90B. Piston ring (Second)

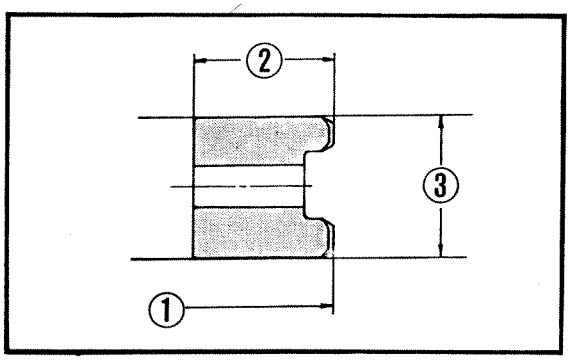


Fig.3-90C. Piston ring (Oil)

3. Piston ring dimensions. **(Fig. 3-90A, B, C)**

	No.	Item	Standard Value	Serviceable Limit	Mark
TOP RING	①	Outside dia (Standard)	52.00 (2.047 in)		None
		Outside dia 0.25 (Oversize)	52.25 (2.057 in)		25
		Outside dia 0.50 (Oversize)	52.50 (2.067 in)		50
		Outside dia 0.75 (Oversize)	52.75 (2.077 in)		75
		Outside dia 1.00 (Oversize)	53.00 (2.087 in)		100
	②	Width	2.3~2.5 (0.091~0.098 in)		
	③	Thickness	1.165~1.18 (0.046~0.0464 in)	1.125 (0.0443 in)	
	④	Angle	20'~50'		
SECOND RING	①	Outside dia (Standard) Outside dia 0.25 (Oversize) Outside dia 0.50 (Oversize) Outside dia 0.75 (Oversize) Outside dia 1.00 (Oversize)	Same as top ring		
	②	Width	2.3~2.5 (0.091~0.098 in)		
	③	Thickness	1.175~1.19 (0.046~0.047 in)	1.135 (0.0447 in)	
	④	Angle	1°~1°30'		
OIL RING	①	Outside dia (Standard) Outside dia 0.25 (Oversize) Outside dia 0.50 (Oversize) Outside dia 0.75 (Oversize) Outside dia 1.00 (Oversize)	Same as top ring		
	②	Width	2.3~2.5 (0.091~0.098 in)		
	③	Thickness	2.475~2.49 (0.097~0.098 in)	2.43 (0.0957 in)	
	④	Angle	None		

C. Replacing the piston rings

1. When a piston ring is reassembled, it should be fitted to the cylinder. Inspection should be made to determine if the gap of each ring is between 0.15 mm (0.006 in) and 0.4 mm (0.018 in). If the gaps are somewhat less, they should be dressed with a file.

(Caution)

(a) When a gap is dressed with a file, adjustment should be made perpendicular to the rings.

(b) If the piston ring gap is too small, seizure between the ring and cylinder occurs due to thermal expansion; if the gap is too large, oil penetration or gas leakage occurs.

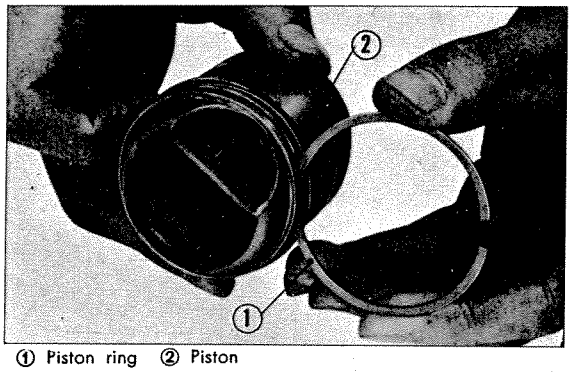
2. When piston ring is assembled on the piston, any interference between the ring and the groove may prevent smooth operation. It is necessary to inspect for clearance, when new ring is fitted to the groove, by rotating the ring around the circumference. **(Fig. 3–91)**
3. Install the rings on the piston with the piston ring tool, the rings may also be installed manually. Install the bottom ring first.

(Caution)

(a) Care should be exersized not to install the rings upside down. The top side of the ring is marked near the ring opening with the manufacturers initials. **(Fig. 3–92)**

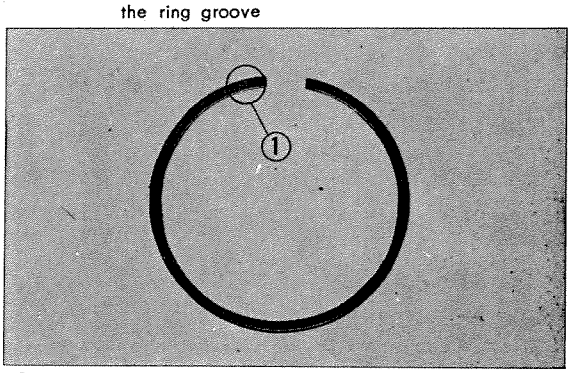
(b) Worn or rings which has lost its tension should be replaced.

4. Space the piston ring gaps 120° apart. Aligning of the gaps will result in pressure leak.



① Piston ring ② Piston

Fig. 3–91. Inspection of the piston ring by rotating around the ring groove



① Mark

Fig. 3–92. Piston ring

3.8 CAM CHAIN TENSIONER AND CAM CHAIN GUIDE ROLLER

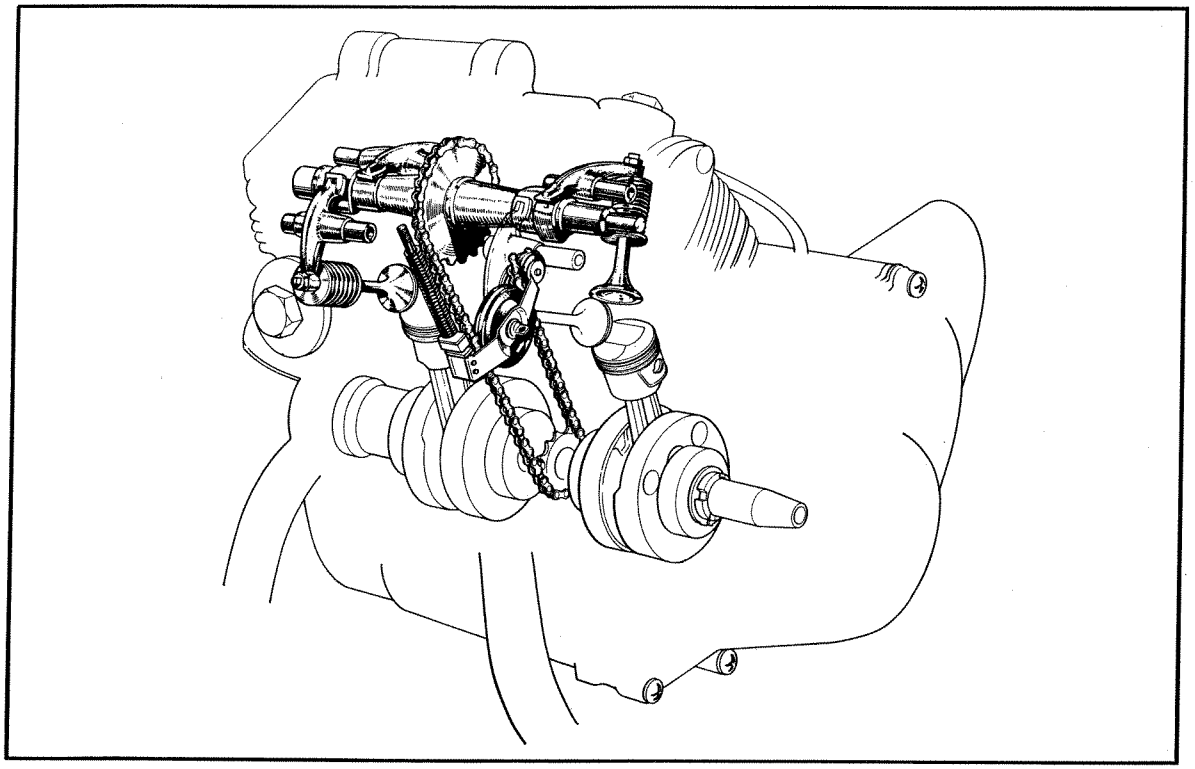


Fig. 3–93. Cam chain tensioner

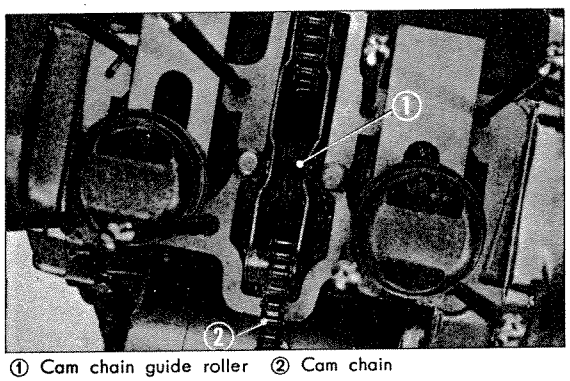
1. CAM CHAIN TENSIONER

A. Operation

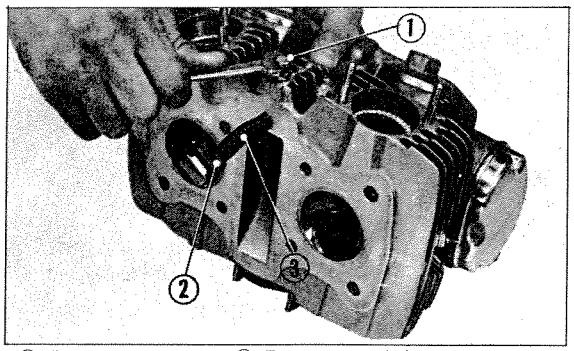
The cam chain tightener is used to tighten the cam chain from the outer side with the cam chain guide roller in between.

As shown in the figure, the tensioner push bar is automatically under compression by the cam chain tensioner spring and supports one end of the tightener.

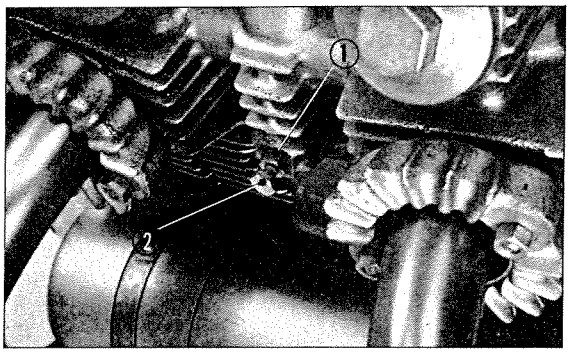
On the other hand, the tensioner roller is applying pressure against the cam chain. When the tensioner set bolt is loosened, the tensioner push bar automatically takes up the slack of the cam chain by applying force from the spring. **(Fig. 3–93)**



① Cam chain guide roller ② Cam chain
Fig. 3–94. Cam chain tensioner



① Tensioner set bolt ② Tensioner push bar
③ Tensioner spring
Fig. 3–95. Assembling the tensioner push bar



① Lock nut ② Tensioner set bolt
Fig. 3–96. Adjusting the cam chain

B. Disassembly

1. Separate the cylinder head and cylinder.
2. Tie a wire across the ends of the cam chain.
3. Remove the two 6×20 bolts mounting the cam chain guide roller and separate the cam chain tensioner from the crankcase.
4. The cam chain guide roller is coupled to the cam chain tensioner and remove the cam chain guide roller pin and then separate the cam chain tensioner. **(Fig. 3–94)**
5. When the 5 mm thin nut is loosened and the tensioner set bolt is removed, the tensioner push bar coupled to the cylinder head is separated together with the tensioner spring. **(Fig. 3–95)**

C. Inspection

1. Check the cam chain tensioner for any damage or wear.

Item	Standard Value	Serviceable Limit
Tensioner spring free length	83 mm (3.268 in)	Replace if under 80 mm (3.1496 in)
Tension	41 mm/0.55~0.65kg (1.614 in/1.21~1.43 lbs)	——

D. Reassembly

1. Perform the assembly in the reverse order of disassembly.
   a. Replace any worn or damaged guide or tensioner roller.
   b. Assemble the tensioner push bar and spring into the cylinder head and lock with the set bolt. The push bar should be in the retracted position to facilitate connecting the cam chain. **(Fig. 3–95)**

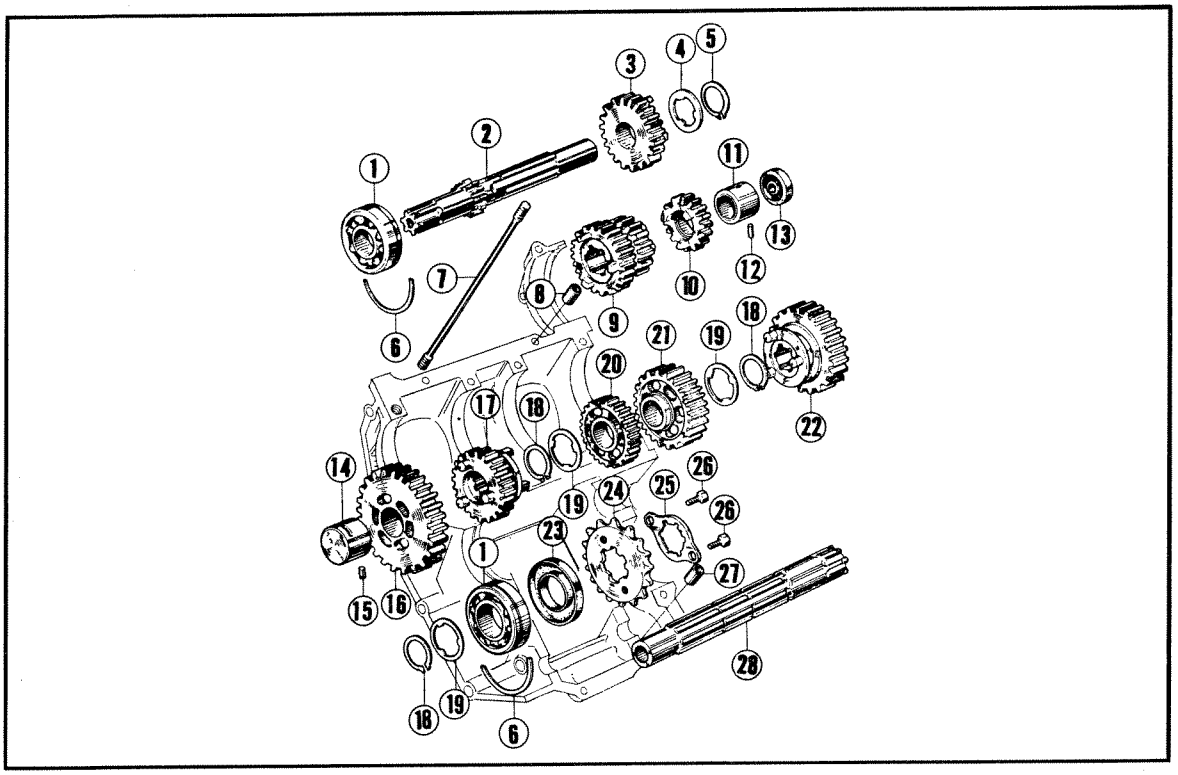
E. Cam chain tension adjustment

1. Loosen the tensioner set bolt and the chain will tighten automatically.
2. Reset the tensioner set bolt and lock with the lock nut. **(Fig. 3–96)**

3.9 TRANSMISSION

A. Description

The transmission receives the rotary power from the crankshaft and through a series of gears, changes it to the desired speed and then transmits it to the drive sprocket to drive the rear wheel. All the gears are fully constant meshed, assuring smooth gear change. **(Fig. 3–97)**



① 6304 HS ball bearing ② Transmission main shaft ③ Main shaft top gear ④ 20 mm thrust washer A
⑤ 20 mm cir-clip ⑥ Ball bearing set ring A ⑦ 8×152 stud ⑧ 10×14 knock pin ⑨ Main shaft shifting gear
⑩ Main shaft second gear ⑪ 15 mm bearing bush A ⑫ Knock pin ⑬ 8×25×8 oil seal ⑭ 16 mm bearing bush B
⑮ Knock pin ⑯ Counter shaft low gear ⑰ Counter shaft second gear ⑱ 20 mm cir-clip ⑲ 20 mm thrust washer A
⑳ Counter shaft fourth gear ㉑ Counter shaft third gear ㉒ Counter shaft top gear ㉓ 20×52×9 TC-type oil seal
㉔ Drive sprocket (16T) ㉕ Drive sprocket fixing plate ㉖ 6×10 hex. bolt ㉗ 10×14 knock pin
㉘ Transmission counter shaft

Fig. 3–97. Transmission

1. OPERATION

When the clutch is engaged, the power from the crankshaft is transmitted through the clutch assembly to drive the transmission main shaft. During the shifting of the transmission gears, the clutch is disengaged to stop the rotation of the main shaft.

The position of the gears will be described in reference to the neutral gear.

Neutral : **(Fig. 3–98)**

When the transmission is in neutral, the gears in the transmission are arranged so that there is no power transmitted from the transmission main shaft to the counter shaft. The fixed main shaft low gear ① is meshed with the free rotating counter shaft low gear ②, free rotating main shaft

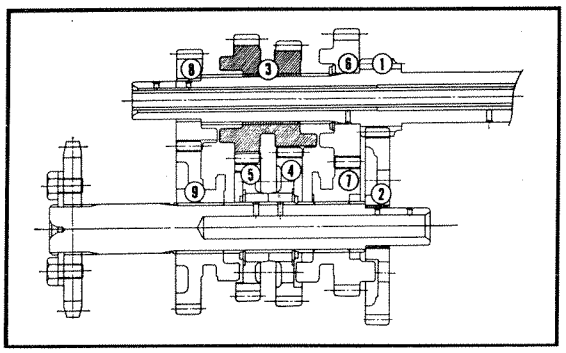


Fig. 3–98. Neutral

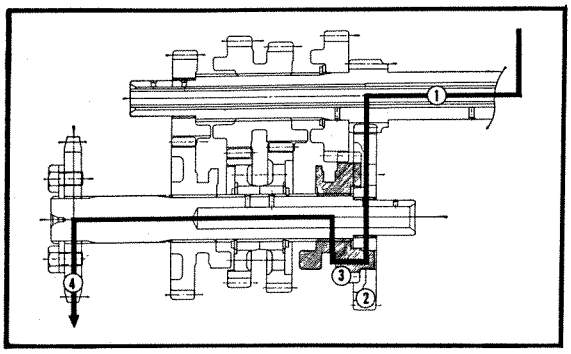


Fig. 3-99. Low gear

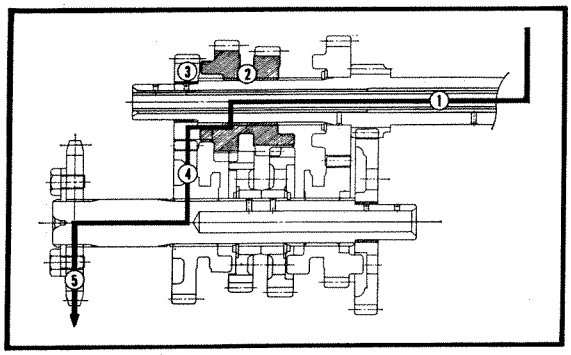


Fig. 3-100. Second gear

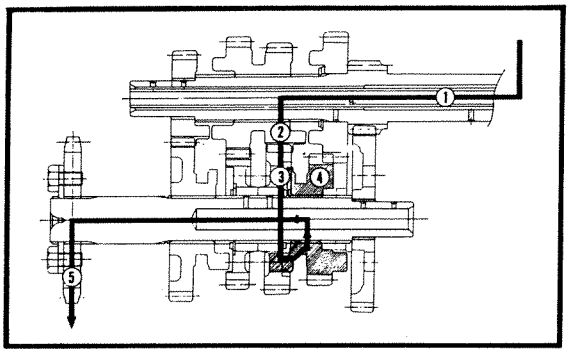


Fig. 3-101. Third gear

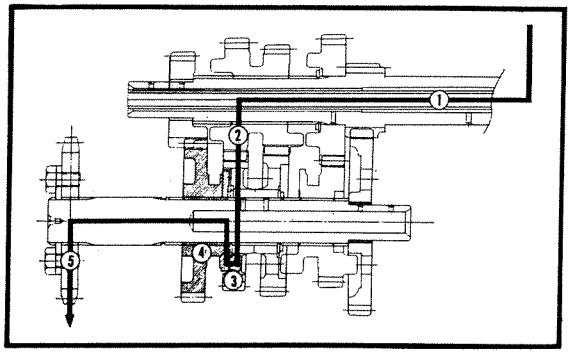


Fig. 3-102. Fourth gear

top gear ⑥ is meshed with the sliding counter shaft top gear ⑦, sliding main shaft third-fourth gears ③ are meshed with the free rotating counter shaft thirdfourth gears ④ ⑤ and the free rotating main shaft second gear ⑧ is meshed with the splined counter shaft second gear ⑨.

Low : **(Fig. 3-99)**

When the gear is shifted to low, the sliding counter shaft top gear ③ is moved by the shift fork to engage with the free rotating counter shaft low gear ②. The power from the transmission main shaft ① is transmitted through the fixed main shaft low gear to the counter shaft low gear, across to the counter shaft top gear and then to the drive sprockt ④ mounted on the end of the counter shaft.

Second : **(Fig. 3-100)**

When the gear is shifted to second, the sliding main shaft third-fourth gear ② is moved by the shift fork to engage with the free rotating main shaft second gear ③. The power from the transmission main shaft ① is transmitted through the main shaft third-fourth gear to the main shaft second gear which drives the counter shaft second gear ④ and hence the drive sprocket ⑤ mounted on the end of the counter shaft.

Third : **(Fig. 3-101)**

When the gear is shifted to third, the counter shaft top gear ④ is moved by the shift fork to engage with the counter shaft third gear ③. The power from the transmission main shaft is transmitted throught the main shaft third-fourth gear to the counter shaft third gear, across to the counter shaft top gear ④ and to drive the drive sprocket ⑤ mounted on the end of the counter shaft.

Fourth : **(Fig. 3-102)**

When the gear is shifted to fourth gear, the sliding counter shaft second gear ④ is moved to become engaged with the free rotating counter shaft fourth gear ③. The power from the transmission main shaft is transmitted through the main shaft third-fourth gear ② to the counter shaft fourth gear ③, across to the counter shaft second gear ④ and then to the drive sprocket ⑤ at the end of the counter shaft.

Top : **(Fig. 3-103)**

When the gear is shifted to top gear, the sliding main shaft third-fourth gear ③ is moved by the shift fork to become engaged with the free rorating main shaft top gear ②.

The power from the transmission main shaft is transmitted to the main shaft third-fourth gear ③, over to the main shaft top gear ②, across to the counter shaft top gear ④ and then to the drive sprocket ⑤ at the end of the counter shaft.

B. Disassembly

1. Disassemble the cylinder head and cylinder.
2. Separate the crankcase.

C. Inspection

1. Main shaft to main shaft gear clearance.

Item	Standard Value	Serviceable Limit
Second gear (15φ)	0.016~0.045 mm (0.0006~0.0018 in)	Replace if over 0.1 mm (0.004 in)
Top gear (20φ)	0.011~0.045 mm (0.0004~0.0018 in)	Replace if over 0.1 mm (0.004 in)

2. Counter shaft to counter shaft gear clearance.

Item	Standard Value	Serviceable Limit
Third, Fourth gear	0.009~0.025 mm (0.0004~0.0010 in)	Replace if over 0.1 mm (0.004 in)
Low gear	0.016~0.045 mm (0.0006~0.0018 in)	Replace if over 0.1 mm (0.004 in)

3. Bearing clearance. **(Fig. 3-104)**

Item	Standard Value	Serviceable Limit
Axial clearance	Within 0.05 mm (0.002 in)	Replace if over 0.1 mm (0.004 in)
Radial clearance	0.01~0.025 mm (0.0004~0.0010 in)	Replace if over 0.05 mm (0.002 in)

4. Shift drum groove. **(Fig. 3-105)**

   Standard value : 6.1~6.2 mm (0.240~0.244 in)
   Serviceable limit : 6.4 mm (0.256 in)

D. Reassembly

1. Assemble the transmission gears in the reverse order of removal.
2. After assembly, all components should be checked to assure that the operation is smooth without any binding.
3. Inspect the mating surfaces of the crankcase for any scratches or damage which will be a source of oil leak.

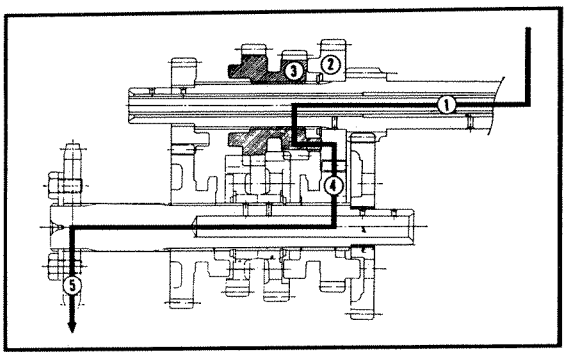
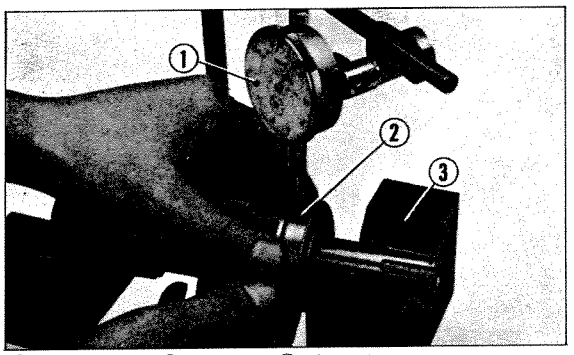


Fig. 3-103. Top gear



① Dial gauge ② Bearing ③ V block
Fig. 3-104. Measuring clearance of the bearing

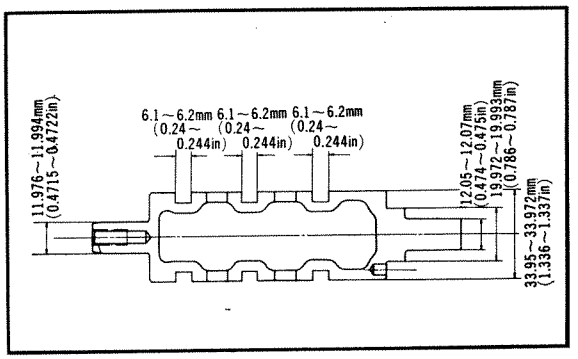
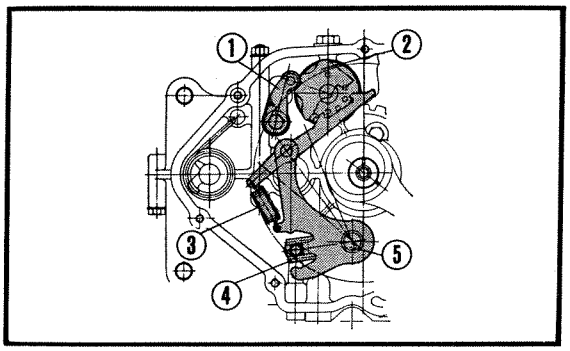
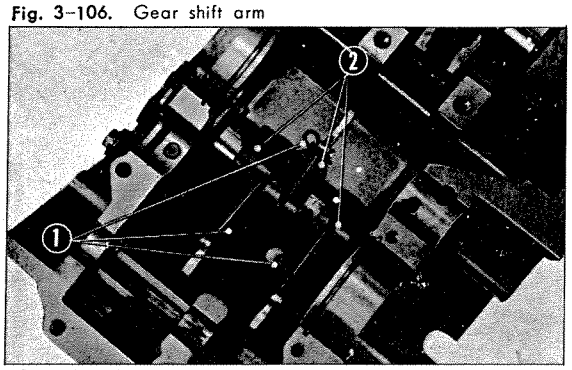


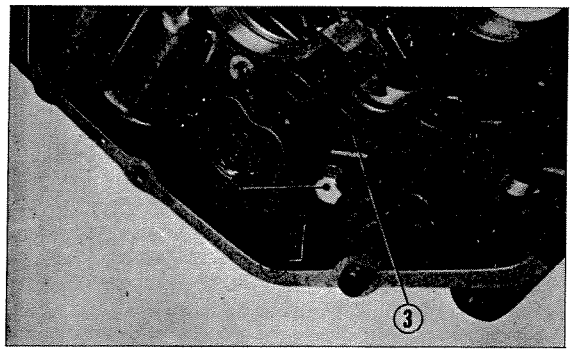
Fig. 3-105. Measuring the shift drum groove



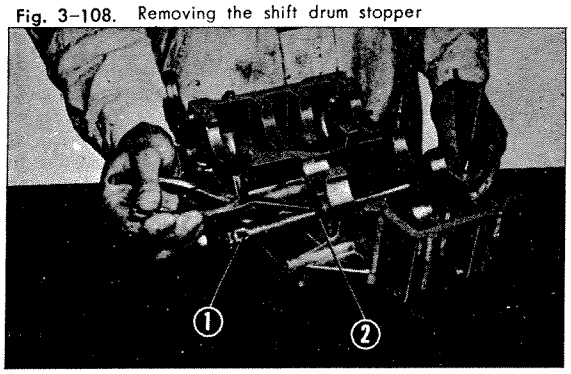
① Shift drum stopper ② Gear shift drum
③ Gear shift arm spring ④ Gear shift return spring
⑤ Gear shift spindle comp.
Fig. 3–106. Gear shift arm



① Shift fork guide pin clips ② Gear shift forks
Fig. 3–107. Removing the shift fork guide pins



① 6×20 hex bolt ② Shift drum stopper
③ Stopper arm plate
Fig. 3–108. Removing the shift drum stopper



① Gear shift spindle ② 12 mm set ring
Fig. 3–109. Removing the gear shift spindle

3.10 GEAR SHIFT

A. Operation

The gear shift fork is moved linearly by the rotary movement of the gear shift drum. When the gear shift pedal is depressed, the gear shift spindle, through the gear shift arm, causes the shift drum to move either in the clockwise or counter clockwise direction, depending upon whether the forward or rear of the pedal is depressed. The shift forks are fitted over the shift drum and guided in its linear movement by the cam groove on the surface of the shift drum into which the fork guide pins are inserted. Rotation of the drum shifts the forks to the right or left which in turn performs the gear shifting. A gear shift return its normal position after each gear change stroke. **(Fig. 3–106)**

B. Disassembly

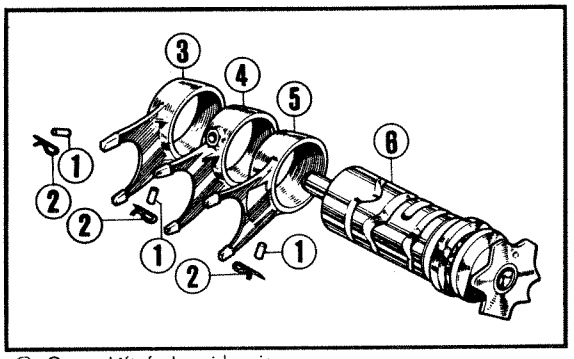
1. Disassemble the transmission in accordance with section 3.9. B.
2. Pull out the gear shift guide pin clips and guide pins. **(Fig. 3–107)**
3. Remove the neutral switch rotor and stator from the left end of the shift drum.
4. Unscrew 6×20 hex. bolt ① and remove the shift drum stopper ② and stopper arm plate ③ **(Fig. 3–108)**
5. Draw out the gear shift drum.
6. The gear shift spindle and return spring can be removed by removing the set ring from the opposite end of the gear shift spindle. **(Fig. 3–109)**

C. Inspection

1. Inspect the gear shift spindle, gear shift arm and gear shift forks for twist or bend.
2. Inspect the gear shift drum and guide pin for excessive wear.
3. Check the springs for breakage and proper tension.

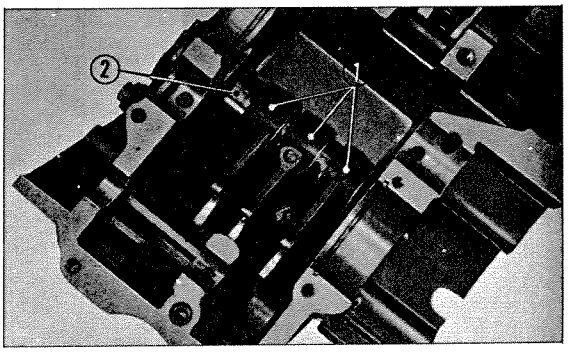
D. Reassembly

1. Insert the gear shift drum at the right side of the upper crankcase and assemble the gear shift fork in the crankcase. **(Fig. 3–110, 3–111)**
2. Assemble the shift fork with the gear shift fork guide pins and guide pin clips.
3. Assemble the neutral switch rotor and the stator.
4. Assemble the shift drum stopper; this completes upper case assembly.
5. Assemble the gear shift return spring in the lower crankcase.
6. The gear shift spindle should be inserted together with the return spring from the right side of the lower crankcase. The gear shift spindle side stopper and oil seal should be inserted at the left end of the shift spindle and then install the set ring.
7. Assemble the crankshaft with transmission gears in the upper case and tighten the lower crankcase.
8. Complete the assembly in accordance with section 3.8.



① Gear shift fork guide pin
② Gear shift fork guide pin clip ③ Left gear shift fork
④ Center gear shift fork ⑤ Right gear shift fork
⑥ Gear shift drum.

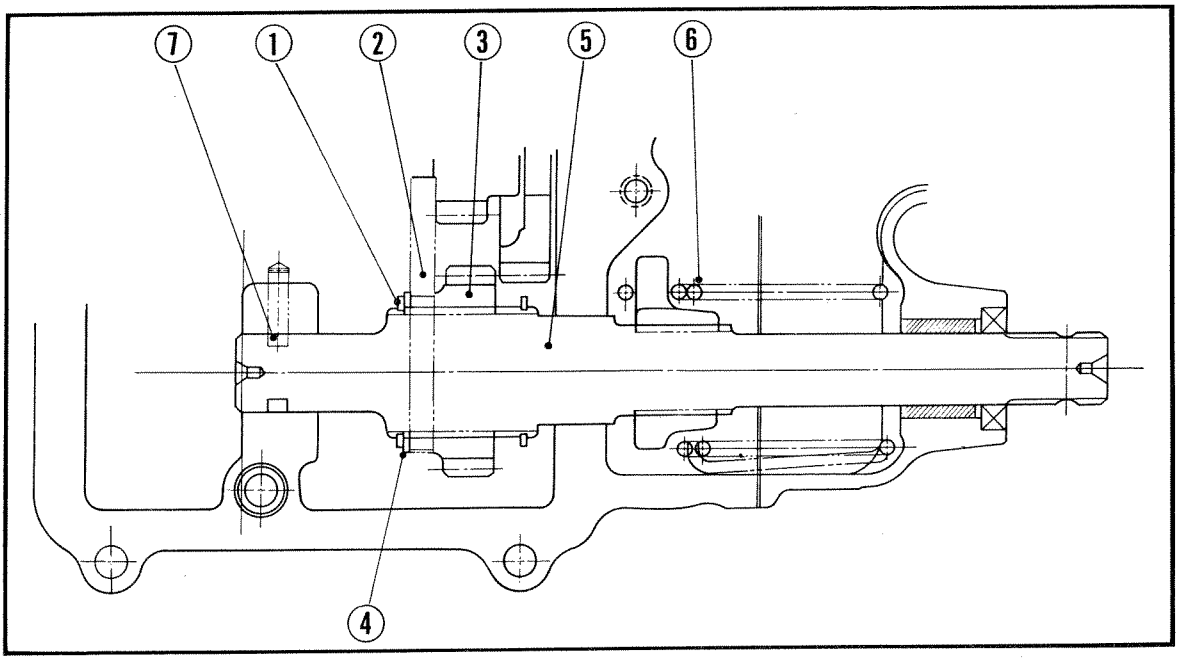
Fig. 3–110. Component parts of gear shift drum.



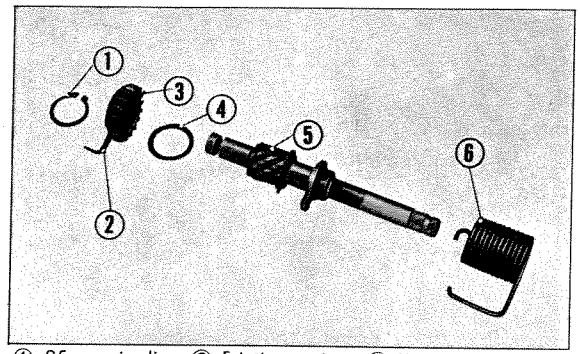
① Gear shift fork ② Gear shift drum

Fig. 3–111. Assembling the gear shift fork

3.11 KICK STARTER



① 25 mm cir-clip ② Friction spring ③ Kick starter pinion ④ Kick starter washer ⑤ Kick starter spindle ⑥ Kick starter spring ⑦ 4×15 knock pin **Fig. 3–112A.** Kick starter assembly



① 25 mm cir-clip ② Friction spring ③ Kick starter pinion
④ Kick starter washer ⑤ Kick starter spindle
⑥ Kick starter spring

Fig. 3-112B. Disassembling the kick starter

A. Construction

The kick starter pinion engages with the transmission low gear and by utilizing the transmission gears kicking is made easy and does not require much force.

When the kick starter shaft is rotated by the kicking action the serrated kick starter ratchet flange is rotated simultaneously and the pawl of the kick starter ratchet flange slides down from the kick starter guide and is pushed against the kick starter pinion groove by the pawl spring. Power is transferred from the kick starter pinion to the countershaft low gear.

When the kick starter is not depressed or the kick starter pedal is released after kicking, the kick starter ratchet flange is pushed back by the kick starter spring. The pawl rests on the kick starter ratchet guide and the kick starter pinion is freed. **(Fig. 3-112A, B)**

B. Disassembly

1. Separate upper and lower crankcase in accordance with section 3.10. B.
2. Take out the kick starter shaft.
3. Remove the main shaft, countershaft and gear shift drum.

C. Inspection

Check the ratchet and the kick starter pinion ratchet for excessive wear and replace if excessive wear exists.

D. Reassembly

Reassemble the kick starter in the reverse order of disassembly.

Setting specification (CB175, $CL_1$75)

Model	CB 175		CL 175	
Carburetor type	PW 20		PW 22	
Setting mark	CB-B		B	
Main bore	20 mm (0.787 in)		22 mm (0.867 in)	
Main jet	# 95		# 98	
Air jet	#100		#100	
Air bleed	AB 1	0.8φ×4	AB 1	0.9φ×4
	AB 2	0.8φ×2	AB 2	0.8φ×2
	AB 3	0.6φ×2	AB 15	0.8φ×2
	AB 4	0.6φ×2	AB 3	0.8φ×4
	AB 5	0.6φ×2		
Needle jet	2.6φ×3.6φ		2.6φ×3.6φ	
Jet needle	3°, 2.535φ-3 stage		4°, 2.535φ-3 stage	
Cut-away (throttle valve)	#2.0		#3.0 (Width 1.2 depth 0.5)	
Air screw	1⅛±⅛		⅞±⅛	
Slow jet	#35 (0.7×2×3)		#38~#40 (0.6φ×2×2)	
Valve seat	1.7φ		2.0φ	
Pilot outlet	0.8φ P=8.0 mm		1.0φ P=8.5 mm)	
Fuel level	19.5 mm (0.768 in)		28.0 mm (1.1 in)	

3.12 CARBURETOR (CB175, CL175)

A. CONSTRUCTION

The CB175 or CL175 is equipped with a twin variable venturi carburetors operated synchronously by a single cable from the throttle grip branching to the two throttle valves. The choke valves are connected by a linkage. Each cylinder is equipped with an individual carburetor to provide maximum performance.

The operation of the engine creates a vacuum within the cylinder and this draws the outside air into the cylinder after having been passed through the air cleaner where the air is cleaned, through the carburetor where the proper amount of fuel has been mixed to form a combustible mixture and finally enters the cylinder where it is ignited to produce the power necessary to perform work.

1. FUEL SYSTEM

As the air enters the carburetor, it passes under the throttle valve where vacuum pressure is produced due to the restriction caused by the throttle valve extending into the main air passageway. The fuel discharge outlet is located in this so-called venturi area so that the vacuum pressure can draw out the fuel. This carburetor incorporates both the main and a slow system.

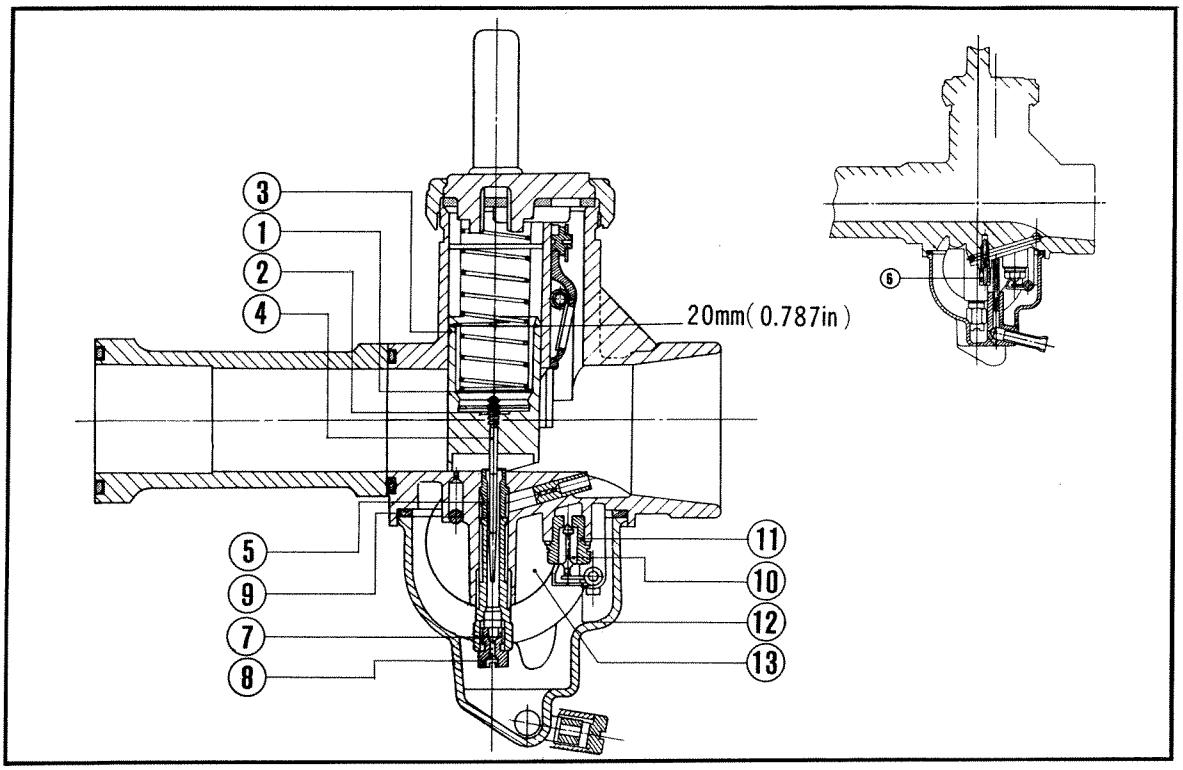


Fig. 3-113. Sectional view of carburetor (CB175)

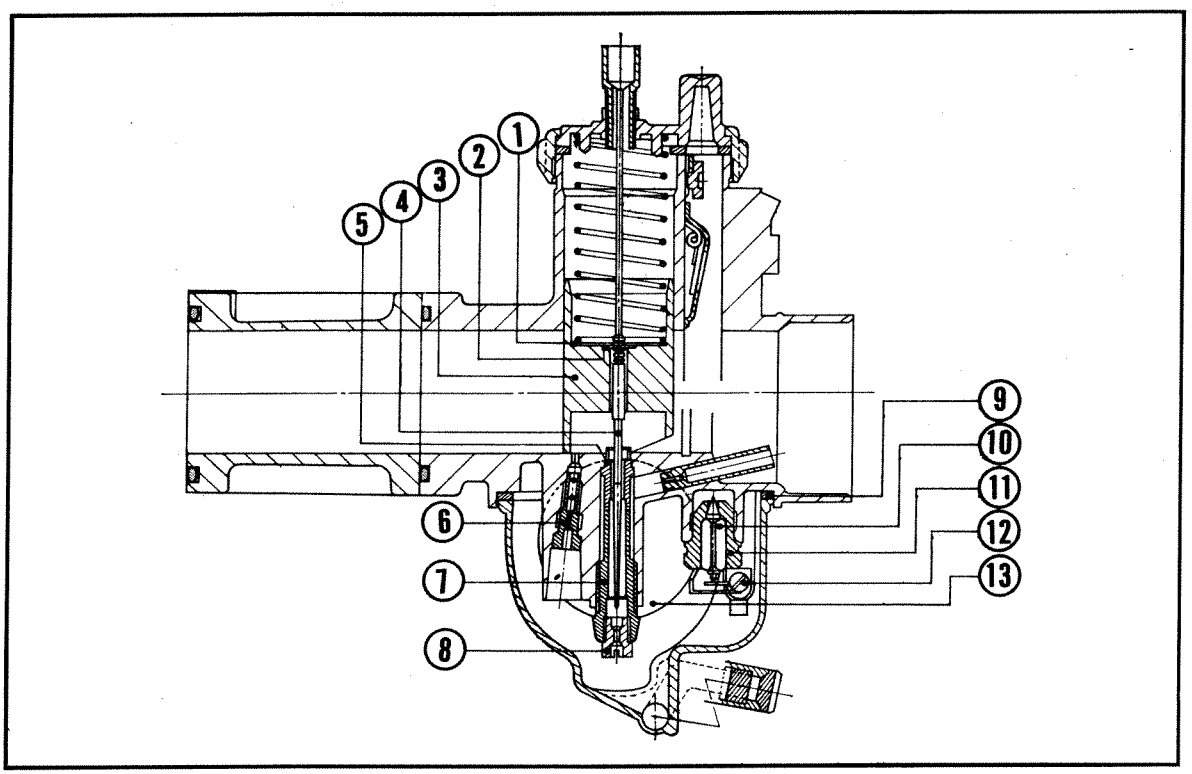


Fig. 3–114. Sectional view of carburetor (CL175)

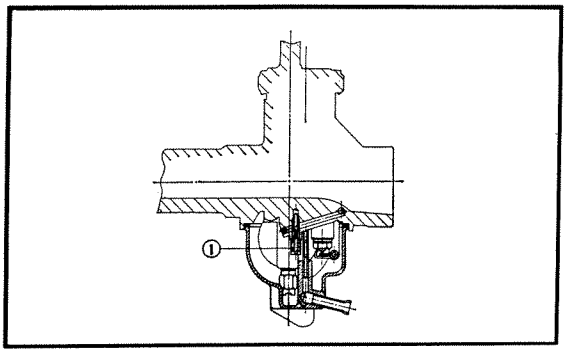


Fig. 3–115. ① Slow jet

A. Main system (Fig. 3–113, 3–114)

The fuel passes through the main jet ⑧ and enters the needle jet holder ⑦ where it mixes with the bleed air entering from the bleed hole located around the needle jet holder ⑦. The fuel air mixture passes by the opening between the needle jet ⑤ and jet needle ④ and is discharged from below the throttle valve ③.

It is here that the mixture is combined with the main air and after being atomized, is taken into the engine.

B. Slow system (Fig. 3–115)

The air which enters from the inlet passes through the outside of the air screw where it is metered and enters the slow jet bleed hole. It mixes with the fuel which enters the slow jet ① to produce a full spray that is discharged from the pilot outlet at a point under the throttle valve. This mixes with the air from the air inlet to form a combustible mixture before being taken into the engine.

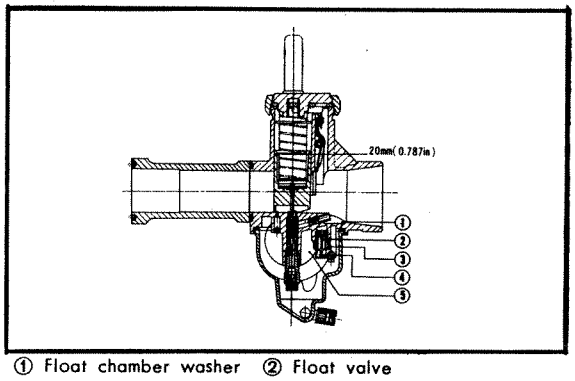
2. FLOAT CHAMBER (Fig. 3–116)

The carburetor must provide a proper mixture of fuel at different throttle openings and engine speeds; in order to accomplish this, the fuel level in the carburetor must be maintained constant. The float chamber functions to serve this purpose. The fuel from the tank enters the float chamber through the fuel inlet passage, between the float valve seat ③ and float valve ② and fills the chamber to the level where the float ⑤ rises to shut off the flow of the fuel by seating the float valve against the valve seat through the action of the float arm ④. As the fuel is consumed, the fuel level in the float chamber, drops the float will follow the level, and the fuel will start to enter the chamber between the opening of the float valve and valve seat to maintain a constant fuel level.

A spring is incorporated in the head of the float valve which comes in contact with the float arm. The purpose of this spring is to prevent the float valve from oscillating so that a constant fuel level can be maintained even when riding over rough or bad roads. It further serves to prevent any shock between the float valve and seat, thereby reducing the amount of wear to these parts.

Overflow pipe

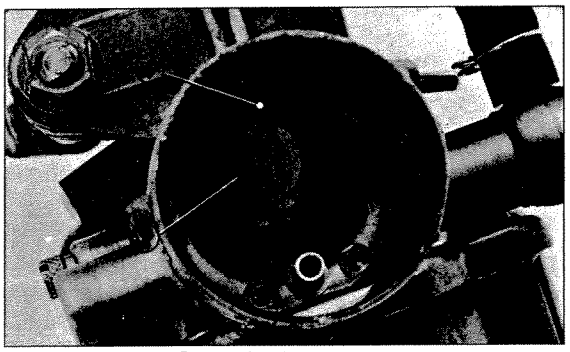
When riding on a steep grade or when any foreign substance becomes lodge in the float valve, it causes the fuel to overflow from the needle jet or the slow jet, and enters the engine causing the engine oil to become diluted. In order to prevent such a condition, an overflow pipe has been incorporated in the float chamber. At normal condition, the pipe opening is above the fuel level and it serves no purpose, but when the overflow condition exists and the fuel level rises, the fuel will drain out of the overflow pipe to the outside rather than into the engine.



① Float chamber washer ② Float valve
③ Float valve seat ④ Float arm ⑤ Float
Fig. 3–116. Sectional view of float chamber.

3. CHOKE (Fig. 3–117)

For starting in cold weather, a rich fuel mixture is momentarily required; to serve this purpose, a choke valve ① is used in the carburetor. A relief valve ② is included in the choke valve and is held closed by a spring. By raising the choke lever fully, the choke valve closes and the air entering from the air inlet becomes restricted. When the starting motor is engaged with the throttle lever opened approximately 1/4, the fuel will be drawn out of the pilot outlet and the needle jet by the vacuum pressure. At the same time, the vacuum pressure will cause the relief valve to open by the proper amount to provide an ideal fuel mixture to effect and engine start. As the engine starts, the vacuum pressure becomes greater and the relief valve is opened further to provide the proper fuel mixture to warm up the engine. In this manner, the throttle valve movement causes the relief valve to operate and, therefore, the operation of the choke valve is not required to warm up the engine. The choke valve is opened after the engine warms up.



① Choke valve ② Relief valve
Fig. 3–117. Choke valve.

FUNCTION OF THE MAIN COMPONENTS

The main components of the carburetor functions in the following manner.

1. MAIN JET (Fig. 3–118)

The function of the main jet is to control the fuel discharge and to provide the proper fuel air mixture at the higher range of throttle opening (driving at maximum speed). However, the main jet will also have a varying degree of effect in the vicinity of 1/2 throttle opening. The main jets are numbered, so that the larger the number, bigger the opening and consequently a richer fuel-air mixture.

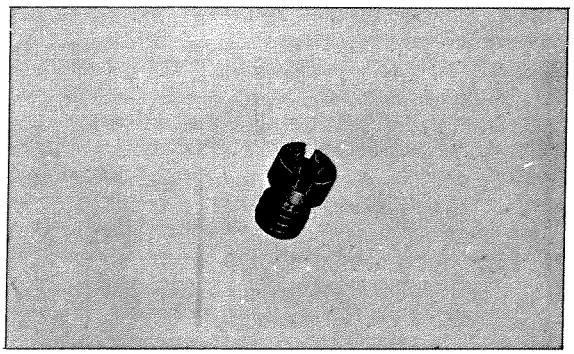


Fig. 3–118. Main jet

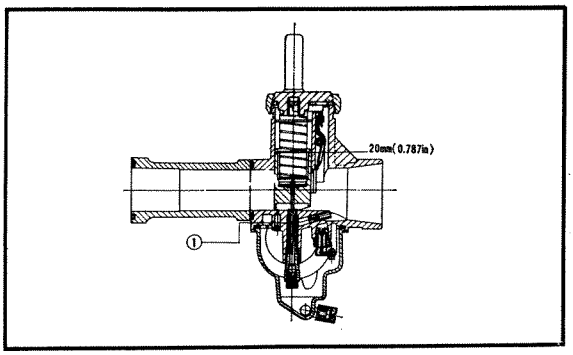


Fig. 3–119. Needle jet

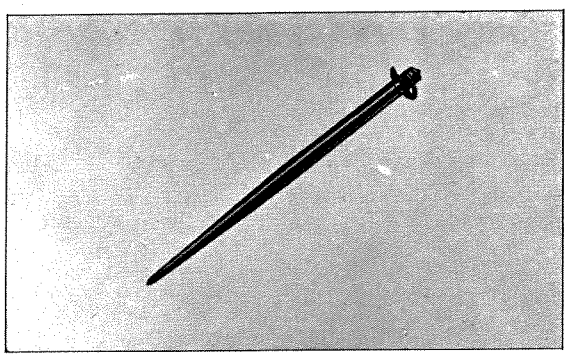


Fig. 3–120. Jet needle

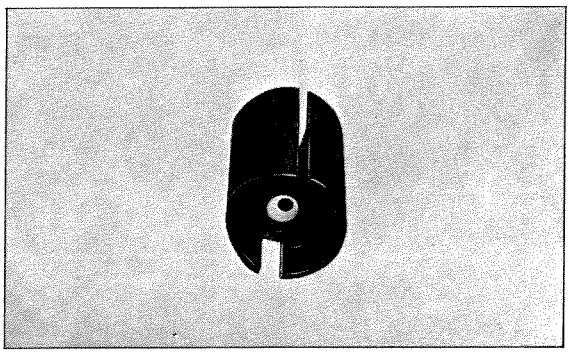
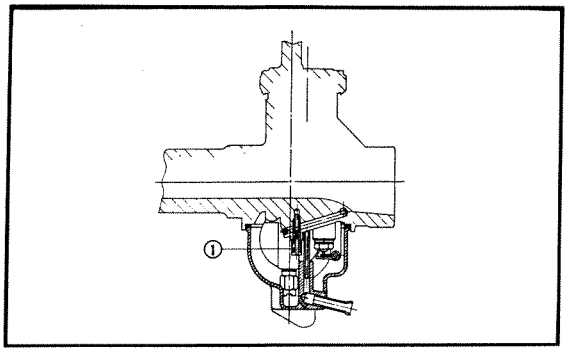


Fig. 3–121. Throttle valve



① Slow jet
Fig. 3–122. Slow jet

2. AIR JET

At full throttle opening, the fuel-air mixture has a tendency to become rich, and in order to prevent this condition, a bleed air is added to the fuel through the needle jet holder. The purpose of the air jet is to meter the amount of this air; the larger the air jet, more air will be added to the fuel mixture and a leaner fuel mixture is provided. Also, by mixing the air with the fuel, better atomization will be assured.

3. NEEDLE JET (Fig. 3–119)

At full or intermediate throttle opening, the needle jet will regulate the fuel which had been metered by the main jet. This control is accomplished together with the jet needle which will be described in the following paragraph. The hole of needle jet is made very accurately for precise control.

4. JET NEEDLE (Fig. 3–120)

The jet needle together with the needle jet described in the previous paragraph, meters the discharge of the fuel mixture in the 1/4 to 3/4 throttle range. The long tapered needle is suspended within the needle jet opening. The jet needle moves up and down with the throttle to control the fuel mixture proportionally to the throttle opening. There are three grooves on the head of the jet needle by resetting the set clip toward the lower groove, a richer fuel mixture will be provided.

5. THROTTLE VALVE (Fig. 3–121)

The throttle valve regulates the amount of fuel air mixture taken into the engine to control the output and speed of the engine. In addition, it serves a very important function in that it controls the fuel mixture. There is a cutaway on the throttle valve at the air inlet side which affects the vacuum pressure that controls the function of the needle jet. The use of the throttle valve with different size cutaway will control the discharge rate of the fuel, which affects the fuel-air ratio. The larger throttle valve cutaway number provides leaner mixture, however, this is only effective within the lower range of the throttle opening and has no effect above 1/2 throttle opening. There is also a throttle stop screw which sets the idling speed. Turning this screw IN will raise the idling speed, and lowers the speed when the screw is turned OUT.

6. SLOW JET (Fig. 3–122)

The slow jet controls the fuel at slow speed and at idling by regulating the air entering from the air bleed to produce a fuel-air mixture which assists in the atomization of the fuel. The slow jet, like the main jet, provides a richer fuel mixture when a jet of larger number is used.

7. AIR SCREW (Fig. 3-123)

The air screw regulates the air entering the slow system by controlling the pilot hole. Turning the screw IN will richen the mixture and turning the screw OUT will lean the mixture.

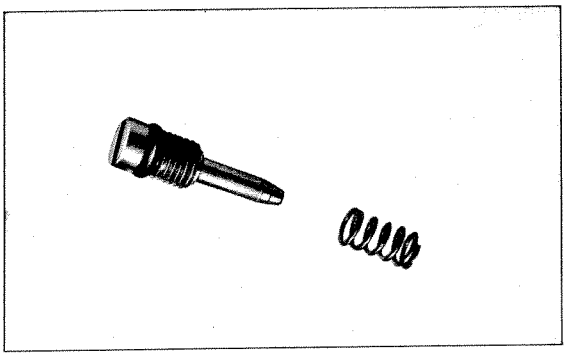


Fig. 3-123. Air screw

8. FUNCTIONAL RANGE OF THE RESPECTIVE COMPONENTS

In summarizing the description stated above, the functional range of the respective components are as follows:

Air screw:	from full close to 1/8 throttle opening
Throttle valve cutaway:	1/8 to 1/4 throttle opening
Jet needle:	1/4 to 3/4 throttle opening
Main jet:	3/4 to full throttle opening

ADJUSTMENT

1. HIGH SPEED ADJUSTMENT

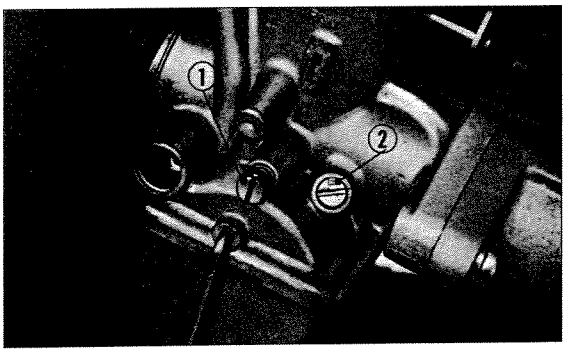
During driving, if the speed increases when the choke valve is closed slightly, it is an indication that the fuel mixture is lean. In which case, replace the main jet progressively with the next larger size until properly adjusted. The main jet sizes above #100 are #105, #110 and #115 and for sizes below #100 are #98, #95 and #92. In the opposite case, if the speed should fall off when the choke valve is closed, the main jet size is proper, or else, it may be too large. In which case, follow the procedure below to make the determination.

A. Properly set

When, after replacing the main jet with one of a smaller size and if it is found to cause a drop in speed, and an increase in speed when the choke is slightly closed, it is an indication that the main jet is too small. The replaced jet can be considered to be of the proper size.

B. Main jet too large

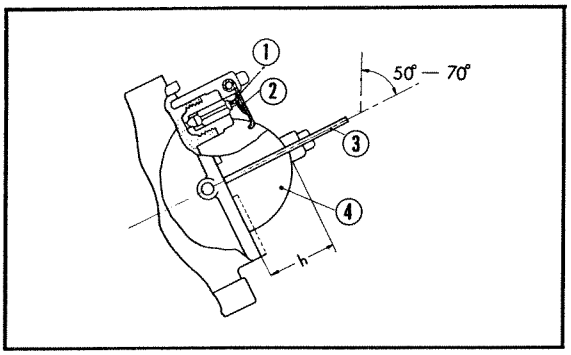
When the jet is too large, progressively replace the jet with one of a smaller size until the condition in paragraph A above occurs, and make the adjustment accordingly.



① Throttle stop screw ② Air screw
Fig. 3-124. Adjusting carburetor

2. INTERMEDIATE SPEED ADJUSTMENT (Fig. 3-125)

The adjustment within 1/8 to 3/4 throttle opening is made by the changing the position of the clip on the jet needle groove and the replacement of the throttle valve cutaway. However, the throttle valve cutaway will affect the fuel mixture between idling and 1/4 throttle opening. In the intermediate speed range, it is recommended that the jet needle be adjusted within the range of good acceleration as this will prove to give better fuel economy.



① Float valve ② Float arm ③ Float gauge ④ Float
Fig. 3-125

A. Jet needle

(1) When excessive black smoke is emitted from the exhaust during intermediate speed, it is an indication of rich fuel mixture, therefore, lower the jet needle by one groove.
(2) During driving, if the engine misses or bucks, raise the jet needle one groove.

B. Cutaway of the throttle valve

The throttle valve with a larger number stamped on the cutaway will give a leaner mixture.
Throttle valve will affect the performance of the slow speed as well as the intermediate speed, therefore, the range affected should be considered when making the adjustment.

3. SLOW SPEED ADJUSTMENT

The fuel mixture adjustment between idling and 1/8 throttle opening is accomplished with the air screw and the cutaway of the throttle valve.

A. Air screw

The mixture adjustment at idle is made by the air screw. Turning the screw clockwise will give a rich mixture and turning in the opposite direction will lean the mixture. Not only is the idling screw used to make the idling adjustment but it also should take into consideration the mixture condition at the point where the throttle starts to open so that there is a smooth transition from the idling speed to the start of throttle opening speed.

B. Adjusting with the throttle cutaway

As a point 1/8 throttle opening, the air screw may no longer be effective in adjusting the fuel mixture. In such a case, replace the cutaway. If the mixture is too rich, replace the cutaway with one of a larger number and if the mixture is too lean, replace with one of a smaller cutaway number.

C. Idle adjustment (Fig. 3-124)

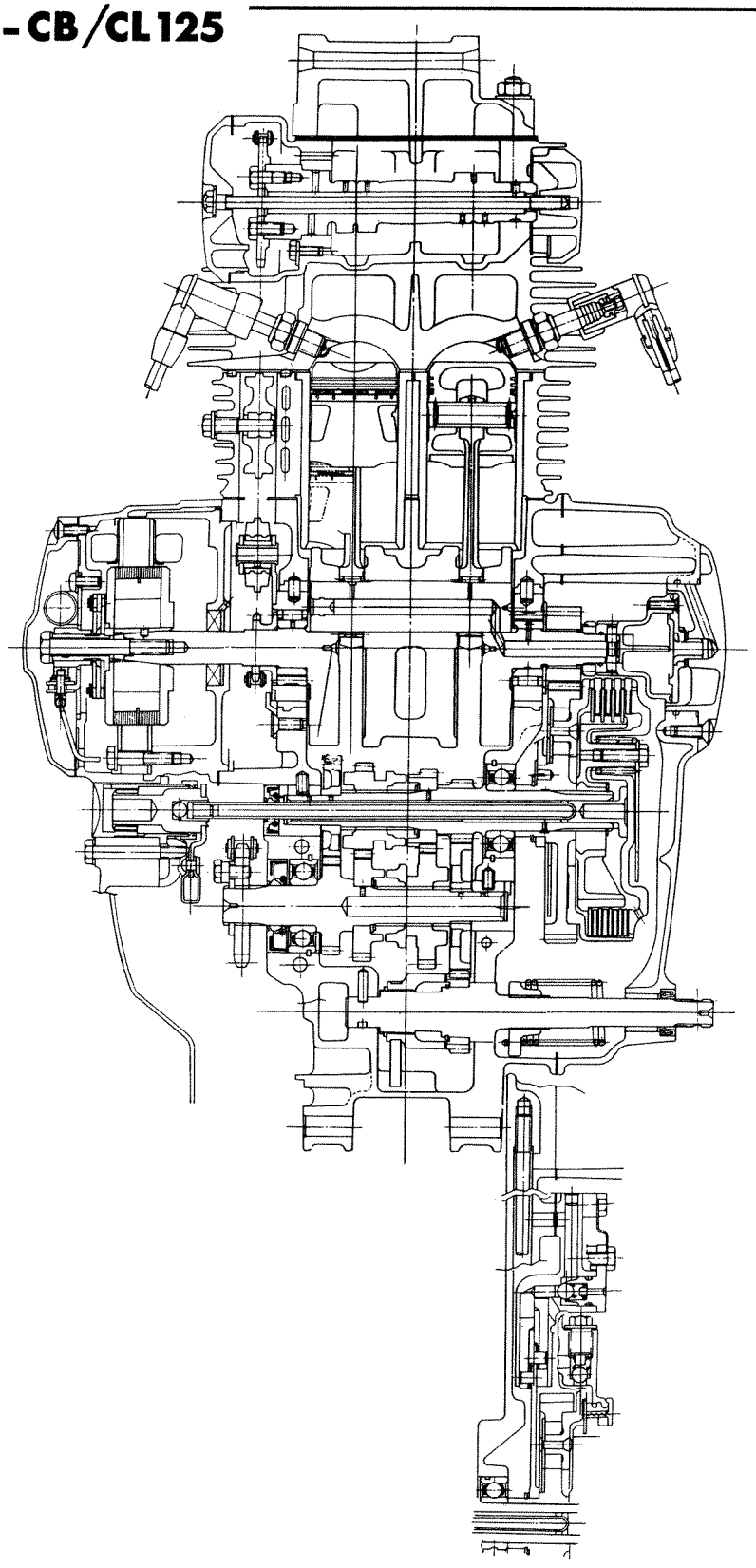
Idle adjustment is made by the use of both the throttle stop screw and the air screw by the following procedure.
(1) Use the throttle stop screw to set the engine to the proper speed.
(2) Manipulate the air screw back and forth slowly to obtain the point of maximum speed.
(3) Reset the throttle stop screw to bring the speed back to the normal.
(4) In this position, recheck the air screw to assure that the setting is correct.
(5) After completing the idle adjustment, check the engine response by snapping and accelerating the throttle. Perform this check between 1/8 to 1/4 throttle opening.

4. FUEL LEVEL ADJUSTMENT (Fig. 3-125)

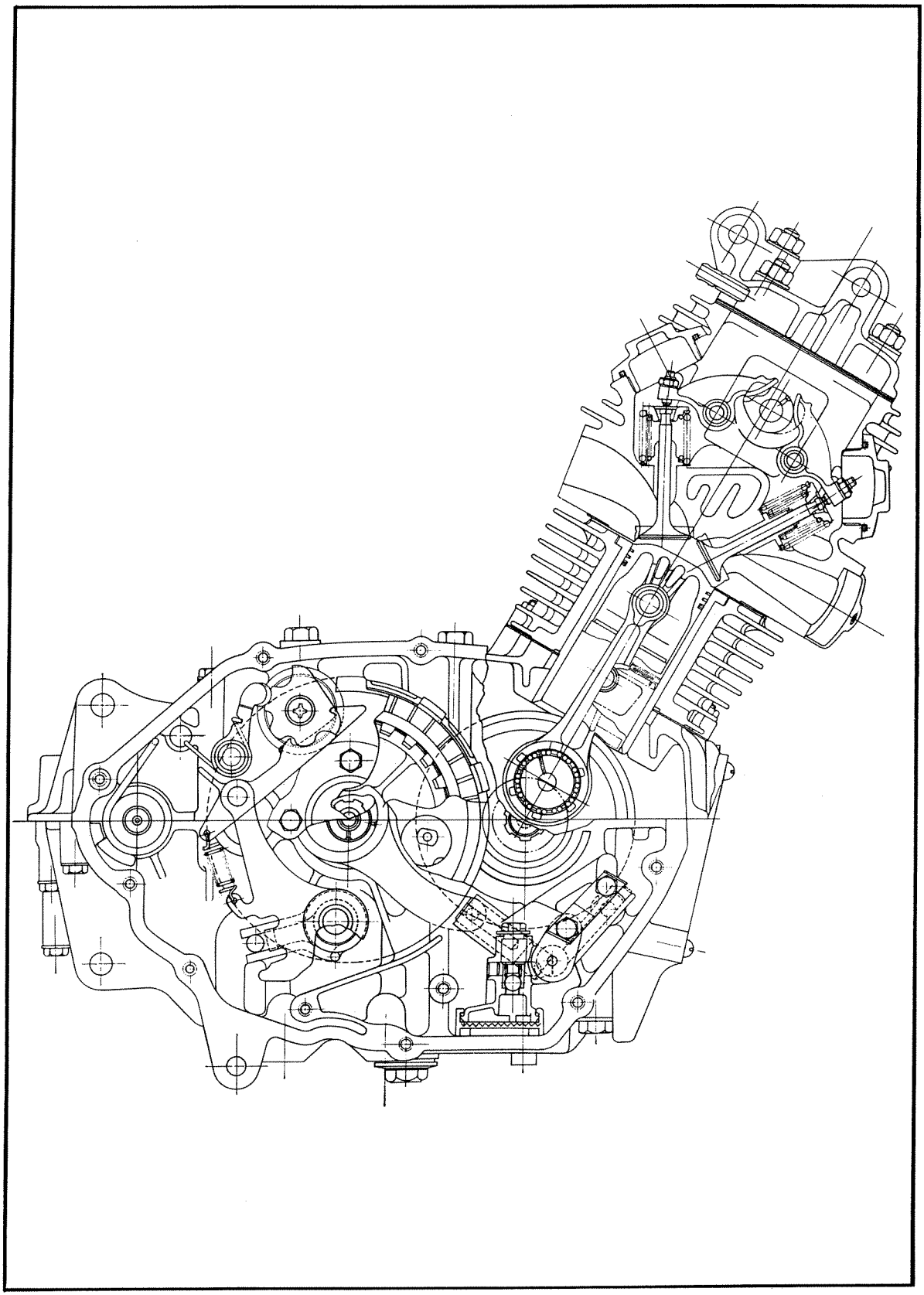
The float level is specified by the height of the float "h" shown in figure 3-125. The float adjusting procedure is described below in conjunction with figure 3-125. CB175 : h=19.5 mm (0.768in) CL175 : h=28.0 mm (1.1in)

a. Invert the carburetor, in this condition, the weight of the float has caused the float arm to bear against the float valve and the spring is compressed into the valve. This is not the normal fuel level position.
b. Next, set the carburetor as shown in the figure with the float arm pin toward the top, tilt the carburetor so that the float is on the bottom with the float arm in the position so that it is just about to separate from the end of the float valve and set in this position. (the arm will separate from the end of the valve when the carburetor is raised approximately 70°, therefore, about 10° from this point is sufficient, i.e., where the arm is not compressing the valve end).
c. In this position, measure the distance the bottom of the float is from the body flange area with the gauge, this is the height "h". The tolerance is 1 mm, the float may be depressed 1 mm or there may be a clearance of 1 mm between the gauge and the float. This much to lerance will not adver sely affect the operation. If the float is positioned in excess of this amount, make the adjustment by bending the lip of the float arm. There is a spring incorporated in the end of the float valve which will permit the end of the float valve to submerge and will give and erroneous reading, therefore, exercise care when determining the point of contact. Improper measurement and adjustment will not give the proper fuel level.

ENGINE - CB/CL125



Engine assembly diagram (Fig. 3–126)



Engine assembly diagram (Fig. 3-127)

3.1 ENGINE REMOVAL AND INSTALLATION

A. Engine Description

The motorcycle performance characteristics are determined by the engine which is used. Primary requirements of an engine are high power output, light weight, compactness, ability to withstand rough handling and low maintenance cost. Further, the engine must be designed so that it harmonizes with the styling of the frame to give it a well balanced appearance.

All Honda motorcycles are engineered to provide these features.

The extensive use of aluminum alloy gives a good weight to power ratio which attributes to high performance. It also provides good engine cooling.

OHC driven by a lightweight chain makes possible higher engine speed, greater power output and quiet operation.

Long life of the engine component and trouble free maintenance is assured by the employment of dual oil filtering in the pressure lubrication system.

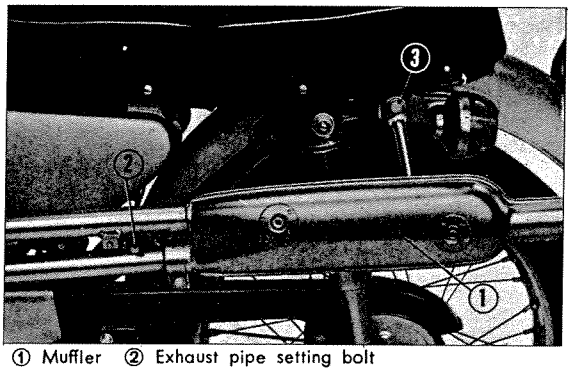
B. Engine removal (CB 125 and CL 125)

1. Shut off the fuel cock at the fuel tank.
2. Remove the muffler by unscrewing the four 6 mm nuts at the cylinder head and the two 8 mm bolts. To remove the muffler ① (CL 125), unscrew the four 6 mm nuts at the cylinder head, exhaust pipe setting bolt ② and 8×20 bolt ③ at the rear of the seat. **(Fig. 3–128)**

(Note)

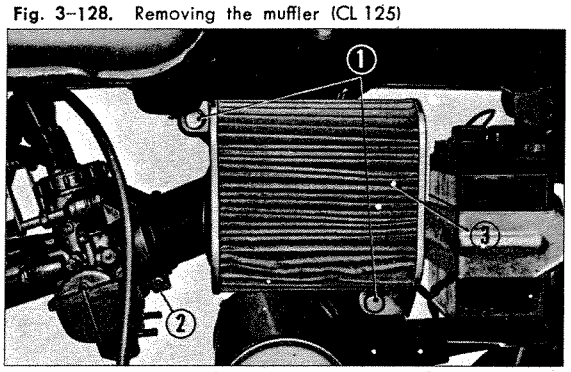
Remove the exhaust pipe protector to facilitate the removal of the exhaust pipe setting bolt.

3. Remove the air filter covers. Unscrew the two 6×12 bolts ① and 5×16 cross screw ② at the air cleaner connecting tube and remove the air filter ③. **(Fig. 3–129)**
4. Disconnect the high tension terminal from the spark plug and all electrical leads. **(Fig. 3–130)**



① Muffler ② Exhaust pipe setting bolt
③ 8×20 hex. bolt

Fig. 3–128. Removing the muffler (CL 125)



① 6×10 hex. bolts ② 5×16 cross screw ③ Air cleaner

Fig. 3–129. Removing the air cleaner

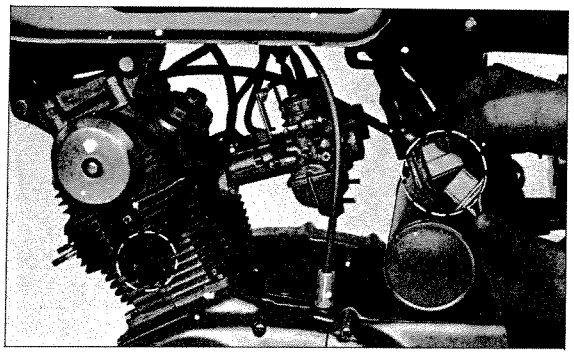
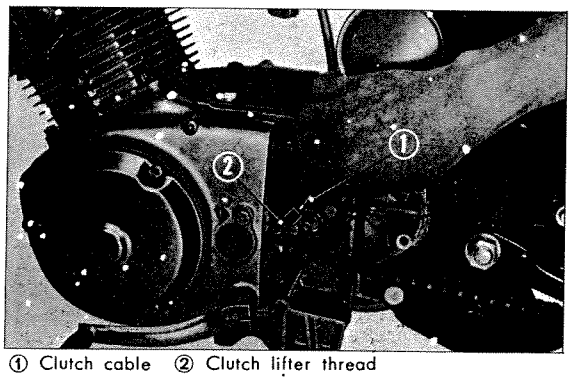
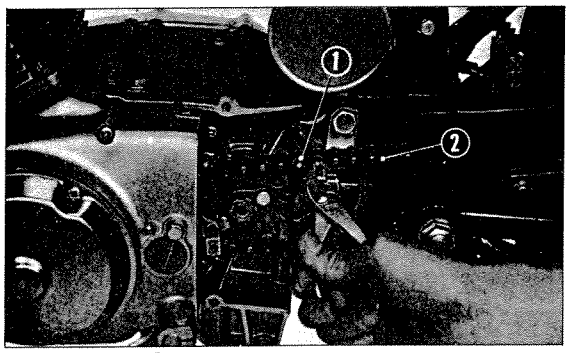


Fig. 3–130. Disconnecting the electrical leads



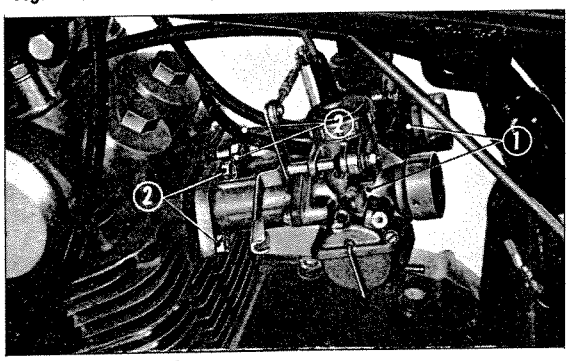
① Clutch cable ② Clutch lifter thread

Fig. 3–131. Disconnecting the clutch cable



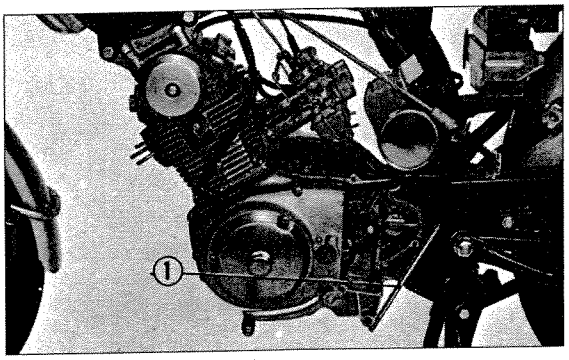
① Joint clip ② Drive chain

Fig. 3-132. Removing the drive chain



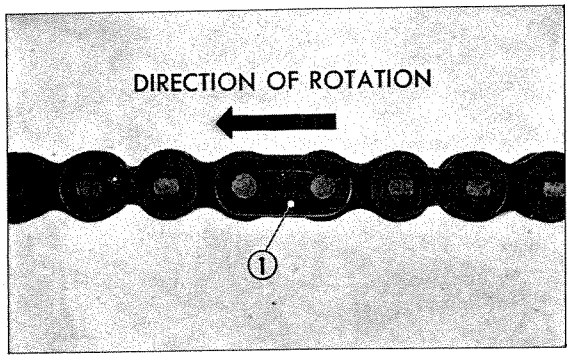
① Carburetors ② 6mm hex. nuts

Fig. 3-133. Removing the carburetors



① T-handle cross screw driver

Fig. 3-134. Installing the engine



① Joint clip

Fig. 3-135. Joint clip installation

5. Remove the drive chain cover and disconnect the clutch cable end ① from the clutch lifter thread ②. **(Fig. 3-131)**
6. Disconnect the chain joint clip ① and remove the drive chain ②. **(Fig. 3-132)**
7. Remove the 6mm nuts ② mountind the carburetors ① to the cylinder head. **(Fig. 3-133)**
8. Remove the four 8×25 bolts at the underside of the crankcase and remove the step bar.
9. Unscrew the four engine mounting nuts. Place a support block under the engine to prevent dropping, push out the mounting bolts and then the engine will be freed from the frame.

C. Reassembly

1. Perform the engine installation in the reverse order of removal described in Section 3.1 B.
2. The engine installation can be made easier by temporarily hanging the engine on the frame by the use of a T-handle cross screw driver ① followed by the installation of the engine mounting bolts. **(Fig. 3-134)**

(Note)

When reconnecting the drive chain, the joint clip should be installed with the opening facing opposite to the direction of the normal chain movement. **(Fig. 3-135)**

3. Adjust the chain tension so that there will be 1 to 2 cm (0.40~0.80 in) slack in the chain.

3.2 CYLINDER HEAD AND CYLINDER

1. CYLINDER HEAD, COVER AND BREATHER

A. Construction

The cylinder head is a cast aluminum twin head construction of a semi-spherical combustion chamber with a squish area for better combustion efficiency. **(Fig. 3–136)**

The single piece overhead camshaft, rocker arms and valve mechanisms are all incorporated in the valve chamber above the combustion chamber.

Cylinder head cover incorporates a breather passage for dissipating the pressure build up.

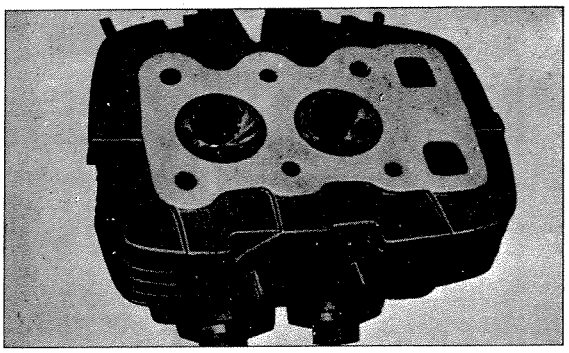
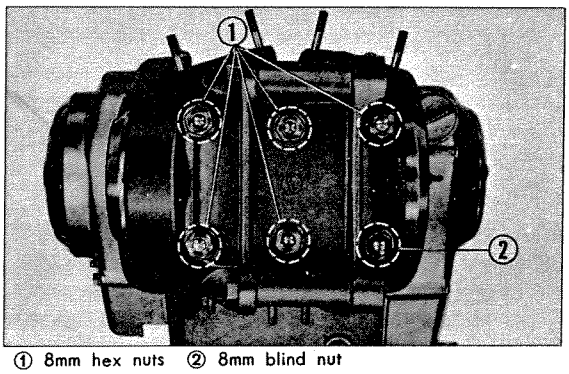


Fig. 3–136. Cylinder head

B. Disassembly

1. Drain oil from the engine.
2. Remove the 8 mm blind nut and five 8 mm hex. nuts, and then remove the cylinder head cover. **(Fig. 3–137)**
3. Remove the left and right cylinder head side covers by unscrewing the long bolt from the left side
4. Rotate the crankshaft so that the cam chain joint is toward the top of the cam sprocket and then remove the cam sprocket mouuting bolts.
5. Attach a wire ① to both ends of the chain ② and then disconnect the cam chain, this will simplify the reassembly task later. **(Fig. 3–138)**
6. Separate the cylinder head from the cylinder.

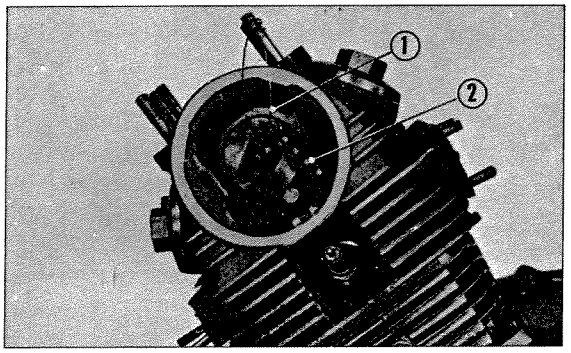


① 8mm hex nuts ② 8mm blind nut

Fig. 3–137. Removing the cylinder head cover.

C. Inspection

1. Disassemble and clean all the parts before inspection. Carbon, should be removed with care, using a carbon scraper to prevent damaging the head. **(Fig. 3–139)**
2. Refer to section 3.2 C on page 21.
3. Inspect the combustion chamber, inlet and exhaust ports for cracks.
4. Inspect the valve guide and valve stem. Check the valve guide diameter at the top, center and bottom in both the X and Y axes, using a precision cylinder gauge. Check the valve stem with micrometer.



① Wire ② Cam chain

Fig. 3–138. Attaching the wire to the cam chain

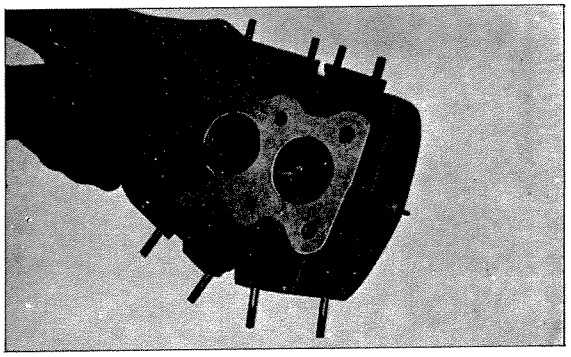
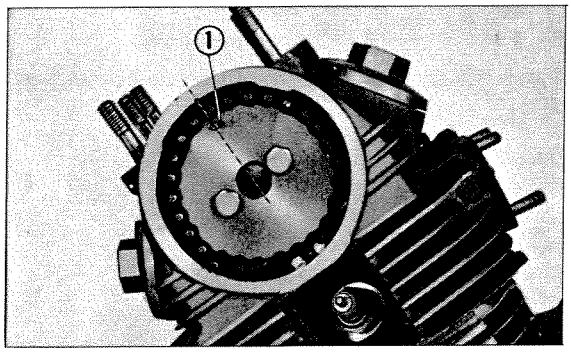


Fig. 3–139. Scraping carbon from combustion chamber

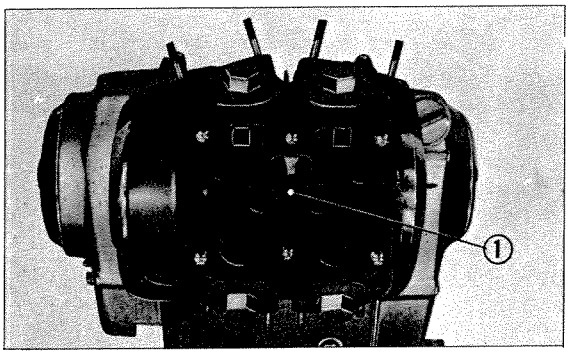
	Item	Standard Value	Serviceable Limit
Inlet valve	Outside diameter	5.48~5.49 mm (0.2158~0.2162 in)	Replace if under 5.46 mm (0.215 in)
	Contact face runout	Within 0.02 mm (0.0008 in)	
Inlet valve guide	Inside diameter	5.5~5.515 mm (0.2165~0.2171 in)	Replace if over 5.555 mm (0.219 in)
	Outside diameter	10.055~10.065 mm (0.3959~0.3963 in)	
	Interference fit	0.04~0.065 mm (0.0016~0.0026 in)	
	Inlet valve clearance	0.01~0.035 mm (0.0004~0.0014 in)	Replace if over 0.08 mm (0.028 in)
Exhaust valve	Outside diameter	5.46~5.47 mm (0.2150~0.2154 in)	Replace if under 5.44 mm (0.214 in)
	Contact face runout	Within 0.02 mm (0.0008 in)	
Exhaust valve guide	Inside diameter	5.5~5.515 mm (0.2165~0.2171 in)	Replace if over 5.555 mm (0.219 in)
	Outside diameter	10.055~10.065 mm (0.3959~0.3963 in)	
	Interference fit	0.04~0.065 mm (0.0016~0.0026 in)	
	Exhaust valve clearance	0.03~0.055 mm (0.0012~0.0022 in)	Replace if over 0.1 mm (0.0039 in)

If the valve guide is beyond serviceable limit, it may be repaired by using a reamer (Tool No. 07008-00101) and replacing the valve with one of an oversize.

5. When replacement of the valve guide becomes necessary, remove and replace with an oversize guide; use the valve guide remover (Tool No. 07942-3290100) and the valve guide driver (Tool No. 07942-3290200) for replacement operation. After installing the valve guide, use a reamer to obtain the proper valve clearance.



① "O" mark
Fig. 3-140. Installing the cam sprocket



① Cylinder head cover gasket
Fig. 3-141.

D. Reassembly

1. Reassemble the cylinder head in the reverse order of disassembly.

(Note)

(a) Before installing the cam chain, the valve must be timed in reference to the position of the crankshaft. To do this, first, position the crankshaft so that the knock pin at the tapered shaft end is on the cylinder centerline and toward the cylinder head. Then align the "O" mark stamped on the cam sprocket to the index mark on the cylinder head (both inlet and exhaust valve should be closed, if not, rotate the cam 180°.) In this position, connect the cam drive chain. **(Fig. 3-140)**

(b) Check the condition of the gaskets. It is recommended that a new gaskets be used throughout, especially the head gasket. **(Fig. 3-141)**

(c) If the cam chain tensioner push rod is not screwed in completely, the cam chain cannot be connected.

2. Tighten the cylinder head cover nuts uniformly in the sequence shown : **(Fig. 3-142)**
   Torque : 180~230 kg. cm (13.0~16.7 ft. lbs)
3. Insert the bolt in through the center bolt hole on the left side cover, assemble and tighten the right side cover.

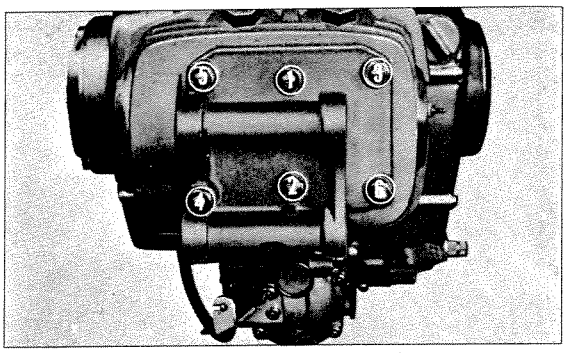


Fig. 3-142. Torquing sequence of cylinder head

2. CAMSHAFT

A. Construction

A single piece camshaft contains both inlet and exhaust cams together with the sprocket which is mounted at the left end. **(Fig. 3-143, 144)**

The cam sprocket is driven by the crankshaft at ½ the speed.

The cam is designed with a long gradual slope to prevent abrupt rise and drop of the valve, thus assuring a quieter valve operation.

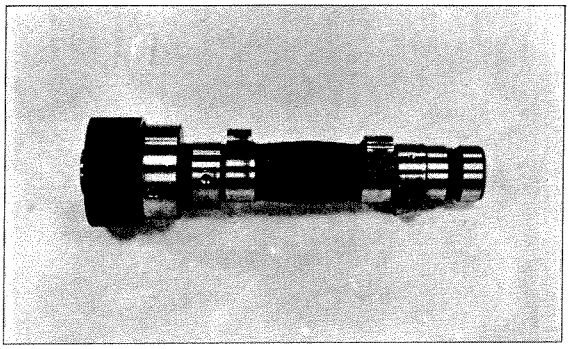
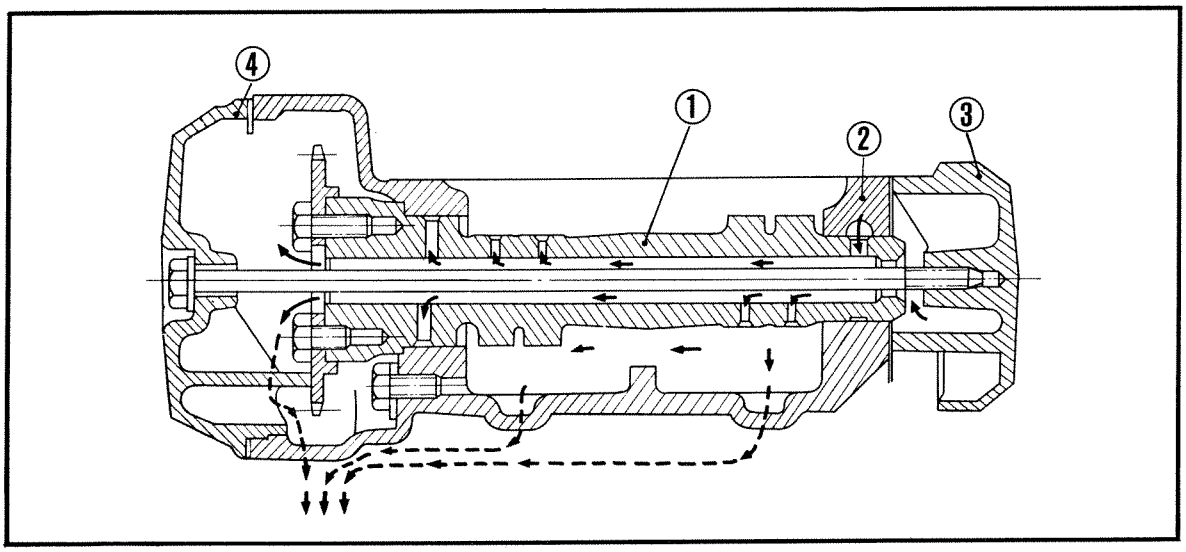
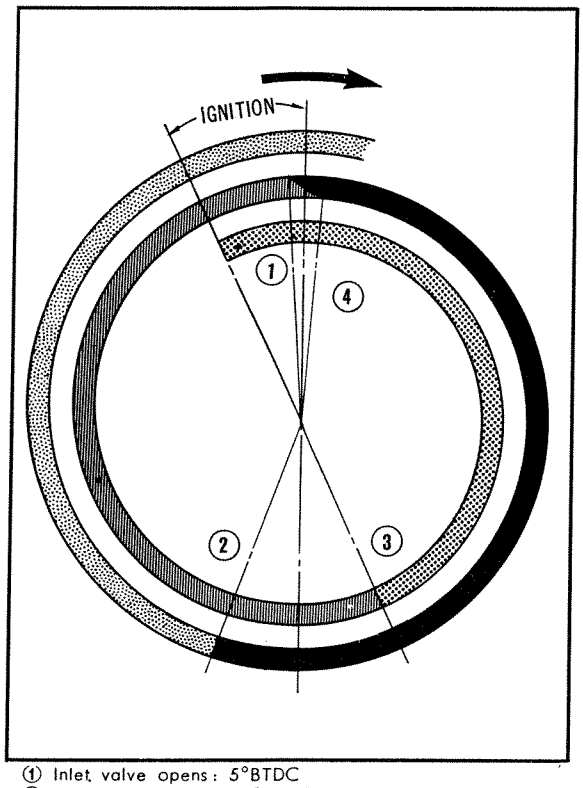


Fig. 3-143. Camshaft

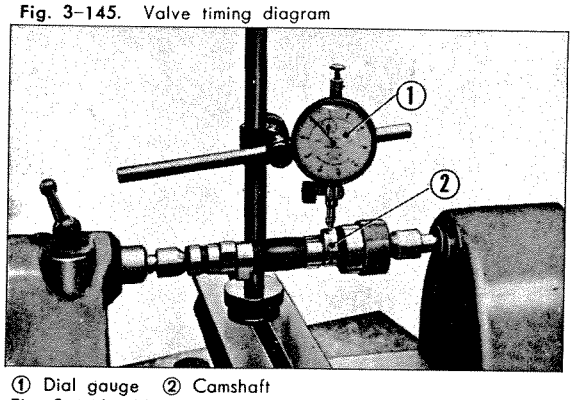


① Camshaft ② Cylinder head ③ Cylinder head right side cover ④ Cylinder head left side cover
Fig. 3-144. Oil passage diagram



① Inlet valve opens : 5°BTDC
② Inlet valve closes : 30°ABDC
③ Exhaust valve opens : 5°BBDC
④ Exhaust valve closes : 35°ATDC

Fig. 3–145. Valve timing diagram



① Dial gauge ② Camshaft

Fig. 3–146. Measuring the camshaft

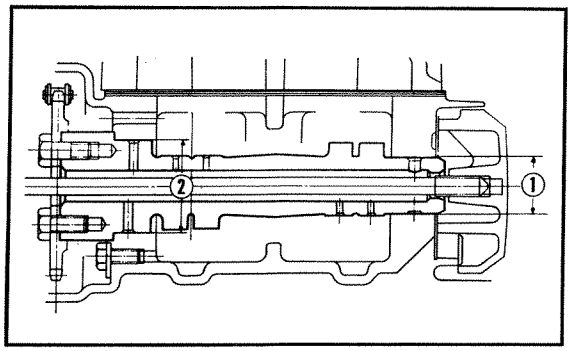


Fig. 3–147. Camshaft dimensions

B. Disassembly

1. Remove the cylinder head in accordance with Section 3.2.1 B.
2. Remove the tappet adjusting hole caps and loosen the tappet adjusting screws.
3. Remove the 5 mm hex. bolt holding the rocker arm shaft stopper and pull out the rocker arm shafts, and the rocker arms can be removed from the cylinder head.
4. Remove the camshaft from the cylinder head by sliding out the left side.

C. Inspection

1. Valve timing **(Fig. 3–145)**
2. Check the cam for excessive wear or scoring.
3. Camshaft **(Fig. 3–146, 3–147)**

Item		Standard Value	Serviceable Limit
Right end diameter ①		19.953～19.964 mm (0.7857～0.7861 in)	Replace if under 19.93mm (0.7846in)
Left end diameter ②		32.927～32.94 mm (1.2963～1.2968 in)	Replace if under 32.907mm(1.2955in)
Cam base circle		21.0 mm (0.8268 in)	
Cam height	IN	26.177mm(1.0306in)	
	EX	25.740mm(0.0134in)	

4. Cam sprocket root diameter
   Standard value ⇨ 59.87～59.99 mm
   (2.358～2.364 in)

D. Reassembly

1. Screw out the tappet adjusting screw and assemble the camshaft into the cylinder head in the reverse order of disassembly.
2. Adjust the tappet clearance to 0.04 to 0.06 mm (0.015 to 0.023 in) with a cold engine.

3. ROCKER ARM

A. Construction

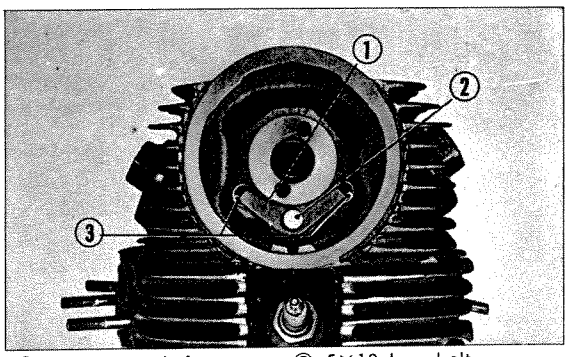
The function of the rocker arm is to transpose the rotary motion of the camshaft to a reciprocating motion for actuating the valve. The rocker arm is made rigid to prevent deflection and the end which contacts the cam is finished smooth after surface hardening to minimize wear. The end which operates the valve is provided with a tappet adjusting screw that contacts the valve.

B. Disassembly

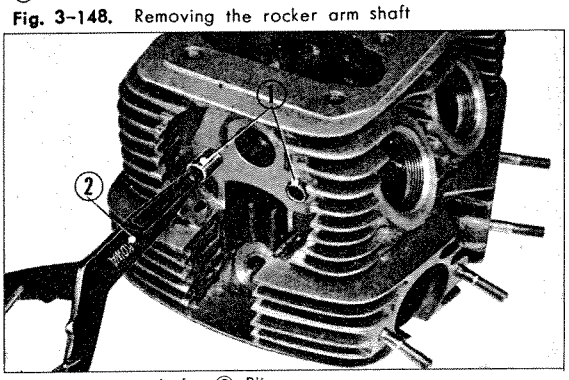
1. Disassemble the cylinder head in accordance with Section 3.2.1 B.
2. Remove the tappet adjusting screws.
3. Rotate the camshaft so that the rocker arms are resting on the base circle of the cam (this can be set by aligning the "O" mark stamped on the cam sprocket to the index mark on the cylinder head left cover flange).

4. Remove the bolt holding the rocker arm shaft stopper ① and pull out the rocker arm shaft ③, the rocker arm can then be removed. **(Fig. 3–148)**

   To facilitate the removal, use the snap ring plier. **(Fig. 3–149)**



① Rocker arm shaft stopper ② 5×10 hex. bolt
③ Rocker arm shaft
Fig. 3–148. Removing the rocker arm shaft



① Rocker arm shaft ② Plier
Fig. 3–149. Removing the rocker arm shaft

C. Inspection

1. Clean all parts, especially make sure that the oil holes are clean.
2. Inspect the rocker arm cam contact surface and repair or replace if there is scoring or excessive wear.

Rocker arm

Item	Standard Value	Serviceable Limit
Slipper surface wear	——	Replace if over 0.3 mm (0.012 in)
Shaft bore dia	10.00~10.015 mm (0.3937~0·3943 in)	Replace if over 10.1 mm (0.40 in)

Rocker arm shaft

Item	Standard Value	Serviceable Limit
Outside dia	9.972~9.987 mm (0.3926~0.3933 in)	Replace if under 9.92 mm (0.3934 in)
Clearance	0.013~0.043 mm (0.0005~0.0017 in)	Replace if over 0.08 mm (0.0031 in)

Check for proper tappet clearance, both inlet and exhaust should be 0.05 mm (0.002 in), too small a clearance will cause the valves to remain partly open, causing compression leak and results in hard starting.

D. Reassembly

Reassemble the valve rocker arm in the reverse order of disassembly.

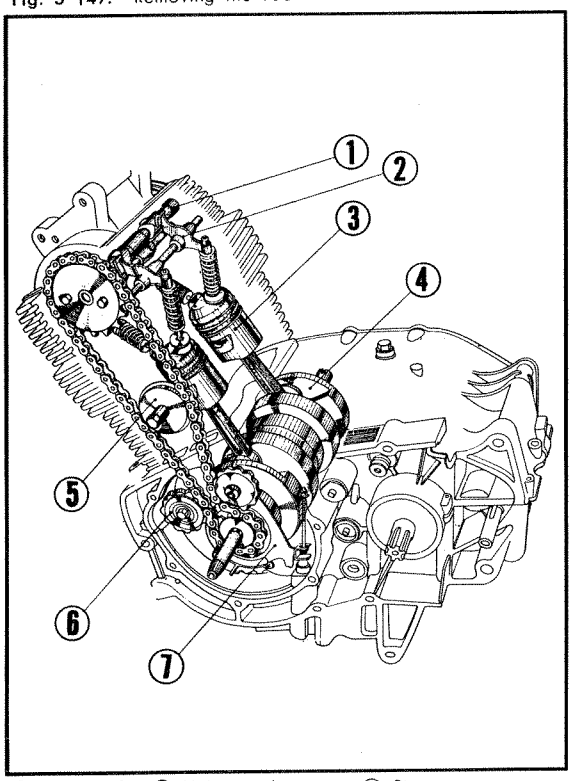
4. VALVE

A. Construction

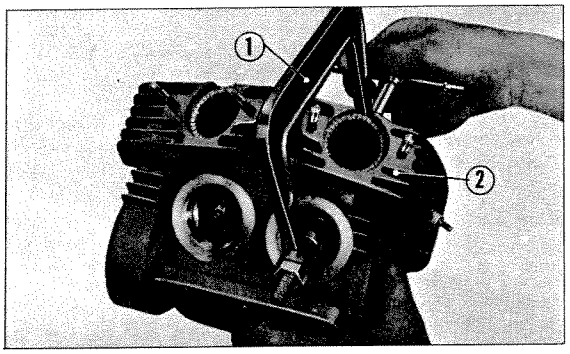
Refer to section 3.2.5 on page 27.

B. Disassembly

1. Remove the cylinder head. Refer to Section 3.2.1 A.
2. Disassemble the rocker arms and camshaft from the cylinder head. Refer to Section 3.2.3. B and 3.2.2. B.
3. Compress the valve spring with the valve lifter (Tool No. 07957–3290000) and after removing the valve cotter, valve spring and retainer, the valve can be removed. **(Fig. 3–151)**



① Cam shaft ② Valve rocker arm ③ Piston
④ Crankshaft ⑤ Cam chain guide roller
⑥ Cam chain tensioner roller ⑦ Cam chain tensioner
Fig. 3–150. Valve mechanism.



① Valve lifter ② Cylinder head
Fig. 3–151. Removing the valves

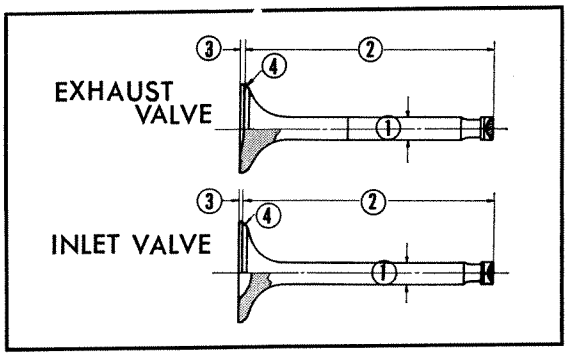
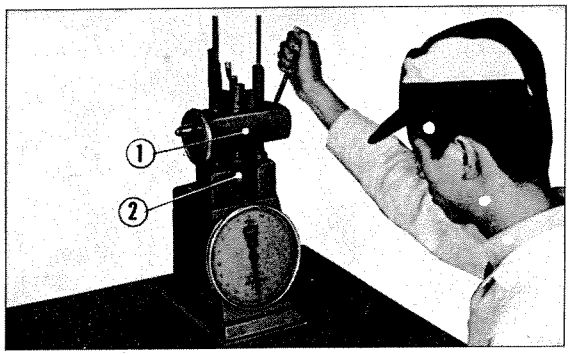


Fig. 3–152. Valve dimensions



① Valve tester ② Valve
Fig. 3–153. Measuring valve tension

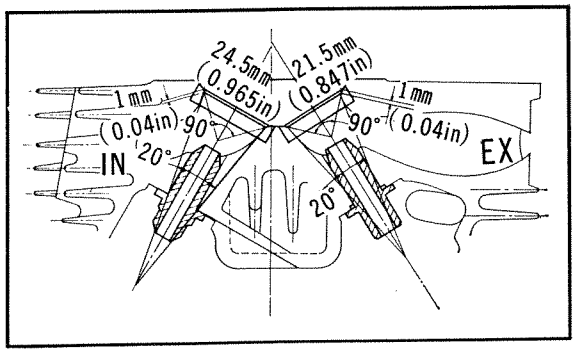


Fig. 3–154. Valve seat detail

C. Inspection

1. Exhaust valve **(Fig. 3–152)**

Item		Standard Value	Serviceable Limit
Stem diameter	①	5.46~5.47 mm (0.2150~0.2154 in)	Replace if under 5.44 mm (0.2142 in)
Length	②	61.6~61.8 mm (2.4252~2.4331 in)	Replace if under 61.2 mm (2.4094 in)
Head thickness	③	0.6~0.8 mm (0.024~0.032 in)	Replace if under 0.3 mm (0.0118 in)
Concentricity of valve face	④	With in 0.02 mm (0.0008 in)	

Inlet valve **(Fig. 3–152)**

Item		Standard Value	Serviceable Limit
Stem diameter	①	5.48~5.49 mm (0.1764~0.1768 in)	Replace if under 5.46 mm (0.2150 in)
Length	②	62.2~62.4 mm (2.4488~2.4567 in)	Replace if under 61.8 mm (2.4331 in)
Head thickness	③	0.4~0.6 mm (0.0158~0.0236 in)	Replace if under 0.2 mm (0.0079 in)
Concentricity of valve face	④	Within 0.02 mm (0.0008 in)	

2. Valve spring measurement **(Fig. 3–153)**

Outer valve spring

Item	Standard Value	Serviceable Limit
Free length	32.1 mm (1.2638 in)	Replace if under 31.0 mm (1.2205 in)
Tension	20.3 mm/19~21 kg (0.799 in/41.895~46.305 lbs)	——

Inner valve spring

Item	Standard Value	Serviceable Limit
Free length	26.1 mm (1.0276 in)	Replace if under 25.6 mm (1.0079 in)
Tension	15.6 mm/10.45~11.55 kg (0.6142 in/23.042~25.468 lbs)	——

D. Reassembly

1. Install the outer and inner valve springs from the tappet adjusting hole and compress the springs with a valve lifter and reassemble the valves with valve cotters.

5. VALVE SEAT

A. Description

The valve seat is repaired with three types of cutter.

The relative location and the width of the valve seat contact area is accomplished with the valve seat top cutter and valve seat bottom cutter while the refacing of the valve contact area is performed by the 90° cutter. **(Fig. 3–154)**

Valve lapping operation is performed last. This is to obtain a leak-proof seal between the valve and the valve seat. Place a liberal amount of lapping compound on the valve face and lap the valves, applying a slight pressure while rotating the valve back and forth with a suction cup lapping tool. Wash off the compound thoroughly and inspect the valve seat with bluing.

(Note)

(a) When the valve stem is greatly worn, the valve guide is usually also worn. Hence, when a valve is replaced, it also is desirable to replace the valve guide. Since the guide is press fitted, it is recommended that they be replaced with an oversize guide.

(b) When the valve is assembled, the compound which was used during lapping should be completely removed.

6. CYLINDER

A. Construction

For improved cooling effect and weight, reduction, the cylinder is made of aluminum alloy with a press fitted special cost steel cylinder sleeves. **(Fig. 3-155)**

The cam chain guide roller is incorporated at the left hand side of the cylinder.

B. Disassembly

1. Remove the cylinder head. Refer to Section 3.2 B.
2. Remove the two 6 mm hex. nuts and the cylinder from the crankcase. **(Fig. 3-156)**

C. Inspection

1. Measure the cylinder bore, taper, out-of-round with a precision cylinder gauge. **(Fig. 3-157)**

   Take the measurement at the top, middle and bottom in both the X and Y axes.

Item	Standard Value	Serviceable Limit
Bore	44.0~44.01 mm (1.7323~1.7327 in)	Repair if over 44.1 mm (1.7362 in)
Taper, out-of-round	0.005 mm (0.0002 in)	Repair if over 0.05 mm (0.0020 in)

2. The clearance between the piston and cylinder will greatly affect the engine performance. Because the piston is elliptical, the clearance is controlled very closely. The clearances are not the same, however, if any area is greater than 0.1 mm (0.004 in), the cylinder should be rebored and fitted with an oversize piston.

D. Reassembly

1. Install the gasket between the cylinder and crankcase and insert the cylinder over the stud bolts.
2. Make sure that the cylinder gasket and the two dowel pins are installed.
3. During the installation of the cylinder, use a hardwood piston base to prevent piston movement. Also use a ring compressor to prevent ring damages. **(Fig. 3-158)**

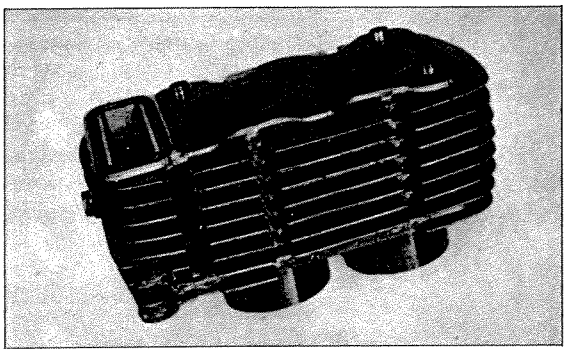
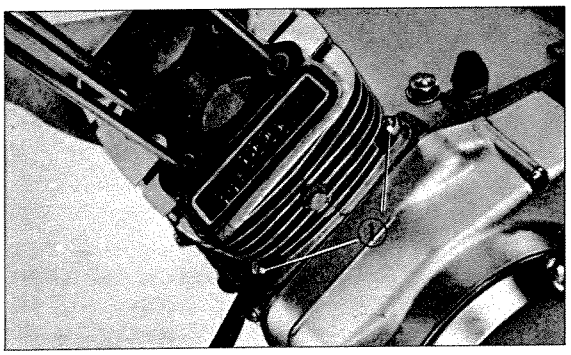
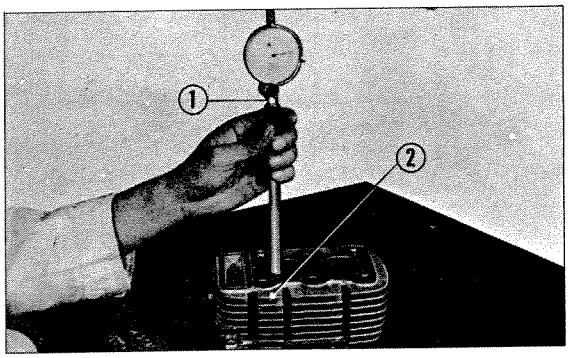


Fig. 3-155. Cylinder



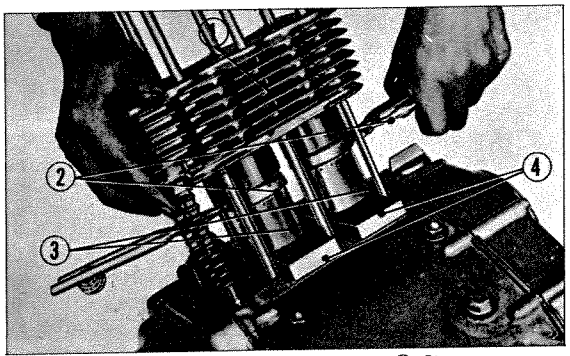
① 6 mm nuts

Fig. 3-156. Removing the cylinder



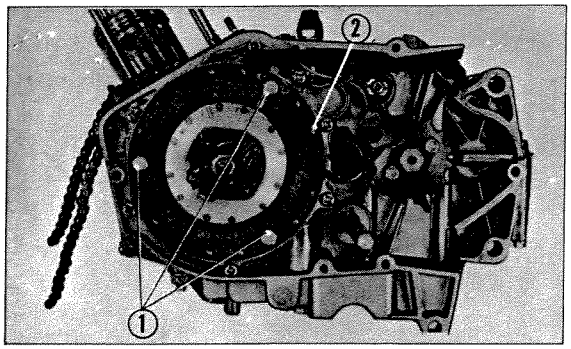
① Cylinder gauge ② Cylinder

Fig. 3-157. Measuring the cylinder bore

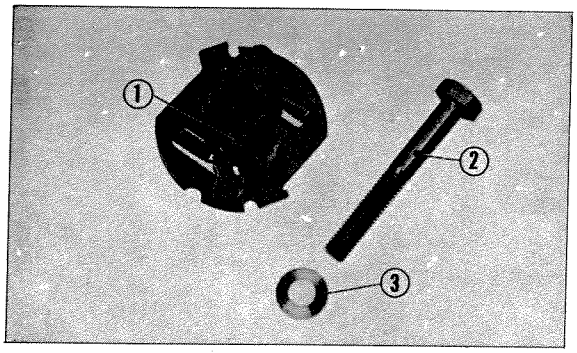


① Cylinder ② Piston ring compressor ③ Piston ④ Piston base.

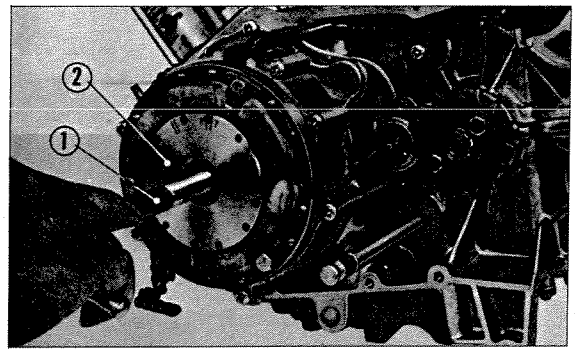
Fig. 3-158. Installing the cylinder



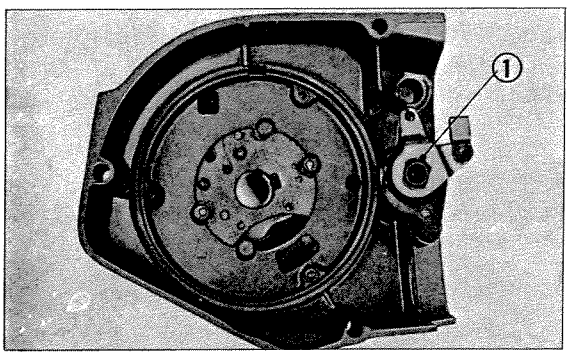
① 6 mm hex. bolt ② Stator
Fig. 3–159. Removing the dynamo stator.



① Spark advancer ② Dynamo rotor setting bolt ③ Washer
Fig. 3–160. Spark advancer



① Generator rotor puller ② Generator rotor
Fig. 3–161. Removing the A.C. generator rotor



① Clutch lifter
Fig. 3–162. Clutch lifter thread installation

3.3 LEFT CRANKCASE COVER

1. LEFT CRANKCASE COVER

The purpose of the crankcase cover is to protect the vital component parts of the engine. The contact point is mounted on the left end of the crankshaft.

2. A.C. GENERATOR

A. Construction

The detailed description of the A.C. generator is given in the electrical section.

B. Disassembly

A.C. generator can be disassembled or reassembled without separating the engine from the frame. However, this section describes disassembly of the A.C. generator from the engine which had been separated from the frame, and the cylinder and cylinder head disassembled.

1. Remove three screws and take off the contact breaker cover.
2. Disconnect the primary lead from the breaker assembly terminal and remove the two contact breaker plate screws to remove the breaker assembly.
3. Remove the left erankcase cover.
4. Remove the three bolts holding the A.C. dynamo stator and A.C. dynamo stator can be separated. **(Fig. 3–159)**
5. Remove the bolts holding the A.C. generator rotor and the spark advancer assembly can be removed. **(Fig. 3–160)**
6. Remove the rotor from the crankshaft using the A. C. generator rotor puller. (Tool No. 07933–2000000) **(Fig. 3–161)**

C. Reassembly

1. Align the dowel pin on the flywheel when reassembling the A.C. generator rotor, set in the crankshaft with the groove on the rotor and insert the rotor. Install the spark advancer over the rotor and tighten the rotor setting bolt.
2. Reassemble the crankcase cover, etc. in the reverse order of disassembly.

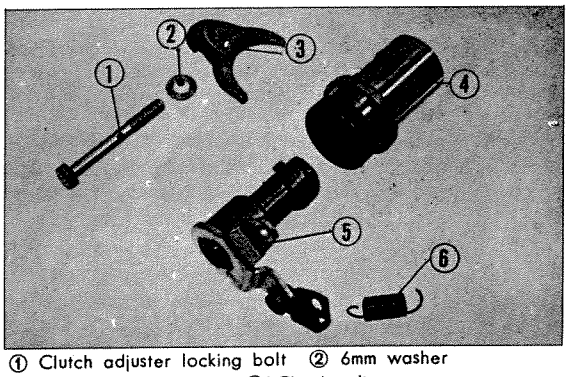
3. CLUTCH LIFTER THREAD

A. Description

The clutch lifter thread is located between the clutch lever and the clutch lifter rod. It transmits the action of the clutch lever to the clutch rod during starting and changing of the gears. In other words, the clutch lifter thread regulates the function of the clutch mechanism, and therefore, it indirectly affects the performance of the motorcycle. **(Fig. 3-162)**

B. Disassembly

1. Remove the left crankcase cover.
2. Remove the bolt from the adjuster fixing piece and the clutch lever spring. The clutch lifter thread can then be disassembled. **(Fig. 3-163)**



① Clutch adjuster locking bolt ② 6mm washer
③ Adjuster fixing piece ④ Clutch adjuster
⑤ Clutch lifter thread ⑥ Clutch lever spring
Fig. 3-163. Component parts of clutch adjuster

C. Reassembly

1. Apply grease to the clutch lifter thread before assemblying.

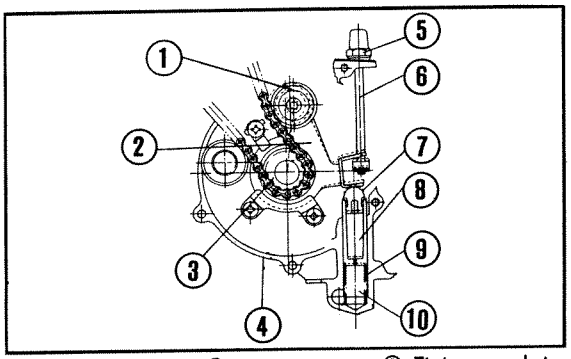
   Use HD type multi-purpose NLGI, No. 2.

4. CAM CHAIN TENSIONER

A. Costruction

An automatic cam chain tensioner has been employed to simplify the maintenance and eliminate the adjustment of the cam chain. This is done by automatically applying pressure against the tensioner push rod by means of the cam chain tensioner spring. The force is applied by the push rod to one side of the "seesaw" type, tensioner to maintain proper tension to the cam chain at high speed; further, the location of the guide roller has been engineered to minimize the chain noise.

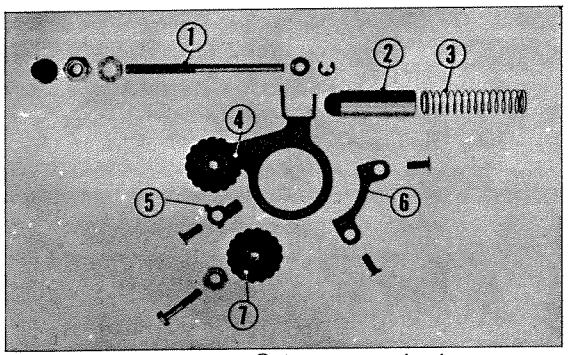
In addition, a manual adjusting feature is also provided to correct any stretch in the chain as the result of the centrifugalf orce from extended riding. **(Fig. 3-164)**



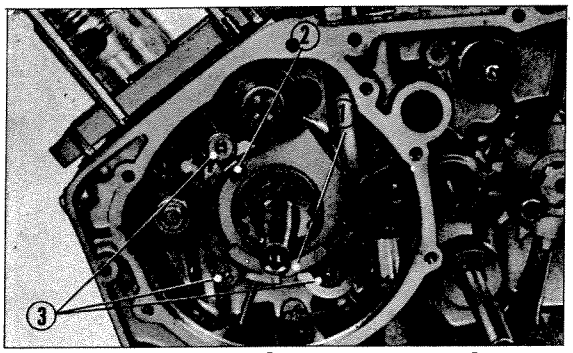
① Tensioner roller ② Tensioner arm ③ Timing sprocket
④ Crankcase ⑤ Adjust screw lock nut
⑥ Tensioner adjust bolt ⑦ Tensioner pushrod head
⑧ Tensioner pushrod ⑨ Tensioner spring
⑩ Oil damper chamber
Fig. 3-164. Construction of the cam chain tensioner

B. Disassembly

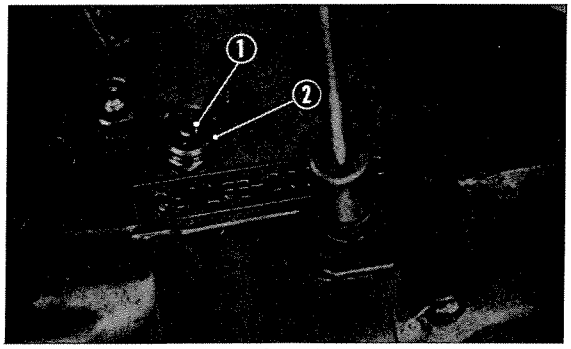
1. Remove the breaker point cover, point terminal left cover, AC Generator rotor, and then disassemble the AC Generator stator base.
2. Remove the cylinder head and disassemble the cylinder.



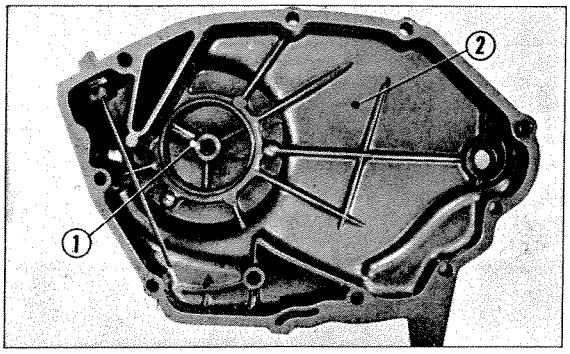
① Tensioner adjust bolt ② Tensioner pushrod
③ Cam chain tensioner spring ④ Cam chain tensioner
⑤ Tensioner set plate B ⑥ Tensioner set plate A
⑦ Cam chain tensioner roller
Fig. 3-165. Component parts of the cam chain tensioner



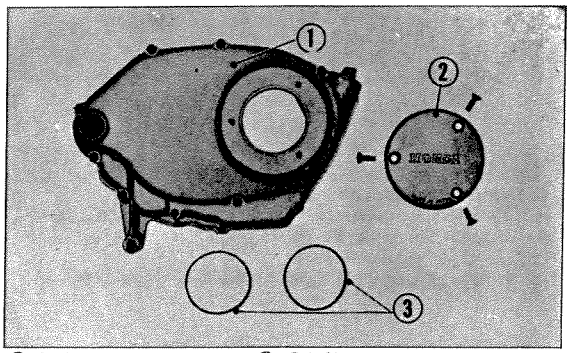
① Tensioner set plate A ② Tensioner set plate B
③ 6×16 cross screw
Fig. 3-166. Removing the tensioner set plates



① Tensioner adjust bolt ② Lock nut
Fig. 3-167. Adjusting the cam chain tension



① Oil filter cover ② Right crankcase cover
Fig. 3-168. Right crankcase cover



① Right crankcase cover ② Oil filter cover
③ 64.5×2 O ring
Fig. 3-169. Component parts of R. crankcase cover.

3. Unscrew the three tensioner set plate mounting screws. **(Fig. 3-166)**
4. Loosen the lock nut from the cam chain adjuster screw and after removing the circlip from the adjuster bolt with a plier, the tensioner pushrod and the tensioner spring can be disassembled.

C. Inspection

Check the cam chain tensioner roller for damage, distortion of the parts, and replace any defective parts.

Cam chain tensioner spring

Item	Standard Value	Serviceable Limit
Free length	68.7 mm (2.705 in)	Replace if under 66.0 mm (2.5984 in)
Tension	20 mm/185~215 gr (0.787 in/8.6~10 oz)	

D. Reassembly

1. Perform the reassembly in the reverse order of disassembly.
2. The tensioner adjusting bolt should first be screwed all the way in and then gradually backed off until the proper tension is achieved.
   Make the adjustment by applying a screwdriver to the upper portion of the bolt head and tighten the lock nut after completion. **(Fig. 3-167)**
   If the adjusting bolt is loosened, the cam tensioner will be automatically tightened.
3. Align the "T" marking on the AC Generator rotor to the arrow marking on the stator and set the crankshaft on top-dead-center of compression stroke.

3.4 RIGHT CRANKCASE COVER ASSEMBLY

1. RIGHT CRANKCASE COVER

A. Construction

The right crankcase cover and the left crankcase cover, house the engine primary components.

The oil filter cover is fitted to the right crankcase cover and provides the passage for lubricating oil. **(Fig. 3-168)**

B. Disassembly

1. Remove the kick starter arm from the kick pinion snaft.
2. By removing the ten screws securing the case cover, the right crankcase cover can be removed.
3. After unscrewing the three 6×16 screws, the filter cover can be removed.

(Caution)

During operation, attention should be given to the two 64.5×2 O ring fitted to the filter cover to assure that there are no oil leaks. **(Fig.3-169)**

C. Reassembly

1. Before performing the assembly, inspect the crankcase and oil filter cover for cracks and also for any damages to the mating surfaces since they will cause oil leak.
2. Clean the O ring and inspect for any damages; replace if necessary.
3. After installation of the screws, tighten them uniformly to prevent the covers from warping and consequent oil leak.

2. CLUTCH

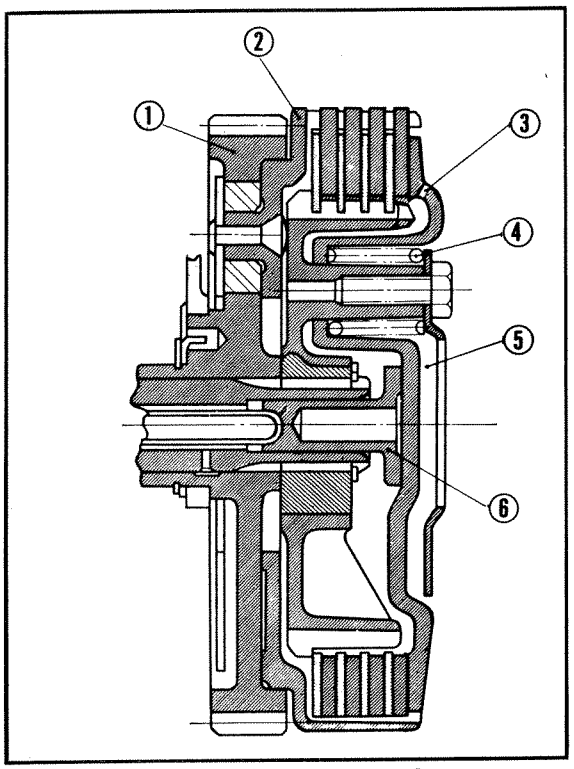
A. Description and Operation

When the right crankcase cover is removed the clutch complete is exposed. To the clutch outer, the clutch spring driving the clutch pressure plate is installed. The clutch plate is installed with the clutch friction disc between the clutch center with four 6×20 hex. bolts.

The clutch plate has internal teeth which fits over the machined grooves cut on the outside of the clutch center. Clutch center in turn is mounted on the transmission main shaft by spline. Hence, it and the transmission main shaft are essentially a single unit. The clutch plate, clutch center, and clutch pressure plate rotate.

On the other hand, to the groove cut on the exterior circumference of the clutch outer, the clutch friction disc is coupled by the collar entering the groove; free wheeling rotation with the transmission main shaft is obtained. Hence, while the clutch is connected, the clutch outer center, four clutch plates, four clutch friction discs, and clutch pressure plate are essentially a single unit through friction exerted by the clutch spring; rotation of the crankshaft is transmitted to transmission system.

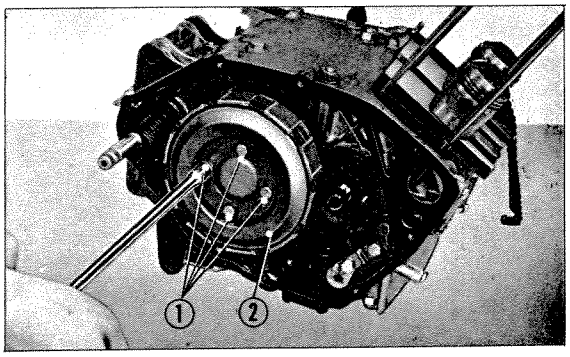
When the clutch lever is gripped, the clutch adjuster rotates clockwise, the adjustment thread is pushed out by the square-headed thread in the clutch adjuster fitted to the left crankcase cover; this is pushed out by the clutch joint through the clutch rod. The clutch spring is compressed and the four clutch friction discs and four clutch plates become disengaged. Hence, the rotary motion of four outer clutches and four clutch discs is not transmitted to the clutch center. **(Fig. 3–170)**



① Primary driven gear ② Clutch outer ③ Oil opening
④ Clutch spring ⑤ Clutch pressure plate
⑥ Clutch lifter joint piece
Fig. 3–170. Sectional view of clutch assembly

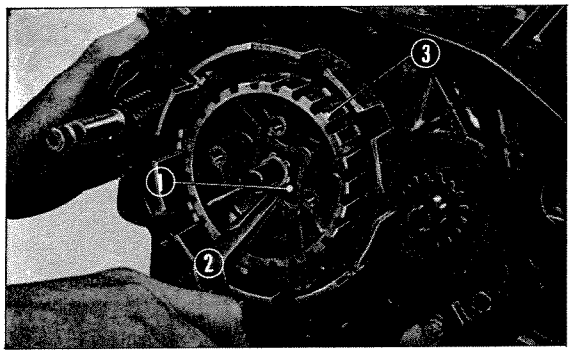
B. Disassembly

1. Remove the right crankcase cover.
2. Remove the four 6×20 bolts ① securing the clutch pressure plate, separate the clutch friction disc and the clutch plate. **(Fig. 3–171)**

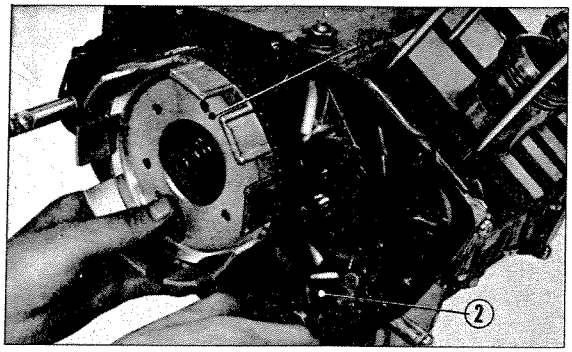


① 6×20 hex. bolt ② Clutch assembly
Fig. 3–171. Removing the clutch assembly

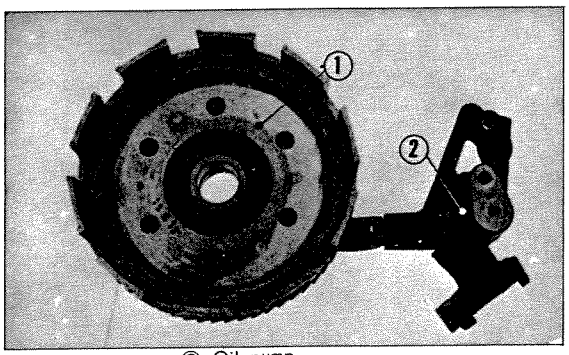
3. By removing the 20 mm set ring ①, clutch center ③ can be removed. **(Fig. 3–172)**
4. Remove the oil filter cap and extract the oil filter rotor.
   Remove the 16mm lock nut securing the primary drive gear.
5. By pulling up the turn stop, remove the 6 mm hex bolts securing the oil pump.



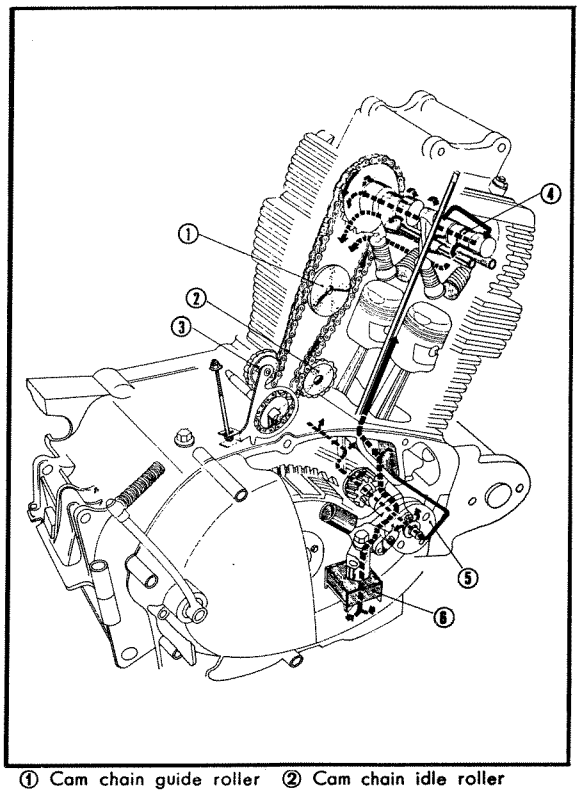
① 20 mm set ring ② Plier ③ Clutch center
Fig. 3–172. Removing the clutch center



① Clutch outer ② Oil pump
Fig. 3–173. Removing the oil pump



① Clutch outer ② Oil pump
Fig. 3–174. Oil pump



① Cam chain guide roller ② Cam chain idle roller
③ Cam chain tensioner ④ Camshaft ⑤ Oil filter
⑥ Oil filter screen
Fig. 3–175. Oil lubrication diagram

6. Remove the clutch outer together with the oil pump. **(Fig. 3–173)**

(Note)

This is removed at a right angle facing the transmission shaft. Care should be taken so that the transmission shaft is not damaged.

7. Remove the right primary drive gear.

C. Inspection

1. Measurement of damage, thickness, distortion and one-sides contact of the notch of the clutch friction disc.

Item	Standard Value	Serviceable Limit
Thickness	3.5 mm (0.1378 in)	
Width of claw	13.7~13.8 mm (0.539~0.543 in)	Replace if under 13.5 mm (0.5315 in)

2. Fatigue of clutch spring.

Item	Standard Value	Serviceable Limit
Free length	31.7 mm (1.2480 in)	Replace if under 31.0 mm (1.2205 in)
Tension	21 mm/15~16 kg (0.8268 in/33.075~35.28 lbs)	

3. Measurement of clearance of the clutch outer notch and the clutch friction disc.

Item	Standard Value	Serviceable Limit
Clearance	0.2~0.35 mm (0.0079~0.0138 in)	

D. Reassembly

1. Install the primary drive gears.
2. The clutch outer and the oil pump should be coupled by the pump plunger and the unit should be coupled at a right angle to the transmission main shaft and the pump fitting stud bolt.
3. Tighten the two oil pump bolts.
4. Install the right primary drive gear.
5. Install the oil filter rotor and oil pump cap.
6. Couple the clutch center to the spline of the transmission main shaft and set with the 20 mm set ring.
7. Four clutch plates and four clutch friction discs should be placed alternately. Assemble the clutch pressure plate, the clutch spring and the 6×20 bolts.

(Note)

When the clutch pressure plate is installed, make sure the clutch joint is in place.

8. Install the right crankcase cover and screws.

3. OIL PUMP (Fig. 3-175, 176)

The oil is picked up from the crankcase sump and routed through the oil passage to the oil filter where the impurities are removed by the centrifugally operating oil filter. The clean oil is then pressure fed through the upper crankcase to the right crankshaft bearing. The oil which enters the right and left crankcase outer rings is separated into two routes, one is fed to the roller bearing and the other enters the crankshaft to lubricate the connecting rod large end through the holes drilled in the crankshaft journals. The connecting rod small end is lubricated by oil mist.

The oil from the upper crankcase oil passage is fed to the top of the cylinder head through the cylinder stud bolts. This oil is fed into the camshaft and lubricates the rocker arm. The oil lubricates the cam chain on its way down to the sump. The gears and bearings are lubricated by oil droplets and mists. The normal capacity of oil pump is 3,200 cc (196 cu in) at 7,200 rpm.

B. Disassembly

1. Remove the right crankcase cover.
2. Remove the oil filter rotor
3. Separate the pump body together with the clutch.
4. By removing the 26 mm circlip, ① the pump rod ② can be separated from the clutch outer **(Fig. 3-64)**
5. Extract the pump plunger pin ③ and remove the plunger ① at the tip of the pump rod. **(Fig. 3-65)**

C. Inspection

Refer to section 3.5.1.C on page 39.

D. Reassembly

1. Assemble the pump in the reverse order of disassembly.

4. OIL FILTER

A. Operation

The engine oil is doubly filtered through the centrifugal filter and the mesh screen filter to assure clean supply of oil to the engine. **(Fig. 3-177)**

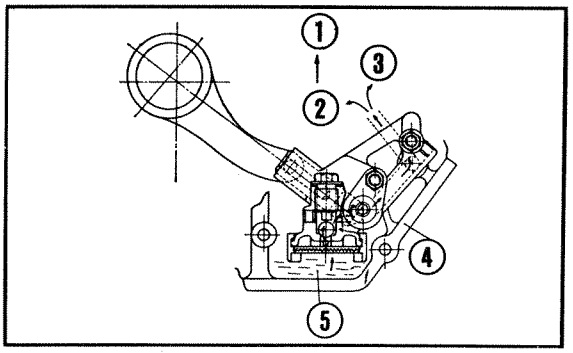
The screen filter is on the pump inlet side and the centrifugal filter is on the outlet side.

B. Disassembly

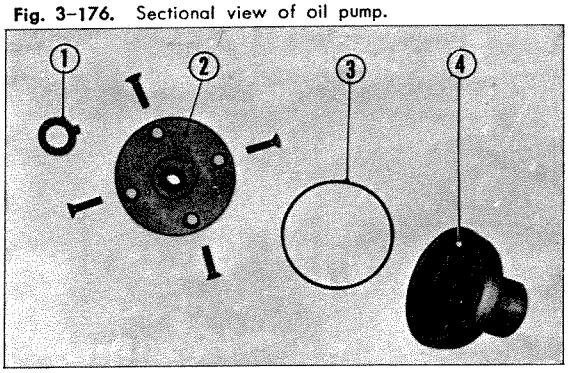
1. Remove the oil filter cover.
2. Remove the four 4×16 cross screws and oil filter cap.
3. Pull off the oil filter rotor.

C. Reassembly

1. After cleaning of all the parts, perform the reassembly in the reverse order of disassembly.



① To crankshaft ② To R. crankcase cover
③ To cylinder head ④ Under crankcase ⑤ Oil
Fig. 3-176. Sectional view of oil pump.



① Oil filter rotor washer ② Oil filter cap
③ 50.5×1.5 O ring ④ Oil filter rotor
Fig. 3-177. Oil filter

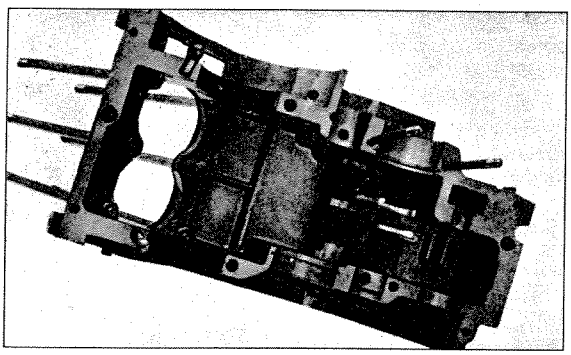


Fig. 3–178. Upper crankcase

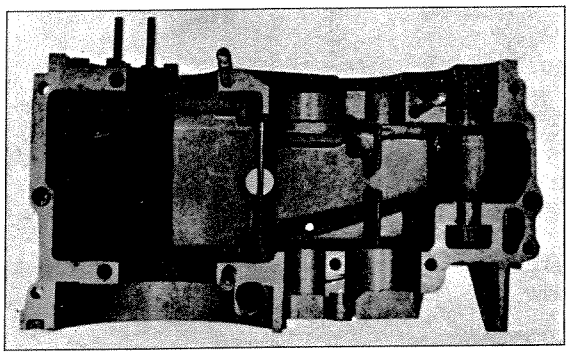
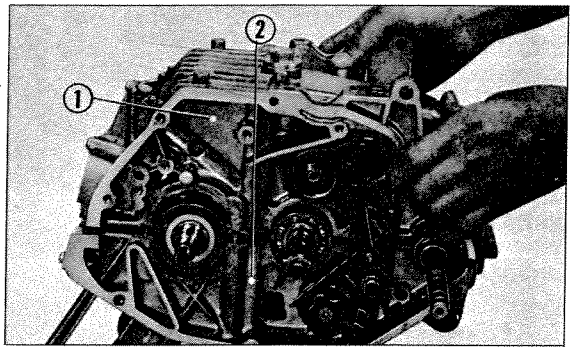
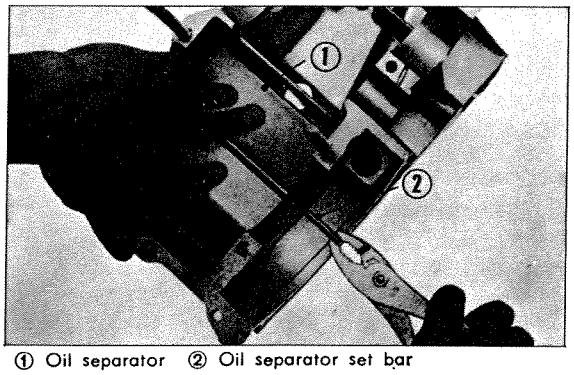


Fig. 3–179. Under crankcase



① Under crankcase ② Upper crankcase
Fig. 3–180. Removing the under crankcase



① Oil separator ② Oil separator set bar
Fig. 3–181. Removing the oil separator

3.5 CRANKCASE

1. Upper and under crankcase.

A. Description

The upper and under crankcases are constructed of lightweight aluminum alloy and can be separated at the center lines of the crankshaft, transmission main shaft and counter shaft.

(Note)

In the upper surface of the upper crankcase, the cylinder stud bolts are inserted. **(Fig. 3–178)**

The lower crankcase is equipped with the oil separator and two drain plugs. **(Fig. 3–179)**

B. Disassembly

1. Drain oil in the crankcase.
2. Remove the cylinder head and cylinder in accordance with 3. 2. 1B and 3. 2. 6B.
3. Separate the right crankcase cover, oil filter, clutch and oil pump in accordance with 3. 4. 1, 3. 4. 2 and 3. 4. 3.
4. Separate the left crankcase cover and A.C. generator in accordance with 3. 3. 1 and 3. 3. 2.
5. Remove the gear shift spindle.
6. Remove the bolts from the under crankcase, and the upper crankcase can be removed from the under crankcase. **(Fig. 3–180)**

C. Inspection

Refer to section 3.6.C on page 41.

D. Reassembly

1. Assembly should be performed with attention paid to the following points :
   - Clean the crankcase and inspect the mating surfaces of the crankcase for sign of leaks, scratches and other damages.
   - Apply liquid gasket to the mating surfaces of the case; assemble after drying.
2. Oil separator

A. Description

The oil separator is located in the forward section of the lower crankcase, directly below the crankshaft.

Its primary function is to control the oil splashed by crankshaft counter weight, prevent oil penetration and controls the oil temperature.

B. Disassembly

Oil separator can be removed by pulling out the oil separator set bar. **(Fig. 3–181)**

C. Reassembly

Assemble the oil separator in the reverse order of disassembly

3.6 CRANKSHAFT

A. Construction

The crankshaft journals are made of high carbon steel and the counterweights are of nickel-chrome-molybdenum steel, assembled by press fitting. Crankshaft is supported by a roller bearing and a ball bearing which take the thrust load and are fixed in place by dowel pins. Sprocket to drive the cam chain is press-fitted on the left crankshaft.

The oil is forced into the crank pin by centrifugal force to lubricate the connecting rod bearing. There is also a separate oil route to lubricate the main bearings. **(Fig. 3–182)**

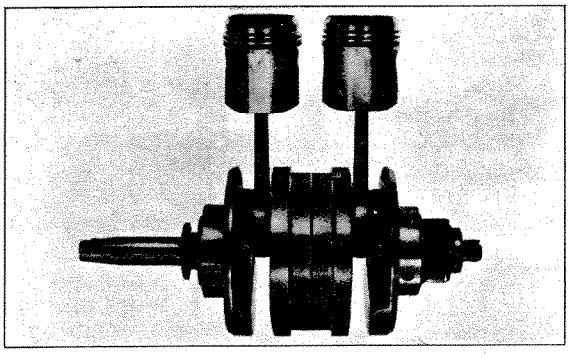


Fig. 3–182. Crankshaft assembly (old type)

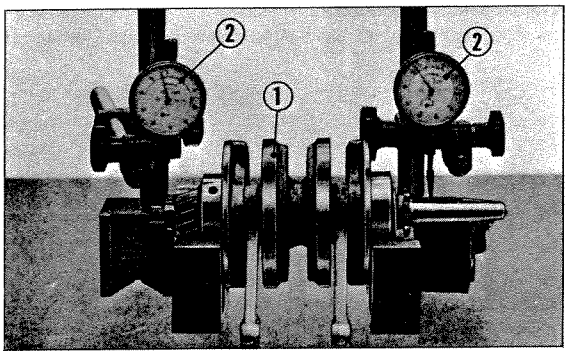
B. Disassembly

1. Drain oil from the crankcase.
2. Separate the cylinder and cylinder head in accordance with 3. 2, 1B and 3. 2. 6B.
3. Separate the right crankcase cover, oil filter, clutch and oil pump in accordance with 3. 4. 1, 3. 4. 2 and 3. 4. 3.
4. Separate the left crankcase cover and A. C. generator in accordance with 3. 3. 1 and 3. 3. 2.
5. Remove the gear shift spindle.
6. Remove the two 8mm and a 6mm hex nuts from the upper crankcase and remove the five 6mm hex bolts, two nuts and 8mm hex and blind nuts from the under crankcase.
7. Separate the under crankcase from the upper crankcase, then the crankshaft can be removed.

C. Inspection

(1) Support the crankshaft on V blocks at both bearings and measure the amount of runout. **(Fig. 3–183)**

Item		Standard Value	Serviceable Limit
Total runout	Left bearing web side at 30 mm (1.3 in)	0.02 mm (0.0008 in)	Replace if over 0.08 mm (0.0032 in)
	Right bearing web side at 26 mm (1.0 in)	0.02 mm (0.0008 in)	Replace if over 0.08 mm (0.032 in)



① Crankshaft assy. ② Dial gauge

Fig. 3–183. Measuring the crankshaft run out.

(2) The clearance in the bearing is measured by fixing the crankshaft on the centers and moving the bearing in the axial and vertical direction.

Item	Standard Value	Serviceable Limit
Axial clearance	Within 0.05 mm (0.0020 in)	Replace if over 0.1 mm (0.004 in)
Clearance normal to axis	Within 0.05 mm (0.0020 in)	Replace if over 0.1 mm (0.004 in)

When the clearance in the axial direction becomes excessive, the crankshaft will move from side to side when engine is running and produce undersirable noises as well as causing uneven wear to the cylinder, piston and the timing sprocket.

D. Reassembly

Assemble the crankcase in the reverse order of disassembly.

2. CONNECTING RODS

A. Description

The connecting rods are of molybdenum steel and have an H-shaped section; The roller (2.5×8.5mm) is hold by the roller retainer made of special aluminum alloy. Staggered rollers are used in order to increase the load capacity.

1. Measuring the deflection at the piston end of the connecting rod. Refer to section 3. 7. 2B on page 43 and 44.

3. PISTON

A. Description

Refer to section 3.7.3.A on page 44.

B. Disassembly

Refer to section 3.7.3.B on page 44.

C. Inspection

1. Before inspection, carbon adhering to the piston head or ring groove should be removed, using care not to scratch the piston.

(Caution)

Sandpaper should not be used for removing carbon, use a carbon scraper.

2. Piston outside diameter.

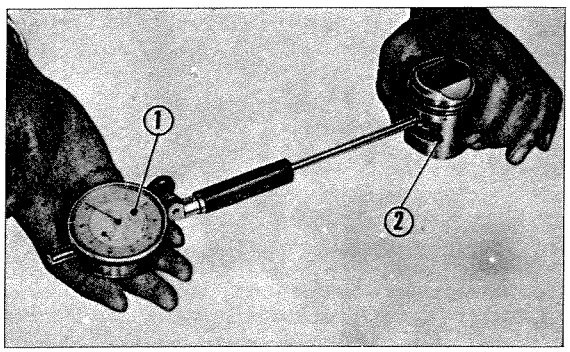
Item	Standard Value	Serviceable Limit
Head diameter	43.50~43.55 mm (1.713~1.715 in)	Replace if under 43.4 mm (1.7087 in)
Major diameter	43.98~44.0 mm (1.732~1.732 in)	Replace if under 43.9 mm (1.7283 in)

3. Ring groove clearance when a new piston ring is fitted.

Item	Standard Value	Serviceable Limit
Top ring	0.015~0.045 mm (0.0006~0.0018 in)	Replace if over 0.1 mm (0.004 in)
2nd ring	0.015~0.045 mm (0.0006~0.0018 in)	Replace if over 0.1 mm (0.004 in)
Oil ring	0.01~0.045 mm (0.0004~0.0018 in)	Replace if over 0.1 mm (0.004 in)

4. Piston pin hole. **(Fig. 3-184)**

Item	Standard Value	Serviceable Limit
Bore	13.000~13.006 mm (0.5118~0.5120 in)	Replace if over 13.05 mm (0.5128 in)



① Dial gauge ② Piston
Fig. 3-184. Measuring piston pin hole

5. There are three types of oversize piston at intervals of 0.25 mm (0.01 in.)

D. Reassembly

Refer to section 3.7.3.D on page 46.

4. PISTON RINGS

Refer to section 3.7.4. on page 46.

B. Inspection

1. When the piston ring has been removed, the gap should be measured. It should be inserted approximately 15 mm (0.6 in.) from skirt of the cylinder at right angle to the center line. Measurement of the gap should be made with a thickness gauge. **(Fig. 3-185)**

Item	Standard Value	Serviceable Limit
Top ring	0.15~0.35 mm (0.0059~0.0138 in)	Replace if over 0.8 mm (0.032 in)
Second ring	0.15~0.35 mm (0.0059~0.0138 in)	Replace if over 0.8 mm (0.032 in)
Oil ring	0.15~0.40 mm (0.0059~0.0158 in)	Replace if over 0.8 mm (0.032 in)

2. Tension of the piston ring is measured with a tension measuring instrument.

Item	Standard Value	Serviceable Limit
Top ring	0.34~0.63 kg (0.750~1.389 lb)	Replace if under 0.24 kg (0.529 lb)
Second ring	0.28~0.57 kg (0.617~1.257 lb)	Replace if under 0.2 kg (0.441 lb)
Oil ring	0.50~0.80 kg (1.103~1.764 lb)	Replace if under 0.4 kg (0.882 lb)

C. Replacing the piston rings

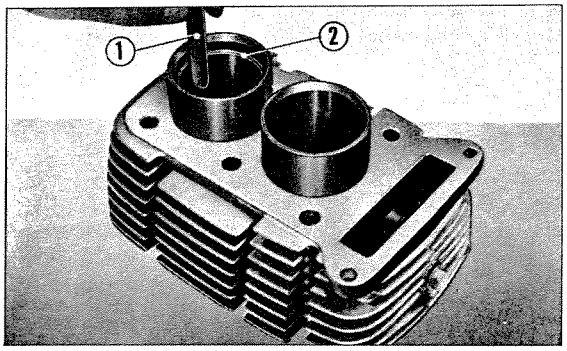
1. When a piston ring is reassembled, it should be fitted to the cylinder. Inspection should be made to determine if the gaps of the top and second rings are proper. If the gaps are somewhat less, they should be corrected with a file.

(Caution)

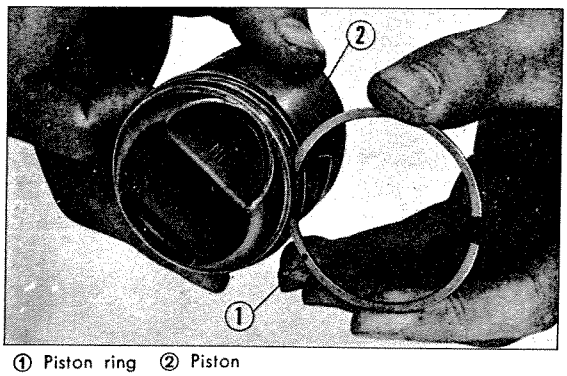
(a) The gap should be filed perpendicular to the ring

(b) If the piston ring gap is too small, seizure between the ring and cylinder occurs due to thermal expansion; if the gap is too large, oil penetration or gas leakage occurs.

2. When piston ring is assembled on the piston, any interference between the ring and the groove may prevent smooth operation. It is necessary to inspect for clearance, when new ring is fitted to the groove, by rotating the ring around the circumference. **(Fig. 3-186)**



① Thickness gauge ② Piston ring
Fig. 3-185. Measuring the piston ring gap



① Piston ring ② Piston
Fig. 3-186. Inspection of the piston ring by rotating around the piston

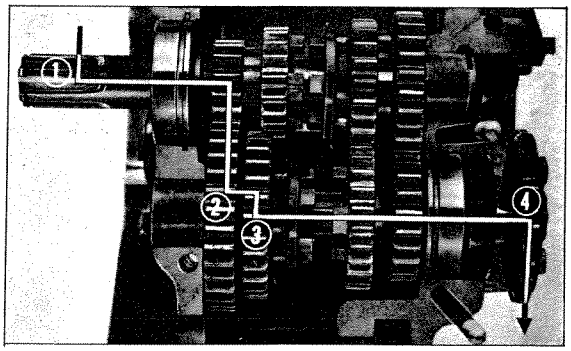


Fig. 3-187. Low gear

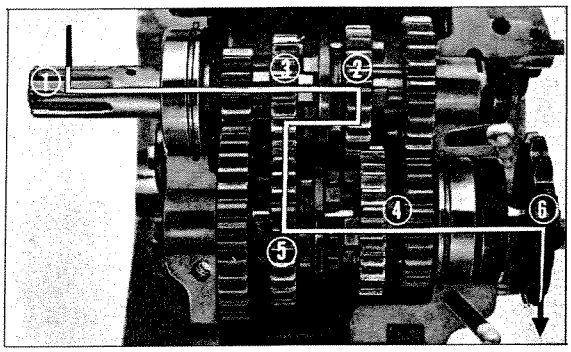


Fig. 3-188. Second gear

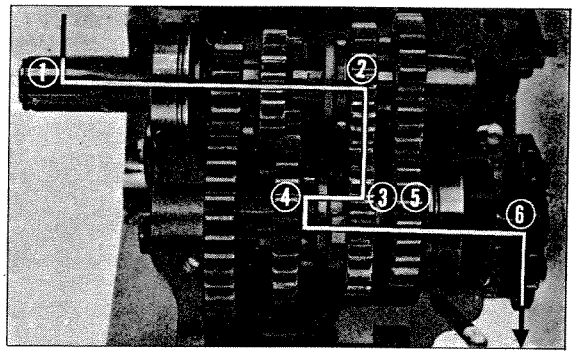


Fig. 3-189. Third gear

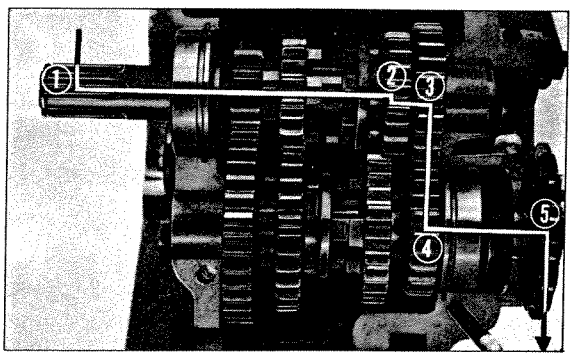


Fig. 3-190. Top gear

3.7 TRANSMISSION

A. Description

The transmission receives the rotary power from the crankshaft and through a series of gears, changes it to the desired speed and then transmits it to the drive sprocket to drive the rear wheel. All the gears are fully constant meshed, assuring smooth gear change.

B. Operation

Low : **(Fig. 3-187)**

The power from the crankshaft is transmitted through the clutch to the spline fixed driven gear on the transmission main shift ①. The power from the transmission main shaft ① is transmitted from the main shaft drive gear to the counter shaft low gear ②. However, the counter shaft second gear ③ which is splined to the counter shaft and is moved against the low gear ② by the shift fork and is locked by means of a dog, forming an single unit with the counter shaft to transmit the driving force to the drive sprocket ④ mounted on the left end of the counter shaft.

Second : **(Fig. 3-188)**

The main shaft third gear ② which is spline slide fitted to the main shaft ① is moved by the shift fork to lock with the second gear ③ by means of a dog, thus permitting the transmission of power from the main shaft to the counter shaft ④ by meshing the main shaft second gear with the splined counter shaft second gear ⑤ hence to drive the sprocket ⑥.

Third : **(Fig. 3-189)**

The power from the transmission main shaft ① is transmitted to the counter shaft third gear ③ by meshing with the main shaft third gear ②. The counter shaft second gear ④ which is spline slide fitted is moved by the shift fork to lock with the free rotating third gear ③ by means of a dog, this causes the counter shaft ⑤ to rotate and in turn drives the sprocket ⑥.

Top : **(Fig. 3-190)**

The main shaft third gear ② is moved by the shift fork to lock with the free rotating top gear ③ by means of a dog, thus permitting the transmission of power from the main shaft ① to the counter shaft by meshing the main shaft top gear ③ with the fixed counter shaft ④ (top gear) to drive the sprocket ⑤.

Neutral : **(Fig. 3-191)**

The gears are not locked. The main shaft low gear ① is meshed with the counter shaft low gear ② and the main shaft third gear ③ is meshed with counter shaft third gear ④, however, the counter shaft gears rotate freely and therefore, no power is delivered to the sprocket ⑤.

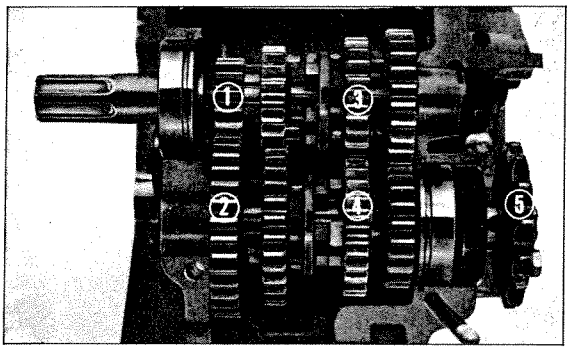


Fig. 3-191: Neutral

C. Inspection

1. Main shaft to main shaft gear clearance.

Item	Standard Value	Serviceable Limit
Second gear	0.011~0.053 mm (0.0004~0.0021 in)	Replace if over 0.1 mm (0.004 in)
Top gear	0.016~0.045 mm (0.0006~0.0018 in)	Replace if over 0.1 mm (0.004 in)

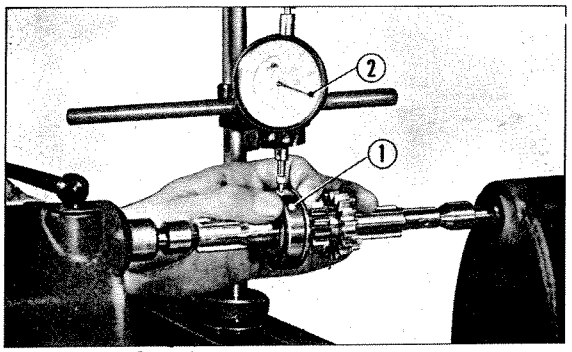
2. Counter shaft to counter shaft gear clearance.

Item	Standard Value	Serviceable Limit
Low gear	0.016~0.045 mm (0.0006~0.0018 in)	Replace if over 0.1 mm (0.004 in)
Third gear	0.011~0.053 mm (0.0004~0.0021 in)	Replace if over 0.1 mm (0.004 in)

3. Bearing clearance. **(Fig. 3-192)**

Item	Standard Value	Serviceable Limit
Axial clearance	Within 0.05 mm (0.002 in)	Replace if over 0.1 mm (0.004 in)
Radial clearance	0.01~0.025 mm (0.0004~0.001 in)	Replace if over 0.05 mm (0.002 in)

4. Shift drum groove **(Fig. 3-193)**
   Standard value : 6.0~6.15 mm (0.236~0.242 in.)



① Bearing ② Dial gauge

Fig. 3-192. Measuring clearance of the bearing

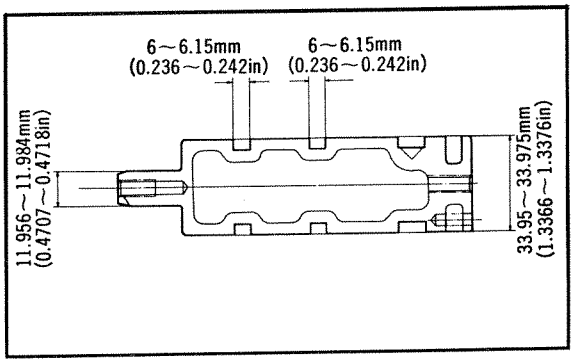


Fig. 3-193. Sectional view of gear shift drum

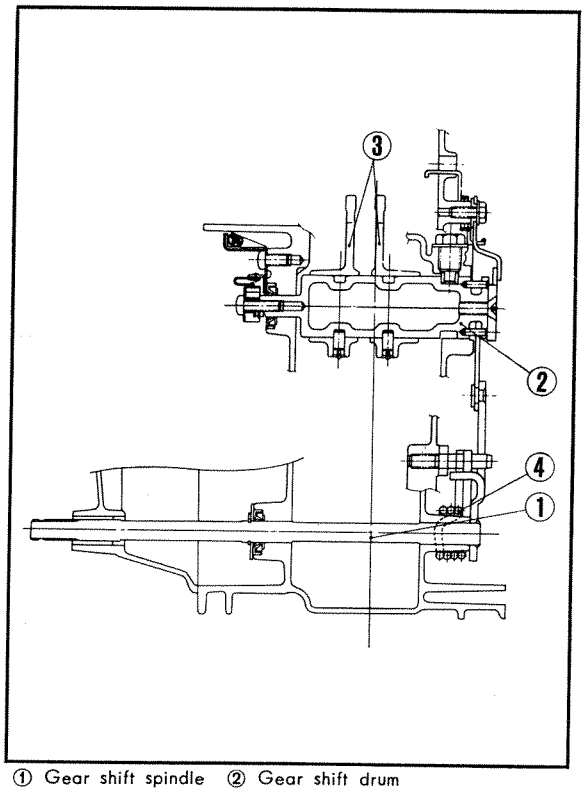
3.8 GEAR SHIFT

A. Description

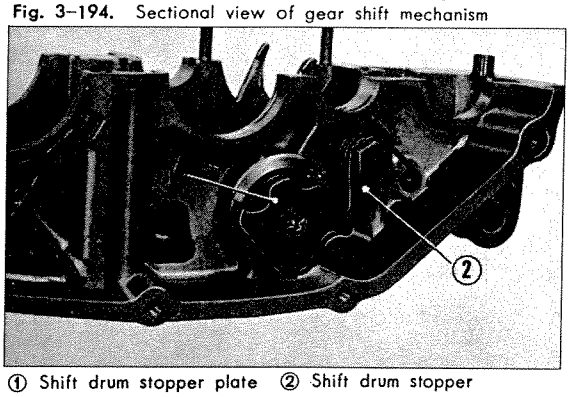
As the gear change pedal is depressed, the gear shift spindle is rotated and the gear shift pawl on the end of the gear shift arm engages with the gear shift pin on the right side of the gear shift drum and causes it to turn.

A groove is machined on the surface of the drum, forming a cam, and as the drum is rotated, the shift fork riding in the groove is actuated by the contour of the groove to perform the gear shifting action.

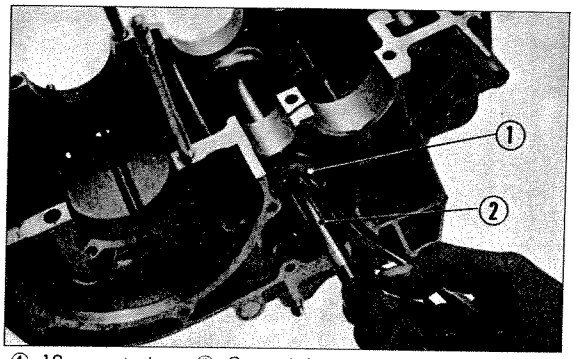
Further, there is a gear shift return spring which brings the pedal back to the original position and prepares for the next gear operating sequence. **(Fig. 3-194)**



① Gear shift spindle ② Gear shift drum
③ Gear shift fork ④ Gear shift return spring
Fig. 3–194. Sectional view of gear shift mechanism



① Shift drum stopper plate ② Shift drum stopper
Fig. 3–195 Removing the shift drum stopper.



① 12 mm set ring ② Gear shift spindle
Fig. 3–196. Removing the gear shift spindle

B. Disassembly

1. Separate the crankcase to the upper and lower half by following the procedure outlined for the disassembly of the transmission.
2. Remove the shift fork guide pin clip installed on the shift fork and separate the guide pins.
3. Remove the neutral switch rotor and stator installed on the right side of the shift drum.
4. Remove the shift drum stopper arm pivot which holds the shift drum stopper plate and then remove the stopper. **(Fig. 3–195)**
5. The gear shift, gear shift return spring, and gear shift spindle side stopper are all assembled by a circlip, therefore, by removing the circlip with the snap ring plier, the spindle can be disassembled. **(Fig. 3–196)**
6. Remove the gear shift return spring with a spanner or with a deep walled socket wrench.
7. Loosen the gear shift fork guide screw in the upper crankcase and remove ; at the same time, remove the shift drum guide collar.
8. Pull out the shift drum from the side of the crankcase. **(Fig. 3–197)**

C. Inspection

1. Inspect the gear shift fork for bend.
2. Check the gear shift guide pin for excessive wear.
3. Check the shift drum stopper for looseness due to excessive wear.
4. Check the gear shift spindle return spring for loss of tension.
5. Check the return spring pin for security.

D. Reassembly

1. Insert the gear shift drum from the right side of the upper crankcase and assemble the gear shift fork within the crankcase being careful that the gear shift fork is centrally positioned.
2. Assemble the shift fork with the gear shift fork guide pin. Make sure that the gear shift fork guide pin is inserted in the correct position.
3. Assemble the gear shift drum stopper.
4. Assemble the neutral switch rotor and stator ; check to make sure that the switch is making contact in the neutral position.
5. Insert the gear shift spindle from the right side and then assemble the gear shift spindle side stopper form the left side and lock in position with the circlip.
6. Assemble the crankshaft and the transmission gear assembly into the upper case. Assemble and bolt the lower crankcase.
7. Finally, assemble the crankshaft in accordance with the assembly procedure.

3.9 KICK STARTER

A. Description

The kick starter is designed to prevent the ratchet noise following the start of the engine ; it is of the same design as the C50 and C65.

As the kick starter pedal is depressed, the kick starter spindle will revolve, causing the rathet to move along the spiral groove in the drum due to action of the ratchet spring, and with the pinion to transmit the action to the counter shaft low gear, main shaft primary driven gear and then finally rotates the crankshaft which is directly driven by the primary drive gear, **(Fig. 3–199)**

When the engine starts, and as the pinion speed exceeds the spindle speed ; the ratchet due to the rotation of the pinion will turn in the left hand direction in reference to the spindle. Because of the left hand square thread action of the set spring, the ratchet will separate from the pinion.

The kick starter spring returns the spindle to the original position, disengaging from the pinion and is poised for the succeeding kick starter operation.

B. Disassembly

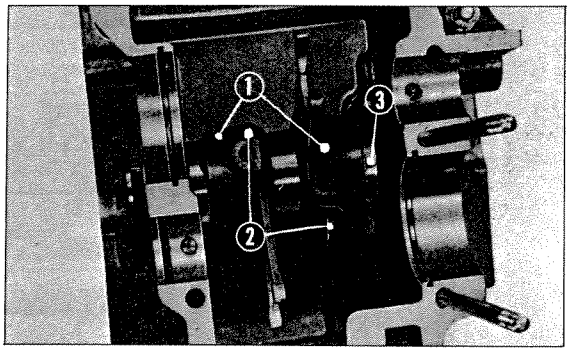
1. By following the disassembly procedure for the transmission, the upper and lower crankcases can be separated permitting the disassembly of the kick starter spindle.
2. Remove the kick starter spindle.

C. Inspection

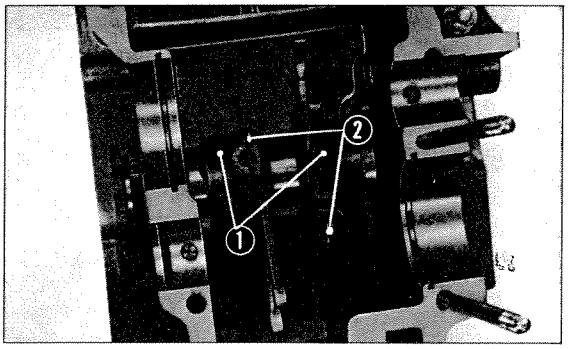
Check ratchet and the gear teeth of the pinion ratchet for excessive wear.

D. Reassembly

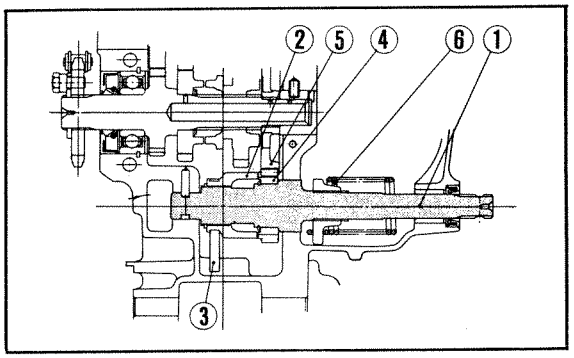
Perform the assembly in the reverse order of disassembly.



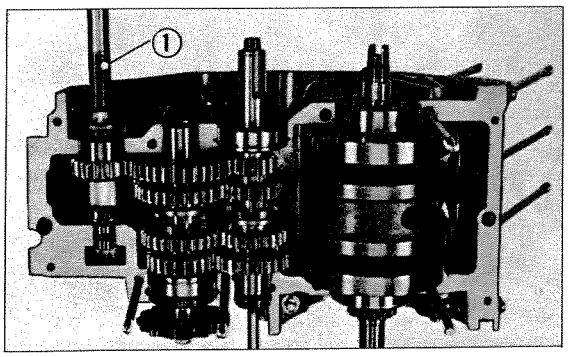
① Gear shift fork ② Guide pin clip ③ Gear shift drum
Fig. 3–197. Removing the gear shift drum.



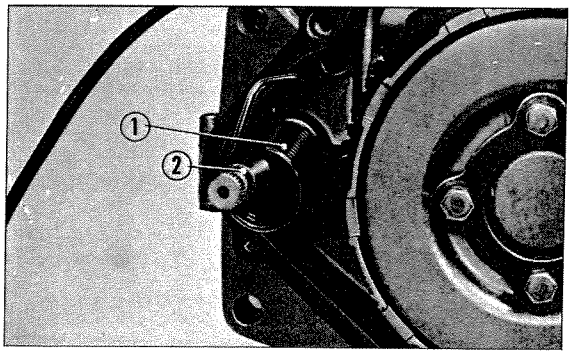
① Gear shift fork ② Guide pin clip
Fig. 3–198. Installing the gear shift drum



① Kick starter spindle ② Kick starter ratchet
③ Kick starter ratchet spring ④ Kick starter pinion
⑤ Counter shaft low gear ⑥ Kick starter spring
Fig. 3–199. Sectional view of kick starter.

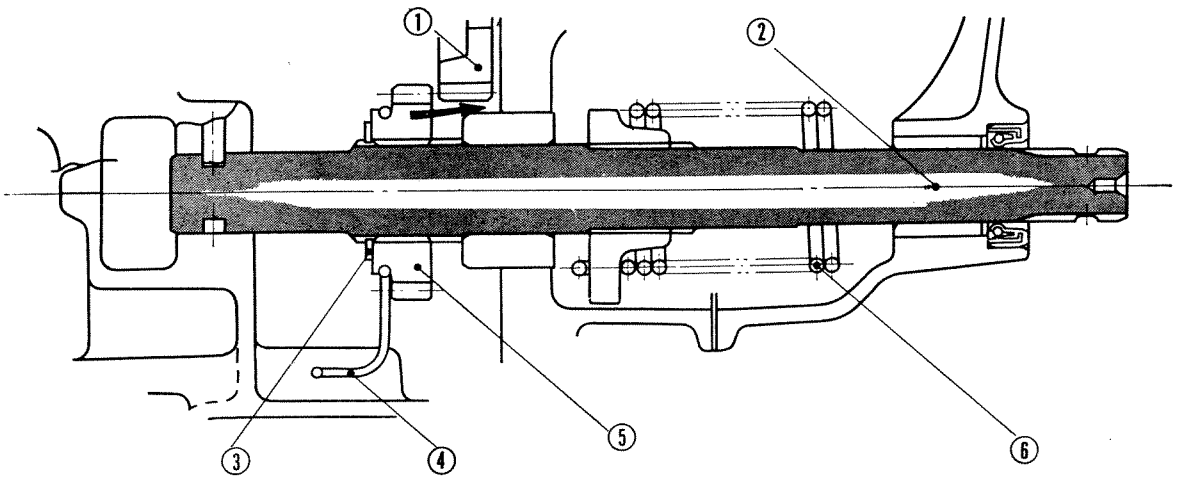


① Kick starter spindle
Fig. 3–200.



① Kick starter spring ② Kick starter spindle
Fig. 3–201. Kick starter spring.

The kick starter for engine No. CB125E-2011645 or CL125E-2007602 and subsequent is equipped as shown in **Fig. 3-202.**



① Low gear ② Kick starter spindle ③ Circlip ④ Friction spring ⑤ Kick starter pinion ⑥ Kick starter spring

3.10 CARBURETOR (CB125, CL125)

CB125 and CL125 are equipped with the carburetor identical to those used on the CB/CL175 which is described on page 56 through 61. The carburetor setting for the CB/CL125 are shown in the table below.

Setting specification

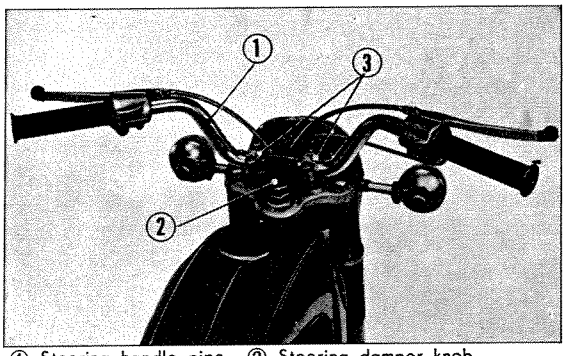
Model	CB125, CL125		
Setting mark	CBC		
Main jet	#92		
Air jet	#150		
Air bleed	AB1	0.6 mm×4	
	AB2	None	
	AB3	0.6 mm×2	
	AB4	None	
	AB5	0.6 mm×2	
Needle jet	2.6 mm×3.6 mm		
Jet needle	CL125 18234 – 2 stage CB125 18231 – 2 stage		
Cut-away (throttle valve)	#2.0 (width 1.2 mm, Depth 0.2 mm)		
Air screw	1⅛±⅛		
Slow jet	#35	AB1	0.7 mm×2
		AB2	0.7 mm×2
		AB3	0.7 mm×2
Valve seat	1.7 mm		
Pilot outlet	0.9 mm, Pitch 7.0 mm		
Fuel level	21 mm (0.827 in)		

4. FRAME

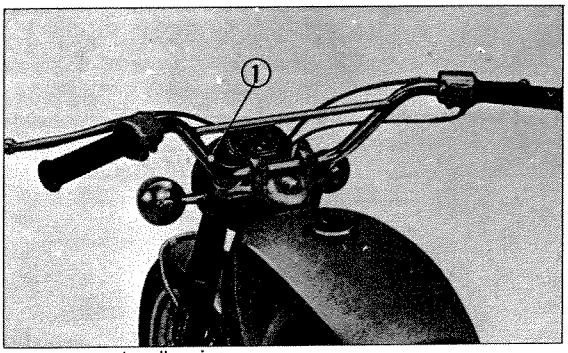
4.1 STEERING HANDLE

A. Description

The steering handle ① is made of high strength steel pipe, and is mounted on the front fork top bridge with the handle pipe holder ③. The fork top bridge is attached to the front cushions by two front fork bolts. All control cables are exposed to simplify steering handle replacement. **(Fig. 4-1-1, 2)**



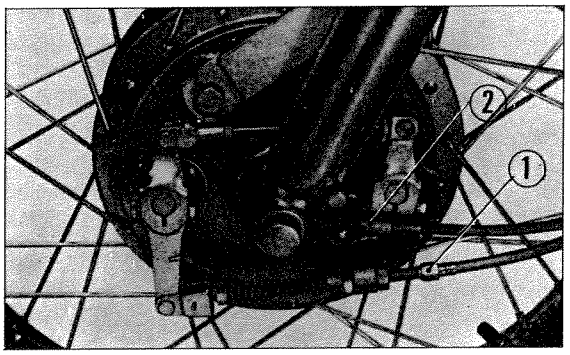
① Steering handle pipe ② Steering damper knob
③ Handle pipe holder
Fig. 4-1-1. CB type steering handle



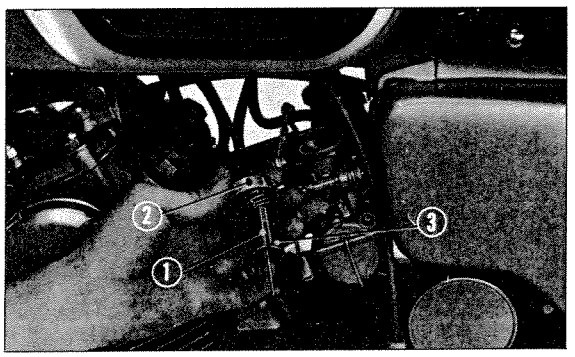
① Steering handle pipe
Fig. 4-1-2. CL type steering handle

B. Disassembly

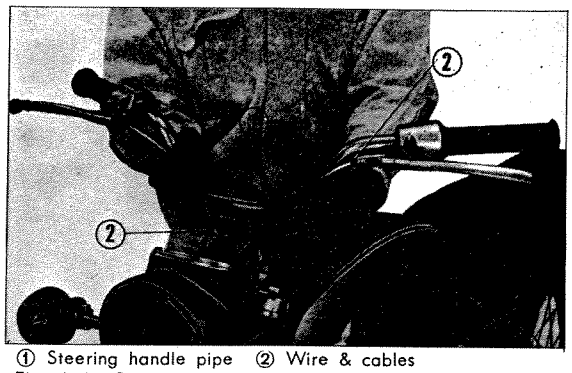
1. To disassemble the front brake cable ①, push the brake arm toward the braking position to provide slack to the cable and then disconnect the brake cable from the brake arm. Remove the 5 mm cross screw and pull out the speedometer cable ② from the front brake panel. **(Fig. 4-2)**
2. Disassemble the clutch cable lower end by loosening the three 6 mm screws on the drive chain cover A and disconnect the clutch cable from the clutch lifter.
3. Disconnect the lower end of the throttle cable ① by removing the carburetor cap ②, pulling out the throttle valve ③ and then disconnecting the throttle cable from the valve. **(Fig. 4-3)**



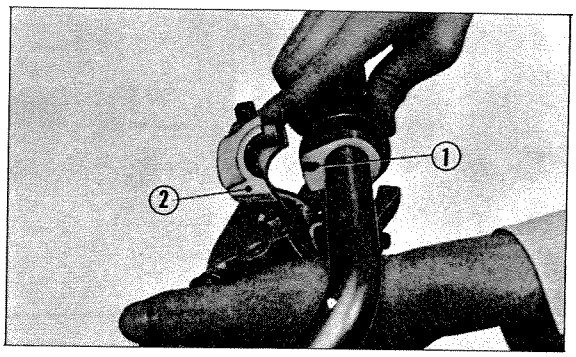
① Front brake cable ② Speedometer cable
Fig. 4-2. Removing the speedometer and brake cables



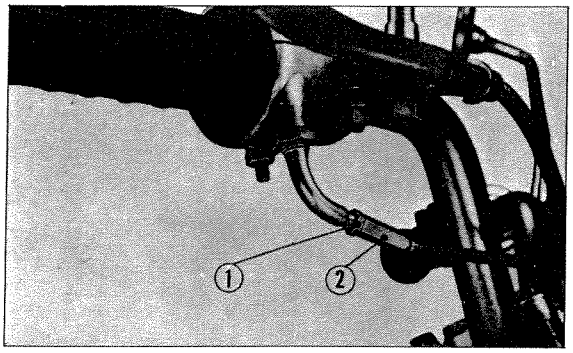
① Throttle cable ② Carburetor cap ③ Throttle valve
Fig. 4-3. Disconnecting the throttle cable from the throttle valve



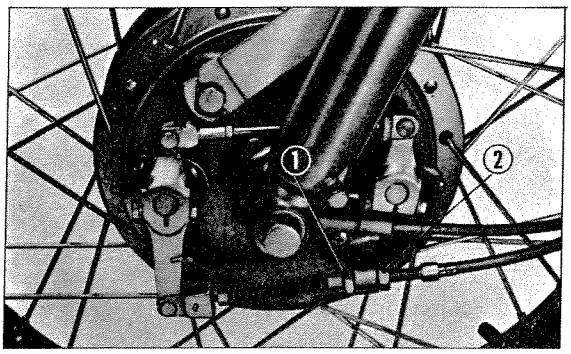
① Steering handle pipe ② Wire & cables
Fig. 4–4. Removing the steering handle pipe



① Throttle cable ② Light switch assembly
Fig. 4–5. Removing the throttle cable



① Lock nut ② Throttle cable adjuster
Fig. 4–6. Adjustment of the throttle cable



① Lock nut ② Adjusting nut
Fig. 4–7. Adjustment of the front brake cable

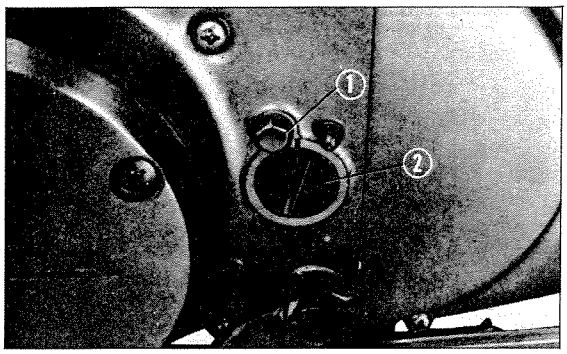
4. Access to the wire harness connectors for disassembly of the electrical equipment is made by removing the headlight unit to expose the connectors housed in the headlight case.
5. Remove the 6 mm snap pin under the steering stem and the steering damper knob.
6. Loosen the four 8×36 handle mounting bolts to remove the steering handle ① from the fork top bridge. The steering handle can be removed together with the cable and wires ② as a complete unit. **(Fig. 4–4)**
7. Unscrew the brake and clutch cable adjusting bolts and disconnect the inner cable from the levers.
8. Disassemble the throttle cable by unscrewing the two 5×25 cross screws to separate the light switch assembly. Disconnect the throttle cable from the handle grip pipe. **(Fig. 4–5)**

C. Inspection

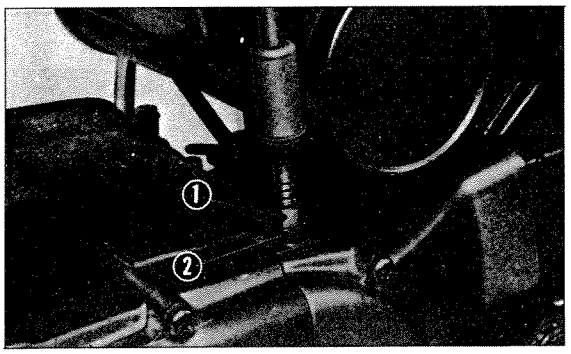
1. Check the throttle, clutch and front brake cable for wear, damage, kinks and unsmoothness of operation.
2. Check the handle levers for unsmoothness of operation.
3. Check the handle pipe for bend and twist.
4. Check all the switches for improper operation and also check the electrical leads for damage.

D. Reassembly

1. Connect the upper ends of the cables to their respective levers.
2. Position the cables and electrical leads in their proper location and then clamp the steering handle in place between the upper and lower handle pipe holders with the four mounting bolts.
3. Route the cables though the supports and the electrical leads into the headlight case.
4. Connect the clutch cable end to the clutch lifter thread, the brake cable end to the brake arm and the throttle cable end to the throttle valve.
5. Adjust the respective cables to the proper specification with the adjust bolt at both ends of the cable assemblies. Tighten the lock nuts after completing the adjustment. **(Fig. 4–6, 4–7, 4–8, 4–9)**
6. Free travel :
   Throttle cable grip twist angle
   9 to 10 degrees
   Front brake cable (at end of lever)
   10 to 30 mm (0.4 to 1.2″)
   Clutch cable (at end of lever)
   20 to 30 mm (0.8 to 1.2″)

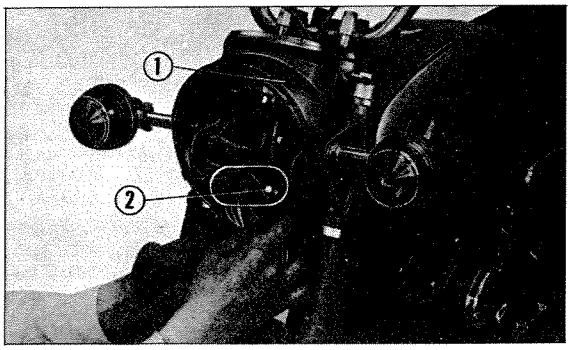


① Clutch adjuster locking bolt ② Clutch adjuster
Fig. 4–8. Adjustment of the clutch play



① Clutch adjusting bolt ② Locking nut
Fig. 4–9. Adjustment of the clutch play.

7. Connect all electrical leads within the headlight case. Join the leads of the identical color.
8. After the reassembly has been completed, move the steering handle through the full travel to make sure that the cables electrical leads are not binding or restricting the movement of the front fork.



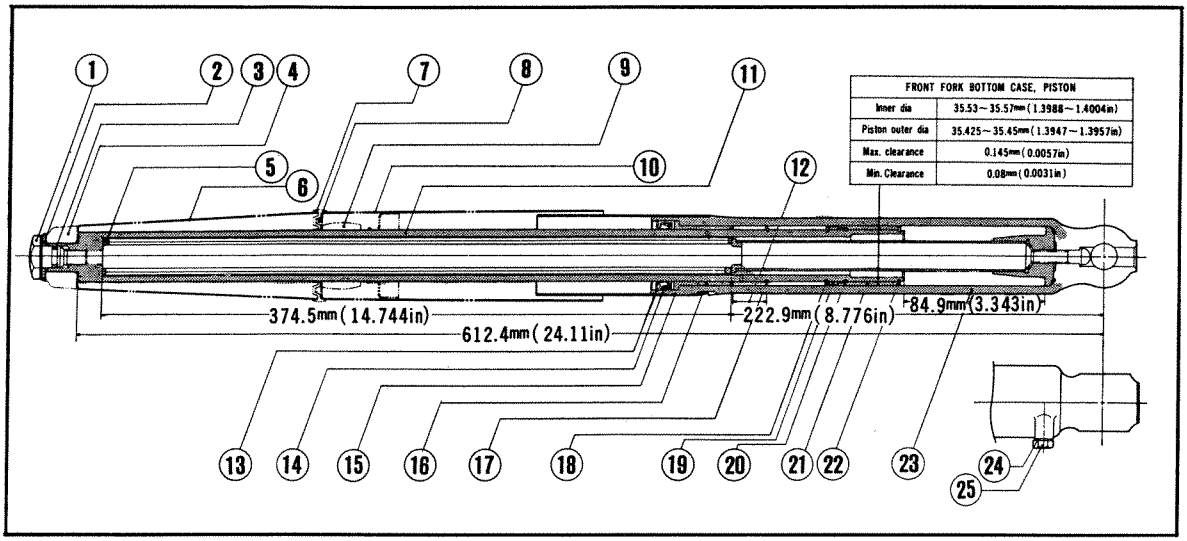
① Headlight case ② Electrical leads
Fig. 4–10. Joining the leads.

4.2 FRONT CUSHION

A. Description

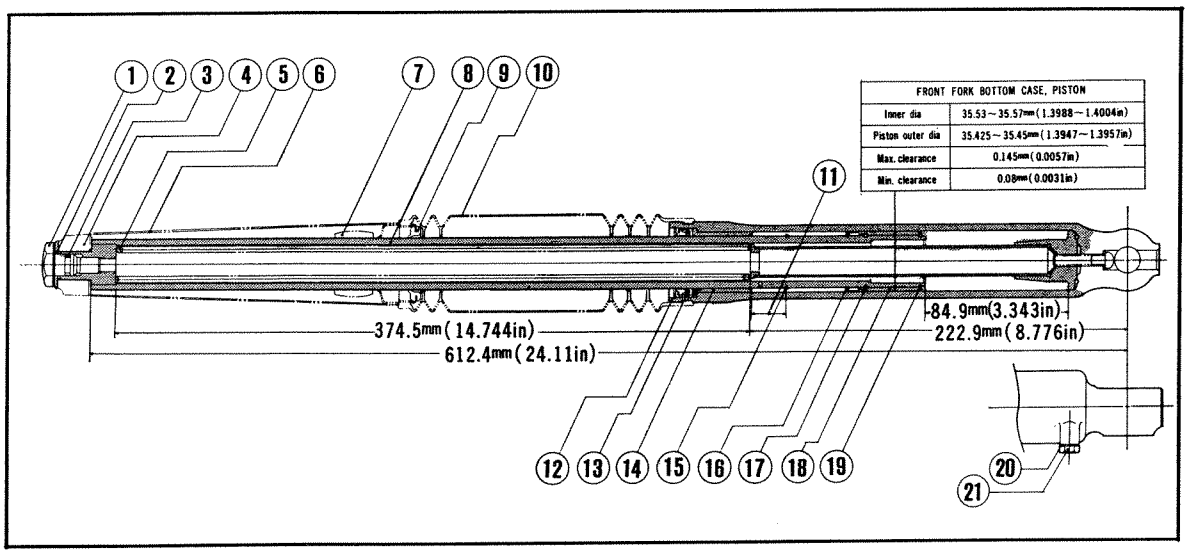
The front and rear cushions should not be considered to be functioning independently. The suspension and dampening components directly influence the steering characteristic and stability of the motorcycle. The front fork must not only withstand the load from the vertical cushioning but also the horizontal force resulting from the steering function.

The front cushion spring is designed with two different pitches ; this is to provide a broader range of effective cushioning. The oil damper contains 135～145 cc (8.27～8.88 cu. in) hydraulic fluid.



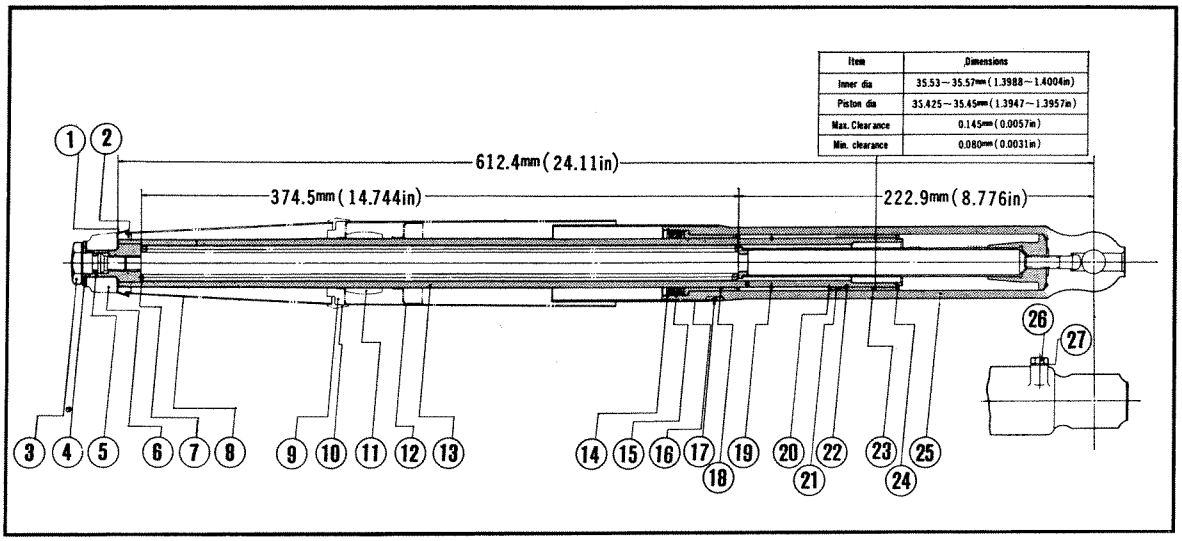
① Front fork bolt ② Front fork washer ③ 8.4×2.4 O ring ④ Fork top bridge ⑤ Front cushion spring
⑥ Front fork upper cover ⑦ Front fork rib ⑧ Front fork rib packing ⑨ Steering stem ⑩ Front fork under cover
⑪ Front fork pipe complete ⑫ Rebound stroke (19mm : 0.748 in) ⑬ 41mm internal circlip ⑭ Front fork oil seal
⑮ Bottom case cover ⑯ Front fork pipe guide ⑰ Fork pipe stopper ring ⑱ Fork valve stopper ring
⑲ Front damper valve ⑳ Piston stopper ring ㉑ Front fork piston ㉒ Fork piston snap ring
㉓ Front fork bottom case comp. ㉔ Fork drain cock packing ㉕ 6×8 hex bolt

Fig. 4-10-1. (CB125)

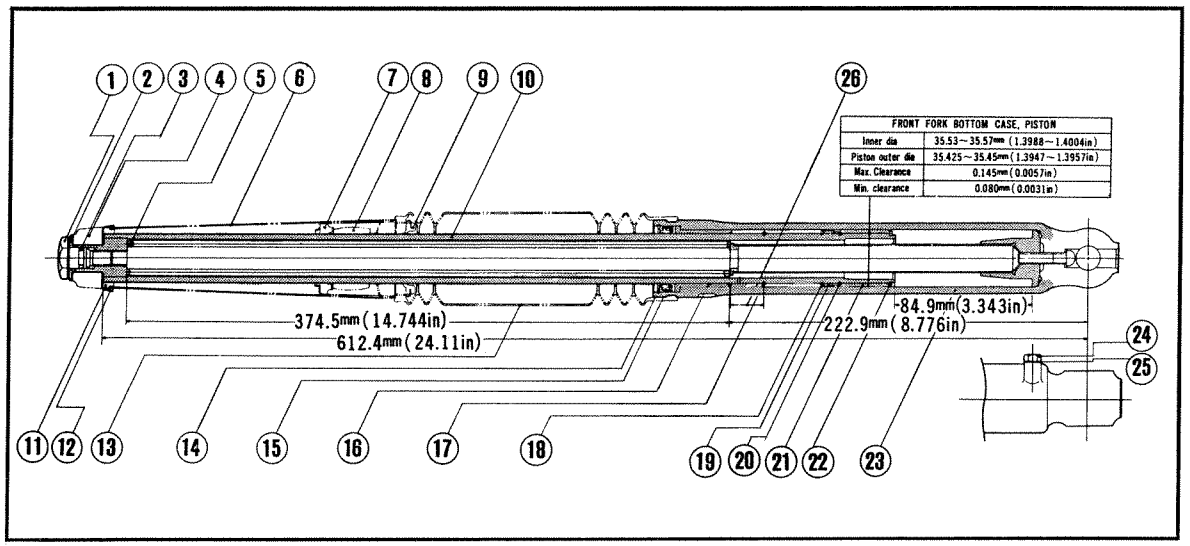


① Front fork bolt ② Front fork washer ③ 8.4×2.4 O ring ④ Fork top bridge ⑤ Front cushion spring
⑥ Front fork cover ⑦ Steering stem ⑧ Front fork pipe comp. ⑨ Front fork dust seal ⑩ Front fork boot
⑪ Rebound stroke (19mm : 0.748 in) ⑫ 41mm internal circlip ⑬ Front fork oil seal ⑭ Front fork pipe guide
⑮ Fork pipe stopper ring ⑯ Fork valve stopper ring ⑰ Piston stopper ring ⑱ Front fork piston ⑲ Fork piston snap ring
⑳ Fork drain cock packing ㉑ 6×8 hex bolt

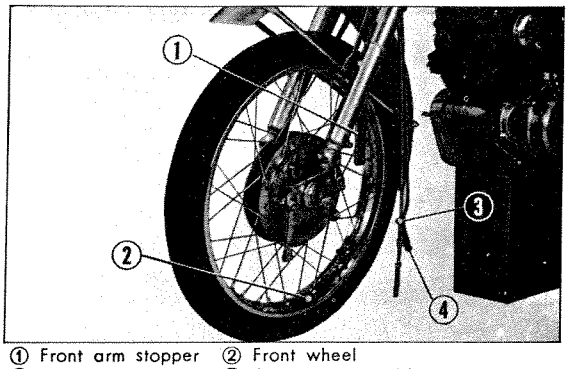
Fig. 4-10-2. (CL125)



① Front fork upper cover cap ② Front fork cover upper cushion ③ Front fork bolt ④ Front fork washer
⑤ 8.4×2.4 O ring ⑥ Fork top bridge ⑦ Front cushion spring ⑧ Front fork upper cover
⑨ Front fork cover lower cushion ⑩ Front fork rib ⑪ Steering stem ⑫ Front fork lower cover
⑬ Front fork pipe comp. ⑭ 41mm circlip ⑮ Front fork oil seal ⑯ Bottom case cover ⑰ Staking
⑱ Front fork pipe guide ⑲ Fork pipe stopper ring ⑳ Fork valve stopper ring ㉑ Front damper valve
㉒ Piston stopper ring ㉓ Front fork piston ㉔ Fork piston snap ring ㉕ Front fork bottom case comp. ㉖ 6×8 hex. bolt
㉗ Fork drain cock packing
Fig. 4–10–3. (CB175)



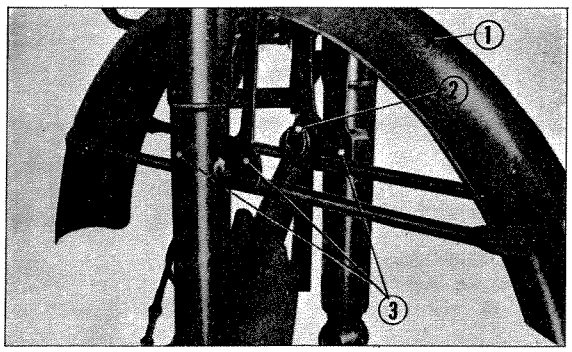
① Front fork bolt ② Front fork washer ③ 8.4×2.4 O ring ④ Fork top bridge ⑤ Front cushion spring
⑥ Front fork cover ⑦ Front fork cover lower cushion ⑧ Steering stem ⑨ Front fork dust seal
⑩ Front fork pipe comp. ⑪ Front fork cover upper cushion ⑫ Front fork upper cover cap ⑬ Front fork boot
⑭ 41mm internal circlip ⑮ Front fork oil seal ⑯ Front fork pipe guide ⑰ Front pipe stopper ring
⑱ Front fork valve stopper ring ⑲ Front damper valve ⑳ Piston stopper ring ㉑ Front fork piston
㉒ Fork piston snap ring ㉓ Front fork bottom case ㉔ 6×8 hex bolt ㉕ Drain cock packing
㉖ Rebound stroke (19 mm : 0.748 in) **Fig. 4–10–4.** (CL175)



① Front arm stopper ② Front wheel
③ Front brake cable. ④ Speedometer cable
Fig. 4–11. Removing the front wheel

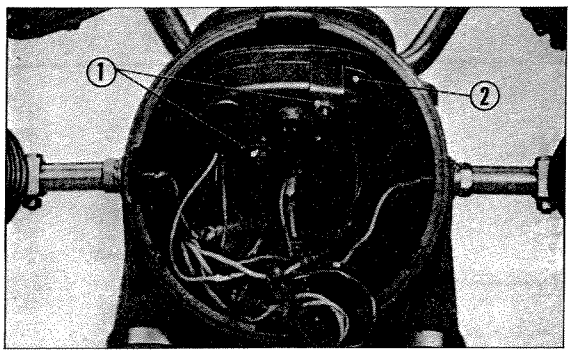
B. Disassembly

1. Remove the steering handle in accordance with section 4.1B.
2. Straighten the tabs of the 8.2 mm tongued washer A and remove the front arm stopper bolt. Loosen the front axle nut and pull out the axle ; the front wheel will disengage from the front forks. **(Fig. 4–11)**



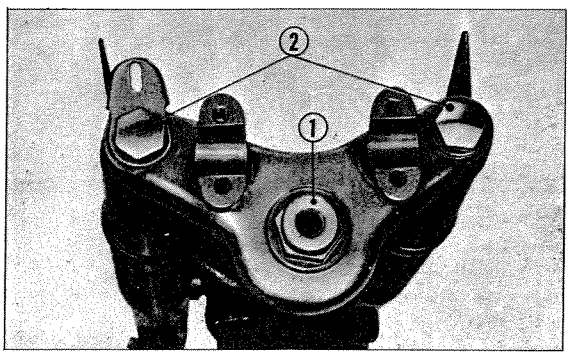
① Front fender ② 8×28 hex. bolt ③ 6×16 hex. bolt
Fig. 4–12. Removing the front fender

3. Remove the front fender ① by unscrewing the 6 mm bolts ③ and 8 mm bolt ②. **(Fig. 4–12)**



① 5 mm hex. nut ② Speedometer
Fig. 4–13. Removing the speedometer

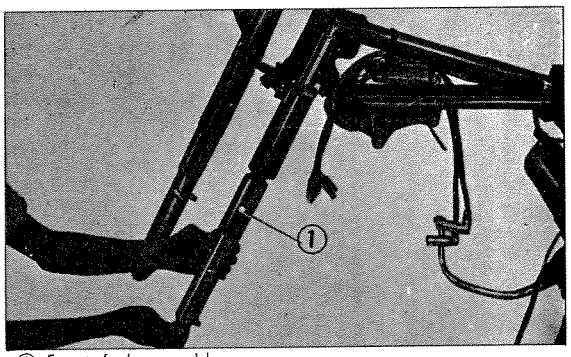
4. Remove the headlight rim, headlight sealed beam unit, two 5 mm nuts ① and then separate all electrical leads. Remove the speedometer assembly ②. **(Fig. 4–13)**



① Steering head stem nut ② Front fork bolts
Fig. 4–14. Unscrewing the steering head stem nut

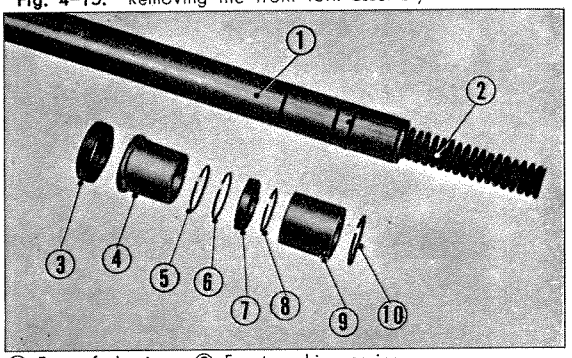
5. Unscrew the two headlight case mounting bolts and remove from the front fork.
6. Unscrew the steering head stem nut. **(Fig. 4–14)**

7. Unscrew the two front fork bolts and remove the top bridge and front fork upper cover.
8. Unscrew the two 8×32 bolts and slide out the front fork assemblies out the bottom. **(Fig. 4–15)**



① Front fork assembly
Fig. 4–15. Removing the front fork assembly

9. Remove the 41 mm internal circlip and pull out the front fork pipe from the front fork bottom case.
10. Remove the front fork pipe guide, stopper ring, front damper valve and piston. **(Fig. 4–16)**



① Front fork pipe ② Front cushion spring
③ Front fork oil seal ④ Front fork pipe guide
⑤ Piston stopper ring ⑥ Fork valve stopper ring
⑦ Front damper valve ⑧ Piston stopper ring
⑨ Front fork piston ⑩ Fork piston snap ring
Fig. 4–16. Removing the fork piston

C. Inspection

1. Front cushion spring

Model	Item	Standard Value	Serviceable Limit
CB125 CL125	Free length	414.8mm (16.331 in)	Replace if under 384 mm (15.1 in)
	Loading	289.6 mm/76kg (11.402in/167.6lbs)	——
	Tilt	Within 1.5°	——
CB175	Free length	414.7 mm (16.337 in)	Replace if under 384 mm (15.1 in)
	Loading	294.6 mm/86 kg (11.608 in/189 lbs)	——
	Tilt	within 1.5°	——
CL175	Free length	408.3 mm (16.075 in)	Replace if under 378 mm (14.9 in)
	Loading	294.4 mm/93 kg (11.591 in/205 lbs)	——
	Tilt	within 1°	——

2. Damping capacity

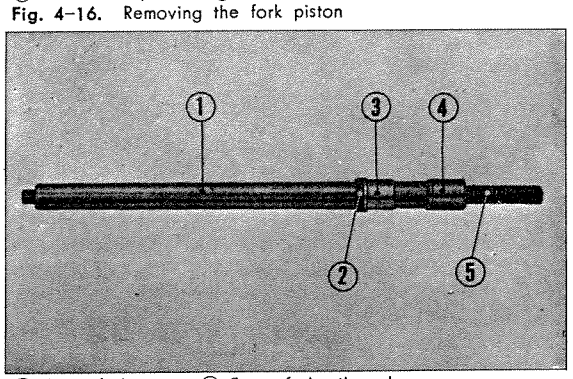
Item	Damping capacity	Capacity
All model	14~18kg/0.5m/sec (30.8~39.6lbs/ 19.7in./sec.)	135~145 cc (8.26~8.87 cu. in.)

3. Front fork piston

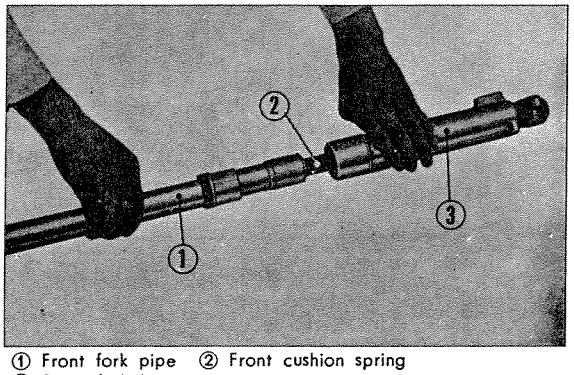
Item	Standard Value	Serviceable Limit
Outer dia	35.425~35.45 mm (1.3553~1.3563 in)	Replace if under 35.415 mm (1.3549 in)
Out of round	Within 0.02 mm (0.0008 in)	Replace it over 0.04 mm (0.0016 in)
Taper	Within 0.02 mm (0.0008 in)	Replace if over 0.04 mm (0.0016 in)

4. Front fork bottom case

Item	Standard Value	Serviceable Limit
Inner diameter	35.53~35.57 mm (1.3988~1.4004 in)	Replace if over 35.72 mm (1.4063 in)
Out of round	Within 0.02 mm (0.0008 in)	Replace if over 0.04 mm (0.0016 in)
Taper	Within 0.02 mm (0.0008 in)	Replace if over 0.04 mm (0.0016 in)



① Front fork pipe ② Front fork oil seal
③ Front fork pipe guide ④ Front fork piston
⑤ Front cushion spring
Fig. 4–17. Front fork pipe assembly



① Front fork pipe ② Front cushion spring
③ Front fork bottom case
Fig. 4–18. Reassembling the front cushion

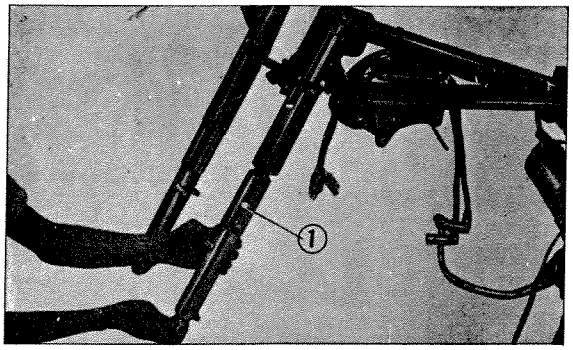


Fig. 4-19. Installing the front fork

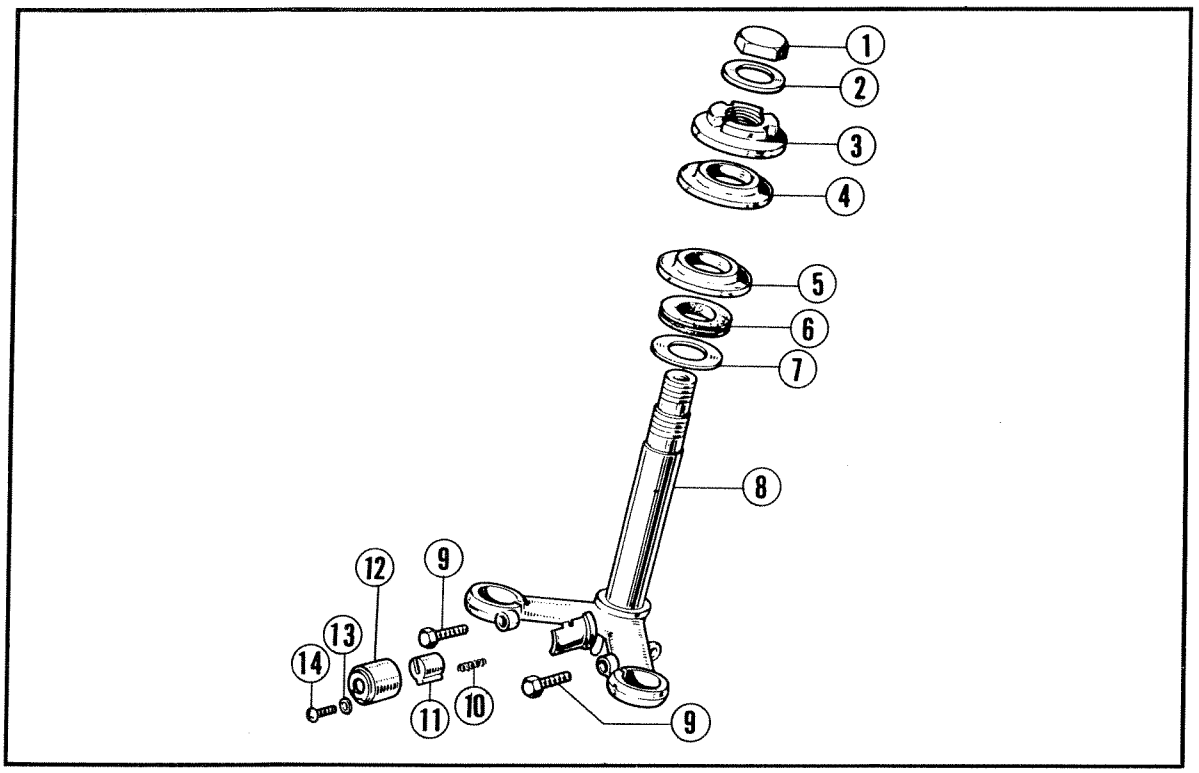
D. Reassembly

1. Assemble the front damper valve and front fork piston on the front fork pipe, and lock with the front pipe rings. **(Fig. 4-17)**
2. Fill the front fork with SAE 10W30 hydraulic fluid. (135 cc~145 cc : 8.26~8.87 cu in)
3. Insert the front fork pipe assembly into the fork bottom case and push the front fork oil seal into place, being careful not to damage and then set the internal circlip. **(Fig. 4-18)**
4. After completing the assembly, install the front fork into the steering stem. **(Fig. 4-19)**
5. Assemble the front fork to the top bridge.
6. Assemble the steering handle to the top bridge in accordance with section 4.1D.
7. Install the headlight case, connect the electrical leads within the case and then assemble the light unit.
8. Install the front fender on the front fork.
9. Assemble the front wheel to the front fork.
10. Connect the speedometer cable to the gear box and connect the front brake cable and complete the adjustment.
11. Connect and adjust the throttle cable.

4.3 STEERING STEM AND STEERING HANDLE LOCK

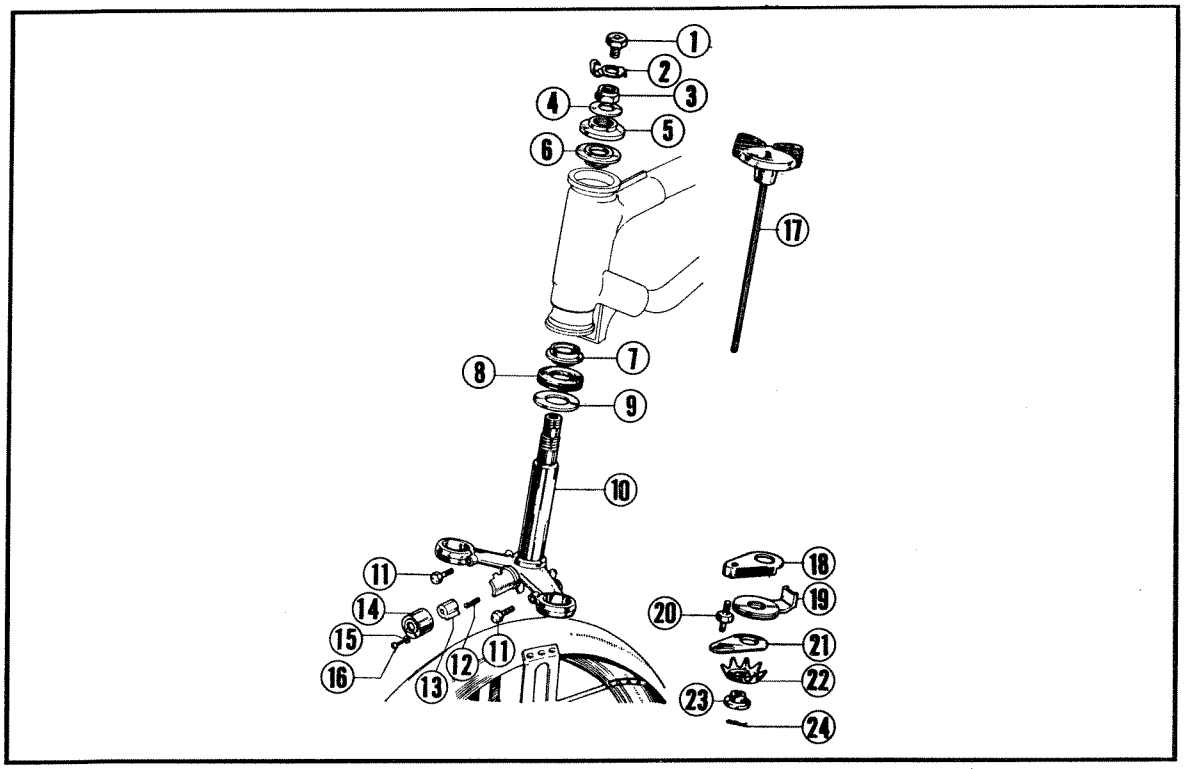
A. Construction

The steering stem is mounted by the bolts to the front fork through the top bridge plate and supported by upper and lower sets of ball bearings in the steering head on which it pivots.



① Steering head stem nut ② Steering stem washer ③ Steering head top thread ④ Steering top cone race
⑤ Steering bottom cone race ⑥ Steering head dust seal ⑦ Steering head dust seal washer ⑧ Steering stem
⑨ 8×32 hex. bolt ⑩ Handle lock spring ⑪ Handle lock ⑫ Handle lock case cover ⑬ 3 mm flat washer
⑭ 3×8 cross screw

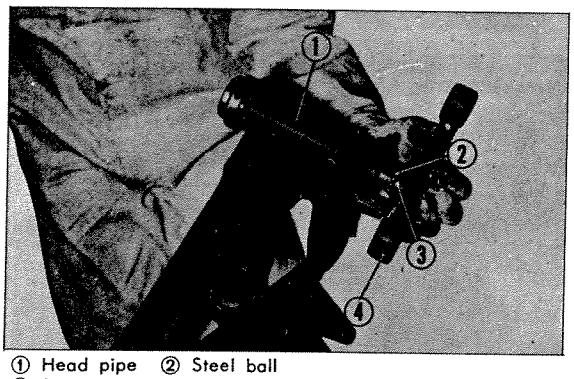
Fig. 4-20-1. Steering stem and steering handle lock (CB/CL125)



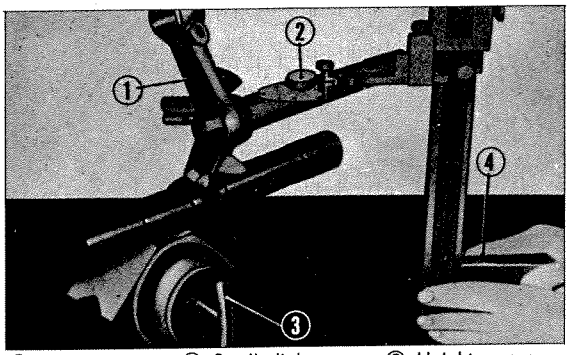
① Damper lock spring setting bolt ② Steering damper locking spring ③ Steering head stem nut ④ Steering stem washer
⑤ Steering head top thread ⑥ Steering top cone race ⑦ Steering bottom cone race ⑧ Steering head dust seal
⑨ Steering head dust seal washer ⑩ Steering stem ⑪ 8×32 hex. bolt ⑫ Handle lock spring ⑬ Handle lock
⑭ Handle lock case cover ⑮ 3 mm flat washer ⑯ 3×8 cross screw ⑰ Steering damper knob
⑱ Steering damper plate A ⑲ Steering damper friction disk ⑳ Friction disk anchor bolt ㉑ Steering damper plate B
㉒ Steering damper spring ㉓ Steering damper nut ㉔ 6 mm snap pin
Fig. 4-20-2. Steering stem and steering handle lock (CB/CL175)

B. Disassemble

1. Separate the steering handle pipe in accordance with section 4.1B.
2. Remove the front cushion in accordance with section 4.2B.
3. Remove the steering stem top thread and draw the steering stem ④ out of the head pipe ①, being careful not to drop the steel balls ②. **(Fig. 4-21)**



① Head pipe ② Steel ball
③ Steering stem bottom cone race ④ Steering stem
Fig. 4-21. Removing the steering stem



① Steering stem ② Small dial gauge ③ Height gauge
④ Magnetic V block
Fig. 4–22. Measurement of the steering stem bend

C. Inspection

1. Inspect steel balls for cracks, wear and other damages.
2. Inspect the cone and ball races of both the top and bottom for any wear or damages.
3. Inspect the steering head dust seal for wear and damage.
4. Inspect the steering stem for twist and bend. **(Fig. 4–22)**

Item	Standard Value	Serviceable Limit
Bend	Within 0.05 mm (0.002 in)	——

5. Inspect the thread end of the steering stem for damaged threads.
6. Inspect the spring on the steering handle lock for breakage.

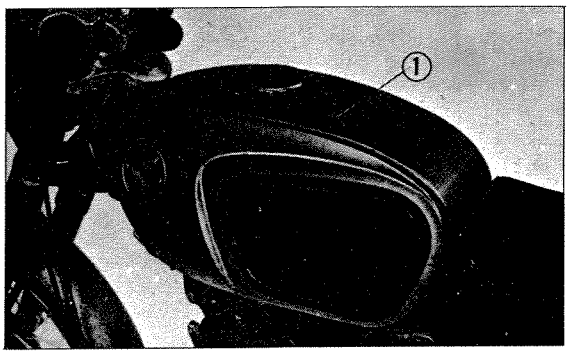
D. Reassembly

1. Mount the steering handle lock on the steering stem.
2. Mix the #8 steel balls (36 total in grease and lay into the lower and upper ball races and carefully insert the stem to prevent dropping the balls. Tighten the steering head top thread.

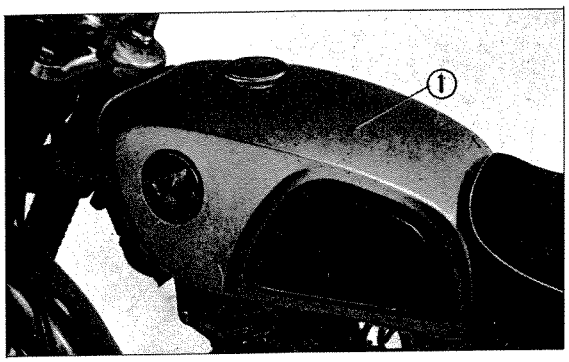
(Note)

Special care is required to tightening the top thread. It must be tightened in conjunction with the steering stem nut and the front fork bolt. When the stem nut is properly tightened, the front wheel should move to either lock under its own weight when a slight force is applied. Further there should not be any looseness in the vertical or the horizontal directions.

3. Assemble the front cushion and front wheel.
4. Install the steering handle.



① CB type fuel tank
Fig. 4–23–1. Fuel tank



① CL type fuel tank
Fig. 4–23–2. Fuel tank

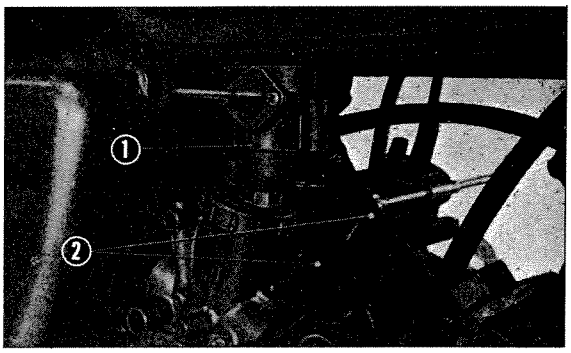
4.4 FUEL TANK

A. Construction

The fuel tank is placed on the frame body directly above the engine and is installed on the frame body through the fuel tank cushion. The knee grip rubber, as well as the tank mark, fitted with the tank side cover, is installed on the fuel tank. **(Fig. 4–23)**

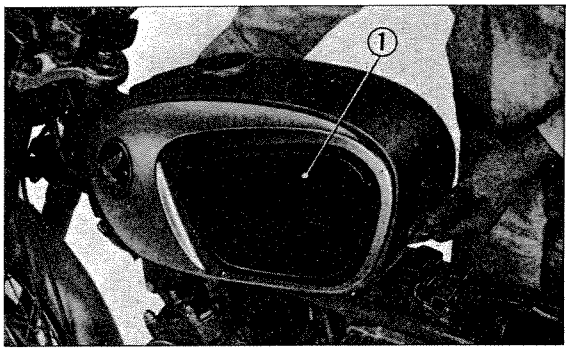
B. Disassembly

1. Loosen the two seat mounting bolts.
2. Position the fuel cock lever to STOP and remove the fuel tube ② from the fuel cock. **(Fig. 4–24)**



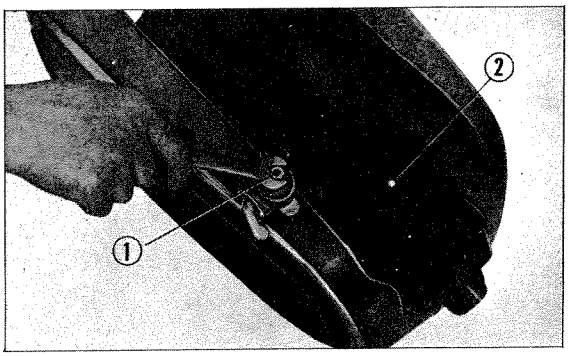
① Fuel cock ② Fuel feed tube
Fig. 4–24. Removing the fuel feed tube

3. To remove the fuel tank ①, pull it upward toward the rear and exercise care so as not to domage the fuel cock. **(Fig. 4–25)**



① Fuel tank
Fig. 4–25. Removing the fuel tank

4. After the emblem is removed, the 6×8 bolt is loosened, the side cover pushed forward and the side cover can be removed.
5. To remove the fuel cock ①, unscrew the fuel cock cup, remove the O ring and fuel strainer screen and unscrew the mounting screws. **(Fig. 4–26, 27)**



① Fuel cock ② Fuel tank
Fig. 4–26. Removing the fuel cock

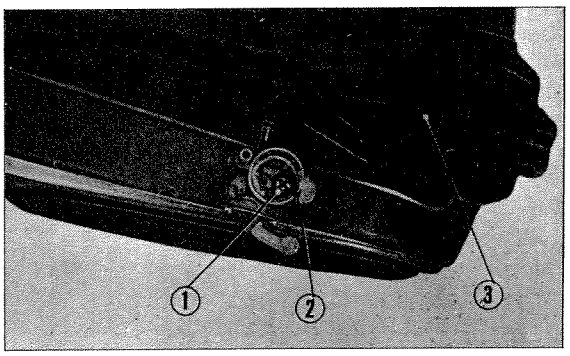
C. Inspection

1. Inspect the fuel tank for leaks.

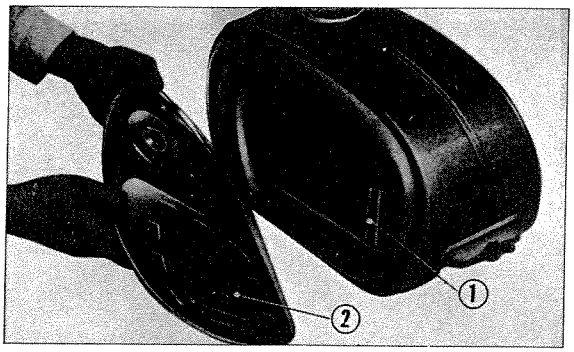
(Caution)

Normally a water test is performed at a specified pressure. However, exercise precaution since excessive pressure will cause rupture at the tank seam.

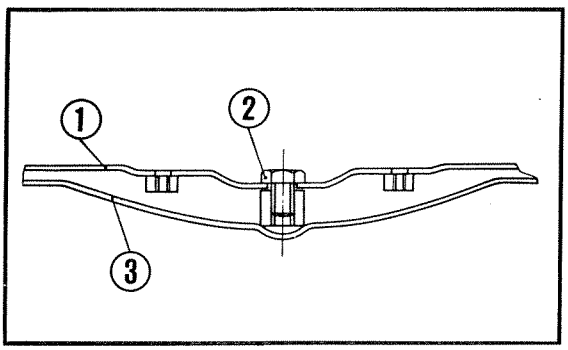
2. Check for clogging of the filler cap vent hole.
3. Check the front and rear fuel tank cushion rubbers for wear and damage.
4. Check the fuel cock fixing packing, strainer cup packing and fuel filler cap packing for wear and damage.
5. Check the fuel tube for wear and breakage.



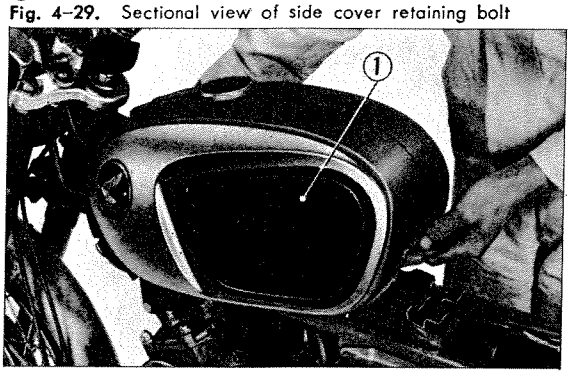
① 6×25 cross screw ② Fuel cock body ③ Fuel tank
Fig. 4–27. Removing the fuel cock body



① Clip ② Fuel tank side cover
Fig. 4–28. Installing tank side cover



① Fuel tank side cover ② 6×8 mm hex. bolt
③ Fuel tank
Fig. 4–29. Sectional view of side cover retaining bolt



① Fuel tank
Fig. 4–30. Installing the fuel tank

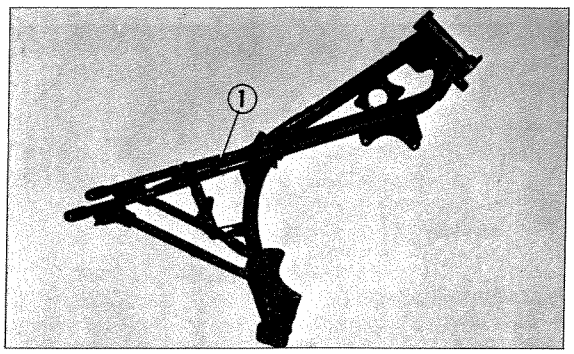


Fig. 4–31. Frame body

D. Reassembly

1. Install the fuel cock.
2. Install the side cover. **(Fig. 4–28)**

(Caution)

The side cover ② is hooked to the clip at the rear of the fuel tank ① and the forward end is attached to the tank by 6×8 hex. bolt. Make sure that the bolt is of the proper length to prevent puncturing the tank. **(Fig. 4–29)**

3. Fit the front and rear rubber cushions to the frame body. The front rubber cushion should be inserted by pushing the fuel tank from the rear. Install the fuel tank rear end by placing it under the rear frame. **(Fig. 4–30)**
4. Fit the fuel line to the carburetor and secure it by the clips.

4.5 FRAME BODY

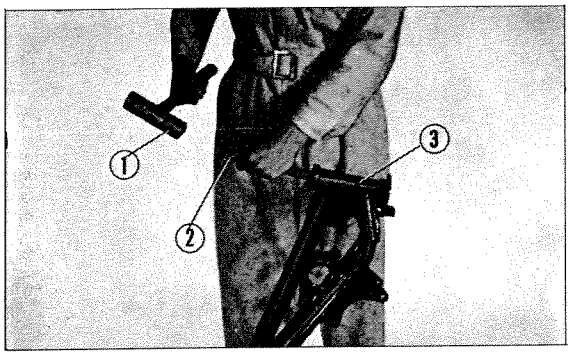
A. Construction

The frame body is the main structural member around which the motorcycle is assembled. It mounts the engine and is supported on the front and rear wheels. The frame is made strong to support the weight of the engine, rider and carrier load and in addition, it must be substantial to receive the dynamic reaction imposed by the road and riding conditions under the load.

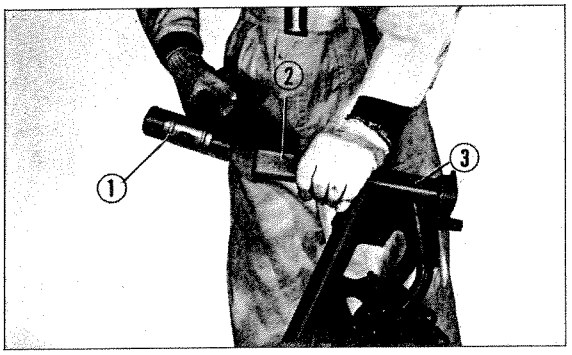
The frame must be rigid to provide good steering characteristic and at the same time lightness is desirable for lose in handling and for good riding performance. **(Fig. 4–31)**

B. Disassembly

1. Remove the engine from the frame in accordance with section 3.1B.
2. Remove the steering handle in accordance with section 4.1B.
3. Remove the front cushion in accordance with section 4.2B.
4. Disassemble the steering stem in accordance with section 4.3B
5. Remove the seat and fuel tank in accordance with section 4.4B.
6. Disassemble the rear wheel in accordance with section 4.13B.
7. Remove the rear cushion in accordance with section 4.11B.
8. Disassemble the rear fork and rear fender in accordance with section 4.10B.
9. Remove the air cleaner and tool box in accordance with section 4.6B and 4.9B.
10. Detach all electrical components from the frame.
11. Remove the stand in accordance with section 4.7B.



① Plastic hammer ② Wood ③ Head pipe
Fig. 4-32. Removing ball race



① Hammer ② Insertion tool ③ Steering head pipe
Fig. 4-33. Driving ball race

C. Inspection

1. Inspect the weld joint for any breaks and cracks.
2. Inspect the steering head pipe for twist, bends and misalignment.

(Note)

The ball races should be fitted to the steering head pipe with light driving (interference fit : 0.01 mm~0.05 mm/0.0004~0.002 in) and must be bottomed so that it is not cocked. **(Fig. 4-32, 33)**

4. Inspect the frame paint coating for any chips and rust spots.

D. Disassembly

Perform the assembly in the reverse order of disassembly.

4.6 AIR CLEANER CASE AND SEAT

A. Construction

The air cleaner case is a stamped metal plate and protects the air cleaner.

The motorcycle is equipped with a tandem seat for double riding ; the front section hooked to the frame and the rear section bolted to the frame.

The seat consists of sponge padding and vinyl leather covering. A hand-hold strap is installed across the seat for the rear rider. **(Fig. 4-34)**

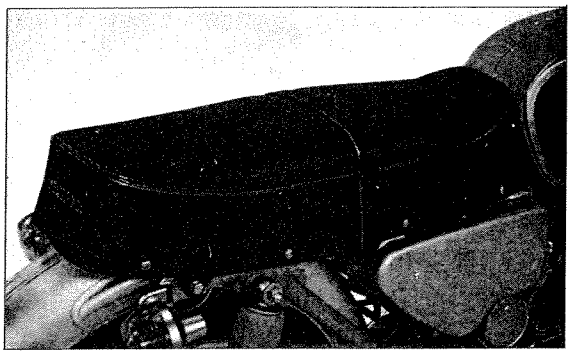


Fig. 4-34. Seat

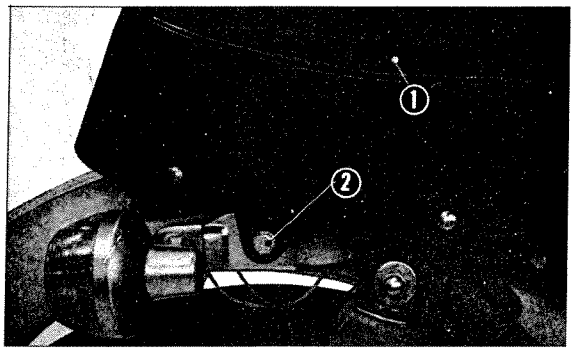
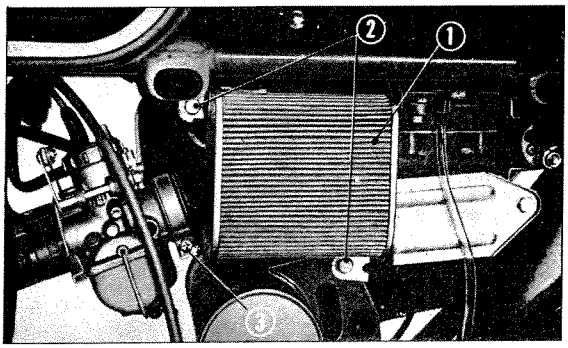


Fig. 4-35-1. Removing the seat



① Air cleaner ② 6×12 hex. bolt
③ 5×16 cross screw
Fig. 4-35-2. Removing the air cleaner

B. Disassembly

1. Remove the air cleaner case by pulling it from the frame body.

2. To remove the seat ① from the frame body (CB175), loosen the two 8×16 ② seat mounting bolts (CL175 : 8×16 and 8×20 bolts) and pull the seat to the rear. **(Fig. 4-35-1)**

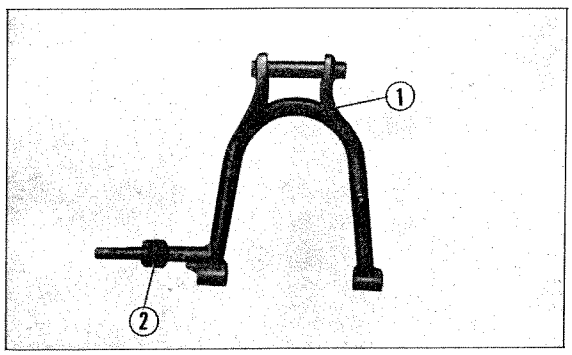
3. Remove the air cleaner ① by unscrew the two 5×12 bolts ② and the 5×16 cross screw ③. **(Fig. 4-35-2)**

C. Inspection

1. Inspect the air cleaner case for deformation.
2. Inspect the seat leather for wear and tear.

D. Reassembly

1. After the seat is fitted, install the seat setting rubber and two seat damper rubbers.
2. Install the two seat setting bolts.



① Main stand ② Stopper rubber (CB type)
Fig. 4-36.

4.7 STAND

A. Construction

For reducing the weight, a bent pipe is used for the stand. The section which contacts the ground when the stand is erected has an oval plate welded to increase the contact area. The step bar (CB175) is mounted under the crankcase with four 8 mm bolts and nuts. (CL175 : four 8×25 bolts) **(Fig. 4-36)**

B. Disassembly

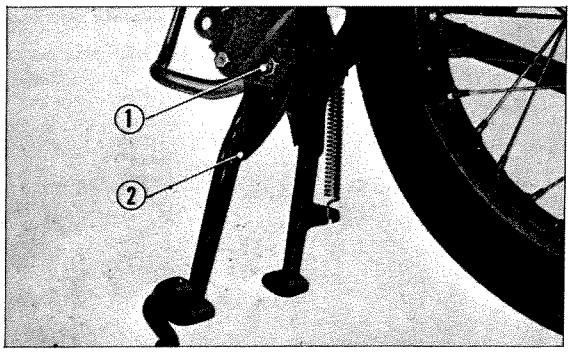
1. Remove the muffler in accordance with section 3.1B and detach the step bar.
2. Unhook the main stand spring.
3. Place a support block under the engine and remove the 10×125 bolt. **(Fig. 4–37)**
4. The main stand can be removed from the frame.

C. Inspection

1. Inspect the stand and step bar for bend ; the pad on the step bar should also be inspected for wear.

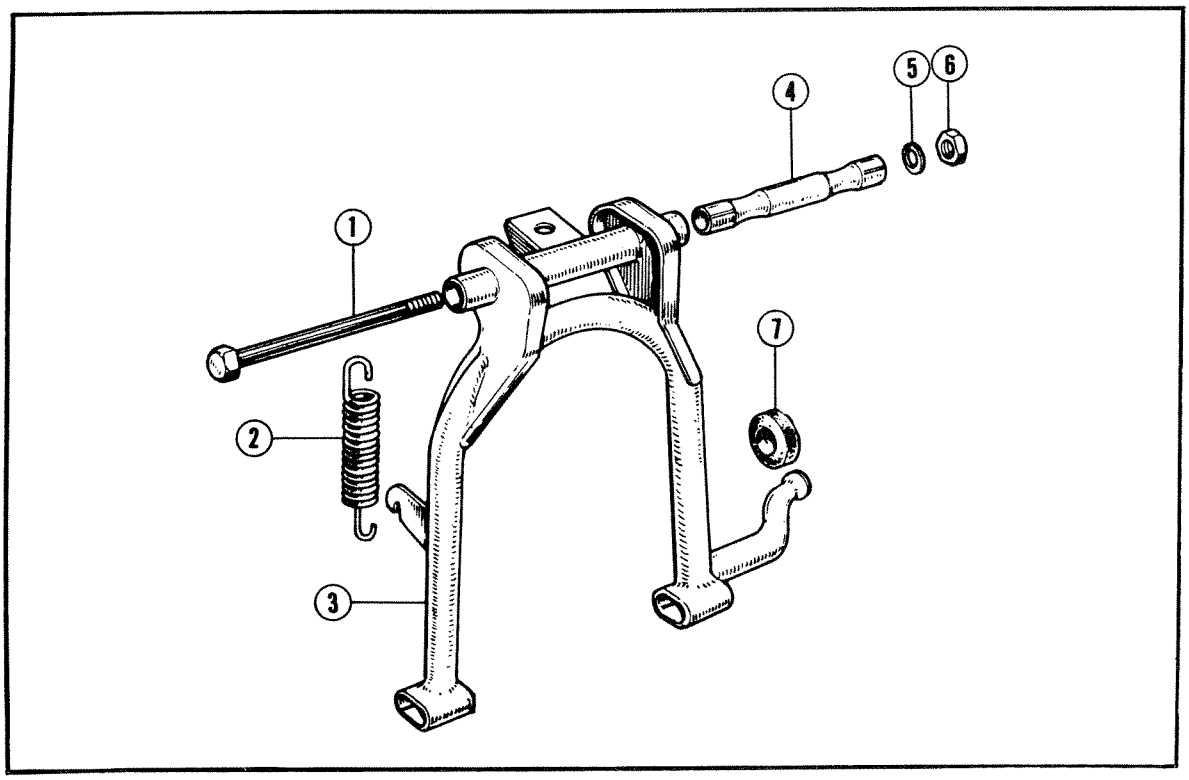
D. Reassembly

Perform the assembly in the reverse order of disassembly.



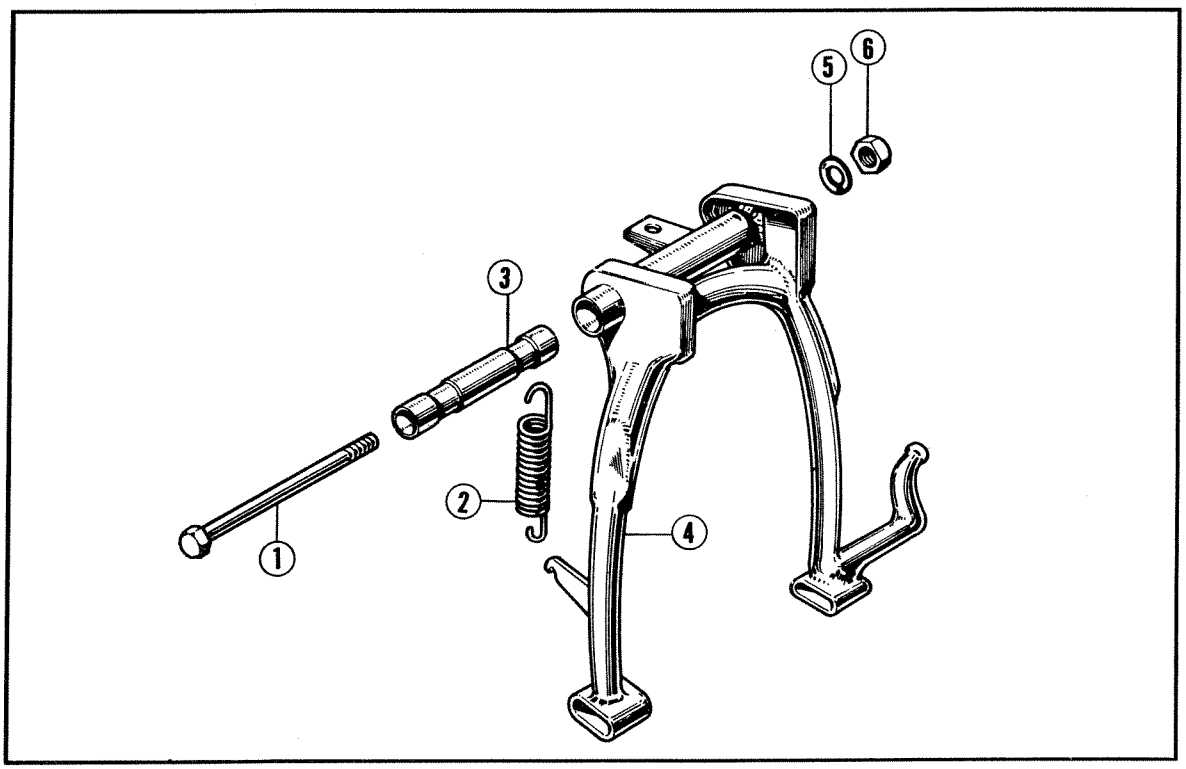
① 10×125 hex bolt ② Main stand

Fig. 4–37. Removing the main stand



① 10×125 hex. bolt ② Main stand spring ③ Main stand ④ Main stand distance collar
⑤ 10 mm spring washer ⑥ 10 mm hex. nut ⑦ Stopper rubber

Fig. 4–38–1. Main stand (CB/CL125)



① 10×125 hex. bolt ② Main stand spring ③ Main stand distance collar ④ Main stand ⑤ 10 mm spring washer ⑥ 10 mm hex. nut
Fig. 4–38–2. Main stand (CB/CL175)

4.8 EXHAUST PIPE AND MUFFLER

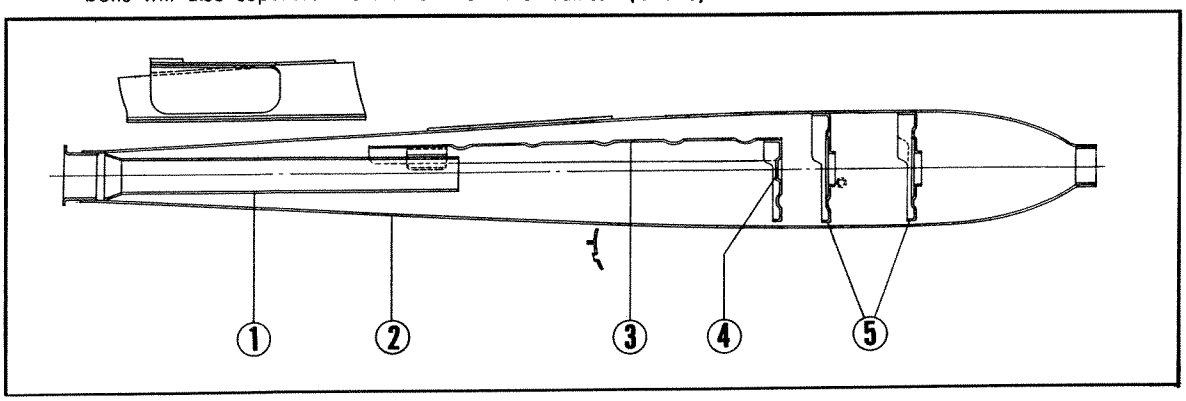
A. Construction

The muffler and the exhaust pipe have been made into an integral welded unit to greatly improve the silencing effectiveness of the muffler.

The length and bend in the exhaust pipe and the volume of the muffler will have a great effect on the engine output. The exhaust gases noise is reduced as it is routed through the narrow passages in the muffler. The remaining noise is diffused by the diffuser pipe to assure greater silencing effectiveness of the muffler.

B. Disassembly

1. Remove the two 6 mm nuts at the cylinder head.
2. Loosen the four 8×25 bolts and remove the footrest bar.
3. The muffler is bolted to the frame together with the step; therefore, loosening the 2×58 step mounting bolts will also separate the muffler from the frame. **(CB175)**



① Inner pipe ② Muffler half ③ Separator A ④ Separator B ⑤ Separator C
Fig. 4–39. Sectional view of muffler

C. Inspection

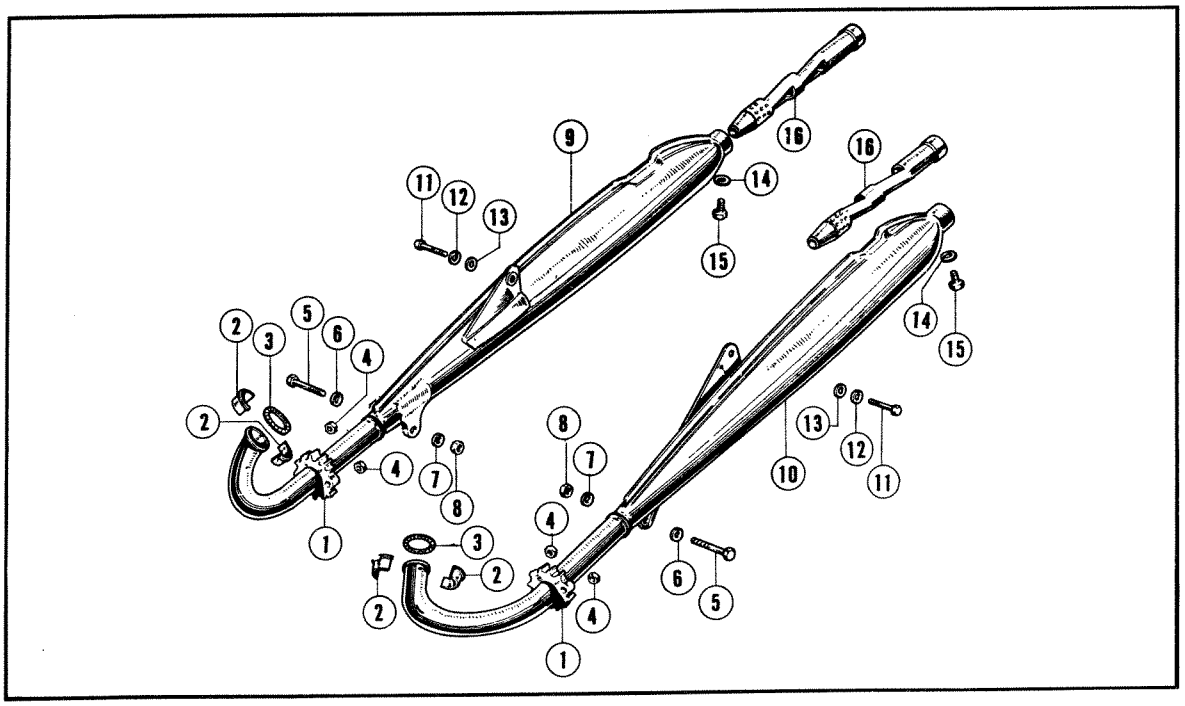
1. Inspect the muffler gasket for damage.
2. Inspect the muffler for cracks, dents and other defects.

D. Reassembly

Perform the assembly in the reverse order of disassembly.

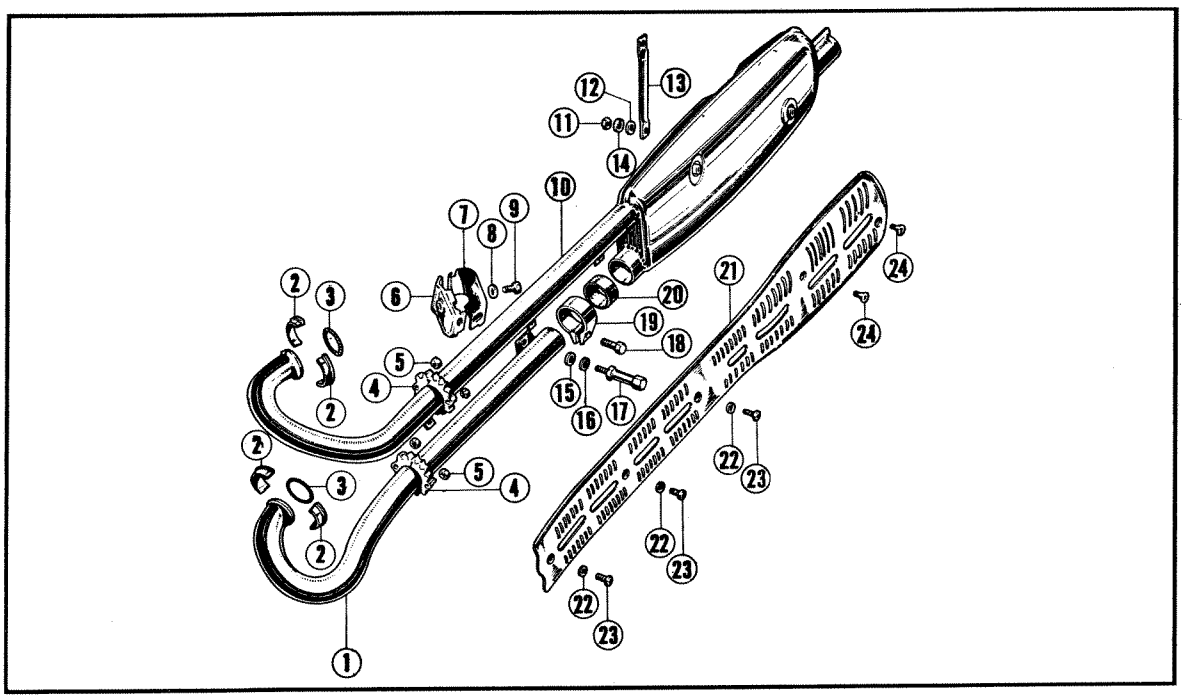
(Note)

First install the exhaust pipe joint but do not tighten as it will make the installation of the other muffler mounting bolts difficult. The tightening of the exhaust pipe joint nuts should be made last.

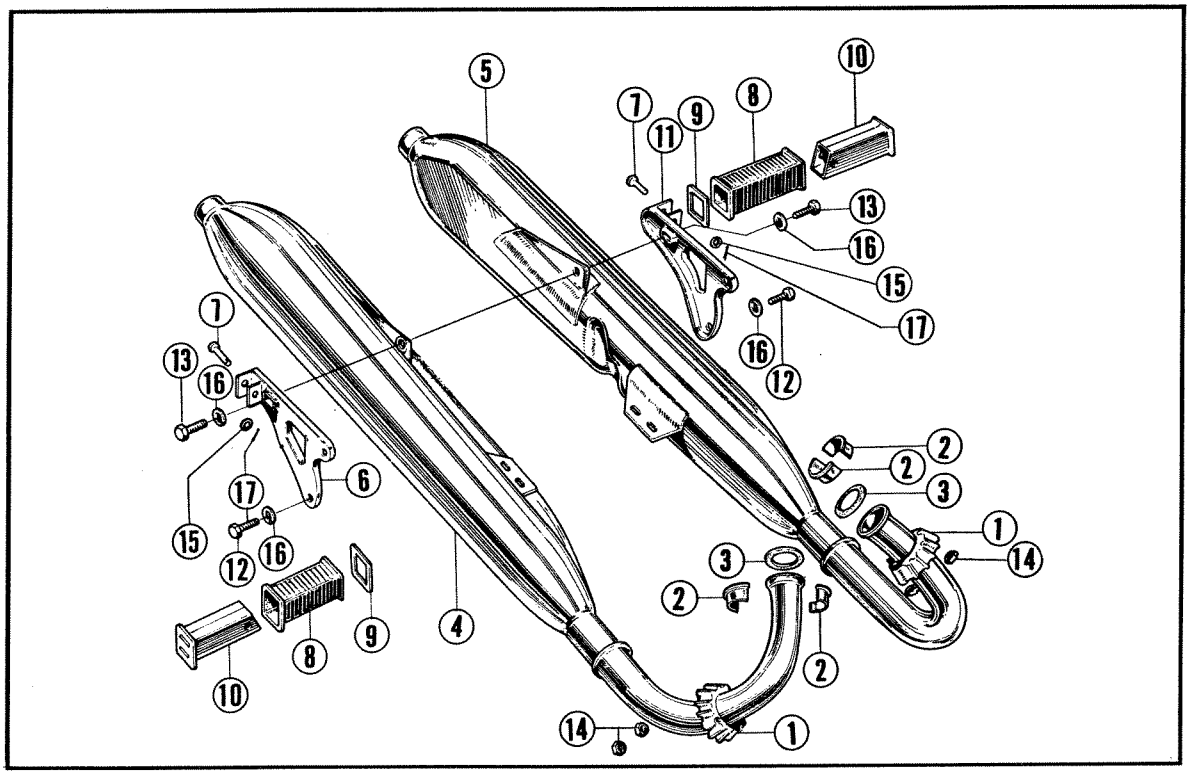


① Exhaust pipe joint ② Exhaust pipe joint collar ③ Exhaust pipe gasket ④ 6 mm hex. nut ⑤ 8×71 hex. bolt ⑥ 8 mm spring washer ⑦ 8 mm spring washer ⑧ 8 mm hex. nut ⑨ Right exhaust muffler ⑩ Left exhaust muffler ⑪ 8×36 hex. bolt ⑫ 8 mm spring washer ⑬ 8 mm flat washer ⑭ 5 mm spring washer ⑮ 5×8 hex. bolt ⑯ Exhaust diffuser pipe

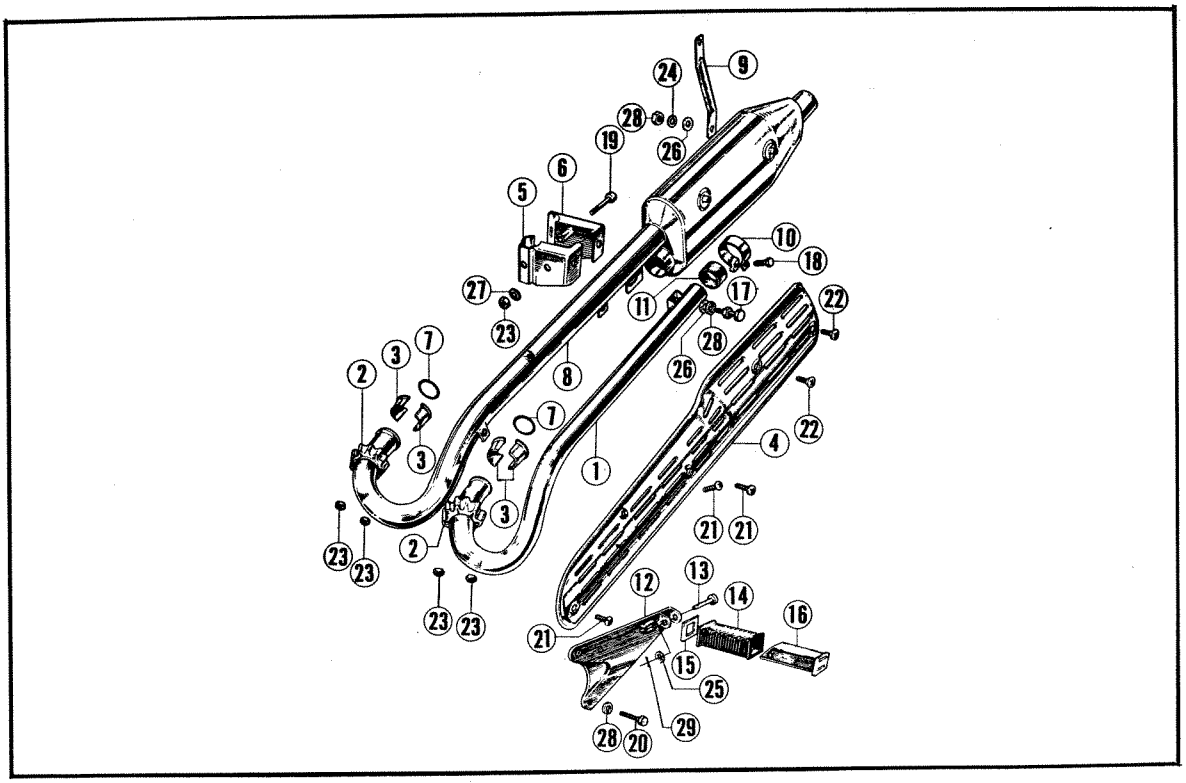
Fig. 4-40-1. CB125 Muffler



① Left exhaust pipe ② Exhaust pipe joint collar ③ Exhaust pipe gasket ④ Exhaust pipe joint ⑤ 6 mm hex. nut
⑥ Exhaust pipe bracket A ⑦ Exhaust pipe bracket B ⑧ 6 mm flat washer ⑨ 6×32 hex. bolt ⑩ Right exhaust pipe
⑪ 8 mm hex. nut ⑫ 8 mm flat washer ⑬ Muffler hanger stay ⑭ 8 mm spring washer ⑮ 8 mm flat washer
⑯ 8 mm spring washer ⑰ Exhaust pipe setting bolt ⑱ 6×20 hex. bolt ⑲ Muffler band ⑳ Muffler packing
㉑ Exhaust pipe protector ㉒ 6 mm flat washer ㉓ 6×12 cross screw ㉔ 6×10 cross screw
Fig. 4-40-2. CL125 Muffler



① Exhaust pipe joint ② Exhaust pipe joint collar ③ Exhaust pipe gasket ④ Right exhaust muffler ⑤ Left exhaust muffler
⑥ Right pillion step arm ⑦ Pillion step pin ⑧ Pillion step rubber ⑨ Pillion step washer ⑩ Pillion step bar
⑪ Left pillion step arm ⑫ 8×16 hex. bolt ⑬ 8×36 hex. bolt ⑭ 6 mm hex. nut ⑮ 6 mm flat washer
⑯ 8 mm spring washer ⑰ 1.6×15 cotter pin **Fig. 4-40-3.** CB175 Muffler



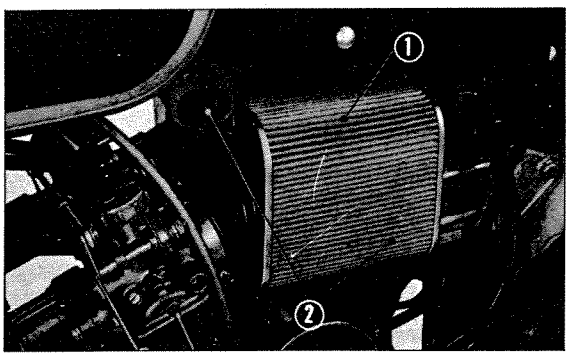
① Left exhaust pipe ② Exhaust pipe joint ③ Exhaust pipe joint collar ④ Exhaust pipe protector
⑤ Exhaust pipe bracket A ⑥ Exhaust pipe bracket B ⑦ Exhaust pipe gasket ⑧ Right exhaust pipe
⑨ Muffler hanger stay ⑩ Muffler band ⑪ Muffler packing ⑫ Left pillion step arm ⑬ Pillion step pin
⑭ Pillion step rubber ⑮ Pillion step washer ⑯ Pillion step bar ⑰ Exhaust pipe setting bolt ⑱ 6×20 hex. bolt
⑲ 6×32 hex. bolt ⑳ 8×16 hex. bolt ㉑ 6×12 cross screw ㉒ 6×10 cross screw ㉓ 6 mm hex. nut
㉔ 8 mm spring washer ㉕ 6 mm flat washer ㉖ 8 mm flat washer ㉗ 6 mm spring washer ㉘ 8 mm spring washer
㉙ 1.6×15 cotter pin
Fig. 4–40–4. CL175 Muffler

4.9 AIR CLEANER AND TOOL CASE

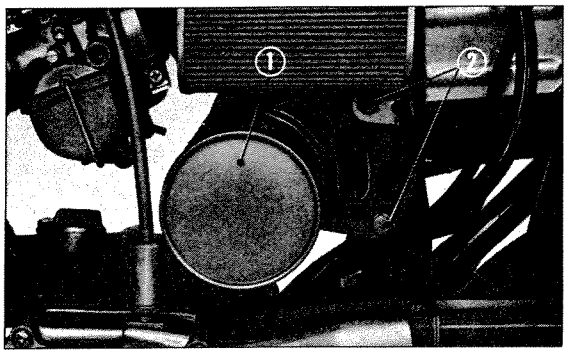
Filter paper is employed in the air cleaner for increasing the filter performance by enlarging the surface area. As the motorcycle is equipped with twin carburetors, air cleaners are mounted on both the right and left sides.

B. Disassembly

1. Loosen the two 6×12 nuts and remove the right and left air cleaners. **(Fig. 4–41)**
2. Remove the air cleaner connecting tube from the carburetor by loosening the 5 mm cross screw.
3. The air cleaner can be separated from the frame.
4. Separate the tool box ① by removing the two 6 mm bolts. **(Fig. 4–42)**



① Air cleaner ② 6 mm hex: bolt
Fig. 4–41. Removing the air cleaner



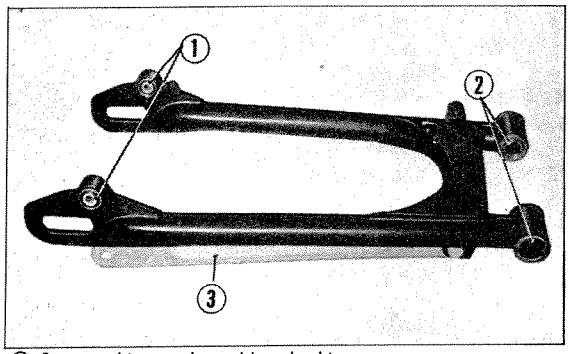
① Tool box ② Tool box mounting bolt
Fig. 4-42. Removing the tool box from the frame

C. Inspection

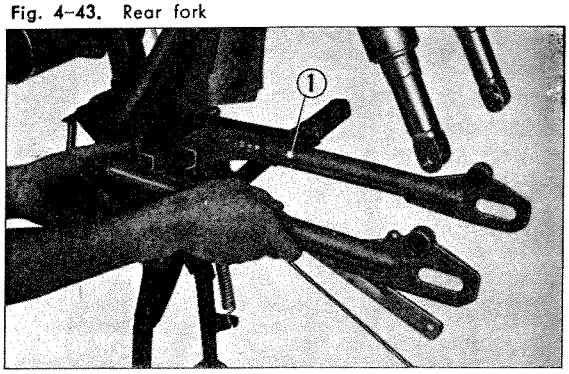
1. The air cleaner which is clogged with dust should be cleaned with dry compressed air or by brushing lightly.
2. Inspect the filter element for tear or stains.

D. Reassembly

1. Mount the tool box on the frame and secure by the 6 mm bolts.
2. Insert the air cleaner connecting tube into the carburetor, and tighten the air cleaner tube with the air cleaner connecting band.
3. Install the air cleaner case.



① Rear cushion under rubber bushing
② Rear fork pivot bushing ③ Rear brake stopper arm
Fig. 4-43. Rear fork



① Rear fork
Fig. 4-44. Removing the rear fork

4.10 REAR FORK AND REAR FENDER

A. Construction

One end of the rear fork is fitted to a section of the frame and the other end is fitted to the frame through the rear cushion. When the rear wheel bounces, the section which is fitted to the frame becomes the pivot axis and the rear wheel moves in an arc.

The close proximity of the pivot axis to the drive sprocket poses negligible change to the chain tension. **(Fig. 4-43)**

B. Disassembly

1. Remove the rear wheel in accordance with section 4.13B.
2. Remove the 6×12 bolts and 6×20 bolt to separate the chain case from the frame.
3. Remove the rear cushions in accordance with section 4.11B.
4. Remove the axle nut and pull out the rear fork pivot bolt. **(Fig. 4-44)**
5. Drive out the rear fork center collar and the rear fork pivot bushing. **(Fig. 4-45)**
6. Loosen the two 6×12 ① and rear fender setting bolts ② to separate the rear fender from the frame. **(Fig. 4-46)**

C. Inspection

1. Rear fork center collar

Item	Standard Value	Serviceable Limit
Bore	14.01~14.02 mm (5.516~5.519 in)	Replace if over 14.2 mm (0.559 in)

2. Rear fork pivot bolt

Item	Standard Value	Serviceable Limit
Outside diameter	13.925~13.968 mm (0.548~0.550 in)	——
Bend	0.02 Max (0.008 in)	Replace if over 0.05 mm (0.002 in)

3. Rear fork **(Fig. 4-47)**

Item	Standard Value	Serviceable Limit
Twist	0.1 Max (0.004 in)	——

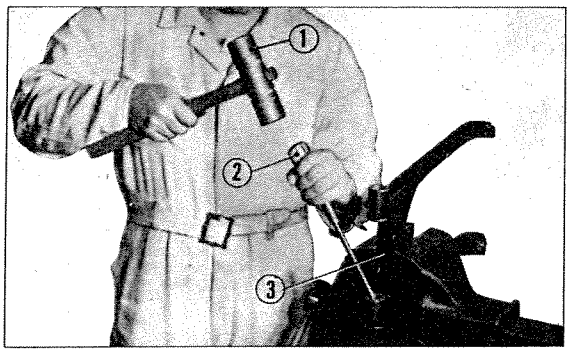
(Note)

Measurement should be made with the rear fork pivot bushing and the center collar assembled in the rear fork.

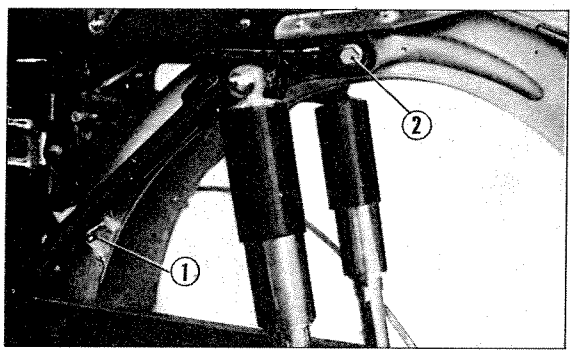
4. Inspect the rear fender and drive chain case for dents and other defects.
5. Check the drive chain for stretch.

D. Reassembly

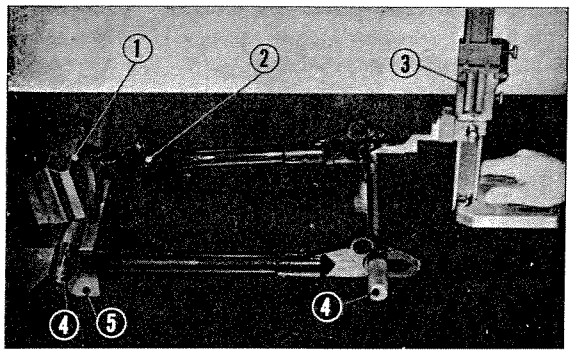
1. Install the rear fender.
2. Drive in the pivot bushing, and the center collar, insert the rear fork seal cap.
3. Insert the pivot bolt through the side bracket and assemble the rear fork to the frame.
4. Install the rear cushion
5. Install the rear wheel.
6. Install the drive chain.
7. When the assembly is completed, adjust the rear brake pedal and the chain tension.
8. Install the drive chain case. **(Fig. 4-48)**



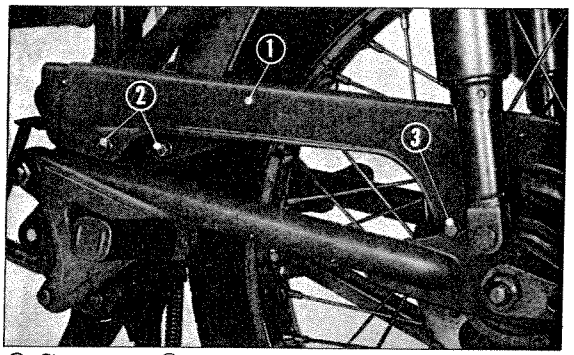
① Plastic hammer ② Driver ③ Rear fork
Fig. 4-45. Removing the rear fork pivot bushing



① 6×12 mm hex. bolt ② Rear fender setting bolt
Fig. 4-46. Disassembly of the rear fender



① Magnetic V block ② Rear fork ③ Height gauge
④ Bar for measuring ⑤ V-block
Fig. 4-47. Measurement of the rear fork



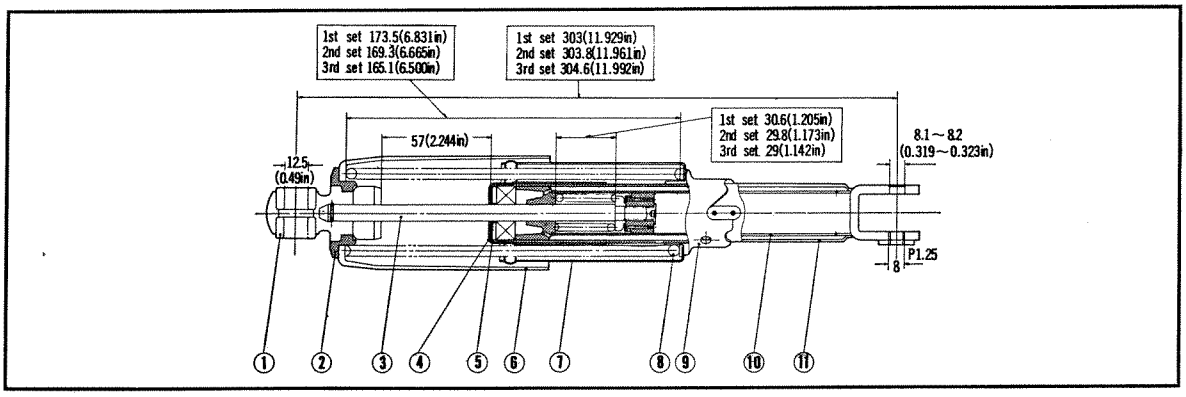
① Chain case ② 6×12 hex. bolt ③ 6×20 hex bolt
Fig. 4-48. Installation of the chain case

4.11 REAR CUSHION

A. Construction

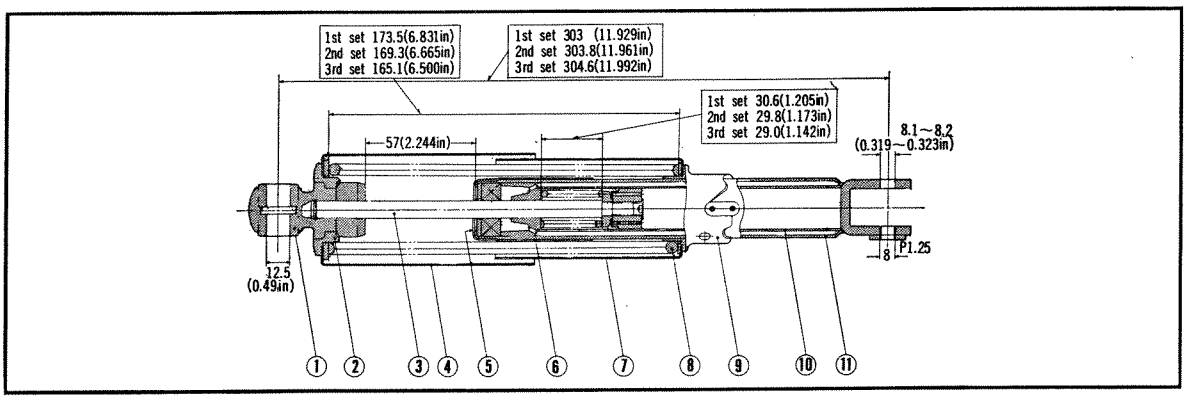
The rear cushion is of a bottom link type utilizing the spring to absorb the compressive load, and with an oil damper taking up the reacting load to perform the damping function.

The damper contains 52 cc of #60 spindle oil. Improper amount of oil will reduce the cushioning stroke, and result in oil leaks as well as noise caused by the bottoming piston.



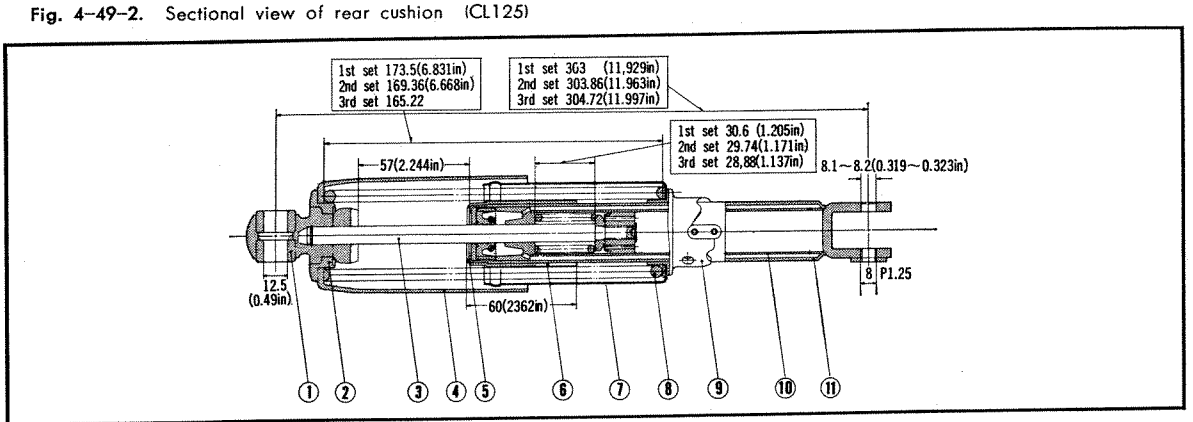
① Rear cushion upper rubber bush ② Rear cushion spring seat stopper ③ Rear damper piston rod complete ④ Staking ⑤ Cover tube ⑥ Rear cushion upper case ⑦ Rear cushion bottom case ⑧ Rear cushion spring ⑨ Spring under seat ⑩ Rear damper cylinder ⑪ Rear damper case complete

Fig. 4-49-1. Sectional view of rear cushion (CB125)



① Rear cushion upper rubber bush ② Rear cushion spring seat stopper ③ Rear damper piston rod complete ④ Rear cushion upper case ⑤ Staking ⑥ Cover tube ⑦ Rear cushion bottom case ⑧ Rear cushion spring ⑨ Spring under seat ⑩ Rear damper cylinder ⑪ Rear damper case complete

Fig. 4-49-2. Sectional view of rear cushion (CL125)



① Rear cushion upper rubber bushing ② Rear cushion spring seat stopper ③ Rear damper piston rod complete ④ Rear cushion upper case ⑤ staking ⑥ Cover tube ⑦ Rear cushion bottom case ⑧ Rear cushion spring ⑨ Spring under seat ⑩ Rear damper cylinder ⑪ Rear damper case complete

Fig. 4-49-3. Sectional view of rear cushion (CB125)

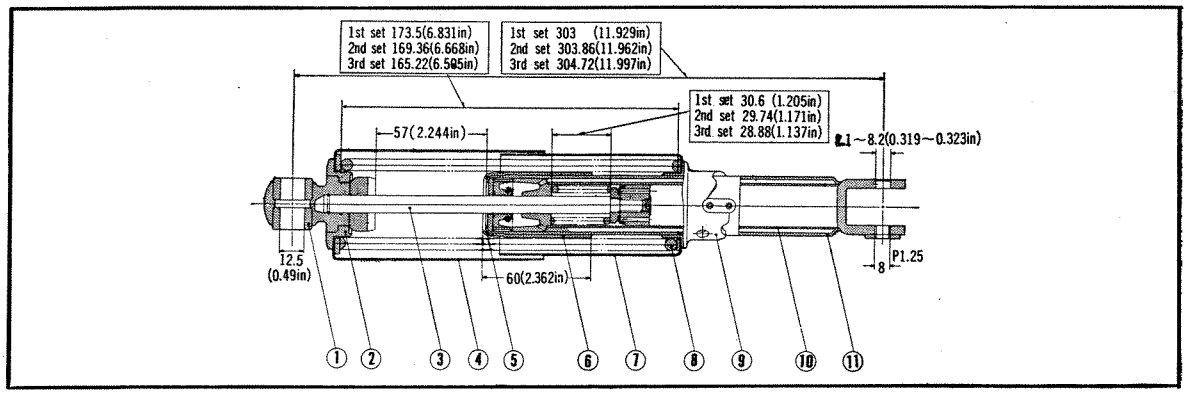


Fig. 4-49-4. Sectional view of rear cushion (CL175)

B. Disassembly

1. Loosen the 10 mm blind nut and rear cushion lower bolt, remove the rear cushion assembly.
2. Compress the rear cushion upper case, using the rear cushion disassembly and assembly tool (Tool No. 07035-21601), remove the rear cushion seat, lift off the upper case and then remove the rear cushion spring. **(Fig. 4-50.)**

C. Inspection

1. Rear cushion spring

Model	Item	Standard Value	Serviceable Limit
CB125 CL125	Free length	195.6 mm (7.701 in)	Replace if under 175 mm (6.890 in)
	Loading	103.6 mm/150 kg (4.079in/330.75lbs)	
	Tilt	within 1.5°	
CB175 CL175	Free length	194.0 mm (7.638 in)	Replace if under 174 mm (6.850 in)
	Loading	103.6 mm/160 kg (4.079in/352.8lbs)	
	Tilt	within 1.5°	

2. Damping Performance :
   65kg±10%/0.5m/sec (143lbs±10%/19.7 in/sec)
3. Inspect for cushion oil leak.
4. Inspect for damage to the cushion spring seat.

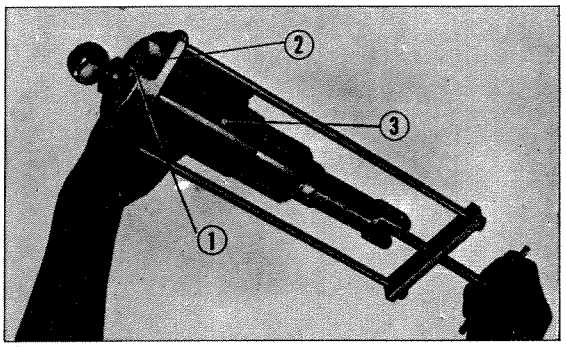
D. Reassembly

Perform the reassembly in the reverse order of disassembly.

(Note)

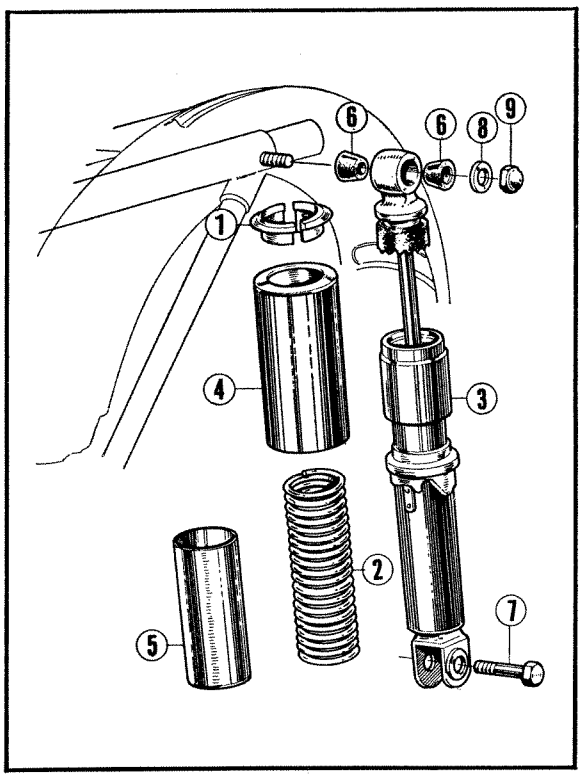
a. The spring is made with two different types of pitch, the end with the smaller pitch must be toward the bottom.

b. To facilitate the installation of the spring seat stopper, extend the cushion until the stopper can be inserted.



① Rear cushion spring seat stopper
② Rear cushion disassembly & assembly tool
③ Rear cushion assembly

Fig. 4-50. Disassembling the rear cushion



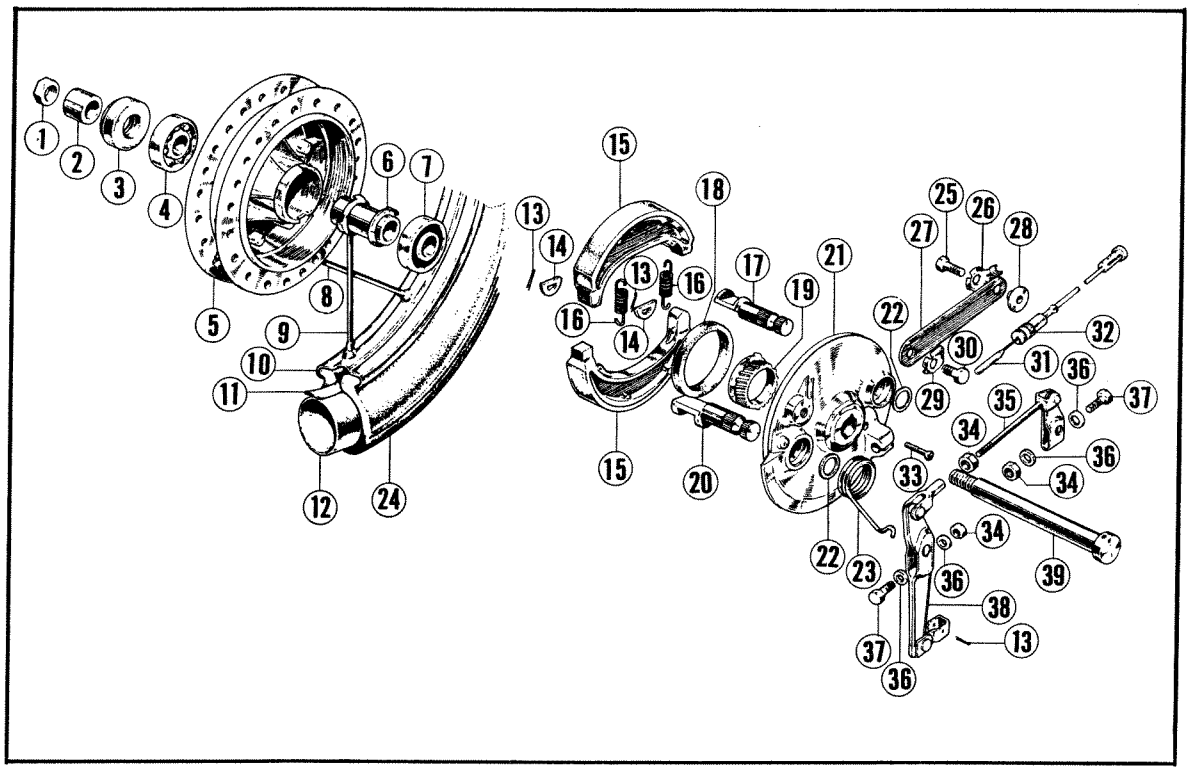
① Rear cushion spring seat stopper ② Rear cushion spring
③ Rear damper case ④ Rear cushion upper case
⑤ Rear cushion bottom case ⑥ Rear cushion upper rubber bush
⑦ Rear cushion under bolt ⑧ 10mm washer ⑨ 10mm biind nut

Fig. 4-51. Rear cushion

4.12 FRONT WHEEL

A. Construction

The aluminum hub contains the brake assembly, front axle distance collar and bearing enclosed by the brake panel. The slot on the brake panel fits the cushion to prevent the panel from rotating.

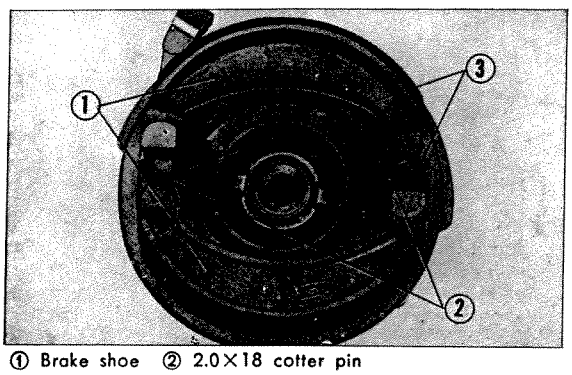


① Axle nut ② Front wheel side collar ③ 26427 oil seal ④ 6302 R ball bearing ⑤ Front wheel nub
⑥ Front axle distance collar ⑦ 6302 R ball bearing. ⑧ #9-157.5 spoke B. ⑨ #9-158 spoke B. ⑩ Front wheel rim
⑪ Tire flap ⑫ Front wheel tube ⑬ 2.0×18 cotter pin ⑭ Anchor pin washer ⑮ Front brake shoe
⑯ Front brake spring ⑰ Front brake cam ⑱ 54667 oil seal ⑲ Speedometer gear ⑳ Front brake cam
㉑ Front brake panel ㉒ Front brake cam dust seal ㉓ Front brake arm return spring ㉔ Front wheel tire
㉕ 8×28 hex. bolt. ㉖ 8.2mm tongued washer B. ㉗ Front brake stopper arm ㉘ Front brake stopper arm collar
㉙ 8.2mm tongued washer A ㉚ Front brake stopper arm bolt ㉛ Speedometer inner cable ㉜ Speedometer cable
㉝ 5×20 cross screw ㉞ 6mm hex nut ㉟ Front brake arm B ㊱ 6mm flat washer ㊲ 6×32 hex bolt
㊳ Front brake arm A ㊴ Front wheel axle

Fig. 4-52-1. Front wheel

B. Disassembly

1. Place a suitable support block under the engine to raise the front wheel off the ground.



① Brake shoe ② 2.0×18 cotter pin
③ Anchor pin washer

Fig. 4-52-2. Removing the brake shoe

2. Disconnect the brake cable.
3. Remove the 5 mm screw and the speedometer cable from the gear box.
4. Straighten the tab of the 8.2 mm tongued washer A and loosen the front brake stopper arm bolt at the front brake stopper arm.
5. Loosen the front wheel axle nut and the wheel will drop off when the axle is drawn out.
6. Remove the panel from the front wheel, two 6302 R ball bearings, and the front axle distance collar.
7. Remove the two 2×18 cotter pins and anchor pin washer to remove the brake shoe from the panel. **(Fig. 4-52-2)**
8. Separate the tire and tube from the rim with a tire lever.

C. Inspection

1. Rim runout. **(Fig. 4–53)**

Item	Standard Value	Serviceable Limit
Side runout	0.5 mm Max (0.02 in)	Replace or repair if over 3.0 mm (0.118 in)
Vertical runout	0.5 mm Max (0.02 in)	Replace or repair if over 3.0 mm (0.118 in)

2. Axle bend and wear. **(Fig. 4–54)**

Item	Standard Value	Serviceable Limit
Outside diameter	14.957~14.984 mm (0.598~0.599 in)	Replace if under 14.95 mm (0.588 in)
Bend	0.01 Max (0.0004 in)	Replace if over 0.15 mm (0.0059 in)

3. 6302 Z ball bearings axial and radial clearance.

Item	Standard Valve	Serviceable Limit
Axial clearance	0.05 mm Max (0.002 in)	Replace if over 0.1 mm (0.004 in)
Radial clearance	0.002~0.007 mm (0.0008~0.0014 in)	Replace if over 0.05 mm (0.002 in)

4. Brake shoe spring free length and tension.

Item	Standard Value	Serviceable Limit
Free length	48.6 mm (1.915 in)	
Tension	57 mm/8 kg (2.245 in/17.6 lbs)	

5. Front brake shoe diameter and lining thickness.

Item	Standard Value	Serviceable Limit
Diameter	158~160 mm (6.22~6.30 in)	
Lining thikness	5.0~5.3 mm (0.197~0.209 in)	

6. Front brake cam thickness.

Item	Standard Value	Serviceable Limit
Thickness	8 mm (0.315 in)	

7. Inspect and tighten and loose spokes.
8. Check for air leak by inflating the tube and placing it in water.
9. Check the tire for damage to casing.

D. Reassembly

1. The tube can be easily mounted by inflating with small amount of air to make the tube firm. **(Fig. 4–55)**

(Note)

(a) After the tire is mounted, inflate with approximately ⅓ designated pressure and lightly tap around the tire with a wooden hammer to eliminate any pinching of the tube. **(Fig. 4–56)**

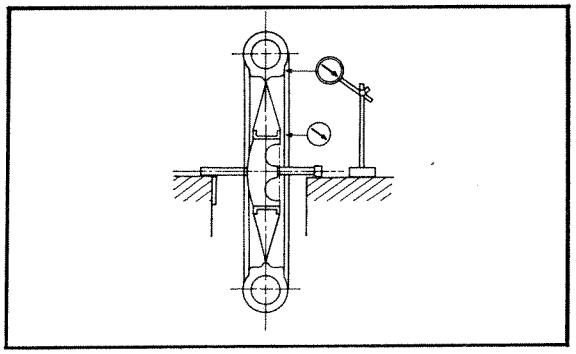
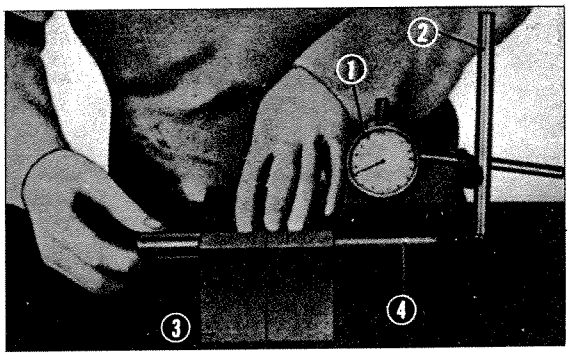
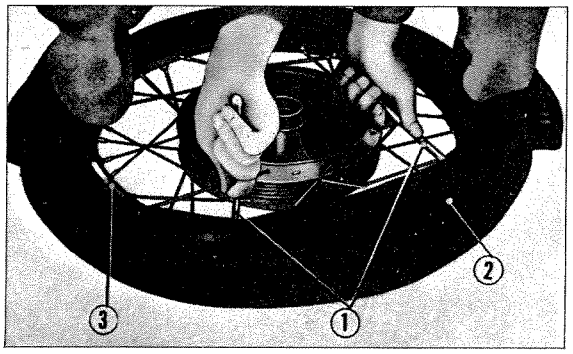


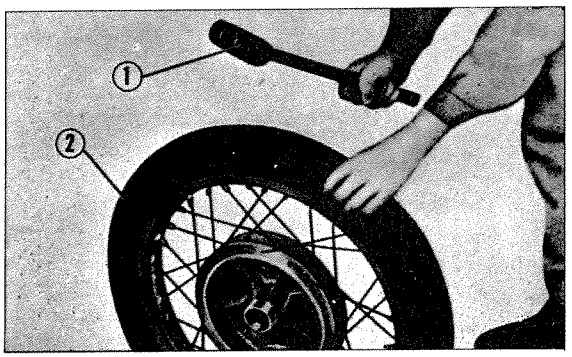
Fig. 4–53. Measurement of deflection



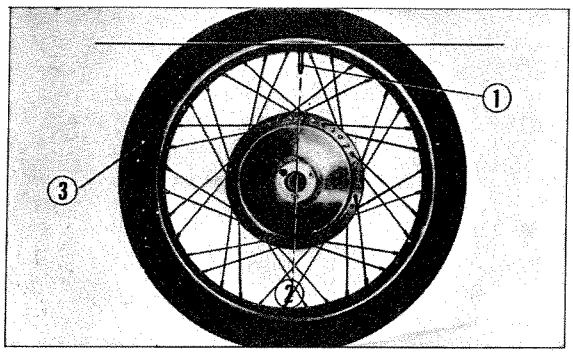
① Dial gauge ② Gauge stand ③ V block ④ Front wheel axle
Fig. 4–54. Measuring the front axle bend



① Tire lever ② Front wheel tire ③ Front wheel rim
Fig. 4–55. Installing the tire

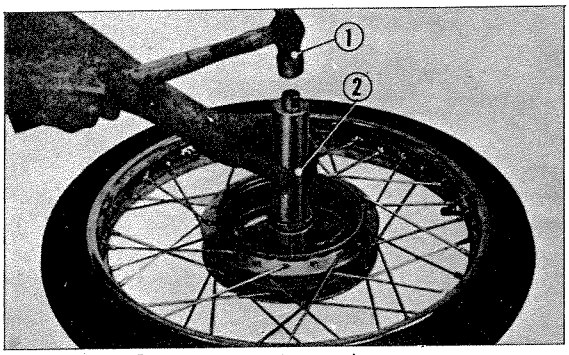


① Hammer ② Front wheel tire
Fig. 4–56. Tapping tire circumference lightly



① Valve stem ② Center line ③ Front wheel
Fig. 4–57. Angle of valve stem

(b) The valve stem should be placed pointing toward the axle to prevent damage to the tube. **(Fig. 4–57)**



① Hammer ② Bearing installing tool
Fig. 4–58. Installing the bearing

2. Grease the 6302R ball bearing and pack the inside of the front wheel hub with grease, and insert the distance collar. Drive in the 6302R ball bearing. **(Fig. 4–58)**

(Note)

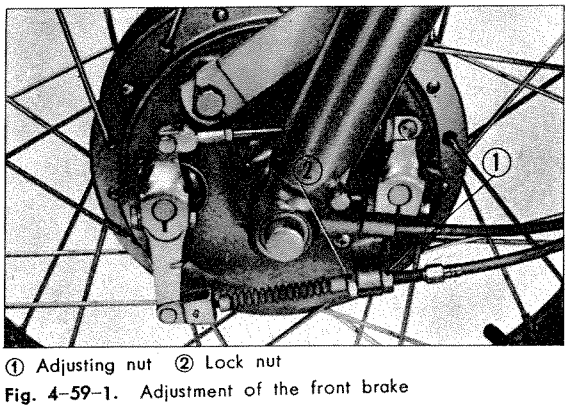
The 6302R ball bearing incorporates a seal on the outside; therefore, make sure that the bearing is not inverted.

3. Hook the spring on the front brake shoe and install the two anchor pins and brake cams. Install the unit to the front brake panel and tighten with the anchor pin washer and 2×18 cotter pin.
4. Assemble the panel to the front wheel and the gear box to the bearing retainer side. Secure them by the front wheel axle to the front fork.

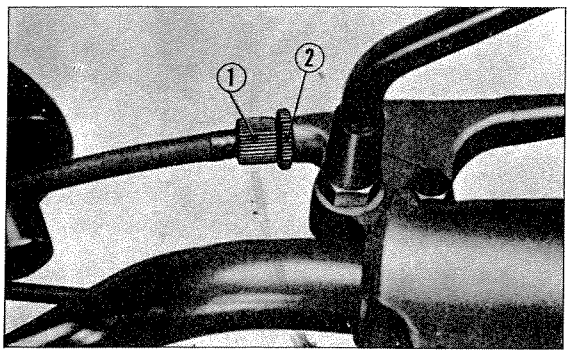
(Note)

The gear box joint section should be in line with the axles of the front and rear wheels. If not, the speedometer cable may break due to excessive bending.

5. Install the front brake stopper arm on the front brake panel.
6. Connect the speedometer cable to the gear box.
7. Connect the front brake cable to the brake arm and adjust the free travel. The designated free travel is 10–20 mm (0.4–0.8 in)



① Adjusting nut ② Lock nut
Fig. 4–59–1. Adjustment of the front brake

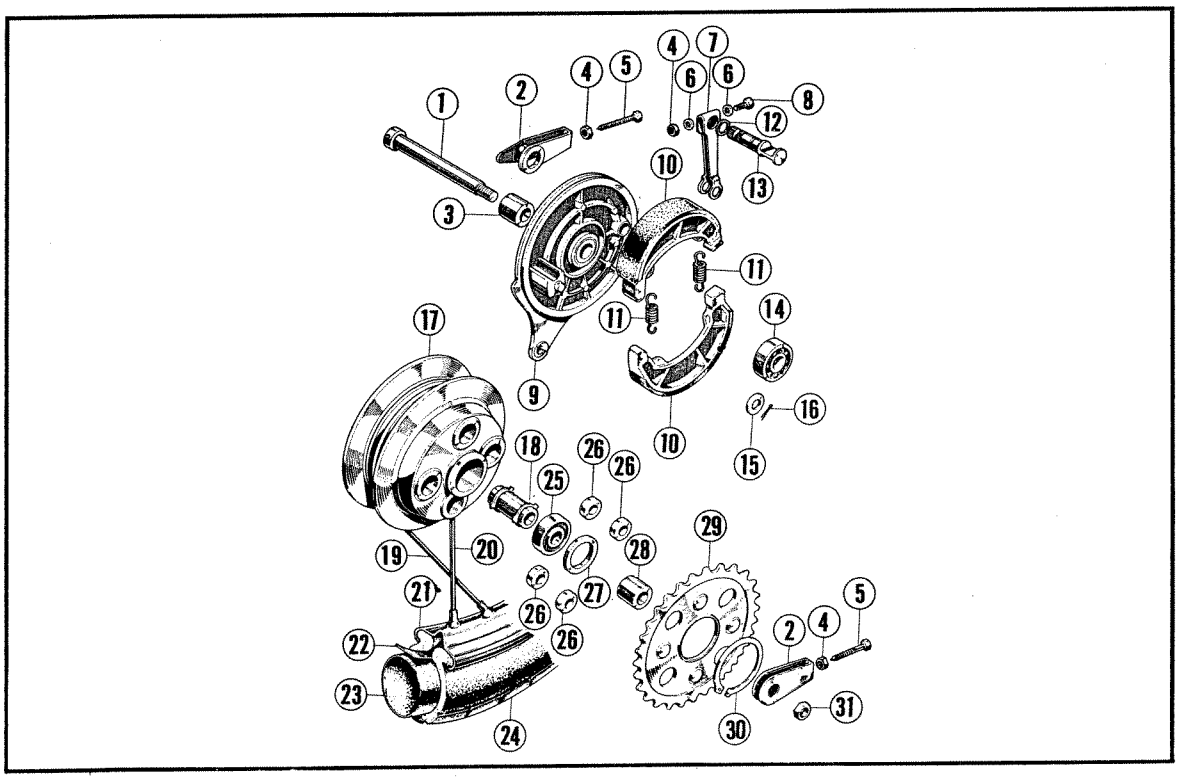


① Front brake upper adjuster ② Lock nut
Fig. 4–59–2. Adjustment of the front brake

4.13 REAR WHEEL

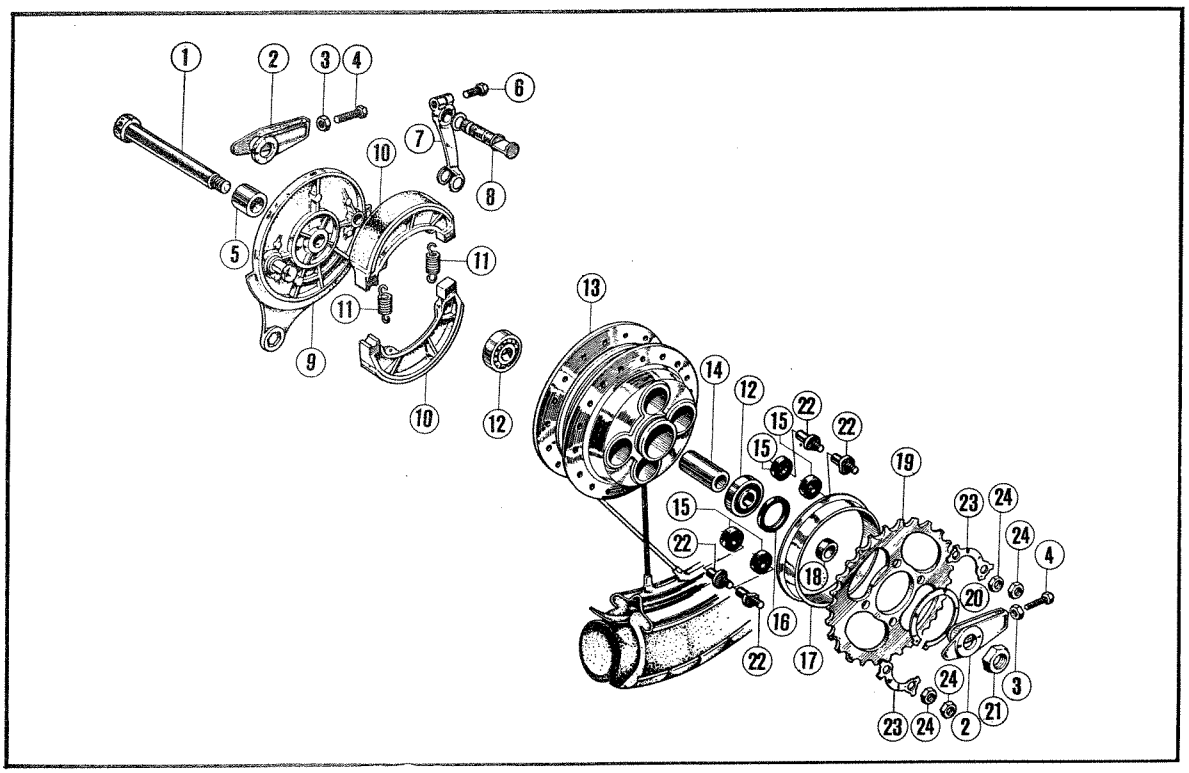
A. Description

The rear wheel consists of the 6303R ball bearings, (CB/CL125 6302R ball bearings) aluminum cast rear wheel hub with the brake drum and brake panel. It contains a single cam mounted in the brake panel. At the left side of the wheel hub, the final driven sprocket is mounted.



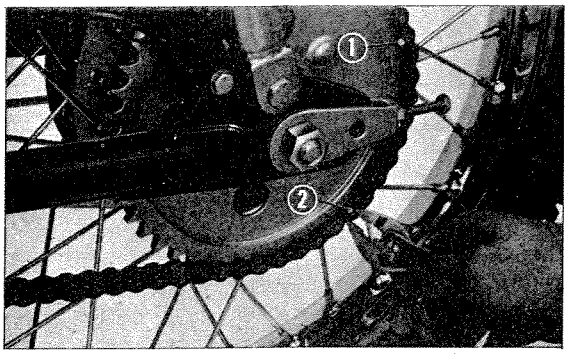
① Rear wheel axle ② Drive chain adjuster ③ Rear brake panel side collar ④ 6 mm hex. nut
⑤ Drive chain adjusting bolt ⑥ 6 mm flat washer ⑦ Rear brake arm ⑧ 6×20 hex. bolt ⑨ Rear brake panel
⑩ Rear brake shoe ⑪ Brake shoe spring ⑫ Brake cam dust seal ⑬ Rear brake cam ⑭ 6302R ball bearing
⑮ Handle holder setting washer A ⑯ 2.0×18 cotter pin ⑰ Rear wheel hub ⑱ Rear axle distance collar
⑲ B#9×162.5 spoke ⑳ B#9×163.5 spoke ㉑ Rear wheel rim ㉒ Tire flap ㉓ Rear wheel tube ㉔ Rear wheel tire
㉕ 6302R ball bearing ㉖ Rear wheel damper bushing ㉗ 28427 oil seal ㉘ Rear wheel side collar
㉙ Final driven sprocket ㉚ 58 mm cir-clip ㉛ Axle nut

Fig. 4-60-1. CB/CL125, CB/CL175 Rear wheel



① Rear wheel axle ② Drive chain adjuster ③ 6 mm hex nut ④Chain adjust bolt ⑤ Rear brake panel side collar
⑥ 6×20 hex bolt ⑦ Rear brake arm ⑧ Rear brake cam ⑨ Rear brake panel ⑩ Rear brake shoe
⑪ Brake shoe spring ⑫ 6302 Z ball bearing ⑬ Rear wheel hub ⑭ Rear axle distance collar
⑮ Rear wheel damper bush ⑯ 28427 oil-seal ⑰ Rear wheel dust seal ⑱ Rear wheel side collar
⑲ Final driven sprocket ⑳ 58 mm circlip ㉑ Rear axle nut ㉒ Driven sprocket fixing bolt ㉓ 8 mm tongued washer
㉔ 8 mm thin washer

Fig. 4-60-2. CB/CL175 Rear wheel (Early model)



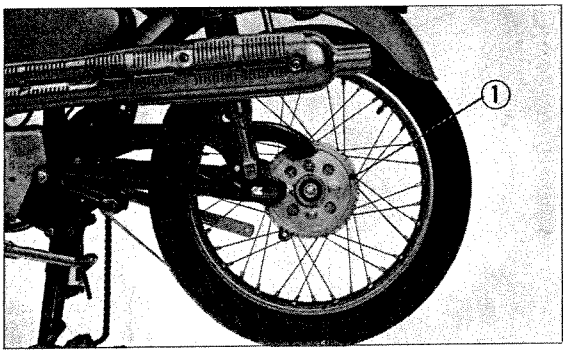
① Drive chain ② Drive chain clip

Fig. 4-61. Removing the drive chain

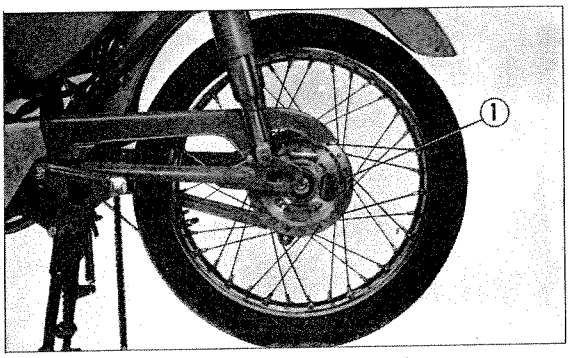
B. Disassembly

1. Remove the drive chain joint and disconnect the chain. **(Fig. 4-61)**
2. Loosen the rear brake panel stopper bolt and remove the rear brake stopper arm from the panel.
3. Loosen the rear wheel axle nut and draw out the rear wheel axle.
4. Tilt and remove the rear wheel. **(Fig. 4-62-1, 2)**

5. Remove the 58 mm circlip using a plier ; the final driven sprocket can be removed from the rear wheel.
   The sprocket on the earlier models is fixed with 4 nuts and locked with tongued washers in addition to the circlip.
6. Remove the oil seal internal retainer, two 6303R ball bearings, and the rear axle distance collars.
7. The rear brake shoe can be removed from the rear brake panel by spreading the shoes apart by hand. **(Fig. 4-63)**
8. Use the tire lever to remove the tire and tube.



① Rear wheel
Fig. 4-62-1. Removing the rear wheel



① Removing the rear wheel
Fig. 4-62-2. Rear wheel

C. Inspection

1. Rim runout. **(Fig. 4-64)**

Item	Standard Value	Serviceable Limit
Side runout	0.5 mm Max (0.02 in)	Replace or repair if over 3.0 mm (0.118 in)
Vertical runout	0.5 mm Max (0.02 in)	Replace or repair if over 3.0 mm (0.118 in)

2. Axle bend and wear. **(Fig. 4-65)**

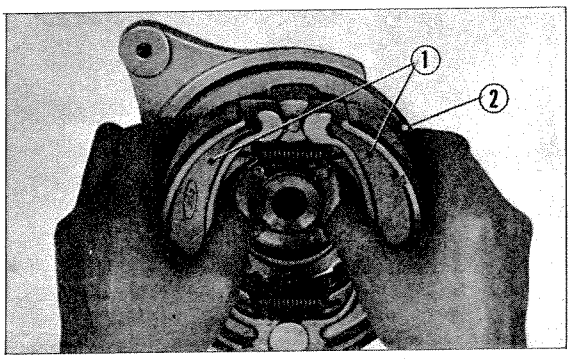
Item		Standard Value	Serviceable Limit
Outside diameter	CB125 CL125	14.957~14.984 mm (0.5886~0.5899 in)	—
	CB175 CL175	16.957~16.984 mm (0.6676~0.6686 in)	—
Bend		0.01 mm Max. (0.0004 in)	Replace if over 0.2 mm (0.008 in)

3. Rear brake shoe spring.

Item		Standard Value
Free length	CB125 CL125	35 mm (1.377 in)
	CB175 CL175	41 mm (1.615 in)
Tension	CB125 CL125	43 mm/6.5 kg (1.693 in/14.3 lbs)
	CB175 CL175	47 mm/7.8 kg (1.850 in/17.15 lbs)

4. Rear brake shoe diameter and lining thickness. **(Fig. 4-66)**

Item		Standard Value
Diameter	CB125 CL125	129.8~130 mm (5.110~5.118 in)
	CB175 CL175	139.8~140 mm (5.504~5.512 in)
Lining thickness	CB125 CL125	4.0~4.3 mm (0.157~0.169 in)
	CB175 CL175	4.5~4.8 mm (0.177~0.189 in)



① Rear brake shoes ② Rear brake panel
Fig. 4-63. Removing the brake shoes

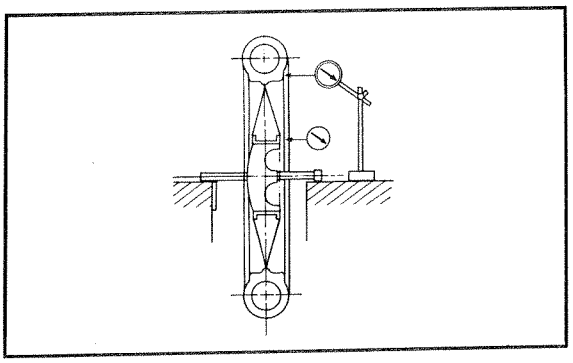
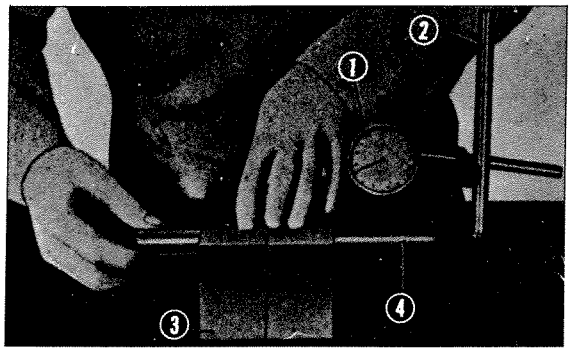
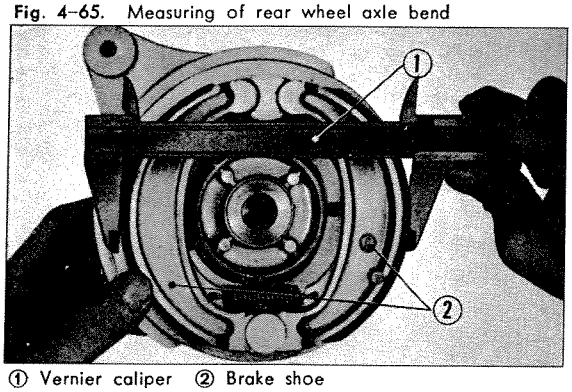


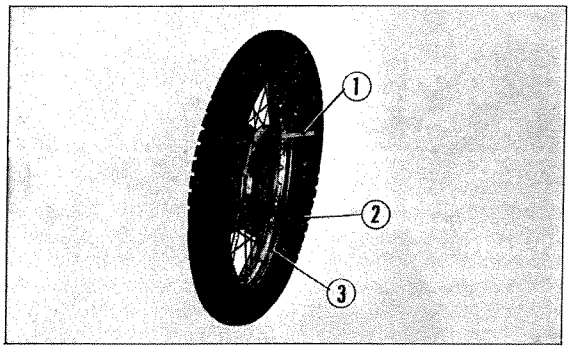
Fig. 4-64. Runout of the rim



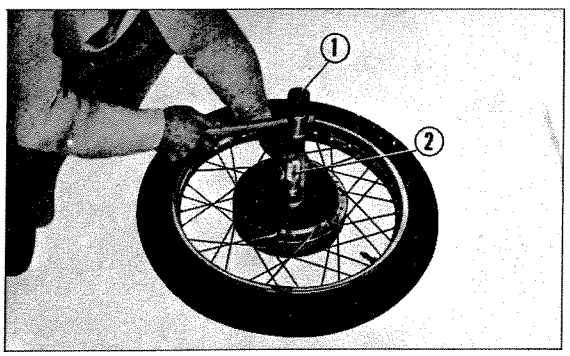
① Dial gauge ② Gauge stand ③ V block
④ Rear wheel axle
Fig. 4-65. Measuring of rear wheel axle bend



① Vernier caliper ② Brake shoe
Fig. 4-66. Measuring the brake shoes



① Wood spreader ② Rear tire ③ Rear wheel rim
Fig. 4-67. Tire inspection



① Plastic hammer ② Bearing installing tool
Fig. 4-68. Driving the ball bearing

5. Inspect and tighten all loose spokes.
6. Inspect air leak by inflating the tube and placing it in water.
7. Check the tire for damage to casing.

D. Reassembly

1. The tube can be easily mounted by inflating with small amount of air to make the tube firm.

(Note)

a. After the tire is mounted, inflate with approximately 1/3 the designated pressure and lightly tap around the tire with a wooden hammer to eliminate any pinching of the tube.

b. The valve stem should be pointed toward the axle.

2. Grease the 6303R (CB125/CL125 : 6302R) ball bearing and pack the rear wheel hub with grease. Insert the spacer and drive the 6303R (CB125/CL125 : 6302R) bearing into place. **(Fig. 4-68)**

(Note)

The 6303R (6302R) ball bearing incorporates a seal on one side, therefore, make sure that the bearing is not inverted.

3. Mount the final driven sprocket on the drive flange with the sprocket retaining bolt, 8 mm thin nut and 8 mm tongued washer. **(Fig. 4–69)**
4. Install the spring to the rear brake shoe in place, assemble the rear brake shoe to the brake panel and fix with the 6×20 bolt.
5. Assemble the panel on the rear wheel and mount the wheel assemdly on the frame. Install the drive chain.
6. Install the rear brake stopper arm to the rear brake panel.
7. Adjust the drive chain.

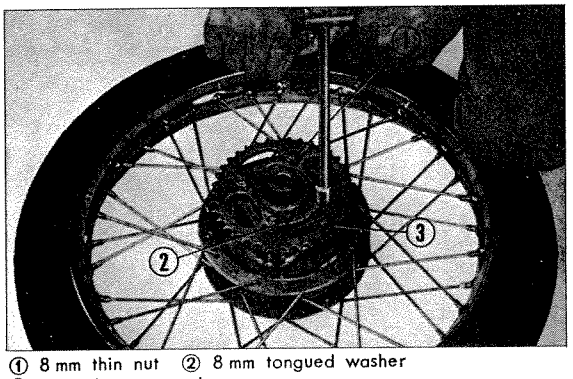
(Note)

Adjust the chain so that there is 10 to 20 mm (0.40 to 0.80 in) of slack and make sure that the chain adjusters on both sides are in the same relative position.

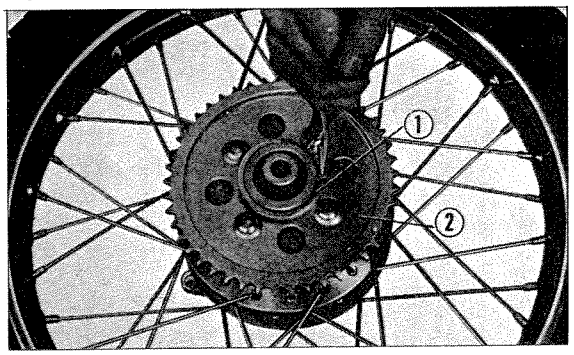
8. Install the rear brake rod to the brake arm. **(Fig. 5–70)**
9. Set the rear brake panel on its side and adjust rear brake free travel.

(Note)

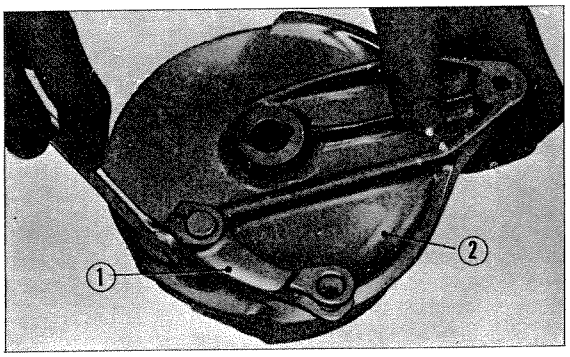
The free travel of the rear brake pedal should be 20 to 30 mm (0.8 to 1.2 in).



① 8 mm thin nut ② 8 mm tongued washer
③ Final driven sprocket
Fig. 4–69–1. Tightening the final driven sprocket



① 58 mm circlip ② Final driven sprocket
Fig. 4–69–2. Installing the final driven sprocket



① Rear brake arm ② Rear brake panel
Fig. 4–70. Installing the rear brake arm

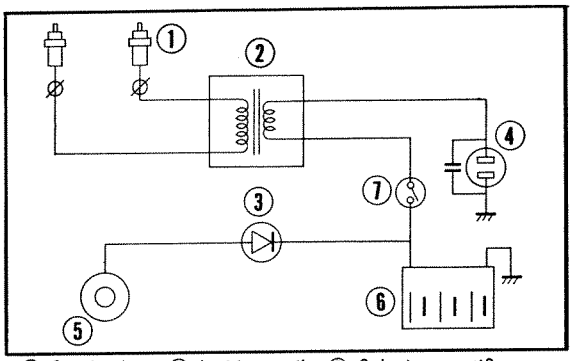
MEMO

5. ELECTRIC SYSTEM

These models use essentially the same basic electrical system with a varying degree of minor differences. The electrical equipment and their installation depend upon the wiring circuitry.

The ignition system is comprised of a special A.C. generator with the use of an ignition coil and contact breaker to provide easy starting. The charging and power supply to the electrical system is provided by the combination of A.G. generator and selenium rectifier to take care of the discharge load such as the horn, lights and the indicator lamps. The function of the electrical system can be classified as follows: **(Fig. 5-1)**

1. Ignition system (ignition coil, condenser, contact breaker and spark plug)
2. Generating system (A.C. generator)
3. Rectifying system (selenium rectifier)
4. Battery
5. Various loads (lights and horn)



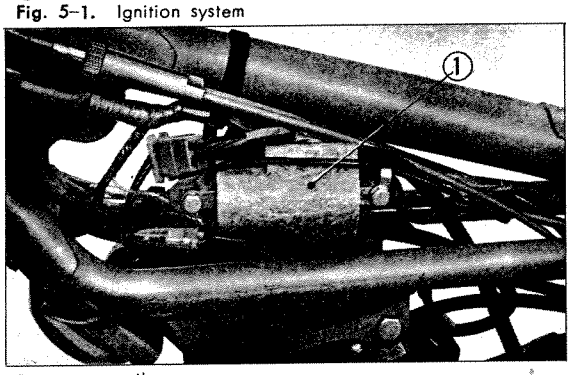
① Spark plug ② Ignition coil ③ Selenium rectifier ④ Contact breaker ⑤ A.C. generator ⑥ Battery ⑦ Switch

Fig. 5-1. Ignition system

1. IGNITION CIRCUIT

A. Ignition Coil (Fig. 5-2)

The ignition coil is made up of a primary coil which comprises of approximately 200. to 300 turns of 0.6 mm (0.024 in.) enameled copper wire wound over an iron core, and a secondary coil of 10,000 to 20,000 turns of 0.075 mm (0.003 in) enameled copper wire. Coil is coated with dielectric material and molded in a synthetic compound, with two exposed terminals. **(Fig. 5-2, 3)**



① Ignition coil

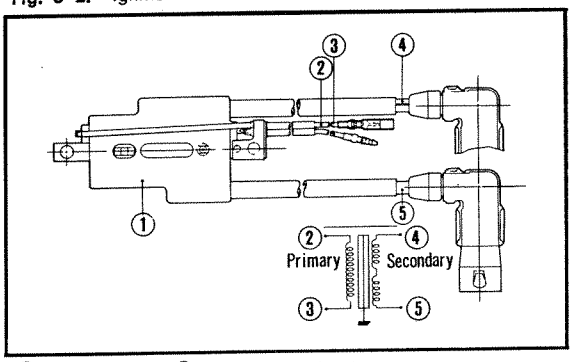
Fig. 5-2. Ignition coil

CB/CL175 (Specification)

Primary Current: 12V, 3.2A max. under locked condition at normal temperature.
12V, 0.6A max...at 10,000 rpm crankshaft.

Spark Characteristics:
Length, 7mm min. ...primary 8V, 300 rpm crankshaft.
Length, 7mm min. ...primary 12V, 10,000 rpm crankshaft.

Cam closing angle shall be at 180° of crankshaft. Measurement shall be made with a gap of 1mm on one side of the high tension lead, the other lead shall be connected to the three point spark gap tester. The measurement shall be taken of the gap between the points of the three point tester.



① Ignition coil ② Low tension lead ③ 4 mm inner cord connector ④⑤ High tension cord

Fig. 5-3. Ignition coil assy.

CB/CL125 (Specification)

Primary Current: 6V, 4.3A max. under locked condition at normal temperature.

Spark Characteristics:
Length, 8mm min. ...primary 5V, 300 rpm crankshaft.
Length, 8mm min. ...primary 7V, 10,000 rpm crankshaft.

B. Spark Advancer

Ignition timing is automatically advanced with the increase in engine RPM. The device which performs this function is the automatic spark advancer. It utilizes the centrifugal force of a rotating mass to actuate a cam which controls the opening of the breaker points. **(Fig. 5-4)**

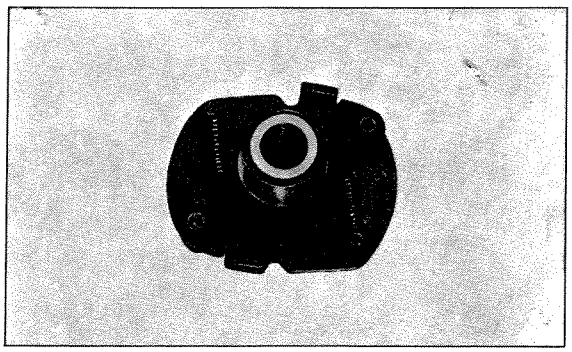
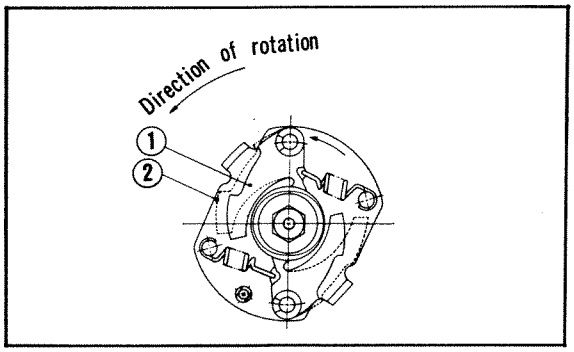
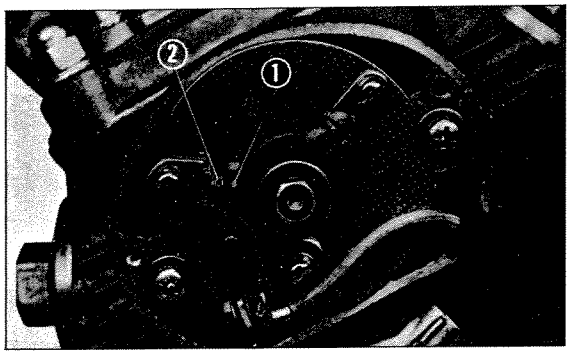


Fig. 5-4. Spark advancer



① 5° advanced angle ② 40° advanced angle
Fig. 5-5. Graph of spark advancer



① Contact breaker arm ② Breaker points
Fig. 5-6. Breaker points

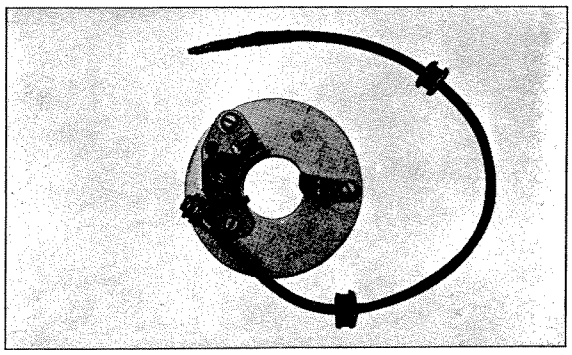


Fig. 5-7. Contact breaker assembly

The spark advancer, mounted on the left end of the camshaft for the CB/CL175 model and mounted against the A.C. dynamo rotor for the CB/CL125, is held in a fixed position, at 5° advance, by a spring. As the engine speed increases, the revolving weights on the advancer moves outward by centrifugal force, overriding the force of the spring to move the cam in the direction to cause an early ignition.

The spark advancer starts to become active at the engine speed of 900 RPM (CB/CL125 : 1800 RPM) and advances 40° at 3,900 RPM (CB/CL125 : 3200 RPM). **(Fig. 5-5)**

C. Contact Breaker

Contact breaker is a device which performs a very important function of interrupting the primary circuit of the ignition coil to enable the build-up of the high secondary voltage. It is composed or the breaker arm, stationary and movable points, primary terminal, breaker arm spring and oil felt, all of which are assembled on the base plate and mounted together with the spark advancer. The breaker arm is a formed sheet metal piece with a bakelite cam follower attached to one end. It must operate very lightly and, further, in order to minimize the inertia, the arm must be light and strong. **(Fig. 5-6, 5-7)**

The movable point requires a strong spring tention to prevent chattering during the collapse of the primary circuit, however, on the other hand, the tension must not be excessively strong so as to cause wear of the friction areas, which would result in change to the ignition timing.

The proper breaker point tension is 700~900 g (1.54~2.0 lbs). To prevent wear to the friction areas, a small amount of grease is applied to the felt lubricating wick and also to the pivot shaft.

Necessary requirements of breaker points.

① Must be wear resistance
② Good electrical conductor
③ High melting temperature
④ High resistance to oxidation
⑤ Not effected by oil or water
⑥ Possess suitable hardness

Inspection

1. Make sure that the points are free of oil.
   a. Points become black and result in excessive wear, if dirty.
   b. If left uncleaned for a long time, a hardened oil insulation film will result and causes faulty ignition.
2. Breaker arm with excessively worn pivot hole should be replaced.
3. Make sure that the insulation at the contact breaker terminal is free of oil, water and dirt.
4. Pitted or dirty points should be cleaned with a point file or sandpaper. Points with excessively pitted surfaces should be removed and both surfaces dressed so that the points are making parallel contact.

D. Condenser

The purpose of the condenser is to prevent unwanted sparking across the points, however, if the condenser capacity is too large, the ignition spark will deteriorate, normal value is 0.3 μf, $\pm$10%.

At the instance of point opening, the condenser will have several hundred volts applied momentarily, therefore, it must have sufficient capacity to withstand this surge. **(Fig. 5–8)**

After performing a leak test on the megger, a simple capacity test of the condenser can be made by removing the terminals from the megger while still in operation and use a wire to short across the terminals. If there is a good strong spark, the condenser can be assumed to be in good condition. Actually, the capacity of the condenser will not change. A use of a service tester will provide an accurate measurement of the capacity and resistance values.

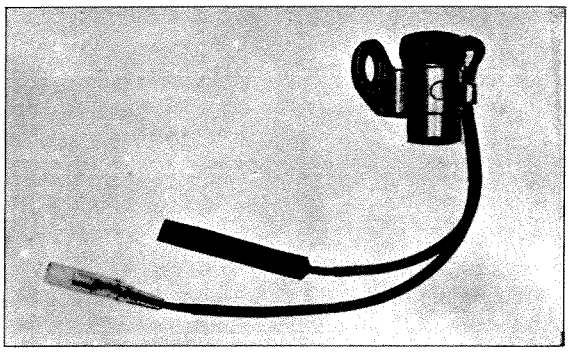


Fig. 5–8. Condenser

E. Spark Plug

Spark plug performs one of the most important functions in the engine ignition system. The high voltage produced by the ignition coil is received by the spark plug and produces the high tension spark as it jump across from the center electrode of the spark plug to the side electrode.

The spark ignites the compressed fuel mixture in the combustion chamber and causes an explosion which operates the engine. Even under various adverse conditions, durability and reliability is required. **(Fig. 5–9)**

1. Spark Plug Condition
   The operation of the engine can be determined by the condition of the plug. The firing area of the insulator colored white, gray or light gray indicates good condition and is performing satisfactory.
2. Heat Range
   The firing area of the spark plug insulator is exposed to carbon and oil while the engine is operating, and to prevent its build-up, plugs are designed to burn off any deposits by the heat of combustion.

In order to function as above, the surface of the insulator firing area must be maintained at approximately 500~870°C (932~1,600°F) range. This temperature is referred to as the self-cleaning temperature, and will vary to a considerable degree with the type engine and design, riding condition and type fuel used.

In order for the plug to function properly under the different conditions it is necessary for it to dissipate the heat caused by the combustion.

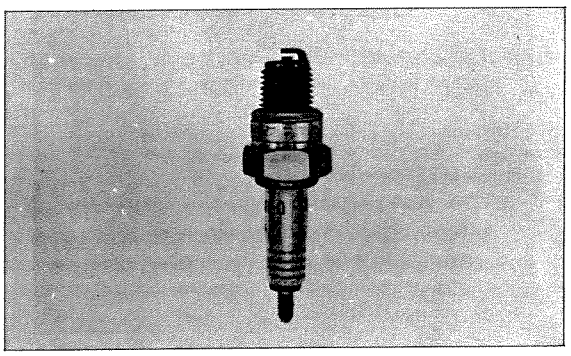
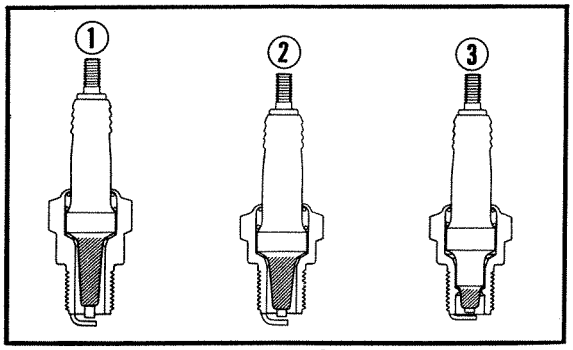
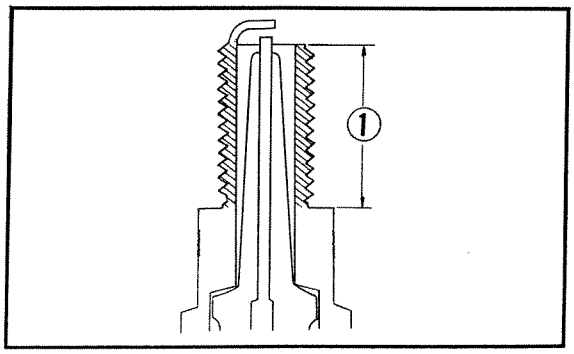


Fig. 5–9. Spark plug



① Hot type ② Medium type ③ Cold type
Fig. 5-10. Sectional view of the spark plug



① Reach
Fig. 5-11. Spark plug reach

The rate of heat dissipation of the plug in determined by the heat range of the plug. A plug which readily dissipates the heat and which is difficult to overheat is referred to as a "Cold Type". A plug which retains the heat and which will burn readily is referred to as a "Hot Type". On engine operating at high temperature, a plug which is difficult to overheat, in other words, the cold type plug is used and for engine operating at low temperature a hot type plug is used. **(Fig. 5-10)**

3. Spark Plug Reach

The reach of the spark plug refers to length of the threaded section. Different model motorcycles have cylinder head designed with different depth of spark plug hole, therefore, the spark plug with the proper reach should be used. **(Fig. 5-11)**
Reach : 12.7 mm.

The following unsatisfactory conditions will occur if plug of improper reach is used.

(1) Reach too long

a. Carbon will be deposited on the exposed thread and cause damages to the threads in the spark plug hole during plug removal.

b. The plug tip will become overheated, causing pre-ignition.

(2) Reach too short

a. Carbon will be deposited on the threads at the bottom of the plug hole and when the spark plug of the proper reach is installed, the threads will be damaged or stripped.

b. Due to the cavity left by the short reach, exhaust gas will accumulate causing a decrease in power output, overheating and engine malfunction.

4. Spark Plug Gap

The spark plug firing, regardless of whether the primary power supply is from an A.C. generator or a D.C. source, is produced by the high voltage secondary coil. The voltage generated will vary with the engine speed, however, with the proper spark gap, there is always sufficient voltage to produce a spark required for the ignition of the compressed fuel mixture. If the spark gap is too wide, a very high voltage is necessary to produce the necessary spark and, in which case, a misfire will result at low speed.

On the otner hand, if the gap is too narrow, a spark will be produced at a very low voltage and being of a low energy, an incomplete explosion will take place, resulting in engine malfunction.

5. Main Spark Plug Trouble and Corrective Action.

a. Poor starting, occasional misfire, knocks during acceleration.

b. Malfunctions when climbing, backfires, preignition.

5. MAIN SPARK PLUG TROUBLE AND CORRECTIVE ACTION

A. Poor starting, occasional misfire, knocks during acceleration.

Symptom	Probable cause	Corrective action
1. Dirty plug electrodes (sooty) 2. Plug wet with fuel 3. Flushed over	Misfire caused by the insulation of the electrodes due to carbon deposits or fouling with oil. 1. Too rich a fuel mixture. 2. Excessive intake of fuel during starting. 3. Heavy carbon deposit on the electrode resulting in bridging or narrowed gap.	1. Adjust the spark gap, adjust carburetor. 2. Dry the plugs, change the procedure on the use of choke. 3. Clean and properly adjust the gap. Standard gap : 0.6-0.7 mm (0.024-0.028 in)

B. Malfunctions when climbing, backfires, pre-ignition.

Symptom	Probable cause	Corrective action
1. Electrodes not noticeable dirty. 2. Electrodes excessively eroded. 3. Small deposits on the insulator. 4. Indication of burning.	Spark plug 1. Insufficiently torqued causing exhaust gas lead. 2. Too lean a fuel mixture. 3. Ignition timing too for advanced. 4. Improper plug, head range too low.	1. Replace plug gasket or retorque the plug. 2. Adjust the carburetor. 3. Adjust ignition timing. 4. Replace with plug of higher heat range. (higher numbered plug)

F. Noise Suppressor

The oscillating current which contains the high frequency radio wave produced by the high tension ignition circuit is radiated from the high tension circuit and the vehicle chassis to cause interference to the reception of the radio and television sets. To prevent this undesirable condition, the spark plug is fitted with a suppressor.

The suppressor consists of a resistor incorporated within the plug cap and housed in the shield cover. The resistor functions as a diminishing resistor, the shield cover increases the high frequency suppressing characteristics as a combined part of the suppressor.

(Caution)

1. The suppressor should be handled in the same manner as the plug cap, however, provide adequate care to the junction of the high tension cord and make sure that the cord is fully screwed in.
2. If the resistance value should accidentally change or if the value should become infinate, it should not effect the performance; (discoloration of the outer insulated coating) it is recommended, however, that it be changed with a new item.

2. ELECTRICAL POWER SUPPLY

A. A.C. Generator (Fig. 5–12)

A generator produces electricity because an iron core cuts across a magnetic field. This basic principle holds true both in the flywheel magneto, D.C. Generator or an A.C. generator.

In the A.C. generator, the output voltage changes direction, henceforth the name A.C. (alternating current) generator.

The advantage of an A.C. generator is that the malfunction as compared to the other type is less frequent due to its simpler construction and fewer parts which are subject to wear. Another major advantage is that the kick starter can be employed as an auxiliary starting method even with the battery completely discharged. This is because the A.C. generator induces a large voltage which when fed through the rectifier to the ignition coil will produce a spark of sufficient strength to produce ignition.

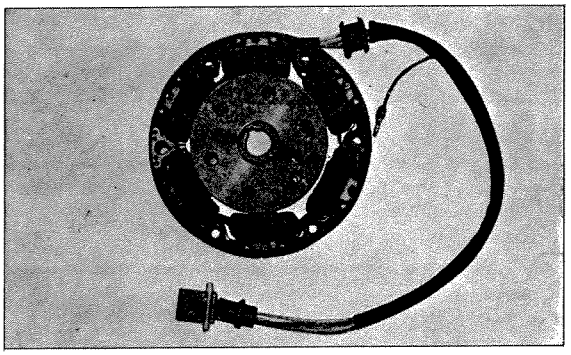
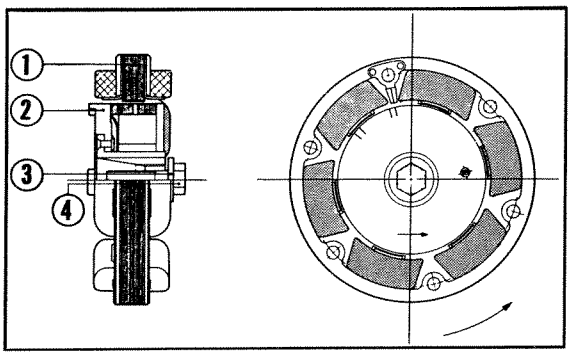


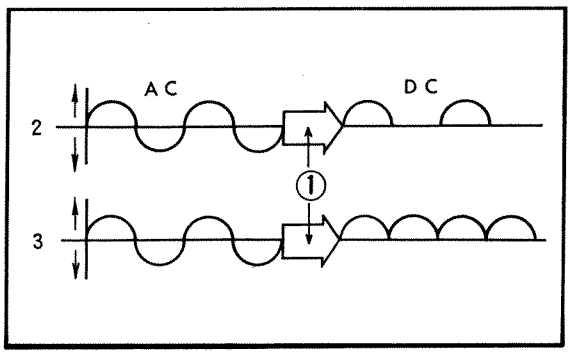
Fig. 5–12A. A.C. generator



① Stator ② Rotor ③ Washer ④ Set bolt
Fig. 5–12B. A.C. generator construction

B. Characteristics

Items	CB/CL175	CB/CL125
RPM	300–11,000 RPM	300–10,500 RPM
Normal voltage	12 V	6 V
Electrical load	After full wave rectification. Day : 6V–12AH battery+ ignition coil (single lobe cam with spark every revolution, contact breaker closed 180° of each revolution) Night : In addition to the day load, the lamp loads are added (H.L. 35W, T.L. 8W, M.L. 3W×3, B.L. 2.5W)	After full wave rectification. Day : 6V–6AH+ignition coil (D.C. ignition, spark every revolution, contact breaker closed 180° of each revolution) Night : In addition to the day load, the lamp loads are added (H.L. 25W, T.L. 5W, M.L. 3W)
Charging •Initial charging speed •Charging at 5000 RPM	Day : 2400 RPM max Night : 2800 RPM max Day : 1.0±0.5A Night : 1.0±0.5A	Day : 1300 RPM max Night : 2000 RPM max Day : 2.0 $^{+0.5A}_{-0.3A}$ Night : 2.0 $^{+0.5A}_{-0.3A}$



① Rectifier

Fig. 5–13. Selenium rectifier construction diagram

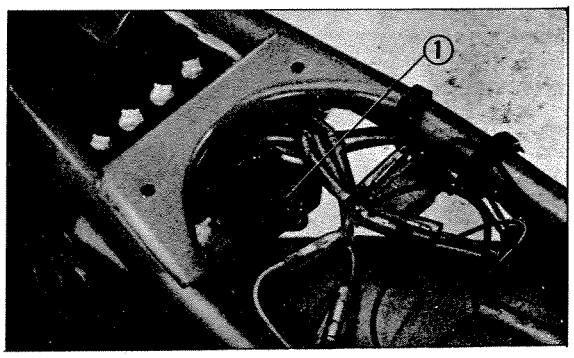


Fig. 5–14. Selenium rectifier

3. SELENIUM RECTIFIER

A rectifier is an equipment which converts the A.C. (alternating) current to a D.C. (direct) current and is necessary for use with an A.C. generator or an A.C. generating coil. Battery requires D.C. voltage for charging and if the electrical voltage produced by the generator is an A.C., this must be converted to D.C. so that the battery can receive the charge.

Rectification is a process of causing the cyclic reversing current to flow in only one direction. As shown in the figure, it permits the current to flow in one direction but blocks the current from flowing in the opposite direction, thus is known as a half wave rectification ②. There is another type which changes the reverse flow of current so that if also flows in the same direction; this is known as full wave rectification ③. **(Fig. 5–13)**

Rectifiers are of many types in construction, material and shape, however, principally the theory of operation is the same, i.e., the current is readily permitted to flow in one direction but restricted from flowing in the opposite direction.

The selenium rectifier is made with the plate of either aluminum or nickle plated steel sheet coated or vacuum plated with a highly purified selenium and a rare element. This plate is heat treated under a controlled pressure followed by spray coating an area which will be used as a terminal. In which case, a special electrolytic action is set up at the layer between the selenium wafer and the sprayed alloy terminal. As shown in the figure, the current will readily flow in the normal direction and only a negligible amount flows in the opposite direction.

When this unit is placed in the primary A.C. circuit, the current will flow in only the specified direction form the output side. **(Fig. 5–14)**

A. Selenium Rectifier Installation and Handling

1. Do not bend, cut or scratch the selenium wafers.
2. The rectifier locking nut should not be loosend or the wafers rotated.

   Any movement will cause the electrode alloy to peel, affecting the rectification function further, it will destroy the moisture proofing and thereby, shortens the life of selenium rectifier.
3. Take adequate precaution not to permit rain, salt water, water or battery electrolyte to get on the selenium rectifier, as it will cause the amount of current flowing in the reverse direction to increase. Further, if the selenium wafer if exposed to moisture for any length of time, oxide will be produce on the surface, resulting in a shorted condition and the following trouble will occur.

   a. Battery will be discharge.

   b. Malfunction of the charging system.
4. Do not operate engine without the battery or electrical load connected to the circuit.

(examples)

a. Loose or disconnected lead at the battery terminal.

b. Loose or disconnected terminals on the lead between the battery and the ⊕ side of the selenium rectifier.

c. Running without a battery.

If the engine should be started under the above condition or if such condition should develop while the engine is being operated, a high voltage will be produced due to the absence of any load on the coil, and this high voltage will cause a large amout of current to flow through the rectifier in the reverse direction, resulting in the eventual damage to the selenium rectifier.

Therefore :

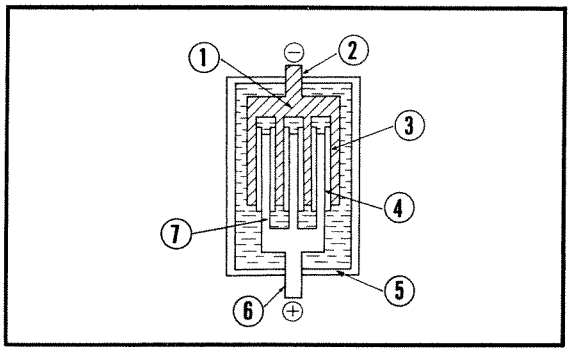
a. Always maintain all electrical connections in the circuit in a good condition.

b. Under no circumstances should the engine be started without the battery connected.

4. BATTERY

A. Construction

The battery stores the electricity produced by the generator for use as a source of power for the safety items such as the lights and horn. At present, all batteries used for small type vehicles are of a lead storage type inclosed in a plastic case. The construction and the name of the component parts are shown in (Fig. 5-15).

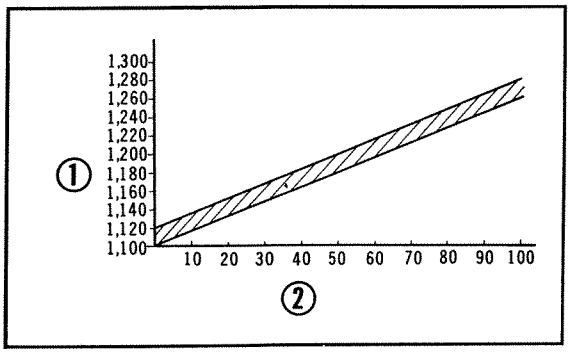


① Pole ② ⊖ terminal ③ Negative plate ④ Separator & glass net ⑤ Container ⑥ ⊕ terminal ⑦ Positive plate

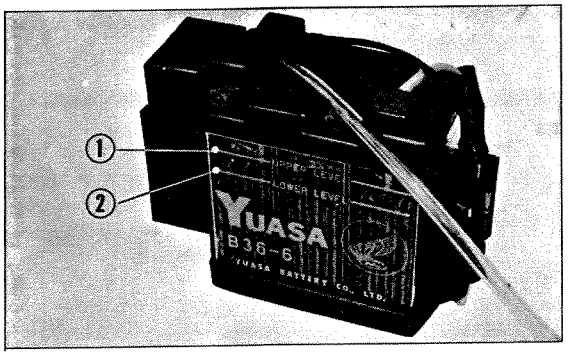
Fig. 5-15. Battery construction

B. RATING

Item	CB/CL175	CB/CL125
Type	MBW3-12C	B36-6
Voltage	12 V	6 V
Capacity	9 AH	6AH
Specific gravity of electrolyte	1.260-1.280 at 20°C (68°F)	Same as left



① Specific gravity (20°C) ② Residual capacity (%)
Fig. 5–16. Specific gravity and residual capacity chart



① Upper level mark ② Lower level mark
Fig. 5–17.

C. Instruction on use and Servicing

1. Check specific gravity
   Before using the battery, check the capacity and if the specific gravity of the electrolyte is below 1.220 at 20°C (68°F) (less than 75% capacity), the battery should be recharged.

(Note)
The relation between the battery capacity and the specific gravity (residual capacity) is shown in **(Fig. 5–16).** When the specific gravity is 1.189 at 20°C (68°F) (less than 50% capacity) the residual capacity is small and if continued to be used in such a condition, it will eventually lead to trouble as well as shortening the battery life, therefore, the battery should, under such a condition, be recharged as soon as possible. **(Fig. 5–16)**

2. Inspecting the electrolyte level. As shown in **Fig. 5–17,** if the electrolyte level falls below the LOWER LEVEL, remove the filler cap with a screw driver or an appropriate tool and fill the battery to the UPPER LEVEL with distilled water or battery water. Do not fill beyond the UPPER LEVEL. **(Fig. 5–17)**
3. Whenever the vent pipe is removed during recharging, it must be reconnected when the battery is installed. Care should be exersized not to restrict the opening.

D. BATTERY CHARGING PROCEDURE

1. Connection to Charger (Fig. 5–18)

Connect the positive (+) terminal of the battery (colored red) to the positive terminal of the charger, and the negative (—) battery terminal to the negative terminal of the charger. (Fig. 5–18A)

When more than one battery is to be charged at once, they should be charged in series, as shown in (Fig. 5–18B).

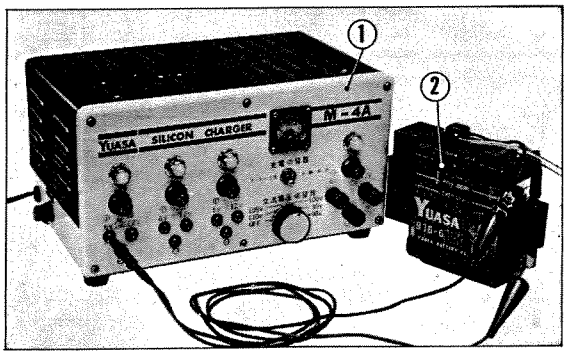


Fig. 5–18A. ① Charger ② Battery

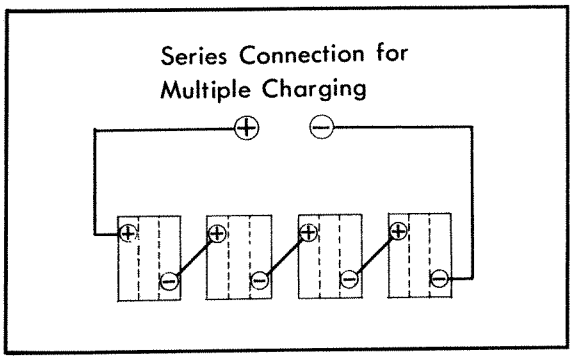


Fig. 5–18B.

(Note) When series charging more than one battery, the charger voltage must be the sum of the battery voltages. For example, to charge three six volt batteries, the charger must have an output voltage in excess of 6+6+6 or 18 volts.

2. Charging

Charge the battery at the current specified in following table.

Type	Voltage (V)	Capacity at10-hr rate (AH)	Charging current (A)	Electrolyte		Specific gravity of electrolyte when fully charged at 20°C (68°F)
				Specific gravity at 20° (68°F)	Volume of electrolyte required for filling (liters)	
MBW3-12C (Used on CB/CL175)	12	9	0.9	1.260	0.7	1.280
B36-6 (Used on CB/CL125)	6	6	0.6	1.260	0.26	1.280

The charging time for a new battery is determined by the length of time in storage since the date of manufacture. (Date of manufacture is printed on the back of the specification booklet, enclosed with motorcycle batteries).

The table shows the approximates charging times.

Duration of storage	Less than 6 months.	6 to 12 months.	Over 12 months.
Duration of charge	10 to 20hrs.	20 to 30 hrs.	Over 30 hrs.

(Note)

1. During the charging operation, if the battery temperature exceeds 45°C (113°F), discontinue charging or decrease charging current to 1/2 of the specified value until the temperature falls to a safe level. In this case, charging time must be increased.
2. Be sure to charge the battery at the specified current.
3. If the electrolyte level falls during charging, refill with distilled water to the upper level line (to the level indicator in hard rubber-case batteries).
   Near the end of the charging period, adjust the specific gravity to between 1.270 and 1.290 (between 1.250 and 1.270 in tropical areas), and continue charging for two to three additional hours.
4. Explosive hydrogen gas is discharged from the cells, therefore, do not charge batteries near any open fire. Always turn charger off before connecting or disconnecting batteries.
5. After charging, add distilled or battery water to the cells to bring the electrolyte to the upper level line (to the level indicator in hard rubber case batteries).
   Tighten cell caps firmly and wash off with clean water any acid spilled.
6. The battery is now ready to install. When installing a motorcycle battery, be sure not pinch the battery vent tube. Explosion may result if the exhaust tube is blocked.

3. Preventative Maintenance

The battery is being recharged all the while the engine is running. Further, while running, the load such as the use of the winker, horn are placed on the battery (discharged), as the result, the battery is being discharged at the same time it is being recharged. In the long run, the discharge and the recharge is in balance. The system has been designed in this manner. Under certain condition when the balance is upset, then trouble develops.

To obtain maximum life from the battery, it is necessary to locate this trouble and take the appropriate action early.

The trouble to the battery are mainly external such as cracked case, broken terminal, disconnected lead wire. The battery condition, trouble, corrective action are shown in the following table.

E. TROUBLE SHOOTING AND CORRECTIVE ACTION

Trouble	Probable cause	Correct action
A. Sulfation The electrode plates are covered with white layer or in spots	1. Charging rate is too small or else excessively large. 2. The specific gravity or the mixture of the electrolyte is improper. 3. Battery left in a discharged condition for a long period. (left with the switch turned on). 4. Exposed to excessive vibration due to improper insulation. 5. Motorcycle stored during cold season with battery connected.	1. When motorcycle is in storage, the battery should be recharged once a month even though the motorcycle is not used. 2. Check the electrolyte periodically and always maintain the proper level. 3. In a lightly discharged condition, performing recharging and discharging several times by starting the engine may be sufficient.
B. Self discharge Battery discharges in addition to that caused by the connected load.	1. Dirty contact areas and case. 2. Contaminated electrolyte or electrolyte excessively concentrated.	1. Always maintain the exterior clean. 2. Handle the replenishing electrolyte with care.
C. Large discharge rate Specific gravity, gradually lowers and around 1.100, the winker and horn no longer function.	1. The fuse and the wiring is satisfactory, loads such as winker and horn does not function. In this condition the motorcycle will operate but with prolong use, both ⊕ and ⊖ plates will react with the sulfuric acid and form lead sulfide deposits, (sulfation) making it impossible to recharge.	1. When the specific gravity falls below 1,200 (20°C : 68°F), the battery should be recharged immediately. 2. When the battery frequently becomes discharged while operating at normal speed, check the generator for proper output. 3. If the battery discharges under normal charge output, it is an indication of overloading, remove some of the excess load.
D. High charging rate The electrolyte level drops rapidly but the charge is always maintained at 100% and the condition appears satisfactory. A condition which is overlooked. (Specific gravity over 1.260)	1. The deposit will heavily accumulate at the bottom and will cause internal shorting and damage the battery.	1. Check to assure proper charging rate. 2. When overcharge condition exist with the proper charging rate, place an appropriate resistor in the charging circuit.
E. Specific gravity drops Electrolyte evaporates	1. Shorted 2. Insufficient charging 3. Distilled water overfilled 4. Contaminated electrolyte	1. Perform specific gravity measurement. 2. If the addition of distilled water causes a drop in specific gravity, add sulfuric acid and adjust to proper value.

5. VARIOUS LOADS

A. Headlight

The headlight is to provide safe riding at night and, therefore, it should always be maintained at proper adjustment.

On the CB/CL175, a sealed beam type lamp unit is used, whereas, a semi sealed type is used on the CB/CL125. On these types, deterioration rate of brightness is relatively low. **(Fig. 5-19-1-2)**

a. Malfunctions

1. Broken bulb filament
   Primary causes are :
   Excessive voltage applied
   Excessive vibration due to bad roads or high speed riding.
   Defective material.
2. Defective contact.
   Contact points making poor contact

B. Taillight, Stop light

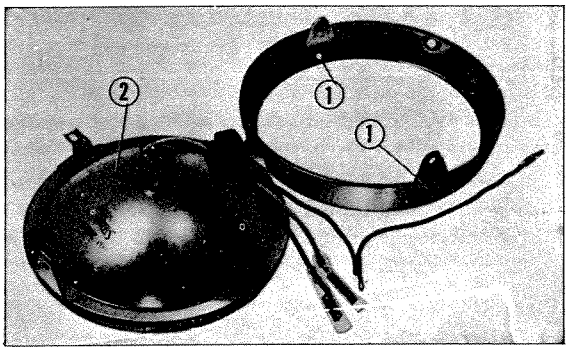
A combination light bulb is used for the taillight and the stoplight. The bulb rating is 6V-18/5w, (CB/CL175 : 6V-25/8W) the stop lamp is 18W (CB/CL175 : 25W) and the tail lamp 5W (CB/CL175 : 8W). The glass enclosure is a pear shaped bulb (CB/CL 125) **(Fig. 5-20)**

b. Inspection

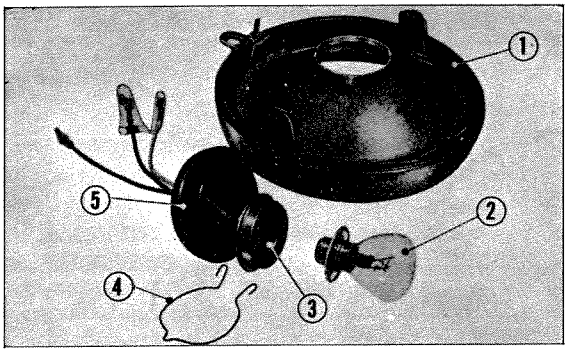
1. Broken filament
   The main cause of broken filament can be attributed to excessive vibration resulting from riding over bad roads or excessive voltage, however, in a rare case it can also be caused by defective material used in the manufacture of the bulb.
   Remedy : Replace the bulb.
2. Defective contact
   Bulb contacts making poor contact with the socket.
3. Broken cord
   Cause : Break at the terminal due to vibration from riding over rough road.
   Remedy : Peel back the insulation of the cord and resolder the wire to the proper terminal on the socket or connector.

C. Neutral lamp and Speedometer lamp

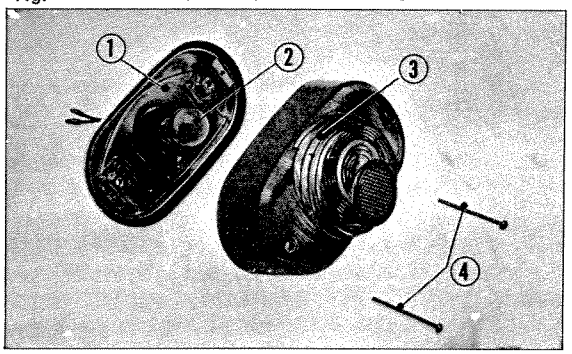
This lamp is to indicate the gear change to be in the neutral position and is located within the speedometer. Lamp rating is 6V-3.0W. Refer to section 1.2 for remedy in case of defective operation **(Fig. 5-21)**



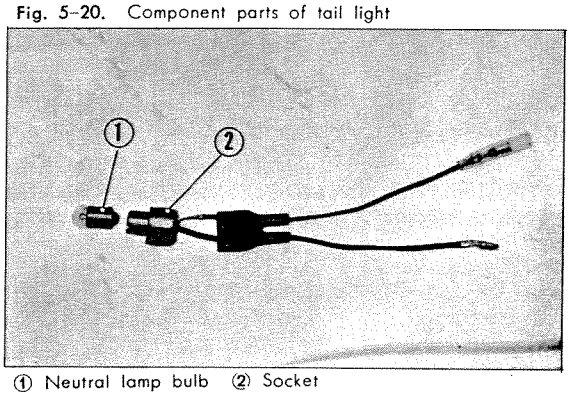
① Head light rim ② Head light unit
Fig. 5-19-1. Component parts of head light (CB/CL 175)



① Head light rim ② Head light bulb
③ Head light socket ④ Socket supporter ⑤ Boot
Fig. 5-19-2. Component parts of head light (CB/CL 125)



① Tail light base ② Tail light bulb ③ Tail light lens
④ 4×45 cross screw
Fig. 5-20. Component parts of tail light



① Neutral lamp bulb ② Socket
Fig. 5-21. Components parts of neutral lamp

6. STARTING MOTOR

A. Description

CB 175 is equipped with a starting motor mounted on the forward section of the crankcase. In addition a kick starter can be used as an auxiliary starting method.

When the starter switch is depressed, the powerful series wound electric motor incorporating a planetary reduction gear drives the crankshaft by means of a chain and sprockets. As the engine starts, the speed of the crankshaft exceeds the starting motor, however, the starting motor is presented from being motorized by the overrunning clutch mounted on the driven sprocket.

The starter magnetic switch is installed in the starting circuit to permit a large current to flow to the starter when the starter switch is depressed.

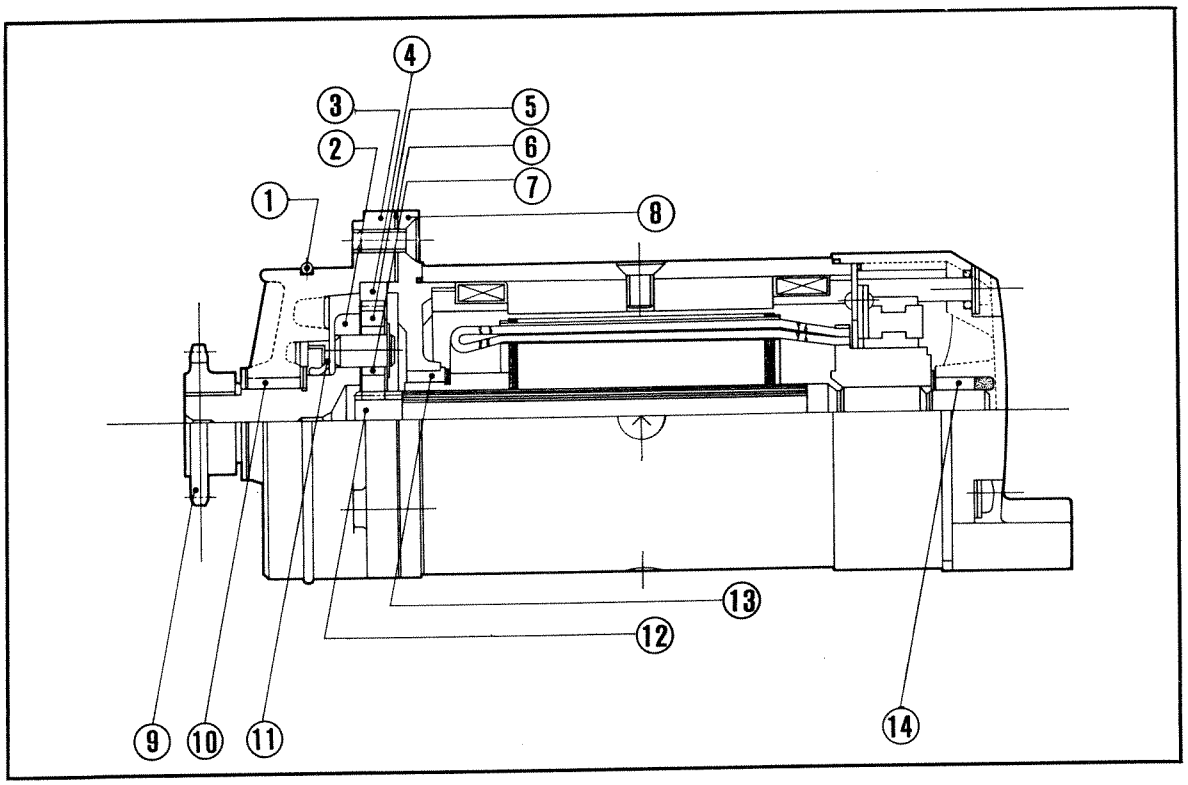
Starter Specification

Rated voltage	12V
Rated output	0.35 KW
Rated loading time	30 sec.
Reduction ratio	5.45
Direction of rotation	left hand, viewing the sprocket
Battery	12V – 9AH
Weight	2.5 kg max.

Starter Performance

at sprocket shaft	without load	with load	at been locked
Voltage	11.5V	9.4V	6.7V
Current	28A max.	100A	240A
Torque	——	——	1.5kg. m min.
RPM	2000 rpm min.	500 rpm min.	——
Power output	——	0.33 KW min.	——

Brush spring tension	550 ± 55 gr.	
Carbon brush	5.85~5.95mm × 12.2~12.4mm × 11~12.5mm	Clearance, in rotary direction 0.2~0.45mm
Brush holder	6.15~6.3 × 12.6~12.8 mm	in axial direction 0.2~0.6mm



① O ring ② Sprocket shaft ③ Gear cover ④ Ring gear ⑤ Planetary gear ⑥ Rubber gasket ⑦ Oilless metal D ⑧ End bracket A ⑨ Drive sprocket ⑩ Oilless metal C ⑪ Oil seal ⑫ Rotor shaft ⑬ Oilless metal A ⑭ Oilless metal B

Fig. 5–22. Construction of starting motor

B. Disassembly

a. Removal of starting motor

1. Disconnect the electrical power cable from the starting motor terminal.
2. Remove the two 5×12 cross screws and starting motor side cover.
3. Remove left crankcase cover.
4. Remove the starting motor sprocket by removing the starting chain.
5. Remove the three starting motor mounting bolts and separate the motor from the engine.

C. Inspection

1. Check the commutator for wear and if necessary, repair.
2. Check wear of the brush, if worn excessively, replace.
3. Check tension of brush spring, if there is loss of tension, replace.
4. Check the reduction gears for wear and damages, replace if necessary.
5. Check the driven sprocket, overrunning clutch spring and roller for wear and damage. Replace any defective parts.
6. Check all ball bearings and bushings for wear and damage, replace if necessary.
7. Check the operation of the starter magnetic switch by applying battery power to the primary terminal while grounding the solenoid body. A click will be heard for a solenoid which is in good condition. If the starting motor does not operate properly, the solenoid contact points may be in poor condition. Disassemble the solenoid and clean the points with a fine file.

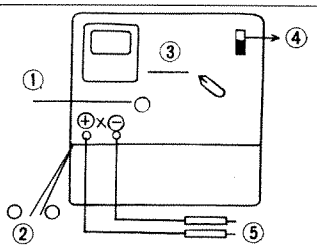
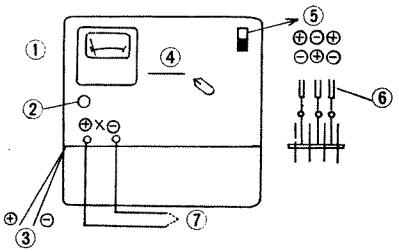
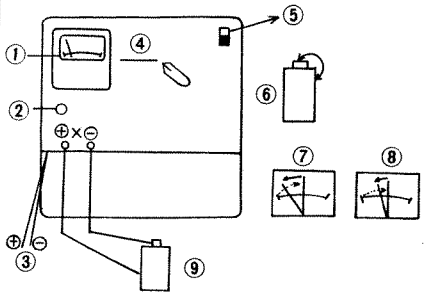
D. Reassembly

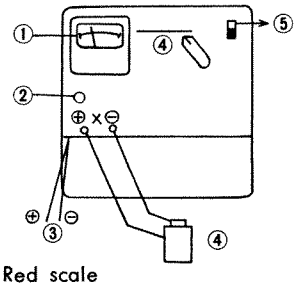
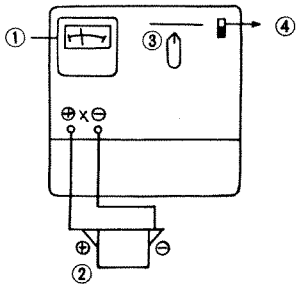
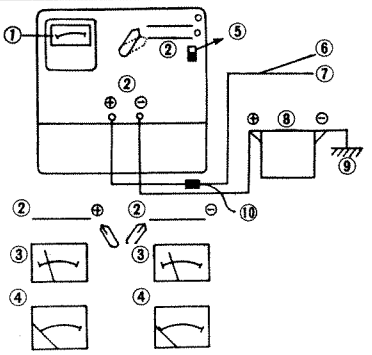
Reassemble the starting motor and overrunning clutch in the reverse order of removal.

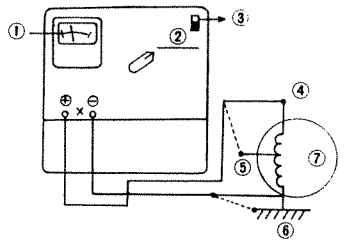
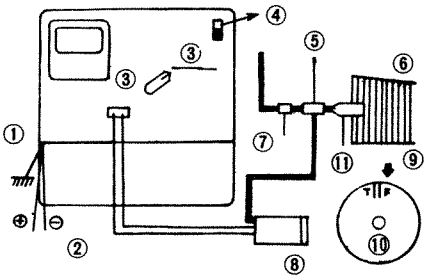
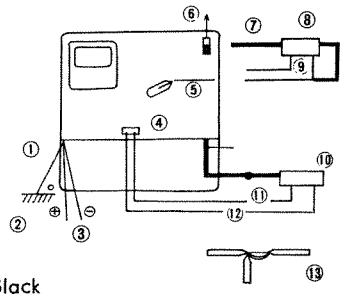
(Note)

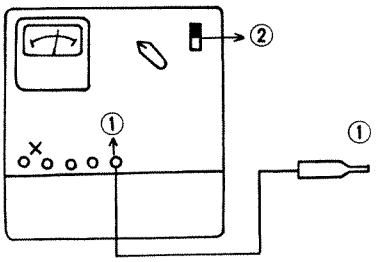
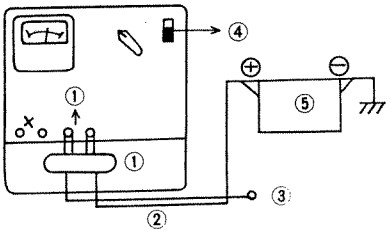
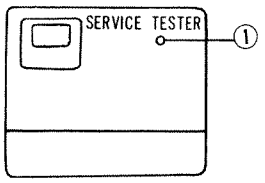
Apply a thin coating of silicone grease to the overrunning clutch rollers during assembly.

7. SERVICE TESTER INSTRUCTION

Item	Power	Direction for Use	
Continuity test	6 or 12 volts	Connect the test leads to the "X" terminals and attach the ends of the test leads to the part to be tested. If there is continuity, the red "Continuity" lamp will be lit. No lighting indicates that there is no continuity. Examples : 1. Light bulbs, shorted or open electrical circuit. 2. Many other electrical continuity tests can be performed.	 ① Continuity lamp ② Power (6V or 12V) ③ Continuity ④ ON / OFF turn the switch off ⑤ Test lead
Resistance test	6 or 12 volts	Short out the ends of the test leads connected to the "X" terminals and adjust the indicator needle of the resistance meter to "O" by the adjusting knob. Attach the ends of the test leads to the points across which the resistance is to be measured and read the meter indication. Examples : 1. Secondary ignition coil, 5,000–10,000 ohm 2. Selenium rectifier normal direction, 5–40 ohm 3. Selenium rectifier reverse direction, 600 ohm min. 4. In addition, measurement of resistance across the points and many other uses.	 ① Black scale ② Adjusting knob ③ Power (6V or 12V) ④ Resistance ⑤ Turn the switch off ⑥ Test lead ⑦ Short (Adjust the needle to "O")
Insulation test	6 or 12 volts	Short out the ends of the test leads connected to the "X" terminals and adjust the indicator needle of the insulation meter to "O" by the adjusting knob. Attach the ends of the test leads across the points to be measured, the insulation value is indicated on the meter. Examples : 1. Condenser insulation value : Under 1M ohm .... defective Over 5M ohm .... satisfactory 2. Various insulation tests may be performed.	 ① Black scale ② Adjusting knob ③ Power (6V or 12V) ④ Insulation ⑤ Turn the switch off, discharge after the measurement ⑥ Condenser, Short out the terminals to discharge ⑦ Over 5M ohm..... satisfactory ⑧ Under 1M ohm..... detective ⑨ Condenser

Item	Power	Direction for Use	
Condenser capacity test	6 or 12 volts	With the initial resistance adjust the indicator needle of the meter to "O" by the adjusting knob and position the switch to "Condenser". Attach the ends of the test leads to the test condenser terminals and read the capacity on the meter. Range of measuring value : 0.3~0.3μF	 ① Red scale ② Adjusting knob ③ Power (6V or 12V) ④ Condenser ⑤ Turn the switch
D.C. voltage measurement	Not required	Attach the red test lead from the "X" terminal to the ⊕ side and the black test lead from the "X" terminal to the ⊖ side of the test part and read the measurement on the meter. Examples : 1. Battery terminal voltage 2. Measuring the output of the D.C. dynamo	 ① Blue scale ② Battery ③ D.C. voltage ④ Turn the switch off
D.C. current Ⓘ ⊕	Not required	Connect the D.C. current measuring leads to the D.C. current terminals. When the current flows from the red terminal to the black terminal, the indicator needle on the meter swings to the normal direction. If the indicator needle swings in the reverse direction, the connection at the D. C. connection must be reversed. **(Caution)** If the connections are reversed, fuse (15A) will be blown. When the indicator needle of the meter does not swing, inspect for fuse. Example : 1. The charge or discharge condition of the battery. 2. Measuring the current consumption of the flasher, horn, light, etc.	 ① Yellow scale ② D.D. current ③ Charge ④ Discharge ⑤ Turn the switch off ⑥ Switch ⑦ Selenium rectifier ⑧ Battery ⑨ Mounted on chassis ⑩ 15A fuse

Item	Power	Direction for Use	
A.C. voltage measurement	Not required	Attach the ⊕ test lead from the "X" terminal to the ⊕ side of the dynamo (A.C.) either day or night operation and the ⊖ test lead to the ⊖ side or to the chassis and measure the voltage with the engine running. **(Caution)** Do not run the engine at high speed. Measure at a speed below 2,000 rpm.	 ① Blue scale ② A.C. voltage ③ Turn the switch off ④ Day ⑤ Night ⑥ Chassis ⑦ Dynamo (A.C.)
Timing test	6 or 12 volts	Plug in the timing light attachment into the timing receptacle. Next, attach the timing light high tension cord to the hex bar installed on the head of the spark plug. Position the switch to "Timing", start the engine and the timing light will start flashing. Point the light to the flywheel adjacent to the case timing index mark. The ignition timing and spark advancing can be inspected.	 ① Earth ② Power 6V or12V ③ Timing ④ The switch may be turned either ON or OFF ⑤ Hex bar ⑥ Engine ⑦ Plug cap ⑧ Timing light ⑨ Ignition timing alignment mark ⑩ Rotor
Coil test	6 or 12 volts	Plug the crow foot plug into the crow foot receptacle to connect the primary coil, and connect the red test lead to the ⊕ side of the primary coil and the white test lead to the ⊖ side. Then, connect the high tension cord from the upper RH corner of the pocket in the tester body to the high tension secondary coil. Position the switch to "Coil Test" and the spark will jump across the three needle test gap. Measure the spark gap by turning the adjustment knob. **(Caution)** Ground the black cord in the upper LH pocket of the tester body to avoid possible electric shocks during the test. For 6V coils, use 6 volts power and 12 volts power for 12V coils.	 ① Black ② Ground ③ Power (For 6V coils, use 6V power and use 12V power for 12V coils) ④ Primary coil ⑤ Coil test ⑥ The switch may be turned either ON or OFF ⑦ High tension secondary (For simultaneous ignition) ⑧ Coil ⑨ Primary coil ⑩ For common use ⑪ Red ⑫ White ⑬ Normal ⑭ Reverse

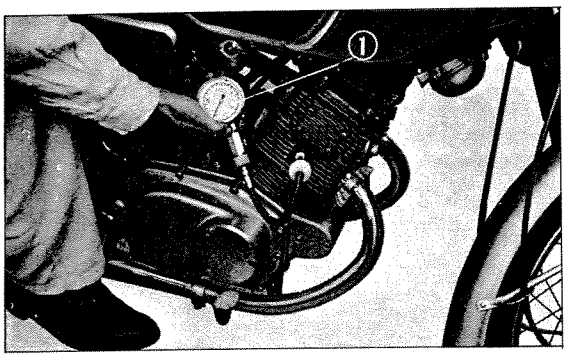
Item	Power	Direction for Use
Transistor tachometer unit attachment	Not required	Use the transistor tachometer unit attachment in the timing test started above for measuring the revolution of the engine, the revolution for the charge starting and the revolution for the governor advancing, etc. 0～6,000 rpm.  ① Tachometer ② Turn the switch on
Shunt unit attachment	Not required	The shunt unit attachment is used for measuring the starter current, the current under no load and for testing the selfstarting motor performance 0～60A  ① Shunt ② Wiring diagram for starter current measurement ③ Starter cord ④ Turn the switch off ⑤ Battery
Caution		1. The service tester shall be operated with care and the switches turned off when not in use. 2. When the power indicator lamp is not lit with the battery connected, the probable causes of the trouble are either blown fuse or defective vibrator. Inspect the parts. 3. When using the timing light, if the service tester is operating but the timing light is not lit, the bulb (xenon tube) is probably defective and should be replaced.  ① Power indicator lamp

MEMO

6. PERIODIC ADJUSTMENT

6.1 MAINTENANCE INSPECTION

Periodic inspections should be performed at regular schedule and designated mileages in order to obtain satisfactory service as well as to extend the useful life of the motorcycle.



① Compression gauge
Fig. 6-1. Measuring compression pressure

A. ENGINE ADJUSTMENT

1. MEASURING COMPRESSION

A low compression pressure will result in a corresponding drop in the engine power output. Pressure leak from any cause may effect the engine speed adjustment at low speed and create engine stall condition.

a. Remove the spark plug.

b. Insert the end of the compression gauge into the spark plug hole and hold firmly to prevent pressure from leaking. **(Fig. 6-1)**

c. Operate the kick starter repeatedly several times with both the choke and throttle in the full open position.

(Note)

1. Make sure that the throttle and choke are fully open, or else, a lower pressure indication will be registered on the compression gauge.
2. The cylinder compression pressure indication will gradually increase with each kick, therefore, continue kicking until the pressure stabilizes at the highest point.
3. To obtain a true cylinder pressure indication, the measurement should be made after the engine attains operating temperature.
4. Check for the proper operation of the valves.
5. Make sure that the compression gauge is firmly fitted in the spark plug hole to prevent pressure leak.

d. The normal cylinder compression pressure is 10kg/cm^2 (142.3 lb/in^2).

e. In case the compression pressure exceeds 12 kg/cm^2 (172 lb/in^2), it is an indication of heavy carbon deposit accumulation on the cylinder head or the piston. The deposits should be removed by disassembling the cylinder head from the cylinder.

f. When the compression pressure registers less than 8kg/cm^2 (114 lb/in^2), it is an indication of pressure leak. First check the tappet adjustment and see if the condition can be corrected. disassemble the engine and inspect the condition of the valves, the head gasket and piston rings.

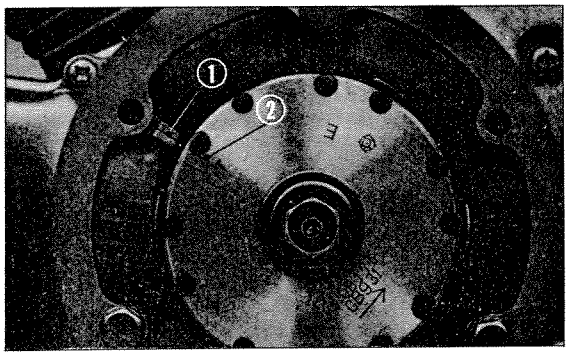
2. TAPPET ADJUSTMENT

The tappet clearance will have a great deal of effect on the valve timing. If the clearance is too small, it may prevent the valve from fully closing and result in pressure leak at the valve. On the other hand, an excessive tappet clearance will produce tappet noise and result in noisy engine operation. The tappet clearance will also have a varying degree of effect on the engine power output, engine operation at slow speed and engine noise.

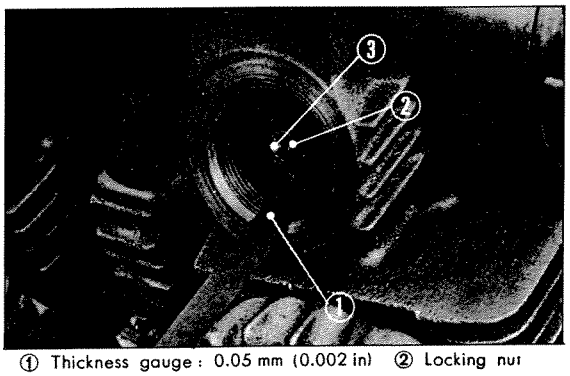
1. Valve clearance

a. Remove the left crankcase cover and align the "T" timing mark on the A.C. generator rotor with the timing index mark on the stator. **(Fig. 6-2)**

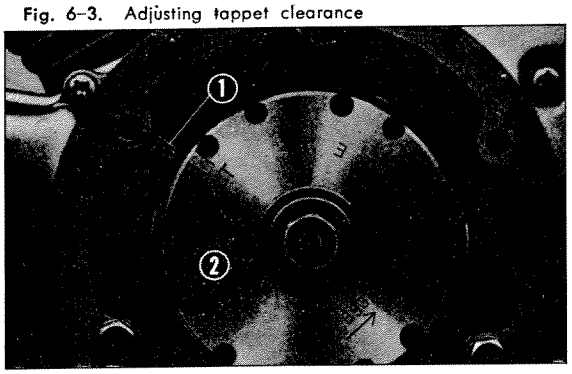
b. Unscrew the tappet adjusting cap on the cylinder head and check the clearance between the adjusting screw and the valve with a thickness gauge. **(Fig. 6-3)**



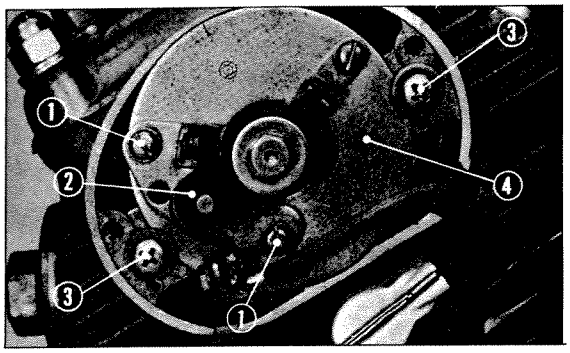
① Timing index mark ② "T" mark
Fig. 6-2. Aligning the "T" mark



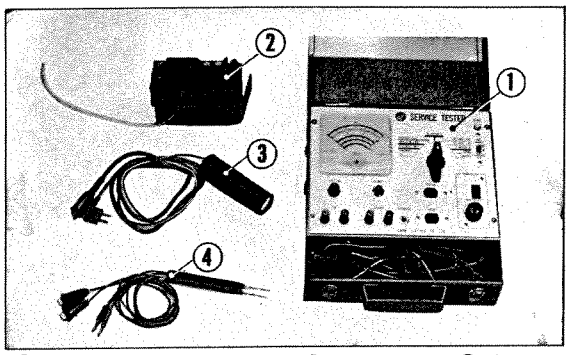
① Thickness gauge : 0.05 mm (0.002 in) ② Locking nut
③ Adjusting screw
Fig. 6-3. Adjusting tappet clearance



① Timing index mark ② "F" mark
Fig. 6-4. Aligning the "F" mark



① Breaker point adjusting screws ② Contact breaker
③ Contact base plate screws ④ Contact base plate
Fig. 6-5. Adjusting the ignition timing



① Service tester ② Battery ③ Timing light ④ Cord
Fig. 6-6.

If the valve is being actuated by the rocker arm, rotate the A.C. generator rotor one complete turn to set the piston at top-dead-center of the compression stroke, and then perform the check.

2. Adjustment

Loosen the adjusting screw locking nut and make the adjustment with the adjusting screw to obtain the standard clearance of **0.05 mm (0.002 in.)** for both the inlet and exhaust valves. Turn screw clockwise for closer clearance. **(Fig. 6-3)**

(Note)

1. The adjustment must be made with a cold engine and the clearance measured with a thickness gauge.
2. When locking the adjusting screw locking nut hold the screw to prevent its turning.

3. Inspection

a. Check to make sure that the tappet clearance is within standard tolerance. Too small a clearance will cause the valve to stay open with a consequent pressure leakage which will result in hard starting or no starting at all.
b. Check for improper valve timing.
c. Check for stretch in the cam chain.

3. IGNITION TIMING ADJUSTMENT

An improper ignition timing, regardless of the accuracy of the valve timing or the proper compression pressure, will not realize a satisfactory engine performance. Ignition timing out of adjustment will seriously affect engine power output as well as the fuel consumption.

1. Alignment of the "F" mark

a. Remove the left crankcase cover and align the "F" marking on the generator rotor to the timing index mark on the stator. Check to make sure that the spark is produced across the spark plug gap at this point. **(Fig. 6-4)**
Perform this test by removing and placing the spark plug on top of the cylinder head with the high tension case connected.

2. Adjustment

Make the adjustment if required, by loosening the contact breaker adjusting screws.

- ○ When the ignition timing is retarded, move contact breaker foward the right.
- ○ When the ignition timing is advanced, move the contact breaker toward the left.

3. Breaker point gap, 0.3 to 0.4 mm (0.012-0.016 in.) max.

Improper ignition timing will result in combustion to take place at the incorrect point of compression, making it impossible to obtain smooth engine operation the throttle grip will require greater opening, consequeuntly, the fuel consumption is increased.

Results of retarded ignition timing:

1. Drop in power output.
2. Drastic increase in fuel consumption.
3. Engine overheats with a possibility of piston seizure.

Results of advanced ignition timing:

1. Produces knocking and drop in power output. In severe cases, damage to piston, connecting rod, crankshaft may result, therefore, periodic inspection should be performed.
2. Upon completion of the point gap and ignition timing adjustment, check for proper operation of the spark advancer by the use of a timing light.

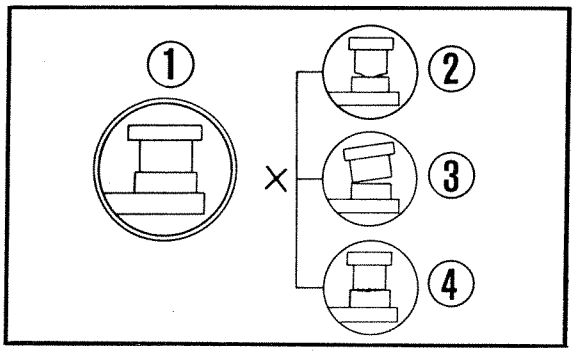
   Checking the operation of the spark advancer with a tachometer.

Refer to section service tester on page 123.

4. CONTACT POINTS

Inspect the surfaces of the contact points; if they are burnt or pitted, dress the surface with an oilstone or a point dressing file so that the points are making parallel contact. **(Fig. 6–7)**

After the points have been dressed, wash in gasoline or trichloroethylene to remove all trace of oil.



① Normal ② Worn contact point
③ Side contact point ④ Dirty contact point
Fig. 6–7. Breaker point contacting condition

Insufficient breaker point gap.

a. The spark tends to linger, that is the interruption of the primary circuit is not completed at the points, therefore, the secondary high voltage build up is reduced.
b. The closed duration of the points is longer, producing heat and resulting in damage.
c. In conjunction with ⓑ above, the points will be late in opening with a consequent delay in the ignition timing; this will cause a drop in power output.

Excessive breaker point gap

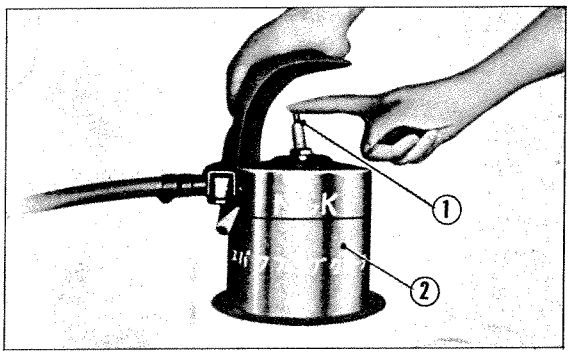
a. The duration that the points are closed is too short to allow for sufficient current flow in the primary circuit with a consequent low voltage build-up in the secondary high voltage circuit. This condition will cause poor engine starting, ignition missing at high speed and resulting in loss of power.
b. Engine over-heats readily.
c. The ignition timing is advanced.

5. SPARK PLUG ADJUSTMENT

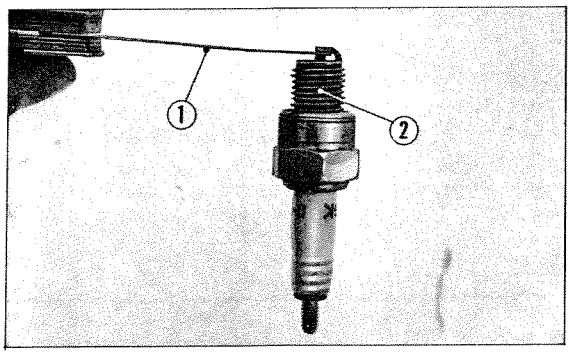
A dirty or damaged spark plug or plug electrode which are eroded will not product a good strong spark, therefore, the spark plug should be inspected periodically and cleaning and adjustment made. Spark plug with sooty wet electrodes, or electrodes covered with deposits will permit the high tension voltage to bypass the gap without sparking.

1. Cleaning

a. The use of the spark plug cleaner is the recommended method of cleaning the plugs, however, a satisfactory cleaning can be performed by using a needle or a stiff wire to remove the deposits and then wash in gasoline followed by drying with a rag or compressed air. **(Fig. 6–8)**



① Spark plug ② Spark plug cleaner
Fig. 6–8. Cleaning the spark plug



① Thickness gauge ② Spark plug
Fig. 6–9. Adjusting the spark plug gap

b. Adjust the spark gap after cleaning. Set the gap to **0.6–0.7 mm (0.024–0.028 in.)** by bending the electrode on the ground side. **(Fig. 6–9)**

Spark Plug Inspection

a. Check the spark intensity produced between the gap of the ground and the center electrodes by observing the color.

Blue spark ..... Good condition
Red spark ..... Poor condition

Cause due to :

1. Low supply voltage
2. Defective ignition coil
3. Defective spark plug
4. Absence of sparking may also be due to compression

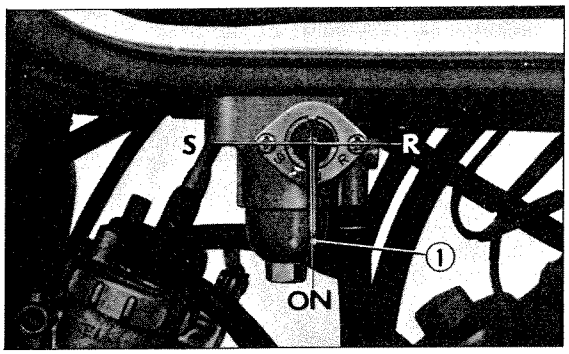
(Note)

1. Do not remove the deposits by burning.
2. When installing the spark plugs, clean the seating area free of oil or foreign matter and install finger tight before torquing with a plug wrench.
3. The spark plugs can be tested after adjustment with the plug tester. With the high tension voltage maintained constant, vary the test chamber pressure and inspect the condition of the spark.

6. FUEL SUPPLY SYSTEM

Restriction in the fuel supply system will prevent sufficient fuel flow to the carburetor and cause engine to sputter during acceleration or the engine may stall at high speed.

a. Check for sufficient supply of fuel in the tank.
b. Disconnect the fuel feed tube from the carburetor and check the fuel flow with the fuel cock in the ON or the RES position. **(Fig. 6–10)**
c. If the fuel flow is insufficient, remove the fuel tank from the body and clean internally. When the flow is still inadequate, remove the fuel cock, disassemble and clean.



① Fuel cock S : STOP R : RESERVE
Fig. 6–10.

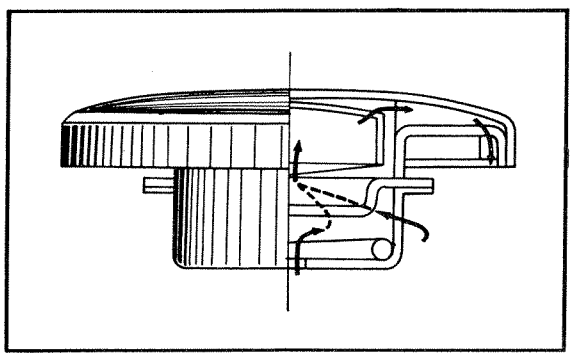


Fig. 6–11. Sectional view of the fuel tank cap

(Note)

1. The insufficient fuel flow may be caused by the plugged vent hole in the filler cap as well as the restriction in the fuel line. **(Fig. 6–11)**
2. The fuel cock is switched to RES (reserve) from the ON position when the fuel tank becomes empty. The reserve fuel supply contains approximately.
   CB/CL175 : 1.8 ℓ (3.8 U. S. pts., 3.2 Imp. pts.)
   CB/CL125 : 1.5 ℓ (3.2 U. S. pts., 2.6 Imp. pts.)

d. Fuel strainer cleaning

The accumulation of dirt and water in the fuel cock strainer cup will cause a restriction in fuel flow, resulting in drop in engine speed and malfunction of the carburetor. Clean the cock, strainer and the filter screen at periodic interval.

7. FUEL STRAINER CLEANING

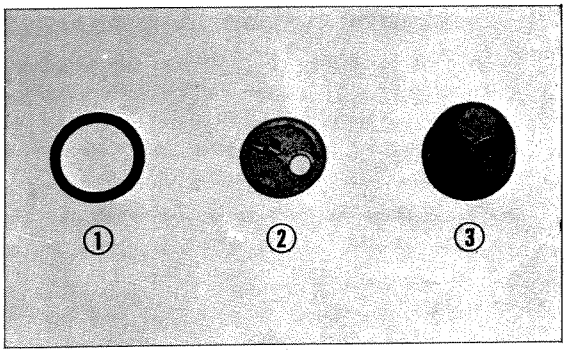
The foreign substances contained in the fuel passes through the fuel line from the fuel tank and enters the strainer cup. The foreign substances and water, if not arrest in the strainer cup will enter the cylinder and causes engine malfunction.

1. **Cleaning**

a. Set the fuel cock lever to the STOP position.

b. Remove the strainer cup.

c. Clean inside the strainer cup and filter screen. **(Fig. 6–12)**



① O ring ② Screen ③ Fuel strainer cup

Fig. 6–12. Cleaning the fuel strainer

8. OIL FILTER SCREEN CLEANING

The engine oil is filtered through a system of double filters, the centrifugal rotor oil filter and the pump filter screen before being supplied to the various parts of the engine. When the impurities have accumulated in the filters to prevent its proper function, the oil supply to the various parts are starved and eventually result in seizure and damage to the engine. It is therefore, important that the filters be cleaned periodically.

1. **Cleaning**

Remove the right crankcase oil filter cover to get access to the rotor oil filter and for access to the pump filter screen, remove the right crankcase cover. Clean the units in gasoline.

9. AIR CLEANAR SERVICING

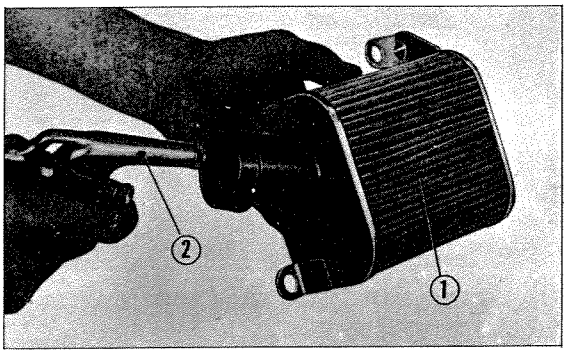
An air cleaner clogged with dust restricts the free passage of inlet air and result in power loss or drop in acceleration, therefore, to assure proper performance, periodic cleaning of the air cleaner should be made.

1. **Removal**

Remove the seat to get access to the air cleaner. Reler to section 49 B on page 118.

2. **Cleaning**

Tap the air cleaner lightly to loosen the dust and then blow dry compressed air from the inside or use a brush. **(Fig.6–13)**



① Air cleaner element ②Air gun

Fig. 6–13. Cleaning the air cleaner element

(Caution)

1. The air cleaner is made of paper and if torn or damaged, will cause dust to enter the engine cylinder, resulting in increased cylinder wear, therefore, replace with a new element.
2. Oil or water on the cleaner element will render it ineffective by restricting the flow of air and causing a drop in power.

0. CARBURETOR CLEANING AND ADJUSTMENT

A dirty carburetor or carburetor out of adjustment will cause poor engine performance. As an example, a carburetor set to a lean fuel air mixture will cause the engine to overheat while a rich mixture will cause engine to run sluggish. Further, overflowing of fuel from the carburetor is a possible fire hazard, therefore, periodic cleaning and adjustment should be performed.

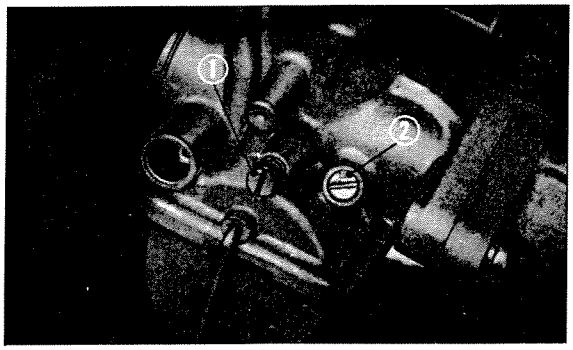
1. Cleaning

a. Disassemble the carburetor and wash the parts in gasoline.

b. Blow out the nozzles with compressed air and after cleaning and reassembly, make the adjustment.

2. Idle adjustment

The idle adjustment is performed with both the throttle stop screw and the air screw by the following procedure. **(Fig. 6–14)**



① Throttle stop screw ② Air Screw
Fig. 6–14. Adjusting the carburetor

a. Both carburetors must be adjusted simultaneously.

b. Set the throttle stop screw to the specified idling speed **(1100~1300 rpm)**.

c. Next, adjust the air screw by turning slowly in both directions to obtain the highest engine speed.
Turning the screw in will produce a rich fuel mixture.
Turning the screw out will produce a lean fuel mixture.

d. Reduce the engine speed which has gone up in to the specified RPM by regulating the throttle stop screw.

e. At this throttle stop screw setting, recheck the carburetor adjustment by manipulating the air screw.

f. After the idling adjustment has been completed, check the carburetor by snapping throttle and also check the throttle response.

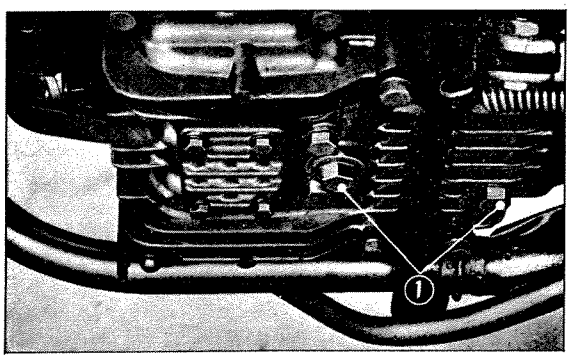
(Note)

1. All adjustment should be made after the engine has attained operating temperature.
2. Adjust both carburetors alternately through each of operations.

B. LUBRICATING

The purpose of lubrication is to prevent direct surface to surface contact of the moving parts by providing a film of oil between the surfaces and thereby, reducing friction and preventing wear. It also serves to cool the parts from the heat produced by friction.

Further, the lubricant penetrates between the piston and cylinder to form an oil film which act as a seal to maintain the cylinder pressure.



① Drain plug
Fig. 6–15. Removing the drain plug

1. PARTS NOT REQUIRING PERIODIC OIL CHANGE OR LUBRICATION

There are some parts which only require lubrication whenever the parts are disassembled for repair or replacement.

Steering stem steel balls and cone race
Throttle grip
Main stand
} Grease

2. ENGINE OIL CHANGE

Change oil at initial **300 km (185 mi)** and at every **1000 km (620 mi)** thereafter.

1. Oil Change

a. Remove the oil cap and drain the engine completely of oil by unscrewing the plug at the bottom of the engine. **(Fig. 6–15)**

(Note)

The oil should be drained while the engine is still warm. This will save time and assure proper draining.

b. The proper oil level is indicated by the oil level markers on the gauge when checked without screwing the cap down. **(Fig. 6–16)**

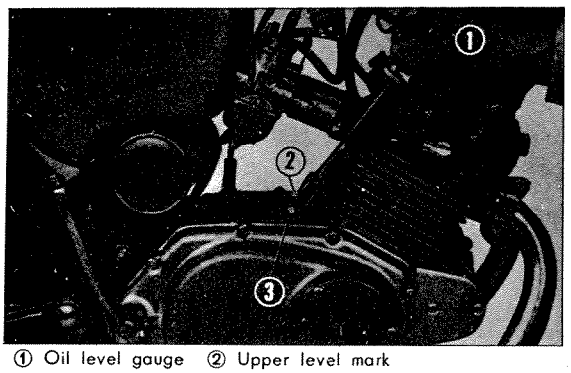
Oil capacity
CB/CL175 : 1.5 ℓ (3.2 U.S. pt, 2.7 Imp pt)
CB/CL125 : 1.2 ℓ (2.5 U.S. pt, 2.1 Imp. pt)

Oil Brand and Grade
The grade of oil for the season is shown on the upper crankcase. Use the oil corresponding to MS. DG in the A. P. I. service classification. **(Fig. 6–17)**

Under 0°C (32°F)..... SAE 10 W
0°~15°C (32°~60°F)... SAE 20 W
Over 15°C (60°F) ..... SAE 30

(Note)

1. Oil plays a prominent role in the life and the trouble free performance of an engine, therefore, it is very important that the oil change be performed periodically and refrain from using dirty oil over a long period. The more frequent the oil change, the better it is for the engine.
2. When refilling or adding oil, it should not be filled above the specified level. Overfilling will cause oil pumping with consequent fouling of the spark plug.
3. Use only recommended oil of proper grade.



① Oil level gauge ② Upper level mark
③ Lower level mark
Fig. 6–16. Oil level gauge

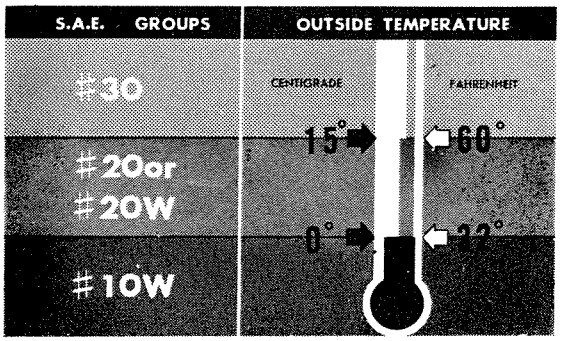


Fig. 6–17. Oil viscosity

C. DRIVE CHAIN ADJUSTMENT

An excessively slack drive chain will cause chain to whip, whereas an over-tension condition will produce resistance, resulting in lowering the power output at the rear wheel. Always maintain the chain at the specified tension.

1. Tension Checking Procedure

a. Check to see if the total vertical slack of the chain at the mid point is between **1–2cm (0.40–0.80 in).** **(Fig. 6–18)**

b. Perform adjustment by loosening the axle nut and then adjust with the adjusting bolts. **(Fig. 6–19)**

Turn to the right to decrease chain slack.

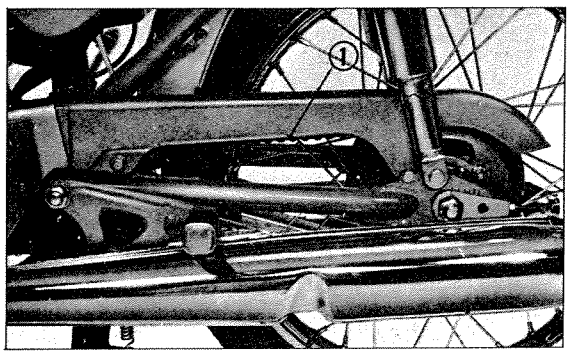
Turn to the left to increase chain slack.

(Note)

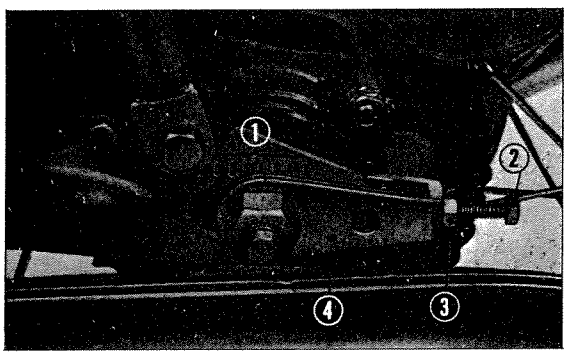
The adjusters should be at the same alignment marks for both the right and left sides.

c. Periodically clean and lubricate the chain.

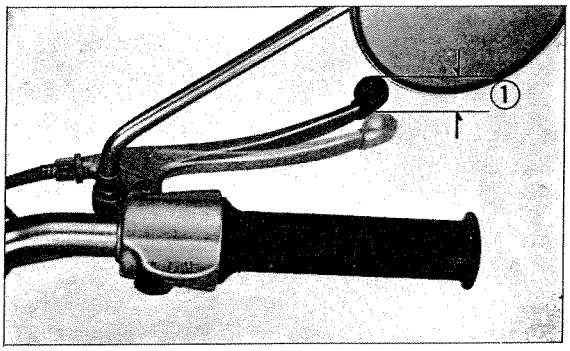
Lack of oil will cause the chain links to bind and cause undesirable effect on the sprocket.



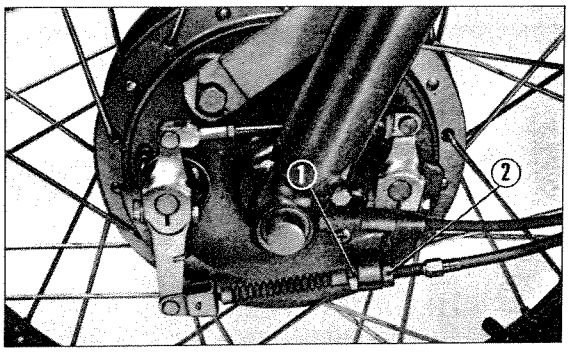
① Drive chain
Fig. 6–18. Inspecting drive chain tension



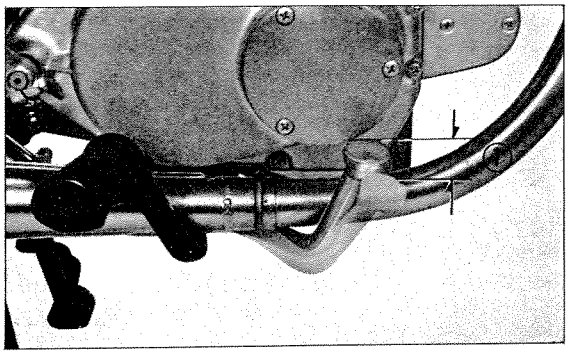
① Alignment mark ② Adjusting bolt ③ Lock nut
④ Adjuster
Fig. 6–19. Adjusting the drive chain



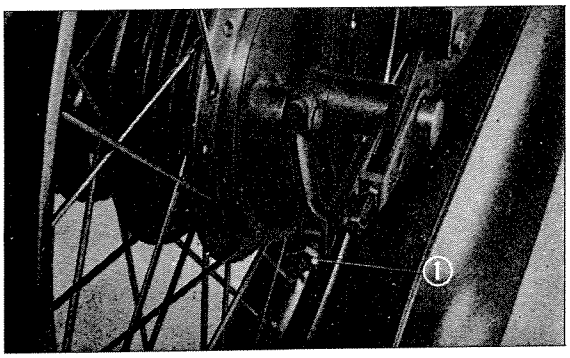
① Free play of the lever
Fig. 6–20.



① Lock nut ② Adjusting nut
Fig. 6–21. Adjusting the front brake lever



① Free play of the pedal
Fig. 6–22.



① Adjusting nut
Fig. 6–23. Adjusting the rear brake pedal

D. BRAKE ADJUSTMENT

Brakes are the life-line of the rider, therefore do not neglect to perform the periodic inspection, daily inspection and pre-riding inspection.

1. FRONT BRAKE ADJUSTMENT

1. Lever free play

a. The free play of the brake lever, that is, the distance between the normal attitude and the point where the brake starts to take hold should be **2–3 cm (0.73–1.12 in).**

Adjustment can be made at the cable adjuster at the brake lever, by loosening circular lock nut and screwing the adjuster in to increase the lever play and screwing the adjuster out to decrease the free play.

b. Adjustment is also made by the adjusting nut. **(Fig. 6–21)**

Turn to the right to decrease the free play.

Turn to the left to increase the free play.

2. REAR BRAKE ADJUSTMENT

1. Pedal free play

a. The free play of the brake pedal, that is the distance between the normal attitude and the point where the brake starts to take hold should be **2–3 cm (0.78–1.12 in) (Fig. 6–22)**

b. Adjustment is made by the adjusting nut. **(Fig. 6–23)**

Turn to the right to decrease pedal play.

Turn to the left to increase pedal play.

c. When the braking stroke is small, the following condition is apparent.

1. Too small a clearance between brake panel and shoe.
2. Loss of tension in the brake spring.
3. Brake lining damaged due to overheating.

E. SPOKE TORQUING

Riding with loose spoke will place an ununiform loading on the rim as well as on the remaining spokes, therefore, the spokes should be inspected frequently and retorqued when they become loose.

Raise the wheel off the ground and check each spoke for tightness, any spoke which are noticeably loose should be torqued to the same value as the remaining spokes so that the spokes are all of uniform torque. Use the spoke nipple tool and torquing wrench.

F. BATTERY INSPECTION

Loss of battery electrolyte occurs after long use and should be replenished periodically. When the electrolyte level drops to the point where the plates are exposed, it will result in rapid discharge to the battery. The battery should always be maintained at the proper electrolyte level.

1. Electrolyte Level

a. Remove the air cleaner cover disconnect the battery cable from the battery, remove the battery setting bolt and then remove the battery.

The standard battery used is the MBW3-12C (CB/CL125 : B36-6) (Mfg. by Yuasa Battery Co.)

b. Always maintain the electrolyte level above the lower electrolyte level marking on the battery. When replenishing, add distilled water to raise the electrolyte level to the upper marking. **(Fig. 6-24)**

c. Replenish by unscrewing the battery cap at the top and add the distilled water. All three battery cells should be filled to the same level.

2. Damaged and Dirty Battery Cable Connector

Inspect the connectors for cleanliness and damage. Clean the dirty connectors or replace damaged connectors before making connection and apply a coating of grease or vaseline on the connectors to prevent corrosion.

3. Specific Gravity

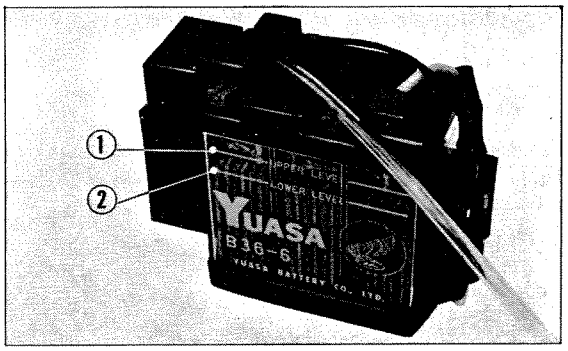
Check the specific gravity of all three cells of the battery with a hydrometer, if it measures below **1.200,** the battery should be charged.

A fully charged battery should indicate a specific gravity of 1.280 at electrolyte temperature of **20°C (68°F).**

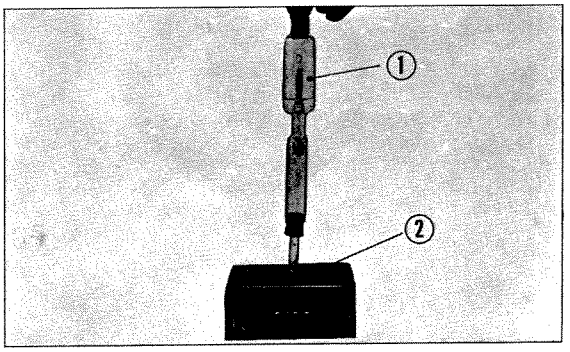
The specific gravity will vary somewhat with the temperature at the rate of 0.00017 specific gravity variation for each 1°C (1.8°F) charge in temperature. A rise in temperature will cause a decrease in specific gravity and vica versa. **(Fig. 6-25)**

(Caution)

1. Do not add any sulfuric acid to the distilled water when replenishing.
2. When the drop in electrolyte level is excessive, check the discharge rate of the battery.
3. Exercise care not to pinch the battery cable when making the battery installation.
4. Also, make sure that the vent tube is not pinched.
5. When the temperature drops, the capacity of the battery will lower and cause hard starting. In such a case, store the motorcycle in a warm place.



① Upper level mark ② Lower level mark
Fig. 6-24. Battery electrolyte level



① Hydrometer ② Battery
Fig. 6-25. Measuring specific gravity

G. SECURITY INSPECTION OF PARTS

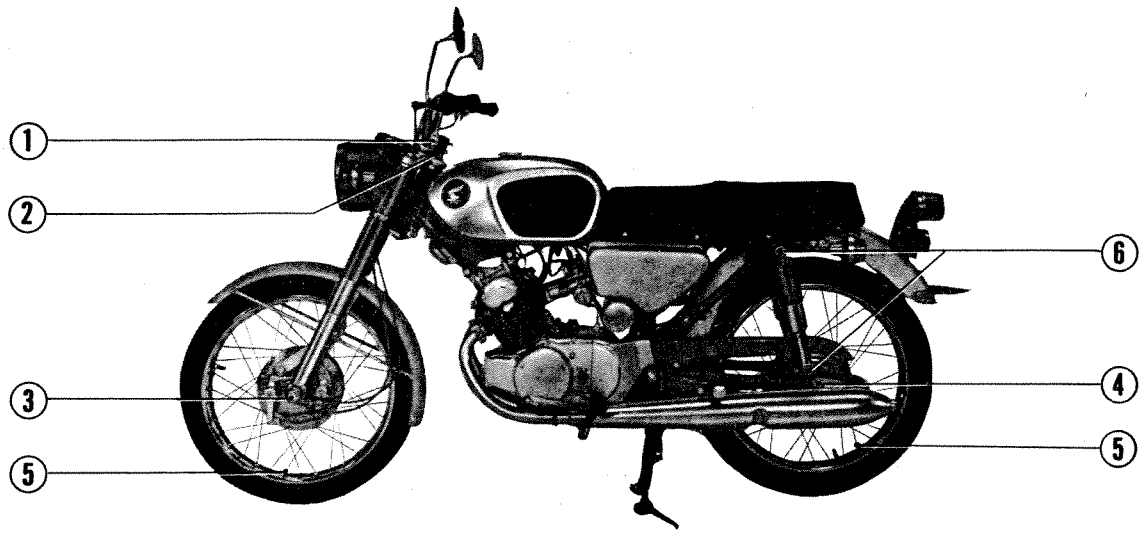


Fig. 6–26

① Handle installation nut	150～250 kg-cm (10.1～18.1 ft. lbs)
② Steering stem nut	900～1,200 kg-cm (65.1～86.8 ft. lbs)
③ Front axle nut	700～900 kg-cm (50.6～72.3 ft. lbs)
④ Rear axle nut	900～1,100 kg-cm (65.1～79.5 ft. lbs)
⑤ Wheel spokes	15～20 kg-cm (1.0～1.5 ft. lbs)
⑥ Rear cushion upper and rear nuts	200～350 kg-cm (14.5～25.3 ft. lbs)
⑦ Rear fork pivot bolt	500～600 kg-cm (36.1～43.4 ft. lbs)
⑧ Engine hanger bolts	8 mm : 200～300 kg-cm (15～21.7 ft. lbs) 10 mm : 300～400 kg-cm (21.7～28.9 ft. lbs)
⑨ Rear brake torque bolt nut.	150～250 kg-cm (10.8～18.1 ft. lbs) **(Fig. 6–26, 27)**

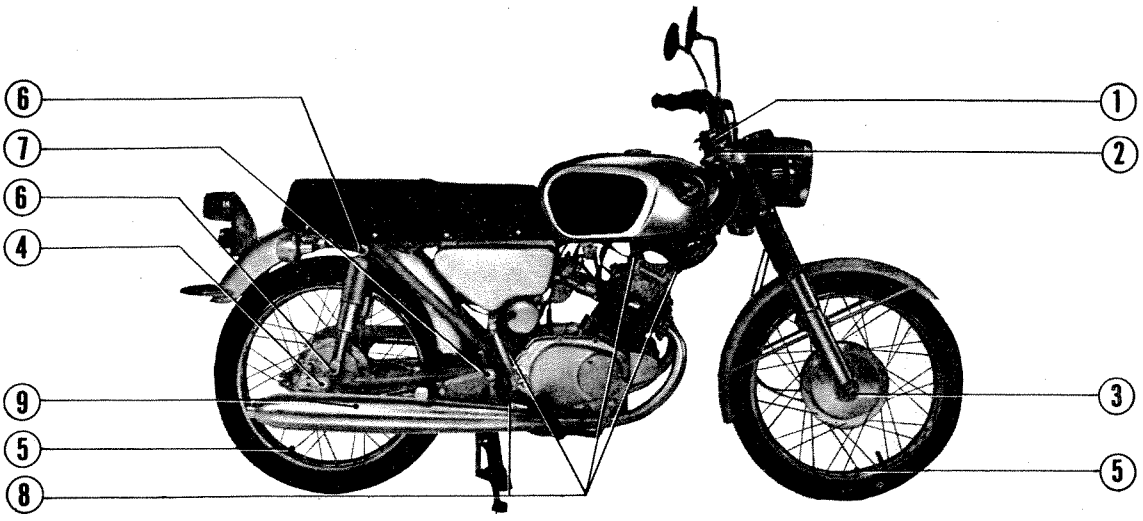


Fig. 6–27

6.2 PERIODIC INSPECTION AND SERVICING

A. Daily inspection

It is of utmost importance to perform periodical inspection and servicing so that troubles can be prevented and the motorcycle maintained in the best of operating condition. The inspection is classified into two types, namely, the pre-riding inspection performed by the rider daily and the periodical inspection which is performed at a regular schedule either by the rider or the service shop.

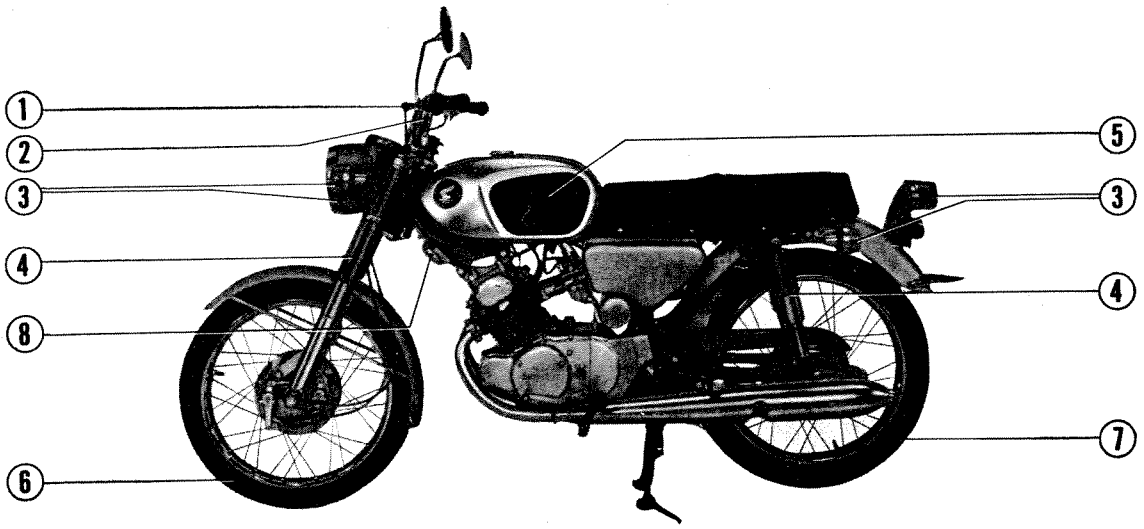


Fig. 6–28

The following items of inspection should be performed daily as a matter of habit. **(Fig. 6–28, 29)**

① Check for excessive looseness or sway of the handle.
② Check for proper free play of the clutch lever.
③ Check the function of the headlight, taillight, stoplight and turn signal lights.
④ Check for looseness and oil leaks in the front and rear cushions.
⑤ Check fuel quantity.
CB125/CB175 : 10.5 ℓ (2.8 U.S. gal., 2.3 Imp. gal.)
CL125/CL175 : 9.5 ℓ (2.5 U.S. gal., 2.1 Imp. gal.)
⑥ Front tire air pressure 1.8 kg/cm² (25.6 lbs/in²)
⑦ Rear tire air pressure 2.0 kg/cm² (28.5 lbs/in²)
⑧ Check the horn for sound and loudness.
⑨ Check for proper play of front brake lever.
⑩ Correct level and condition of engine oil
CB/CL175 : 1.5 ℓ (3.2 U.S. pt., 2.7 Imp. pt.)
CB/CL125 : 1.2 ℓ (2.5 U.S. pt., 2.1 Imp. pt.)
⑪ Check for proper play of the rear brake lever.

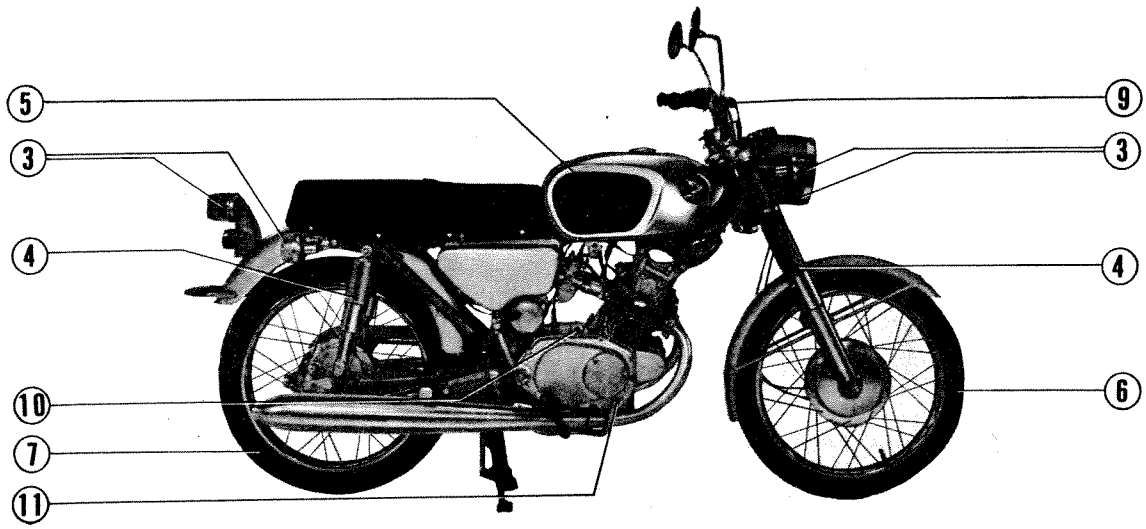


Fig. 6–29

(Note)

After inspecting the above items, attention should be paid to the following points when riding.

1. After starting, warm up the engine for two minutes at low speed.
   When the engine is cold, the viscosity of the oil is heavy and does not permit adequate lubrication to all parts
2. Do not race the engine needlessly.
3. Refrain from sudden acceleration or braking, tight cornering.
4. Check battery electrolyte level weekly without fail. Under the following conditions, checks should be made at a more frequent intervals.
   a. Riding in mountainous area.
   b. More frequent inspection is necessary when riding at high speed.

Periodic Inspection

Periodic inspection and servicing should be performed in accordance with the following table.

Items \ Intervals by speedometer km (miles)	300 (180)	1,000 (620)	2,000 (1,240)	3,000 (1,860)	4,000 (2,480)	5,000 (3,100)	6,000 (3,720)	7,000 (4,340)	8,000 (4,960)	9,000 (5,580)	10,000 (6,200)	11,000 (6,820)	12,000 (7,440)
Change engine oil	●	●	●	●	●	●	●	●	●	●	●	●	●
Adjust ignition timing				●			●			●			●
Adjust valve clearance	●			●			●			●			●
Adjust cam chain	●			●			●			●			●
Adjust clutch		●		●			●			●			●
Adjust carburetor				●			●			●			●
Adjust drive chain	●	●	●	●	●	●	●	●	●	●	●	●	●
Adjust front and rear brake		●	●	●	●	●	●	●	●	●	●	●	●
Clean spark plug				●			●			●			●
Clean oil filter	●						●						●
Clean air cleaner							●						●
Clean fuel strainer				●			●			●			●
Clean muffler							●						●
Check tightness of spokes		●					●						●
Retighten nuts and bolts							●						●
Adjust lighting equipments and horn				●			●			●			●
Check battery	●	●	●	●	●	●	●	●	●	●	●	●	●

7. TROUBLE SHOOTING

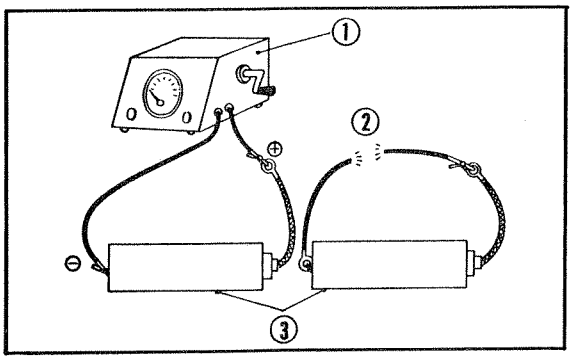
It is most important that the cause of any trouble be located as soon as possible and the proper corrective action taken so that the serviceable life of the engine will be extended.

Listed in the following tables are the troubles, probable causes and the corrective actions.

1. MAIN ENGINE TROUBLE

Troubles	Probable causes	Corrective action
Engine will not continue running.	1. Clogged fuel cock. 2. Plugged vent hole in fuel tank cap. 3. Improper tappet clearance. 4. The carburetor to intake manifold connecting tube damaged or leaking air at the joints. 5. Improper oil level	Clean and inspect.
Engine malfunctions after warm-up.	1. Defective spark plug 2. Defective ignition coil 3. Incorrect float level	1. Overheated spark plug, replace with plugs of correct heat range
Excessive smoke at high engine speed. (oil pumping condition)	1. Oil being pumped into the combustion chamber due to excessively worn or damaged cylinder, piston, rings and burned during combustion.	By diagnosing the noise, rebore and/or replace the parts as required.
Noise produced near the top of the engine	1. Worn piston and cylinder The clearance between the piston and cylinder is increased causing the piston skirt to slap against cylinder wall during combustion. 2. Worn connecting rod large end produces knocking 3. Tappet noise	1. Inspect and rebore cylinder and replace worn parts. 2. Replace connecting rod, large end bearing and crank pin. 3. Adjust to proper specification.
Overheating engine	1. Carbon deposit accumulation 2. Dirty or fouled spark plugs 3. Improper type spark plugs or gap 4. Insufficient lubrication to drive chain or chain tension too tight. 5. Oil level too low, poor or improper grade oil 6. Improper distributor point gap clearance, dirty, burnt 7. Excessive carbon accumulation in combustion chamber	1. Disassemble and clean 2. Clean, dry fouled plugs. Inspect carburetor if plugs continues to foul. 4. Adjust periodically, lubricate 7. Adjust periodically
Engine does not start (lack of compression)	1. Foreign object caught between valve and valve seat 2. Tappet stuck open 3. Ignition timing out of adjustment 4. Blown fuse	1. Disassemble and clean 2. Adjust 3. Adjust 4. Replace new fuse

Engine suddenly stalls while running	1. Clogged fuel cock 2. Fuel passage in the carburetor clogged 3. Dirty spark plugs (heavy carbon deposit or wet plug) 4. Ignition timing out of adjustment 5. Blown fuse	1. Disconnect the fuel line and check the fuel flow 5. If the fuse is blown, the pilots lamps will not light up
Oil becomes emulsified (especially during winter)	1. Water mixed with oil 2. Use of improper type oil 3. Clogged breather pipe	2. Use Honda Ultra Oil or equivalent oils **(Caution)** The oil, even though clean in appearance, may decomposed due to extended use and become thin, resulting in loss of lubricating properties. Should be replaced.
Increased fuel consumption. (Related symptoms) • Low exhaust noise, low back pressure at muffler • Low compression noticeable when kick starting.	1. Clogged air cleaner 2. Distributor point gap out of adjustment, dirty, burnt 3. Excess accumulation of carbon in cylinder exhaust port or inside muffler. 4. Ignition timing retarted 5. Worn cylinder, piston, piston ring.	1. Service air cleaner element 2. Adjust gap clearance, rework or replace burnt points 4. If ignition timing is retarded, the distributor points will open after the timing mark "F" has been passed. Adjust to proper setting
Insufficient engine rpm.	1. Fuel passage clogged 2. Defective spark plug (fouled) 3. Clogged muffler 4. Clogged air cleaner 5. Ignition timing out of adjustment	1. When the fuel passage in clogges, the spark plugs will be dry. 4. If the air cleaner is clogged, engine will not develop high RPM and the exhaust smoke becomes dark. Clean the air filter element periodically.
Poor throttle response (check first to see that the throttle cable is properly adjusted)	1. Clogged air cleaner. 2. Clogged exhaust port or exhaust pipe 3. Ignition timing out of adjustment 4. Tappet clearance out of adjustment	
Distributor points burnt	1. Points covered with oil 2. Improper ignition timing 3. Defective condenser 4. Condenser in poor condition	The condenser by method described below.



① Service tester ② Spark ③ Condenser
Fig. 7-1. Measuring condenser capacity

Condenser Test Method

After taking the resistance value with the manager, use a copper wire to short across the terminals, a good strong spark should be produced at the instance the leads are contacted.

Condenser Measurement

With the distributor points open, measure the resistance between the primary terminal and the outer shell, a good condenser should measure at least 5 M Ω resistance at standard temperature.

The condenser is defective if it measures below 1 M Ω

Determine the condition of the condenser by the above method.

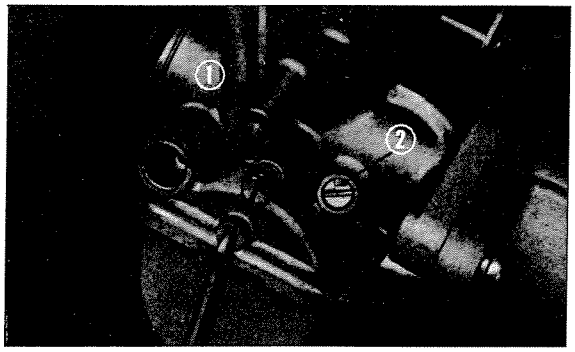
(Caution)

A loosely installed condenser or dirty terminal will cause ignition to malfunction.

2. CARBURETOR TROUBLE

Trouble	Probable cause	Corrective action
1. Fuel overflow (related symptoms) • Poor idling • Poor performance in all speed • Excessive fuel consumption • Hard starting • Low power output • Poor acceleration	1. Contaminated fuel	1. Remove float chamcer cover a. Remove locking clip and disassemble the float chamber b. Check for any dirt lodge in the valve seat, remove dirt by blowing with compressed air or by unscrewing the valve seat, and clean. c. Reassemble after cleaning in gasoline.
	2. Damaged valve or valve seat	2. Replace both the valve and valve seat with new parts.
	3. Punctured float	3. Remove the float chamber cover, take out the float and check for fuel in the float. (Checking procedure) • Shake the float • Immerse the float in hot water 90–95 C (194–263°F) for approximately 60 seconds, bubbles can be observed if the float is punctured.
	4. Float arm lip bent	4. Straighten the arm lip if bent and use the fuel level gauge to obtain the proper fuel level.

Trouble	Probable cause	Corrective action
2. Poor idling (related symptoms) • Poor performance at slow speed • Poor speed transistion • Poor response to throttle snapping • Poor performance at medium speed	1. Air screw improperly adjusted	1. Turn the air screw lightly to full close and check to see if the air screw was properly adjusted. Back off $1\frac{1}{8} \pm \frac{1}{8}$ turn from full close. Start the engine and turn the air screw in both direction not more than ¼ turn and set at the point where the engine rpm is highest (smooth).
	2. Throttle stop screw out of adjustment	2. Back off the throttle stop screw all the way and check for proper operation of the throttle, turn the stop screw in until the proper rpm is obtained.
	3. Clogged slow jet (including pilot jet)	3. Unscrew the plug, remove the pilot jet, check for any dirt, blow out with compressed air if dirty. Remove the slow jet and clean in the same manner.



① Throttle stop screw ② Air screw
Fig. 7-2. Adjusting idling (CB/CL 175)

Trouble	Probable cause	Corrective action
3. Poor performance at intermediate speed (related symptoms) • Flat spot • Poor acceleration • Excessive fuel consumption • Poor speed transition	1. Clogged slow jet (include, pilot jet)	1. Same corrective action as for poor idling
	2. Jet needle at improper setting	2. Adjust to the proper stage (3 stages)
	3. Improper fuel level	3. Replace worn jet needle with new part. Use the fuel level gauge and adjust the level by bending the float arm lip.
	4. Clogged air vent	4. Clean out the air vent

Trouble	Probable cause	Corrective action
4. Poor high speed performance (related symptoms) • Loss of power • Poor acceleration • Black exhaust smoke • Poor engine performance	1. Loose main jet or clogged with dirt 2. Clogged air vent tube 3. Choke closed 4. Fuel cock improperly positioned 5. Loose jet needle	1. Remove main jet and clean, install and tighten securely. 2. Clean out vent tube 3. Open the choke to full OPEN position 4. Position the fuel cock lever to full OPEN position. 5. If jet needle locking clip is broken, replace with a new part.
5. Hard starting	1. Excessive use of choke 2. Fuel overflow 3. Fuel cock in closed position	1. Start engine with choke valve fully open (clean spark plug) 2. Same corrective action as 1 above 3. Open fuel cock

3. ENGINE NOTICE

Trouble	Probable cause	Corrective action
1. Tappet noise	1. Excessive tappet clearance 2. Worn tappet	1. Adjust to proper clearance 2. Repair or replace
2. Piston slap	1. Worn piston, cylinder 2. Carbon deposit in combustion chamber 3. Worn piston pin bore, connecting rod small end	1. Repair or replace 2. Remove carbon 3. Repair or replace
3. Cam chain noise	1. Tensioner out of adjustment 2. Stretched chain 3. Worn teeth on cam sprocket, timing sprocket	1. Readjust 2. Replace 3. Replace
4. Clutch knock	1. Worn clutch friction disc outer tab area 2. Worn clutch center spline	1. Repair or replace 2. Repair or replace
5. Crankshaft noise	1. Crankshaft end play 2. Worn crankshaft bearing	1. Repair or replace 2. Repair or replace
6. Engine noise (magneto noise)	1. Chafing between kick arm and oil seal 2. Breaker point noise, defective slipper surface	1. Repair 2. Replace A.C. generator assembly

4. STEERING SYSTEM

Trouble	Probable cause	Corrective action
1. Handle operates heavy	1. Overtorqued steering cone race 2. Damaged steering steel balls 3. Bent steering stem	1. Readjust 2. Replace 3. Repair
2. Front or rear wheel	1. Loose bearing in front or rear wheel 2. Bent rim on front or rear wheel 3. Loose spoke 4. Worn rear fork pivot bushing 5. Twisted frame 6. Drive chain adjuster out of adjustment 7. Defective tire	1. Check for wear and replace as required 2. Straighten by loosening or tightening the spokes. 3. Replace if uncorrectable 4. Replace 5. Repair or replace 6. Adjust to proper value 7. Replace
3. Pulls to one side	1. Right and left cushion not balanced, front or rear. 2. Misalignment of front and rear cushions 3. Bent front fork 4. Bent rear fork 5. Bent front axle 6. Loose component in steering system	1. Replace 2. Replace 3. Repair 4. Repair 5. Repair 6. Repair

5. CLUTCH SYSTEM

Trouble	Probable cause	Corrective action
1. Clutch slips	1. Loss of tension in clutch springs 2. Worn or warped clutch plate 3. Worn or warped clutch friction disc	1. Replace 2. Replace 3. Repair or replace
2. Clutch will not disengage	1. Excessively worn clutch friction disc 2. Improper adjustment	1. Repair or replace 2. Adjust to proper specification
3. Clutch out of adjustment (engine stalls)	1. Warped clutch plate or friction disc 2. Uneven tension of clutch spring	1. Repair 2. Measure tension and repair or replace

6. GEAR CHANGE SYSTEM

Trouble	Probable cause	Corrective action
1. Gears will not engage	1. Broken lug on shift drum 2. Broken lug on shift arm broken 3. Unsmooth movement between shift drum and shift fork 4. Broken shift fork 5. Broken lug on counter shaft second and third gear 6. Broken lug on main shaft second and third gear	1. Replace 2. Replace 3. Repair 4. Replace 5. Replace 6. Replace
2. Gear change pedal not returning	1. Broken shift return spring 2. Gear shift spindle rubbing against case or cover	1. Replace 2. Repair
3. Gear jump out of engagement	1. Worn lug on counter shaft second and third gear 2. Worn lug on main shaft second and third gear 3. Worn or bent shift fork 4. Broken or loss of tension of shift drum stopper spring	1. Repair or replace 2. Repair or replace 3. Replace 4. Replace

7. SUSPENSIONS

Trouble	Probable cause	Corrective action
1. Soft suspension	1. Loss of spring tension 2. Excessive load	1. Replace
2. Hard suspension	1. Ineffective front cushion damper 2. Ineffective rear cushion damper	
3. Suspension noise	1. Cushion case rubbing 2. Interference between cushion case and spring 3. Damaged cushion stopper rubber 4. Insufficient spring damper oil (front and rear)	1. Inspect cushion spring and case 2. Repair 3. Replace 4. Replace

8. BRAKE SYSTEM

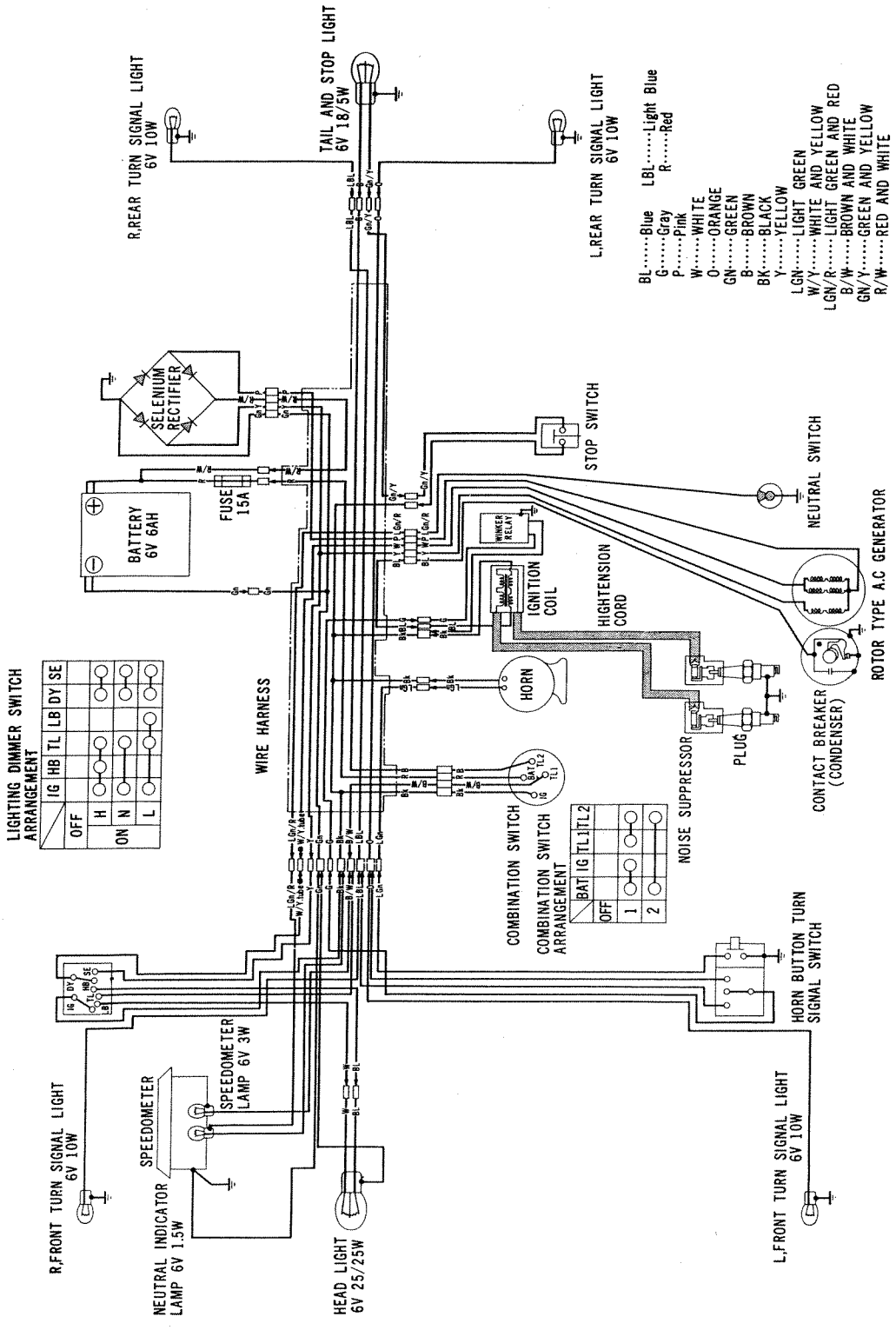
Trouble	Probable cause	Corrective action
1. No range of adjustment	1. Worn brake shoe 2. Worn brake cam slipper 3. Worn brake cam	1. Replace 2. Replace 3. Replace
2. Unusual noise when applied	1. Worn brake shoe 2. Foreign object lodged in brake lining 3. Pitted brake drum surface 4. Worn brake panel bushing	1. Replace 2. Remove foreign object 3. Repair 4. Replace
3. Ineffective braking	1. Inoperative front brake cable 2. Loose brake rod 3. Improper shoe contact 4. Dirt or water inside the brake 5. Oil or grease on brake lining	1. Remove foreign object from cable and inspect for bends 2. Inspect and repair 3. Inspect and repair 4. Inspect and repair 5. Inspect and repair

9. DRIVE CHAIN

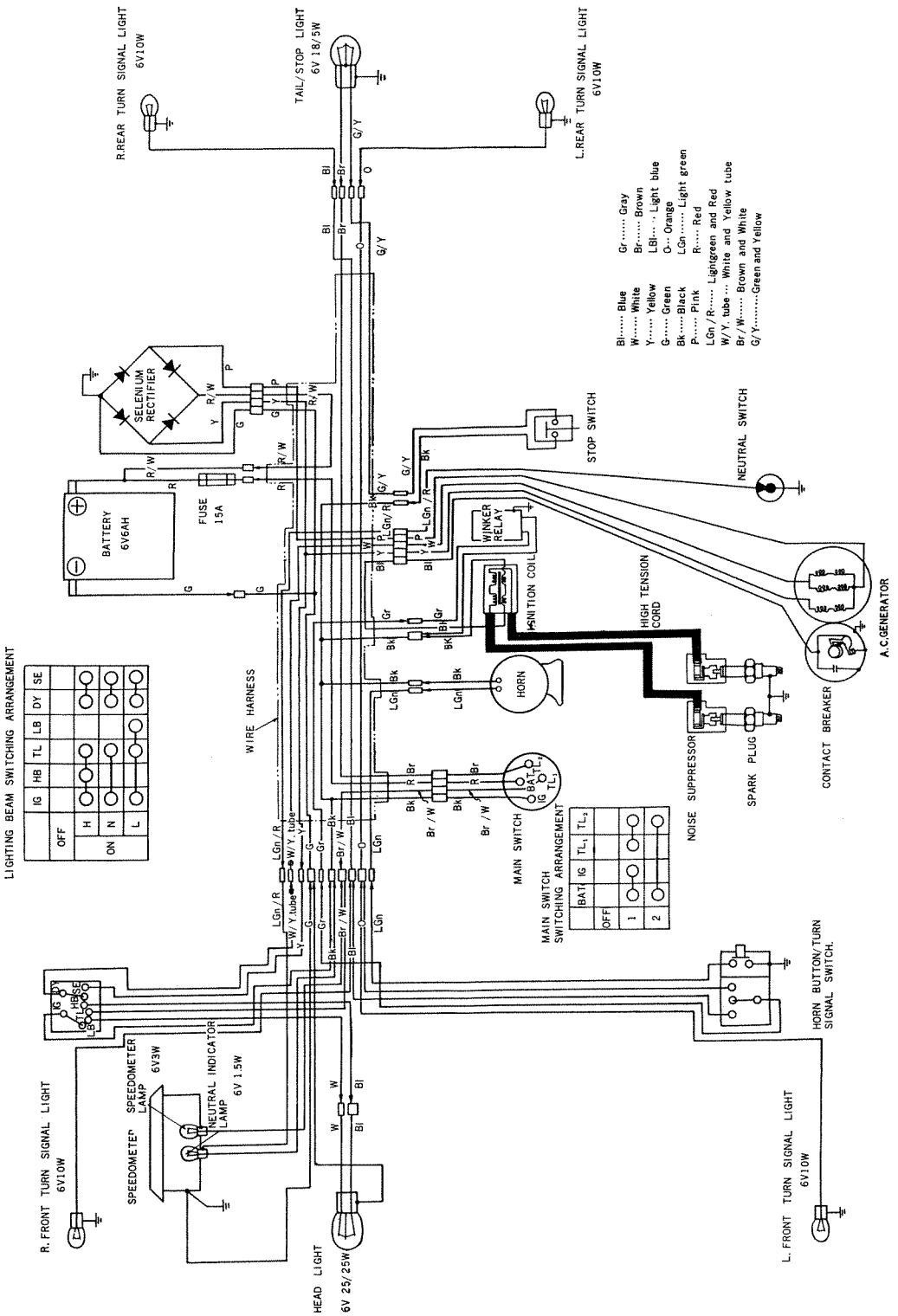
Trouble	Probable cause	Corrective action
1. Drive chain stretch rapid	1. Excessive load applied to chain (during riding or gear change) 2. Due to oil leak, excessive lubrication periodically	1. Correct riding technique 2. Perform proper lubrication
2. Excessively worn sprocket	1. Driving with worn sprocket 2. Sprocket malfitted to drive chain	1. Clean sprocket area 2. Replace with proper sprocket

8. WIRING DIAGRAM

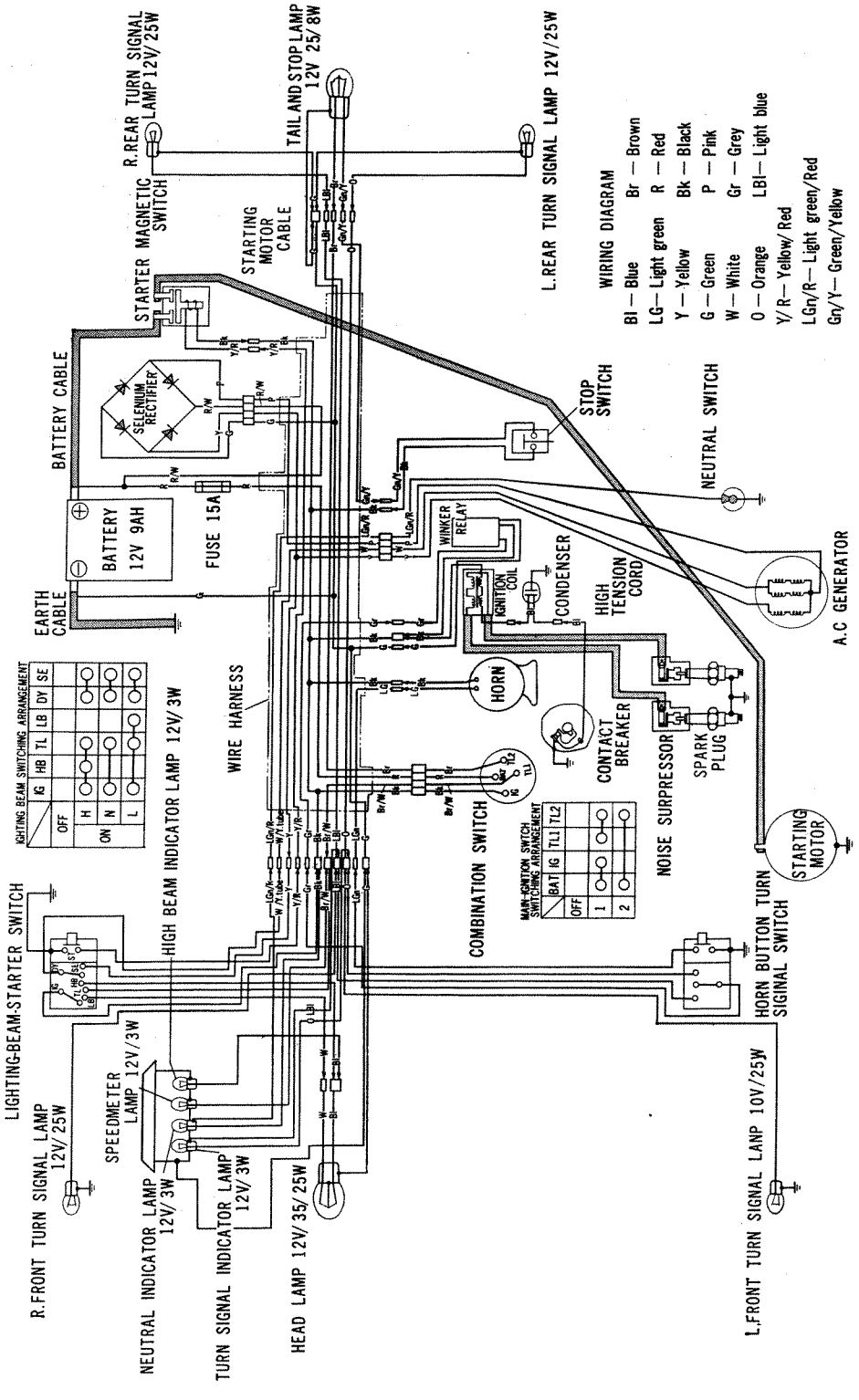
CB125 WIRING DIAGRAM



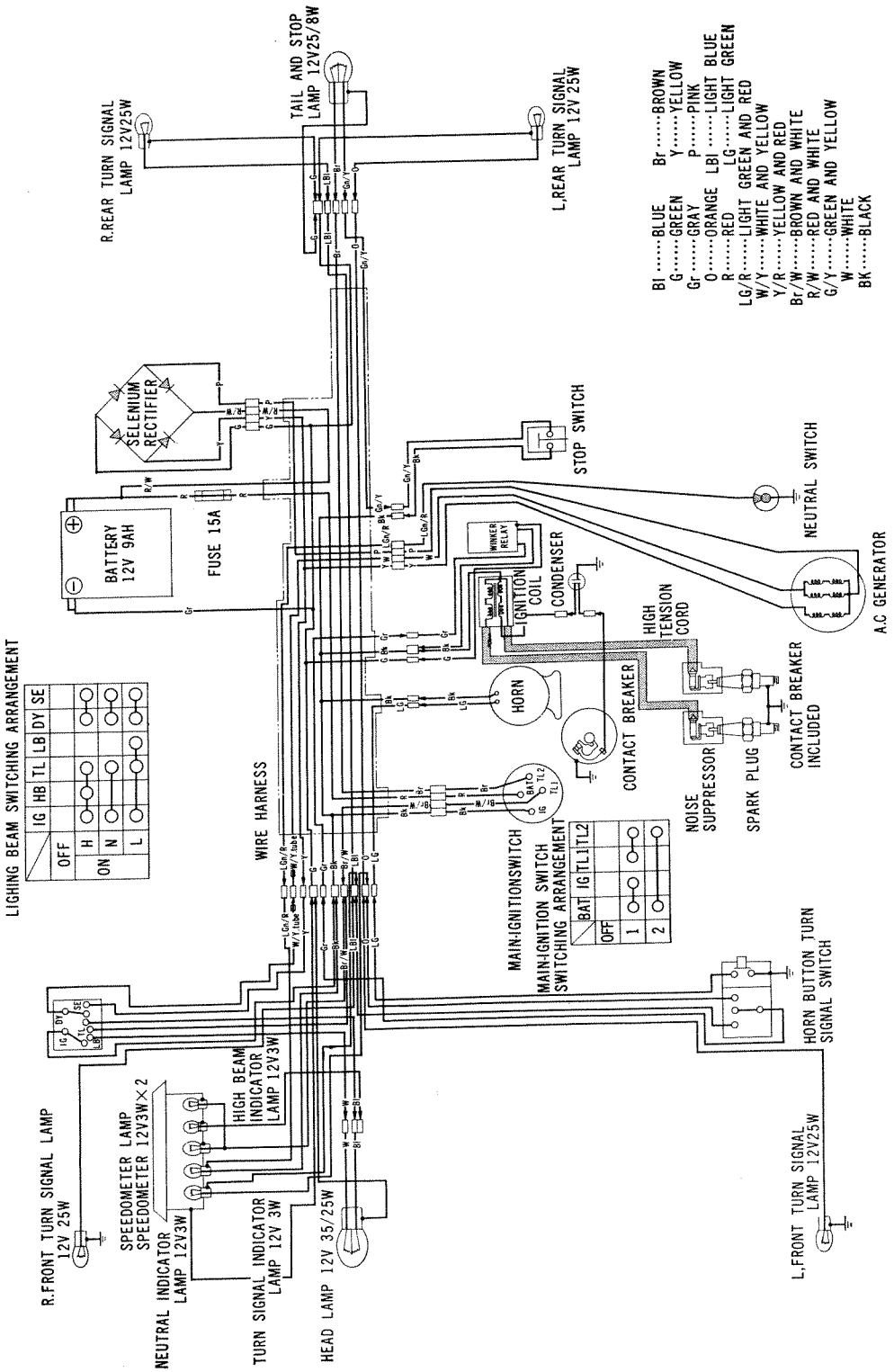
CL125 WIRING DIAGRAM



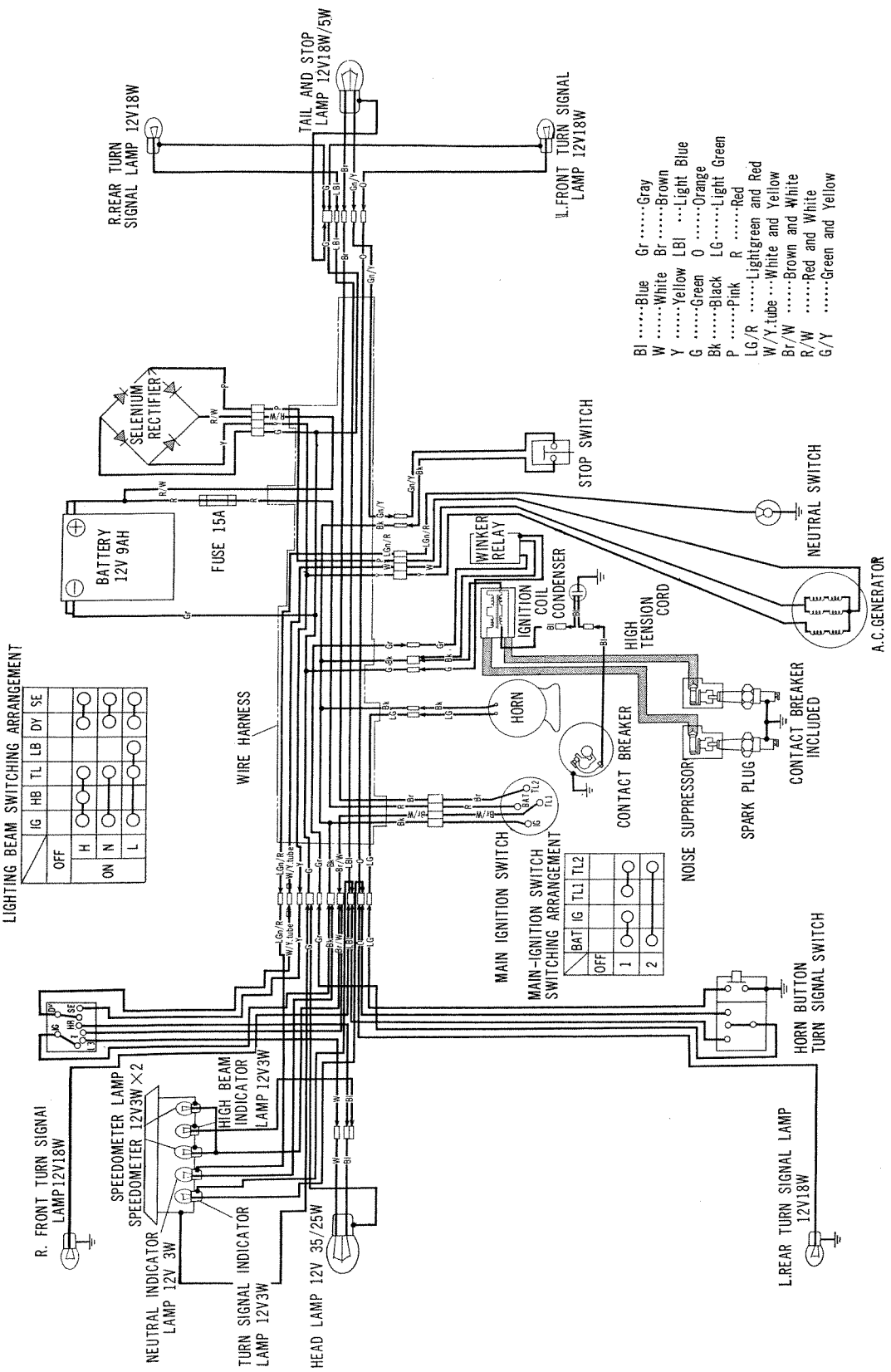
CB175 WIRING DIAGRAM



CL175 WIRING DIAGRAM (General Export type)



CL175 WIRING DIAGRAM (U.S.A. Export type)



9. CB/CL125, 175K3

9.1 DISMOUNTING AND MOUNTING ENGINE

1. DISMOUNTING ENGINE

〔CB/CL175〕

1. Remove the step bar, kick starter pedal and gear change pedal.
2. Remove the muffler.
3. Remove the spark plug caps from the spark plugs.
4. Remove the cylinder head R. side cover and remove the tachometer cable by unscrewing the setting screw.
5. Remove the seat.
6. Shut off the fuel cock and remove the two fuel tubes from the carburetors.
7. Uncouple the electric leads connecting. **(Fig. 9–1)**
8. Loosen the air cleaner tube bands and remove the remove the throttle valve from the carburetor.
9. Remove the L. crankcase rear cover and remove drive chain at the joint clip.
10. Remove the clutch cable from the clutch lever. **(Fig. 9–2)**
11. Remove the stater magnetic switch. (CB175)
12. Pull out the engine hanger bolts (9 each) and remove the engine to the right side. **(Fig. 9–3)**

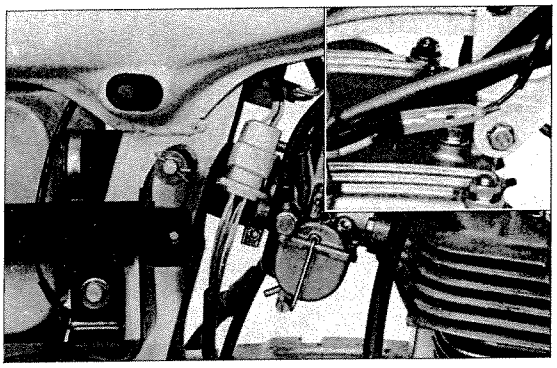
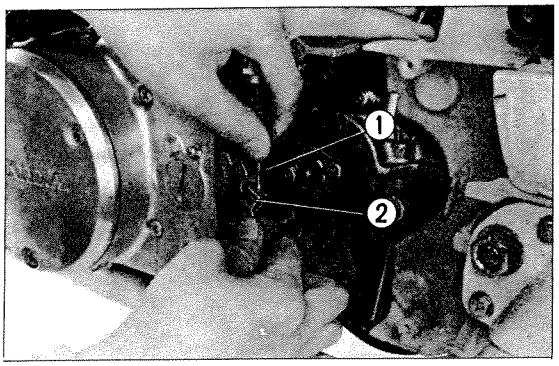
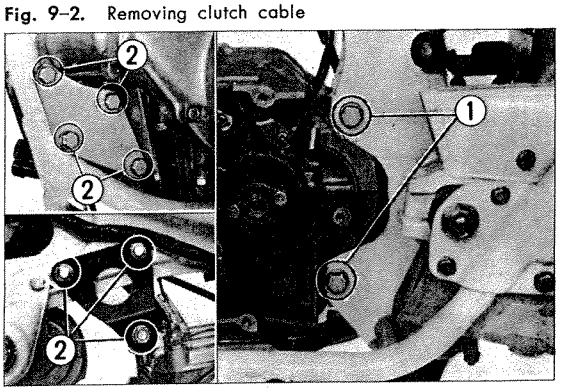


Fig. 9–1. Disconnecting electrical leads



① Clutch cable ② Clutch lever
Fig. 9–2. Removing clutch cable



① 10 mm bolt ② 8 mm bolt
Fig. 9–3. Removing engine hanger bolts

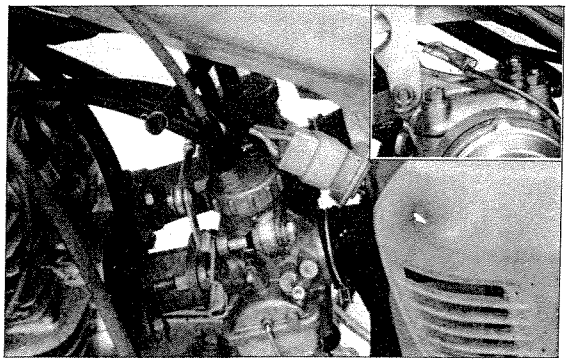
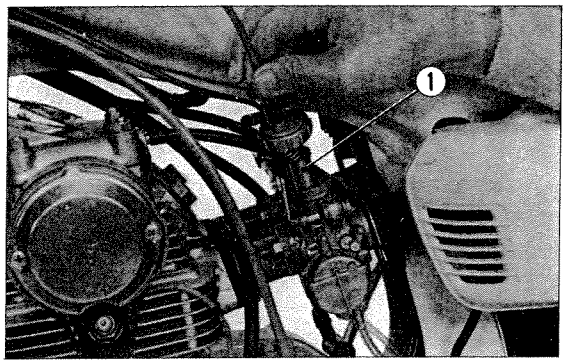
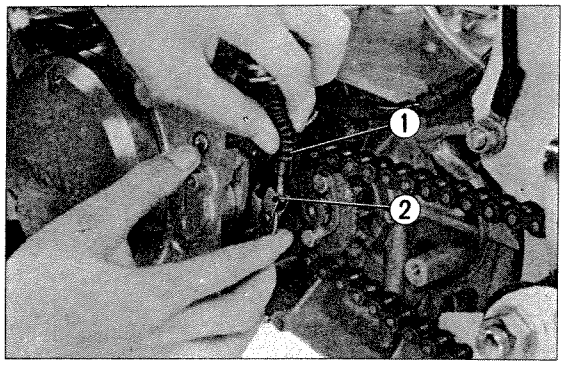


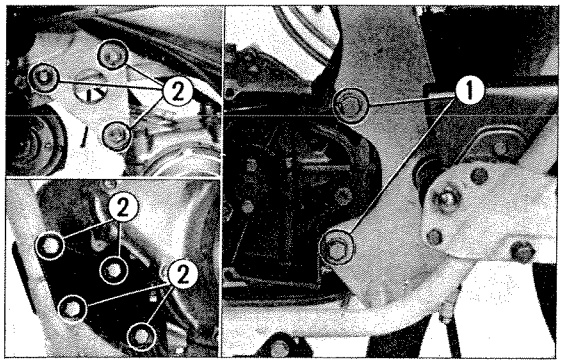
Fig. 9–4. Disconnecting electrical leads (connectors)



① Throttle valve
Fig. 9–5. Removing throttle valve



① Clutch cable ② Clutch lever
Fig. 9–6. Removing clutch cable



① 10 mm bolt ② 8 mm bolt
Fig. 9–7. Removing engine hanger bolts

〔CB/CL125〕

1. Remove the step bar, kick starter pedal and gear change pedal.
2. Remove the muffler.
3. Remove the spark plug caps from the spark plugs.
4. Remove the tachometer cable from the right side of the cylinder head.
5. Remove the seat.
6. Shut off the fuel cock and remove the fuel tubes from the carburetors.
7. Uncouple the electrical leads at the connectors. **(Fig. 9–4)**
8. Loosen the air cleaner connecting tube and throttle valve from the carburetor. **(Fig. 9–5)**
9. Remove the L. crankcase rear cover and remove the drive chain.
10. Remove the clutch cable from the clutch lever. **(Fig. 9–6)**
11. Remove the starting motor cable from the starter magnetic switch. (CB125)
12. Pull out the engine hanger bolts (9 each) and remove the engine to the right side. **(Fig. 9–7)**

2. MOUNTING ENGINE

Perform the mounting in the reverse order of removal, however, exercise care on the following points.

1. Remove the corrosion from the starting motor cable back to the specified location before mounting with a bolt.
2. The drive chain joint clip should be installed so that the open end will face opposite to the direction of rotation.

9.2 ENGINE MECHANISM [CB/CL175]

1. CYLINDER HEAD AND CYLINDER

A. Disassembly

1. Drain oil from the engine.
2. Remove the cylinder head tightening nuts (six nuts and two cap nuts), tightening bolt and cylinder head cover.
3. Rotate the dynamo rotor so that the cam chain joint is toward the top of the cam sprocket and then disconnect the cam chain.

(Note)

Attach the wire to both ends of the chain before disconnecting.

4. Remove the cylinder head.
5. Remove the cylinder setting bolt and remove the cylinder.

B. Inspection

Refer to page 21.

C. Reassembly

1. Push the cam chain tensioner, mounted on the cylinder head, all the way in and lock in place with the lock bolt. **(Fig. 9–9)**
2. Install the cylinder head on the cylinder. **(Fig. 9–10)**

(Note)

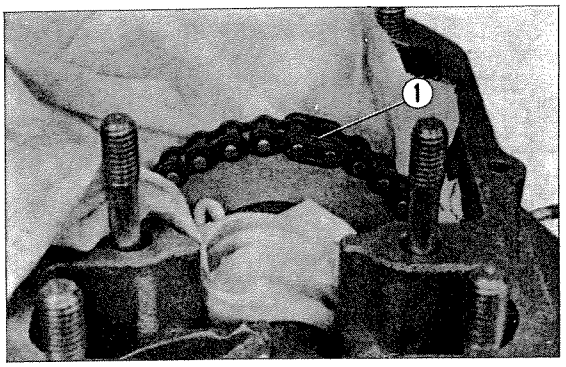
Make sure that the four dowel pins are installed into the top of the cylinder, two O rings and the gasket are properly installed.

3. To install the cam chain, turn the generator to align the "T" mark on the rotor to the index mark on the stator. The will position the piston to the top-dead-center. Position the "O" mark on the cam sprocket to the top position, connect the chain with the joint clip. The position of the clip must be in the position shown in **Fig. 9–8.**

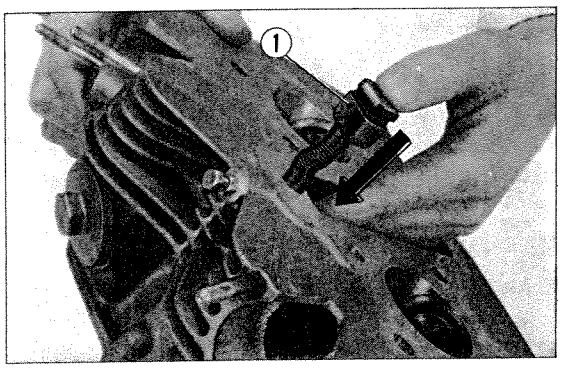
(Note)

When both sides of the cylinder head cover are removed, install the cylinder head side covers before connecting the cam chain.

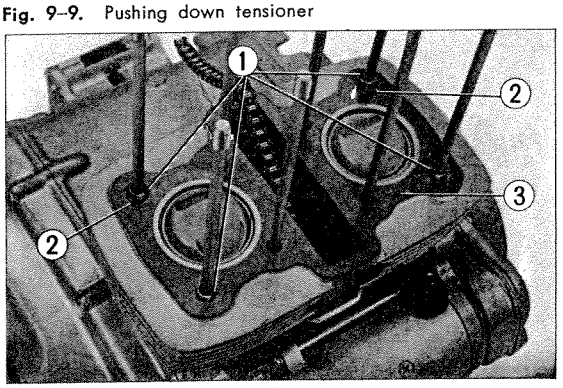
Loosen the valve tappet adjuster before installing the side cover.



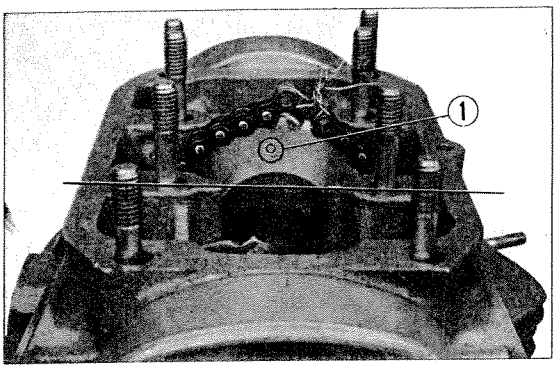
① Cam chain joint
Fig. 9–8. Removing cam chain



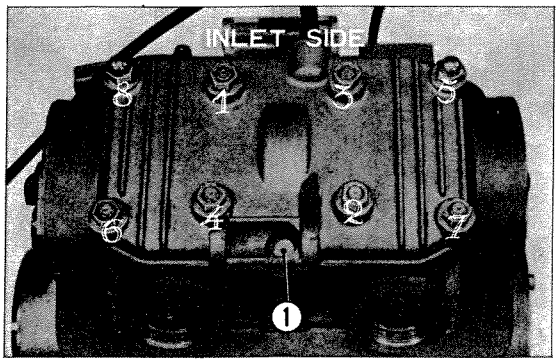
① Cam chain tensioner
Fig. 9–9. Pushing down tensioner



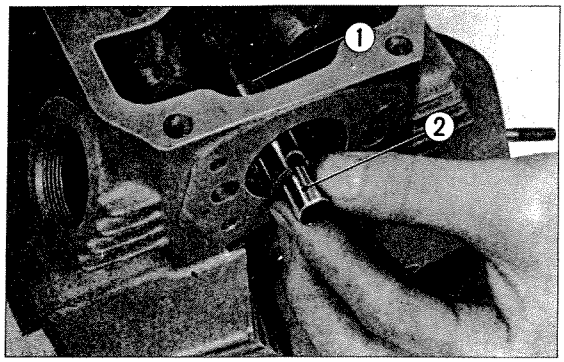
① Dowel pin ② O ring ③ Gasket
Fig. 9–10.



① "O" mark
Fig. 9–11. Installing cam chain



① 6 mm bolt
Fig. 9–12. Nut tightening sequence



① Camshaft ② Knock pin
Fig. 9–13. Removing knock pin

4. Install the cylinder head cover and tighten the mounting nuts. (Eight cap nuts and one hex. bolt)

(Note)

Perform the torquing in a diagonal pattern, starting from the inside and working outward.

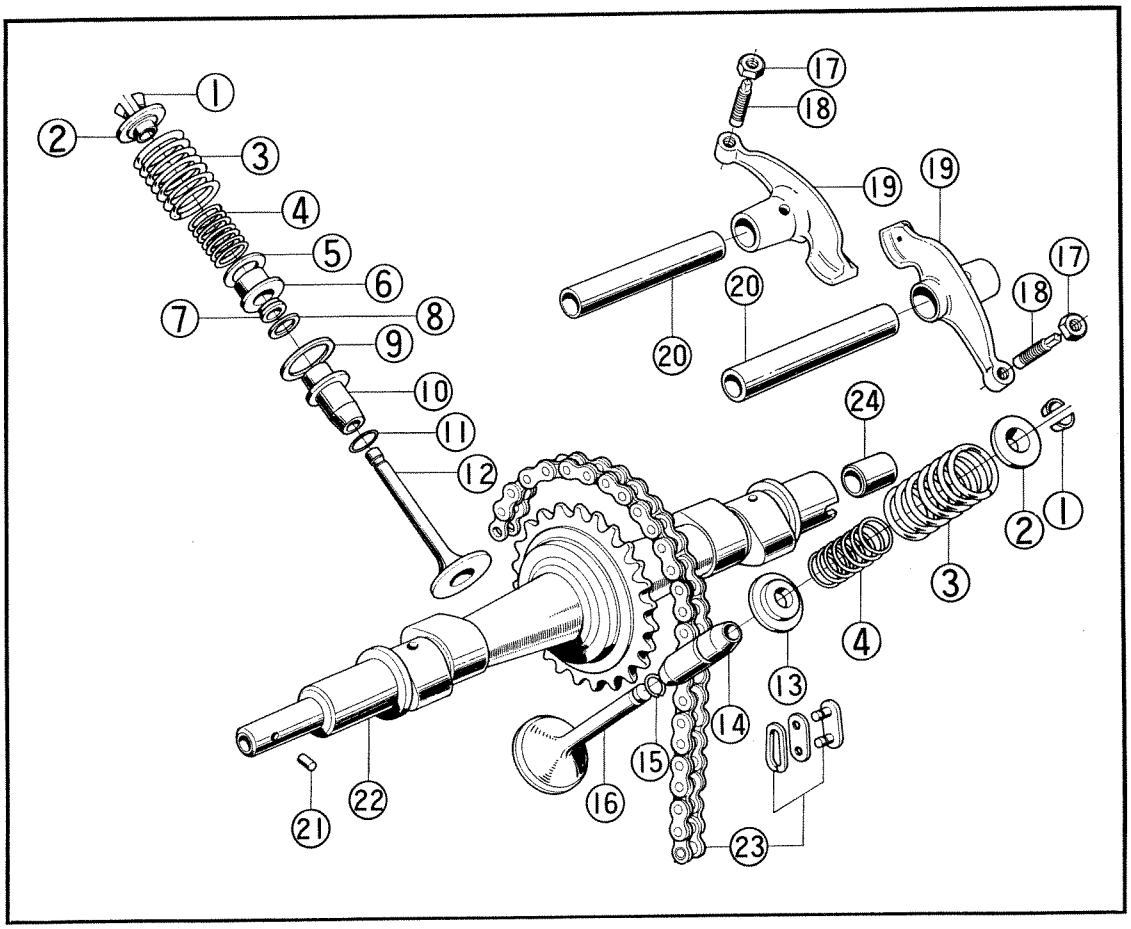
Torque to **160~210 kg-cm (11.6~15.2 ft-lbs)**

5. Loosen the cam chain tensioner lock bolt and then retighten; followed by setting the lock nut. (To tighten the cam chain)

6. Adjust the valve tappet clearance. Adjust to **0.05 mm (0.002 in.) cold setting.**

Camshaft

When removing the camshaft from the cylinder head, first remove the pin at the right side of the camshaft and then remove from the cylinder.



① Valve cotter ② Valve retainer ③ Outer valve spring ④ Inner valve spring ⑤ Inner seal ⑥ Valve stem seal cap ⑦ Valve stem seal ⑧ Stem seal rubber cushion ⑨ Valve spring seat B ⑩ Exhaust valve guide ⑪ O ring ⑫ Exhaust valve ⑬ Valve spring seat ⑭ Inlet valve guide ⑮ Valve guide clip ⑯ Inlet valve ⑰ Valve tappet adjusting lock not ⑱ Valve tappet adjuster ⑲ Rocker arm ⑳ Rocker arm shaft ㉑ Knock pin ㉒ Camshaft ㉓ Cam chain ㉔ Dowel pin

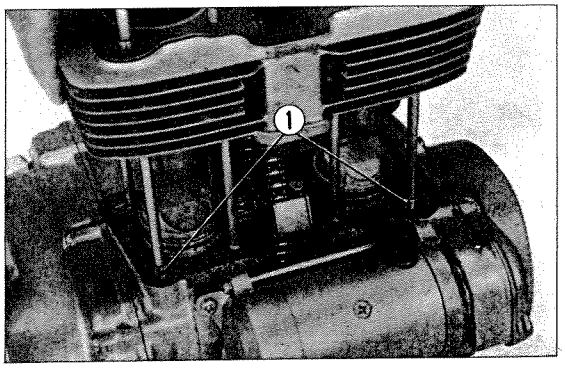
Fig. 9–14.

Valve

Assemble the inlet and exhaust valve assembly components in accordance with **Fig. 9–14**, exersize care not to mismatch.

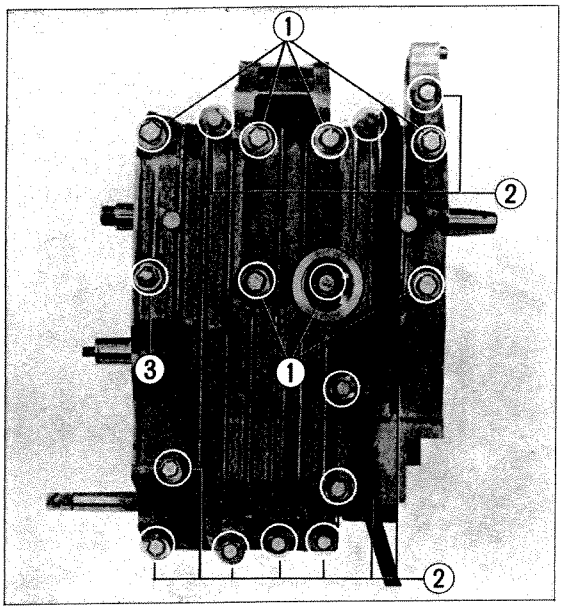
Cylinder

When assemblying the cylinder, install one each dowel pin on the right and left side.



① Dowel pin

Fig. 9–15.



① 8 mm bolt ② 6 mm bolt ③ 8 mm cap nut
Fig. 9–16. Removing lower crankcase

2. CRANKCASE

A. Disassembly

1. Remove the cylinder head and cylinder in accordance with 9.1 on page 164.
2. Remove the L. crankcase cover, A.C. generator, and starting sprocket in accordance with section 3.3 on page 32~33.
3. Remove the R. crankcase cover, clutch, oil pump in accordance with section 3.4 on page 34~36.
4. Remove the gear shift spindle and kick starter spring.
5. Loosen the crankcase setting nut and bolts and separate the lower crankcase.

(Note)

Crankcase tightening bolt is installed under the oil drain plug, therefore, do not forget to remove the bolt. **(Fig. 9–16)**

B. Inspection

Refer to section 3.6 C on page 41.

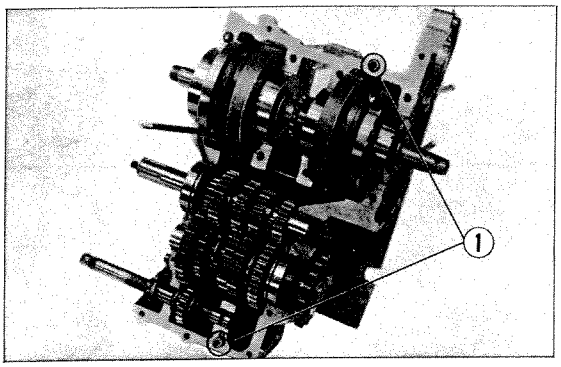
C. Reassembly

Assemble the crankcase in the reverse order of disassembly with attention paid to the following point.

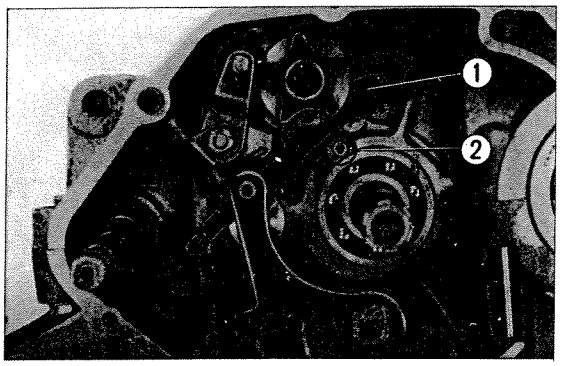
Clean the crankcase and inspect the mating surfaces of the crankcase for sign of leaks, scratches and other damages.

Apply liquid gasket to the mating surfaces of the crankcase, assemble after drying.

Make sure that the two dowel pins are installed on the upper crankcase.



① Dowel pin
Fig. 9–17.



① Gear shift arm ② Projection
Fig. 9–18.

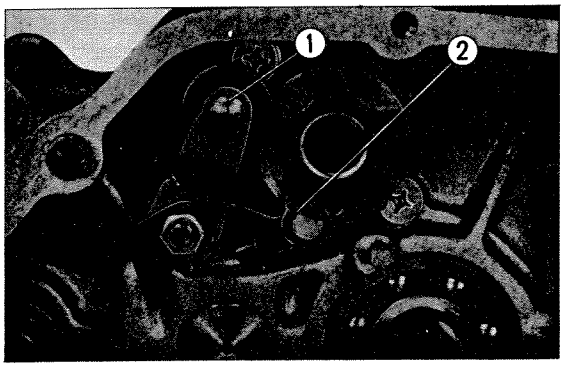
3. GEAR SHIFT MECHANISM

To prevent the gear shift arm from disengaging with gear shift drum, a projection is provided on the upper crankcase to limit jumping of gear shift arm. Further to facilitate shifting into the neutral gear, the neutral stopper is made to fit the drum directly. **(Fig. 9–18)**

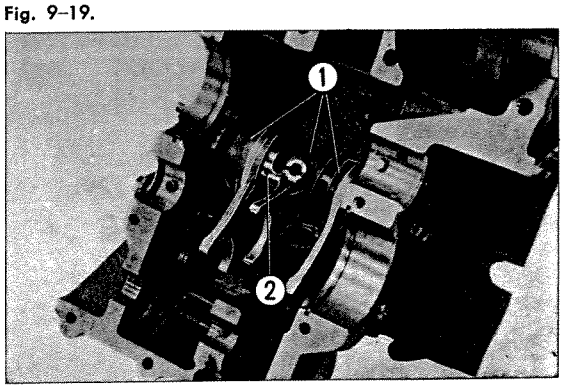
A. Disassembly

1. Remove the cylinder head and cylinder in accordance with 9.2-1 A on page 164.
2. Remove the R. crankcase cover.
3. Remove the clutch and oil pump in accordance with 3. 4. 2. B on page 35~36.
4. Remove the L. crankcase cover, A.C. generator, and starting sprocket in accordance with section 3. 3 on page 32~33.
5. Remove the upper crankcase in accordance with section 9. 2 A on page 167.
6. Separate the transmission gears from the upper crankcase.
7. Remove the gear shift drum stopper, neutral switch from the gear shift drum. **(Fig. 9–19)**

Remove the shift fork clip, shift fork knock pins and pull out the shift drum. **(Fig. 9–20)**



① Gear shift drum stopper ② Neutral stopper
Fig. 9–19.

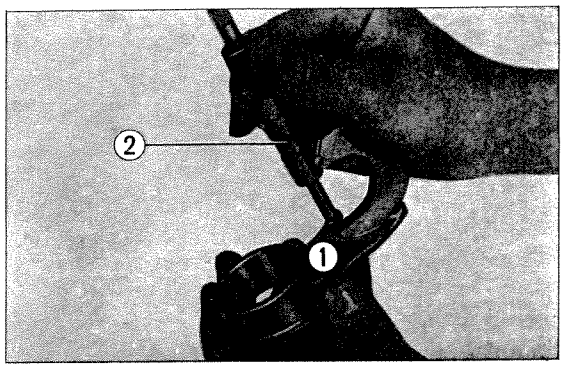


① Gear shift fork ② Gear shift drum
Fig. 9–20. Removing gear shift drum

B. Inspection

1. Measure the thickness of the gear shift fork tip. Use a vernier caliper. **(Fig. 9–21)**

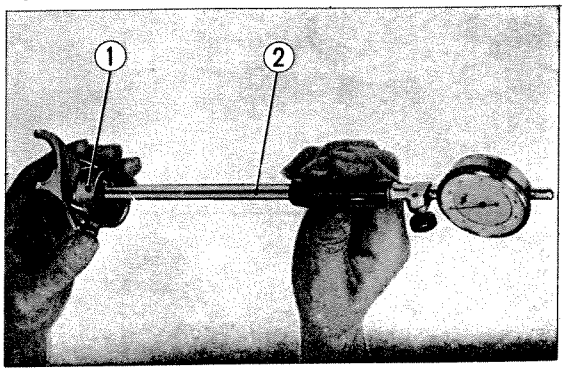
	Standard Value	Serviceable Limit
R. L and center shift fork	0.211~0.2142 (5.36~5.44)	Replace if under 0.203 (5.16)



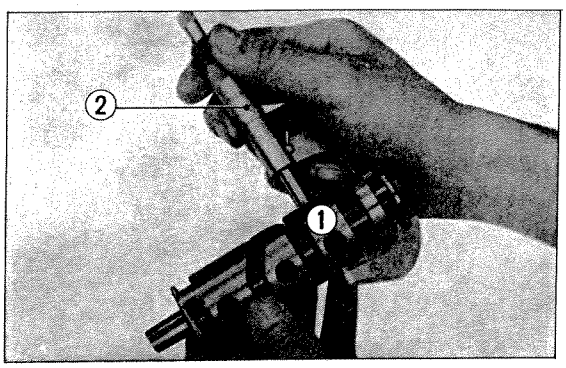
① Gear shift fork ② Micrometer
Fig. 9–21. Measuring gear shift fork tip

2. Measure inside of the gear shift fork. Use a cylinder gauge or inside micrometer. **(Fig. 9–23)**

	Standard Value	Serviceable Limit
Shift fork	1.339~1.340 (34.0~34.025)	Replace if over 1.342 (34.075)



① Gear shift fork ② Cylinder gauge
Fig. 9–22. Measuring inside diameter



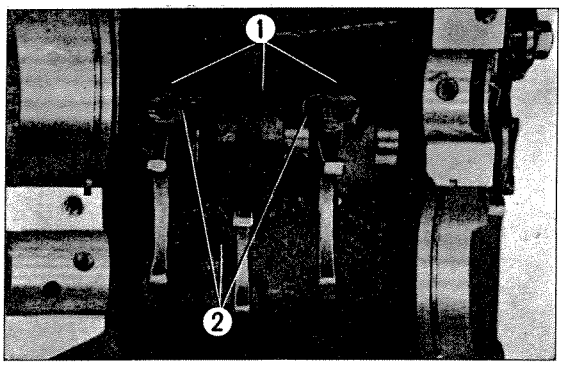
① Gear shift drum ② Micrometer
Fig. 9–23. Measuring outside diameter

3. Measure outside diameter of the gear shift drum.

   Use a micrometer to make the measurement. **(Fig. 9–23)**

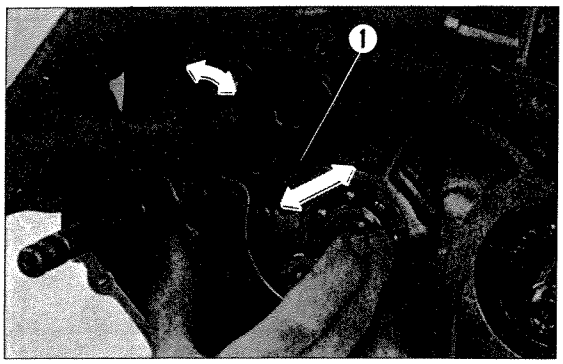
C. Reassembly

Reassembly is performed in the reverse order of the disassembly procedure, however, special attention should be given to the following items.



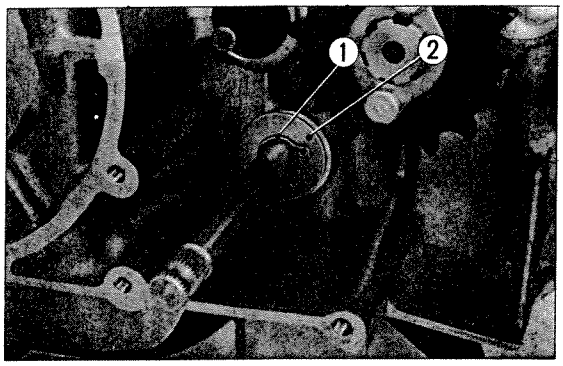
① Gear shift fork ② Clip
Fig. 9–24.

1. When assemblying the gear shift fork into the upper crankcase the shift fork should be assembled from the left side in the order of the stamped markings "R", "C" and "L" so that the letters are facing to the left. **(Fig. 9–24)**
2. Make sure that the shift fork guide pin is installed and then properly set the clip.
3. Check the shift fork to assure that it is operating smoothly.



① Gear shift arm
Fig. 9–25.

4. After assemblying the gear shift spindle move it as shown in **Fig. 9–25** and check to make sure that it positively returns to normal position.



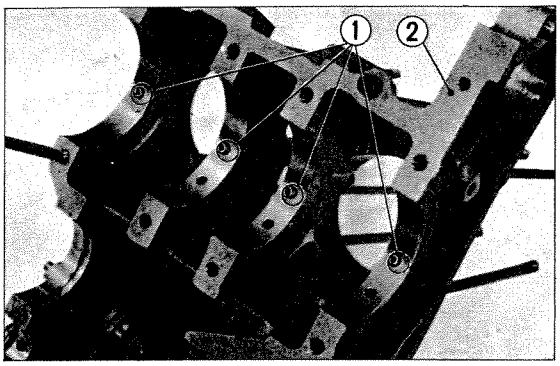
① Circlip ② Washer
Fig. 9–26.

5. Make sure that the gear shift spindle is positively set with the washer and circlip. **(Fig. 9–26)**

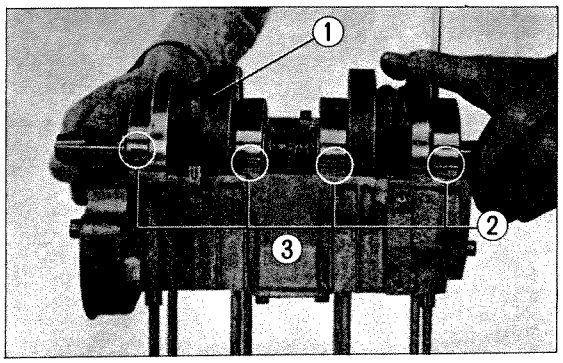
4. CRANKSHAFT

When assemblying the crankshaft into the crankcase, give proper attention to the following points.

1. Install the dowel pins into the upper crankcase and positively align the dowel pin holes in the crankseaft bearings to the dowel pins. Work will be simpliged by aligning the scribe line on the bearing outer to the parting surface of the crankcase. **(Fig. 9–27** and **9–28)**
2. Refer to page 41～43, section 3.7.



① Dowel pin ② Upper crankcase
Fig. 9–27.



① Crankshaft ② Scribe line ③ Upper crankcase
Fig. 9–28.

5. TRANSMISSION

5-speed, constant mesh transmission is mounted. Refer to section 3.9 page 50～52 for details of the respective gears.

A. Disassembly

Refer to section 4.3 B.

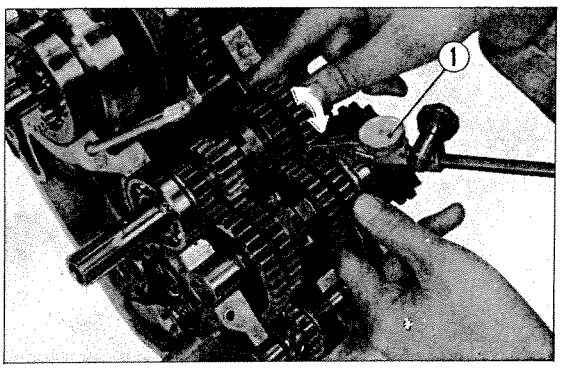
B. Inspection

1. Measuring backlash
   Hold the mating gear so that it does not move and lightly rock the gear being measured. Measure the amount of backlash using a small dial gauge. **(Fig. 9–29)**

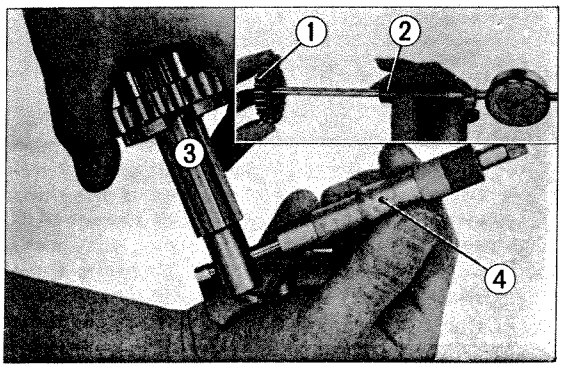
	Standard Value	Serviceable Limit
1st, 2nd, 3rd gears	0.0017～0.0052 (0.044～0.133(	Replace if over 0.008 (0.2)
4th and 5th gears	0.0016～0.005 (0.042～0.126)	Replace if over 0.008 (0.2)

2. Gears when used for a long period will develop wear to the teeth and dogs as well as resulting in side loading of the gear teeth. This becomes the cause of gear noise and in severe case, gear disengagement. Gear which are excessive worn should be replaced in sets.
3. Measuring gear-shaft clearance
   Measure the bore of the gear with a cylinder gauge or an internal micrometer, measure the shaft diameter with a micrometer and compute the clearance. **(Fig. 9–30)**

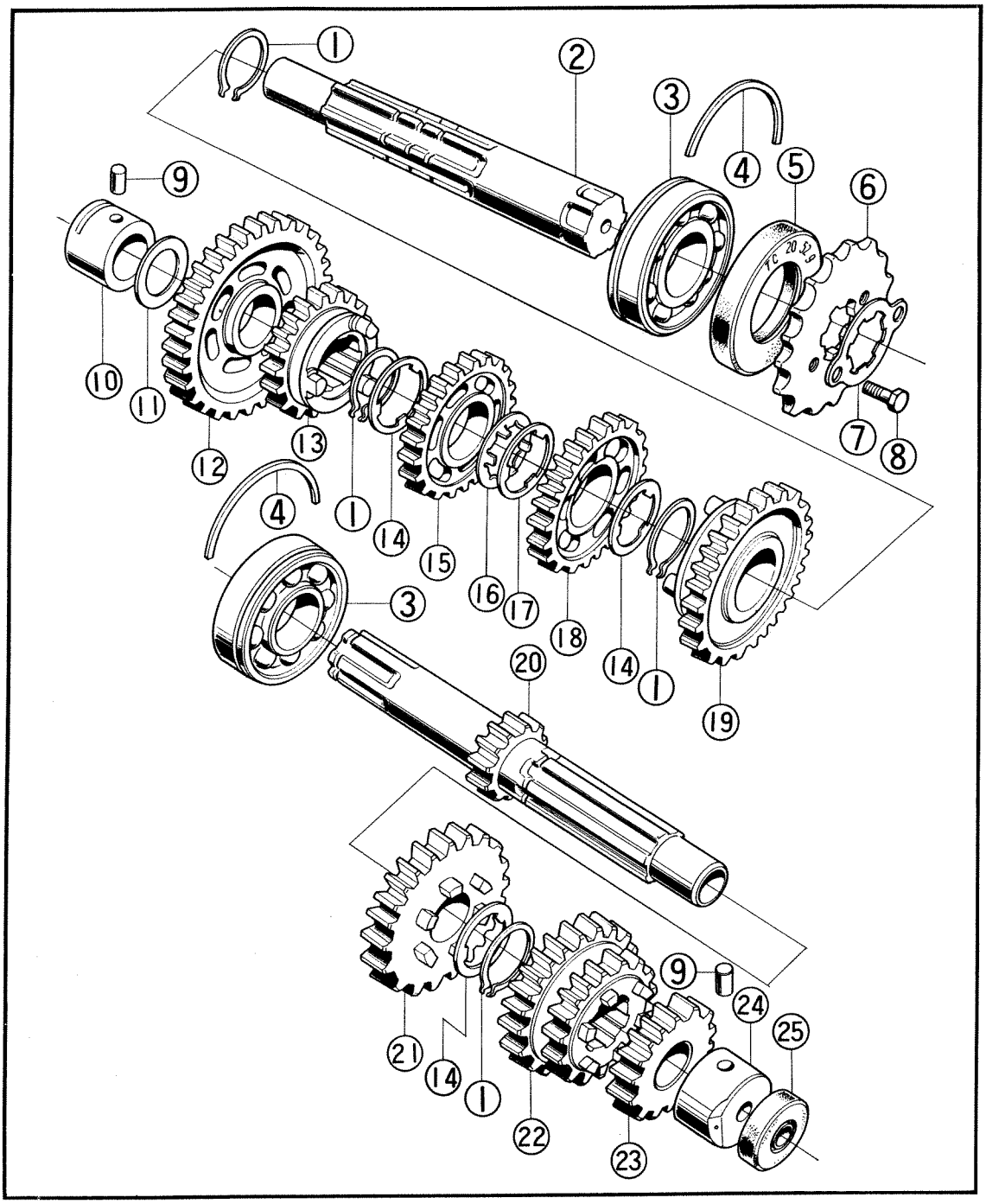
	Standard Value	Serviceable Limit
M4	0.0008～0.0024 (0.02～0.062)	Replace if over 0.004 (0.1)
M5, C1	0.0006～0.0018 (0.016～0.045)	
C2, C3	0.0016～0.003 (0.04～0.082)	Replace if over 0.0047 (0.12)



① Small dial gauge
Fig. 9–29. Checking gear backlash



① Gear ② Cylinder gauge ③ Shaft ④ Micrometer
Fig. 9–30. Measuring diameter



① 20 mm set ring ② Transmission counter shaft ③ 6304 HS radial ball bearing ④ Ball bearing set ringA
⑤ 20×52×9 oil seal ⑥ Drive sprocket ⑦ Drive sprocket fixing plate ⑧ 6×10 hex bolt ⑨ Guide pin
⑩ 16 mm bearing bush B ⑪ 16 mm thrust washer ⑫ Counter shaft low gear (36 T) ⑬ Counter shaft top gear (25T)
⑭ 20 mm thrust washer B ⑮ Counter shaft fourth gear (27 T) ⑯ 20 mm thrust washer ⑰ 20 mm thrust washer B
⑱ Counter shaft third gear (29 T) ⑲ Counter shaft second gear (32 T) ⑳ Transmission main shaft
㉑ Mainshaft top gear (25 T) ㉒ Mainshaft shifting gear (23 T & 20 T) ㉓ Mainshaft second gear ㉔ Bearing bush A
㉖ 8×25×8 oil seal

Fig. 9-31.

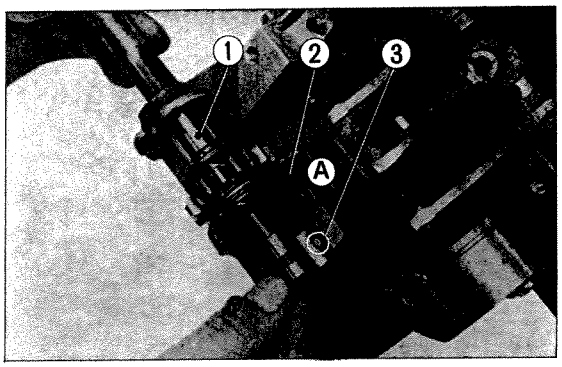
C. Reassembly

Perform the reassembly in the reverse order of disassembly, however, special attention should be given be to the following items.

1. Do not use the circlips which have been removed, use only new parts.
2. Install all gears, washers, and circlips properly as shown in the **Fig. 9–31.**

6. KICK STARTER

1. When installing the kick starter assembly into the upper crankcase, align the kick starter spindle pin groove to the dowel pin in the crankcase, and positively set the friction spring to the case groove Ⓐ.



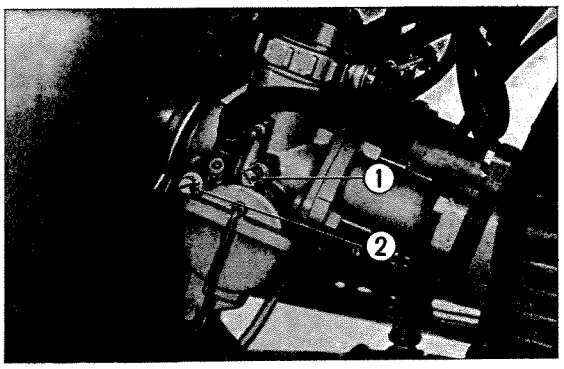
① Kick starter spindle ② Friction spring ③ Dowel pin
Fig. 9–32.

7. CARBURETOR

A piston valve type variable venturi carburetors are mounted one to each cylinder.

A. Disassembly

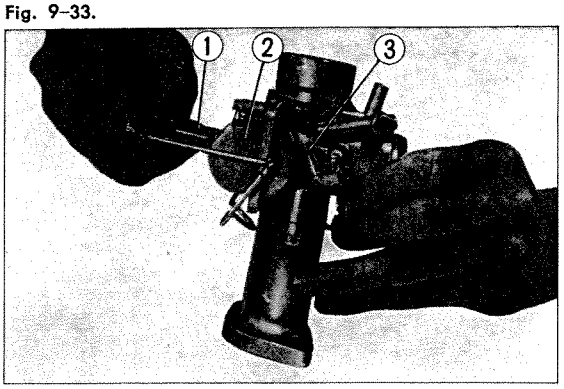
1. Remove the carburetor mounting bolt, loosen the air cleaner connecting tube clamp.
2. Position the fuel cock to OFF, and remove the fuel tube.
3. The carburetor can be removed after removal of the throttle valve.



① Throttle stop screw
Fig. 9–33.

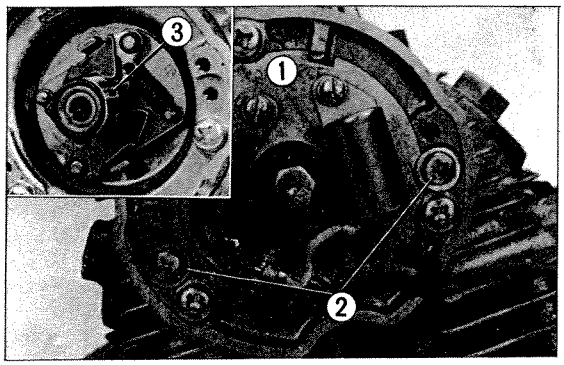
B. Inspection

1. Idle adjustment
   The carburetors must be adjusted after the engine has warmed up to operating temperature. Further, both the right and left carburetors must be adjusted at the same time. **(Fig. 9–33)**
   a. Adjust the engine idle speed to **1,200 rpm** with the throttle stop screw.
   b. Manipulate the air screw back and forth and set it to the point of highest rpm (the air screw should be set to $1\frac{1}{4} \pm \frac{1}{8}$ turn per from full closed position).
   c. Readjust the idling speed to the proper setting with the throttle stop screw.

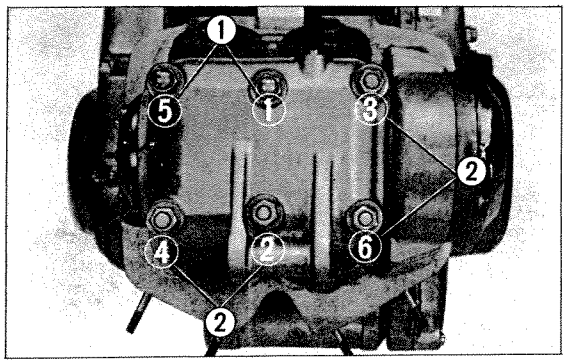


① Fuel level gauge ② Float ③ Carburetor
Fig. 9–34.

2. Float level adjustment
   Remove the float chamber cover and check the position of the float with the fuel gauge, as shown in **Fig. 9–34**, at the point where the float arm just comes in contact with float valve. (Carburetor is tilted approximately 10°). Adjustment is made by bending the float arm with a small screwdriver. The fuel level gauge is Tool No. 07401–0010000.



① Contact breaker assembly ③ Spark advancer
② Contact breaker setting screw **Fig. 9-35.**



① Cap nut ② Hex nut
Fig. 9-36. Nut tightening sequence

ENGINE MECHANISM [CB/CL125]

1. CYLINDER HEAD

A. Disassembly

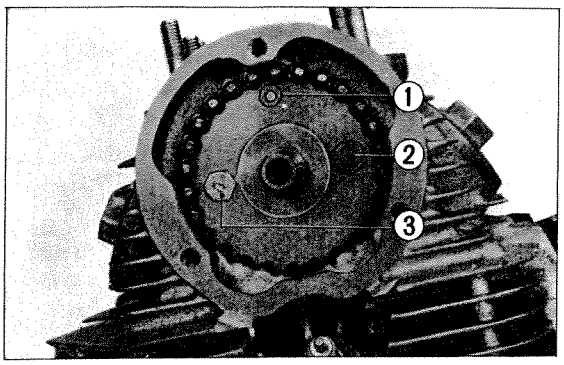
1. Remove the R. side cover from the right side of the cylinder head and breaker point cover from the left side.
2. Unscrew the two contact breaker setting screws and remove the contact breaker assembly. **(Fig. 9-35)**
3. Unscrew the spark advancer mounting bolt and remove the spark advancer from the camshaft. **(Fig. 9-35)**
4. Unscrew the three cross screws and disassemble the point base.
5. Unscrew the two cam sprocket mounting bolts and remove the sprocket from the end of the camshaft.
6. Disconnect the chain being careful not to drop the joint clip into the cylinder, and then, with a piece of wire the both ends of the chain.
7. Loosen the six cylinder head attaching nuts to remove the head.

B. Inspection

Refer to section 3. 2. 1 C on page 66~67.

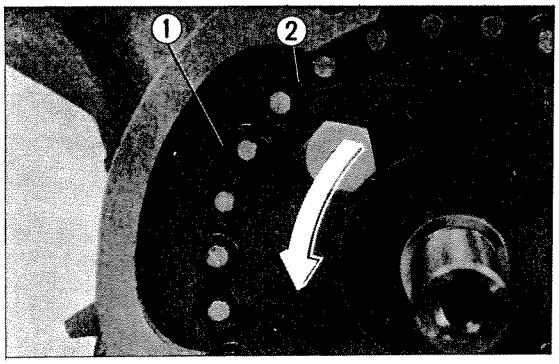
C. Reassembly

1. Tighten the cylinder head cover nuts uniformly in the sequence shown **Fig. 9-36.**
2. The mounting of the cam chain can be simplified if the chain is reassembled prior to the installation of the cam sprocket left and right bolts are of different sizes, therefore, exercise care that they are not installed in reverse order. **(Fig. 9-37)**



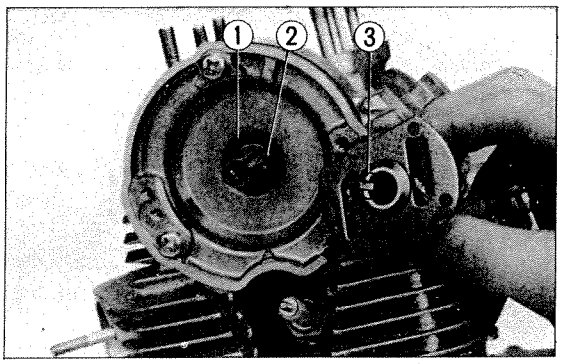
① "O" mark ② Knock bolt ③ 6 mm hex bolt
Fig. 9-37.

3. Assemble the chain joint clip so that the open slit is facing in the direction opposite to the chain movement. **(Fig. 9–38)**
4. Align the "T" timing mark on the A.C. generator rotor to the timing index mark on the position, the piston is positioned to the top-dead-center. Position the "O" timing mark on the cam sprocket to the top and mount on the camshaft with the two bolts. **(Fig. 9–37)**



① Joint clip ② Cam chain
Fig. 9–38.

5. When assemblying the point base, make sure that the oil seal is properly installed on the camshaft. **(Fig. 9–39)**
6. Make sure that the dowel pin in the camshaft is properly fitted to the spark advancer setting groove. **(Fig. 9–39)**

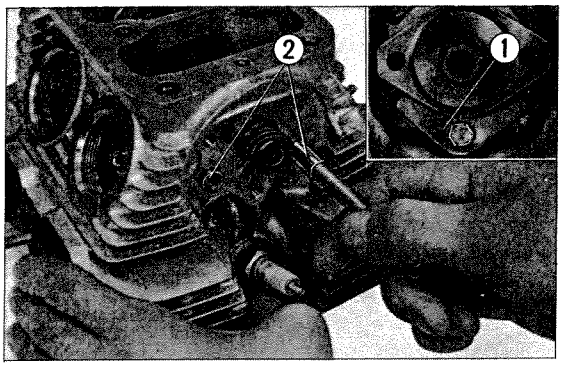


① Oil seal ② Pin ③ Spark advancer groove
Fig. 9–39.

2. CAMSHAFT

A. Disassembly

1. Refer to cylinder head disassembly procedure on page 173.
2. Remove the tappet hole caps.
3. Loosen the valve tappet adjusting screw.
4. Remove the rocker arm stopper and pull out the rocker arm shaft. **(Fig. 9–40)**
5. Remove the camshaft from the cylinder head.

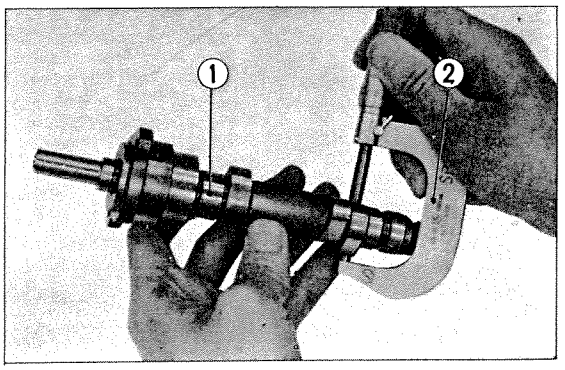


① Rocker arm shaft stopper ② Rocker arm shaft
Fig. 9–40.

B. Inspection

Measure the base circle and cam heights with a micrometer. **(Fig. 9–41)**

		Standard Value	Serviceable Limit
Cam base circle		0.826~0.828 (20.98~21.02)	——
Cam height (including base circle)	IN	1.030~1.031 (26.157~26.197)	Replace if under 1.024 (26.0)
	EX	1.013~1.014 (25.72~25.76)	Replace if under 1.008 (25.6)



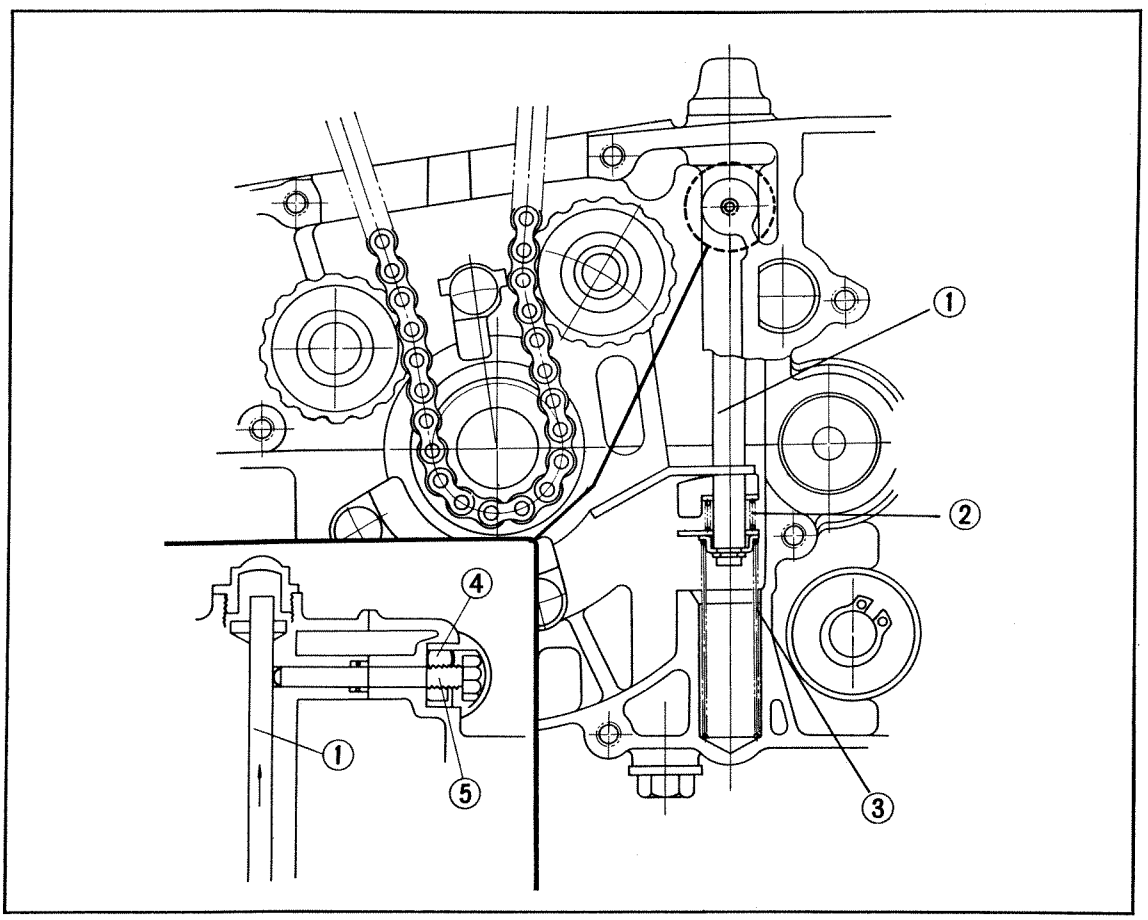
① Cam shaft ② Micrometer
Fig. 9–41. Measuring cam height

C. Reassembly

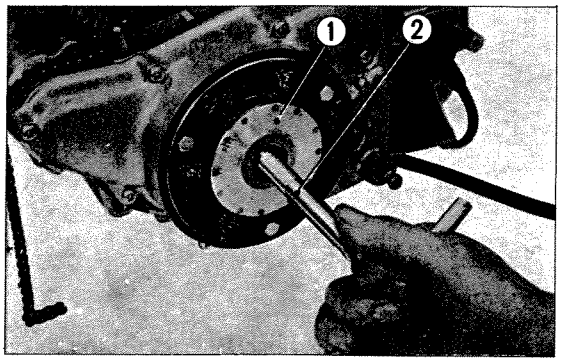
Refer to cylinder head reassembly procedure.

3. CAM CHAIN TENSION

The design has been simplified, making it perform with high degree of reliability and also providing easy adjustment.



① Cam chain tensioner push rod ② Tension spring ③ Tensioner spring A ④ Lock nut ⑤ Cam tensioner adjust
Fig. 9–42.

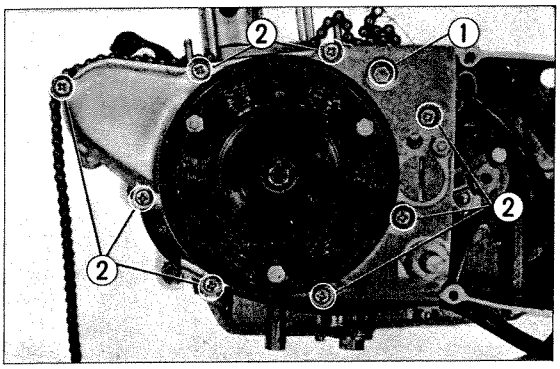


① Generator rotor ② Rotor puller
Fig. 9–43.

A. Disassembly

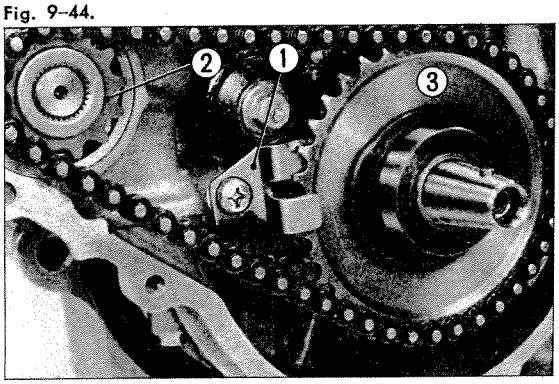
1. Remove the generator rotor by using the rotor puller (Tool No. 07933~200000). **(Fig. 9–43)**

2. Remove the L. crankcase cover by removing the cam chain adjust bolt and eight 6 mm screws. **(Fig. 9–44)**



① Cam chain adjust ② 6 mm screw
Fig. 9–44.

3. Remove the starting sprocket set plate and then remove the starting chain together with sprockets. **(Fig. 9–45)**



① Starting sprocket set plate ② Starting motor sprocket
③ Starting sprocket **Fig. 9–45.**

4. Remove the cam chain tensioner set plates and remove the cam chain tensioner. **(Fig. 9–47)**

B. Inspection

Cam chain adjustment can be made in accordance with following procedure.

a. Remove the dynamo cover.

b. Rotate the dynamo rotor counterclockwise until the "T" mark on the rotor lines up with the timing index mark on the stator.

This adjustment must be made when the pistons are on the top of the compression stroke. This condition can be determined by shifting the tappets with fingers.

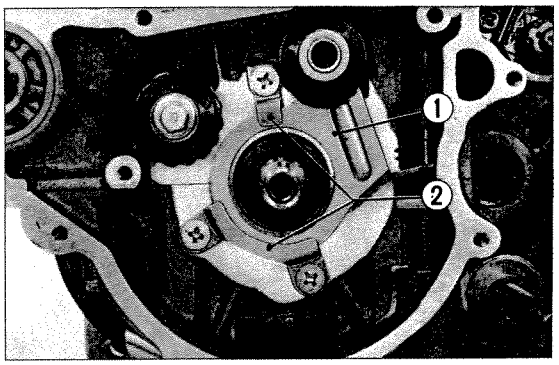
If the tappets are free, it is an indication that the pistons are on the top of the compression stroke.

c. Unscrews the cam chain tensioner adjust bolt and rotate the dynamo rotor counterclockwise one turn.

d. Screw the cam chain tensioner adjust bolt and then tighten the lock nut.

C. Reassembly

Check to make sure that tensioner operates smoothly in the direction indicated by the arrow in **Fig. 9–47.**



① Cam chain tensioner ② Tensioner set plate
Fig. 9–46.

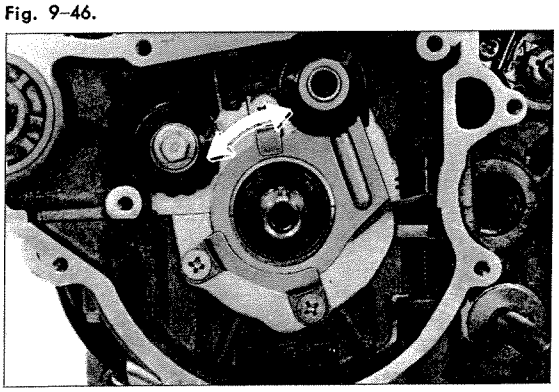


Fig. 9–47.

4. TRANSMISSION

The CB type is equipped with a 5-speed transmission while model CL125 is equipped with a 4-speed transmission.

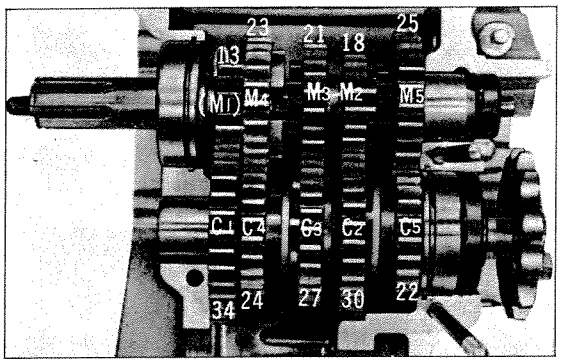


Fig. 9–48. Neutral

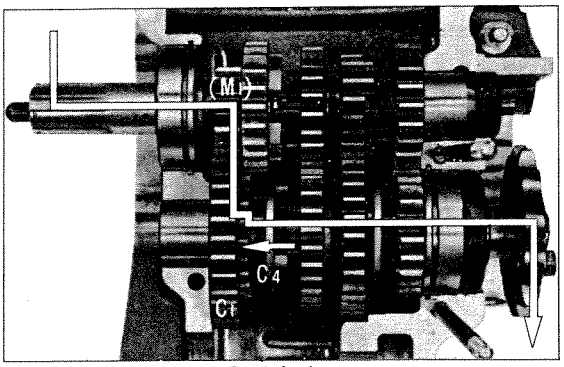


Fig. 9–48 A. 1st gear (C_4 shifted)

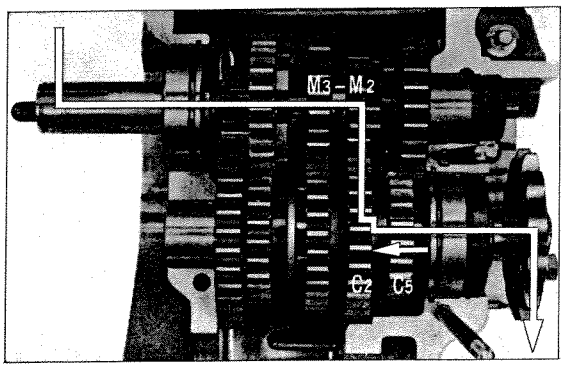


Fig. 9–48 B. 2nd gear (C_5 shifted)

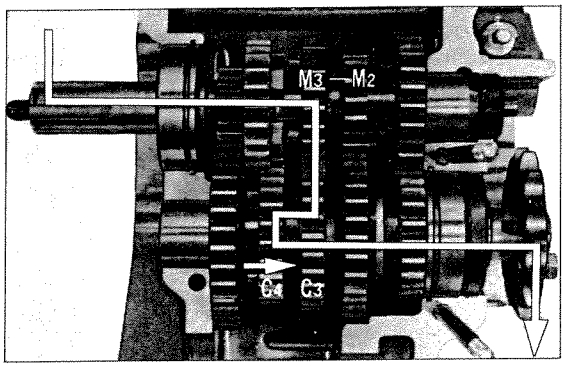


Fig. 9–48 C. 3rd gear (C_4 shifted)

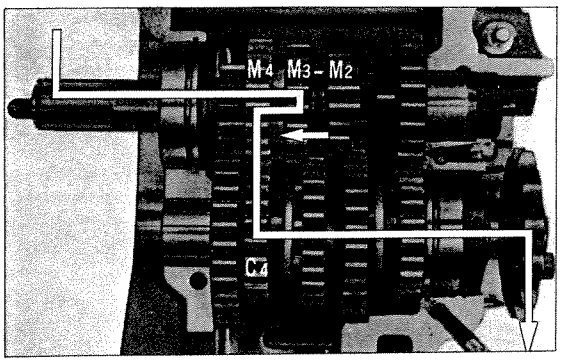


Fig. 9–48 D. 4th gear (M_3M_2 shifted)

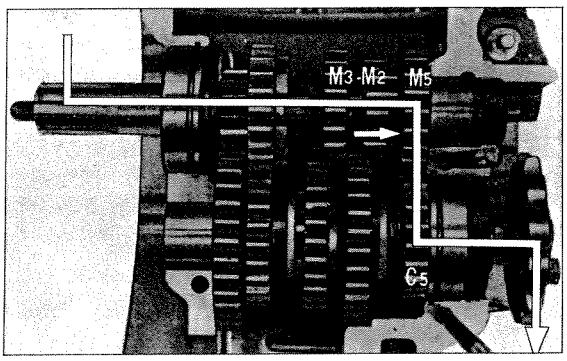
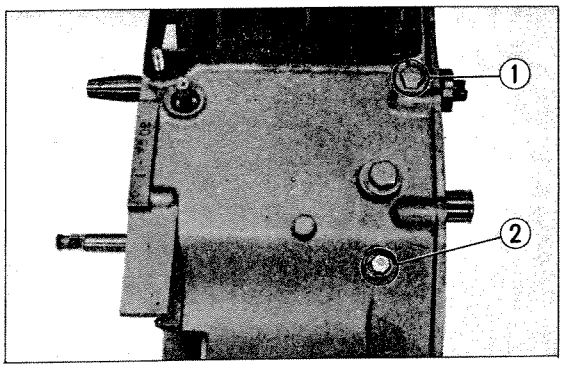


Fig. 9–48 E. 5th gear (M_3M_2 shifted)

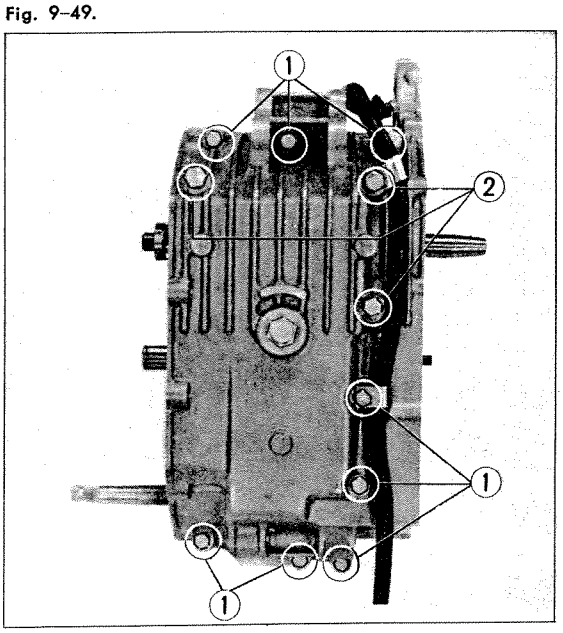
A. Disassembly

1. Disassemble the cylinder head in accordance with section 4. 1. A or page 173.
2. Remove the cylinder.
3. Remove the L. crankcase cover generator rotor, starting sprocket and cam chain tensioner.
4. Remove the R. crankcase, oil filter, clutch, oil pump and gear shift spindle.
5. Remove the 8 mm and 6 mm bolts from the upper crankcase. **(Fig. 9-49)**



① 8 mm bolt ② 6 mm bolt
Fig. 9-49.

6. Remove the 8 mm and 6 mm bolts from the lower crankcase and separate the upper crankcase. **(Fig. 9-50)**
7. Separate the transmission gears.



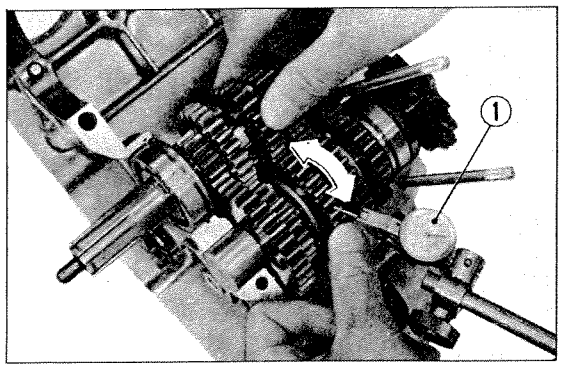
① 6 mm bolt ② 8 mm bolt
Fig. 9-50.

B. Inspection

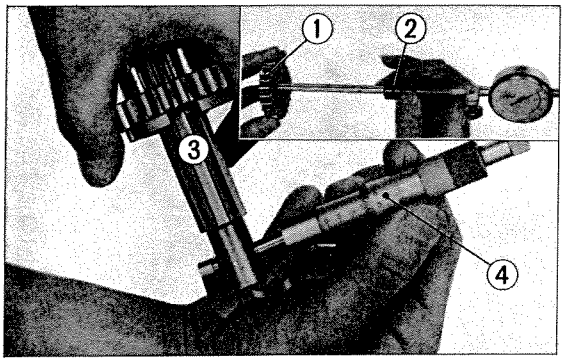
1. Measuring backlash
   Hold the mating gear so that it does not move and lightly rock the gear being measured. Measure the amount of backlash using a small dial gauge. **(Fig. 9-51)**

	Standard Value	Serviceable Limit
1st, 2nd, 3rd gears	0.0017~0.0052 (0.044~0.133)	Replace if over 0.008 (2.0)
4th and 5th gears	0.0016~0.005 (0.042~0.126)	Replace if over 0.008 (0.2)

2. Gears when used for a long period will develop wear to the teeth and dogs as well as resulting in side loading of the gear teeth. This becomes the cause of disengagement. Gear which are excessive worn should be replaced in sets.



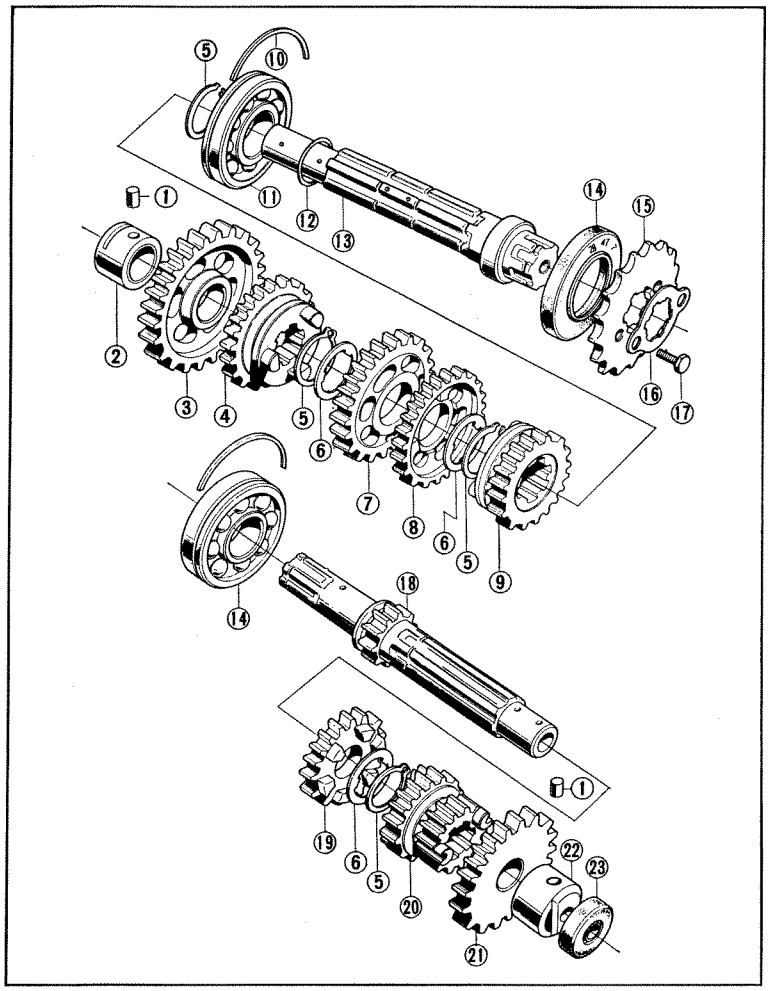
① Small dial gauge
Fig. 9-51. Measuring gear backlash



① Gear ② Cylinder gauge ③ Shaft ④ Micrometer
Fig. 9–52. Measuring diameter

3. Measuring gear-shift clearance
Measure the bore of the gear with a cylinder gauge or an internal micrometer, measure the shaft diameter with a micrometer and compute the clearance. **(Fig. 9–52)**

	Standard Value	Serviceable Limit
M 4	0.0008～0.0024 (0.02～0.062)	Replace if over 0.004 (0.1)
M 5, C 1	0.0006～0.0018 (0.016～0.045)	
C 2, C 3	0.0016～0.003 (0.04～0.082)	Replace if over 0.0047 (0.12)



① Knock pin, 6×9 B ② 15 mm bearing bush B ③ Counter shaft low gear ④ Counter shaft fourth gear
⑤ 20 mm set ring ⑥ 20 mm thrust washer A ⑦ Counter shaft third gear ⑧ Counter shaft top gear
⑨ Counter shaft top gear ⑩ Ball bearing set ring B ⑪ 6204 HS ball bearing ⑫ 20 mm O ring
⑬ Transmission counter shaft ⑭ 28×48×7 oil seal ⑮ Drive sprocket ⑯ Drive sprocket fixing plate
⑰ 6×10 hex bolt ⑱ Transmission main shaft ⑲ Main shaft fourth gear ⑳ Main shaft second & third gear
㉑ Main shaft top gear ㉒ 15 mm bearing bush A ㉓ 8×25×8 oil seal
Fig. 9–53.

C. Reassembly

Perform the reassembly in the reverse order of disassembly, however, special attention should be given to the following items.

1. Do not use the circlips which have been removed, use only new parts.
2. Install gears, washers, and circlips properly as shown in the following figures. **(Fig. 9–53)**
3. Position all the gears in neutral and rotate by hand to assure that the dogs are not hitting and that the gears are all rotating smoothly.
4. After assemblying the gear assemblies into the upper crankcase, make sure that the set rings and dowel pins are properly installed.

5. GEAR SHIFTING MECHANISM

To prevent the gear shift arm from disengaging with gear shift drum, a projection is provided on the upper crankcase to limit jumping of gearshift arm. Further to facilitate shifting into the neutral gear, the neutral stopper is made to fit the drum directly. **(Fig. 9–54)**

A. Disassembly

1. Remove the cylinder head and cylinder.
2. Remove the L. crankcase cover, generator rotor, starting sprocket and cam chain tensioner.
3. Remove the R. crankcase cover, clutch, oil pump and gear shift spindle.
4. Separate the lower crankcase from the uppercase.
5. Separate the transmission gear from the upper crankcase.
6. Remove the shift drum stopper, neutral stopper bolt and neutral switch.
7. Remove the shift fork setting clips and guide pins.
8. Remove the gear shift drum from the crankcase.

B. Inspection

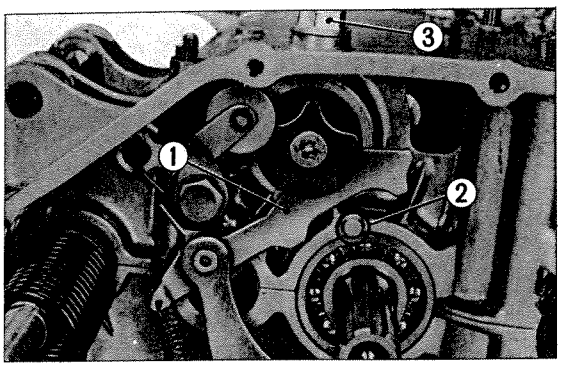
1. Measure the thickness of the gear shift fork tip.

   Use a vernier caliper. **(Fig. 9–55)**

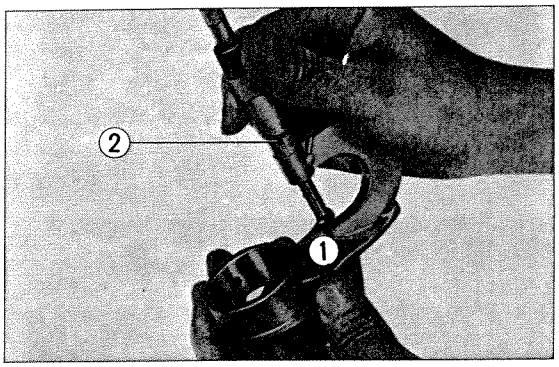
	Standard Value	Serviceable Limit
Right, left & cehter shift fork	0.211~0.215 (5.35~5.45)	Replace if under 0.1985 (5.05)

2. Measure inside diameter of the gear shift fork.

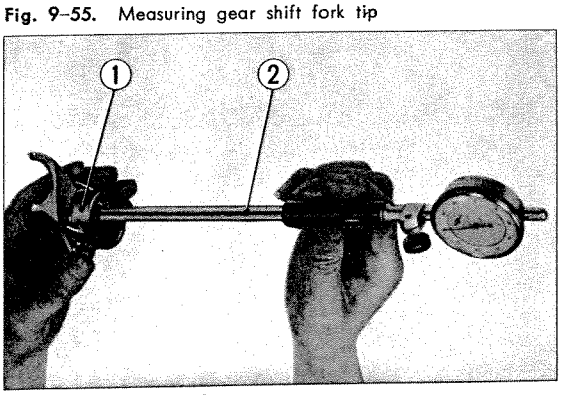
   Use a cylinder gauge or inside micrometer. **(Fig. 9–56)**



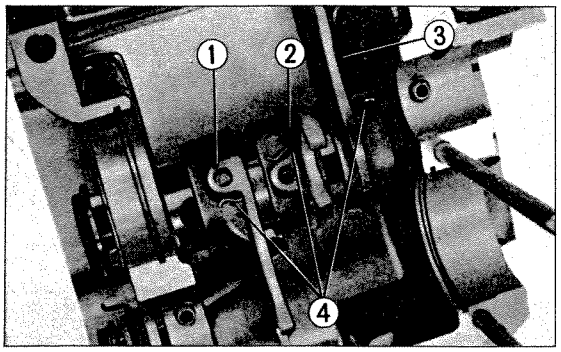
① Gear shift arm ② Projection ③ Neutral stopper bolt
Fig. 9–54.



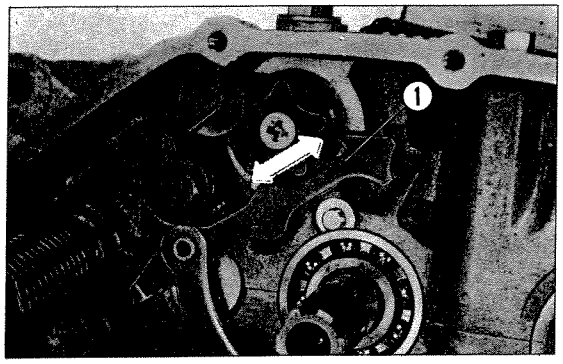
① Gear shift fork ② Micrometer
Fig. 9–55. Measuring gear shift fork tip



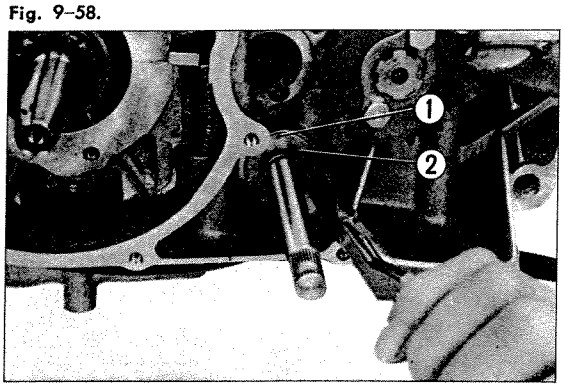
① Gear shift fork ② Cylinder gauge
Fig. 9–56. Measuring inside diameter



① R. shift fork ② Center shift fork ③ L. shift fork
④ Guide pin clip **Fig. 9–57.**



① Gear shift arm
Fig. 9–58.



① Washer ② Circlip
Fig. 9–59.

	Standard Value	Serviceable Limit
Shift fork	1.339~1.340 (34.0~34.025)	Replace if over 1.342 (34.075)

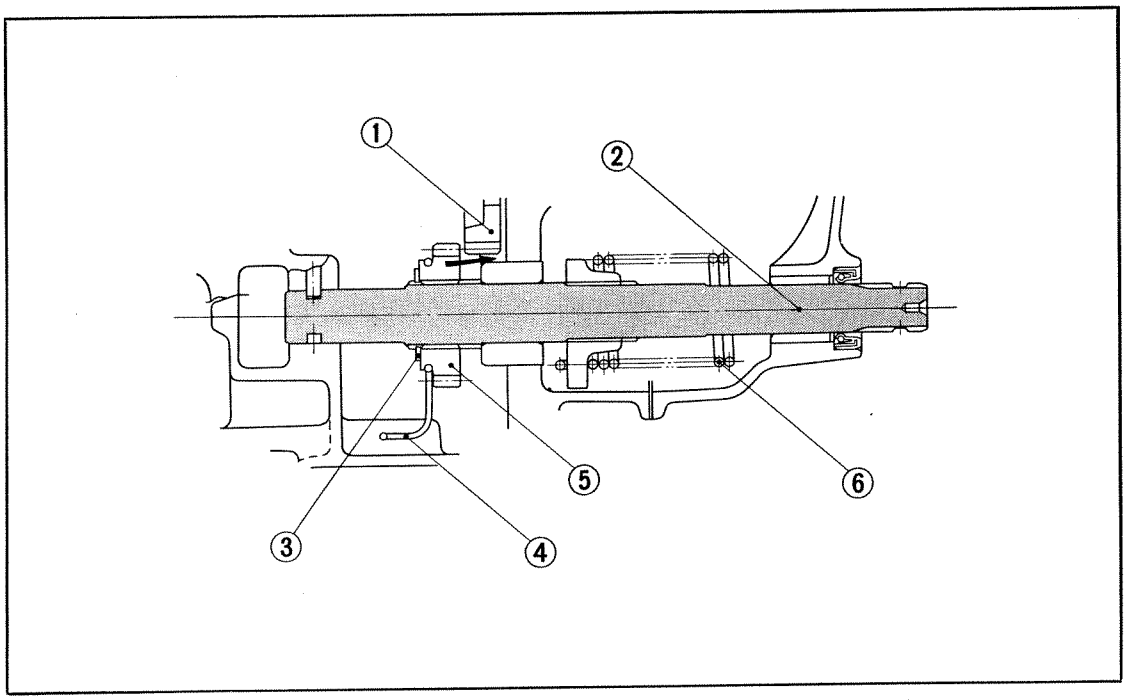
C. Reassembly

Reassembly is performed in the reverse order of the disassembly procedure, however, special attention should be given to the following items.

1. When assemblying the gear shift fork of the CB type (5-speed transmission) into the upper crankcase the shift fork should be assembled from the left side in the order of the stamped markings "S", "C" and "L" so that the letters are facing to the left. **(Fig. 9–57)**
2. Make sure that the shift fork guide pin is installed and then properly set the clip.
3. Check the shift fork to assure that it is operating smoothly.
4. After assembly the gear shift spindle move it as shown in **Fig. 9–58** and check to make sure that it positively returns to normal position.
5. Make sure that the gear shift spindle is positively set with the washer and circlip. **(Fig. 9–59)**

6. KICK STARTER

When the kick starter is operated, the kick starter pinion moves toward the right and engages with the counter shaft low gear to transmit the force to the piston through the main shaft. This causes the engine to start. As the starter pedal is released, the force of the kick stater spring rotates the spindle and returns the pinion to the normal position. **(Fig. 9-60)**



① Low gear ② Kick starter spindle ③ Circlip ④ Friction spring ⑤ Kick starter pinion ⑥ Kick starter spring
Fig. 9-60.

A. Disassembly

Refer to page 79.

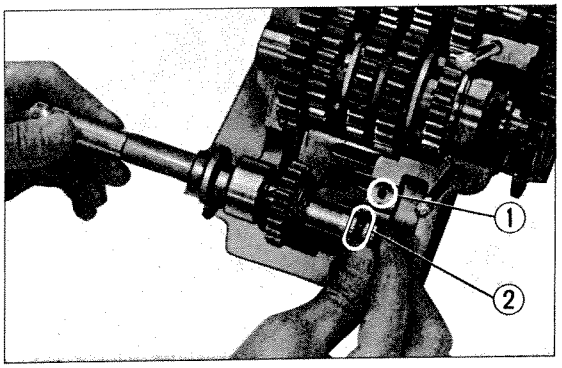
B. Ispection

Check to make sure that the action of the kick starter spindle is smooth.

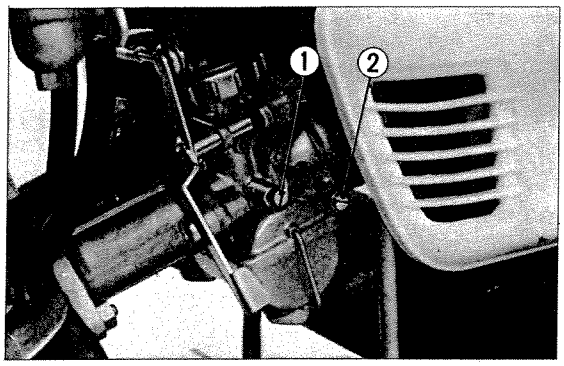
C. Reassembly

Reassembly is performed in the reverse order of disassembly procedure, however, special attention should be given to the following items.

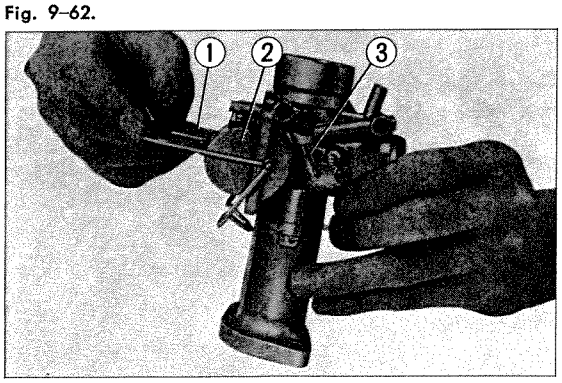
1. When installing the kick starter assembly into the upper crankcase, align the kick starter spindle pin groove to the dowel pin in the crankcase, and positively set the friction spring to the case groove.
2. Assemble the kick starter spindle and check to assure that it is operating properly.



① Dowel pin ② Groove
Fig. 9-61.



① Throttle stop screw ② Air screw
Fig. 9-62.



① Fuel level gauge ② Float ③ Carburetor
Fig. 9-63.

7. CARBURETOR

A. Disassembly

Refer to page 56~61.

B. Inspection

1. Idle adjustment

The carburetors must be adjusted after the engine has warmed up to operating temperature. Further, both the right and left carburetors must be adjusted at the same time. **(Fig. 9-62)**

a. Adjust the engine idle speed to **1200 rpm** with the throttle stop screw.

b. Manipulate the air screw back and forth and set it to the point of highest rpm (the air screw should be set to $1\frac{1}{4} \pm \frac{1}{8}$ **turn** open from full closed position).

c. Readjust the idling speed to the proper setting with the throttle stop screw.

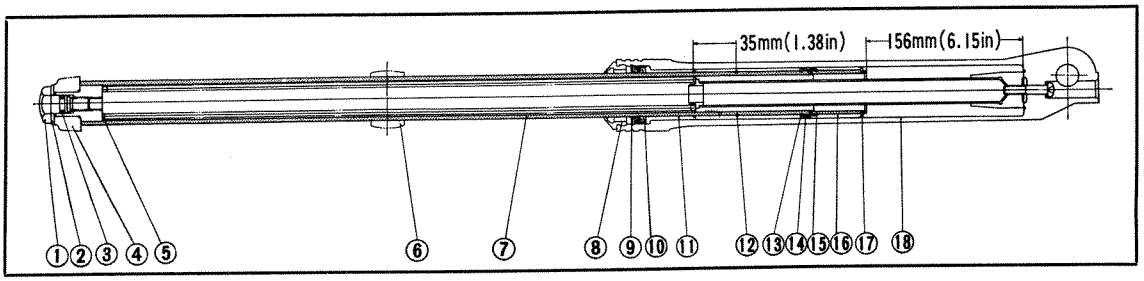
2. Float level adjustment

Remove the float chamber cover and check the position of the float with the fuel level gauge, as shown in **Fig. 9-63,** at the point where the float arm just comes in contact with the float valve. (Carburetor is tilted approximately 10°). Adjustment is made by bending the float arm with a small screwdriver. The fuel level gauge is Tool No. 07401-0010000.

9.3 FRAME

1. FRONT SUSPENSION

Refer to page 90~95 of this Manual for the information on the front suspension of all other models. CL175: The front cushion compression stroke **4.53 in (115 mm)** while the extension stroke is **1.38 in (35 mm)** for a total travel of **5.91 in (150 mm)**.



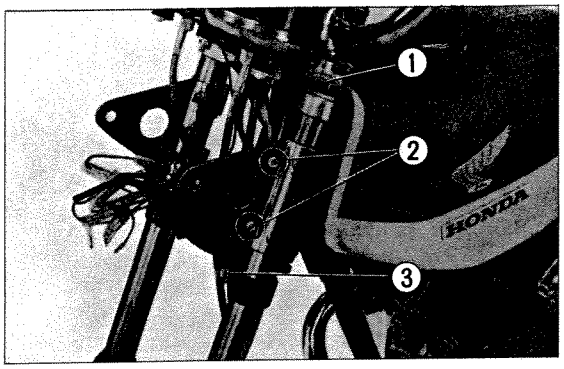
① Front fork bolt ② 24 mm washer ③ O ring ④ Front fork top bridge ⑤ Front cushion spring ⑥ Front fork bottom bridge ⑦ Front fork pipe ⑧ Front fork dust seal ⑨ 41 mm internal circlip ⑩ Front fork oil seal ⑪ Front fork pipe guide ⑫ Front piston stopper ring ⑬ Fork valve stopper ring ⑭ Front damper valve ⑮ Fork piston stopper ring ⑯ Front fork piston ⑰ Fork piston snap ring ⑱ Front fork bottom case
Fig. 9-64.

A. Disassembly

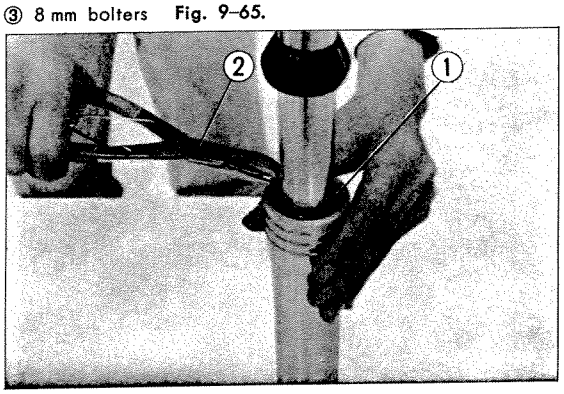
1. Disconnect the front brake cable and the speedometer cable from the front brake panel.
2. Remove the front wheel torque bolt.
3. Place a block under the engine, remove the front axle and separate the wheel from the fork.
4. Loosen the headlight mounting bracket bolts.
5. Loosen the front fork top bolt and the 8 mm fork bolt which mounts the front fork and pull the front fork out the bottom. **(Fig. 9-65)**
6. Remove the front fork dust seal and remove the internal circlip using the circlip pliers. **(Fig. 9-66)**
7. Draw the front fork pipe assembly out of the bottom case.

B. Inspection

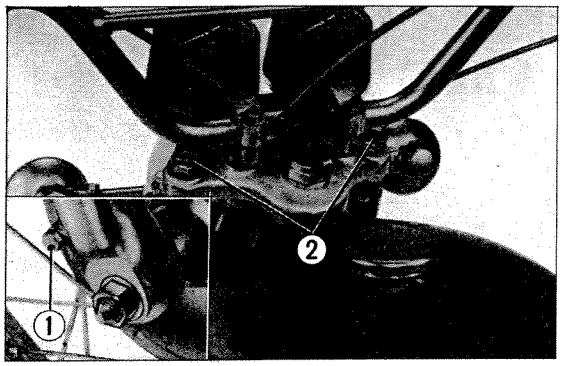
1. Check front fork damper otl (disassembly is not necessary). If the oil is dirty or the level low, change or replenish the oil.



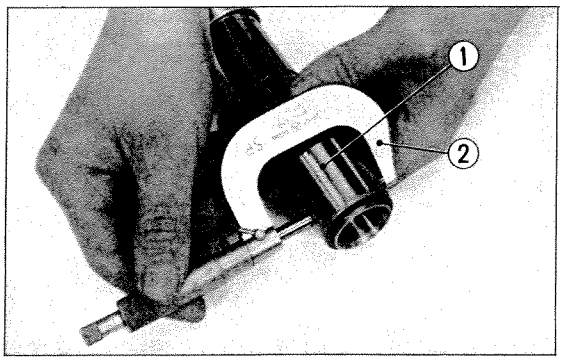
① Front for top bolt ② Headlight bracket setting bolt ③ 8 mm bolters **Fig. 9-65.**



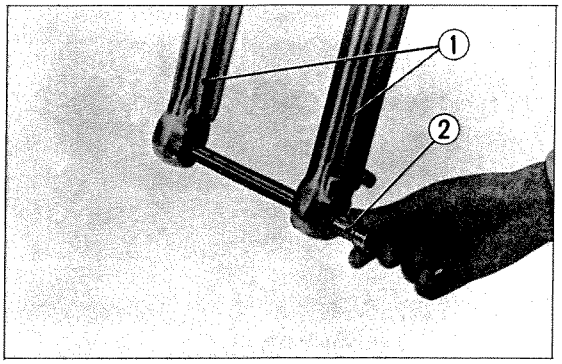
① Circlip ② Pliers
Fig. 9-66.



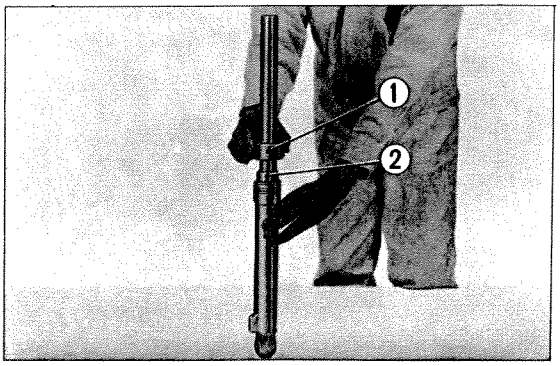
① Front fork drain plug ② Front fork top bolt
Fig. 9–67.



① Front fork piston ② Micrometer
Fig. 9–68. Measuring diameter of fork piston



① Frot fork ② Front axle
Fig. 9–69.



① Front fork oil seal driving weight
② Front fork oil seal driving guide
Fig. 9–70.

Remove the front fork top bolt and drain plug on the damper and allow oil to drain followed by stroking the damper several times to get complete removal. **(Fig. 9–67)**

Replace the drain plug and fill with **155~165 cc (9.5~10.1 cu-in)** of good grade **SAE #10W–30** or equivalent.

2. Front fork piston
   Measure the diameter of the piston with a micrometer to check the amount of wear. **(Fig. 9–68)**

	Standard Value	Serviceable Limit
Piston diameter	1.3946~1.3955 (35.425~35.45)	Replace if under 1.3937 (35.4)

C. Reassembly

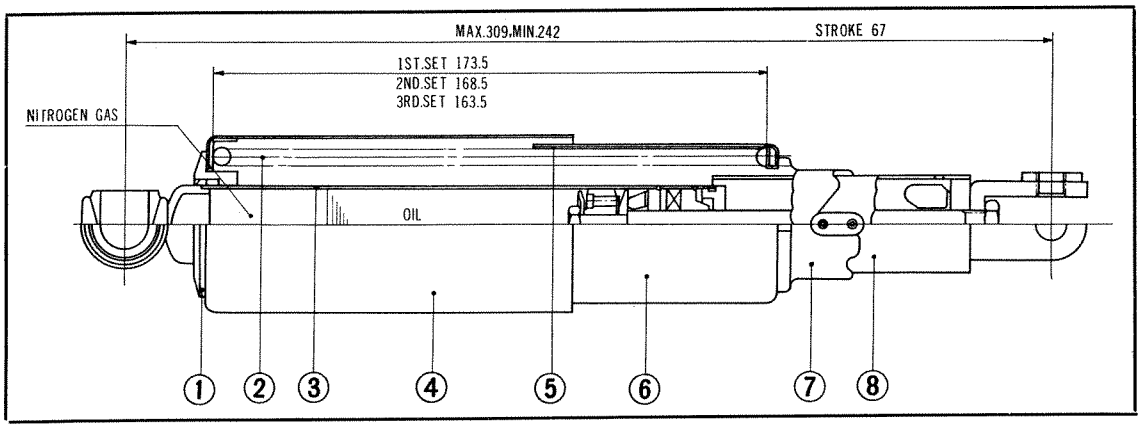
Perform the reassembly in the reverse order of the disassembly, however, particular attention should be given to the following points.

1. First insert the axle through the fork axle holes to make sure that the left and right forks are level before tightening the 8 mm front fork mounting bolt. **(Fig. 9–69)**
2. When installing the front fork oil seal, apply a liberal amount of the grease between the main seal lip and the dust seal lip (petroleum resisting grease) and exercise care not to damage the lips. Use the dust seal driving weight to drive to the seal. **(Fig. 9–70)**
3. It is recommended that the fork piston stopper ring and the circlip be replaced with a new item. The old part may have lost its tension or may have become distorted during the removal.

2. REAR SUSPENSION

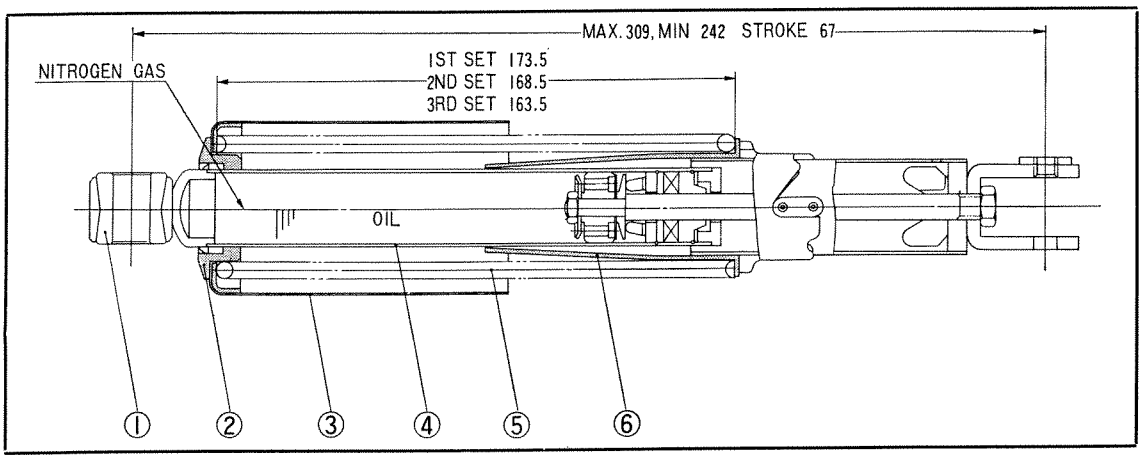
The rear suspension utilizes a De Carbon type shock absorber. Compressed nitrogen gas and oil is sealed within the cylinder and during contraction and extension the oil flows back and forth through the orifice incorporated in the piston; the function of the valve which controls the flow perform the dampening.

Model	Damping force		Stroke
	Extension	Contraction	
CB175	50 kg/0.5 m/sec	15 kg/0.5 m/sec	2.64 in (67 mm)
CB/CL125 CL175	35 kg/0.5 m/sec	12 kg/0.5 m/sec	3.35 in (85 mm)



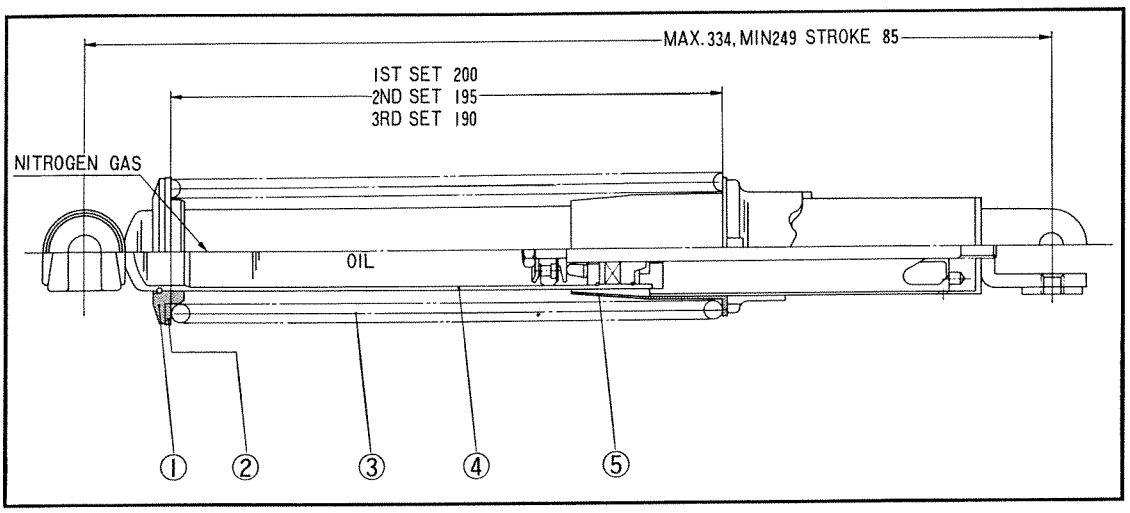
① Spring seal stopper ② Rear cushion spring ③ Rear damper assembly ④ Rear cusion upper case ⑤ Rear cushon spring guide ⑥ Rear cushion bottom case ⑦ Spring adjuster ⑧ Under seat complete

Fig. 9-71. CB/CL125



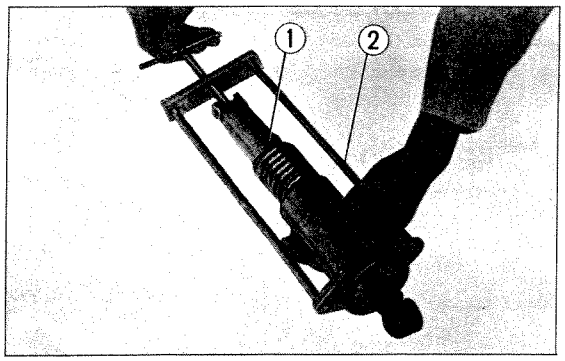
① Rubber joint ② Spring seat stopper ③ Rear cushion upper case ④ Rear damper assembly ⑤ Rear cushion spring ⑥ Rear cushion spring guide

Fig. 9-72. CB175

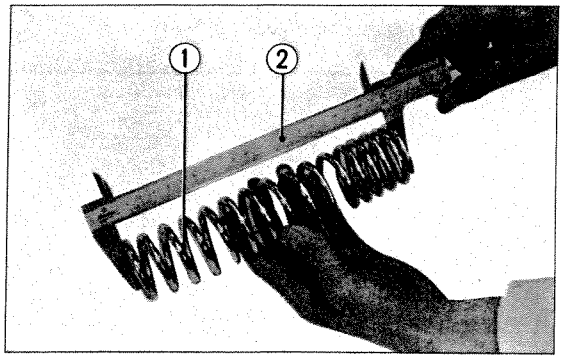


① Spring seat stopper ② Spring upper seat ③ Rear cushion spring ⑤ Rear damper assembly ④ Rear cushion spring guide

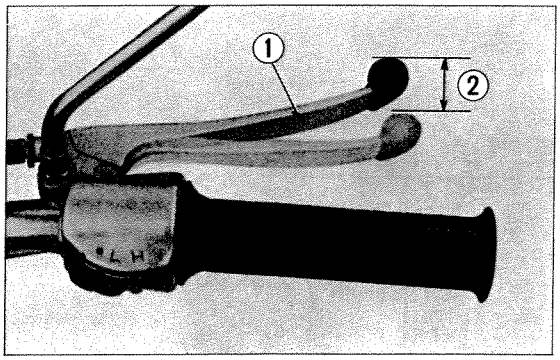
Fig. 9-73. CL175



① Rear cushion
② Rear cushion disassembling & assembling tool **Fig. 9–74.**



① Rear cushion spring ② Vernier caliper
Fig. 9–75.



① Front brake lever ② Free play
Fig. 9–76.

A. Disassembly

1. Separate the rear cushion assembly from the frame.
2. Remove the rear cushion spring by using the rear cushion removal tool. **(Fig. 9–74)**

(Note)

The rear damper contains nitrogen gas under pressure, therefore, it should not be disassembly due to the extreme hazard.

B. Inspection

1. Rear cushion spring **(Fig. 9–75)**

   Measure the free length of the rear cushion spring using a vernier caliper ; replace it is beyond the serviceable limit shown below.

   The spring compressive force is also shown as reference.

Model	Spring free length		Compressive force
	Standard Value	Serviceable Limit	
CB125 CL125	7.257 (184.3)	Replace if under 6.693 (170)	6.8307 in/32 lbs (173.5 mm/14.5 kg)
CB175	7.807 (188.3)	Replace if under 6.850 (174)	6.8307 in/44.1 lbs (173.5 mm/20 kg)
CL175	8.331 (211.6)	Replace if under 7.284 (185)	7.874 in/32 lbs(200mm/14.5 kg)

C. Reassembly

Reassembly is performed in the reverse order of disassembly. Install the spring so that the end with the smaller coil pitch is toward the top.

3. FRONT WHEEL

The front brake utilizes the two leading type brake shoes to provide superior braking performance.

Refer to section 4. 12, page 111 of this Manual for the descriptton of the compönent parts.

A. Disassembly

Refer to section 4. 12 B, page of this Manual for the disassembly procedure.

B. Inspection

1. Front brake pedal adjustment (disassembly is not necessay).
   a. Place a black under the engine to raise the front wheel off the ground.
   b. Spin the wheel by hand slowly apply the brake lever until the brake starts to take hold, measure the amount of lever travel at the tip. The standard lever travel **3/8–3/4 in (1～2 cm). (Fig. 9–76)**

c. Perform the adjustment by the loosening the lock nut at the front brake arm and turning the adjuster nut. For minor adjustment, the cable adjuster on the front brake lever may be used. **(Fig. 9–77)**

2. Brake drum wear
   The wear of the brake drum is checked by the measuring the inside diameter of the brake drum with a vernier caliper. **(Fig. 9–78)**

Standard Value	Serviceable Limit
6.30~6.31 (160~160.3)	Replace if over 6.38 (162)

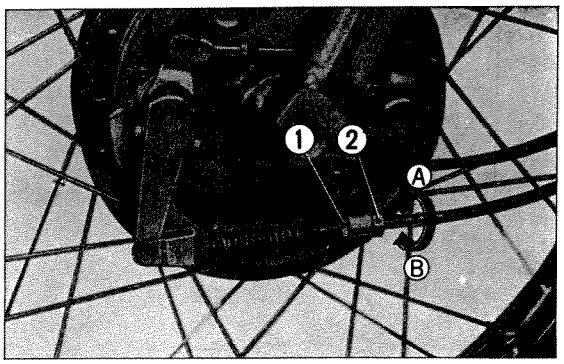
3. Front brake shoe wear
   Measure the thickness of the brake shoe with a vernier caliper and if it is worn beyond the specified serviceable limit shown below, the shoes should be replaced.

Standard Value	Serviceable Limit
0.197~0.209 (5.0~5.3)	Replace if under 0.08 (2.0)

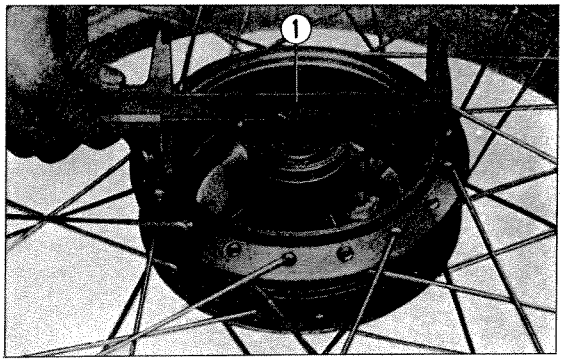
4. For other inspecting items, refer to section 4.12 C, page 112.

C. Reassembly

Perform the reassembly in the reverse order of disassembly. Perform the brake adjustment in accordance with section B inspection above.



① Lock nut ② Cable adjuster
Fig. 9–77.



① Vernier calipe
Fig. 9–78.

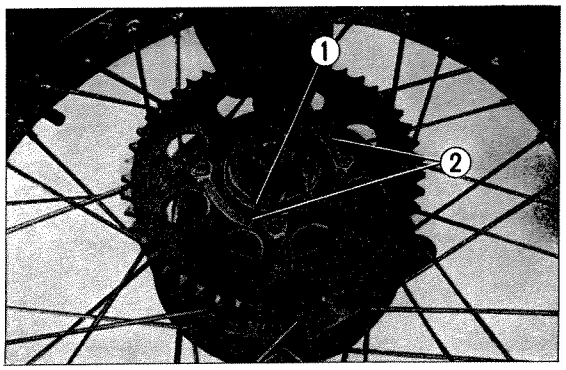
4. REAR WHEEL

Rear wheel components.

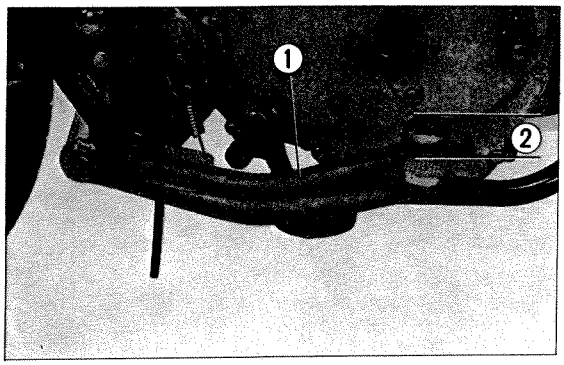
Refer to Fig. 4–60–2 page 115.

A. Disassembly

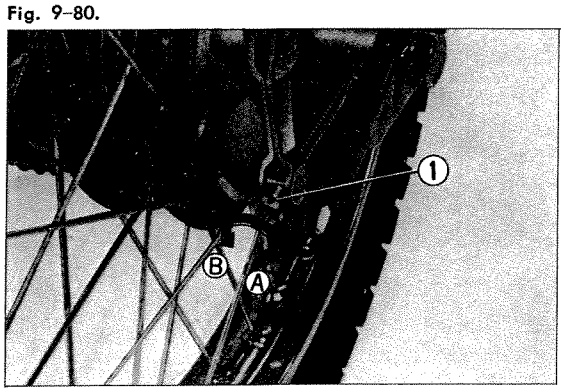
1. Remove the drive chain.
2. Remove the brake adjuster nut from the rear brake lever and the torque arm bolt from the brake panel.
3. Loosen the rear axle nut and remove the rear axle. The rear wheel will drop away from the rear fork.
4. Remove the driven sprocket by unfastening the 8 mm special tongued washer and circlip. **(Fig. 9–79)**



① Circlip ⑧ 8 mm Special tongued washer
Fig. 9–79.



① Rear brake pedal ② Free play
Fig. 9-80.



① Rear brake adjuster nut
Fig. 9-81.

5. The brake shoes are removed from the brake panel by spreading them apart by hand.

B. Inspection

1. Adjust the stroke of the rear brake pedal. (Disassembly is not necessary).
   a. Lower the main stand or place the block under the engine to raise the rear wheel off the ground.
   b. Spin the wheel and apply the rear brake pedal until the brake start to take hold; measure the amount of the brake pedal travel. The normal pedal travel when measured at the forward tip should be **3/4~1·1/4 in (2~3 cm). (Fig. 9-80)**
   c. Perform the adjustment with the rear brake adjuster nut. **(Fig. 9-81)**
2. Rear brake drum wear
   Check the wear of the brake drum by measuring the inside diameter of the drum with a vernier caliper. If the wear is beyond the serviceable limit shown below, the brake drum should be replaced.

Model	Standard Value	Serviceable Limit
CB125 CL125	5.110~5.126 (129.8~130.2)	Leplace if over 5.20 (132)
CB175 CL175	5.512~5.514 (140~140.3)	Replace if over 5.60 (142)

3. Rear brake shoe wear
   Measure the thickness of the brake shoe with a vernier caliper and if it is worn the beyond the serviceable limit shown below, the shoe should be replaced.

Standard Value	Serviceable Limit
0.167~0.169 (4.0~4.3)	Replace if under 0.08 (2.0)

4. For the inspection of the other items, refer to section 4. 13 C, page 116.

9.4 ELECTRICAL

1. CHARGING CURRENT MEASUREMENT

Connect an ammeter between the battery (+) terminal and the selenium rectifier, and check to see if the values obtained are in accordance with the standard specifications listed in the chart below.

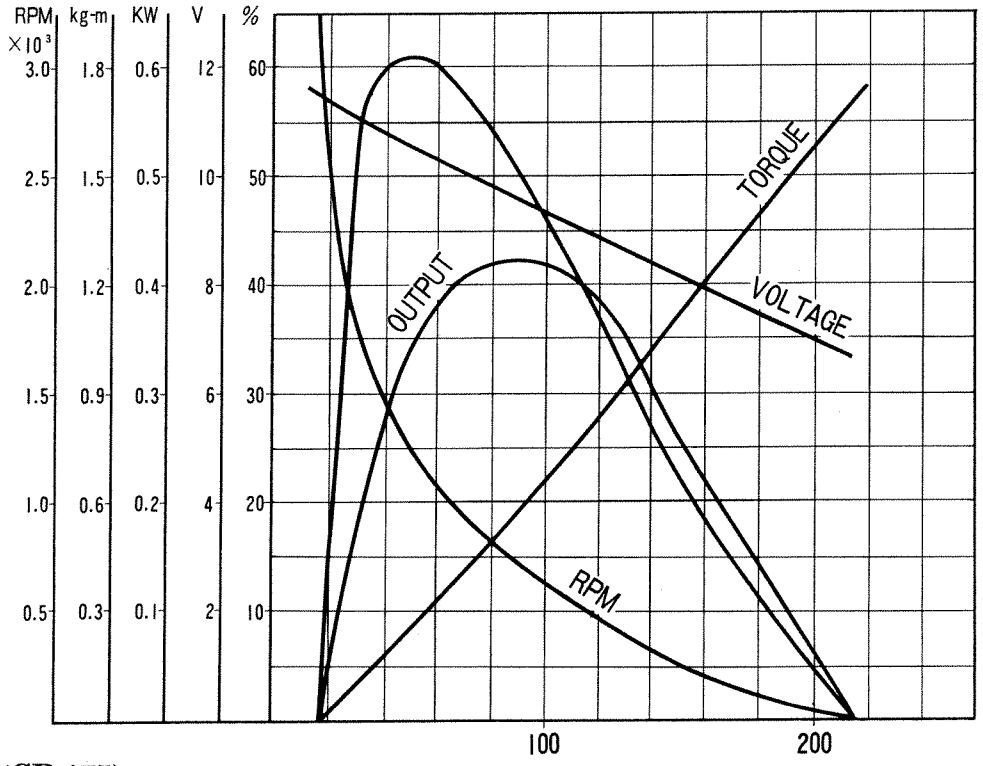
When the battery charge is low, the cause may be in the A. C. generator, selenium rectifier or the defective wiring.

Model	Item	Charging start	Charging current /3,000 rpm	Charging current /5,000 rpm	Charging current /10,000 rpm
CB 175	Day time Night time Battery voltage	Max. 2,400 rpm Max. 2,800 rpm 12.3 V	——	Min. 0.5 A Min. 0.5 A 13 V	Max. 3.0 A Max. 3.0 A 16.5 V
CL 175	Day time Night time Battery voltage	Max. 2,400 rpm Max. 2,800 rpm 13.2 V	——	Min. 0.5 A Min. 0.5 A 14 V	Max. 3.0 A Max. 3.0 A 16.5 V
CB 125	Day time Night time Battery voltage	Max. 1,300 rpm Max. 1,900 rpm 6.3 V	Min. 2.0 A Min. 1.2 A 6.7 V	Min. 2.7 A Min. 2.0 A 7 V	Max. 4.5 A Max. 4.0 A 8.3 V
CL 125	Day time Night time Battery voltage	Max. 1,300 rpm Max. 2,000 rpm 6.3 V	——	Min. 1.7 A Min. 1.7 A 7 V	Max. 3.0 A Max. 3.5 A 8.3 V

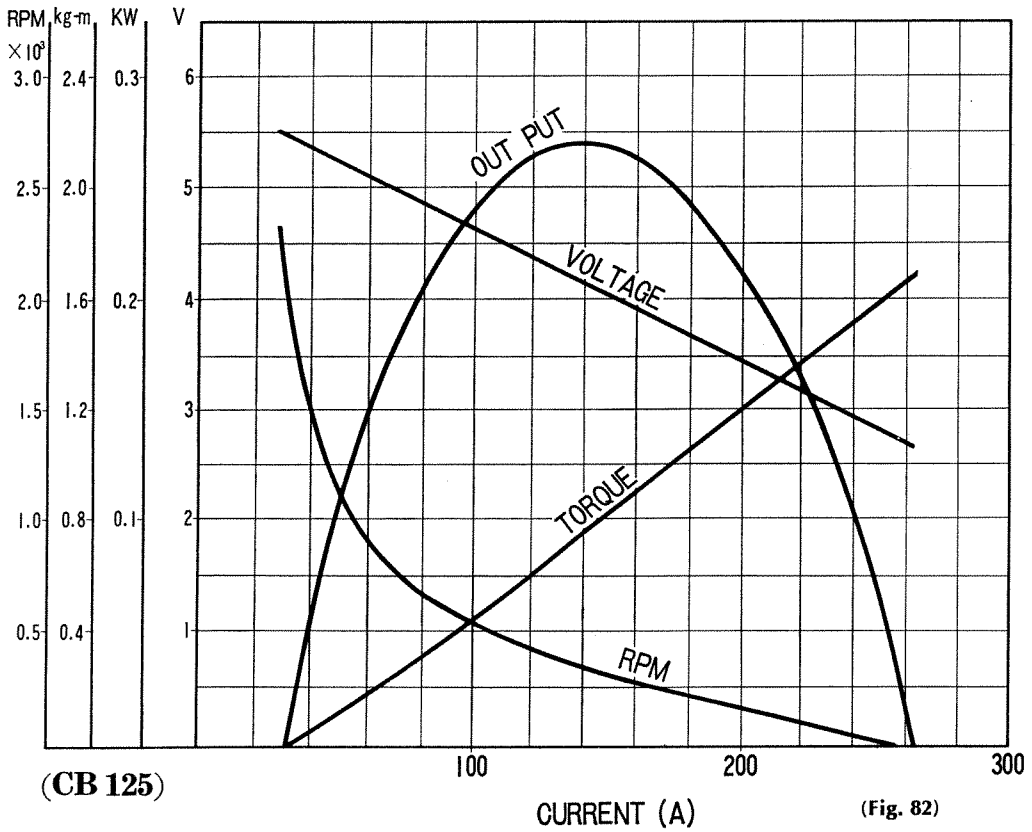
2. STARTING MOTOR (CB175/125)

Starting motor is mounted at the front of the crankcase. The power to drive the crankshaft is reduced in speed by a planetary gear incorporated within the starting motor and further reduced at the sprocket and chain connecting the motor to the crankshaft. Starting motor specification and characteristics **(Fig. 9–82)**.

2. If the solenoid switch has been used for a long period, the contacts will become pitted or burned, creating a high resistance which will prevent flow of current to properly operate the starting motor. When such condition develops, dress the contact points with a file or sandpaper.



(CB 175)



(CB 125)

(Fig. 82)

(CB175)

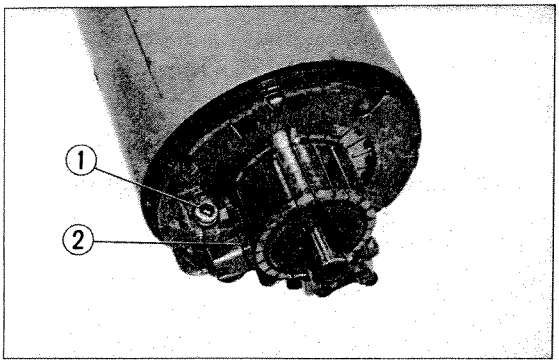
Items	Specification		
Rated voltage	12 V		
Rated output	0.35 kW		
Intermittent operation	30 sec.		
Reduction ratio	6.44		
	Without load	With load	Lock
Voltage	11.5 V	9.4 V	6.7 V
Current	Max. 28 A	100 A	Max. 240 A
Torque	——	Min. 0.55 kg-m	Min. 1.5 kg-m
RPM.	Min. 2000 rpm	Min. 500 rpm	——
Output	——	Min. 0.33 kW	——

(CB125)

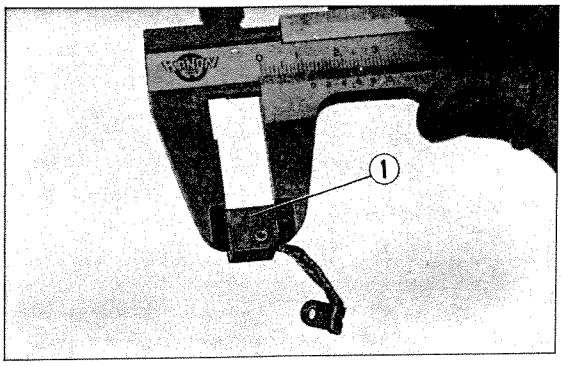
Items	Specification		
Rated voltage	6 V		
Rated output	0.25 kW		
Intermittent operation	30 sec.		
Reduction ratio	6.44		
	Without load	With load	Lock
Voltage	5.5 V	4.2 V	2.8 V
Current	Max. 40 A	120 A	Max. 300 A
Torque	——	Min. 0.55 kg-m	Min. 1.5 kg-m
RPM	Min. 1900~2700 rpm	Min. 400 rpm	——
Output	——	Min. 0.22 kW	——

A. Disassembly

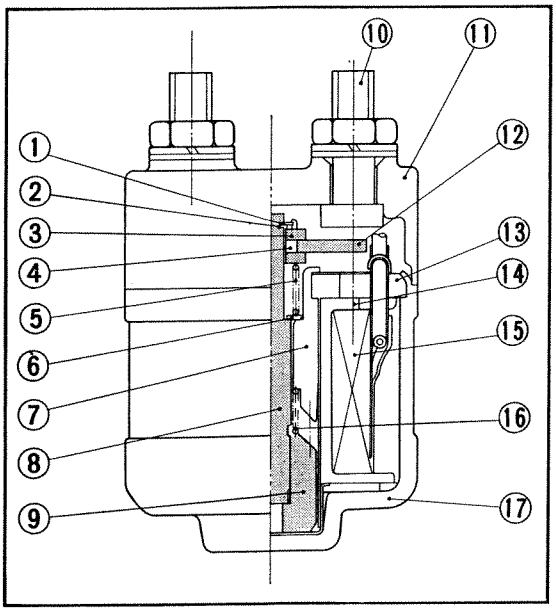
1. Remove the L. crankcase cover.
2. Remove the generator rator by using the rotor puller.
3. Remove the starting sprochet set plate.
4. Remove the starting chain together with sprockets.
5. Remove the starting motor cable from the starting motor.
6. Remove the two starting motor setting screws and then remove the starting motor.
7. Remove the starting motor side cover and remove the carbon brush **(Fig. 9-83)**.



① Carbon brush setting screw ② Carbon brush
Fig. 9-83.



① Carbon brush
Fig. 9-84.



① Stopper ② Stopper holder ③ Insulation washer
④ Insulation collar A ⑤ Contact spring ⑥ Flat washer
⑦ Plunger holder ⑧ Plunger shaft ⑨ Plunger
⑩ Contact bolt ⑪ Case ⑫ Contact plate ⑬ Yoke
⑭ Coil bobbin ⑮ Coil complete ⑯ Return spring
⑰ Body
Fig. 9-85.

B. Inspection

1. Measure the amount of brush wear with a vernier caliper. **(Fig. 9-84)**

Standard Value	Serviceable Limit
0.433~0.492 (11~12.5)	Replace if under 0.197 (5.0)

Also check to make sure that the brush is not binding in the holder causing the brush the to float away from the commutator.

2. Measure the starting current
Use a service tester and an external shunt to measure the starting current. (Refer to page 136)

C. Reassembly

Reassembly is performed in the reverse order of the disassembly procedure.

3. STARTER SOLENOID SWITCH

A large current is required to operate the starter and if the starter circuit was connected directly to the push button switch on the handle, the switch will burn out. A starter solenoid of a large capacity is installed between the battery and the starting motor. Wnen the push button switch is pressed, the solenoid coil is energized, creating an electromagnet which draws is the iron core. A heavy duty electrical contacts are mounted to this iron core which closes the circuits between the battery and the starting motor.

A. Disassembly

1. Disconnect the starting motor cable from the solenoid switch.
2. Unscrew the two mounting bolts and remove the starter solenoid switch.

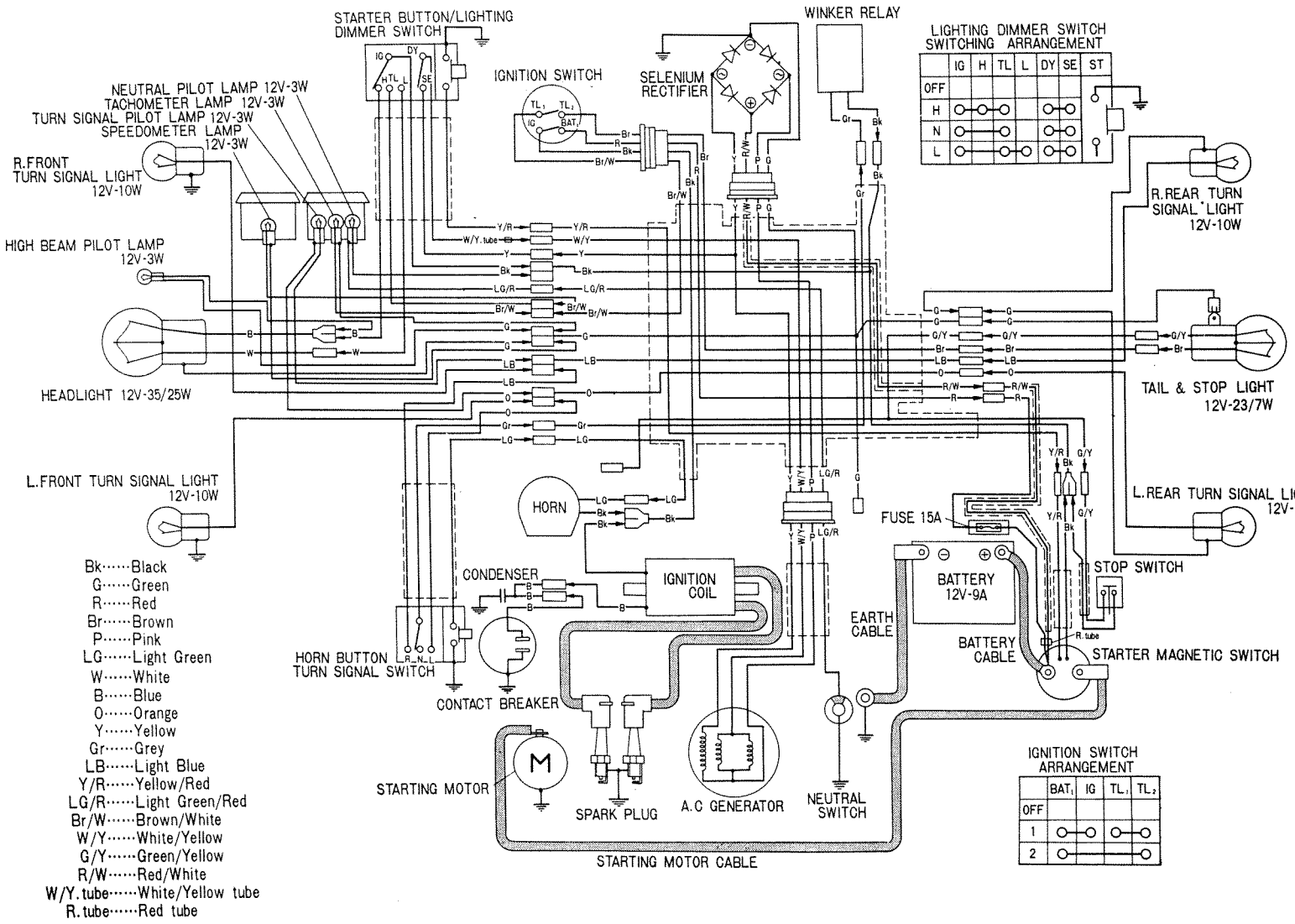
B. Inspection

1. Press the starter switch listen for the click in the solenoid switch, it is an indication that the plunger within the solenoid switch is functioning.

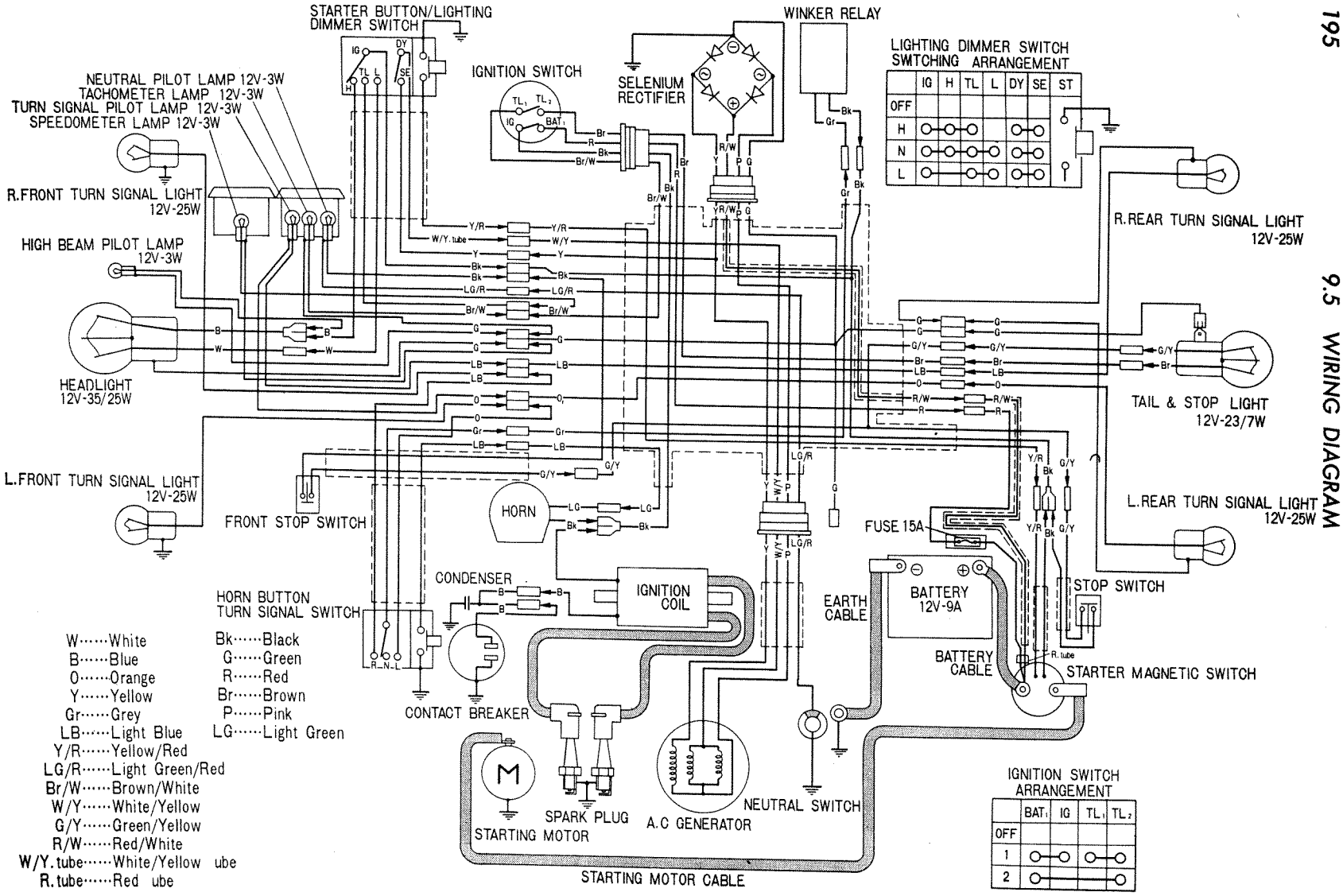
C. Reassembly

Reassembly is performed in the reverse order of the disassembly procedure.

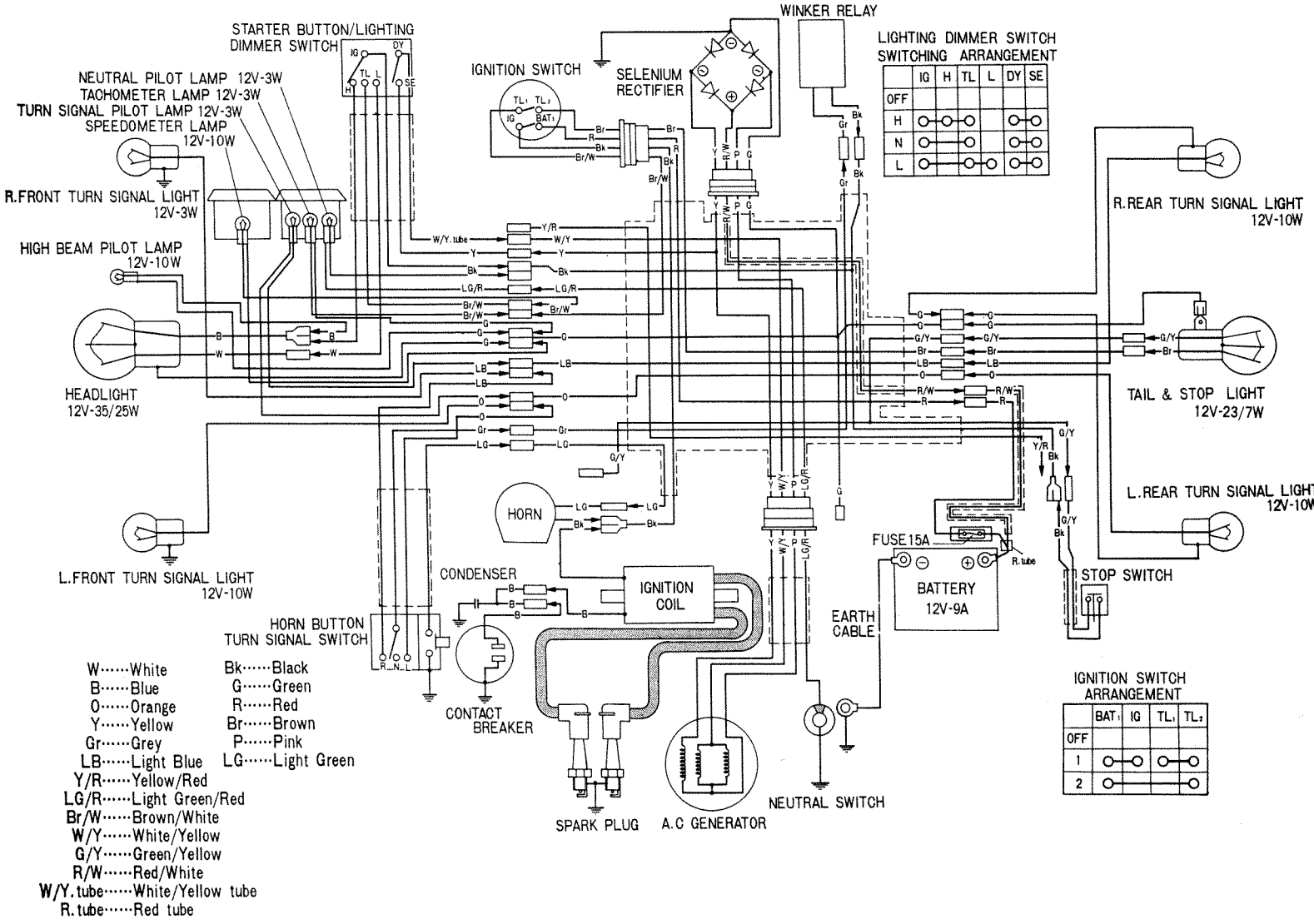
CB175 WIRING DIAGRAM (General Export Type)



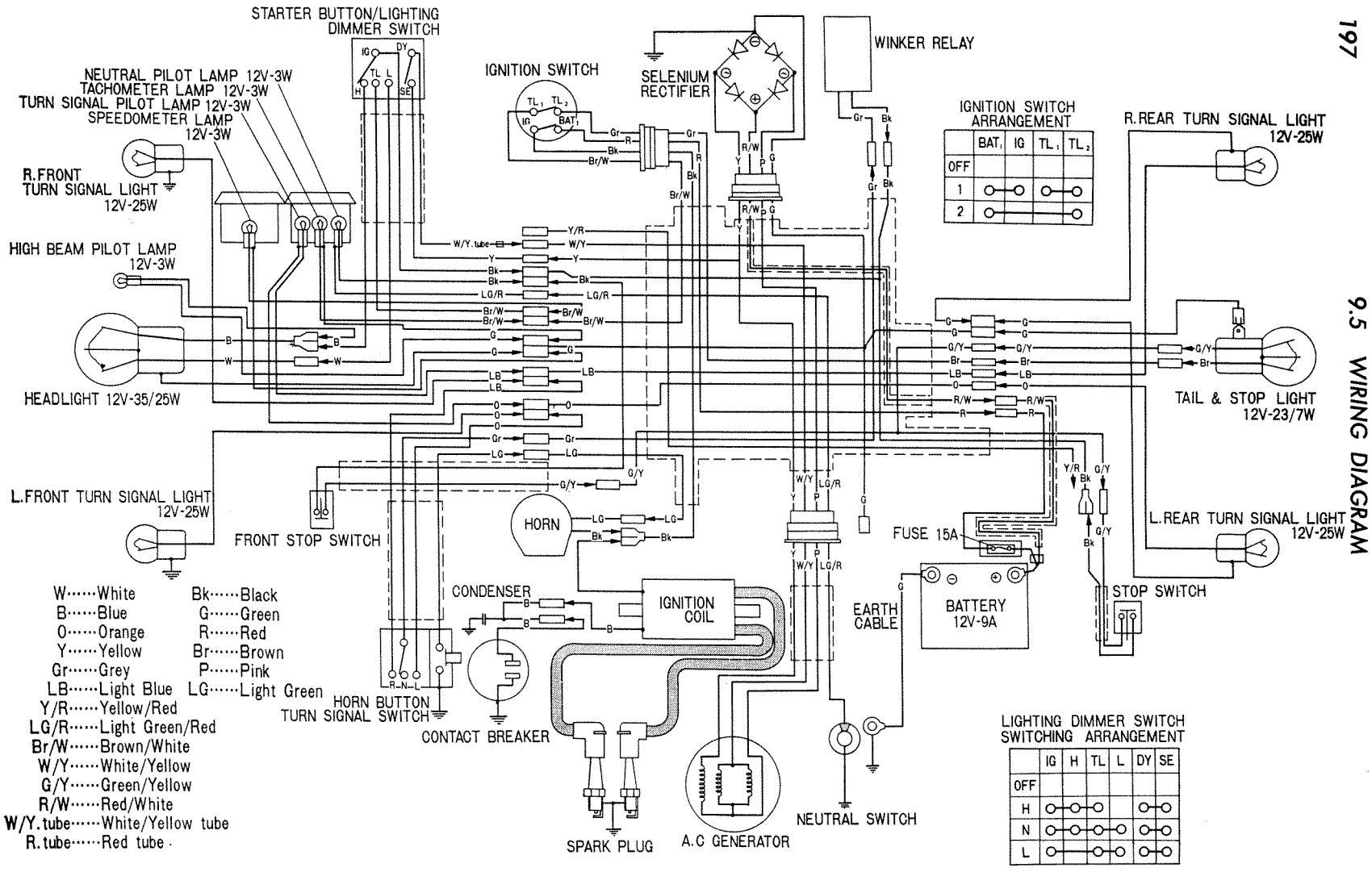
CB175 WIRING DIAGRAM (U.S.A. Type)



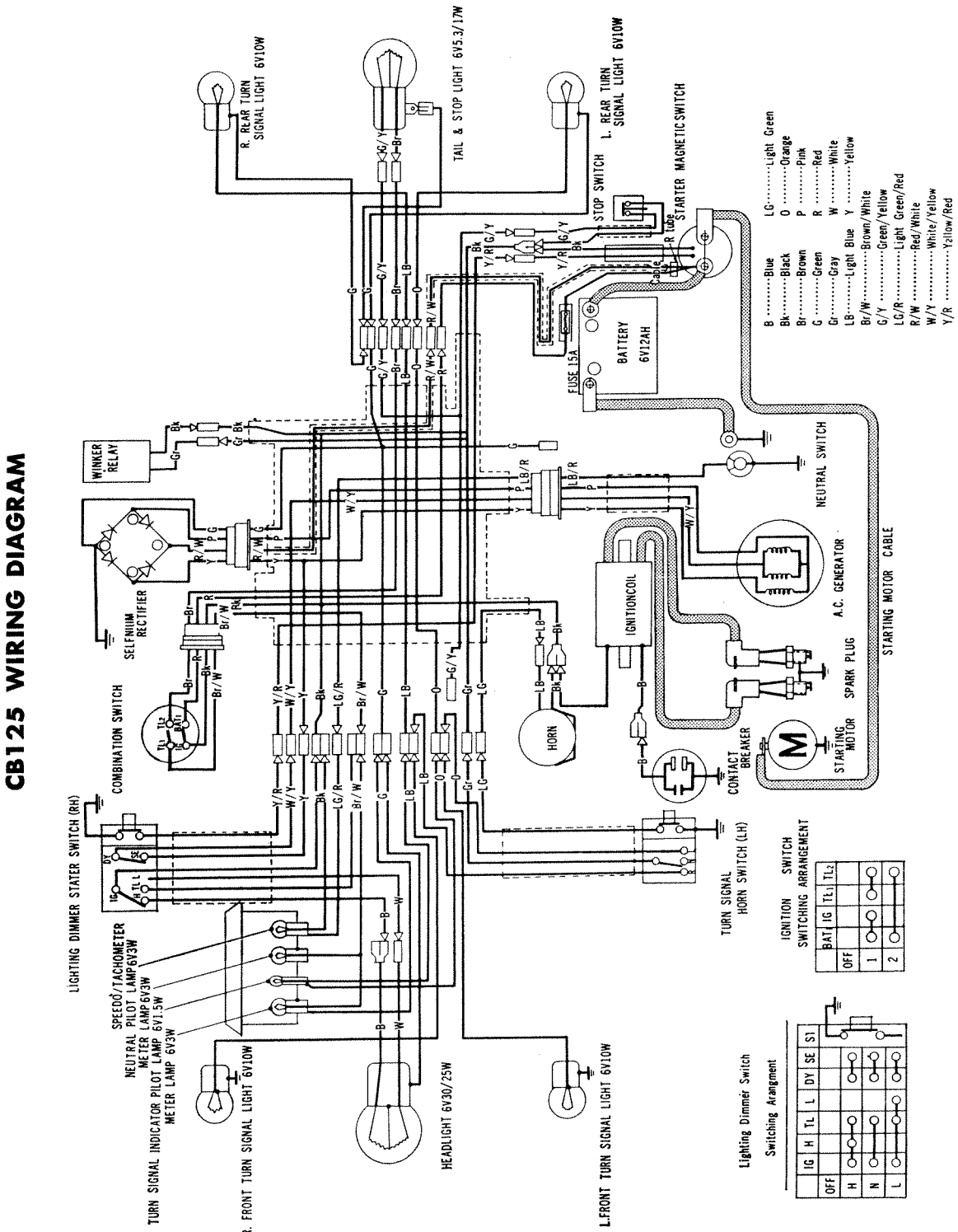
CL175 WIRING DIAGRAM (General Export Type)



CL175 WIRING DIAGRAM (U.S.A. Type)



CB125 WIRING DIAGRAM



CL125 WIRING DIAGRAM